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CONTENTS Table of Contents

[Summarize]

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CONTENTS Table of Contents

[Summarize]

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First Edition (April 1995)

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CONTENTS Table of Contents

[Expand]

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VTAM(TM)

Resource Definition Samples

Version 4 Release 2 for MVS/ESA, VM/ESA, and VSE/ESA

Document Number SC31-6499-00

Program Number
5695-117 (MVS/ESA)
5654-010 (VM/ESA)
5686-065 (VSE/ESA)

File Number S370/4300/30XX-50

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Notices

Note!

Before using this document, read the general information under "Notices."

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Figures

Tables

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Subtopics:

FRONT_1.1 Trademarks

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AS/400	ESCON
ES/9000	IBM
MVS/ESA	NetView
OS/2	Personal System/2
PS/2	VM/ESA
VSE/ESA	VTAM

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PREFACE About This Book

This book contains sample definitions to help system programmers define resources in a VTAM(*) network.

Warning: Be aware that these samples are for illustrative purposes only; they are not intended to run in your network as presented here. You are responsible for making the proper modifications to the samples for your specific installation. For example, operands that define such items as line speed and control unit addresses must be changed to match the needs of your installation.

Note: These samples ***are not*** all taken from the same network. Therefore, host A01N in one sample ***is not*** necessarily the same host as A01N in any other sample.

Subtopics:

PREFACE.1 Who Should Use This Book

Before defining resources for a VTAM network, you should be familiar with the basic concepts of telecommunication, Systems Network Architecture (SNA), and VTAM. You should be especially well acquainted with the requirements of your own network and the directions given in the *VTAM Network Implementation Guide* for addressing those requirements.

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PREFACE.2 How to Use This Book

This book is an aid to be used in conjunction with the following VTAM books:

- *VTAM Network Implementation Guide*
- *VTAM Resource Definition Reference*
- *VTAM Operation*.

In each chapter you will find sample resource definitions for commonly used network configurations and networking functions. After determining, with the help of the *VTAM Network Implementation Guide*, what resources need to be defined to implement your own VTAM network configuration, you can then refer to *VTAM Resource Definition Samples* to find samples of the resource definitions you need. Since these samples are for guidance only, you must then customize them to your specific networking environment.

Keyword Highlighting

> You will notice that certain keywords are highlighted in the samples. The highlighted keywords are those keywords that are referred to in the accompanying text.

This book does not explain in detail the syntax used in the sample definitions. For more information on the syntax, refer to "Coding VTAM Definitions" in the *VTAM Resource Definition Reference*.

For installation and coding instructions, and for more detailed descriptions of the functions covered in these samples, refer to the following chapters in the *VTAM Network Implementation Guide*:

- **MVS** Chapter 2, "Installing VTAM under MVS"
- **VM** Chapter 3, "Installing VTAM under VM"
- **VSE** Chapter 4, "Installing VTAM under VSE."

The *VTAM Network Implementation Guide* also contains many samples and examples in addition to those presented in this book.

For an overview of VTAM's support for APPN(*). and the new functions in VTAM V4R2, refer to the *VTAM Release Guide* and the *VTAM Migration Guide*.

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PREFACE.3 How This Book Is Organized

This book follows the organization of the *VTAM Resource Definition Reference* very closely. It consists of the following chapters:

Subtopics:

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PREFACE.3.1 Where to Find Samples for New VTAM V4R2 Functions

Table 1 shows the topic numbers where you can locate examples of VTAM definition statements for new functions introduced by VTAM V4R2 in the areas of:

- System and configuration management
- Performance enhancements
- Operator interface enhancements
- Problem diagnosis enhancements.

Table 1. System and Configuration Management Enhancements

ENHANCEMENT	REFERENCES
APPN Host-to-Host Channel	"APPN Host-to-Host Channel Connection"
	Chapter 16, "Transport Resource List Major Node"
APPN Multiple Network Connectivity	"Defining Subnetwork Boundaries"
	"Defining Subnetwork Boundaries"
	"Defining Subnetwork Boundaries"
	"Start Option List with Border Node Support"
	"Border Node Class-of-Service Mapping Definitions"
Adjacent SSCP Lists for CDRSCs	"Adjacent SSCP Lists for CDRSCs"
	"Defining an Adjacent SSCP List for CDRSCs"
VTAM AnyNet(*) Feature for V4R2 **MVS**	"Using CDRSC Definition Statements for Independent LUs"
	Chapter 15, "TCP/IP Major Node (MVS)"
Connection Network	"Connecting to a Connection Network over a Token Ring"
	"Connecting to a Connection Network using NTRI"
Dependent LU Server	"Dependent LU Server Function"

Dynamic Reconfiguration of Retry Values and 3174 Group Addresses	"Defining 3174 Polling Addresses"
Expanded Addressing Pool	"Subarea Node Start Option List"
Expanded Dial Information	"Expanded Dial Support"
	"Expanded Dial Support"
Frame Relay Networks Over Token-Ring Connections	"Frame Relay Networks Over Token-Ring Connections"
Network-Qualified Names	"Network-Qualified Names"
PU Dial at Major Node Activation	"DLUS-initiated Connection (Dial-Out)"
Sift-Down Effect in Application Program and Cross-Domain Resource Major Nodes	"Sift-Down Effect in Application Program and Cross-Domain Resource Major Nodes"
	"Sift-Down Effect in Application Program and Cross-Domain Resource Major Nodes"
Specifying Search Order for Locating Switched PUs	"Subarea Node Start Option List"
	"Interchange Node Start Option List"
Virtual-Route-Based Transmission Groups	"Virtual-Route-Based Transmission Groups"
	"Interchange Node Start Option List"
	"Migration Data Host Start Option List"
31-Bit Addressing Capability	"Default VTAM Start Option List"

Table 2 shows the topic numbers where you can locate examples of VTAM definition statements for new functions introduced by VTAM V4R2 in the area of performance enhancements.

Table 2. Performance Enhancements

ENHANCEMENT	**REFERENCES**
Authorized Transmission Priority for LEN Connections	"Authorized Transmission Priority for LEN Connections"
	"Authorized Transmission Priority for LEN Connections"
	"Authorized Transmission Priority for LEN Connections"
	"Authorized Transmission Priority for LEN Connections"
	"Subarea Node Start Option List"
Autologon Enhancements	"Subarea Node Start Option List"
Automatic Recovery From an Outstanding Session Request	"Subarea Node Start Option List"
Automatic Termination of Sessions Using Too Much of IO Buffer Pool	"Default VTAM Start Option List"
Data Compression	"Data Compression"
Delayed Activation of Logical Lines	"Delayed Activation of Logical Lines"

Delayed Disconnection	"Delayed Disconnection"
	"Subarea Node Start Option List"
Eliminating and Reducing Searches for Unavailable Resources	"Eliminating and Reducing Searches for Unavailable Resources"
	"Default VTAM Start Option List"
Limiting Sessions for Switched Resources	"Limiting Sessions for Independent LUs"
	"Limiting Sessions for Switched Resources"
	"Limiting Sessions for Switched Resources"
	"Limiting Sessions for Switched Resources"
Multipath Channels	"Multipath Channel Connection"

Table 3 shows the topic numbers where you can locate examples of VTAM definition statements for new functions introduced by VTAM V4R2 in the area of operator interface enhancements.

Table 3. Operator Interface Enhancements

ENHANCEMENT	**REFERENCES**
Display of a Maximum Number of Resources	"Subarea Node Start Option List"
Display of VTAM Maintenance Level	"Subarea Node Start Option List"
Extended Wildcard Enhancement	"Extended Wildcard Enhancement"
	"Subarea Node Start Option List"
Inactivating LUs in a Pending-Notify State	"Inactivating LUs in a Pending-Notify State"
Scheduled Automatic Reloading	"Default VTAM Start Option List"
Start List Processing Enhancements.	"Subarea Node Start Option List"
User-Defined Message-Flooding Prevention	"Subarea Node Start Option List"
	"Message-Flooding Prevention Table"
Wildcard Resource Names	"Subarea Node Start Option List"

Table 4 shows the topic numbers where you can locate examples of VTAM definition statements for new functions introduced by VTAM V4R2 in the area of problem diagnosis.

Table 4. Problem Diagnosis Enhancements

ENHANCEMENT	**REFERENCES**
Buffer Contents Trace Enhancements	"Subarea Node Start Option List"
IPL and Dump Contention Improvements	"IPL/Dump Contention Improvements"

Table 5 shows the topic numbers where you can locate examples of VTAM definition statements for new functions introduced by VTAM V4R2 in the area of network dynamics.

Table 5. Network Dynamics Enhancements

ENHANCEMENT	**REFERENCES**
Definition of Spare SDLC Lines	"Defining Spare SDLC Lines"
Enabling Dynamic Definition of Cross Domain Resources	"Subarea Node Start Option List"
Scanner Interface Trace (SIT) Enhancements	"Default VTAM Start Option List"
Session Enhancement for LEN CP Nodes	"Subarea Node Start Option List"

PREFACE.4 Terms Used in the VTAM Library

Clarification of some terms used in the VTAM library follows:

- The term *end node* represents an APPN end node.
- The term *network node* represents an APPN network node.
- The term *Advanced Peer-to-Peer Networking(*) (APPN)* represents VTAM's implementation of APPN.
- The term *VTAM* refers to VTAM V4R2 unless otherwise stated.
- The terms *CPCP* and *CP-CP* are similar but have different meanings. *CPCP* is the name of a start option or operand. *CP-CP* refers to CP-CP sessions between control points.

Subtopics:

PREFACE.4.1 Symbols Used in the VTAM Library

```
The following symbols are used in the VTAM library to indicate information
that applies only to a particular operating system or processor:
```

MVS Indicates information that applies only to MVS/ESA(*).

VSE Indicates information that applies only to VSE/ESA(*).

VM Indicates information that applies only to VM/ESA(*).

```
These symbols either precede or follow unique information in the VTAM
library.  Following is an example of how these symbols are used:
```

VM VSCS is a VTAM application program and must be defined to VTAM.

PREFACE.5 Artwork Used in This Book

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

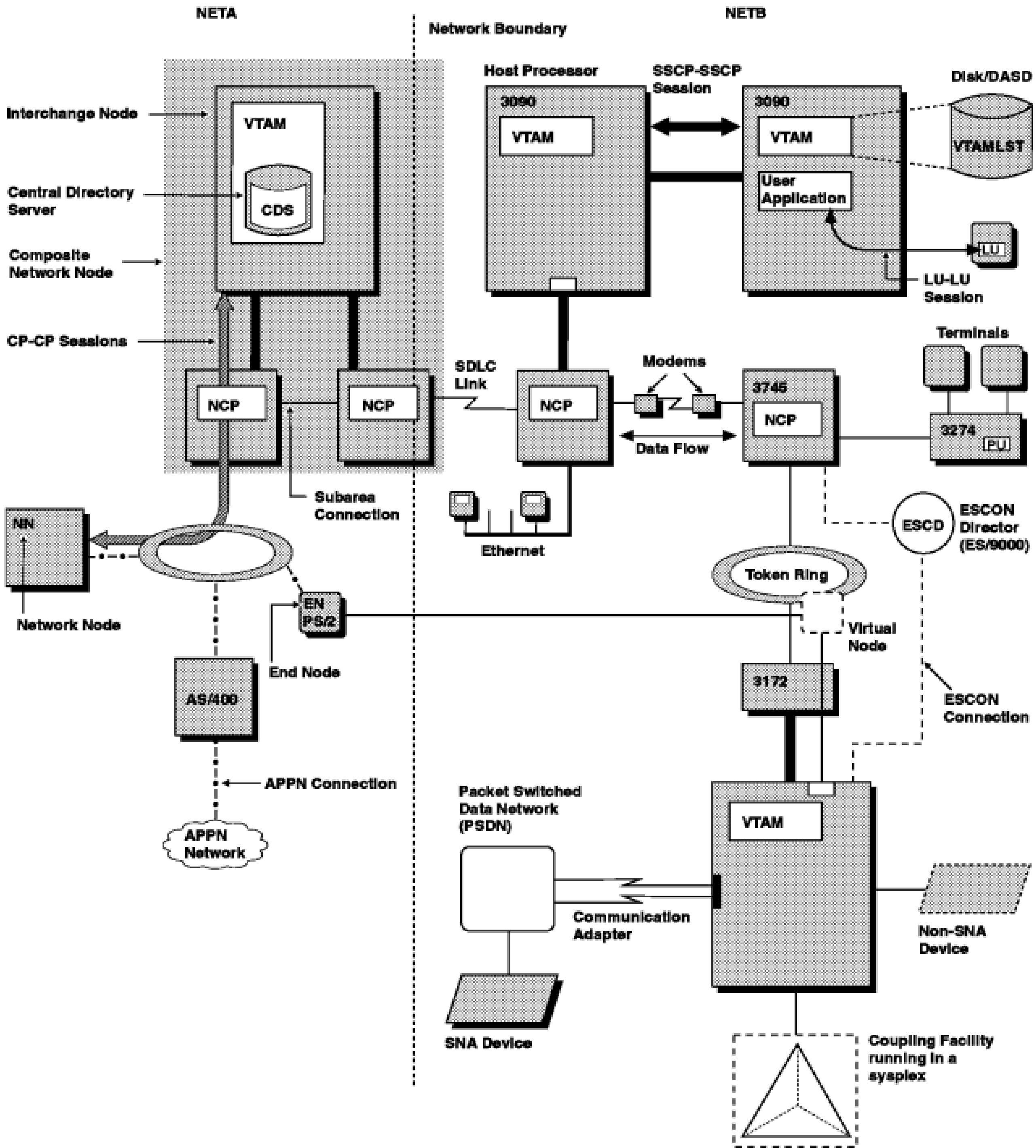

Figure 1. Conventions Used in Network Illustrations

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PREFACE.6 What Is New in This Book

Information has been added to this book to reflect the new functions introduced by VTAM V4R2 for MVS/ESA, VM/ESA, and VSE/ESA. Table 1 , Table 2, and Table 3 show the topic numbers where you can locate examples of VTAM system definition statements for new functions introduced by VTAM V4R2. Changes have also been made in both the technical content and organizational format of the book as a result of user comments.

The following sections contain the new operands, definition statements, major nodes, start options, and tables that have been added for each new function in VTAM V4R2 for MVS, VM and VSE:

- "What Is New in This Book for MVS"
- "What Is New in This Book for VM and VSE."

Subtopics:

PREFACE.6.1 What Is New in This Book for MVS

This book, last published in April 1993 with order number SC31-6428-0, has been significantly reorganized with this edition. Due to the large extent of these organizational changes, revision bars are not included in this edition.

The following sections contain the new operands, definition statements, major nodes, start options, and tables that have been added for each new function in VTAM V4R2 for MVS.

Subtopics:

PREFACE.6.1.1 New Major Nodes for MVS

The following **new major nodes** are new for VTAM V4R2 for MVS/ESA:

TCP/IP Major Node
is new for the SNA over TCP/IP function. It defines the TCP/IP network to VTAM. For more information about this major node, see Chapter 15, "TCP/IP Major Node (MVS)."

Transport Resource List (TRL) Major Node
is new for the APPN host-to-host channel function. It specifies the transport characteristics of the multipath channel for an APPN host-to-host channel connection. For more information about this major node, see Chapter 16, "Transport Resource List Major Node."

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PREFACE.6.1.2 New Definition Statements for MVS

The following **definition statements** are new for VTAM V4R2 for MVS/ESA:

ADJLIST
: is new for the adjacent SSCP lists for CDRSCs function. It specifies a list of adjacent SSCPs to be used when routing to a CDRSC. For more information about this definition statement, see topic 21.2.9.

FLDENT
: is new for the message-flooding prevention table function. It specifies which message should be suppressed, how long subsequent messages are suppressed, which variable text fields are compared, and whether messages are suppressed for the hardcopy log. For more information about this definition statement, see topic 21.8.

FLDEND
: is new for the message-flooding prevention table function. It indicates the end of a message-flooding prevention table. For more information about this definition statement, see topic 21.8.

FLDTAB
: is new for the message-flooding prevention table function. It indicates the beginning of a message-flooding prevention table. For more information about this definition statement, see topic 21.8.

MAPSTO
: is new for the APPN multiple network connectivity function. It identifies the one-to-one mapping of nonnative COS names to native COS names. The COS operand is included in the syntax for this definition statement. For more information about this definition statement, see topic 21.4.

NETWORK
: is new for the APPN multiple network connectivity function. For the adjacent cluster routing definitions, it specifies information about adjacent subnetworks that are to be searched for resources. The BNDYN, NETID, and SNVC operands are included in the syntax for this definition statement. For more information about this definition statement, see topic 21.3.

For the border node class-of-service mapping table, the NETWORK statement specifies the destination network identifier. The NETID operand is included in the syntax for this definition statement. For more information about this definition statement, see topic 21.4.

NEXTCP
: is new for the APPN multiple network connectivity function. It specifies information in the adjacent cluster routing table about border nodes that are to be searched for resources. The CPNAME and SNVC operands are included in the syntax for this definition statement. For more information about this

definition statement, see topic 21.3.

TRLE

is new for the APPN host-to-host channel function. It describes the transport characteristics of the multipath channel that is being used by an APPN host-to-host connection. The LNCTL, MAXBFRU, READ, REPLYTO, and WRITE operands are included in the syntax of this definition statement. For more information about this definition statement, see topic 16.1.

PREFACE.6.1.3 New Start Options for MVS

The following **start options** are new for VTAM V4R2 for MVS/ESA:

AUTHLEN
: is new to enable authorized transmission priority for LEN connections. It allows you to specify that the PU 2.1 exit point from the network uses the same transmission priority as the PU 2.1 entry point. For more information about this start option, see topic 19.3 and topic 19.6.

AUTORTRY
: is new for enhancements to the automatic logon function. It specifies which adjacent node activation causes pending automatic logon requests to be retried. For more information about this start option, see topic 19.3, topic 19.4, and topic 19.6.

AUTOTI
: is new for enhancements to the automatic logon function. It specifies how often outstanding automatic logon requests are retried. For more information about this start option, see topics 19.3, 19.4, and 19.6.

BN
: is new for the APPN multiple network connectivity function. It indicates whether a node provides the border node function. For more information about this start option, see topics 19.4, 19.6, and 19.9.

BNDYN
: is new for the APPN multiple network connectivity function. It specifies whether VTAM dynamically adds entries to the adjacent cluster table. For more information about this start option, see topic 19.9.

BNORD
: is new for the APPN multiple network connectivity function. It specifies whether VTAM searches an adjacent cluster table in priority order or in the order in which the table is defined. For more information about this start option, see topic 19.9.

CMPMIPS
: is new for the enhancements to data compression. It specifies how long compression tables are maintained in adaptive mode until compression efficiency drops. For more information about this start option, see topic 19.3.

DISCNTIM
: is new for the delayed disconnection function. It enables you to specify how long VTAM delays disconnection of switched resources to provide sufficient time for another LU-LU session to be started. For more information about this start option, see topics 19.3, 19.4, and 19.6.

DSPLYMAX

is new for the display of a maximum number of resources function. It enables you to limit or expand display output to *n* number of resources on a DISPLAY STORUSE or DISPLAY RSCLIST command. For more information about this start option, see topic 19.3.

DSPLYWLD

is new for the Wildcard Resource Names function. It enables you to indicate if wildcards are permitted in certain DISPLAY commands. For more information about this start option, see topic 19.3.

ENHADDR

is new for the expanded addressing pool function. It specifies whether a host will be capable of using high-order addresses to extend its addressing range. For more information about this start option, see topics 19.3, 19.4, 19.6, and 19.8.

FLDTAB

is new for the message-flooding prevention table function. It allows you to specify that VTAM use a default message-flooding prevention table, a user-defined table, or deny message-flooding prevention. For more information about this start option, see topic 19.3.

SNVC

is new for the APPN multiple network connectivity function. It defines the maximum number of networks that a border node will search when looking for a resource. For more information about this start option, see topic 19.9.

SRCHRED

is new for eliminating and reducing searches for unreachable resources. It specifies whether a node will perform search reduction. For more information about this start option, see topics 19.2, 19.3, and 19.8.

SRCOUNT

is new for eliminating and reducing searches for unavailable resources. It specifies the number of search requests that fail before VTAM performs another resource discovery search. For more information about this start option, see topics 19.2 and 19.8.

SRTIMER

is new for eliminating and reducing searches for unavailable resources. It specifies the amount of time during which VTAM does not conduct searches for an unavailable resource. For more information about this start option, see topics 19.2 and 19.8.

SWNORDER

is new for locating switched PUs. It specifies whether VTAM locates a switched PU by the CPNAME first or by the station identifier (IDBLK and IDNUM operands on the PU definition statement for the switched major nodes). For more information about this start option, see topics 19.3 and 19.6.

VRTG

is new for the virtual-route-based transmission group (VR-based TG) function. It indicates whether a VRTG should be activated for any CDRMs on a node. For more information about this start option, see topics 19.6 and 19.8.

VRTGCPCP

is new for the virtual-route-based transmission group (VR-based TG) function. It indicates whether a CP-CP session is supported across a VR-based TG connection. For more information about this start option, see topics 19.6 and 19.8.

PREFACE.6.1.4 Changes to Existing Start Options for MVS

The following **start options** have changed for VTAM V4R2 for MVS/ESA:

CINDXSIZ
The default value for this start option has been increased to 8176. For more information about this start option, see topics 19.3, 19.4, 19.5, 19.6, and 19.8.

TRACE,TYPE=VTAM
A new trace option, OPTION=CFS, has been added for the generic resources function. This option enables VTAM to trace coupling facilities services when started. For more information about this start option, see topics 19.4 and 19.8.

RESWGHT
This start option has been **deleted**.

PREFACE.6.1.5 New Operands for MVS

The following **operands** are new for VTAM V4R2 for MVS/ESA:

ADJLIST

is new for the adjacent SSCP lists for CDRSCs function. It specifies on a CDRSC definition statement which adjacent SSCP list (ADJLIST) from the adjacent SSCP table should be used for routing to this CDRSC. For more information about this operand, see topic 4.4.

AUTHLEN

is new to enable authorized transmission priority for LEN connections. It allows you to specify that the PU 2.1 exit point from the network use the same transmission priority as the PU 2.1 entry point. For more information about this operand, see the following topics:

9.7	Local SNA major node
14.9	Switched major node
11.4	Model major node
12.14	NCP major node.

DISCNT

is new for the delayed disconnection function. It enables you to specify how long VTAM delays disconnection of switched resources to provide sufficient time for another LU-LU session to be started. For more information about this operand, see topic 14.13.

DLCADDR

is new for the expanded dial number function. It allows you to specify up to 250 bytes of signal information on the PATH definition statement of a switched major node. For more information about this operand, see topics 14.4.6 for token ring connections or 14.5.3 for X.25 connections.

DLURNAME

is new for the dependent LU server function. On the PATH definition statement of a switched major node, it specifies the name of a DLUR for a PU. For more information about this operand, see topic 14.10.2.

DSPLYWLD

is new for the wildcard resource names function. On the APPL definition statement of a application major node, it indicates whether the program operator application can issue DISPLAY commands containing wildcards. For more information about this operand, see topic 2.6.

LOSTERM

is new for inactivating LUs in a pending-notify state. It allows you to force an LU to an inactive state when it becomes hung during a session with an application program that has a LOSTERM exit routine but no NSEXIT. For more information about this operand, see topic 2.9.

MAXDLUR

is new for the dependent LU server function. It determines the maximum number of unique DLUR names that can be specified for a switched deck. For more information about this operand, see topic 14.10.2.

MAXSESS

is new for the session limits for switched resources function. It specifies the maximum number of concurrent LU-LU sessions a cross-domain resource can have. For more information about this operand, see topics 4.3 (CDRSC major node), 14.4.2 (switched major node), 12.15 (NCP major node), or 11.5 (model major node).

NATIVE

is new for the APPN multiple network connectivity function. It specifies whether an adjacent node is expected to be in the native subnetwork. For more information about this operand, see topics 9.6 (local SNA major node), 1.2.1 (adjacent CP major node), 11.6 (model major node), or 14.14 (switched major node).

SRCOUNT

is new for eliminating and reducing searches for unavailable resources. It specifies the number of search requests that fail before VTAM performs another resource discovery search. For more information about this operand, see topic 4.5.

SRTIMER

is new for eliminating and reducing searches for unavailable resources. It specifies the amount of time during which VTAM does not conduct searches for an unavailable resource. For more information about this operand, see topic 4.5.

TRLE

is new for the APPN host-to-host channel function. It specifies the name of the TRLE definition statement to be used for the physical unit being defined by this PU definition statement. For more information about this operand, see topic 9.3.

VN

is new for the connection network function. It defines an adjacent CP as a virtual node. For more information about this operand, see topic 1.2.1.

VNGROUP

is new for the connection network function. It specifies the name of the GROUP containing dial-out links available for use on the connection network. For more information about this operand, see topic 12.7 (NCP major node), topic 6.9 (XCA major node) or topic 7.4 (LAN major node).

VNNAME

is new for the connection network function. It specifies a network-qualified CPNAME for the connection network. For more information about this operand, see topics 12.7 (NCP major node), 6.9 (XCA major node), or 7.4 (LAN major node).

PREFACE.6.1.6 New Tables for MVS

The following **tables** are new for VTAM V4R2 for MVS/ESA:

Adjacent Cluster Routing Definitions (ADJCLUST)
is new for the APPN multiple network connectivity function. It controls the order in which VTAM searches known border nodes and nonnative network nodes for a resource. For more information about this table, see topic 21.3.

Border Node Class-of-Service Mapping Definitions (BNCOSMAP)
is new for the APPN multiple network connectivity function. The border node class-of-service (COS) mapping table (COSMAP) enables you to define how the COS name from an adjacent nonnative APPN network should be mapped to the local, or native, COS name. For more information about this table, see topic 21.4.

Message-Flooding Prevention Table (FLDTAB)
is new for the message-flooding prevention table function. This table specifies messages that a user wants suppressed from display output. For more information about this table, see topic 21.8.

IBM Library Server

PREFACE.6.2 What Is New in This Book for VM and VSE

This book, last published in March 1992 with order number SC31-6414-1, has been significantly reorganized with this edition. Due to the large extent of these organizational changes, revision bars are not included in this edition.

The following sections contain the new operands, definition statements, major nodes, start options, and tables that have been added for each new function in VTAM V4R2 for VM/ESA and VTAM V4R2 for VSE/ESA.

Note: Operating system icons appearing in the following sections denote a function that is new only to that operating system. For instance, the VERIFYCP start option is marked with a **VM** icon, as it is new to VM and does not apply to VSE (but has applied to MVS since V4R1).

Subtopics:

PREFACE.6.2.1 New Major Nodes for VM and VSE

The following **major nodes** are new for VTAM V4R2 for VM/ESA and VSE/ESA:

Adjacent Control Point (ADJCP) Major Node
is new for the APPN and LEN node CP-to-CP function. It defines all the adjacent CPs with which you want your VTAM node to establish CP-CP sessions. For more information about this major node, see Chapter 1, "Adjacent Control Point Major Node."

Transport Resource List (TRL) Major Node
is new for the APPN host-to-host channel function. It specifies the transport characteristics of the multipath channel for an APPN host-to-host channel connection. For more information about this major node, see Chapter 16, "Transport Resource List Major Node."

PREFACE.6.2.2 New Definition Statements for VM and VSE

The following **definition statements** are new for VTAM V4R2 for VM/ESA and VSE/ESA :

ADJLIST

is new for the adjacent SSCP lists for CDRSCs function. It specifies a list of adjacent SSCPs to be used when routing to a CDRSC. For more information about this definition statement, see topic 21.2.9.

APPNCOS

is new for the APPN function. It defines the characteristics of the nodes and transmission groups to be used for a session. For more information about this definition statement, see topic 21.6.

AUTHLEN

is new for authorized transmission priority for LEN connections. It specifies whether VTAM should pass the transmission priority field specified by this PU to another PU. For more information about this definition statement, see the following topics:

9.7	Local SNA major node
14.9	Switched major node
11.4	Model major node
12.14	NCP major node.

FLDENT

is new for the message-flooding prevention table function. It specifies which message should be suppressed, how long subsequent messages are suppressed, which variable text fields are compared, and whether messages are suppressed for the hardcopy log. For more information about this definition statement, see topic 21.8.

FLDEND

is new for the message-flooding prevention table function. It indicates the end of a message-flooding prevention table. For more information about this definition statement, see topic 21.8.

FLDTAB

is new for the message-flooding prevention table function. It indicates the beginning of a message-flooding prevention table. For more information about this definition statement, see topic 21.8.

GROUP

is new for the sift-down effect in application program and cross-domain resource manager major nodes function. As a result, some operands can now be sifted to subordinate definition statements in those major nodes. For more information about this definition statement, see topic 2.10 and topic 4.6.

LINEROW

is new for the APPN function. It specifies the characteristics for the lines in each class of service. For more information about this definition statement, see topic 21.6.

MAPSTO

is new for the APPN multiple network connectivity function. It identifies the one-to-one mapping of nonnative COS names to native COS names. The COS operand is included in the syntax for this definition statement. For more information about this definition statement, see topic 21.4.

NETSRVR

is new for the APPN function. It defines a network node as a network node server to the end node. For more information about this definition statement, refer to the *VTAM Resource Definition Reference*.

NETWORK

is new for the APPN multiple network connectivity function. For the adjacent cluster routing definitions, it specifies information about adjacent subnetworks that are to be searched for resources. The BNDYN, NETID, and SNVC operands are included in the syntax for this definition statement. For more information about this definition statement, see topic 21.3.

For the border node class-of-service mapping table, the NETWORK statement specifies the destination network identifier. The NETID operand is included in the syntax for this definition statement. For more information about this definition statement, see topic 21.4.

NEXTCP

is new for the APPN multiple network connectivity function. It specifies information in the adjacent cluster routing table about border nodes that are to be searched for resources. The CPNAME and SNVC operands are included in the syntax for this definition statement. For more information about this definition statement, see topic 21.3.

NODEROW

is new for the APPN function. It specifies the characteristics for the nodes in each class of service. For more information about this definition statement, see topic 21.6.

TGP

is new for the APPN function. It specifies a set of characteristics for a transmission group. For more information about this definition statement, see topic 21.9.

TRLE

is new for the APPN host-to-host channel function. It describes the transport characteristics of the multipath channel that is being used by an APPN host-to-host connection. The LNCTL, MAXBFRU, READ, REPLYTO, and WRITE operands are included in the syntax of this definition statement. For more information about this definition statement, see topic 16.1.

PREFACE.6.2.3 New Start Options for VM and VSE

The following **start options** are new for VTAM V4R2 for VM/ESA and VSE/ESA:

APPNCOS
: is new for APPN. It specifies the APPN class of service to be used if a requested class of service cannot be found in the topology and routing services class-of-service database. For more information about this start option, see topic 19.4.

ASIRFMSG
: is a new start option whose value was previously specified via a the RACALMSG (within RACMSGS) replaceable constant. It controls the display of messages IST890I and IST896I which are issued when an autologon session initiation request fails.

AUTHLEN
: is new to enable authorized transmission priority for LEN connections. It allows you to specify that the PU 2.1 exit point from the network uses the same transmission priority as the PU 2.1 entry point. For more information about this start option, see topic 19.3 and topic 19.6.

AUTORTRY
: is new for enhancements to the automatic logon function. It specifies which adjacent node activation causes pending automatic logon requests to be retried. For more information about this start option, see topic 19.3, topic 19.4, and topic 19.6.

AUTOTI
: is new for enhancements to the automatic logon function. It specifies how often outstanding automatic logon requests are retried. For more information about this start option, see topics 19.3, 19.4, and 19.6.

BN
: is new for the APPN multiple network connectivity function. It indicates whether a node provides the border node function. For more information about this start option, see topics 19.4, 19.6, and 19.9.

BNDYN
: is new for the APPN multiple network connectivity function. It specifies whether VTAM dynamically adds entries to the adjacent cluster table. For more information about this start option, see topic 19.9.

BNORD
: is new for the APPN multiple network connectivity function. It specifies whether VTAM searches an adjacent cluster table in priority order or in the order in which the table is defined. For more information about this start option, see topic 19.9.

BSCTMOUT

is a new start option whose value was previously specified via a the RACINOPT replaceable constant. It specifies an interval during which VTAM tracks the number of general poll failures that occur for a BSC 3270 terminal.

CACHETI

is new for the APPN function. It specifies the amount of time that an APPN search request is remembered to prevent processing the same search again For more information about this start option, see topic 19.2.

CDRDYN

is new for enabling dynamic definition of cross-domain resources. It specifies whether the host is authorized to dynamically define CDRSC representations of resources. For more information about this start option, see topic 19.3.

CDSERVR

is new for the APPN function. It specifies whether this network node is a central directory server. For more information about this start option, see topic 19.4.

CINDXSIZ

is a new start option whose value was previously specified via a the RACCITSZ replaceable constant. It indicates the maximum size of the ISTCIT and ISTCONVT index tables

CMPMIPS VSE

is new for the enhancements to data compression. It specifies how long compression tables are maintained in adaptive mode until compression efficiency drops. For more information about this start option, see topic 19.3.

CMPVTAM VSE

is new for the enhancements to data compression. It specifies the maximum compression level allowed for sessions involving the host's application programs. For more information about this start option, see topic 19.3.

CONNTYPE

is new for the APPN function. It specifies for an APPN PU (type 2.1) whether a connection from it is established as a LEN connection or attempted as an APPN connection. For more information about this start option, see topic 19.4.

CPCDRSC

is new for the session enhancement for LEN CP nodes function. It specifies whether VTAM allows applications or LUs to initiate and establish sessions to a dynamic LEN CP ILU. For more information about this start option, see topic 19.3.

CPCP

is new for the APPN function. It specifies whether an APPN node supports CP-CP sessions with an adjacent node. For more information about this start option, see topic 19.4.

DATEFRM VSE

is new for the Scheduled Automatic Reloading function. It specifies the format of the start date for an automatic scheduled IPL. For more information about this start option, see topic 19.2.

DIRSIZE

is new for the APPN function. It specifies the maximum number of dynamic APPN resources that VTAM stores in the directory services database. For more information about this start option, see topic 19.4.

DIRTIME

is new for the APPN function. It specifies the amount of time that an APPN resource can remain unused in the directory services database before VTAM deletes it. For more information about this start option, see topic 19.4.

DISCNTIM

is new for the delayed disconnection function. It enables you to specify how long VTAM delays disconnection of switched resources to provide sufficient time for another LU-LU session to be started. For more information about this start option, see topics 19.3, 19.4, and 19.6.

DSPLYMAX

is new for the display of a maximum number of resources function. It enables you to limit or expand display output to *n* number of resources on a DISPLAY STORUSE or DISPLAY RSCLIST command. For more information about this start option, see topic 19.3.

DSPLYWLD

is new for the wildcard resource names function. It enables you to indicate if wildcards are permitted in certain DISPLAY commands. For more information about this start option, see topic 19.3.

DYNADJCP

is new for APPN. It specifies whether adjacent control point (ADJCP) minor nodes are allowed to be created dynamically and placed in ISTADJCP. For more information about this start option, see topic 19.4.

ENHADDR

is new for the expanded addressing pool function. It specifies whether a host will be capable of using high-order addresses to extend its addressing range. For more information about this start option, see topics 19.3, 19.4, 19.6, and 19.8.

ESIRFMSG

is a new start option whose value was previously specified via the RACESMSG (within RACMSGS) replaceable constant. It controls the display of messages IST891I, IST892I, and IST893I. These messages are issued when a session initiation request fails and extended sense data exists.

FLDTAB

is new for the message-flooding prevention table function. It allows you to specify that VTAM use a default message-flooding prevention table, a user-defined table, or deny message-flooding prevention. For more information about this start option, see topic 19.3.

FSIRFMSG

is a new start option whose value was previously specified via a the RACSSMSG (within RACMSGS) replaceable constant. It controls the display of messages IST894I and IST895I. These messages are issued when a session initiation request fails because trial and error routing, using an adjacent SSCP table, exhausted the table and was unable to locate the destination LU.

HNTSIZE

is a new start option whose value was previously specified via a the RACHNTSZ replaceable constant. It specifies the maximum size of the host node table used to find element addresses.

HOTIOTRM

is new for automatic termination of sessions using too much of I/O buffer pool. It specifies the percentage of the current size of the IO buffer pool that a single session must have allocated to it to cause VTAM to take corrective action. For more information about this start option, see topic 19.2.

HSRTSIZE
is a new start option whose value was previously specified via the RACHXSRT replaceable constant. It specifies the number of queue pointers in the symbol resolution table (SRT) for the network containing the VTAM host node.

INITDB
is new for APPN. It specifies whether the directory services and the topology and routing services databases are loaded when VTAM is started. For more information about this start option, see topic 19.4.

INOPDUMP VM
is a new start option whose value was previously specified via the RACINOPT replaceable constant. It specifies whether VTAM dumps should be generated whenever VTAM detects certain channel-to-channel, local SNA, and channel-attached NCP INOPs.

IOMSGLIM
is a new start option whose value was previously specified via the RACNTWRE replaceable constant. It limits the number of pairs of IST530I and IST1436I messages that are written for individual subareas by the IOPD facility.

IOPURGE
is new for automatic recovery from an outstanding session request. It specifies a time interval after which outstanding I/O requests are purged, and VTAM continues as if it had received negative responses from those requests. For more information about this start option, see topic 19.3.

IRNSTRGE
is a new start option whose value was previously specified via the RACINNBL replaceable constant. It defines the maximum size of the virtual area in VTAM storage that can save host intermediate routing node (IRN) transmissions.

ISTCOSDF
is new for default logon mode table entry for unknown logon modes. It specifies the resource types that can use the ISTCOSDF logmode entry. For more information about this start option, see topic 19.3.

LISTBKUP
is a new start list processing enhancement. It specifies what action is taken when VTAM detects an error in a start file. For more information about this start option, see topic 19.3.

MAINTLVL
is a new operator interface enhancement. It specifies which maintenance level is running on a host. For more information about this start option, see topic 19.3

MAXLURU
is a new start option whose value was previously specified via the RACMLUBF replaceable constant. It specifies the maximum length, in bytes, for request units (RUs) in LU-LU sessions that have a VTAM application as an endpoint.

MAXSSCPS
is a new start option whose value was previously specified via the RACVCNT replaceable constant. It replaceable constant. It specifies the maximum number of SSCPs on a specific path that are searched for the destination SSCP before alternate paths are

tried.

MIHTMOUT

is a new start option whose value was previously specified via the RACMIHTM replaceable constant. It specifies the time (in tenths of a second) that allows you to adjust the missing interrupt handling time interval during channel-to-channel communication between two VTAMs or between VTAM and an IBM(*) 3172 Interconnect Controller.

MSGLEVEL

is new for the network-qualified names function. It specifies whether VTAM is to issue the level of messages containing network-qualified names. For more information about this start option, see topic 19.8.

MXSAWBUF

is a new start option whose value was previously specified via the RACMXBUF replaceable constant. It specifies the maximum number of buffers used for session awareness (SAW).

MXSSCPRU

is a new start option whose value was previously specified via the RACMCPBF replaceable constant. It specifies the maximum length for RUs in SSCP sessions (SSCP-PU, SSCP-LU, and SSCP-SSCP).

MXSUBNUM

is a new start option whose value was previously specified via the RACSASUP replaceable constant. It specifies the maximum subarea number supported by a network to which a host VTAM is interconnected.

NCPBUFSZ

is a new start option whose value was previously specified via the RACBUFSZ replaceable constant. It specifies the request unit size in bytes (I/O buffer size minus the size of the SNA header) used by VTAM when loading or performing a static dump of a remote NCP.

NODETYPE

is new for the APPN function. It specifies the node type that is presented to other APPN nodes. For more information about this start option, see topic 19.4 and 19.5.

NQNMODE

is new for the network-qualified names function. It specifies whether VTAM defines cross-network resources by both their nonnetwork-qualified names and their network-qualified names or only by their network-qualified names. For more information about this start option, see topic 19.6

NUMTREES

is new for the APPN function. It specifies a limit on the number of routing trees retained in the topology and routing services tree cache. Topology and routing For more information about this start option, see topic 19.4

OSRTSIZE

is a new start option whose value was previously specified via the RACXNSRT replaceable constant. It specifies the number of queue pointers in the symbol resolution table (SRT) directory for networks other than the VTAM host node's network.

PDTRCBUF

is a new start option whose value was previously specified via the RACPBDFS replaceable constant. It specifies the number of buffers to build for a session monitor request.

PLUALMSG

is a new start option whose value was previously specified via the RACPAUTO replaceable constant. It specifies whether VTAM is to suppress messages for a session setup failure caused when the PLU is not available for a session.

RESUSAGE

is new for the APPN function. It specifies how many times a resource (node or TG) is used during route selection before that resource is considered overused. For more information about this start option, see topic 19.4.

ROUTERES

is new for the APPN function. It specifies a route addition resistance value. For more information about this start option, see topic 19.4.

SECLVLCP VM

is new for the APPN function. It specifies whether VTAM uses the basic or enhanced protocol for session-level security verification during activation of an LU 6.2 session involving a control point. For more information about this start option, see topic 19.6.

SGA24 VSE

is new for the 31-bit addressing enhancement. It specifies the maximum amount of 24-bit addressable system GETVIS area (SGA) that can be used by VTAM. For more information about this start option, see topic 19.2.

SIRFMSG

is a new start option whose value was previously specified via the RACFLMSG (within RACMSGS) replaceable constant. It controls the display of IST663I, IST664I, IST889I, and their message groups. These messages are issued when a session initiation request fails.

SLUALMSG

is a new start option whose value was previously specified via the RACSAUTO replaceable constant. It specifies whether VTAM is to suppress messages for a session setup failure caused when the SLU is not enabled for a session.

SNAPREQ

is a new start option whose value was previously specified via the RACBSNAP replaceable constant. It specifies, when the SMS (buffer use) trace is active, the threshold number of requests for VTAM buffers after which to take a snapshot dump.

SNVC

is new for the APPN multiple network connectivity function. It defines the maximum number of networks that a border node will search when looking for a resource. For more information about this start option, see topic 19.9.

SORDER

is new for the APPN function. It controls the order in which the APPN and subarea networks are searched when a network search request is received from the subarea network. For more information about this start option, see topic 19.6.

SRCHRED

is new for eliminating and reducing searches for unreachable resources. It specifies whether a node will perform search reduction. For more information about this start option, see topics 19.2, 19.3, and 19.8.

SRCOUNT
is new for eliminating and reducing searches for unavailable resources. It specifies the number of search requests that fail before VTAM performs another resource discovery search. For more information about this start option, see topics 19.2 and 19.8.

SRTIMER
is new for eliminating and reducing searches for unavailable resources. It specifies the amount of time during which VTAM does not conduct searches for an unavailable resource. For more information about this start option, see topics 19.2 and 19.8.

SSDTMOUT
is a new start option whose value was previously specified via the RACSSDTO replaceable constant. It specifies the number of seconds that can pass without a new LU-LU session beginning before VTAM automatically disconnects the switched PU.

SSEARCH
is new for the APPN function. It controls whether the subarea network is searched when a network search request is received from the APPN network. For more information about this start option, see topic 19.4.

SWNORDER
is new for locating switched PUs. It specifies whether VTAM locates a switched PU by the CPNAME first or by the station identifier (IDBLK and IDNUM operands on the PU definition statement for the switched major nodes). For more information about this start option, see topics 19.3 and 19.6.

TRANSLAT
is a new start option whose value was previously specified via the RACALIAS replaceable constant. It controls alias name translation. It specifies which names will be translated, but not how the names will be translated.

VERIFYCP **VM**
is new for the APPN function. It specifies whether VTAM performs LU-LU session-level verification during activation of LU 6.2 sessions involving control points. For more information about this start option, see topic 19.4.

VRTG
is new for the virtual-route-based transmission group (VR-based TG) function. It indicates whether a VRTG should be activated for any CDRMs on a node. For more information about this start option, see topics 19.6 and 19.8.

VRTGCPCP
is new for the virtual-route-based transmission group (VR-based TG) function. It indicates whether a CP-CP session is supported across a VR-based TG connection. For more information about this start option, see topics 19.6 and 19.8.

VTAMEAS
is a new start option whose value was previously specified via the RACEAS replaceable constant. It specifies the number of concurrent sessions VTAM can have with other LUs.

PREFACE.6.2.4 Changes to Existing Start Options for VM and VSE

The following **start options** have changed for VTAM V4R2 for VM/ESA and VSE/ESA:

CDRSCTI
The minimun value for this start option is now 1.

DATEFORM VM
DATEFORM has been changed to DATEFRM. Although specifying DATEFORM will not cause an error, it is recommended that DATEFRM be used.

DYNLU
If DYNLU=NO is specified, CP-CP sessions cannot be started unless the adjacent control point has a predefined CDRSC.

FFDC VM
This start option has been **deleted**.

HOSTSA
Both HOSTSA and NODETYPE must be specified for VTAM to provide both APPN and subarea functions. If NODETYPE is not specified, only subarea functions are provided by VTAM.

LFBUF VSE
This start option no longer contains I/O buffers. These buffers are now contained in a new buffer pool, IOBUF.

LOGAPPL
This start option can now specify a network-qualified name.

RESWGHT
This start option has been **deleted**.

SSCPNAME
If VTAM is an interchange node or a migration data host, the CP name and SSCPNAME are the same.

SSCPORD
For SSCPORD=DEFINED, VTAM scans the adjacent SSCP table in the same order that SSCPs are listed, if past session initiation attempts were successful, with the exception that the owner, if identified, is tried first.

VFBUF VSE
This start option has been **deleted**.

VPBUF VSE
This start option has been **deleted**.

XNETALS

```
When BN=YES is coded, the default for XNETALS is now YES.  This
change does not affect nodes started with BN=NO or nodes that
specify XNETALS through the start list or start command.
```

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PREFACE.6.2.5 New Operands for VM and VSE

The following **operands** are new for VTAM V4R2 for VM/ESA and VSE/ESA:

ADJLIST

is new for the adjacent SSCP lists for CDRSCs function. It specifies which adjacent SSCP list (ADJLIST) from the adjacent SSCP table should be used for routing to this CDRSC. For more information about this operand, see topic 4.4.

AMOUNT

is new for the buffer contents trace enhancements. On the TRACE,TUPE=BUF start option, it specifies whether VTAM records part or all of the data that is transmitted in inbound and outbound message buffers. For more information about this operand, see topic 19.3.

AUTHLEN

is new to enable authorized transmission priority for LEN connections. It allows you to specify that the PU 2.1 exit point from the network use the same transmission priority as the PU 2.1 entry point. For more information about this operand, see the following topics:

9.7	Local SNA major node
14.9	Switched major node
11.4	Model major node
12.14	NCP major node.

AUTODMP VSE

is new for IPL and dump contention improvements. It specifies whether a dump of communication controller storage is taken automatically after an unrecoverable failure in the NCP or the communication controller. For more information about this operand, see topic 12.17.

AUTOIPL VSE

is new for IPL and dump contention improvements. It specifies whether VTAM loads another copy of the NCP and restarts it after either an unrecoverable failure occurs in the NCP or the communication controller. For more information about this operand, see topic 12.17.

CMPAPPLI

is new for the data compression function. specifies the maximum compression levels for the application's input data, which is the data the primary logical unit (PLU) receives. For more information about this operand, see topic 2.7.

CMPAPPLO

is new for the data compression function. It specifies the maximum compression levels for the application's output data, which is the data the primary logical unit (PLU) sends. For more information about this operand, see topic 2.7.

CAPACITY

is new for the APPN and virtual-route-based transmission group (VR-based TG) functions. It specifies the range of the number of bits per second that the link can transmit data. For more information about this operand, see topic 5.5.

CONNTYPE

is new for the APPN and LEN node CP-to-CP function. It specifies whether a PU type 2.1 connection will be established as a LEN connection or as an APPN connection. For more information about this operand, see topic 12.9.

COSTBYTE

is new for the APPN and VR-based TG functions. It specifies a cost-per-byte-transmitted to be associated with the transmission group. For more information about this operand, see topic 5.5.

COSTTIME

is new for the APPN and VR-based TG functions. It specifies a cost-per-unit-of-time to be associated with the transmission group. For more information about this operand, see topic 5.5.

CPCP

is new for the APPN and LEN node CP-to-CP function. It specifies whether CP-CP sessions are supported on this connection. For more information about this operand, see topic 12.9.

CPNAME

is new for the APPN and LEN node CP-to-CP function. It identifies the resource's owning control point name. For more information about this operand, see topic 14.4.1 and 21.3.

DISCNT

is new for the delayed disconnection function. It enables you to specify how long VTAM delays disconnection of switched resources to provide sufficient time for another LU-LU session to be started. For more information about this operand, see topic 14.13.

DISJOINT

is new for the APPN function. It indicates whether a search from an SSCP should be sent to another SSCP, when the SSCPs have matching network IDs and their only connection is through an APPN network. For more information about using the DISJOINT operand in the CDRM major node refer to section "Using the DISJOINT Operand to Define Disjoint SNI Networks" in the *VTAM Network Implementation Guide*.

DLCADDR

is new for the dependent LU server function and the expanded dial function. It allows you to specify up to 250 bytes of signal information on the PATH definition statement of a switched major node. For more information about this operand, see topics 14.4.6 for token ring connections or 14.5.3 for X.25 connections.

DLURNAME

is new for the dependent LU server function. On the PATH definition statement of a switched major node, it specifies the name of a DLUR for a PU. For more information about this operand, see topic 14.10.2.

DSPLYWLD

is new for the wildcard resource names function. On the APPL definition statement of a application major node, it indicates whether the program operator application can issue DISPLAY commands containing wildcards. For more information about this operand, see topic 2.6.

DWACT

is new for the PU dial at major node activation function. It specifies whether a physical unit is dialed when it is activated. For more information about this operand, see topic 14.10.2.

DYNADJCP

is new for the APPN and LEN node CP-to-CP function. It specifies whether an adjacent control point can be created dynamically for the adjacent node. For more information about this operand, see topic 2.6.

DYNPU

is new for the APPN and LEN node CP-to-CP function. It specifies whether a PU is to be dynamically allocated when the calling PU cannot be identified during a switched call-in operation. For more information about this operand, see topic 6.9.

DYNPUPFX

is new for the APPN and LEN node CP-to-CP function. It specifies a two character identifier used to create an 8-byte PU name when a dynamic PU is created for the link station. For more information about this operand, see topic 6.9.

ECLTYPE

VSE is used for the delayed activation of logical lines function. VTAM uses the ECLTYPE operand and DIAL=YES to detect lines used for peripheral devices that are connected through NCP/Token-Ring interface (NTRI) support. For frame relay networks over token ring connections support, a new value, FRELAY, (ECLTYPE=LOGICAL,FRELAY), can be specified for a token-ring logical group.

For more information about this operand, see topics 12.16.1 and 12.19.

GP3174

is new for the dynamic reconfiguration of retry values and 3174 group addresses on a nonswitched SDLC line. It specifies that a poll to an IBM 3174 gateway controller can be a group poll for any station on the IBM 3174, including the IBM 3174 and the stations attached to the token ring. For more information about this operand, see topic 12.10.

IDTYPE

is new for the APPN function. On the TRACE and NOTRACE start options, it specifies the type of resource that the ID operand names. For more information about this operand, see topic 19.3.

LOSTERM

is new for inactivating LUs in a pending-notify state. It specifies how VTAM terminates a session with a hung LU. For more information about this operand, see topic 2.9.

LUALIAS

is new for the network-qualified names function. Code this operand on the CDRSC definition statement. This defines a 1-8 character name used by application programs in this domain to represent a cross-network or cross-domain resource that is defined under a NETWORK definition statement. For more information about this operand, see topic 4.7.

MAXBFRU

is new for the multipath channels function. It specifies the amount of storage VTAM uses to receive data from the channel-attached resource once it is activated. The value coded is the number of 4K-buffer pages. For more information about this operand, see topic 3.2.1.

MAXDLUR

is new for the dependent LU server function. It determines the maximum number of unique DLUR names that can be specified for a switched deck. For more information about this operand, see topic 14.10.2.

MAXSESS

is new for the session limits for switched resources function. It specifies the maximum number of concurrent LU-LU sessions a cross-domain resource can have. For more information about this operand, see the following topics:

4.3	CDRSC major node
14.4.2	Switched major node
12.15	NCP major node
11.5	Model major node.

NATIVE

is new for the APPN multiple network connectivity function. It specifies whether an adjacent node is expected to be in the native subnetwork. For more information about this operand, see the following topics:

9.6	Local SNA major node
1.2.1	Adjacent CP major node
11.6	Model major node
14.14	Switched major node.

NETSRVR

is new for the APPN function. It indicates the resource's network node server. For more information about this operand, see the *VTAM Resource Definition Reference*.

NN

is new for the virtual-route-based transmission function. It specifies whether the virtual-route-based transmission group represents a connection to an interchange node or a migration data host. For more information about this operand, see topic 5.5.

NQNMODE

is new for the network-qualified names function. It indicates whether VTAM defines the cross-network resource by its nonnetwork-qualified name and its network-qualified name or only by its network-qualified name. For more information about this operand, see topic 4.7.

PHYSRSC VSE

Is new for delayed activation of logical lines. It indicates the lines in the group are logical resources having dependency on a higher level (physical) resource. For more information about this operand, see topic 12.16.

PDELAY

is new for the APPN function. It specifies the maximum propagation delay of the link for the transmission group. For more information about this operand, see topic 5.5.

READ

is new for the multipath channels function. It specifies the 3-digit hexadecimal subchannel addresses used to read data from the adjacent host. For more information about this operand, see topic 3.4.

REGISTER
is new for APPN. It specifies how a resource should be registered on a definition statement. For more information about this operand, see topic 2.8.

SECURITY
is new for the APPN function. Code this operand on the CDRM definition statement to specify the security level of the transmission group. For more information about this operand, see topic 5.5.

SRCOUNT
is new for eliminating and reducing searches for unavailable resources. It specifies the number of search requests that fail before VTAM performs another resource discovery search. For more information about this operand, see topic 4.5.

SRTIMER
is new for eliminating and reducing searches for unavailable resources. It specifies the amount of time during which VTAM does not conduct searches for an unavailable resource. For more information about this operand, see topic 4.5.

TGP
is new for the virtual-route-based transmission group function. It specifies the name of the transmission group (TG) profile definition. For more information about this operand, see topic 6.9.

TOPO
is new for the APPN function. It controls the way APPN connections using this link station will be reported to APPN topology and routing services for inclusion into APPN functions. For more information about this operand, see topic 2.6.

TRACEPT VSE
is new for scanner interface trace enhancements. On the TRACE,TYPE=SIT start option, TRACEPT specifies the point in the microcode at which tracing should be activated. For more information about this operand, see topic 19.2.

TRLE
is new for the APPN host-to-host channel function. It specifies the name of the TRLE definition statement to be used for the physical unit being defined by this PU definition statement. For more information about this operand, see topic 9.3.

UPARM1
is new for the APPN function. It specifies a range for a user defined value. You can determine the meaning of this value. For more information about this operand, see topic 21.6.

UPARM2
is new for the APPN function. It specifies a range for a user defined value. You can determine the meaning of this value. For more information about this operand, see topic 21.6.

UPARM3
is new for the APPN function. It specifies a range for a user defined value. You can determine the meaning of this value. For more information about this operand, see topic 21.6.

USE
is new for the definition of spare SDLC lines function. It allows you to specify SDLC lines in the NCP generation for line slots that do not have physical lines attached, but which can be attached later, and allows you to redefine a line that is attached. For more information about this operand, see topic

12.18.

VERALSID

is new for the APPN function. It specifies whether the adjacent link station name should be used to determine the link station. For more information about this operand, see "Controlling Dial-In Requests" in the *VTAM Network Implementation Guide*.

VN

is new for the connection network function. It defines an adjacent CP as a virtual node. For more information about this operand, see topic 1.2.1.

VNGROUP

is new for the connection network function. It specifies the name of the GROUP containing dial-out links available for use on the connection network. For more information about this operand, see topic 12.7 for the NCP major node or topic 6.9 for the XCA major node.

VNNAME

is new for the connection network function. It specifies a network-qualified CPNAME for the connection network. For more information about this operand, see topics 12.7 for the NCP major node or 6.9 for the XCA major node.

VRTG

is new for the virtual-route-based transmission groups function. It indicates for this node, whether virtual-route-based transmission group connections are requested when SSCP-SSCP sessions are established. For more information about this operand, see topic 5.5.

VRTGCPCP

is new for the virtual-route-based transmission groups function. It indicates whether CP-CP sessions are supported over the virtual-route-based transmission group. For more information about this operand, see topic 5.5.

WRITE

is new for the multipath channels function. It specifies the 3-digit hexadecimal subchannel addresses used to write data to the adjacent host. For more information about this operand, see topic 3.4.

PREFACE.6.2.6 Changes to Existing Operands for VM and VSE

The following **operands** have changed for VTAM V4R2 for VM/ESA and VSE/ESA :

ACBNAME
: If ACBNAME is not identical to the network name, it cannot be network-qualified and used in any VTAM command or macroinstruction.

CDRDYN
: In the CDRM major node, the value specified on the CDRYN operand of the CDRM definition statement is now overriden by the value specified on the new CDRDYN start option.

DYNLU
: If the DYNLU operand is not coded in a major node, the default is the value you coded on the DYNLU start option.

ID
: On the TRACE and NOTRACE start options for IO and BUF traces, ID operand can now specify a network-qualified name.

LNCTL
: In the channel-attachment major node, a new value, MPC, is specified on the LNCTL definition statement to define a multipath channel connection between two hosts.

LOGAPPL
: This operand can now specify a network-qualified name.

LUDR
: VTAM no longer ignores this operand on the LU definition statemnet in a LU group major node.

VTAM no longer ignores this operand on the GROUP, LINE, LU, and PU definition statements in an NCP major node.

MAXBFRU
: The new default value for the MAXBFRU operand on the GROUP and LINE definition statements in the channel-attachment (NCP) major node is 3.

On the PU definition statement in the local SNA major node, the default for MAXBFRU is now 3.

On the HOST definition statement in the NCP major node, the default for MAXBFRU is now 3.

OPTION VSE
: For the TRACE TYPE=VTAM start option, VTAM always runs with the default trace options recorded, regardless of whether you request tracing. The default options are recorded internally or

externally, depending on how the trace is started.

PUDR

VTAM no longer ignores this operand on the GROUP, LINE, LU, and PU definition statements in an NCP major node.

REPLYTO

For multipath channel definitions, the default value for REPLYTO is 3 seconds.

RETRIES

VTAM no longer ignores this operand on the GROUP, LINE, LU, and PU definition statements in an NCP major node, for a PU that is to be dynamically reconfigured.

TGN

For APPN, this operand specifies the transmission group (TG) that represents the connection between this node and the destination APPN node. For APPN, this operand is valid when PUTYPE=2.

For APPN, coding TGN=0 means that the PU does not support parallel TGs.

VFYC

The new default value for the VFYC operand on the PCCU definition statement in an NCP major node is 7.

VFYOWNER

In the CDR major node, VFYOWNER=YES on the CDRSC or GROUP definition statements is not valid for sessions that now traverse an APPN node.

VPACING

The new default value for the VPACING operand on the APPL definition statement is 7.

XID

For APPN, XID=YES must be specified.

PREFACE.6.2.7 New Tables for VM and VSE

The following **tables** are new for VTAM V4R2 for VM/ESA and VSE/ESA:

Adjacent Cluster Routing Definitions (ADJCLUST)
is new for the APPN multiple network connectivity function. It controls the order in which VTAM searches known border nodes and nonnative network nodes for a resource. For more information about this table, see topic 21.3.

Border Node Class-of-Service Mapping Definitions (BNCOSMAP)
is new for the APPN multiple network connectivity function. The border node class-of-service (COS) mapping table (COSMAP) enables you to define how the COS name from an adjacent nonnative APPN network should be mapped to the local or native COS name. For more information about this table, see topic 21.4.

Message-Flooding Prevention Table (FLDTAB)
is new for the message-flooding prevention table function. This table specifies messages that a user wants suppressed from display output. For more information about this table, see topic 21.8.

IBM Library Server

1.0 Chapter 1. Adjacent Control Point Major Node

Subtopics:

1.1 About This Chapter

This chapter describes sample adjacent control point major node definitions.

You need an adjacent control point major node to define all the adjacent CPs with which you want your VTAM node to establish CP-CP sessions. The adjacent control point major node consists of ADJCP definition statements (the minor nodes), each of which represents an adjacent control point.

If the DYNADJCP start option is defaulted or specified as YES, an adjacent CP major node, ISTADJCP, is automatically created when VTAM is initialized. Adjacent CP minor nodes will then be created as needed to provide control and management of connections to adjacent APPN nodes. It is not necessary, in this case, to code an adjacent control point major node.

Note: Unless CDRSCs are predefined for adjacent CPs, CDRDYN=YES is also required for the dynamic creation of adjacent CP minor nodes.

If the DYNADJCP start option is defaulted or specified as YES, and you code an ADJCP major node, adjacent control points not specified in the ADJCP major node are still dynamically defined in the ISTADJCP major node.

If you define the DYNADJCP start option as NO, you need to define every potential adjacent CP within adjacent CP major and minor nodes. Connections are established with only those nodes you specify.

This chapter covers the following topics:

For more information about adjacent control point major nodes, see the *VTAM Network Implementation Guide* or the *VTAM Resource Definition Reference*.

IBM. Library Server

1.2 Adjacent Control Point Major Nodes for a Small Network

The adjacent control point major node samples shown in this section are for a small APPN network consisting of three network nodes (SSCP1A, SSCP2A, and SSCPBA) and three end nodes (SSCP7B, SSCP9C, and SSCPAA). This network is shown in Figure 2. Note that this graphic representation of the network is only intended to describe the overall topology of the network. The actual physical connections are not shown.

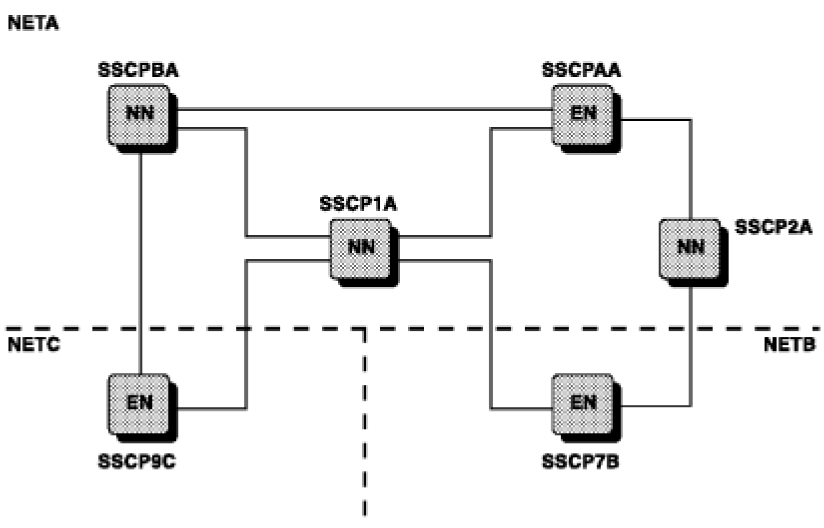

Figure 2. A Small APPN Network

Note also that not all the nodes have the same NETID.

Subtopics:

1.2.1 Adjacent Control Point Major Node for SSCP1A

In the following example, there are five adjacent control point minor nodes in the adjacent control point major node ADJCPAA. SSCP2A is the name of the first minor node and the name of an adjacent CP to which connections are to be established. Although SSCPAA is known to SSCP1A, its NODETYPE (end node) will not be learned by SSCP1A until a connection is established between the two nodes. The following list explains the significance of the various operands specified.

Operand	Meaning
NN=YES	The adjacent node is expected to be a network node. If you do not specify a value for NN, then the APPN capabilities of the adjacent node are identified and accepted when a connection is established.
NETID=NETA	The network identifier of SSCP2A is NETA.
DYNLU	Because DYNLU is not coded, its value is the value of the DYNLU start option.
NATIVE	Because NATIVE is not coded, the two nodes negotiate their subnetwork affiliation during connection establishment: if the NETIDs match, the connection defaults to a native connection; if the NETIDs are different, the connection defaults to a nonnative connection.
VN=NO	The adjacent CP is not a virtual node.

```
*  =====> BEGINNING OF DATA SET ADJCP1A
***********************************************************************
* Description:  Adjacent CP Major Node for SSCP1A                     *
***********************************************************************
*
ADJCP1A   VBUILD TYPE=ADJCP         **  ADJACENT CP MAJOR NODE
SSCP2A    ADJCP  NN=YES,            **  SSCP2A IS ADJACENT NN          X
                 NETID=NETA,        **  NETA IS SSCP2A'S NETID         X
                 VN=NO              **  SSCP2A IS NOT A VIRTUAL NODE
SSCPAA    ADJCP  NETID=NETA         **  NETA IS SSCPAA'S NETID
SSCPBA    ADJCP  NN=YES,            **  SSCPBA IS ADJACENT NN          X
                 NETID=NETA         **  NETA IS SSCPBA'S NETID
SSCP7B    ADJCP  NN=NO,             **  SSCP7B IS ADJACENT EN          X
                 NETID=NETB,        **  NETB IS SSCP7B'S NETID         X
                 VN=NO              **  SSCP7B IS NOT A VIRTUAL NODE
SSCP9C    ADJCP  NN=NO,             **  SSCP9C IS ADJACENT EN          X
                 NETID=NETC         **  NETC IS SSCP9C'S NETID
```

```
*  =====> END OF DATA SET ADJCP1A
```

1.2.2 Adjacent Control Point Major Node for SSCP2A

```
In the adjacent control point major node below, note that, although SSCPAA
is known to SSCP2A, its NODETYPE (end node) will not be learned by SSCP2A
until a connection is established between the two nodes.
```

```
*  =====> BEGINNING OF DATA SET ADJCP2A
**********************************************************************
* Description: Adjacent CP Major Node for SSCP2A                     *
**********************************************************************
*
ADJCP2A   VBUILD TYPE=ADJCP
SSCP1A    ADJCP  NN=YES,NETID=NETA
SSCPAA    ADJCP  NETID=NETA
SSCPCA    ADJCP  NN=YES,NETID=NETA
SSCP7B    ADJCP  NN=NO,NETID=NETB
SSCP9C    ADJCP  NN=NO,NETID=NETC
*  =====> END OF DATA SET ADJCP2A
```

1.2.3 Adjacent Control Point Major Node for SSCPBA

```
In the adjacent control point major node below, note that, although SSCPAA
is known to SSCPBA, its NODETYPE (end node) will not be learned by SSCPBA
until a connection is established between the two nodes.
```

```
*  =====> BEGINNING OF DATA SET ADJCPBA
**********************************************************************
* Description:  Adjacent CP Major Node for SSCPBA                    *
**********************************************************************
*
ADJCPBA   VBUILD TYPE=ADJCP
SSCP1A    ADJCP  NN=YES,NETID=NETA
SSCPAA    ADJCP  NETID=NETA
SSCP9C    ADJCP  NN=NO,NETID=NETC
*  =====> END OF DATA SET ADJCPBA
```

IBM Library Server

1.2.4 Adjacent Control Point Major Node for SSCPAA

```
In the adjacent control point major node shown below, note that, although
SSCPBA has predefined SSCPAA as an adjacent control point (see "Adjacent
Control Point Major Node for SSCPBA"), SSCPAA has not predefined SSCPBA as
an adjacent control point.  Therefore, SSCPAA must have the DYNADJCP start
option defaulted or coded as YES to establish CP-CP sessions with SSCPBA.
```

```
*  =====> BEGINNING OF DATA SET ADJCPAA
***********************************************************************
* Description: Adjacent CP Major Node for SSCPAA                      *
***********************************************************************
*
ADJCPAA   VBUILD TYPE=ADJCP
SSCP1A    ADJCP  NN=YES,NETID=NETA
SSCP2A    ADJCP  NN=YES,NETID=NETA
*  =====> END OF DATA SET ADJCPAA
```

IBM Library Server

1.2.5 Adjacent Control Point Major Node for SSCP7B

```
Note that this end node has defined both SSCP1A and SSCP2A as adjacent
control points.  These definitions are required for either SSCP1A or
SSCP2A to act as SSCP7B's network node server, in the event that the
DYNADJCP start option had been coded with NO as a value.
```

```
*   =====> BEGINNING OF DATA SET ADJCP7B
**********************************************************************
* Description: Adjacent CP Major Node for SSCP7B                     *
**********************************************************************
*
ADJCP7B    VBUILD TYPE=ADJCP
SSCP1A     ADJCP  NN=YES,NETID=NETA
SSCP2A     ADJCP  NN=YES,NETID=NETA
*   =====> END OF DATA SET ADJCP7B
```

1.2.6 Adjacent Control Point Major Node for SSCP9C

```
Note that this end node has defined both SSCP1A and SSCPBA as adjacent
control points.  These definitions are required for either SSCP1A or
SSCPBA to act as SSCP7B's network node server, in the event that the
DYNADJCP start option had been coded with NO as a value.
```

```
*   =====> BEGINNING OF DATA SET ADJCP9C
**********************************************************************
* Description: Adjacent CP Major Node for SSCP9C                     *
**********************************************************************
*
ADJCP9C    VBUILD TYPE=ADJCP
SSCP1A     ADJCP  NN=YES,NETID=NETA
SSCPBA     ADJCP  NN=YES,NETID=NETA
*   =====> END OF DATA SET ADJCP9C
```

IBM Library Server

1.3 Adjacent Control Point Minor Node with DYNLU=NO

```
In the following example, SSCP2A is defined as an adjacent control point
with DYNLU=NO, specifying that dynamic definition of logical units is not
allowed for SSCP2A.  Unless you predefine the logical units that use
adjacent link stations attached to this adjacent CP, the session request
will fail.  DYNLU=NO overrides the value coded on the DYNLU start option
and also overrides the values coded on definition statements for resources
attached to this adjacent CP.
```

```
*  =====> BEGINNING OF DATA SET CMAD0901
**********************************************************************
* Description: Adjacent CP Major Node for SSCP1A                     *
**********************************************************************
*
ADJCP1A   VBUILD TYPE=ADJCP
SSCP2A    ADJCP  NN=YES,NETID=NETA,DYNLU=NO
SSCPAA    ADJCP  NETID=NETA
*  =====> END OF DATA SET CMAD0901
```

2.0 Chapter 2. Application Program Major Node

Subtopics:

2.1 About This Chapter

```
This chapter contains sample application definitions used by hosts in the
VTAM network.  Application programs must be defined within an application
program major node.  Each application program represents a minor node.
```

IBM Library Server

2.2 LU 6.2 Conversation-Level Security

VTAM's LU 6.2 support provides five levels of conversation-level security for user ID verification, specified on the SECACPT operand of the APPL definition statement.

- NONE means the logical unit does not support conversation requests containing access security subfields.

- CONV means the logical unit supports conversation requests containing access security subfields.

- **MVS,VM** ALREADYV means the logical unit supports conversation requests containing access security subfields and it also accepts already-verified indications that it receives in conversation requests from partner logical units.

- **MVS** PERSISTV means the logical unit supports conversation requests containing access security subfields and it also accepts persistent verification indications that it receives in conversation requests.

- **MVS** AVPV means the logical unit supports conversation requests containing access security subfields, and it also accepts the already-verified indications and persistent verification indications that it receives in conversation requests.

APPC=YES is required for LU 6.2 conversation-level security.

Persistent verification during an LU 6.2 session means that, after a successful initial sign-on (in which a password is required), the user's ID and other relevant information are saved by the local and remote logical units. The user can then request access to secure resources at the remote logical unit without providing the user's password. The remote logical unit considers the user's authorization to be already verified.

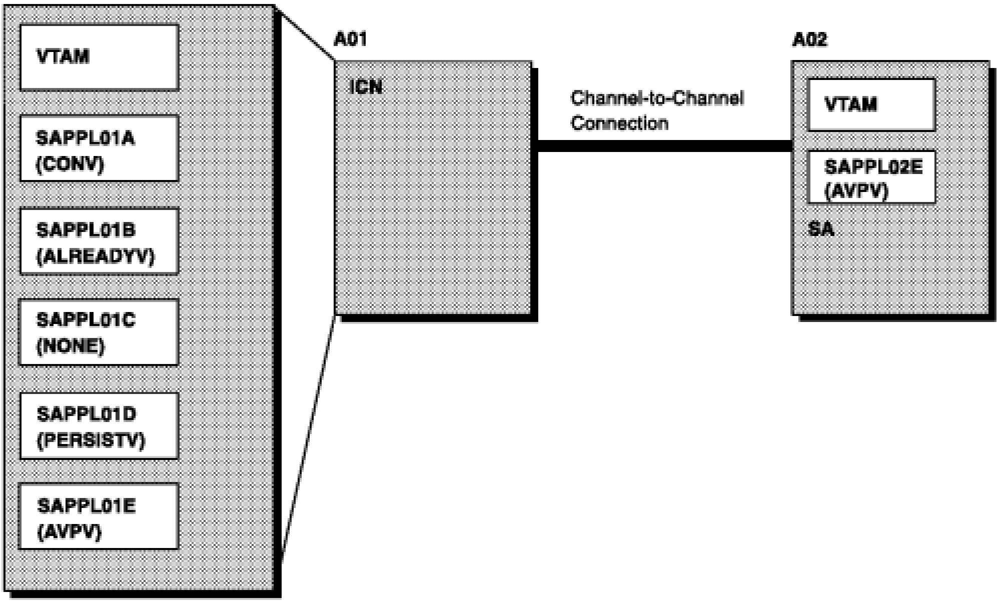

Figure 3. LU 6.2 Persistent Verification. Host A01 is an interchange node (ICN). Host A02 is a subarea node (SA).

For a more detailed description of LU 6.2 conversation-level verification, refer to "Conversation-Level Security" in the *VTAM Programming for LU 6.2*.

For more information on PERSISTV, AVPV, and the other SECACPT options, refer to "SECACPT" in the *VTAM Resource Definition Reference*.

The next sample illustrates the use of the SECACPT operand.

```
***********************************************************************
* A01APPLS - VTAM APPLICATION PROGRAM MAJOR NODE - ICN A01            *
***********************************************************************
* APPLS WITH LU6.2 CONVERSATION SECURITY                              *
***********************************************************************
         VBUILD TYPE=APPL
SAPPL01A APPL   AUTH=(ACQ,PASS),                                       X
               APPC=YES,           ** REQUIRED FOR SECACPT KEYWORD   **X
               MODETAB=AMODETAB,                                       X
               SECACPT=CONV        ** CONVERSATION ACCESS SUBFIELDS  **
SAPPL01B APPL   AUTH=(ACQ,PASS),                                       X
               APPC=YES,           ** REQUIRED FOR SECACPT KEYWORD   **X
               MODETAB=AMODETAB,                                       X
               SECACPT=ALREADYV    ** ALREADY VERIFIED INDICATIONS   **
SAPPL01C APPL   AUTH=(ACQ,PASS),                                       X
               APPC=YES,           ** REQUIRED FOR SECACPT KEYWORD   **X
               MODETAB=AMODETAB,                                       X
               SECACPT=NONE        ** NO CONVERSATION SECURITY       **
SAPPL01D APPL   AUTH=(ACQ,PASS),                                       X
               APPC=YES,           ** REQUIRED FOR SECACPT KEYWORD   **X
               MODETAB=AMODETAB,                                       X
               SECACPT=PERSISTV    ** PERSISTENT VERIFY INDICATIONS  **
SAPPL01E APPL   AUTH=(ACQ,PASS),                                       X
               APPC=YES,           ** REQUIRED FOR SECACPT KEYWORD   **X
               MODETAB=AMODETAB,                                       X
               SECACPT=AVPV        ** ACCEPTS ALL INDICATIONS        **
************************************************************************
```

```
In the next sample, SAPPL02E is defined with SECACPT=AVPV.  This
application supports conversation requests containing access security
subfields, already-verified indications, and persistent verification
indications when communicating with SAPPL01E from the previous sample from
A01.
```

```
*********************************************************************
* A02APPLS - VTAM APPLICATION PROGRAM MAJOR NODE - SUBAREA A02      *
*********************************************************************
* APPL WITH LU6.2 CONVERSATION                                      *
*********************************************************************
         VBUILD TYPE=APPL
SAPPL02E APPL  AUTH=(ACQ,PASS),                                       X
               APPC=YES,           ** REQUIRED FOR SECACPT KEYWORD**X
               MODETAB=AMODETAB,                                      X
               VERIFY=OPTIONAL,    ** IDENTITY VERIFICATION       **X
               SECACPT=AVPV        ** ACCEPTS ALL INDICATORS
*********************************************************************
```

2.3 LU 6.2 Session-Level Security

This function provides an optional security protocol for verifying the identity of a partner LU when LU-LU sessions are established.

APPC=YES is required for LU 6.2 session-level security.

During activation of LU 6.2 sessions involving control points, the VERIFYCP start option specifies whether VTAM performs session-level LU-LU verification. See topic 19.4.

Subtopics:

2.3.1 Using the VERIFY Operand

The VERIFY operand specifies whether the VTAM program performs session-level LU-LU verification during activation of LU-LU 6.2 sessions.

- VERIFY=NONE specifies that no verification of the partner LU's identity takes place during session activation.

- VERIFY=OPTIONAL specifies that identity verification is performed for certain partner LUs during session activation. Determination for which partner LUs the LU-LU verification is performed depends on whether there is a password defined for the LU-LU pair in the installed security manager product.

- VERIFY=REQUIRED specifies that VTAM verifies the identity of all partner LUs during activation of sessions between LU 6.2 applications. Every partner LU must have an LU-LU password defined. Any partner LUs that do not have an LU-LU password defined cannot establish LU 6.2 sessions with this application program.

The example below illustrates the use of the VERIFY operand.

```
*********************************************************************
* A02APPLS - VTAM APPLICATION PROGRAM MAJOR NODE - SUBAREA A02      *
*********************************************************************
* APPL WITH LU6.2 CONVERSATION                                      *
*********************************************************************
         VBUILD TYPE=APPL
SAPPL02E APPL  AUTH=(ACQ,PASS),                                       X
               APPC=YES,               ** REQUIRED FOR SECACPT KEYWORD**X
               MODETAB=AMODETAB,                                      X
               VERIFY=OPTIONAL         ** IDENTITY VERIFICATION       **X
               SECACPT=AVPV            ** ACCEPTS ALL INDICATORS
*********************************************************************
```

2.3.2 Using the SECLVL Operand (MVS, VM)

The SECLVL operand specifies whether enhanced security verification is used during session-level LU-LU verification.

- SECLVL=ADAPT specifies that either the enhanced or the basic protocol for identity verification will be performed on sessions that use session-level LU-LU verification. VTAM attempts to use the enhanced protocol but accepts the use of the basic protocol if the partner LU does not support the enhanced protocol.

- SECLVL=LEVEL1 specifies that the basic protocol is used for sessions that use session-level LU-LU verification.

- SECLVL=LEVEL2 specifies that VTAM uses only the enhanced protocol for identity verification. If the partner LU does not support the enhanced protocol, VTAM rejects the session and issues a sense code.

The following example illustrates the use of SECLVL:

```
         VBUILD TYPE=APPL
            . . .
APPCAP05 APPL AUTH=(ACQ,PASS),APPC=YES,SYNCLVL=SYNCPT,ATNLOSS=ALL,    *X
               OPERCNOS=ALLOW,VERIFY=REQUIRED,SECLVL=ADAPT
APPCAP06 APPL AUTH=(ACQ,PASS),APPC=YES,SYNCLVL=SYNCPT,ATNLOSS=ALL,    *X
               OPERCNOS=ALLOW,VERIFY=REQUIRED,SECLVL=LEVEL1
APPCAP07 APPL AUTH=(ACQ,PASS),APPC=YES,SYNCLVL=SYNCPT,ATNLOSS=ALL,    *X
               OPERCNOS=ALLOW,VERIFY=REQUIRED,SECLVL=LEVEL2
            . . .
```

2.4 LU 6.2 Selective Deactivation of Idle Sessions

You can limit the use of some network connections, such as lines, groups of lines, and physical units. When a network connection is limited, a session on the connection can be deactivated if no conversation is detected for a set period of time. If all sessions are deactivated, the connection itself is deactivated.

Note: Only LU 6.2 conversations are affected by limited resource definition. Non-LU 6.2 sessions are unaffected and cannot be limited.

To use this function, you must:

1. Choose which network connections you want to define as limited. The best connections to choose are lines and physical units whose cost is determined by the length of time a connection exists. Defining these as limited can help reduce switched line connect charges.

   You can define a line, a group of lines, or a physical unit as a limited resource for the following major nodes:

   - NCP
   - Packet (SDLC, switched and nonswitched, VM only)
   - LAN (VM only)
   - External communication adapter (line only)
   - Switched (physical unit only)
   - Local SNA (physical unit only)
   - Model (physical unit only).

2. Define the connections as limited resources by coding LIMRES=YES on the major node's GROUP, LINE, or PU definition statement.

3. Use the following steps to determine how long you want an inactive session to remain on the queue before it is deactivated:

   a. Determine the shortest line time cost interval for the connection.
   b. Divide that interval in half.
   c. Subtract 1 second.

4. Code the result, in seconds, on the LIMQSINT operand on the APPL definition statement.

For example, in Figure 4, S28APPLA is an APPC application program and B28CCNPU, a channel-attached type 2.1 node, has been defined for the channel between B128 and NCP B75NCP. The value for LIMQSINT is determined as follows:

1. The line time cost interval for S28APPLA is 4 minutes 2 seconds, or 242 seconds.

2. Divide that in half: 242 ÷ 2 = 121.

3. Subtract 1: 121 - 1 = 120.

4. Code LIMQSINT=120 on the APPL definition statement (See "Defining LIMQSINT.")

In the local SNA major node, code LIMRES=YES on the PU definition statement for B28CCNPU to define B28CCNPU as a limited resource. (See "Selective Deactivation of Idle LU 6.2 Sessions.")

That means that any LU 6.2 sessions in which S28APPLA is participating and which traverse B28CCNPU will be deactivated if no conversations are detected for a period of 120 seconds on B28CCNPU.

For more information on selective deactivation, refer to "Selective Termination of Idle LU 6.2 Sessions" in the *VTAM Network Implementation Guide*.

For more information on the LIMRES and LIMQSINT operands, refer to "LIMRES" and "LIMQSINT" in the *VTAM Resource Definition Reference*.

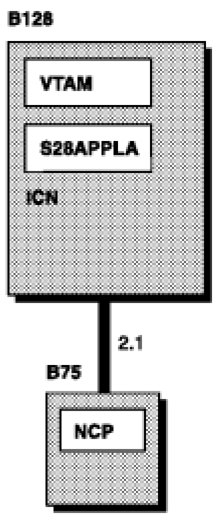

Figure 4. LU 6.2 Selective Deactivation. Host B128 is an interchange node (ICN).

Subtopics:

- 2.4.1 Defining LIMRES
- 2.4.2 Defining LIMQSINT

2.4.1 Defining LIMRES

```
For an example of a major node that defines a limited resource, see
"Selective Deactivation of Idle LU 6.2 Sessions."
```

IBM Library Server

2.4.2 Defining LIMQSINT

```
In the following definition, any LU 6.2 sessions in which S28APPLA is
participating and which traverse a limited resource will be deactivated if
no conversations are detected for a period of 120 seconds over that
limited resource.
```

```
*********************************************************************
* B28APPLS - VTAM APPLICATION PROGRAM MAJOR NODE - ICN B1028        *
*********************************************************************
* LIMITED RESOURCE APPL                                             *
*********************************************************************
         VBUILD TYPE=APPL
S28APPLA APPL  APPC=YES,                                              X
               AUTH=(ACQ,PASS),                                       X
               LIMQSINT=(120)        ** LIMITED RESOURCE EXPIRATION  **
*********************************************************************
```

2.5 Application-Supplied Information for Switched Connections

A VTAM application program can supply dial number digits and other dial-out switched connection information during session initiation. This application-supplied information, which you provide in the ASDP control block, temporarily overrides the information defined for the contacted device in a switched major node.

Note: This function also authorizes the application to override XID checking for the contacted device. This can cause a security exposure.

This function can be used with a type 1 or 2 physical unit or a type 2.1 node.

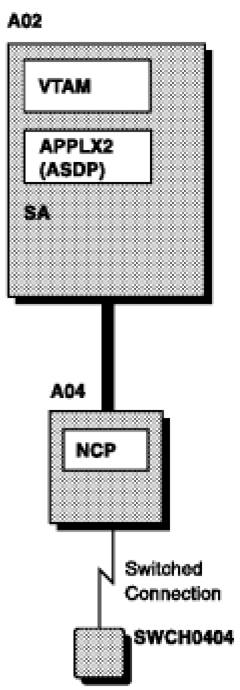

Figure 5. Application-Supplied Operands for Switched Connections. Host A02 is a subarea node (SA).

For more information on this function, refer to "Authorizing Application Facilities" in the *VTAM Network Implementation Guide*.

For a sample switched major node that authorizes a physical unit to accept application-supplied dial-out information, see "Application-Supplied Operands for Switched Connections."

For more information on the ASDP control block, refer to "Control Blocks Used for Session Establishment and Termination" in *VTAM Programming*.

An application is authorized to supply dial-out information using the ASDP option on the AUTH operand on the APPL definition statement in an application program major node. Here, application APPLX2 is authorized to supply dial-out information (AUTH=ASDP).

```
**********************************************************************
*   A02APPLS - VTAM APPLICATION PROGRAM MAJOR NODE - SUBAREA A02     *
**********************************************************************
         VBUILD TYPE=APPL
APPLX2   APPL  AUTH=(ACQ,PASS,ASDP),                                  X
               MODETAB=AMODETAB,                                      X
               PARSESS=YES
**********************************************************************
```

2.6 Extended Wildcard Enhancement

```
Wildcard values enable an operator or program operator application to
expand a display by substituting special symbols (for example, * and ?) to
represent unspecified characters in the name of a resource.  In the
application program major node named A01APPLS (see below), the application
program minor node A01NVPPT specifies the operand DSPLYWLD=YES.
DSPLYWLD=YES indicates that A01NVPPT--the program operator interface--is
permitted to issue DISPLAY commands containing wildcards when the DSPLYWLD
start option is FULLWILD or POAONLY.  In addition, the application program
must specify either AUTHLEN=PPO or AUTHLEN=SPO for DSPLYWLD=YES to take
effect.  Therefore, DISPLYWLD=YES is in effect for A01NVPPT (which
specifies AUTH=(NVPACE,PPO)) and DSIAMLUT (which specifies AUTH=(SPO,ACQ))
but not for A01NVLUC (which only specifies AUTH=ACQ).
```

```
**********************************************************************
*   A01APPLS - VTAM APPLICATION PROGRAM MAJOR NODE - ICN A01         *
**********************************************************************
         VBUILD TYPE=APPL
              .
              .
              .
A01NVPPT APPL   AUTH=(NVPACE,PPO),                                     X
               DSPLYWLD=YES,                                           X
               DLOGMOD=DSILGMOD,                                       X
               EAS=1,                                                  X
               MODETAB=AMODETAB,                                       X
               PRTCT=A01NV
DSIAMLUT APPL   AUTH=(SPO,ACQ),                                        X
               DSPLYWLD=YES,                                           X
               EAS=2,                                                  X
               PARSESS=YES,                                            X
               PRTCT=A01NV,                                            X
               VPACING=1
*********************************************************************
* NETVIEW-NETVIEW COMMUNICATION                                     *
*********************************************************************
A01NVLUC APPL   AUTH=ACQ,                                              X
               DLOGMOD=DSINLDML,                                       X
               MODETAB=AMODETAB,                                       X
               PARSESS=YES,                                            X
               PRTCT=A01NV
```

IBM Library Server

2.7 Data Compression

VTAM's data compression facility enables VTAM to compress the data on selected LU-LU sessions when you are using application programs in a multiple-domain network. The value specified on the COMPRES operand of the MODEENT macroinstruction determines whether data compression is allowed. If your application is the SLU and you want to use compression, code COMPRES=REQD on the MODEENT macroinstruction in the logon mode table.

If data compression is allowed, VTAM supports the following levels:

- 0 No compression
- 1 Run-length encoding (RLE) compression
- 2 Small table compression
- 3 Medium table compression
- 4 Large table compression.

The CMPVTAM start option specifies the maximum compression level allowed for sessions involving the host's application programs. A VTAM host performs data compression only if the CMPVTAM start option has been specified with a value in the range 1-4. This level can be changed by the MODIFY COMPRESS command, and displayed by the DISPLAY VTAMOPTS command.

Note: **VM** The limit of the CMPVTAM start option overrides the values of 2, 3, and 4. You can specify 2, 3, or 4 as values for CMPAPPLI and for CMPAPPLO but these values have the same effect as 1. These values are for operating system architecture compatibility.

If CMPVTAM has been specified with a value greater than 1, the CMPMIPS start option can be used to balance the number of machine cycles needed with the effectiveness of compression for outbound messages. Higher values for CMPMIPS will likely increase both compression effectiveness and cycle usage, while lower CMPMIPS values will likely lower both compression effectiveness and cycle usage.

Input and output compression levels for a specific application program are specified on the CMPAPPLI and CMPAPPLO operands on the APPL definition statement. The CMPAPPLI and CMPAPPLO operands specify the maximum compression levels for an application's input data (the data the PLU receives) and output data (the data the PLU sends), respectively. An application program's compression level can be modified by the MODIFY COMPRESS command and displayed by the DISPLAY ID command.

For more information on data compression, see "Data Compression" in the *VTAM Network Implementation Guide*.

Subtopics:

IBM Library Server

2.7.1 Defining Compression Limits for Application ECHO01

```
In the application program major node for ECHO01 shown below, CMPAPPLI=4
means that large table data compression is used for ECHO01'S input data
when VTAM is the PLU for the session, unless the value set on A01's
CMPVTAM start option is lower.


CMPAPPLO=1 means that RLE data compression is used for ECHO01's output
data when VTAM is the PLU for the session, unless the value set on A01's
CMPVTAM start option is lower.
```

```
**********************************************************************
*   A01APPLS - VTAM APPLICATION PROGRAM MAJOR NODE - ICN A01         *
**********************************************************************
         VBUILD TYPE=APPL
ECHO01   APPL  APPC=YES,              ** APPCCMD MACRO CAPABILITY     **X
               AUTH=(ACQ,PASS),       ** APPL AUTHORIZE VTAM FUNCTION **X
               AUTOSES=2,             ** APPC - AUTO CONT WINNER SESS **X
               CMPAPPLI=4,            ** INPUT DATA COMPRESSION LEVEL **X
               CMPAPPLO=1,            ** OUTPUT DATA COMPRESSION LEVEL**X
               DMINWNL=1,             ** APPC - CONTENTION LOSER MIN  **X
               DMINWNR=1,             ** APPC - CONTENTION WINNER MIN **X
               DSESLIM=4,             ** APPC - MODE SESSION LIMIT    **X
               MODETAB=AMODETAB,      ** LOGON MODE TABLE NAME        **X
               PARSESS=YES            ** PARALLEL SESSION CAPABILITY  **
```

2.7.2 Defining Compression Limits for Application ECHO02

In the application program major node for ECHO02 shown below, CMPAPPLI=4 means that large table data compression is used for ECHO02'S input data when VTAM is the PLU for the session, unless the value set on A02's CMPVTAM start option is lower.

CMPAPPLO=2 means that small data compression is used for ECHO02's output data when VTAM is the PLU for the session, unless the value set on a A02's CMPVTAM start option is lower.

```
***********************************************************************
*   A02APPLS - VTAM APPLICATION PROGRAM MAJOR NODE - SUBAREA A02     *
***********************************************************************
         VBUILD TYPE=APPL
ECHO02   APPL  APPC=YES,              ** APPCCMD MACRO CAPABILITY     **X
               AUTH=(ACQ,PASS),       ** APPL AUTHORIZE VTAM FUNCTION **X
               AUTOSES=2,             ** APPC - AUTO CONT WINNER SESS **X
               CMPAPPLI=4,            ** INPUT DATA COMPRESSION LEVEL **X
               CMPAPPLO=2,            ** OUTPUT DATA COMPRESSION LEVEL**X
               DMINWNL=1,             ** APPC - CONTENTION LOSER MIN  **X
               DMINWNR=1,             ** APPC - CONTENTION WINNER MIN **X
               DSESLIM=4,             ** APPC - MODE SESSION LIMIT    **X
               MODETAB=AMODETAB,      ** LOGON MODE TABLE NAME        **X
               PARSESS=YES            ** PARALLEL SESSION CAPABILITY  **
```

IBM. Library Server

2.8 Resource Registration in an APPN Network

Resource registration places information about the location of resources in a directory services database. This registration reduces broadcast searches by ensuring that a resource will be found in the directory services database. Resources can be registered to a directory database on a network node server and/or to a central directory server.

For an application in an APPN network, the REGISTER operand on the GROUP or APPL statement specifies how it should be registered.

REGISTER=CDSERVR An end node resource should be registered to its network node server and central directory resource registration is requested for it. A network node resource is registered at the central directory server. This is the default for non-TSO applications, because they are likely to be the object of a search.

REGISTER=NETSRVR An end node resource should be registered to its network node server, but central directory registration should not be requested for it.

REGISTER=NO The resource should not be registered.

For more information on how applications are registered, see "Registering Resources" in the *VTAM Network Implementation Guide*.

The sample application program major node below illustrates the specification of resource registration.

```
**********************************************************************
**
** APPL1A  - APPL DECK FOR SSCP1A
**
**********************************************************************
REGAPPL1 APPL  AUTH=(PASS,ACQ),                                      X
               REGISTER=NETSRVR      ** NETWORK NODE SERVER REGISTRATION
REGAPPL2 APPL  AUTH=(PASS,ACQ),                                      X
               REGISTER=CDSERVR      ** CENTRAL DIRECTORY REGISTRATION
REGAPPL3 APPL  AUTH=(PASS,ACQ),                                      X
               REGISTER=NO           ** NO REGISTRATION
REGAPPL4 APPL  AUTH=(PASS,ACQ)
```

2.9 Inactivating LUs in a Pending-Notify State

```
An application program that has a LOSTERM exit routine but no NSEXIT must
issue a CLSDST macroinstruction when the LOSTERM exit is driven to
terminate a session.  Some applications do not do this and the session
becomes hung.  If a VARY INACT is issued against the LU in the hung
session, the LU will hang in a pending-notify state.  The only recovery is
to recycle the application to clean up one hung session or halt the VTAM
program.

The Inactivating LUs in a Pending-Notify State function allows you to
force the resource to an inactive state when the application does not
issue CLSDST.

LOSTERM=IMMED specifies that VTAM is to send an UNBIND to break the
session on the first call to the LOSTERM exit.
```

```
**********************************************************************
         VBUILD TYPE=APPL
A02NV    APPL  AUTH=(NVPACE,ACQ,PASS),EAS=6,PRTCT=A02NV,              X
               MODETAB=AMODETAB,DLOGMODE=DSILGMOD,LOSTERM=IMMED
```

2.10 Sift-Down Effect in Application Program and Cross-Domain Resource Major Nodes

```
A GROUP definition statement has been added to the application program
major node so that some operands can now be sifted to subordinate
definition statements.  You can use the GROUP definition statement to
specify values for several resources in the application major node without
having to specify the operands for each resource individually.
```

```
*  =====> BEGINNING OF DATA SET A02APPLS
**********************************************************************
         VBUILD TYPE=APPL
A02GRP   GROUP PRTCT=A02NV,MODETAB=AMODETAB,DLOGMOD=DSILGMOD
A02NV    APPL  AUTH=(NVPACE,ACQ,PASS),EAS=6
A02NVPPT APPL  AUTH=(NVPACE,PPO),EAS=1
A02NV000 APPL  AUTH=(NVPACE,SPO,ACQ),EAS=4
A02NV001 APPL  AUTH=(NVPACE,SPO,ACQ),EAS=4
A02NV002 APPL  AUTH=(NVPACE,SPO,ACQ),EAS=4
A02NV003 APPL  AUTH=(NVPACE,SPO,ACQ),EAS=4
A02NV004 APPL  AUTH=(NVPACE,SPO,ACQ),EAS=4
A02NV005 APPL  AUTH=(NVPACE,SPO,ACQ),EAS=4
A02NV006 APPL  AUTH=(NVPACE,SPO,ACQ),EAS=4
A02NV007 APPL  AUTH=(NVPACE,SPO,ACQ),EAS=4
A02NV008 APPL  AUTH=(NVPACE,SPO,ACQ),EAS=4
A02NV009 APPL  AUTH=(NVPACE,SPO,ACQ),EAS=4
*  =====> END OF DATA SET A02APPLS
```

IBM. Library Server

3.0 Chapter 3. Channel-Attachment Major Node

Subtopics:

3.1 About This Chapter

This chapter describes sample channel-attachment major node definitions.

A channel-attachment major node is used to define the following types of support:

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

IBM Library Server

3.2 VTAM-to-VTAM Channel Connection

A channel-attachment major node is used to define a channel-to-channel adapter connection between two host processors. This connection can be provided by a 3088 or 3737 unit, or by multiple channel adapters on a communication controller.

To define channel-to-channel adapter support you must define two channel-attachment major nodes for each connection, one on each host. It must include the following definition statements:

- VBUILD TYPE=CA
- GROUP LNCTL=CTCA
- LINE
- PU.

For more information on this type of connection, refer to "VTAM-to-VTAM Channel Connections" in the *VTAM Network Implementation Guide*.

Subtopics:

IBM Library Server

3.2.1 Single Transmission Group

Figure 6 shows a channel-to-channel connection between two host processors, A01 and A02. Only one transmission group connects the two processors. The connection is defined using one channel-attachment major node for each host.

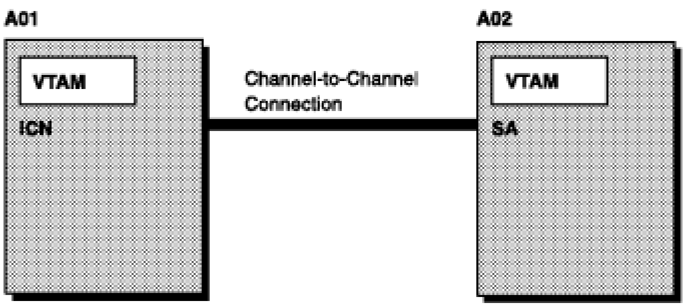

Figure 6. A VTAM-to-VTAM Channel Connection. Host A01 is an interchange node (ICN). Host A02 is a subarea node (SA).

The first channel-attachment major node shown below represents the view of the connection from host A01 in Figure 6.

The VBUILD definition statement defines the beginning of this channel-attachment major node (TYPE=CA).

The GROUP definition statement indicates that the attachment between hosts A01 and A02 is a channel-to-channel attachment (LNCTL=CTCA).

MAXBFRU defines the number of 4K-byte pages of storage that are used to buffer PIUs for transmission over the channel link. DELAY slows down the data transfer so that more PIUs can be buffered and transferred in a single I/O channel operation. In this sample, MAXBFRU=10 and DELAY=.001.

The MIH operand is coded with a value of YES so that the channel link becomes inoperative after the time period (3 seconds) specified on the REPLYTO operand. Otherwise, the channel link appears operative, but VTAM cannot use it.

You must code one LINE definition statement for each channel adapter. Here, BC2 is the address of the channel.

You must code one PU definition statement for each LINE definition statement.

```
*  =====> BEGINNING OF DATA SET A01CTC
***********************************************************************
* A01CTC    - VTAM CHANNEL-ATTACHMENT MAJOR NODE (CTCA) - ICN A01      *
***********************************************************************
         VBUILD TYPE=CA             ** CTCA MAJOR NODE                **
CTCGRP   GROUP DELAY=.001,          ** LOW-PRIORITY DATA TRANS DELAY  ** X
               ISTATUS=ACTIVE,      ** INITIAL ACTIVATION STATE       ** X
               LNCTL=CTCA,          ** CTCA LINKS                     ** X
               MAXBFRU=10,          ** RECEIVE DATA BUFFER PAGE SIZE  ** X
               MIH=YES,             ** MISSING INTERRUPT HANDLING     ** X
               REPLYTO=3.0          ** CHANNEL PROG COMPLETE TIME OUT **
***********************************************************************
* CTC CONNECTION FROM A01 TO A02                                      *
***********************************************************************
CTCLINE3 LINE  ADDRESS=BC2          ** CHANNEL UNIT ADDRESS           **
CTCPU3   PU    PUTYPE=4,            ** PHYSICAL UNIT TYPE             ** X
               TGN=1                ** TRANSMISSION GROUP NUMBER      **
  .
  .
  .
*  =====> END OF DATA SET A01CTC
```

The next channel-attachment major node shown below represents the view of the connection from host A02 in Figure 6.

The VBUILD definition statement defines the beginning of this channel-attachment major node (TYPE=CA).

The GROUP definition statement indicates that the attachment between hosts A01 and A02 is a channel-to-channel attachment (LNCTL=CTCA), with DELAY=.001, MAXBFRU=10, MIH=YES, and REPLYTO=3.0.

The LINE definition statement shows that BC2 is the address of the channel.

You must code one PU definition statement for each LINE definition statement.

```
*  =====> BEGINNING OF DATA SET A02CTC
***********************************************************************
* A02CTC    - VTAM CHANNEL-ATTACHMENT MAJOR NODE (CTCA) - SUBAREA A02  *
***********************************************************************
         VBUILD TYPE=CA             ** CTCA MAJOR NODE                **
CTCGRP   GROUP DELAY=.001,          ** LOW-PRIORITY DATA TRANS DELAY  ** X
               ISTATUS=ACTIVE,      ** INITIAL ACTIVATION STATE       ** X
               LNCTL=CTCA,          ** CTCA LINKS                     ** X
               MAXBFRU=10,          ** RECEIVE DATA BUFFER PAGE SIZE  ** X
               MIH=YES,             ** MISSING INTERRUPT HANDLING     ** X
               REPLYTO=3.0          ** CHANNEL PROG COMPLETE TIME OUT **
***********************************************************************
* CTC CONNECTION FROM A02 TO A01                                      *
***********************************************************************
CTCLINE3 LINE  ADDRESS=BC2          ** CHANNEL UNIT ADDRESS           **
CTCPU3   PU    PUTYPE=4,            ** PHYSICAL UNIT TYPE             ** X
               TGN=1                ** TRANSMISSION GROUP NUMBER      **
  .
  .
  .
```

```
*   =====> END OF DATA SET A02CTC
```

3.2.2 Parallel Transmission Groups

A transmission group is one or more physical links connecting two subareas. In a VTAM-to-VTAM configuration, each transmission group is single-link-capable only. Although you can have as many as 255 transmission groups, only 16 of these can be defined between two adjacent VTAMs, because the maximum number of explicit routes that can be defined is 16.

For more information on parallel transmission groups, refer to "Parallel Sessions Using Parallel Transmission Groups" in the *VTAM Network Implementation Guide*.

Figure 7 shows parallel transmission groups TGN2 and TGN3 in a multiple-domain network.

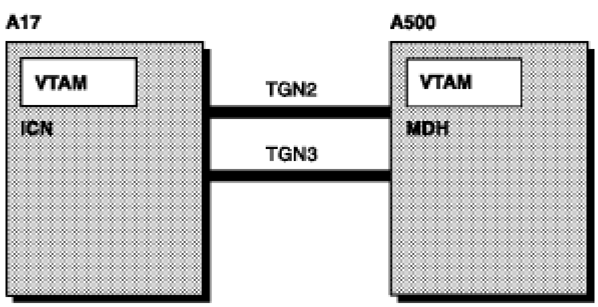

Figure 7. Parallel Transmission Groups in a Multiple-Domain Network. Host A17 is an interchange node (ICN). Host A500 is a migration data host (MDH).

The first channel-attachment major node below represents the view of the connection from host A17 in Figure 7.

The VBUILD definition statement defines the beginning of this channel-attachment major node (TYPE=CA).

The GROUP definition statement indicates that the attachments between hosts A17 and A500 are channel-to-channel attachments (LNCTL=CTCA).

You must code one LINE definition statement for each channel adapter. The address specified by the ADDRESS operand is a 3- or 4-digit (MVS) hexadecimal device address, which must match the value assigned to the device during operating system I/O definition. With 4-digit device addressing you can specify as many as 65536 channel-attached devices.

You must code one PU definition statement for each LINE definition statement. The TGN operands specify transmission group numbers for the channel link transmission groups (TGN=2, TGN=3).

```
*  =====> BEGINNING OF DATA SET A17CTC2
***********************************************************************
* A17CTC2  - VTAM CHANNEL-ATTACHMENT MAJOR NODE (CTCA) - ICN A17      *
*          - CONNECTS A17 TO A500                                     *
***********************************************************************
         VBUILD TYPE=CA            ** CTCA MAJOR NODE                **
CTCGRP2  GROUP DELAY=.001,         ** LOW-PRIORITY DATA TRANS DELAY  ** X
               LNCTL=CTCA,         ** CTCA LINKS                     ** X
               ISTATUS=ACTIVE,     ** INITIAL ACTIVATION STATE       ** X
               MAXBFRU=10,         ** RECEIVE DATA BUFFER PAGE SIZE  ** X
               MIH=YES,            ** MISSING INTERRUPT HANDLING     ** X
               REPLYTO=3.0         ** CHANNEL PROG COMPLETE TIME OUT **
***********************************************************************
* CTC CONNECTION FROM A17 TO A500                                     *
***********************************************************************
CTCLINE4 LINE  ADDRESS=0BC4        ** CHANNEL UNIT ADDRESS           **
CTCPU4   PU    PUTYPE=4,           ** PHYSICAL UNIT TYPE             ** X
               TGN=2               ** TRANSMISSION GROUP NUMBER      **
***********************************************************************
* CTC CONNECTION FROM A17 TO A500                                     *
***********************************************************************
CTCLINE5 LINE  ADDRESS=0BC5        ** CHANNEL UNIT ADDRESS           **
CTCPU5   PU    PUTYPE=4,           ** PHYSICAL UNIT TYPE             ** X
               TGN=3               ** TRANSMISSION GROUP NUMBER      **
*  =====> END OF DATA SET A17CTC2
```

The next channel-attachment major node shown below represents the view of the connection from host A500 in Figure 7.

The VBUILD definition statement defines the beginning of this channel-attachment major node (TYPE=CA).

The GROUP definition statement indicates that the attachments between hosts A17 and A500 are channel-to-channel attachments (LNCTL=CTCA).

You must code one LINE definition statement for each channel adapter.

You must code one PU definition statement for each LINE definition statement. The TGN operands specify transmission group numbers for the channel link transmission groups (TGN=2, TGN=3).

```
*  =====> BEGINNING OF DATA SET A50CTC2
***********************************************************************
* A50CTC2  - VTAM CHANNEL-ATTACHMENT MAJOR NODE (CTCA) - MDH A500     *
*            CONNECTS SA 500 TO SA 17 -                               *
***********************************************************************
         VBUILD TYPE=CA            ** CTCA MAJOR NODE                **
CTCGRP2  GROUP DELAY=.001,         ** LOW-PRIORITY DATA TRANS DELAY  ** X
               LNCTL=CTCA,         ** CTCA LINKS                     ** X
               ISTATUS=ACTIVE,     ** INITIAL ACTIVATION STATE       ** X
               MAXBFRU=10,         ** RECEIVE DATA BUFFER PAGE SIZE  ** X
               MIH=YES,            ** MISSING INTERRUPT HANDLING     ** X
               REPLYTO=3.0         ** CHANNEL PROG COMPLETE TIME OUT **
***********************************************************************
* CTC CONNECTION FROM A500 TO A17                                     *
```

```
***********************************************************************
CTCLINE4 LINE  ADDRESS=BC4         ** CHANNEL UNIT ADDRESS          **
CTCPU4   PU    PUTYPE=4,           ** PHYSICAL UNIT TYPE            ** X
               TGN=2               ** TRANSMISSION GROUP NUMBER     **
***********************************************************************
* CTC CONNECTION FROM A500 TO A17                                     *
***********************************************************************
CTCLINE5 LINE  ADDRESS=BC5         ** CHANNEL UNIT ADDRESS          **
CTCPU5   PU    PUTYPE=4,           ** PHYSICAL UNIT TYPE            ** X
               TGN=3               ** TRANSMISSION GROUP NUMBER     **
*  =====> END OF DATA SET A50CTC2
```

3.3 VTAM-to-NCP Channel Connection

Figure 8 shows a channel attachment between a VTAM host and 3720 Communication Controller running the Network Control Program.

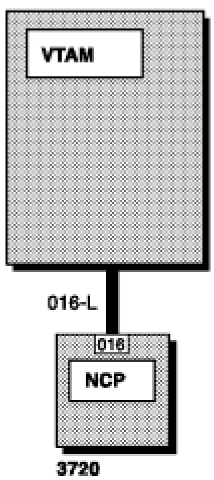

Figure 8. Channel-Attached 3720 Communication Controller

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. With this channel-attachment defined, VTAM can contact a channel-attached NCP without activating the NCP.

By using this definition process, a VTAM data host is not required to establish an SSCP-PU session for data transfer to occur over the channel link to the communication controller.

The only definition required in the VTAM data host is a channel-attachment major node definition; no NCP major node definition is required. However, the NCP must be loaded and active if VTAM is to contact the NCP and not establish an SSCP-PU session.

To define a channel-attached NCP, you must code the following definition statements:

- VBUILD TYPE=CA
- GROUP LNCTL=NCP
- LINE
- PU.

When you code LNCTL=NCP, VTAM does not have to have knowledge of the resources attached to the NCP.

Code one LINE definition statement for each channel-to-NCP link.

Code one PU definition for each LINE definition statement.

For more information on using channel-attachment major nodes to define VTAM-to-NCP channel connections, see the *VTAM Network Implementation Guide*.

The following sample defines a channel-attached NCP (A03) for host A500. The LINE definition statement defines 013 as the channel unit address for the channel link to the communication controller. The MAXBFRU operand specifies 100 as the maximum number of I/O buffers that are used by the VTAM host to receive data from the NCP. The default value for MAXBFRU is 3.

CHANCON=COND (the default value) indicates that 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.

DELAY=0.200 (the default value) specifies 0.200 seconds as the maximum amount of time that VTAM waits before transmitting low-priority data to the physical unit.

MAXDATA=65535 (the default value) specifies 65535 as the maximum number of bytes that the NCP can receive from VTAM in a single-segment PIU.

TGN=1 (the default value) identifies 1 as the unique transmission group number associated with this channel link connection.

```
*  =====> BEGINNING OF DATA SET A50CHN
***********************************************************************
*   A50CHN - VTAM CHANNEL-ATTACHMENT MAJOR NODE (NCP) - MDH A500      *
***********************************************************************
*   SUBAREA CHANNEL CONNECTION FROM A500 TO A03                       *
***********************************************************************
CH013    VBUILD TYPE=CA           ** CHANNEL ATTACHMENT MAJOR NODE  **
CH013G   GROUP LNCTL=NCP          ** NCP CHANNEL LINK               **
CH013L   LINE  ADDRESS=013,       ** CHANNEL UNIT ADDRESS           ** X
               MAXBFRU=100        ** RECEIVE NCP DATA BUFFER SIZE   **
CH013P   PU    PUTYPE=4,          ** PHYSICAL UNIT TYPE             ** X
               CHANCON=COND,      ** CONTACT CONDITIONAL            ** X
               DELAY=0.100,       ** LOW-PRIORITY DATA DELAY        ** X
               MAXDATA=65535,     ** MAXDATA TRANSFER               ** X
               TGN=1              ** TRANSMISSION GROUP NUMBER      **
*  =====> END OF DATA SET A50CHN
```

3.4 Multipath Channel Connection

Multipath Channel (MPC) allows you to code a single transmission group for host-to-host communication that uses multiple write-direction, read-direction subchannels, as shown in Figure 9.

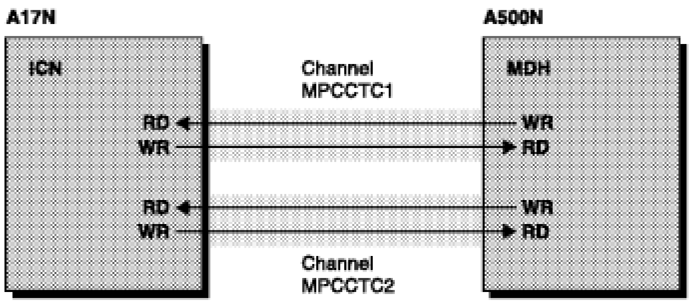

Figure 9. Two Multipath Channel Connections

There are multiple advantages to using MPC:

- Because each subchannel operates in only one direction, the half-duplex turnaround time that occurs with other channel-to-channel connections is reduced.
- If you code a transmission group in which the subchannels are divided between two physical channels, you can increase availability because the transmission group will have a path to use even if one physical channel is down.
- Because each transmission group can use more than one channel, and because the turnaround time required for half-duplex is reduced, throughput is increased.

APPN host-to-host channel connections enable two VTAMs to communicate using APPN protocols over MPC connections. APPN host-to-host channel connection support requires the definition of transport resource list major nodes and local SNA major nodes, rather than channel-attachment major nodes. For more information on APPN host-to-host channel connection see Chapter 16, "Transport Resource List Major Node" and "APPN Host-to-Host Channel Connection."

To define MPC support, code the following definition statements:

- VBUILD TYPE=CA
- GROUP LNCTL=MPC
- LINE

- PU.

Code only one LINE definition statement for multipath channel support. The subchannels on the physical channel are represented by the subchannel addresses coded on the READ and WRITE operands on this statement. One READ subchannel in one host and the corresponding WRITE subchannel in the other host form a complete path. In the two sample definitions below, note that the subchannel read addresses in one definition deck match the subchannel write addresses in the other.

Code one PU definition statement for the LINE definition statement.

Subtopics:

3.4.1 Multipath Channel Connection for Host A17N

The following sample channel-attachment major node defines two multipath channel connections for host A17N, as shown in Figure 9.

The VBUILD definition statement defines the beginning of this channel-attachment major node (TYPE=CA).

The first GROUP definition statement defines the transmission group MPCG1 between hosts A17N and A500N as a multipath channel connection (LNCTL=MPC). The LINE definition statement that follows defines the read and write subchannel addresses for the transmission group. READ=(BC1) defines BC1 as the read subchannel address for that transmission group. This address corresponds to the WRITE subchannel address shown for transmission group MPCG1 in the channel-attachment major node for host A500N.. WRITE=(BC2) defines BC2 as the write subchannel address for that transmission group. This address corresponds to the READ subchannel address shown for transmission group MPCG1 in the channel-attachment major node for host A500N. The READ subchannel address and the corresponding WRITE subchannel address must reference the same physical connection between the two nodes; the two addresses do not need to be identical.

MVS,VSE The CONFGDS operand specifies the data definition name that identifies the configuration restart dataset you defined for this major node.

```
*  =====> BEGINNING OF DATA SET MPCCTC17
*************************************************
* CHANNEL-ATTACHMENT MAJOR NODE FOR MPC         *
*************************************************
MPCCTC   VBUILD TYPE=CA,               ** CHANNEL ATTACHMENT MAJOR NODE **   X
               CONFGDS=CTC1CKP         ** CONFIGURATION RESTART DATASET **
MPCG1    GROUP  LNCTL=MPC,             ** MULTIPATH CHANNEL CONNECTION  **   X
               MAXBFRU=16,             ** READ SUBCHANNEL BUFFER SIZE   **   X
               ISTATUS=ACTIVE,         ** BECOMES ACTIVE WITH MAJOR NODE**   X
               REPLYTO=3.0             ** TIMEOUT VALUE FOR MPC XID I/O **
MPCCTC1 LINE    READ=(BC1),            ** SUBCHANNEL ADDRESS FOR READ   **   X
               WRITE=(BC2)             ** SUBCHANNEL ADDRESS FOR WRITE  **
MPCPU1   PU     PUTYPE=4,TGN=1         ** LINK STATION FOR ADJACENT HOST**
*
MPCG2    GROUP  LNCTL=MPC,             ** MULTIPATH CHANNEL CONNECTION  **   X
               MAXBFRU=16,             ** READ SUBCHANNEL BUFFER SIZE   **   X
               ISTATUS=ACTIVE,         ** BECOMES ACTIVE WITH MAJOR NODE**   X
               REPLYTO=3.0             ** TIMEOUT VALUE FOR MPC XID I/O **
MPCCTC2 LINE    READ=(BC4),            ** SUBCHANNEL ADDRESS FOR READ   **   X
               WRITE=(BC5)             ** SUBCHANNEL ADDRESS FOR WRITE  **
MPCPU2   PU     PUTYPE=4,TGN=2         ** LINK STATION FOR ADJACENT HOST**
*
*  =====> END OF DATA SET MPCCTC17
```

IBM Library Server

3.4.2 Multipath Channel Connection for Host A500N

The following sample defines two multipath channel connections for host A500N.

```
*   =====> BEGINNING OF DATA SET MPCCTC50
*************************************************
* CHANNEL-ATTACHMENT MAJOR NODE FOR MPC         *
*************************************************
MPCCTC   VBUILD TYPE=CA,            ** CHANNEL ATTACHMENT MAJOR NODE **   X
                CONFGDS=CTC1CKP     ** CONFIGURATION RESTART DATASET **
MPCG1    GROUP  LNCTL=MPC,          ** MULTIPATH CHANNEL CONNECTION  **   X
                MAXBFRU=16,         ** READ SUBCHANNEL BUFFER SIZE   **   X
                ISTATUS=ACTIVE,     ** BECOMES ACTIVE WITH MAJOR NODE**   X
                REPLYTO=3.0         ** TIMEOUT VALUE FOR MPC XID I/O **
MPCCTC1 LINE    READ=(BC2),         ** SUBCHANNEL ADDRESS FOR READ   **   X
                WRITE=(BC1)         ** SUBCHANNEL ADDRESS FOR WRITE  **
MPCPU1   PU     PUTYPE=4,TGN=1      ** LINK STATION FOR ADJACENT HOST**
*
MPCG2    GROUP  LNCTL=MPC,          ** MULTIPATH CHANNEL CONNECTION  **   X
                MAXBFRU=16,         ** READ SUBCHANNEL BUFFER SIZE   **   X
                ISTATUS=ACTIVE,     ** BECOMES ACTIVE WITH MAJOR NODE**   X
                REPLYTO=3.0         ** TIMEOUT VALUE FOR MPC XID I/O **
MPCCTC2 LINE    READ=(BC5),         ** SUBCHANNEL ADDRESS FOR READ   **   X
                WRITE=(BC4)         ** SUBCHANNEL ADDRESS FOR WRITE  **
MPCPU2   PU     PUTYPE=4,TGN=2      ** LINK STATION FOR ADJACENT HOST**
*
*   =====> END OF DATA SET MPCCTC50
```

3.5 Integrated Communication Adapter Connection (VM, VSE)

You can define one of three types of ICA support in a channel-attachment major node:

- SDLC nonswitched
- SDLC switched and **VSE** X.21 switched
- BSC nonswitched.

These ICA connections can be used to attach peripheral nodes through an ICA in the host processor and to connect domains.

Subtopics:

3.5.1 Nonswitched SDLC Lines

To define ICA support for SDLC nonswitched lines, code the following definition statements:

- VBUILD TYPE=CA
- GROUP LNCTL=SDLC,DIAL=NO
- LINE
- PU
- LU.

Subtopics:

3.5.1.1 Nonswitched SDLC Line for a Peripheral Node Connection

The VBUILD definition statement defines the beginning of this channel-attachment major node (TYPE=CA).

Code LNCTL=SDLC and DIAL=NO on the GROUP definition statement to define the line as an SDLC nonswitched line.

Code PUTYPE=2 on the PU definition statement to define the physical unit attached to the link as a type 2.1 physical unit.

The following sample is for an SDLC 3274 cluster controller connected through an ICA:

```
*  =====> BEGINNING OF DATA SET CAA81
**********************************************************************
*  NAME:     CAA81
*  USE:      SDLC ICA MAJOR NODE DEFINITION FOR 3274 SDLC THRU AN ICA
**********************************************************************
CAA81     VBUILD TYPE=CA
GA81      GROUP LNCTL=SDLC,            **  SDLC LINE CONTROL          X


.
.
.
                DIAL=NO                **  NONSWITCHED LINK
*
LA81      LINE  ADDRESS=A81,           **  COMMUNICATIONS ADAPTER     X
                                       **  LINE ADDRESS               X


.
.
.
                ISTATUS=ACTIVE         **  VTAM INITIAL STATUS
*
PA8101    PU    ADDR=C1,               **  PHYSICAL UNIT ADDRESS      X
                PUTYPE=2,              **  PHYSICAL UNIT TYPE         X
                MAXOUT=7,              **  NUMBER OF FRAMES FOR       X
                                       **  LINK LEVEL RESPONSE        X
                MAXDATA=265,           **  MAXIMUM DATA SIZE          X


.
.
.
                ISTATUS=ACTIVE         **  VTAM INITIAL STATUS
*
LUA8101   LU    LOCADDR=2,             **  LOGICAL UNIT ADDRESS       X


.
.
.
```

```
                        ISTATUS=ACTIVE          **  VTAM INITIAL STATUS
       *  =====> END OF DATA SET CAA81
```

IBM Library Server

3.5.1.2 Nonswitched SDLC Line for a Subarea Connection

The VBUILD definition statement defines the beginning of this channel-attachment major node (TYPE=CA).

Code LNCTL=SDLC and DIAL=NO on the GROUP definition statement to define the line as an SDLC nonswitched line.

You must code the PU definition statement for each subarea node with which VTAM communicates over this nonswitched SDLC link.

Code PUTYPE=4 on the PU definition statement to define the link station for an adjacent communication controller (physical unit type 4).

In the following sample, the SDLC nonswitched link is used to connect a host processor to the NCP (PUTYPE=4) that is controlled by a VTAM in another domain:

```
*  =====> BEGINNING OF DATA SET A80ICA
**********************************************************************
*  NAME:     A80ICA
*  USE:      SDLC ICA MAJOR NODE DEFINITION FOR NCP ATTACHMENT
**********************************************************************
A80ICA    VBUILD TYPE=CA              **  CHANNEL-ATTACHMENT
A80SNAGR  GROUP  LNCTL=SDLC,          **  SDLC LINK CONTROL           X
                 DIAL=NO,             **  NONSWITCHED CONNECTION      X


 .
 .
 .
                 ISTATUS=ACTIVE       **  INITIAL VTAM STATUS
*
A80SNALN  LINE   ADDRESS=A80,         **  CHANNEL ADDRESS             X
                 RETRIES=7,           **  ERROR RETRY COUNT           X


 .
 .
 .
                 ISTATUS=ACTIVE       **  INITIAL VTAM STATUS
*
A80SNAPU  PU     PUTYPE=4,            **  ADJACENT SUBAREA = NCP      X
                 SUBAREA=109,         **  ADJACENT SUBAREA ADDRESS    X
                 TGN=3,               **  TRANSMISSION GROUP NUMBER   X


 .
 .
 .
                 ISTATUS=ACTIVE       **  INITIAL VTAM STATUS
*  =====> END OF DATA SET A80ICA
```

IBM Library Server

3.5.2 Switched SDLC Lines

To define a switched connection to VTAM through an ICA, you must define the following major nodes:

- A switched major node to define the switched line and physical unit resources attached to the communication adapter.
- A channel-attachment major node to define the resources required to establish a temporary connection in VTAM; the switched line and physical unit resources are defined in the channel-attachment major node.

To define ICA support for SDLC Switched lines code the following statements in the channel-attachment major node:

- VBUILD TYPE=CA
- GROUP LNCTL=SDLC,DIAL=YES
- LINE
- PU.

Subtopics:

3.5.2.1 Switched SDLC Line for a Peripheral Node Connection

The VBUILD definition statement defines the beginning of this channel-attachment major node (TYPE=CA).

Code LNCTL=SDLC and DIAL=YES on the GROUP definition statement to define the line as an SDLC switched line. CALL=INOUT on the GROUP definition statement specifies that the line is used for incoming and outgoing calls.

SUBADIAL=NO (the default) specifies that the line in the group is not a switched subarea line.

ADDRESS=900 and AUTO=900 on the LINE statement defines the line address and the address of the auto-call unit.

```
*  =====> BEGINNING OF DATA SET A01ICA
**********************************************************************
*  NAME:     A01ICA
*  USE:      SDLC ICA MAJOR NODE DEFINITION FOR T2.1 SWITCHED
**********************************************************************
A01ICA   VBUILD TYPE=CA
ICAGR1   GROUP LNCTL=SDLC,                                             X
               DIAL=YES,                                               X
               CALL=INOUT,                                             X
               SUBADIAL=NO
SWLINE1  LINE  ADDRESS=900,                                            X
               ISTATUS=INACTIVE,                                       X
               AUTO=900
SWPUT21  PU
*  =====> END OF DATA SET A01ICA
```

For the corresponding switched major node, see "Switched Major Node for SDLC ICA Peripheral Node Connection (VM, VSE)."

3.5.2.2 Switched SDLC Line for a Subarea Connection

In a multiple-domain environment, ES/9000(*) series domains can be connected using switched SDLC links.

The following sample shows a channel-attachment major node definition that defines the physical connection on the communication adapter.

The VBUILD definition statement defines the beginning of this channel-attachment major node (TYPE=CA).

Code the SUBADIAL=YES operand for a switched subarea node connection in addition to the DIAL=YES operand and the LNCTL=SDLC operand that defines the connection as a switched SDLC link.

```
*  =====> BEGINNING OF DATA SET SW101
**********************************************************************
*  NAME:     SW101
*  USE:      SDLC ICA MAJOR NODE DEFINITION FOR HOST SWITCHED CONNECT
**********************************************************************
SW101    VBUILD TYPE=CA              **   SDLC SWITCHED CONNECTION
*
GSW101   GROUP  LNCTL=SDLC,          **   SDLC LINE CONTROL             X
                DIAL=YES,            **   SWITCHED CONNECTION           X
                SUBADIAL=YES,        **   SUBAREA DIAL CONNECTION       X


 .
 .
 .
                CALL=INOUT           **   DIAL-IN/OUT OPERATION
*
LSW101A  LINE   ADDR=030,            **   PU TYPE 4 CHANNEL ADDRESS     X
                ACTIVTO=60,          **   FRAME NOT RECEIVED TIMEOUT VALUEX
                REPLYTO=1.0,         **   REPLY TIMEOUT                 X
                RETRIES=7,           **   RETRY ERROR COUNT             X


 .
 .
 .
                ISTATUS=ACTIVE       **   VTAM INITIAL STATUS
*
PSW101A  PU     ISTATUS=ACTIVE       **   VTAM INITIAL STATUS
*  =====> END OF DATA SET SW101
```

For the corresponding switched major node, see "Switched Major Node for SDLC ICA Subarea Connection (VM, VSE)."

3.5.2.3 X.21 Short Hold Mode/Multiple Port Sharing (SHM/MPS)

SHM/MPS is a switched line protocol that VTAM can use to provide support for many PUs over a small number of lines. To share these lines, switched calls are dropped during inactive periods and are reestablished when data traffic starts.

To define ICA support for X.21 switched lines using Short Hold Mode/Multiple Port Sharing (SHM/MPS), code the following statements:

- VBUILD TYPE=CA
- GROUP LNCTL=SDLC,DIAL=YES,X21SW=YES
- LINE
- PU.

The VBUILD definition statement defines the beginning of this channel-attachment major node (TYPE=CA).

LNCTL=SDLC and DIAL=YES specify that the line is an SDLC switched line.

X21SW=YES specifies that all lines in the group are X.21 switched lines. SHOLD=(1,1) specifies that the group is an X.21 SHM/MPS group and that there is a 1-second free period after dial completion, and one nonproductive poll is allowed before a connection is dropped.

You must code CALL=INOUT and AUTODL=YES (the default) on the LINE or GROUP definition statement when SHOLD=(*free*,*npoll*) is coded on the GROUP definition statement.

```
*  =====> BEGINNING OF DATA SET ICAX21
**********************************************************************
*  NAME:  ICAX21
*  USE:   X21 SHM/MPS ICA DECK
**********************************************************************
*
ICAX21   VBUILD TYPE=CA
*---------------------------------------------------------------------
* GROUP01 : A GROUP OF THE SHM SDLC SWITCHED DEFINITION
*---------------------------------------------------------------------
GROUP01  GROUP LNCTL=SDLC,                                            X
               DIAL=YES,                                              X
               X21SW=YES,                                             X
               AUTODL=YES,                                            X
               SHOLD=(1,1)
ICAX21L1 LINE  ADDRESS=600,                                           X
               CALL=INOUT,                                            X
               AUTODL=YES,                                            X
               ISTATUS=INACTIVE
ICAX21L2 LINE  ADDRESS=601,                                           X
               CALL=INOUT,                                            X
               AUTODL=YES,                                            X
               ISTATUS=INACTIVE
```

```
ICAX21P1 PU    MAXLU=3
*
*-------------------------------------------------------------------
* GROUP02 : A GROUP OF THE SHM SDLC SWITCHED DEFINITION
*-------------------------------------------------------------------
GROUP02  GROUP LNCTL=SDLC,                                            X
               DIAL=YES,                                              X
               X21SW=YES,                                             X
               AUTODL=YES,                                            X
               SHOLD=(1,1)
ICAX21L3 LINE  ADDRESS=602,                                           X
               CALL=INOUT,                                            X
               AUTODL=YES,                                            X
               ISTATUS=INACTIVE
ICAX21L4 LINE  ADDRESS=603,                                           X
               CALL=INOUT,                                            X
               AUTODL=YES,                                            X
               ISTATUS=INACTIVE
ICAX21P2 PU    MAXLU=3
*
*  =====> END OF DATA SET ICAX21
```

For the corresponding Switched major node, see "Switched Major Node for X.21 SHM/MPS."

IBM Library Server

3.5.3 BSC Nonswitched

To define ICA support for BSC nonswitched lines, code the following statements:

- VBUILD TYPE=CA
- GROUP LNCTL=BSC
- LINE
- CLUSTER
- TERMINAL.

The VBUILD definition statement defines the beginning of this channel-attachment major node (TYPE=CA).

LNCTL=BSC specifies that the line is a binary synchronous communication (BSC) line.

The LINE definition statement defines the name, channel unit address, and procedural options for a BSC nonswitched line.

The CLUSTER definition statement defines the resource name, type, polling characteristics, and communication procedures for a BSC 3270 cluster controller.

The TERMINAL definition statement defines the resource name, type, features, and communication procedures for a BSC terminal attached to a 3270 cluster controller. This statement also defines the device address (device selection character) by which VTAM contacts the terminal (multipoint line control).

The following sample defines a BSC 3274 cluster controller connected to an ES/9000 series communication adapter.

```
*  =====> BEGINNING OF DATA SET CAA83
**********************************************************************
*  NAME:     CAA83
*  USE:      ICA MAJOR NODE DEFINITION FOR BSC 3270 CLUSTER
**********************************************************************
CAA83     VBUILD    TYPE=CA
GA83      GROUP     LNCTL=BSC,            **  BSC LINE CONTROL           X


 .
 .
 .                  DIAL=NO               **  NONSWITCHED LINK
*
LA83      LINE      ADDRESS=A83,          **  COMMUNICATIONS ADAPTER     X
                                          **  LINE ADDRESS               X
                    CUTYPE=3271,          **  BSC 3274 CLUSTER CONTROLLERX
                    RETRIES=7,            **  TRANSMISSION ERROR RECOVERYX
```

```
.
.
.
                  ISTATUS=ACTIVE         **  VTAM INITIAL STATUS
*
PA8301   CLUSTER  GPOLL=40,              **  GENERAL POLLING ADDRESS    X
                  FEATUR2=MODEL2,        **  3270 MODEL2 - 1920 CHARS   X


.
.
.
                  ISTATUS=ACTIVE         **  VTAM INITIAL STATUS
*
LUA8301  TERMINAL ADDR=40,               **  TERMINAL POLLING ADDRESS   X
                  MDLTAB=MDLTAB1,        **  MODEL TERMINAL TABLE NAME  X
                  MDLENT=BSCENTRY,       **  MODEL TERMINAL NAME ENTRY  X


.
.
.
                  TERM=3277,             **  BSC 3278 TERMINAL TYPE     X
                  ISTATUS=ACTIVE         **  VTAM INITIAL STATUS
*  =====> END OF DATA SET CAA83
```

4.0 Chapter 4. Cross-Domain Resource Major Node

Subtopics:

4.1 About This Chapter

This chapter describes sample cross-domain resource major node definitions.

The cross-domain resource (CDRSC) major node is used to define resources in another domain and independent LUs.

Cross-domain resources are logical units (application programs, peripheral nodes, and terminals) that are controlled by another VTAM domain. Cross-domain resources are defined either dynamically or statically.

VTAM will dynamically define CDRSCs if CDRDYN=YES is coded on the host CDRM definition statement and either CDRSC=OPT is coded on the external CDRM definition statement in the cross-domain resource manager major node (if the target LU is a cross-domain resource) or DYNLU=YES is coded on the PU definition representing the link over which the BIND will be sent (if the target LU is an independent LU). When VTAM creates a dynamic CDRSC for a destination logical unit, it uses the Adjacent Link Station Selection function of the Session Management Exit (SME) and/or an adjacent SSCP table to search for the resource. For sample adjacent SSCP tables, see "Adjacent SSCP Table." You do not have to define CDRSCs if you allow dynamic definition, but VTAM's performance is slower because of the time it takes to send session requests to SSCPs that do not own the resource.

You statically define cross-domain resources by predefining them in one or more cross-domain major nodes. You define a cross-domain resource major node by coding one VBUILD definition statement for the major node and one CDRSC definition statement for each cross-domain resource in the major node.

You can define your independent LUs by coding CDRSC definition statements for them, and specifying the adjacent link stations (physical units) that VTAM uses to contact the independent LU. You can specify the adjacent link stations either by using the ALSLIST operand on the CDRSC definition statement, or by using the adjacent link station selection function of the session management exit routine.

As shown in the samples below, cross-domain resource major nodes can be used to implement adjacent SSCP lists for CDRSCs and to permit SNA-to-SNA communication over TCP/IP networks.

For more information about cross-domain resources, see "Identifying Resources in Other Domains" in the *VTAM Network Implementation Guide*.

4.2 Using CDRSC Definition Statements for Independent LUs

You can code CDRSC definition statements for your independent logical units, and specify the adjacent link stations (physical units) that VTAM uses to contact the independent logical unit. One way you can do this is by using the ALSLIST operand on the CDRSC definition statement.

For instance in the following CDRSC major node, note the CDRSC statements beginning with A5001 and ending with EC102. These are all independent logical units residing on other hosts across the TCP/IP network (MVS). By specifying the operand ALSLIST=(TCPPU1), VTAM is directed to use the adjacent link station TCPPU1 to contact the independent logical units.

The CDRSC statements beginning with SN001R0B and ending with P4ECHO define OS/2(*) independent logical units across a TCP/IP network. By specifying the operand ALSLIST=(TCPPU1), VTAM is directed to use the adjacent link station TCPPU1 to contact the independent logical units.

MVS TCPPU1 is the name of a PU definition statement in the TCP/IP major node. This PU definition statement defines the physical unit for a TCP/IP major node line. For the corresponding TCP/IP major node, see Chapter 15, "TCP/IP Major Node (MVS)." See also *VTAM AnyNet Feature for V4R2: Guide to SNA over TCP/IP* for more information on using SNA over TCP/IP networks.

MVS,VSE The CONFGDS operand specifies the data definition name that identifies the configuration restart dataset you defined for this major node.

```
*  =====> BEGINNING OF DATA SET A02CDRSC
***********************************************************************
*   A02CDRSC - VTAM CROSS-DOMAIN RESOURCE MAJOR NODE - SUBAREA A02    *
***********************************************************************
         VBUILD TYPE=CDRSC,CONFGDS=CDRSCKPT
ECHOA01  CDRSC CDRM=A01N            ** APPLICATION OWNING HOST       **
TPNSA01  CDRSC CDRM=A01N
A01NV    CDRSC CDRM=A01N
ECHO01   CDRSC CDRM=A01N
ECHOA17  CDRSC CDRM=A17N
TPNSA17  CDRSC CDRM=A17N
A17NV    CDRSC CDRM=A17N
ECHOA81  CDRSC CDRM=A81N
TPNSA81  CDRSC CDRM=A81N
A81NV    CDRSC CDRM=A81N
ECHOA50  CDRSC CDRM=A500N
ECHO50   CDRSC CDRM=A500N
TPNSA50  CDRSC CDRM=A500N
TPNSA500 CDRSC CDRM=A500N
A50SPAP8 CDRSC CDRM=A500N
A500NV   CDRSC CDRM=A500N
ECHO01A  CDRSC CDRM=A01N
ECHO01B  CDRSC CDRM=A01N
ECHO01C  CDRSC CDRM=A01N
ECHO17A  CDRSC CDRM=A17N
ECHO17B  CDRSC CDRM=A17N
```

```
ECHO17C  CDRSC CDRM=A17N
ECHO50A  CDRSC CDRM=A500N
ECHO50B  CDRSC CDRM=A500N
ECHO50C  CDRSC CDRM=A500N
ECHO81A  CDRSC CDRM=A81N
ECHO81B  CDRSC CDRM=A81N
ECHO81C  CDRSC CDRM=A81N
ECHO82A  CDRSC CDRM=A82N
ECHO82B  CDRSC CDRM=A82N
ECHO82C  CDRSC CDRM=A82N
A0101    CDRSC CDRM=A01N
E0101    CDRSC CDRM=A01N
A0102    CDRSC CDRM=A01N
E0102    CDRSC CDRM=A01N
*********************************
* APPC APPLS AVAILABLE VIA SNA OVER IP
*********************************
A5001    CDRSC ALSLIST=(TCPPU1)     ** SNA OVER IP PU NAME IN TCPMNA
E5001    CDRSC ALSLIST=(TCPPU1)
A5002    CDRSC ALSLIST=(TCPPU1)
E5002    CDRSC ALSLIST=(TCPPU1)
A1701    CDRSC ALSLIST=(TCPPU1)
E1701    CDRSC ALSLIST=(TCPPU1)
A1702    CDRSC ALSLIST=(TCPPU1)
E1702    CDRSC ALSLIST=(TCPPU1)
AB101    CDRSC ALSLIST=(TCPPU1)     ** SNA OVER IP PU NAME IN TCPMNB
EB101    CDRSC ALSLIST=(TCPPU1)
AB102    CDRSC ALSLIST=(TCPPU1)
EB102    CDRSC ALSLIST=(TCPPU1)
AC101    CDRSC ALSLIST=(TCPPU1)     ** SNA OVER IP PU NAME IN TCPMNC
EC101    CDRSC ALSLIST=(TCPPU1)
AC102    CDRSC ALSLIST=(TCPPU1)
EC102    CDRSC ALSLIST=(TCPPU1)
*********************************
* PS/2(*) LU NAMES ****************
*********************************
SN001R0B CDRSC ALSLIST=(TCPPU1)
PC1      CDRSC ALSLIST=(TCPPU1)
P1ECHO   CDRSC ALSLIST=(TCPPU1)
P2       CDRSC ALSLIST=(TCPPU1)
PC2      CDRSC ALSLIST=(TCPPU1)
P2ECHO   CDRSC ALSLIST=(TCPPU1)
P3       CDRSC ALSLIST=(TCPPU1)
PC3      CDRSC ALSLIST=(TCPPU1)
P3ECHO   CDRSC ALSLIST=(TCPPU1)
P4       CDRSC ALSLIST=(TCPPU1)
PC4      CDRSC ALSLIST=(TCPPU1)
P4ECHO   CDRSC ALSLIST=(TCPPU1)
         NETWORK NETID=NETB /* CROSS DOMAIN FOR NETWORK B */
ECHOB01  CDRSC CDRM=B01N
ECHOB1   CDRSC CDRM=B01N
TPNSB01  CDRSC CDRM=B01N
B01NV    CDRSC CDRM=B01N
ECHOB128 CDRSC CDRM=B128N
TPNSB128 CDRSC CDRM=B128N
B128NV   CDRSC CDRM=B128N
ECHOB1A  CDRSC CDRM=B01N
ECHOB1B  CDRSC CDRM=B01N
ECHOB1C  CDRSC CDRM=B01N
ECHO27A  CDRSC CDRM=B127N
ECHO27B  CDRSC CDRM=B127N
ECHO27C  CDRSC CDRM=B127N
ECHO28A  CDRSC CDRM=B128N
ECHO28B  CDRSC CDRM=B128N
ECHO28C  CDRSC CDRM=B128N
         NETWORK NETID=NETC /* CROSS DOMAIN FOR NETWORK C */
ECHOC01  CDRSC CDRM=C01N
TPNSC01  CDRSC CDRM=C01N
C01NV    CDRSC CDRM=C01N
ECHOC1A  CDRSC CDRM=C01N
ECHOC1B  CDRSC CDRM=C01N
ECHOC1C  CDRSC CDRM=C01N
*  =====> END OF DATA SET A02CDRSC
```

4.3 Limiting Sessions for Independent LUs

In the sample CDRSC major node below, the CDRSC definition statement for cross-domain resource ECHO02 specifies MAXSESS=10, which indicates that ten is the maximum number of concurrent LU-LU sessions in which the independent LU ECHO02 can participate per link station. By limiting the number of sessions ECHO02 can establish, MAXSESS prevents ECHO02 from using all of the session control blocks generated in the NCP to which ECHO02 is attached.

MVS,VSE The CONFGDS operand specifies the data definition name that identifies the configuration restart dataset you defined for this major node.

```
*  =====> BEGINNING OF DATA SET A50CDRSC
***********************************************************************
*   A50CDRSC - VTAM CROSS-DOMAIN RESOURCE MAJOR NODE - MDH A500       *
***********************************************************************
         VBUILD TYPE=CDRSC,CONFGDS=CDRSCKPT
A01NV    CDRSC CDRM=A01N            ** APPLICATION OWNING HOST       **
ECHOA01  CDRSC CDRM=A01N
TPNSA01  CDRSC CDRM=A01N
TPNSA02  CDRSC CDRM=A02N
A02NV    CDRSC CDRM=A02N
ECHO02   CDRSC CDRM=A02N,                                              X
               MAXSESS=10         ** MAX NUMBER OF LU-LU SESSIONS **
 .
 .
 .
*  =====> END OF DATA SET A50CDRSC
```

IBM Library Server

4.4 Adjacent SSCP Lists for CDRSCs

You can increase control over adjacent SSCP selection by creating adjacent SSCP lists for CDRSCs in an adjacent SSCP table. When an adjacent SSCP list is identified for a CDRSC, session setup requests are sent to only the SSCPs in the list. If the owning SSCP is not found through one of the adjacent SSCPs in the list, session establishment fails.

In the CDRSC major node below you will find CDRSC definition statements that specify the names of adjacent SSCP lists. The ADJLIST operand is used to specify the name of the list.

```
***********************************************************************
*   NAME:   CDRSC7B
*
*   USE:    DEFINE THOSE CROSS DOMAIN AND CROSS NET RESOURCES KNOWN TO
*           SSCP7B.
***********************************************************************
CDRSC7B  VBUILD  TYPE=CDRSC
*
NETA     NETWORK NETID=NETA
*
APPL1    CDRSC CDRM=SSCP1A,ADJLIST=LIST1  * Adjacent SSCP List is LIST1
APPL2    CDRSC CDRM=SSCP1A,ADJLIST=LIST2  * Adjacent SSCP List is LIST2
APPL3    CDRSC CDRM=SSCP1A,ADJLIST=LIST3  * Adjacent SSCP List is LIST3
APPL4    CDRSC CDRM=SSCP1A,ADJLIST=LIST4  * Adjacent SSCP List is LIST4
L3A3278A CDRSC CDRM=SSCP1A
L3270A   CDRSC CDRM=SSCP1A
L3270B   CDRSC CDRM=SSCP1A
L3270C   CDRSC CDRM=SSCP1A
LTESTA   CDRSC CDRM=SSCP1A
LTESTB   CDRSC CDRM=SSCP1A
LTESTC   CDRSC CDRM=SSCP1A
L3284A   CDRSC CDRM=SSCP1A
TSO1     CDRSC CDRM=SSCP1A
*
NETC     NETWORK NETID=NETC
*
ECHOC11  CDRSC CDRM=SSCP9C,ADJLIST=LIST2  * Adjacent SSCP List is LIST2
ECHOC12  CDRSC CDRM=SSCP9C,ADJLIST=LIST1  * Adjacent SSCP List is LIST1
CRECHOC1 CDRSC CDRM=SSCP9C
TSO9     CDRSC CDRM=SSCP9C,ADJLIST=LIST4  * Adjacent SSCP List is LIST4
L3270C1A CDRSC CDRM=SSCP9C
L3270C1B CDRSC CDRM=SSCP9C
L3270C1C CDRSC CDRM=SSCP9C
```

For samples of adjacent SSCP tables used to implement the adjacent SSCP list function, see "Defining an Adjacent SSCP List for CDRSCs."

For a specified cross-domain resource, you can use the MODIFY RESOURCE command while VTAM is running to:

- delete the name of the resource's current adjacent SSCP list

- add the name of an adjacent SSCP list to a cross-domain resource which does not currently have an adjacent SSCP list defined for it

- replace the name of the current adjacent SSCP list with the name of a different adjacent SSCP list.

For more information on this command, see "MODIFY RESOURCE Command" in the *VTAM Operation*.

For more information on adjacent SSCP lists for CDRSCs, see "Adjacent SSCPs" in the *VTAM Network Implementation Guide*.

IBM Library Server

4.5 Eliminating and Reducing Searches for Unavailable Resources

When a resource is unreachable in a network, futile attempts to reach it can still occur. Excessive searching for unreachable resources can adversely affect network performance. Therefore, VTAM provides search reduction support, which limits requests for resources that have been found to be unreachable.

Search reduction is turned on in VTAM by using the VTAM start option SRCHRED=ON (the default is OFF). See topic 19.2 for more information on the SRCHRED start option. If search reduction has been turned on, the SRTIMER and SRCOUNT operands can be specified on the CDRSC definition statement or the GROUP definition statement in a CDRSC major node.

The SRTIMER operand specifies for the resource the time period (in seconds) during which requests for the resource will be rejected. This time period begins when it is determined that the resource is unreachable. Once the time period expires, the next request for the resource causes VTAM to issue another search for it. This operand overrides the value of the SRTIMER start option for this CDRSC. In the CDRSC major node below, all the cross-domain resources specify this time limit as 600 seconds.

The SRCOUNT operand specifies for the resource the number of subsequent search requests to be rejected after it is determined that the resource is unreachable. Once this limit is reached, the next request for the resource causes VTAM to issue another search for it. This operand overrides the value of the SRCOUNT start option for this CDRSC. See topic 19.2 for more information about the SRCOUNT start option. In the CDRSC major node below, all the cross-domain resources specify 15 as the number of search requests to be rejected.

Search reduction for a resource is stopped when either of these two thresholds is reached.

MVS,VSE The CONFGDS operand specifies the data definition name that identifies the configuration restart dataset you defined for this major node.

For more information on specifying search reduction values, see "Cross-Domain Resource (CDRSC) Major Node" in the *VTAM Resource Definition Reference*.

```
*  =====> BEGINNING OF DATA SET A02CDRSC
***********************************************************************
*                                                                     *
*   A02CDRSC - VTAM CROSS-DOMAIN RESOURCE MAJOR NODE - SUBAREA A02    *
*                                                                     *
***********************************************************************
         VBUILD TYPE=CDRSC,CONFGDS=CDRSCKPT
NETA     NETWORK NETID=NETA
NEGAP50  CDRSC CDRM=A500N,SRTIMER=600,SRCOUNT=15
ECHO50A  CDRSC CDRM=A500N,SRTIMER=600,SRCOUNT=15
```

```
A50A721  CDRSC CDRM=A500N,SRTIMER=600,SRCOUNT=15
W3324802 CDRSC CDRM=A500N,SRTIMER=600,SRCOUNT=15
NRR33248 CDRSC CDRM=A500N,SRTIMER=600,SRCOUNT=15
***********************************************************************
*      CROSS NET RESOURCES                                            *
***********************************************************************
         NETWORK NETID=NETC /* CROSS DOMAIN FOR NETWORK C */
NEGAPC1  CDRSC CDRM=C01N,SRTIMER=600,SRCOUNT=15
*  =====> END OF DATA SET A02CDRSC
```

IBM Library Server

4.6 Sift-Down Effect in Application Program and Cross-Domain Resource Major Nodes

A GROUP definition statement has been added to the cross-domain resource major node so that some operands can now be sifted to subordinate definition statements. You can use the GROUP definition statement to specify values for several resources in the CDRSC major node without having to specify the operands for each resource individually.

```
*  =====> BEGINNING OF DATA SET A02CDRSC
***********************************************************************
*                                                                     *
*   A02CDRSC - VTAM CROSS-DOMAIN RESOURCE MAJOR NODE - SUBAREA A02    *
*                                                                     *
***********************************************************************
         VBUILD TYPE=CDRSC
NETA     NETWORK NETID=NETA
A02GRP   GROUP CDRM=A500N,SRTIMER=600,SRCOUNT=15
NEGAP50  CDRSC
ECHO50A  CDRSC
A50A721  CDRSC
W3324802 CDRSC
NRR33248 CDRSC
***********************************************************************
*       CROSS NET RESOURCES                                           *
***********************************************************************
         NETWORK NETID=NETC /* CROSS DOMAIN FOR NETWORK C */
NEGAPC1  CDRSC CDRM=C01N,SRTIMER=600,SRCOUNT=15
*  =====> END OF DATA SET A02CDRSC
```

IBM Library Server

4.7 Network-Qualified Names

The NQNMODE operand in the CDRSC major node indicates whether the cross-domain resource is to be known only by its network-qualified name or by either its nonnetwork-qualified name or its network-qualified name. NQNMODE is valid only for cross-domain and cross-network resources that are defined under a NETWORK definition statement.

NQNMODE=NAME specifies that the cross-network resource is defined by both its network-qualified name and its nonnetwork-qualified name. No other resource can be defined to that host by the same nonnetwork-qualified name.

NQNMODE=NQNAME specifies that the cross-network resources is defined by its network-qualified name and is not defined to this host by its nonnetwork-qualified name.

The LUALIAS operand in the CDRSC major node defines a 1-8 character name used by application programs in this domain to represent a cross-network or cross-domain resource that is defined under a NETWORK definition statement that precedes the CDRSC definition statement.

Note: LUALIAS is valid only for cross-domain and cross-network resources that are defined under a NETWORK definition statement, and is recommended only for cross-network CDRSCs which are defined using NQNMODE=NQNAME because same-network CDRSCs and NQNMODE=NAME CDRSCs are known by their unqualified resource names.

For more information on using the NQNMODE and LUALIAS operands, see "Defining Cross-Domain Resources" in the *VTAM Network Implementation Guide*.

5.0 Chapter 5. Cross-Domain Resource Manager Major Node

Subtopics:

IBM Library Server

5.1 About This Chapter

This chapter describes sample cross-domain resource manager major node definitions.

A cross-domain resource manager (CDRM) is the part of an SSCP that supports cross-domain session setup and takedown. Before logical units in one domain can have cross-domain sessions with logical units in another domain, an SSCP-SSCP session must be established between the SSCPs of the two domains.

You define a cross-domain resource manager in a cross-domain resource manager major node. You need to define a cross-domain resource manager major node to permit cross-domain sessions in subarea networks. For pure APPN networks, in contrast, you do not need to define CDRM major nodes. However, the use of virtual-route-based transmission groups between APPN nodes with subarea capability (interchange nodes and migration data hosts) requires the definition of cross-domain resource major nodes.

5.2 SSCP-SSCP Sessions

For an SSCP-SSCP session to exist, VTAM must know about all cross-domain resource managers with which it will communicate. For subarea nodes, you must define to VTAM its own (host) cross-domain resource manager and all other (external) cross-domain resource managers with which SSCP-SSCP sessions are desired.

Thus, to have an SSCP-SSCP session, define two cross-domain resource managers to each VTAM: one for the host and one for the external cross-domain resource manager. You file these definitions in a CDRM major node. Each cross-domain resource manager is a minor node.

Each host in a subarea network has a CDRM definition statement for the other hosts. The name of each CDRM matches the name defined to that host by the SSCPNAME start option.

To illustrate, consider the network depicted in Figure 10. In the sample cross-domain resource manager major node named A01CDRM (see below), the CDRM definition statement labeled A01N defines the host cross-domain resource manager for node A01. The CDRM definition statements labeled A02N, A17N, A81N, A500N, and B01N define the external cross-domain resource managers for nodes A02, A17, A81, A500, and B01.

IBM. Library Server

5.3 Dynamic Definition of Cross-Domain Resources

You do not have to define resources owned by VTAMs in other domains. VTAM can dynamically create the definition statements to represent resources that reside in other domains.

To have resources in other domains dynamically defined to VTAM:

1. Code your host CDRM definition statement with CDRDYN=YES
2. Code your external CDRM definition statements with CDRSC=OPT.

Dynamically defined CDRSCs are deactivated and deleted by VTAM on a periodic basis if they are not in use, based on the setting of the timer specified in the CDRSCTI start option.

Consider, for example, the network depicted in Figure 10 Coding CDRDYN=YES allows A01N to dynamically define CDRSCs of cross-domain or cross-network resources. It is only meaningful for the host CDRM statement. Coding CDRSC=OPT on an external CDRM definition authorizes dynamic definition of cross-domain or cross-network resources owned by that CDRM. For example, since A02 has CDRSC=OPT coded, A01 can dynamically define CDRSCs for sessions with LUs through A02.

MVS,VSE The CONFGDS operand specifies the data definition name that identifies the configuration restart dataset you defined for this major node.

```
*  =====> BEGINNING OF DATA SET A01CDRM
***********************************************************************
* A01CDRM - VTAM CROSS-DOMAIN RESOURCE MANAGER MAJOR NODE - ICN A01   *
***********************************************************************
         VBUILD TYPE=CDRM,CONFGDS=CDRMCKP
NETA     NETWORK NETID=NETA        ** NETWORK IDENTIFIER           **
A01N     CDRM   CDRDYN=YES,        ** AUTHORIZE DYNAMIC CDRSC DEF.  ** X
                CDRSC=OPT,         ** AUTHORIZE DYNAMIC CDRSC DEF.  ** X
                ELEMENT=1,         ** HOST ELEMENT ADDRESS          ** X
                ISTATUS=ACTIVE,    ** CDRM INITIAL ACTIVATION STATUS ** X
                RECOVERY=YES,      ** CDRM AUTOMATIC RECOVERY       ** X
                SUBAREA=1,         ** NETWORK UNIQUE SUBAREA ADDRESS ** X
                VPACING=63         ** CDRM REQS BEFORE PACING RESP  **
A02N     CDRM   CDRDYN=YES,                                            X
                CDRSC=OPT,                                             X
                ELEMENT=1,                                             X
                ISTATUS=INACTIVE,                                      X
                RECOVERY=YES,                                          X
                SUBAREA=2,                                             X
                VPACING=63
A17N     CDRM   CDRDYN=YES,                                            X
                CDRSC=OPT,                                             X
                ELEMENT=1,                                             X
                ISTATUS=INACTIVE,                                      X
                RECOVERY=YES,                                          X
                SUBAREA=17,                                            X
```

```
               VPACING=63
A81N     CDRM  CDRDYN=YES,                                              X
               CDRSC=OPT,                                               X
               ELEMENT=1,                                               X
               ISTATUS=INACTIVE,                                        X
               RECOVERY=YES,                                            X
               SUBAREA=81,                                              X
               VPACING=63
A500N    CDRM  CDRDYN=YES,                                              X
               CDRSC=OPT,                                               X
               ELEMENT=1,                                               X
               ISTATUS=INACTIVE,                                        X
               RECOVERY=YES,                                            X
               SUBAREA=500,                                             X
               VPACING=63
*****************************************************************
*        NETWORK B  CDRMS                                       *
*****************************************************************
NETB     NETWORK NETID=NETB
B01N     CDRM  CDRDYN=YES,         ** AUTHORIZE DYNAMIC CDRSC DEF.   ** X
               CDRSC=OPT,          ** AUTHORIZE DYNAMIC CDRSC DEF.   ** X
               ISTATUS=INACTIVE    ** CDRM INITIAL ACTIVATION STATUS **
*****************************************************************
*
*  GWPATH ROUTING: APPLIES TO MVS AND VM
*
*****************************************************************
* GWPATH ROUTING (ORIG HOST -> ... -> DEST HOST)
* A01 -> A04 ->A03/B03 -> B01
* A01 -> A04 ->A03/B03 -> B31 -> B01
*****************************************************************
         GWPATH ADJNET=NETB,       ** ADJACENT NETWORK IDENTIFIER    ** X
               ADJNETEL=1,         ** ADJACENT NETWORK ELEMENT       ** X
               ADJNETSA=01,        ** ADJACENT NETWORK SUBAREA       ** X
               ELEMENT=1,          ** ELEMENT ADDRESS                ** X
               SUBAREA=3           ** SUBAREA ADDRESS                **
*****************************************************************
* GWPATH ROUTING (ORIG HOST -> ... -> DEST HOST)
* A01 -> A04 ->A03/C31 -> C03/B31  -> B01
*****************************************************************
         GWPATH ADJNET=NETC,                                            X
               ADJNETEL=6,                                              X
               ADJNETSA=03,                                             X
               ELEMENT=1,                                               X
               SUBAREA=3
*  =====> END OF DATA SET A01CDRM
```

5.4 Connecting Multiple Networks using SNA Network Interconnection (MVS, VM)

A multiple-network environment consists of multiple independent SNA subarea networks that are interconnected. The SNA network interconnection (SNI) facility enables communication between these separate networks.

To make use of SNA network interconnection, you must identify your different networks and define the resources that enable network-network communication. These resources are:

- Gateway VTAMs
- Gateway NCPs.

CDRM major nodes and NCP major nodes, together with VTAM start options, are used to define these resources. For a full discussion of SNA network interconnection and how to define these resources for various types of SNI configurations, see Chapter 8, "Connecting Multiple Subarea Networks " in the *VTAM Network Implementation Guide*.

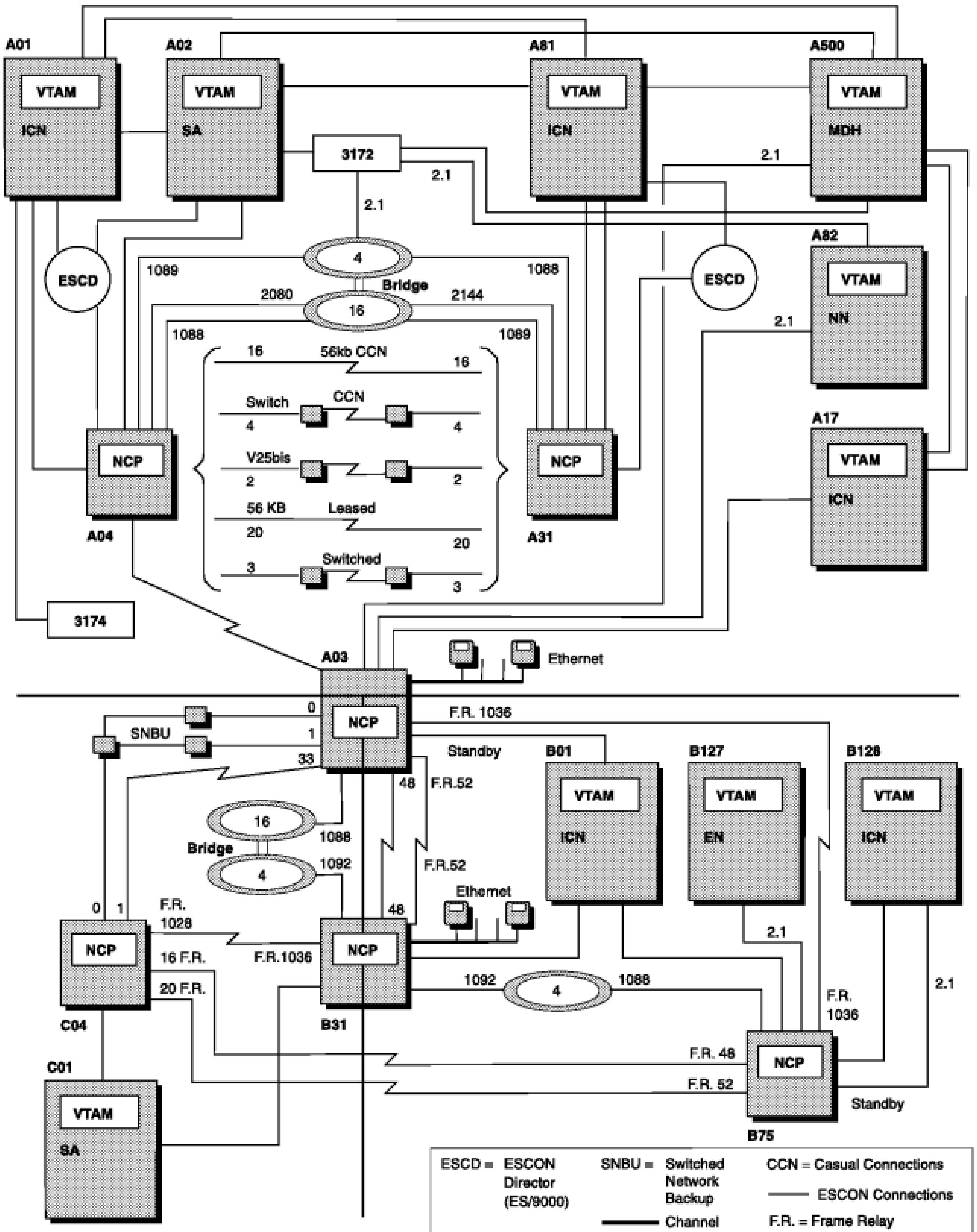

Figure 10. VTAM Hosts in a Multiple-Network Environment

The sample CDRM major node definitions below and the CDRM major node for A01N in topic 5.3, together with the PATH definitions and the associated NCP major node definitions, are necessary to allow LU-LU sessions to be set up among the subarea-capable nodes in the network shown in Figure 10. You will find the PATH definitions for these same nodes in Chapter 18, "Path Definition Statements." The sample NCP major node definition for the A03 gateway NCP and its description are found in "Channel-Attached NCP" and "Connecting Multiple Networks using SNA Network Interconnection (MVS, VM)," respectively.

Subtopics:

5.4.1 CDRM Major Node for Host B01

If VTAM is started at B01 with the start option GWSSCP=YES, B01 is considered to be a gateway VTAM. The GWPATH definition statements in the CDRM major node for B01 define possible cross-network session paths between the gateway host CDRM and a CDRM in another network. NETWORK definition statements define NETA and NETC as the networks in which the cross-network external CDRMs reside.

MVS The CONFGDS operand specifies the data definition name that identifies the configuration restart dataset you defined for this major node.

```
*  =====> BEGINNING OF DATA SET B01CDRM
***********************************************************************
* B01CDRM - VTAM CROSS-DOMAIN RESOURCE MANAGER MAJOR NODE - ICN  B01  *
***********************************************************************
         VBUILD TYPE=CDRM,CONFGDS=CDRMCKP
*****************************************************************
*        NETWORK B  CDRMS                                       *
*****************************************************************
NETB     NETWORK NETID=NETB       ** NETWORK IDENTIFIER          **
B01N     CDRM  CDRDYN=YES,        ** AUTHORIZE DYNAMIC CDRSC DEF.  ** X
               CDRSC=OPT,         ** AUTHORIZE DYNAMIC CDRSC DEF.  ** X
               ELEMENT=1,         ** HOST ELEMENT ADDRESS          ** X
               ISTATUS=ACTIVE,    ** CDRM INITIAL ACTIVATION STATUS ** X
               RECOVERY=YES,      ** CDRM AUTOMATIC RECOVERY       ** X
               SUBAREA=01,        ** NETWORK UNIQUE SUBAREA ADDRESS ** X
               VPACING=63         ** CDRM REQS BEFORE PACING RESP  **
B128N    CDRM  CDRDYN=YES,                                            X
               CDRSC=OPT,                                             X
               ELEMENT=1,                                             X
               ISTATUS=INACTIVE,                                      X
               RECOVERY=YES,                                          X
               SUBAREA=1028,                                          X
               VPACING=63
*              STATOPT='NETB CDRM'
*****************************************************************
*        NETWORK A  CDRMS                                       *
*****************************************************************
NETA     NETWORK NETID=NETA
A01N     CDRM  CDRDYN=YES,        ** AUTHORIZE DYNAMIC CDRSC DEF.  ** X
               CDRSC=OPT,         ** AUTHORIZE DYNAMIC CDRSC DEF.  ** X
               ISTATUS=INACTIVE   ** CDRM INITIAL ACTIVATION STATUS **
*****************************************************************
* GWPATH ROUTING (ORIG HOST -> ... -> DEST HOST)
* B01 -> B03/A03 -> A04 -> A01
* B01 -> B31 -> B03/A03 -> A04 -> A01
*****************************************************************
         GWPATH ADJNET=NETA,      ** ADJACENT NETWORK IDENTIFIER   ** X
               ADJNETSA=01,       ** ADJACENT NETWORK SUBAREA      ** X
               ELEMENT=01,        ** ELEMENT ADDRESS               ** X
               SUBAREA=03         ** SUBAREA ADDRESS               **
*****************************************************************
* GWPATH ROUTING (ORIG HOST -> ... -> DEST HOST)
* B01 -> B31/C03 -> C31/A03 -> A04 -> A01
*****************************************************************
         GWPATH ADJNET=NETC,                                         X
               ADJNETEL=01,                                           X
               ADJNETSA=31,                                           X
```

```
                 ELEMENT=1,                                            X
                 SUBAREA=31
A02N     CDRM    CDRDYN=YES,                                           X
                 CDRSC=OPT,                                            X
                 ISTATUS=INACTIVE
*****************************************************************
* GWPATH ROUTING (ORIG HOST -> ... -> DEST HOST)
* B01 -> B03/A03 -> A04 -> A02
* B01 -> B31 -> B03/A03 -> A04 -> A02
*****************************************************************
         GWPATH ADJNET=NETA,                                           X
                 ADJNETSA=02,                                          X
                 ELEMENT=02,                                           X
                 SUBAREA=03
*****************************************************************
* GWPATH ROUTING (ORIG HOST -> ... -> DEST HOST)
* B01 -> B31/C03 -> C31/A03 -> A04 -> A02
*****************************************************************
         GWPATH ADJNET=NETC,                                           X
                 ADJNETEL=02,                                          X
                 ADJNETSA=31,                                          X
                 ELEMENT=2,                                            X
                 SUBAREA=31
A17N     CDRM    CDRDYN=YES,                                           X
                 CDRSC=OPT,                                            X
                 ISTATUS=INACTIVE
*****************************************************************
* GWPATH ROUTING (ORIG HOST -> ... -> DEST HOST)
* B01 -> B03/A03 -> A17
* B01 -> B31 -> B03/A03 -> A17
*****************************************************************
         GWPATH ADJNET=NETA,                                           X
                 ADJNETSA=17,                                          X
                 ELEMENT=03,                                           X
                 SUBAREA=03
*****************************************************************
* GWPATH ROUTING (ORIG HOST -> ... -> DEST HOST)
* B01 -> B31/C03 -> C31/A03 -> A17
*****************************************************************
         GWPATH ADJNET=NETC,                                           X
                 ADJNETEL=03,                                          X
                 ADJNETSA=31,                                          X
                 ELEMENT=3,                                            X
                 SUBAREA=31
A81N     CDRM    CDRDYN=YES,                                           X
                 CDRSC=OPT,                                            X
                 ISTATUS=INACTIVE
*****************************************************************
* GWPATH ROUTING (ORIG HOST -> ... -> DEST HOST)
* B01 -> B03/A03 -> A04 -> A31 -> A81
* B01 -> B31 -> B03/A03 -> A04 -> A31 -> A81
*****************************************************************
         GWPATH ADJNET=NETA,                                           X
                 ADJNETSA=81,                                          X
                 ELEMENT=04,                                           X
                 SUBAREA=03
*****************************************************************
* GWPATH ROUTING (ORIG HOST -> ... -> DEST HOST)
* B01 -> B31/C03 -> C31/A03 -> A04 -> A31 -> A81
*****************************************************************
         GWPATH ADJNET=NETC,                                           X
                 ADJNETEL=04,                                          X
                 ADJNETSA=31,                                          X
                 ELEMENT=4,                                            X
                 SUBAREA=31
A500N    CDRM    CDRDYN=YES,                                           X
                 CDRSC=OPT,                                            X
                 ISTATUS=INACTIVE
*****************************************************************
* GWPATH ROUTING (ORIG HOST -> ... -> DEST HOST)
* B01 -> B03/A03 -> A500
* B01 -> B31 -> B03/A03 -> A500
*****************************************************************
         GWPATH ADJNET=NETA,                                           X
                 ADJNETSA=500,                                         X
                 ELEMENT=05,                                           X
                 SUBAREA=03
*****************************************************************
* GWPATH ROUTING (ORIG HOST -> ... -> DEST HOST)
* B01 -> B31/C03 -> C31/A03 -> A500
```

```
*******************************************************************
         GWPATH ADJNET=NETC,                                          X
               ADJNETEL=05,                                           X
               ADJNETSA=31,                                           X
               ELEMENT=5,                                             X
               SUBAREA=31
*******************************************************************
*        NETWORK C  CDRMS                                         *
*******************************************************************
NETC     NETWORK NETID=NETC
C01N     CDRM  CDRDYN=YES,                                            X
               ISTATUS=INACTIVE,                                      X
               CDRSC=OPT
*******************************************************************
* GWPATH ROUTING (ORIG HOST -> ... -> DEST HOST)
* B01 -> B31/C03 -> C01
* B01 -> B31/C03 -> C31 -> C04 -> C01
*******************************************************************
         GWPATH ADJNET=NETC,                                          X
               ADJNETSA=01,                                           X
               ELEMENT=6,                                             X
               SUBAREA=31
*******************************************************************
* GWPATH ROUTING (ORIG HOST -> ... -> DEST HOST)
* B01 -> B03/C31 -> C03 -> C01
* B01 -> B03/C31 -> C04 -> C01
*******************************************************************
         GWPATH ADJNET=NETC,                                          X
               ADJNETSA=01,                                           X
               ELEMENT=6,                                             X
               SUBAREA=03
*******************************************************************
* GWPATH ROUTING (ORIG HOST -> ... -> DEST HOST)
* B01 -> B03/A03/C31 -> C03 -> C01
* B01 -> B03/A03/C31 -> C04 -> C01
*******************************************************************
         GWPATH ADJNET=NETA,                                          X
               ADJNETEL=3,                                            X
               ADJNETSA=03,                                           X
               ELEMENT=6,                                             X
               SUBAREA=03
*  =====> END OF DATA SET B01CDRM
```

IBM Library Server

5.4.2 CDRM Major Node for Host A02

If VTAM is started at A02 with the start option GWSSCP=YES, A02 is considered to be a gateway VTAM. The GWPATH definition statements in the CDRM major node for A02 define possible cross-network session paths between the gateway host CDRM and a CDRM in another network. A NETWORK definition statement defines NETB as the network in which the cross-network external CDRMs reside.

MVS The CONFGDS operand specifies the data definition name that identifies the configuration restart dataset you defined for this major node.

```
*  =====> BEGINNING OF DATA SET A02CDRM
***********************************************************************
* A02CDRM - VTAM CROSS-DOMAIN RESOURCE MANAGER MAJ NODE - SUBAREA A02 *
***********************************************************************
         VBUILD TYPE=CDRM,                                             X
               CONFGDS=CDRMCKP
NETA     NETWORK NETID=NETA       ** NETWORK IDENTIFIER             **
A01N     CDRM  CDRDYN=YES,        ** AUTHORIZE DYNAMIC CDRSC DEF.   ** X
               CDRSC=OPT,         ** AUTHORIZE DYNAMIC CDRSC DEF.   ** X
               ELEMENT=1,         ** HOST ELEMENT ADDRESS           ** X
               ISTATUS=INACTIVE,  ** CDRM INITIAL ACTIVATION STATUS ** X
               RECOVERY=YES,      ** CDRM AUTOMATIC RECOVERY        ** X
               SUBAREA=1,         ** NETWORK UNIQUE SUBAREA ADDRESS ** X
               VPACING=63         ** CDRM REQS BEFORE PACING RESP   **
A02N     CDRM  CDRDYN=YES,                                             X
               CDRSC=OPT,                                              X
               ELEMENT=1,                                              X
               ISTATUS=ACTIVE,                                         X
               RECOVERY=YES,                                           X
               SUBAREA=2,                                              X
               VPACING=63
A17N     CDRM  CDRDYN=YES,                                             X
               CDRSC=OPT,                                              X
               ELEMENT=1,                                              X
               ISTATUS=INACTIVE,                                       X
               RECOVERY=YES,                                           X
               SUBAREA=17,                                             X
               VPACING=63
A81N     CDRM  CDRDYN=YES,                                             X
               CDRSC=OPT,                                              X
               ELEMENT=1,                                              X
               ISTATUS=INACTIVE,                                       X
               RECOVERY=YES,                                           X
               SUBAREA=81,                                             X
               VPACING=63
A500N    CDRM  CDRDYN=YES,                                             X
               CDRSC=OPT,                                              X
               ELEMENT=1,                                              X
               ISTATUS=INACTIVE,                                       X
               RECOVERY=YES,                                           X
               SUBAREA=500,                                            X
               VPACING=63
*****************************************************************
*        NETWORK B  CDRMS                                       *
*****************************************************************
```

```
NETB     NETWORK NETID=NETB
B01N     CDRM  CDRDYN=YES,         ** AUTHORIZE DYNAMIC CDRSC DEF.   ** X
               CDRSC=OPT,          ** AUTHORIZE DYNAMIC CDRSC DEF.   ** X
               ISTATUS=INACTIVE    ** CDRM INITIAL ACTIVATION STATUS **
*****************************************************************
* GWPATH ROUTING (ORIG HOST -> ... -> DEST HOST)
* A02 -> A04 ->A03/B03 -> B01
* A02 -> A04 ->A03/B03 -> B31 -> B01
*****************************************************************
         GWPATH ADJNET=NETB,       ** ADJACENT NETWORK IDENTIFIER    ** X
               ADJNETEL=1,         ** ADJACENT NETWORK SUBAREA       ** X
               ADJNETSA=01,        ** ADJACENT NETWORK ELEMENT       ** X
               ELEMENT=1,          ** ELEMENT ADDRESS                ** X
               SUBAREA=3           ** SUBAREA ADDRESS                **
*****************************************************************
* GWPATH ROUTING (ORIG HOST -> ... -> DEST HOST)
* A02 -> A04 ->A03/C31 -> C03/B31 -> B01
*****************************************************************
         GWPATH ADJNET=NETC,                                            X
               ADJNETEL=6,                                              X
               ADJNETSA=03,                                             X
               ELEMENT=1,                                               X
               SUBAREA=3
*  =====> END OF DATA SET A02CDRM
```

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5.4.3 CDRM Major Node for Host A17

If VTAM is started at A17 with the start option GWSSCP=YES, A17 is considered to be a gateway VTAM. The GWPATH definition statements in the CDRM major node for A17 define possible cross-network session paths between the gateway host CDRM and a CDRM in another network. NETWORK definition statements define NETB and NETC as the networks in which the cross-network external CDRMs reside.

MVS The CONFGDS operand specifies the data definition name that identifies the configuration restart dataset you defined for this major node.

```
*  =====> BEGINNING OF DATA SET A17CDRM
***********************************************************************
* A17CDRM - VTAM CROSS-DOMAIN RESOURCE MANAGER MAJOR NODE - ICN A17   *
***********************************************************************
         VBUILD TYPE=CDRM,CONFGDS=CDRMCKP
NETA     NETWORK NETID=NETA       ** NETWORK IDENTIFIER            **
A01N     CDRM  CDRDYN=YES,        ** AUTHORIZE DYNAMIC CDRSC DEF.   ** X
               CDRSC=OPT,         ** AUTHORIZE DYNAMIC CDRSC DEF.   ** X
               ELEMENT=1,         ** HOST ELEMENT ADDRESS           ** X
               ISTATUS=INACTIVE,  ** CDRM INITIAL ACTIVATION STATUS ** X
               RECOVERY=YES,      ** CDRM AUTOMATIC RECOVERY        ** X
               SUBAREA=01,        ** NETWORK UNIQUE SUBAREA ADDRESS ** X
               VPACING=63         ** CDRM REQS BEFORE PACING RESP   **
A02N     CDRM  CDRDYN=YES,                                             X
               CDRSC=OPT,                                              X
               ELEMENT=1,                                              X
               ISTATUS=INACTIVE,                                       X
               RECOVERY=YES,                                           X
               SUBAREA=2,                                              X
               VPACING=63
A17N     CDRM  CDRDYN=YES,                                             X
               CDRSC=OPT,                                              X
               ELEMENT=1,                                              X
               ISTATUS=ACTIVE,                                         X
               RECOVERY=YES,                                           X
               SUBAREA=17,                                             X
               VPACING=63
A81N     CDRM  CDRDYN=YES,                                             X
               CDRSC=OPT,                                              X
               ELEMENT=1,                                              X
               ISTATUS=INACTIVE,                                       X
               RECOVERY=YES,                                           X
               SUBAREA=81,                                             X
               VPACING=63
A500N    CDRM  CDRDYN=YES,                                             X
               CDRSC=OPT,                                              X
               ELEMENT=1,                                              X
               ISTATUS=INACTIVE,                                       X
               RECOVERY=YES,                                           X
               SUBAREA=500,                                            X
               VPACING=63
*****************************************************************
*        NETWORK B  CDRMS                                       *
*****************************************************************
NETB     NETWORK NETID=NETB
B01N     CDRM  CDRDYN=YES,        ** AUTHORIZE DYNAMIC CDRSC DEF.   ** X
               CDRSC=OPT,         ** AUTHORIZE DYNAMIC CDRSC DEF.   ** X
               ISTATUS=INACTIVE,  ** CDRM INITIAL ACTIVATION STATUS ** X
               RECOVERY=YES       ** CDRM AUTOMATIC RECOVERY        **
*****************************************************************
```

```
* GWPATH ROUTING (ORIG HOST -> ... -> DEST HOST)
* A17 -> A03/B03 -> B01
* A17 -> A03/B03 -> B31 -> B01
*****************************************************************
         GWPATH ADJNET=NETB,        ** ADJACENT NETWORK IDENTIFIER    ** X
               ADJNETSA=01,         ** ADJACENT NETWORK SUBAREA       ** X
               ELEMENT=1,           ** ELEMENT ADDRESS                ** X
               SUBAREA=3            ** SUBAREA ADDRESS                **
*****************************************************************
* GWPATH ROUTING (ORIG HOST -> ... -> DEST HOST)
* A17 -> A03/C31 -> C03/B31 -> B01
*****************************************************************
         GWPATH ADJNET=NETC,                                             X
               ADJNETEL=6,                                               X
               ADJNETSA=03,                                              X
               ELEMENT=1,                                                X
               SUBAREA=3
*****************************************************************
*        NETWORK C  CDRMS                                               *
*****************************************************************
NETC     NETWORK NETID=NETC
C01N     CDRM  CDRDYN=YES,                                               X
               CDRSC=OPT,                                                X
               ISTATUS=INACTIVE
*****************************************************************
* GWPATH ROUTING (ORIG HOST -> ... -> DEST HOST)
* A17 -> A03/C31 -> C03 -> C01
* A17 -> A03/C31 -> C04 -> C01
*****************************************************************
         GWPATH ADJNET=NETC,                                             X
               ADJNETSA=01,                                              X
               ELEMENT=3,                                                X
               SUBAREA=3
*****************************************************************
* GWPATH ROUTING (ORIG HOST -> ... -> DEST HOST)
* A17 -> A03/B03 -> B31/C03 -> C01
*****************************************************************
         GWPATH ADJNET=NETB,                                             X
               ADJNETEL=6,                                               X
               ADJNETSA=31,                                              X
               ELEMENT=3,                                                X
               SUBAREA=3
*  =====> END OF DATA SET A17CDRM
```

5.4.4 CDRM Major Node for Host A500

The following sample for host A500 has no network definition statement defining CDRMs in other networks. This means that this host is **not** a gateway VTAM.

MVS The CONFGDS operand specifies the data definition name that identifies the configuration restart dataset you defined for this major node.

```
*  =====> BEGINNING OF DATA SET A50CDRM
***********************************************************************
* A50CDRM - VTAM CROSS-DOMAIN RESOURCE MANAGER MAJOR NODE - MDH A500  *
***********************************************************************
         VBUILD TYPE=CDRM,CONFGDS=CDRMCKP
NETA     NETWORK NETID=NETA       ** NETWORK IDENTIFIER             **
A01N     CDRM  CDRDYN=YES,        ** AUTHORIZE DYNAMIC CDRSC DEF.   ** X
               CDRSC=OPT,         ** AUTHORIZE DYNAMIC CDRSC DEF.   ** X
               ELEMENT=1,         ** HOST ELEMENT ADDRESS           ** X
               ISTATUS=INACTIVE,  ** CDRM INITIAL ACTIVATION STATUS ** X
               RECOVERY=YES,      ** CDRM AUTOMATIC RECOVERY        ** X
               SUBAREA=1,         ** NETWORK UNIQUE SUBAREA ADDRESS ** X
               VPACING=63         ** CDRM REQS BEFORE PACING RESP   **
A02N     CDRM  CDRDYN=YES,                                             X
               CDRSC=OPT,                                              X
               ELEMENT=1,                                              X
               ISTATUS=INACTIVE,                                       X
               RECOVERY=YES,                                           X
               SUBAREA=2,                                              X
               VPACING=63
A17N     CDRM  CDRDYN=YES,                                             X
               CDRSC=OPT,                                              X
               ELEMENT=1,                                              X
               ISTATUS=INACTIVE,                                       X
               RECOVERY=YES,                                           X
               SUBAREA=17,                                             X
               VPACING=63
A81N     CDRM  CDRDYN=YES,                                             X
               CDRSC=OPT,                                              X
               ELEMENT=1,                                              X
               ISTATUS=INACTIVE,                                       X
               RECOVERY=YES,                                           X
               SUBAREA=81,                                             X
               VPACING=63
A500N    CDRM  CDRDYN=YES,                                             X
               CDRSC=OPT,                                              X
               ELEMENT=1,                                              X
               ISTATUS=ACTIVE,                                         X
               RECOVERY=YES,                                           X
               SUBAREA=500,                                            X
               VPACING=63
*****************************************************************
*  =====> END OF DATA SET A50CDRM
```

IBM Library Server

5.4.5 CDRM Major Node for Host A81

If VTAM is started at A81 with the start option GWSSCP=YES, A81 is considered to be a gateway VTAM. The GWPATH definition statements in the CDRM major node for A81 define possible cross-network session paths between the gateway host CDRM and a CDRM in another network. A NETWORK definition statement defines NETB as the network in which the cross-network external CDRMs reside.

MVS The CONFGDS operand specifies the data definition name that identifies the configuration restart dataset you defined for this major node.

```
*  =====> BEGINNING OF DATA SET A81CDRM
***********************************************************************
* A81CDRM - VTAM CROSS-DOMAIN RESOURCE MANAGER MAJOR NODE - ICN A81   *
***********************************************************************
         VBUILD TYPE=CDRM,CONFGDS=CDRMCKP
NETA     NETWORK NETID=NETA       ** NETWORK IDENTIFIER             **
A01N     CDRM  CDRDYN=YES,        ** AUTHORIZE DYNAMIC CDRSC DEF.   ** X
               CDRSC=OPT,         ** AUTHORIZE DYNAMIC CDRSC DEF.   ** X
               ELEMENT=1,         ** HOST ELEMENT ADDRESS           ** X
               ISTATUS=INACTIVE,  ** CDRM INITIAL ACTIVATION STATUS ** X
               RECOVERY=YES,      ** CDRM AUTOMATIC RECOVERY        ** X
               SUBAREA=1,         ** NETWORK UNIQUE SUBAREA ADDRESS ** X
               VPACING=63         ** CDRM REQS BEFORE PACING RESP   **
A02N     CDRM  CDRDYN=YES,                                             X
               CDRSC=OPT,                                              X
               ELEMENT=1,                                              X
               ISTATUS=INACTIVE,                                       X
               RECOVERY=YES,                                           X
               SUBAREA=2,                                              X
               VPACING=63
A17N     CDRM  CDRDYN=YES,                                             X
               CDRSC=OPT,                                              X
               ELEMENT=1,                                              X
               ISTATUS=INACTIVE,                                       X
               RECOVERY=YES,                                           X
               SUBAREA=17,                                             X
               VPACING=63
A81N     CDRM  CDRDYN=YES,                                             X
               CDRSC=OPT,                                              X
               ELEMENT=1,                                              X
               ISTATUS=ACTIVE,                                         X
               RECOVERY=YES,                                           X
               SUBAREA=81,                                             X
               VPACING=63
A500N    CDRM  CDRDYN=YES,                                             X
               CDRSC=OPT,                                              X
               ELEMENT=1,                                              X
               ISTATUS=INACTIVE,                                       X
               RECOVERY=YES,                                           X
               SUBAREA=500,                                            X
               VPACING=63
*****************************************************************
*        NETWORK B  CDRMS                                       *
*****************************************************************
NETB     NETWORK NETID=NETB
```

```
B01N     CDRM  CDRDYN=YES,         ** AUTHORIZE DYNAMIC CDRSC DEF.   ** X
               CDRSC=OPT,          ** AUTHORIZE DYNAMIC CDRSC DEF.   ** X
               ISTATUS=INACTIVE    ** CDRM INITIAL ACTIVATION STATUS **
*******************************************************************
* GWPATH ROUTING (ORIG HOST -> ... -> DEST HOST)
* A81 -> A31 -> A04 -> A03/B03 -> B01
* A81 -> A31 -> A04 -> A03/B03 -> B31 -> B01
*******************************************************************
         GWPATH ADJNET=NETB,       ** ADJACENT NETWORK IDENTIFIER    ** X
               ADJNETSA=01,        ** ADJACENT NETWORK SUBAREA       ** X
               ELEMENT=1,          ** ELEMENT ADDRESS                ** X
               SUBAREA=3           ** SUBAREA ADDRESS                **
*******************************************************************
* GWPATH ROUTING (ORIG HOST -> ... -> DEST HOST)
* A81 -> A31 -> A04 -> A03/C31 -> C03  -> B01
*******************************************************************
         GWPATH ADJNET=NETC,                                            X
               ADJNETEL=6,                                              X
               ADJNETSA=03,                                             X
               ELEMENT=1,                                               X
               SUBAREA=3
*  =====> END OF DATA SET A81CDRM
```

IBM Library Server

5.4.6 CDRM Major Node for Host C01

If VTAM is started at C01 with the start option GWSSCP=YES, C01 is considered to be a gateway VTAM. The GWPATH definition statements in the CDRM major node for C01 define possible cross-network session paths between the gateway host CDRM and a CDRM in another network. NETWORK definition statements define NETA and NETB as the networks in which the cross-network external CDRMs reside.

MVS The CONFGDS operand specifies the data definition name that identifies the configuration restart dataset you defined for this major node.

```
*  =====> BEGINNING OF DATA SET C01CDRM
***********************************************************************
* C01CDRM - VTAM CROSS-DOMAIN RESOURCE MANAGER MAJ NODE - SUBAREA C01 *
***********************************************************************
         VBUILD TYPE=CDRM,CONFGDS=CDRMCKP
NETC     NETWORK NETID=NETC       ** NETWORK IDENTIFIER               **
C01N     CDRM  CDRDYN=YES,        ** AUTHORIZE DYNAMIC CDRSC DEF.     ** X
               CDRSC=OPT,         ** AUTHORIZE DYNAMIC CDRSC DEF.     ** X
               ELEMENT=1,         ** HOST ELEMENT ADDRESS             ** X
               ISTATUS=ACTIVE,    ** CDRM INITIAL ACTIVATION STATUS   ** X
               RECOVERY=YES,      ** CDRM AUTOMATIC RECOVERY          ** X
               SUBAREA=01,        ** NETWORK UNIQUE SUBAREA ADDRESS   ** X
               VPACING=63         ** CDRM REQS BEFORE PACING RESP     **
*****************************************************************
*        NETWORK A  CDRMS                                       *
*****************************************************************
NETA     NETWORK NETID=NETA       ** NETWORK IDENTIFIER               **
A17N     CDRM  CDRDYN=YES,                                               X
               CDRSC=OPT,                                                X
               ISTATUS=INACTIVE
*****************************************************************
* GWPATH ROUTING (ORIG HOST -> ... -> DEST HOST)
* C01 -> C03/B31 -> C31/A03 -> A17
* C01 -> C04 -> C31/A03 -> A17
*****************************************************************
         GWPATH ADJNET=NETA,                                             X
               ADJNETSA=17,                                              X
               ELEMENT=03,                                               X
               SUBAREA=31
*****************************************************************
* GWPATH ROUTING (ORIG HOST -> ... -> DEST HOST)
* C01 -> C03/B31 -> B03/A03 -> A17
*****************************************************************
         GWPATH ADJNET=NETB,                                             X
               ADJNETEL=03,                                              X
               ADJNETSA=03,                                              X
               ELEMENT=3,                                                X
               SUBAREA=03
A500N    CDRM  CDRDYN=YES,                                               X
               CDRSC=OPT,                                                X
               ISTATUS=INACTIVE
*****************************************************************
* GWPATH ROUTING (ORIG HOST -> ... -> DEST HOST)
* C01 -> C03/B31 -> B03/A03 -> A500
* C01 -> C04 -> C31/A03 -> A500
```

```
*****************************************************************
         GWPATH ADJNET=NETA,                                           X
               ADJNETSA=500,                                           X
               ELEMENT=05,                                             X
               SUBAREA=31
*****************************************************************
* GWPATH ROUTING (ORIG HOST -> ... -> DEST HOST)
* C01 -> C03/B31 -> B03/A03 -> A500
*****************************************************************
         GWPATH ADJNET=NETB,                                           X
               ADJNETEL=05,                                            X
               ADJNETSA=03,                                            X
               ELEMENT=5,                                              X
               SUBAREA=03
*****************************************************************
*        NETWORK B  CDRMS                                              *
*****************************************************************
NETB     NETWORK NETID=NETB
B01N     CDRM  CDRDYN=YES,                                             X
               CDRSC=OPT,                                              X
               ISTATUS=INACTIVE
*****************************************************************
* GWPATH ROUTING (ORIG HOST -> ... -> DEST HOST)
* C01 -> C03/B31 -> B01
* C01 -> C04 -> C31 -> C03/B31 -> B01
*****************************************************************
         GWPATH ADJNET=NETB,                                           X
               ADJNETSA=01,                                            X
               ELEMENT=6,                                              X
               SUBAREA=3
*****************************************************************
* GWPATH ROUTING (ORIG HOST -> ... -> DEST HOST)
* C01 -> C04 -> C31/B03 -> B31  -> B01
*****************************************************************
         GWPATH ADJNET=NETB,                                           X
               ADJNETSA=01,                                            X
               ELEMENT=6,                                              X
               SUBAREA=31
*  =====> END OF DATA SET C01CDRM
```

5.5 Virtual-Route-Based Transmission Groups

You can also establish CP-CP sessions between two APPN-capable VTAM nodes through a subarea network over existing subarea links and virtual routes. This is accomplished by defining a virtual-route-based transmission group (VR-based TG) between them. To define a VR-based TG you need to either code VRTG=YES on the CDRM definition statement for the adjacent VTAM in the CDRM major nodes of both VTAMs, or code VRTG=YES as a start option at both VTAMs.

If VRTG=YES is coded at both VTAMs, then a VR-based TG is activated automatically when the CDRM session with the adjacent VTAM is activated. If there are no CP-CP sessions active between the two VTAM nodes, CP-CP establishment is automatically initiated when the VR-based TG is activated.

If CP-CP sessions are not desired over a VR-based TG, and there exists an alternate CP-CP session path between the two VTAMs, you must code VRTGCPCP=NO on the CDRM definition statement for the adjacent VTAM in the CDRM major nodes of both VTAMs, or code VRTGCPCP=NO as a start option at both VTAMs. VRTGCPCP=NO prevents CP-CP sessions from being established over the VR-based TG between the two VTAMs.

The TG number associated with a VR-TG will always be 255. In addition, a VR-TG can only exist:

- Between two interchange nodes
- Between an interchange node and a migration data host
- Between two migration data hosts.

For more information about VR-based TGs, see "Virtual-Route-Based Transmission Groups (VR-Based TGs)" in the *VTAM Network Implementation Guide*.

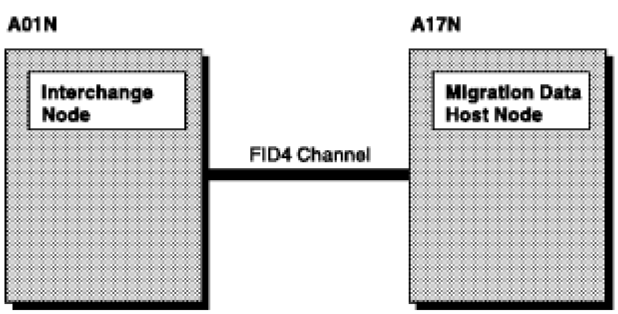

Figure 11. Virtual-Route-Based Transmission Group between Interchange Node and Migration Data Host

The example below shows virtual-route-based transmission group definitions for Figure 11.

Operand	**Meaning**
VRTG=YES	VR-based TG will be activated when this CDRM is established.
VRTGCPCP=YES	CP-CP sessions are supported over this VR-based TG.
CAPACITY=8K	The virtual routes comprising the transmission group have an effective capacity of 8 Kb per second.
COSTBYTE=0	The least expensive cost-per-byte-transmitted is to be associated with the transmission group.
COSTTIME=0	The least expensive cost per unit of time is to be associated with the transmission group.
NN=NO	The VR-based TG represents a connection to a migration data host.
PDELAY=TERRESTR	The maximum propagation delay of the virtual routes for the transmission group is telephone network delay (between .48 and 49.152 milliseconds).
SECURITY=UNSECURE	**MVS,VM** There is no security level for the transmission group.

```
**********************************************************************
* ICN#1 (A01N) definitions
**********************************************************************
         VBUILD TYPE=CDRM
*
NETA     NETWORK NETID=NETA       ** NETWORK IDENTIFIER              **
A01N     CDRM  CDRDYN=YES,        ** AUTHORIZE DYNAMIC CDRSC DEF.    **   X
               CDRSC=OPT,         ** AUTHORIZE DYNAMIC CDRSC DEF.    **   X
               ELEMENT=1,         ** HOST ELEMENT ADDRESS            **   X
               ISTATUS=ACTIVE,    ** CDRM INITIAL ACTIVATION STATUS**   X
               RECOVERY=YES,      ** CDRM AUTOMATIC RECOVERY         **   X
               SUBAREA=1,         ** NETWORK UNIQUE SUBAREA ADDRESS**   X
               VPACING=63         ** CDRM REQS BEFORE PACING RESP    **
*
A17N     CDRM  CAPACITY=8K,       ** EFFECTIVE LINK CAPACITY         **   X
               CDRDYN=YES,                                                X
               CDRSC=OPT,                                                 X
               COSTBYTE=0,        ** COST PER BYTE TRANSMITTED       **   X
               COSTTIME=0,        ** COST PER UNIT OF TIME           **   X
               ELEMENT=1,                                                 X
               ISTATUS=INACTIVE,                                          X
               NN=NO,             ** VR-BASED TG CONNECTS TO MDH     **   X
               PDELAY=TERRESTR,   ** TELEPHONE NETWORK DELAY         **   X
               RECOVERY=YES,                                              X
               SECURITY=UNSECURE, ** NO SECURITY LEVEL              **   X
               SUBAREA=17,                                                X
               VPACING=63,                                                X
               VRTG=YES,          ** VR-BASED TG CONNECTION REQ'D    **   X
```

```
                 VRTGCPCP=YES       ** CP-CP SESSIONS OVER VRTG      **
*
***********************************************************************
* ICN#2 (A17N) definitions
***********************************************************************
         VBUILD TYPE=CDRM
*
NETA     NETWORK NETID=NETA
A17N     CDRM  CDRDYN=YES,                                              X
               CDRSC=OPT,                                               X
               ELEMENT=1,                                               X
               ISTATUS=ACTIVE,                                          X
               RECOVERY=YES,                                            X
               SUBAREA=17,                                              X
               VPACING=63
*
A01N     CDRM  CDRDYN=YES,                                              X
               CDRSC=OPT,                                               X
               ELEMENT=1,                                               X
               ISTATUS=INACTIVE,                                        X
               RECOVERY=YES,                                            X
               SUBAREA=1,                                               X
               VPACING=63,                                              X
               VRTG=YES,                                                X
               VRTGCPCP=YES
*
```

6.0 Chapter 6. External Communication Adapter (XCA) Major Node

Subtopics:

6.1 About This Chapter

This chapter describes sample external communication adapter major node definitions.

The 3172 interconnect controller is also known as an external communication adapter. You can use the 3172 interconnect controller to connect VTAM to the following types of local area networks:

- Carrier sense multiple access with collision detection (CSMA/CD) 802.3
- Token ring IEEE 802.5
- Fiber Distributed Data Interface (FDDI)
- Token-bus.

An external communication adapter major node is defined for each connection (port) between VTAM and a LAN adapter in a 3172. (That is, there is one external communication adapter major node for each card in the 3172.) The major node is defined with a VBUILD TYPE=XCA definition statement. The line groups, lines, and physical units attached to the port are minor nodes defined by GROUP, LINE, and PU definition statements. You can also specify the DIALNO operand on the PATH definition statement for a 3172 switched data network.

Three types of support are defined through the external communication adapter major node:

Peripheral	attaches VTAM to peripheral nodes connected to LAN
Subarea	attaches VTAM to subarea nodes connected to LAN
APPN	provides APPN-to-APPN over a 3172 interconnect controller.

6.2 Peripheral XCA Connection

The 3172 interconnect controller can be used to attach VTAM to a LAN, allowing communication between peripheral nodes attached to the LAN and VTAM. This type of configuration is shown in Figure 12, in which both A02 and A500 are able to communicate over the 3172 to peripheral nodes attached to a token-ring LAN.

To attach VTAM to any peripheral nodes connected to a LAN over a 3172 interconnect controller, you should code the following:

- One external communication adapter major node to represent the physical unit in the 3172 interconnect controller. Used for network management purposes, this major node specifies MEDIUM=BOXMGR on the PORT definition statement. Although this definition is not required, it is highly recommended if you are running the NetView(*) program.

- One switched major node for the physical unit in the 3172 interconnect controller.

- One external communication adapter major node for each LAN connected to the 3172 interconnect controller.

- Major nodes for any peripheral devices connected to the LAN.

To define a peripheral external communication adapter node attached to a LAN through a 3172 interconnect controller, code the VBUILD (TYPE=XCA) and PORT definition statements followed by the GROUP definition statement (DIAL=YES), and LINE and PU definition statements as pairs in the switched line group.

IBM Library Server

6.3 Subarea XCA Connection

A VTAM attached through a 3172 interconnect controller can communicate to other SNA domains through a token-ring, token-bus, CSMA/CD 802.3 or FDDI local area network. This type of configuration is shown in Figure 12, in which A02 and A500 can communicate with each other over the 3172. You define an XCA LAN connection to VTAM using the external communication adapter major node.

To define this multiple-domain configuration, you code

- An external communication adapter major node to represent the physical unit in the 3172 interconnect controller. This definition is used for network management purposes. Although it is not required, it is highly recommended if you are running the NetView program.

- A switched major node for the physical unit in the 3172 interconnect controller.

- An external communication adapter major node for each LAN connected through the 3172 interconnect controller. Within each external communication adapter major node, code the VBUILD (TYPE=XCA) and PORT definition statements, followed by the GROUP definition statement (specified with DIAL=NO), and LINE and PU definition statements as pairs in the nonswitched line group. For the case where two VTAMs are connected to the same LAN through a common 3172 interconnect controller, each VTAM must code an XCA major node for the LAN.

- Switched major nodes for any peripheral nodes attached to the LAN.

For more information on implementing LAN support on the 3172 for single-domain and multiple-domain networks, refer to "VTAM-to-VTAM XCA Connections" in the *VTAM Network Implementation Guide*.

6.4 Token-Ring Example Showing Peripheral and Subarea Connection

The following example shows both peripheral and subarea connections over a 3172 interconnect controller. It shows a token ring attached to a VTAM network through a 3172.

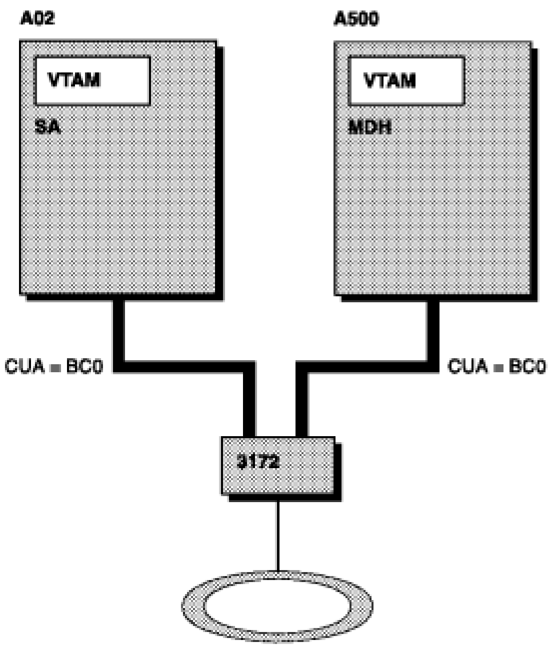

Figure 12. LAN Support through an IBM 3172. Host A02 is a subarea node (SA). Host A500 is a migration data host (MDH).

Subtopics:

IBM Library Server

6.4.1 XCA Major Node for a Box Manager (Token-Ring LAN)

A box manager XCA major node should be coded in one of the VTAMs to which the 3172 interconnect controller is attached. In the sample XCA major node below, TYPE=XCA on the VBUILD definition statement indicates that this is an external communication adapter major node.

On the PORT definition statement:

- CUADDR is the device address of the attached LAN.
- MEDIUM=BOXMGR indicates that this is a box manager definition.

A box manager allows an IBM 3172 Interconnect Controller to have minimal network management, as well as allowing generic alerts to flow from an IBM 3172 Interconnect Controller to the NetView program.

Only one GROUP, LINE, and PU definition statement is allowed in a BOXMGR definition.

```
*  =====> BEGINNING OF DATA SET XCABOXM
***********************************************************************
*   X50RBXMA - VTAM 3172 XCA MAJOR NODE                               *
*                                                                     *
*   DESCRIPTION: VTAM 3172 XCA Major Node MVS channel address         *
*                BC5, BOX MANAGER                                     *
***********************************************************************
XTRBC4   VBUILD  TYPE=XCA
**
PORTBM   PORT    MEDIUM=BOXMGR,CUADDR=BC5
GROUPBM  GROUP   ISTATUS=ACTIVE
LINEBM   LINE    ISTATUS=ACTIVE
PUBM     PU      ISTATUS=ACTIVE
*  =====> END OF DATA SET XCABOXM
```

A corresponding switched major node definition must be provided to the VTAM host to permit the establishment of a SSCP-PU session between the IBM 3172 and NetView. See "Attaching a Peripheral Node over an IBM 3172 Interconnect Controller" for the definition of that switched major node.

IBM Library Server

6.4.2 XCA Major Node for Host A02 (Token-Ring LAN)

TYPE=XCA on the VBUILD definition statement indicates that this is an external communication adapter major node.

On the PORT definition statement:

- ADAPNO=0 is the adapter number assigned by the 3172.
- CUADDR is the device address of the attached LAN. In this case, A02's CUADDR matches A500's CUADDR (CUADDR=BC0).
- MEDIUM=RING indicates that this is a token ring connection.
- A02's SAPADDR=4 is the SAP address of the connection defined by this major node.
- **MVS,VM** USER=VCNS indicates that VTAM Common Network Services (VCNS) uses the line.

The group named GP2BC1 defines a peripheral node connection to a PS/2 connected to the LAN. DIAL=YES is required for a a peripheral node connection. Group name GP2BC1 matches the GRPNM value on the PATH definition statement in the corresponding switched major node in topic 14.7.

The group GP5BC1 is used to define the subarea node connection to host A500. DIAL=NO on the GROUP definition statement is required for a subarea node connection. USER=SNA on the L5BC11 LINE definition statement specifies that the line uses SNA protocols to access an IBM 3172 interconnect controller for use by the LAN. A02's SAPADDR for PU P5BC11 must match A500's PORT SAPADDR (SAPADDR=8).

```
*  =====> BEGINNING OF DATA SET X02BBC0
***********************************************************************
* X02BBC0 - VTAM EXTERNAL COMMUNICATION ADAPTER MAJNOD - SUBAREA A02 *
***********************************************************************
*  3172 XCA DEFINITION FOR HOST A02N
***********************************************************************
XTBBC0   VBUILD TYPE=XCA            ** EXTERNAL COMMUNICATION ADAPT**
PORTBC   PORT   ADAPNO=0,           ** 3172 RELATIVE ADAPTER NUMBER** X
                CUADDR=BC0,         ** CHANNEL UNIT ADDRESS        ** X
                MEDIUM=RING,        ** LAN TYPE                    ** X
                SAPADDR=4,          ** SERVICE ACCESS POINT ADDRESS** X
                TIMER=90            ** CHANNEL ACTIVATE RESP TIME  **
GP2BC1   GROUP  ANSWER=ON,          ** PU DIAL INTO VTAM CAPABILITY** X
                AUTOGEN=(6,L,P),    ** AUTO GENERATE LINES AND PUS ** X
                CALL=INOUT,         ** IN/OUT CALLING CAPABILITY   ** X
```

```
               DIAL=YES,            ** SWITCHED CONNECTION          ** X
               ISTATUS=INACTIVE     ** INITIAL ACTIVATION STATUS    **
**********************************************************************
** MAC ADDR FOR 3172 - NOTICE SAPADDR 8 MATCHES SAPADDR ON A500
**********************************************************************
GP5BC1   GROUP DIAL=NO              ** LEASED CONNECTION            **
L5BC11   LINE  ISTATUS=INACTIVE,    ** INITIAL ACTIVATION STATUS    ** X
               USER=SNA             ** LINE PROTOCOL                **
P5BC11   PU    ISTATUS=INACTIVE,    ** INITIAL ACTIVATION STATUS    ** X
               MACADDR=400007777056, ** MEDIUM ACCESS CONTROL ADDR  ** X
               PUTYPE=5,            ** PHYSICAL UNIT TYPE           ** X
               SAPADDR=8,           ** SERVICE ACCESS POINT ADDRESS** X
               SUBAREA=500,         ** ADJACENT SUBAREA ADDRESS     ** X
               TGN=1                ** TRANSMISSION GROUP NUMBER    **
**********************************************************************
* THESE MACS AND SAPS MUST MATCH THE NCP DEFINITIONS
**********************************************************************
L5RC11   LINE  ISTATUS=INACTIVE,    ** INITIAL ACTIVATION STATUS    ** X
               USER=SNA             ** LINE PROTOCOL                **
P5RC11   PU    ISTATUS=INACTIVE,    ** INITIAL ACTIVATION STATUS    ** X
               MACADDR=400000000431, ** MEDIUM ACCESS CONTROL ADDR  ** X
               PUTYPE=5,            ** PHYSICAL UNIT TYPE           ** X
               SAPADDR=04,          ** SERVICE ACCESS POINT ADDRESS** X
               SUBAREA=04,          ** ADJACENT SUBAREA ADDRESS     ** X
               TGN=1                ** TRANSMISSION GROUP NUMBER    **
L5RC12   LINE  ISTATUS=INACTIVE,    ** INITIAL ACTIVATION STATUS    ** X
               USER=SNA             ** LINE PROTOCOL                **
P5RC12   PU    ISTATUS=INACTIVE,    ** INITIAL ACTIVATION STATUS    ** X
               MACADDR=400000003131, ** MEDIUM ACCESS CONTROL ADDR  ** X
               PUTYPE=5,            ** PHYSICAL UNIT TYPE           ** X
               SAPADDR=04,          ** SERVICE ACCESS POINT ADDRESS** X
               SUBAREA=310,         ** ADJACENT SUBAREA ADDRESS     ** X
               TGN=1                ** TRANSMISSION GROUP NUMBER    **
L1BV11   LINE  ISTATUS=INACTIVE,    ** INITIAL ACTIVATION STATUS    ** X
               USER=VCNS            ** LINE PROTOCOL                **
*  =====> END OF DATA SET X02BBC0
```

IBM Library Server

6.4.3 XCA Major Node for Host A500 (Token-Ring LAN)

TYPE=XCA on the VBUILD definition statement indicates that this is an external communication adapter major node.

On the PORT definition statement:

- ADAPNO=0 is the adapter number assigned by the 3172.
- CUADDR is the device address of the attached LAN. In this case, A02's CUADDR matches A500's CUADDR (CUADDR=BC0).
- MEDIUM=RING indicates that this is a token ring.
- A500's SAPADDR=8 is the SAP address of the connection defined by this major node.
- **MVS,VM** USER=VCNS indicates that VTAM Common Network Services (VCNS) uses the line.

A500's SAPADDR for PU P5BE12 must match A02's PORT SAPADDR (SAPADDR=4).

The group named GP1BE1 defines a peripheral node connection to a PS/2 connected to the LAN. DIAL=YES is required for a a peripheral node connection.

The group GP5BC1 is used to define the subarea node connection to host A02N. DIAL=NO on the GROUP definition statement is required for a subarea node connection.

```
*  =====> BEGINNING OF DATA SET X50BBE0
***********************************************************************
* X50BBE0 - VTAM EXTERNAL COMMUNICATION ADAPTER MAJNOD - MDH A500    *
***********************************************************************
*   3172 XCA MAJOR NODE FOR HOST A500N
***********************************************************************
XTBBE0   VBUILD TYPE=XCA              ** EXTERNAL COMMUNICATION ADAPT**
PORTBE   PORT   ADAPNO=0,             ** 3172 RELATIVE ADAPTER NUMBER** X
                CUADDR=BE0,           ** CHANNEL UNIT ADDRESS        ** X
                MEDIUM=RING,          ** LAN TYPE                    ** X
                SAPADDR=8,            ** SERVICE ACCESS POINT ADDRESS** X
                TIMER=90              ** CHANNEL ACTIVATE RESP TIME  **
GP1BE1   GROUP  ANSWER=ON,            ** PU DIAL INTO VTAM CAPABILITY** X
                AUTOGEN=(3,L,P),      ** AUTO GENERATE LINES AND PUS ** X
                CALL=INOUT,           ** IN/OUT CALLING CAPABILITY   ** X
                DIAL=YES,             ** SWITCHED CONNECTION         ** X
                ISTATUS=INACTIVE      ** INITIAL ACTIVATION STATUS   **
***********************************************************************
** MAC ADDR FOR 3172 - NOTICE SAPADDR 4 MATCHES SAPADDR ON A02
```

```
*********************************************************************
GP5BE2   GROUP DIAL=NO                ** LEASED CONNECTION            **
L5BE12   LINE  ISTATUS=INACTIVE,      ** INITIAL ACTIVATION STATUS    ** X
               USER=SNA               ** LINE PROTOCOL                **
P5BE12   PU    ISTATUS=INACTIVE,      ** INITIAL ACTIVATION STATUS    ** X
               MACADDR=400007777056,  ** MEDIUM ACCESS CONTROL ADDR   ** X
               PUTYPE=5,              ** PHYSICAL UNIT TYPE           ** X
               SAPADDR=4,             ** SERVICE ACCESS POINT ADDRESS** X
               SUBAREA=02,            ** ADJACENT SUBAREA ADDRESS     ** X
               TGN=1                  ** TRANSMISSION GROUP NUMBER    **
*********************************************************************
** MAC ADDRS MUST MATCH NCP GEN FOR LOCADDR AND TGS MUST MATCH AS WELL
*********************************************************************
L5RE12   LINE  ISTATUS=INACTIVE,      ** INITIAL ACTIVATION STATUS    ** X
               USER=SNA               ** LINE PROTOCOL                **
P5RE21   PU    ISTATUS=INACTIVE,      ** INITIAL ACTIVATION STATUS    ** X
               MACADDR=400000000431,  ** MEDIUM ACCESS CONTROL ADDR   ** X
               PUTYPE=5,              ** PHYSICAL UNIT TYPE           ** X
               SAPADDR=08,            ** SERVICE ACCESS POINT ADDRESS** X
               SUBAREA=04,            ** ADJACENT SUBAREA ADDRESS     ** X
               TGN=1                  ** TRANSMISSION GROUP NUMBER    **
L5RE22   LINE  ISTATUS=INACTIVE,      ** INITIAL ACTIVATION STATUS    ** X
               USER=SNA               ** LINE PROTOCOL                **
P5RE22   PU    ISTATUS=INACTIVE,      ** INITIAL ACTIVATION STATUS    ** X
               MACADDR=400000003131,  ** MEDIUM ACCESS CONTROL ADDR   ** X
               PUTYPE=5,              ** PHYSICAL UNIT TYPE           ** X
               SAPADDR=08,            ** SERVICE ACCESS POINT ADDRESS** X
               SUBAREA=310,           ** ADJACENT SUBAREA ADDRESS     ** X
               TGN=1                  ** TRANSMISSION GROUP NUMBER    **
L1BV21   LINE  ISTATUS=INACTIVE,      ** INITIAL ACTIVATION STATUS    ** X
               USER=VCNS              ** LINE PROTOCOL                **
*  =====> END OF DATA SET X50BBE0
```

IBM. Library Server

6.5 External Communication Adapter Connection to Token-Bus LAN

The following two sample XCA major nodes are for a subarea external communication adapter connection between two VTAM hosts, 1A and 2A, through a token-bus local area network (MEDIUM=BUS). Inasmuch as only a subarea (DIAL=NO) connection is defined, there is no need to define a corresponding switched major node.

```
***********************************************************************
*
*  NAME:     XCA1AS  (XCA MAJOR NODE FOR HOST 1A, SLOT 1 ON 3172,
*                     SAP 4 RESERVED FOR SNA)
*
*  USE:      ALL LINES ARE LEASED AND ARE DEFINED FOR
*            TYPE 5 TO TYPE 5 SNA CONNECTIONS.
*
*            TO ESTABLISH AS SNA LEASED CONNECTION, FOLLOW THE
*            FOLLOWING STEPS ON BOTH LOCAL AND REMOTE HOSTS:
*
*              1) ACT XCA_MAJOR_NODE, SCOPE=ONLY
*              2) ACT LEASED_LINE AND PU TO DESTINATION HOST
*                 (EG. ACT LN1A2AS AND ACT P1A2AS FOR SNA
*                  CONNECTION TO HOST 2A)
*
***********************************************************************
XCA1AS   VBUILD  TYPE=XCA
PORT1AS  PORT    MEDIUM=BUS,ADAPNO=1,SAPADDR=4,CUADDR=500,TIMER=254
GP1AS    GROUP   DIAL=NO,ISTATUS=INACTIVE
*
LN1A2AS  LINE    USER=SNA
P1A2AS   PU      MACADDR=004A11111111,PUTYPE=5,SUBAREA=2,TGN=1,       X
                 SAPADDR=4
*
LN1A7BS  LINE    USER=SNA
P1A7BS   PU      MACADDR=007B11111111,PUTYPE=5,SUBAREA=7,TGN=1,       X
                 SAPADDR=4
*
LN1A9CS  LINE    USER=SNA
P1A9CS   PU      MACADDR=009C11111111,PUTYPE=5,SUBAREA=9,TGN=1,       X
                 SAPADDR=4
*
LN1AAAS  LINE    USER=SNA
P1AAAS   PU      MACADDR=00AA11111111,PUTYPE=5,SUBAREA=10,TGN=1,      X
                 SAPADDR=4
*
LN1ABAS  LINE    USER=SNA
P1ABAS   PU      MACADDR=00BA11111111,PUTYPE=5,SUBAREA=11,TGN=1,      X
                 SAPADDR=4
*
LN1ACAS  LINE    USER=SNA
P1ACAS   PU      MACADDR=00CA11111111,PUTYPE=5,SUBAREA=12,TGN=1,      X
                 SAPADDR=4
*
*LN1ADAS  LINE    USER=SNA
*P1ADAS   PU      MACADDR=00DA11111111,PUTYPE=5,SUBAREA=13,TGN=1,     X
*                 SAPADDR=4
*
*LN1AEAS  LINE    USER=SNA
*P1AEAS   PU      MACADDR=00EA11111111,PUTYPE=5,SUBAREA=14,TGN=1,     X
*                 SAPADDR=4
```

```
*
```

```
***********************************************************************
*  NAME:     XCA2AS  (XCA MAJOR NODE FOR HOST 2A, SLOT 1 ON 3172,
*                     SAP 4 RESERVED FOR SNA)
*
*  USE:      ALL LINES ARE LEASED AND ARE DEFINED FOR
*            TYPE 5 TO TYPE 5 SNA CONNECTIONS.
*
*            TO ESTABLISH AS SNA LEASED CONNECTION, FOLLOW THE
*            FOLLOWING STEPS ON BOTH LOCAL AND REMOTE HOSTS:
*
*              1) ACT XCA_MAJOR_NODE, SCOPE=ONLY
*              2) ACT LEASED_LINE AND PU TO DESTINATION HOST
*                 (EG. ACT LN2A1AS AND ACT P2A1AS FOR SNA
*                  CONNECTION TO HOST 1A)
***********************************************************************
XCA2AS   VBUILD  TYPE=XCA
PORT2AS  PORT    MEDIUM=BUS,ADAPNO=1,SAPADDR=4,CUADDR=590,TIMER=254
GP2AS    GROUP   DIAL=NO,ISTATUS=INACTIVE
*
LN2A1AS  LINE    USER=SNA
P2A1AS   PU      MACADDR=003A11111111,PUTYPE=5,SUBAREA=1,TGN=1,        X
                 SAPADDR=4
*
LN2A7BS  LINE    USER=SNA
P2A7BS   PU      MACADDR=007B11111111,PUTYPE=5,SUBAREA=7,TGN=1,        X
                 SAPADDR=4
*
LN2A9CS  LINE    USER=SNA
P2A9CS   PU      MACADDR=009C11111111,PUTYPE=5,SUBAREA=9,TGN=1,        X
                 SAPADDR=4
*
LN2AAAS  LINE    USER=SNA
P2AAAS   PU      MACADDR=00AA11111111,PUTYPE=5,SUBAREA=10,TGN=1,       X
                 SAPADDR=4
*
LN2ABAS  LINE    USER=SNA
P2ABAS   PU      MACADDR=00BA11111111,PUTYPE=5,SUBAREA=11,TGN=1,       X
                 SAPADDR=4
*
LN2ACAS  LINE    USER=SNA
P2ACAS   PU      MACADDR=00CA11111111,PUTYPE=5,SUBAREA=12,TGN=1,       X
                 SAPADDR=4
*
```

6.6 External Communication Adapter Connection to FDDI LAN

The following is a sample external communication adapter major node defining a connection from VTAM to a FDDI LAN through a 3172 interconnect controller. GROUP GP2FC1 defines a peripheral (DIAL=YES) connection, while GROUP GP5FC1 defines a subarea (DIAL=NO) connection. A corresponding switched major node that defines GRPNM=GP2FC1 on the PATH definition statement must also be defined for the peripheral connection.

MVS,VM USER=VCNS on the LINE definition statement indicates that VTAM Common Network Services (VCNS) uses the line.

```
XFDBC0   VBUILD  TYPE=XCA
PORTFC   PORT    MEDIUM=FDDI,ADAPNO=0,SAPADDR=4,CUADDR=BC0
**
GP2FC1   GROUP   DIAL=YES,ISTATUS=INACTIVE,ANSWER=ON,CALL=INOUT
L2FC11   LINE
P2FC11   PU
*
L2FC12   LINE
P2FC12   PU
*
L2FC13   LINE
P2FC13   PU
**
GP5FC1   GROUP   DIAL=NO
L5FC11   LINE    USER=SNA,ISTATUS=INACTIVE
P5FC11   PU      ISTATUS=INACTIVE,MACADDR=400007777787,PUTYPE=5,       X
                 SUBAREA=02,TGN=1,SAPADDR=4
*
L5FC12   LINE    USER=VCNS,ISTATUS=INACTIVE
```

6.7 External Communication Adapter Connection to CSMA/CD 802.3 LAN

You can code an external communication adapter major node to define a connection from VTAM to a CSMA/CD 802.3 local area network through a 3172 interconnect controller. Figure 13 shows a multiple-domain XCA configuration with a CSMA/CD 802.3 local area network and two 3172 interconnect controllers.

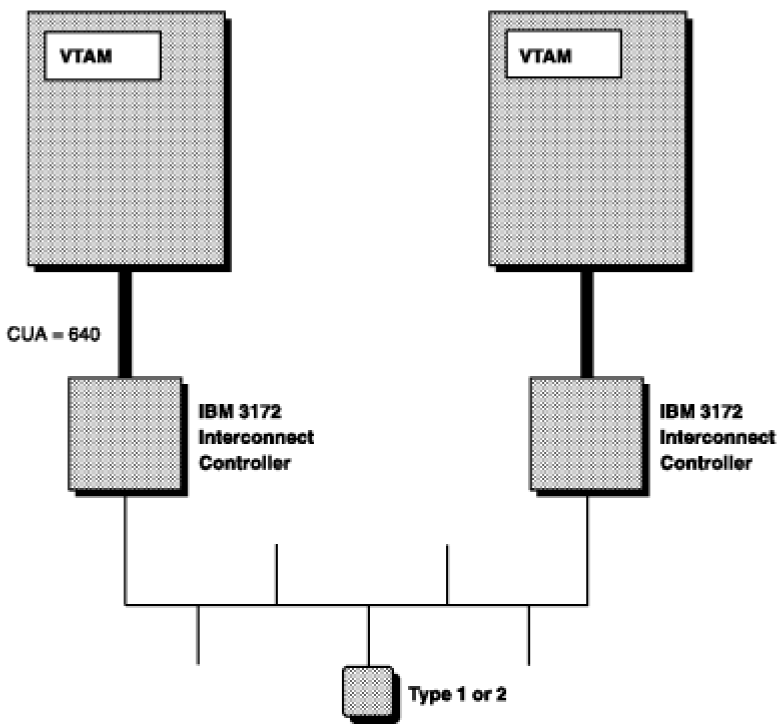

Figure 13. XCA Multiple-Domain Configuration with CSMA/CD 802.3

In the sample external communications adapter major node for one of the two 3172 connections depicted, GROUP GP1C21 defines a peripheral (DIAL=YES) connection, while GROUP GP1C22 defines a subarea (DIAL=NO) connection. A corresponding switched major node that defines GRPNM=GP1C21 on the PATH definition statement must also be defined for the peripheral connection.

MVS,VM USER=VCNS on the LINE definition statement indicates that VTAM Common Network Services (VCNS) uses the line.

```
LMNBC0   VBUILD  TYPE=XCA
PORT1C2  PORT    MEDIUM=CSMACD,ADAPNO=0,SAPADDR=4,CUADDR=BC0
GP1C21   GROUP   DIAL=YES,ANSWER=ON,ISTATUS=INACTIVE,CALL=INOUT
L1C211   LINE
P1C211   PU
L1C212   LINE
P1C212   PU
L1C213   LINE
P1C213   PU
L1C214   LINE
P1C214   PU
*
GP1C22   GROUP   DIAL=NO
L1C221   LINE    USER=SNA,ISTATUS=INACTIVE
P1C221   PU      ISTATUS=INACTIVE,MACADDR=40000EEEE137,PUTYPE=5,       X
               SUBAREA=02,TGN=255,SAPADDR=4
L1CV11   LINE    USER=VCNS,ISTATUS=INACTIVE
```

For more information on attaching a CSMA/CD 802.3 local area network through a 3172 interconnect controller, see "VTAM-to-VTAM XCA Connections" in the *VTAM Network Implementation Guide*.

IBM Library Server

6.8 CP-CP Sessions through 3172-attached Token-Bus LAN

A 3172 connection can be used to establish CP-CP sessions between two network nodes, or between a network node and an end node. The following example shows how to establish CP-CP sessions between two network nodes across a 3172-attached token-bus LAN.

The resource definitions needed are as follows:

- An XCA major node for the token-bus LAN is coded in each of the two VTAM network nodes.
- An XCA major node for the PU in the 3172 Interconnect Controller is coded in each of the two VTAM network nodes (for network management).
- A switched major node for the PU in the 3172 Interconnect Controller is coded in each of the two VTAM network nodes (for network management).
- If both network nodes must be able to perform switched call-out operations, a switched major node for the token bus is required in both network nodes.

The sample XCA major nodes for the token-bus LAN are shown below. See "CP-CP Sessions through 3172-Attached Token-Bus LAN" for the corresponding switched major nodes for the token-bus LAN.

Subtopics:

6.8.1 XCA Major Node for Token-Bus LAN in Network Node SSCP1A

```
**********************************************************************
*  NAME:     XCA1A  (XCA MAJOR NODE FOR HOST 1A, SLOT 1 ON 3172)
*
*  USE:      ALL SWITCHED LINES SHOULD BE USED IN CONJUNCTION
*            WITH SWITCHED MAJOR NODE SWXCA1A. THE SWITCHED
*            PU'S IN SWXCA1A ARE DEFINED FOR APPN CONNECTIONS.
*
*            TO ESTABLISH A FID2 APPN CONNECTION (WHICH APPEARS TO
*            BE A SWITCHED CONNECTION TO VTAM), PERFORM THE
*            FOLLOWING STEPS ON BOTH LOCAL AND REMOTE HOSTS:
*
*              1) ACT XCA_MAJOR_NODE, SCOPE=ONLY
*              2) ACT LOGICAL_XCA_LINE TO DESTINATION HOST
*                 (EG. ACT LN1A2A FOR CONNECTION TO HOST 2A)
*              3) ACT SW_MAJOR_NODE, SCOPE=ONLY
*                 (EG. ACT SWXCA1A DEFINED FOR HOST 1A)
*              4) ACT CORRESPONDING_SW_PU TO DESTINATION HOST
*                 (EG. ACT SW1A2A FOR CONNECTION TO HOST 2A)
*              5) DIAL THE CORRESPONDING_SW_PU FROM EITHER HOST
**********************************************************************
XCA1A    VBUILD  TYPE=XCA
PORT1A   PORT    MEDIUM=BUS,ADAPNO=1,SAPADDR=4,CUADDR=500,TIMER=254
GP1A2A   GROUP   DIAL=YES,ANSWER=ON,ISTATUS=INACTIVE,CALL=INOUT
LN1A2A   LINE
P1A2A    PU
```

6.8.2 XCA Major Node for Token-Bus LAN in Network Node SSCP2A

```
***********************************************************************
*  NAME:     XCA2A  (XCA MAJOR NODE FOR HOST 2A, SLOT 1 ON 3172)
*
*  USE:      ALL SWITCHED LINES SHOULD BE USED IN CONJUNCTION
*            WITH SWITCHED MAJOR NODE SWXCA2A. THE SWITCHED
*            PU'S IN SWXCA2A ARE DEFINED FOR APPN CONNECTIONS.
*
*            TO ESTABLISH A FID2 APPN CONNECTION (WHICH APPEARS TO
*            BE A SWITCHED CONNECTION TO VTAM), PERFORM THE
*            FOLLOWING STEPS ON BOTH LOCAL AND REMOTE HOSTS:
*
*              1) ACT XCA_MAJOR_NODE, SCOPE=ONLY
*              2) ACT LOGICAL_XCA_LINE TO DESTINATION HOST
*                 (EG. ACT LN2A1A FOR CONNECTION TO HOST 1A)
*              3) ACT SW_MAJOR_NODE, SCOPE=ONLY
*                 (EG. ACT SWXCA2A DEFINED FOR HOST 2A)
*              4) ACT CORRESPONDING_SW_PU TO DESTINATION HOST
*                 (EG. ACT SW2A1A FOR CONNECTION TO HOST 1A)
*              5) DIAL THE CORRESPONDING_SW_PU FROM EITHER HOST
***********************************************************************
XCA2A    VBUILD  TYPE=XCA
PORT2A   PORT    MEDIUM=BUS,ADAPNO=1,SAPADDR=4,CUADDR=590,TIMER=254
GP2A1A   GROUP   DIAL=YES,ANSWER=ON,ISTATUS=INACTIVE,CALL=INOUT
LN2A1A   LINE
P2A1A    PU
```

6.9 Connecting to a Connection Network over a Token Ring

A connection network is a representation of a shared access transport facility (SATF), such as a local area network (LAN), that enables nodes identifying their connectivity to the SATF by a common virtual routing node to communicate without having individually defined connections to one another. The 3172 interconnect controller can be used to connect a VTAM network node or end node to a connection network, as shown in Figure 14.

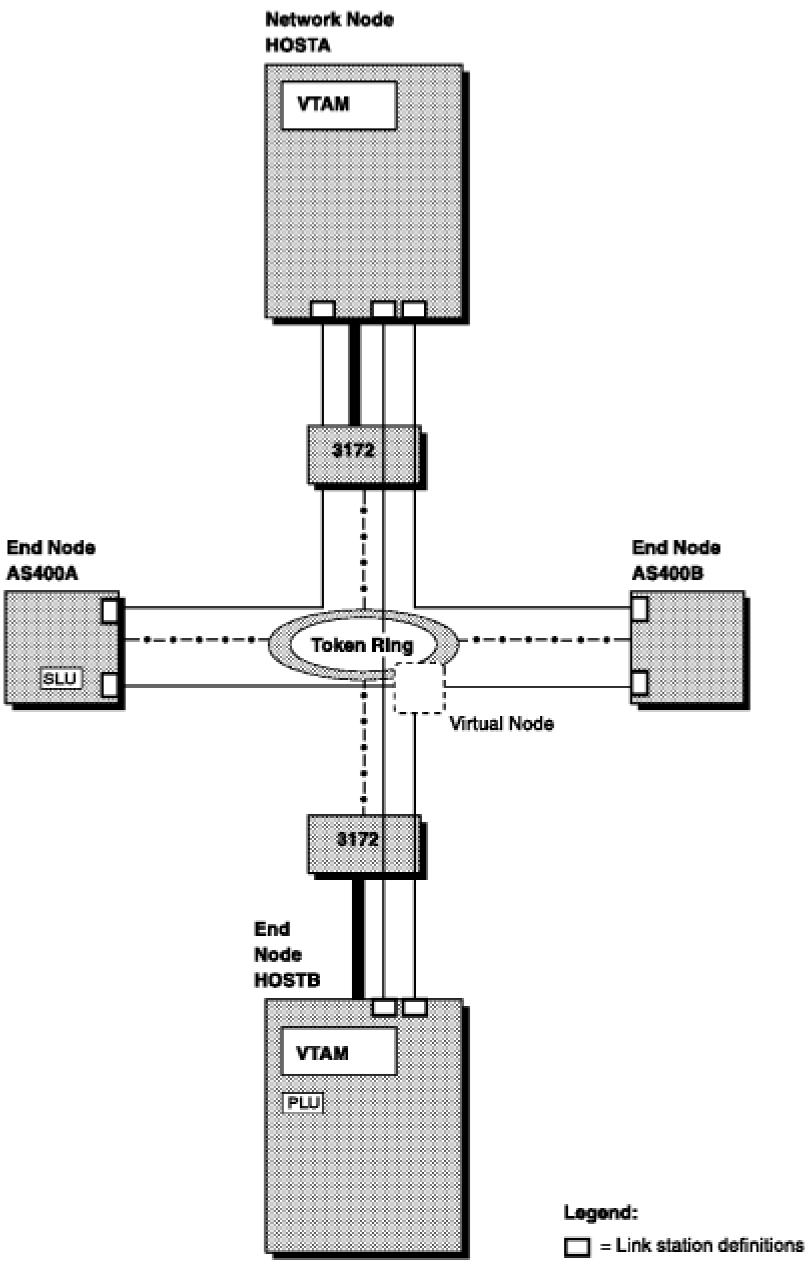

Figure 14. VTAM Attachment to a Connection Network through a 3172

An XCA major node is used to define this connection. The two XCA major nodes shown below define a total of two 3172 token ring connections.

Operands on the PORT definition statement are used to specify a connection to a connection network. VNNAME=CN3172 specifies the CPNAME for the connection network. VNGROUP=GP1RC0 specifies the name of the GROUP containing dial-out links available for use on the connection network named on the VNNAME operand. DYNPU=YES is the default when VNNAME and VNGROUP are coded on the PORT statement. DIAL=YES is required on the GROUP named on the VNGROUP operand. **MVS,VM** SECURITY=UNSECURE indicates there is no security level for the transmission group.

If it had been coded, the TGP operand of the PORT definition statement would have specified the name of a transmission group profile definition used for the connection network. Since it was not coded in this case, the default TG profile definition is used. VTAM therefore uses the token ring profile provided by IBM, since MEDIUM=RING. See *VTAM V4R2 Resource Definition Reference*, for the values specified by the IBM-supplied APPN transmission group profile definitions.

If CP-CP sessions are desired between two nodes on the connection network, you must define a switched major node at the calling node. This switched major node should define a PU for any node on the connection network that the calling-out node is to call. Since DYNPU=YES is enforced automatically when a session is established through the connection network, it is not necessary for DYNPU=YES to be coded by the called nodes. DYNPUPFX=U3 indicates that "U3" will be the first two characters assigned to the PU name when a dynamically generated PU is created.

For more information on defining connections to connection networks through the 3172 interconnect controller, see "Connection Network" in the *VTAM Network Implementation Guide*.

```
*  =====> BEGINNING OF DATA SET XB1RBC6A
**********************************************************************
*   XB1RBC6  - VTAM 3172 XCA Major Node                              *
**********************************************************************
XTRBC6   VBUILD  TYPE=XCA         ** EXTERNAL COMMUNICATION ADAPTER **
PORTR6   PORT    MEDIUM=RING,     ** LAN TYPE                       ** X
                 ADAPNO=0,        ** 3172 RELATIVE ADAPTER NUMBER   ** X
                 SAPADDR=8,       ** SERVICE ACCESS POINT ADDRESS   ** X
                 CUADDR=BC6,      ** CHANNEL UNIT ADDRESS           ** X
                 TIMER=90,        ** CHANNEL ACTIVATE RESP TIME     ** X
                 CAPACITY=8K,     ** TG LINK CAPACITY (BITS PER SEC)** X
                 COSTBYTE=0,      ** TG COST PER BYTE TRANSMITTED   ** X
                 COSTTIME=0,      ** TG COST PER UNIT OF TIME       ** X
                 PDELAY=TERRESTR, ** TG MAXIMUM PROPAGATION DELAY   ** X
                 SECURITY=UNSECURE, ** TG SECURITY LEVEL            ** X
                 VNNAME=CN3172,   ** CPNAME OF CONNECTION NETWORK   ** X
                 VNGROUP=GP1RC0   ** NAME OF GROUP FOR CONN. NETWORK**
**
GP1RC0   GROUP   DIAL=YES,                                             X
                 ISTATUS=INACTIVE,                                     X
                 ANSWER=ON,                                            X
                 CALL=INOUT,                                           X
                 DYNPU=YES,                                            X
                 DYNPUPFX=U3
L1RC01   LINE
P1RC01   PU
L1RC02   LINE
P1RC02   PU
L1RC03   LINE
```

```
P1RC03   PU
L1RC04   LINE
P1RC04   PU
L1RC05   LINE
P1RC05   PU
**********************************************************************
*  =====> END OF DATA SET XB1RBC6A
```

```
*  =====> BEGINNING OF DATA SET X01RBC4B
**********************************************************************
*   X01RBC4  - VTAM 3172 XCA Major Node                              *
**********************************************************************
XTRBC4   VBUILD  TYPE=XCA         ** EXTERNAL COMMUNICATION ADAPTER **
PORTR4   PORT    MEDIUM=RING,     ** LAN TYPE                       ** X
                 ADAPNO=0,        ** 3172 RELATIVE ADAPTER NUMBER   ** X
                 SAPADDR=4,       ** SERVICE ACCESS POINT ADDRESS   ** X
                 CUADDR=BC4,      ** CHANNEL UNIT ADDRESS           ** X
                 TIMER=90,        ** CHANNEL ACTIVATE RESP TIME     ** X
                 VNNAME=CN3172,   ** CPNAME OF CONNECTION NETWORK   ** X
                 VNGROUP=GP1RC0   ** NAME OF GROUP FOR CONN. NETWORK**
**
GP1RC0   GROUP   DIAL=YES,                                             X
                 ISTATUS=INACTIVE,                                     X
                 ANSWER=ON,                                            X
                 CALL=INOUT,                                           X
                 DYNPU=YES,                                            X
                 DYNPUPFX=U4,                                          X
                 AUTOGEN=(6,L,P)
L1RC01   LINE
P1RC01   PU
L1RC02   LINE
P1RC02   PU
L1RC03   LINE
P1RC03   PU
L1RC04   LINE
P1RC04   PU
L1RC05   LINE
P1RC05   PU
*  =====> END OF DATA SET X01RBC4B
```

IBM Library Server

6.10 Automatic Generation of Lines and Physical Units

You can code the AUTOGEN operand on the GROUP definition statement of local area network (LAN) and external communication adapter major nodes where DIAL=YES has been specified. This function enables the VTAM program to automatically generate lines and physical units for that major node. Therefore, you do not have to code lines and PUs explicitly.

The following definitions were extracted from the sample "XCA Major Node for Host A500 (Token-Ring LAN)." The device address is specified on the CUADDR operand of the PORT definition statement. Here, CUADDR=BE0.

The AUTOGEN operand is specified as (3,L,P), where:

- 3 is a decimal value specifying the number of lines and PUs to be generated automatically by VTAM.
- L is a user-supplied character used in generated line names.
- P is a user-supplied character used in generated physical unit names.

DIAL=YES on the GROUP definition statement is required for automatic generation of lines and physical units.

```
***********************************************************************
* X50BBE0 - VTAM EXTERNAL COMMUNICATION ADAPTER MAJNOD - MDH A500    *
***********************************************************************
*   3172 XCA MAJOR NODE FOR HOST A500N
***********************************************************************
XTBBE0   VBUILD TYPE=XCA            ** EXTERNAL COMMUNICATION ADAPT**
PORTBE   PORT   ADAPNO=0,           ** 3172 RELATIVE ADAPTER NUMBER** X
                CUADDR=BE0,         ** CHANNEL UNIT ADDRESS        ** X
                MEDIUM=RING,        ** LAN TYPE                    ** X
                SAPADDR=8,          ** SERVICE ACCESS POINT ADDRESS** X
                TIMER=90            ** CHANNEL ACTIVATE RESP TIME  **
GP1BE1   GROUP  ANSWER=ON,          ** PU DIAL INTO VTAM CAPABILITY** X
                AUTOGEN=(3,L,P),    ** AUTO GENERATE LINES AND PUS ** X
                CALL=INOUT,         ** IN/OUT CALLING CAPABILITY   ** X
                DIAL=YES,           ** SWITCHED CONNECTION         ** X
                ISTATUS=INACTIVE    ** INITIAL ACTIVATION STATUS   **
************************************************************************
```

The three lines generated by VTAM will have line names L0BE0000, L0BE0001, and L0BE0002, where:

- L is the user-supplied character specified in the AUTOGEN operand.
- 0BE0 is the device address, as specified on the CUADDR operand.
- 000, 001, and 002 are sequential hexadecimal numbers assigned by VTAM.

The two physical units generated by VTAM will have PU names P0BE0000, P0BE0001, and P0BE0002, where:

- P is the user-supplied character specified in the AUTOGEN operand.
- 0BE0 is the device address, as specified on the CUADDR operand.
- 000, 001, and 002 are sequential hexadecimal numbers assigned by VTAM.

For more information on the AUTOGEN operand, refer to "AUTOGEN" in the *VTAM Resource Definition Reference*.

IBM Library Server

7.0 Chapter 7. LAN Major Node (VM, VSE)

Subtopics:

IBM Library Server

7.1 About This Chapter

This chapter describes sample LAN major node definitions.

A local area network (LAN) major node defines a LAN attached through an integrated communication adapter (ICA).

7.2 LAN Major Node for Subarea Nodes

The following processors are defined to VTAM by the LINE and PU definition statements:

- A processor with an IBM Token-Ring Subsystem Controller
- A processor with a multi-protocol communication subsystem
- A 37x5 running NCP/Token-Ring interconnection attached to the token ring.

The LINE and PU definition statements must be specified as pairs in a nonswitched line group with a GROUP statement.

To define a LAN major node for subarea nodes, code the following definition statements:

- VBUILD
- PORT
- GROUP
- LINE
- PU.

TYPE=LAN on the VBUILD definition statement indicates that this is a local area network (LAN) major node.

The PORT definition statement identifies the connection between VTAM and a LAN.

On the PORT definition statement:

- CUADDR is the device address of the attached LAN.
- LANCON indicates a timer value and retry count for retransmissions.
- MACADDR is the MAC address for the connection to the LAN.
- SAPADDR is the SAP address for the connection to the LAN.

The values of the MACADDR, SAPADDR, and CUADDR operands are used to route information between the LAN and VTAM. When information flows from the LAN up to VTAM, the MACADDR operand is used to route the information to the subsystem.

On the GROUP definition statement, code DIAL=NO (required for subarea node connection).

You must code a LINE definition statement for each processor or 37x5 on the token ring.
The LINE definition statement defines the following resources:

- Each peer processor on the token ring
- The name of the line
- Procedural options to be used for this line.

You must code a PU definition statement for each processor or 37x5 with which VTAM communicates over this token ring. On the PU definition statement:

- LANACK specifies the acknowledgement delay timer and number of I-LPDUs received prior to sending an acknowledgement.
- LANCON indicates a timer value and retry count for retransmissions.
- LANINACT specifies the timer inactivity value.
- LANRESP specifies the timer and retry count for a station in a connected state.
- LANSDWDW specifies the send window and the window step.

```
*  =====> BEGINNING OF DATA SET LAN1
**********************************************************************
*  NAME:     LAN1
*  USE:      LAN MAJOR NODE FOR VTAM-TO-VTAM CONNECTION
**********************************************************************
LAN1     VBUILD TYPE=LAN              **  LAN MAJOR NODE
PORT1    PORT  CUADDR=840,            **  LAN CHANNEL UNIT ADDRESS       X
               LANCON=(10.1,3),       **  LAN CONNECTION VALUES          X
               MACADDR=00000031,      **  LAN MEDIUM ACCESS CTL ADDR     X
               MAXDATA=2012,          **  LAN MAXIMUM DATA LENGTH        X
               MAXSTN=8,              **  LAN MAXIMUM STATIONS           X


 .
 .
 .
               SAPADDR=4              **  LAN SERVICE ACCESS POINT ADDR
GP1LAN   GROUP DIAL=NO,               **  LEASED (PEER 9000 SERIES)      X
               ISTATUS=INACTIVE
LN1LAN   LINE
PU1LAN   PU    ISTATUS=ACTIVE,                                           X
               LANACK=(5.0,2),        **  LAN ACKNOWLEDGMENT VALUES      X
               LANCON=(10.0,5),       **  LAN CONNECTION VALUES          X
               LANINACT=25.5,         **  LAN INACTIVITY VALUE           X
               LANRESP=(25.4,9),      **  LAN RESPONSE VALUES            X
               LANSDWDW=(7,1),        **  LAN WINDOWING VALUES           X
               MACADDR=400000000032, *  LAN MEDIUM ACCESS CTL ADDR     X


 .
 .
 .
               SAPADDR=4              **  LAN SERVICE ACCESS POINT ADDR
*  =====> END OF DATA SET LAN1
```

7.3 LAN Major Node for Peripheral Nodes

To define physical resources on a local area network, code a LAN major node. Code a switched major node to define the logical connections over a token ring. To define a LAN major node for peripheral nodes, code the following
definition statements:

VBUILD
PORT
GROUP
LINE
PU.

A peripheral node attached to the token ring is defined to VTAM by the LINE and PU definition statements. The LINE and PU definition statements must be specified in pairs in a switched line group with a GROUP definition statement.

TYPE=LAN on the VBUILD definition statement indicates that this is an external communication adapter major node. One VBUILD definition statement is needed for each LAN, but it can contain different link groups. Each link group has a unique GROUP definition statement.

The PORT definition statement identifies the connection between VTAM and a LAN. On the PORT definition statement:

- CUADDR is the device address of the attached LAN.
- MACADDR is the MAC address for the connection to the LAN.
- SAPADDR is the SAP address for the connection to the LAN.

The values of the MACADDR, SAPADDR, and CUADDR operands are used to route information between the LAN and VTAM.

When information flows from the LAN up to VTAM, the MACADDR operand is used to route the information to the subsystem.

On the GROUP definition statement, code DIAL=YES (required for peripheral node connection).

For each switched line, code a LINE definition statement for the line and a PU definition statement for each peripheral node with which VTAM will communicate over that line.

The following sample shows a LAN major node:

```
*  =====> BEGINNING OF DATA SET LAN2
***********************************************************************
```

```
*   NAME:     LAN2
*   USE:      LAN MAJOR NODE DEFINITION PERIPHERAL NODE CONNECTION
**********************************************************************
LAN2     VBUILD TYPE=LAN             **  LAN MAJOR NODE
PORT2    PORT   CUADDR=840,          **  LAN CHANNEL UNIT ADDRESS      X
                LANCON=(10.1,3),     **  LAN CONNECTION VALUES         X
                MACADDR=00000031,    **  LAN MEDIUM ACCESS CTL ADDR    X
                MAXDATA=2012,        **  LAN MAXIMUM DATA LENGTH       X
                MAXSTN=8,            **  LAN MAXIMUM STATIONS          X


.
.
.
                SAPADDR=4            **  LAN SERVICE ACCESS POINT ADDR
GP2LAN   GROUP  DIAL=YES,            **  SWITCHED ATTACHMENT           X
                ISTATUS=INACTIVE,                                      X
                LNCTL=SDLC           **  APPEAR TO VTAM AS SDLC LINES
LN1001   LINE   CALL=INOUT           **  INCOMING/OUTGOING CALLS
PU1001   PU
LN1002   LINE   CALL=INOUT           **  INCOMING/OUTGOING CALLS
PU1002   PU
*
*   =====> END OF DATA SET LAN2
```

For the corresponding Switched major node, see "Switched Major Node for LAN Peripheral Connection (VM, VSE)."

IBM Library Server

7.4 Connecting to a Connection Network over an ICA Token-Ring

To define an ICA token ring connection to a connection network, code the following in the LAN major node:

VNNAME and VNGROUP operands on the PORT definition statement. The VNGROUP operand specifies the GROUP in this major node containing the lines for the virtual node named on the VNNAME operand.

Note: DYNPU=YES is the default when VNNAME and VNGROUP are coded. DIAL=YES is required on the GROUP named on the VNGROUP operand.

For more information on defining connections to connection networks, see "Connection Network" in the *VTAM Network Implementation Guide*.

```
*   =====> BEGINNING OF DATA SET A01LAN
**********************************************************************
*   NAME:     A01LAN
*   USE:      LAN MAJOR NODE DEFINITION FOR SUBAREA 1
**********************************************************************
A01LAN   VBUILD TYPE=LAN
PORTA01  PORT   CUADDR=B00,LANCON=(25.5,5),MACADDR=400000092211,        X
                MAXDATA=2012,MAXSTN=9,SAPADDR=4,                        X
                VNNAME=NETA.VN1,VNGROUP=GP1AVN
*
GP1AVN   GROUP DIAL=YES,ANSWER=ON,ISTATUS=INACTIVE,CALL=INOUT
LN1AVN   LINE
P1AVN    PU
*
*   =====> END OF DATA SET A01LAN
```

8.0 Chapter 8. Local Non-SNA Major Node

Subtopics:

8.1 About This Chapter

This chapter describes sample local non-SNA major node definitions.

The local non-SNA major node defines a set of channel-attached (local) non-SNA terminals (printers or display stations). Each minor node represents a non-SNA terminal. The only valid non-SNA terminals are 3277, 3284, and 3286 devices.

To define a local non-SNA major node, code an LBUILD definition statement followed by one or more LOCAL definition statements, where the LOCAL definition statement defines a channel-attached non-SNA terminal. LOCAL specifies the 3-digit or 4-digit (MVS) hexadecimal channel unit address used for the channel-attached terminal, the terminal type (3277, 3284, or 3286), and other information about the terminal. Do not code a PU definition statement and do not code a definition statement for the non-SNA cluster controller (3272 or compatible device) to which the terminal is attached.

Note: **MVS** A local non-SNA terminal should not be defined to and activated by VTAM if its channel unit address is defined as an MVS console and allocated to console services. Activating a local non-SNA terminal whose channel unit address is in use by console services can cause VTAM, console services, or both to abend.

For more information about local non-SNA definitions, see the *VTAM Network Implementation Guide*.

8.2 Sample Local Non-SNA Major Node Definition

Following is an example of a a local non-SNA major node. The CUADDR operand defines the channel unit address of the non-SNA terminal. The TERM operand specifies the terminal type.

Resource registration places information about the location of resources in a directory services database. This registration reduces broadcast searches by ensuring that a resource will be found in the directory services database. Resources can be registered to a directory database on a network node server and/or to a central directory server.

For APPN, the REGISTER operand specifies how the local non-SNA resource should be registered.

REGISTER=NETSRVR
: An end node resource should be registered to its network node server, but central directory registration should not be requested for it (the default).

REGISTER=CDSERVR
: An end node resource should be registered to its network node server and central directory resource registration is requested for it. A network node resource is registered at the central directory server.

REGISTER=NO
: An end node resource should not be registered.

The sample local non-SNA major node below illustrates how the REGISTER operand can be used.

```
**********************************************************************
*   LOCAL DEFINITION DECK FOR BISYNC LU                              *
**********************************************************************
         LBUILD
L3270A   LOCAL TERM=3277,CUADDR=3E0,ISTATUS=(INACTIVE),                X
               FEATUR2=(MODEL2,SELPEN),REGISTER=NO,                    X
               USSTAB=USSTABFV,MODETAB=MODETAB3,                       X
               LOGTAB=USSINTAB
L3270B   LOCAL TERM=3277,CUADDR=3E1,ISTATUS=(INACTIVE),                X
               FEATUR2=(MODEL2,SELPEN),REGISTER=NETSRVR,               X
               USSTAB=USSTABFV,MODETAB=MODETAB3,                       X
               LOGTAB=USSINTAB
*
L3270C   LOCAL TERM=3277,CUADDR=3E3,ISTATUS=(INACTIVE),                X
               FEATUR2=(MODEL2,SELPEN),REGISTER=CDSERVR,               X
               USSTAB=USSTABFV,MODETAB=MODETAB3,                       X
               LOGTAB=USSINTAB
*
```

```
L3270D   LOCAL TERM=3277,CUADDR=3E4,ISTATUS=(INACTIVE),               X
               FEATUR2=(MODEL2,SELPEN),                               X
               USSTAB=USSTABFV,MODETAB=MODETAB3,                      X
               LOGTAB=USSINTAB
L3270E   LOCAL TERM=3277,CUADDR=3E2,ISTATUS=(INACTIVE),               X
               FEATUR2=(MODEL2,SELPEN),                               X
               USSTAB=USSTABFV,                                       X
               LOGTAB=USSINTAB
L3284A  LOCAL  TERM=3284,CUADDR=3E5,ISTATUS=INACTIVE,                 X
               FEATUR2=(MODEL1),MODETAB=MODETAB3,                     X
               DLOGMOD=S3270
LTESTA   LOCAL TERM=3277,CUADDR=3E6,ISTATUS=(ACTIVE),                 X
               FEATUR2=(MODEL2,SELPEN),                               X
               USSTAB=USSTABFV,MODETAB=MODETAB3,                      X
               LOGTAB=USSINTAB
LTESTB   LOCAL TERM=3277,CUADDR=3E7,ISTATUS=(ACTIVE),                 X
               FEATUR2=(MODEL2,SELPEN),                               X
               USSTAB=USSTAB2,MODETAB=MODETAB3,                       X
               LOGTAB=INTTAB02
LTESTC   LOCAL TERM=3277,CUADDR=3E8,ISTATUS=(ACTIVE),                 X
               FEATUR2=(MODEL2,SELPEN),                               X
               USSTAB=USSTAB3,MODETAB=MODETAB3,                       X
               LOGTAB=INTTAB03
```

IBM Library Server

9.0 Chapter 9. Local SNA Major Node

Subtopics:

9.1 About This Chapter

This chapter describes sample local SNA major node definitions.

9.2 Type 2.1 Channel Connections Between APPN Nodes

Type 2.1 channel connections can be used to connect two network nodes, or a network node and an end node. The following example shows how to connect an NCP in a composite network node to a network node.

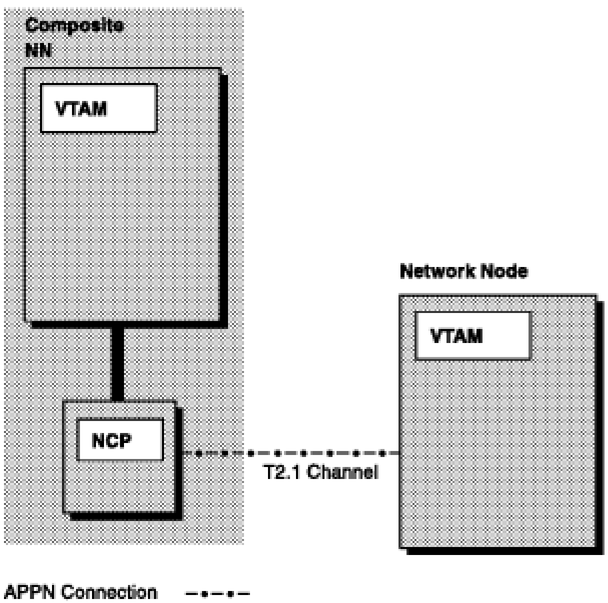

Figure 15. Type 2.1 Channel Connection between a Composite Network Node and a Network Node

To define this type of connection, you must define the following:

- Local SNA major node
- NCP major node.

The local SNA major node resides at the VTAM network node and the NCP major node resides at the VTAM host in the composite network node. Code PUTYPE=2 and XID=YES on the PU definition statement in the local SNA major node to define a peripheral type 2.1 node. Similarly, code PUTYPE=2 and XID=YES on the PU definition statement in the NCP major node to define a peripheral type 2.1 node.

To allow CP-CP sessions to be established between the two nodes, CONNTYPE=APPN and CPCP=YES must be specified on both of those PU definition statements, unless CONNTYPE=APPN and CPCP=YES have been specified as start options.

The CP-CP sessions are established through the NCP by activating the local

SNA major node from the network node and the line for the 2.1 channel from the VTAM composite node.

The following sample is taken from the local SNA major node for this connection. The corresponding NCP major node definition is found in "Type 2.1 Channel Connections between APPN Nodes."

```
***********************************************************************
* THE FOLLOWING IS A DEFINITION FOR CHANNEL ATTACHED PU 2.1.          *
* THE CONNECTION IS BETWEEN SUBAREAS 3 (NCP3AXX) AND A (SSCPAA)       *
***********************************************************************
LSNA3AA  VBUILD TYPE=LOCAL
LSNA3APA PU     PUTYPE=2,CUADDR=050,ISTATUS=INACTIVE,XID=YES,          X
               VPACING=0,SSCPFM=USSSCS,MAXBFRU=15,                    X
               CONNTYPE=APPN,CPCP=YES
```

Another sample local SNA major node for this type of configuration follows:

```
*  =====> BEGINNING OF DATA SET LCL011
***********************************************************************
*  LCL011 - LOCAL SNA MAJOR NODE FOR APPN (T2.1) CHANNEL ACTIVATION   *
*           FOR A500                                                  *
*  TO ESTABLISH CP-CP SESSIONS BETWEEN A500 AND A17 THROUGH NCP       *
*    A03NCP:                                                          *
*  - CHANGE THE CUADDR TO MATCH YOUR DEVICE ADDRESS AND ACTIVATE      *
*     LCL011 FROM A500                                                *
*  - FROM A17, ACTIVATE A03CP3 (LINE FOR CHANNEL ADDR 10 - PHYSICAL   *
*     PORT 3) ON A03NCP                                               *
***********************************************************************
CA1      VBUILD TYPE=LOCAL     ** LOCAL SNA MAJOR NODE               **
PUCA1    PU     CUADDR=9B9,    ** DEVICE ADDRESS                     **X
               CONNTYPE=APPN,  ** CONNECTION TYPE                    **X
               CPCP=YES,       ** CP-CP SESSION SUPPORT              **X
               DYNLU=YES,      ** DYNAMIC ALLOCATION OF CDRSCS       **X
               ISTATUS=ACTIVE, ** INITIAL ACTIVATION STATUS          **X
               MAXBFRU=15,     ** NUMBER OF BUFFER UNITS             **X
               PUTYPE=2,       ** PHYSICAL UNIT TYPE                 **X
               SSCPFM=USSSCS,  ** RU TYPES SUPPORTED                 **X
               VPACING=0,      ** VTAM PACING                        **X
               XID=YES         ** CHANNEL CONTACT PROCEDURE          **
*  =====> END OF DATA SET LCL011
```

IBM Library Server

9.3 APPN Host-to-Host Channel Connection

APPN host-to-host channel connections enable two VTAMs to communicate using APPN protocols over MPC connections, as illustrated in Figure 32.

To allow two VTAMs to communicate using APPN protocols over MPC connections, each VTAM must, in addition to defining a transport resource list (TRL) major node (see Chapter 16, "Transport Resource List Major Node"), define the channel connection to the adjacent VTAM as an APPN PU using the PU definition statement with the TRLE operand in a local SNA major node.

The PU definition statement defines the channel connection and the adjacent VTAM as an APPN PU. The TRLE operand identifies a transport resource list element (TRLE) as defined in the TRL major node. The TRLE contains transport characteristics of the PU.

The following sample local SNA major nodes show transport resource list element (TRLE) definitions for the two hosts in Figure 32. For example, TRLE=MPC1 in A11HHC specifies in the corresponding TRL major node the name of the TRLE definition statement VTAM uses to route data over the channel. XID=YES specifies that a PU type 2.1 channel contact procedure is to be used. CONNTYPE=APPN and CPCP=YES indicates that CP-CP sessions are supported on this connection.

```
***********************************************************************
* Local SNA Major Node for A11N                                       *
***********************************************************************
*********************************************************************
*    NAME:   A11BFTG
*    USE:    APPN HOST TO HOST CHANNEL BF TG (LOCAL SNA MAJNODE)
*********************************************************************
A11HHC   VBUILD TYPE=LOCAL
A11HHCP1 PU     TRLE=MPC1,                                             *
               ISTATUS=INACTIVE,                                       X
               XID=YES,                                                X
               CONNTYPE=APPN,                                          X
               CPCP=YES
```

```
***********************************************************************
* Local SNA Major Node for A12N                                       *
***********************************************************************
```

```
**********************************************************************
*   NAME:  A12BFTG
*   USE:   APPN HOST TO HOST CHANNEL BF TG (LOCAL SNA MAJNODE)
**********************************************************************
A12HHC   VBUILD TYPE=LOCAL
A12HHCP1 PU     TRLE=MPC1,                                            X
                ISTATUS=INACTIVE,                                     X
                XID=YES,                                              X
                CONNTYPE=APPN,                                        X
                CPCP=YES
```

IBM Library Server

9.4 Selective Deactivation of Idle LU 6.2 Sessions

In the following sample used in the configuration depicted in Figure 4, Type 2.1 node B28CCNPU is defined as a limited resource (LIMRES=YES). That means that any LU 6.2 sessions that traverse B28CCNPU will be deactivated if no conversation is detected for the period of time specified on the LIMQSINT operand of the APPL definition statement.

For an example of a LIMQSINT definition, see "Defining LIMQSINT."

```
**********************************************************************
* LOCAL SNA MAJOR NODE FOR CHANNEL-ATTACHED TYPE 2.1 NODE            *
*     (FOR CHANNEL BETWEEN B128 AND NCP B75NCP)                      *
**********************************************************************
B28CCN   VBUILD TYPE=LOCAL
B28CCNPU PU    CUADDR=013,         ** PHYSICAL UNIT ADDRESS         ** X
               LIMRES=YES,         ** LIMITED RESOURCE              ** X
               ISTATUS=INACTIVE,   **                               ** X
               PUTYPE=2,           ** PU TYPE 2.1 OR 2.0            ** X
               XID=YES             ** XID=YES==>2.1  NO==>2.0       **
B75L341A LU    LOCADDR=0,MODETAB=AMODETAB
B75L341B LU    LOCADDR=0,MODETAB=AMODETAB
B75L342A LU    LOCADDR=0,MODETAB=AMODETAB
B75L342B LU    LOCADDR=0,MODETAB=AMODETAB
***********************************************************************
```

IBM Library Server

9.5 Dynamic Definition of Dependent LUs

Dependent logical units that are attached through an IBM 3174 control unit can be defined dynamically to a VTAM network when the device containing the logical units powers on, rather than during major node activation.

VTAM defines dependent logical units dynamically by using model logical unit definitions, rather than predefined definitions. The dynamically defined logical unit definitions are updated, if needed, each time the device containing the logical units powers on. You can use this function to add, change, or relocate dependent logical units from a VTAM network without reactivating the major node.

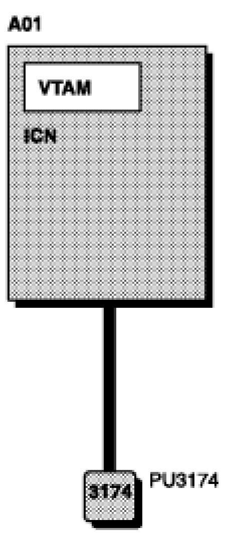

Figure 16. Dynamic Definition of Dependent LUs. Host A01 is an interchange node (ICN).

For more information on this function, including the process VTAM follows to dynamically define dependent logical units, refer to "Defining Dependent LUs Dynamically" in the *VTAM Network Implementation Guide*.

To enable dynamic definition of dependent logical units, you must code an LU group major node. The LU group major node defines one or more model LU groups, each of which contains a list of model LU definition statements. For a sample LU group major node, see Chapter 10, "LU Group Major Node."

In addition to coding an LU group major node, you must also code the LUGROUP operand on the PU definition statement for the 3174. If you use the SDDLU (selection of definitions for dependent LUs) exit routine, you must also code the LUSEED operand on the 3174's PU definition statement.

In the sample local SNA major node named A01LSNA the VBUILD definition statement identifies it as a local SNA major node (TYPE=LOCAL).

In the PU definition statement, PU3174 is the 3174's PU name.

LUGROUP specifies the name of the model LU group (LUGRP) that VTAM uses to select a model LU definition when dynamically defining a logical unit attached through this 3174.

LUSEED provides a pattern name (L3174### in this sample) that is used to create an LU name for the dynamically created LU definition statements.

```
*  =====> BEGINNING OF DATA SET A01LSNA
***********************************************************************
*  A01LSNA -  VTAM LOCAL SNA MAJOR NODE  -  LOCAL SNA 3174             *
***********************************************************************
* 3174 LOCAL SNA PU                                                    *
***********************************************************************
A01LSNA  VBUILD TYPE=LOCAL
PU3174   PU     CUADDR=7A0,        ** CHANNEL UNIT ADDRESS          ** X
                DLOGMOD=D4A32784,  ** DEFAULT LOGON MODE TABLE ENTRY ** X
                LUGROUP=LUGRP,     ** SDDLU GROUP - SEE A01LUGRP     ** X
                LUSEED=L3174###,   ** LU PATTERN NAME               ** X
                MAXBFRU=15,        ** RECEIVE DATA BUFFER SIZE      ** X
                USSTAB=AUSSTAB     ** USS TABLE NAME                **
*  =====> END OF DATA SET A01LSNA
```

IBM Library Server

9.6 Defining Subnetwork Boundaries

When the start option BN=YES is in effect, the operand NATIVE is used on the PU definition statement to specify whether this link station represents a connection to a native node. NATIVE=NO defines a subnetwork boundary between this node and the named adjacent CP, or between this node and the CP represented by the PU statement. NATIVE=NO must be used when both nodes have the same network ID, but a subnetwork boundary is desired. The NATIVE operand is required on only one side of a network or subnetwork boundary. For more information on the how the NATIVE operand is used in local SNA major nodes, see "Local SNA Major Node" in the *VTAM Resource Definition Reference*.

The following sample local SNA major node illustrates how specifying NATIVE=NO on a PU definition statement defines a subnetwork boundary between two nodes with the same network ID.

```
***********************************************************************
* THE FOLLOWING IS A DEFINITION FOR CHANNEL ATTACHED PU 2.1           *
***********************************************************************
LSNA3A2  VBUILD TYPE=LOCAL
LSNA3APU PU    PUTYPE=2,CUADDR=051,ISTATUS=INACTIVE,XID=YES,           X
               VPACING=0,SSCPFM=USSSCS,MAXBFRU=15,NATIVE=NO,           X
               CONNTYPE=APPN,CPCP=YES
APPL2    LU    LOCADDR=00,MODETAB=ISTINCLM,DLOGMOD=INTERACT
APPCAP06 LU    LOCADDR=00,MODETAB=ISTINCLM,DLOGMOD=INTERACT
L4A4956A LU    LOCADDR=00,MODETAB=ISTINCLM,DLOGMOD=D4A32781
L4A3767A LU    LOCADDR=00,MODETAB=ISTINCLM,DLOGMOD=D4A32782
ECHOB12  LU    LOCADDR=00,MODETAB=ISTINCLM,DLOGMOD=INTERACT
ECHOC12  LU    LOCADDR=00,MODETAB=ISTINCLM,DLOGMOD=INTERACT
L3270B   LU    LOCADDR=00,MODETAB=ISTINCLM,DLOGMOD=D4A32783
```

For more information on the BN start option, see "Start Option List with Border Node Support."

IBM Library Server

9.7 Authorized Transmission Priority for LEN Connections

```
In the LSNA3A2 local SNA major node below, AUTHLEN=YES specifies that a
session between two independent LUs through a subarea network will use the
same transmission priority for both type 2.1 LEN connections (entry and
exit).  AUTHLEN may only be specified where node type 2.1 is specified and
the connection is to be attempted as an APPN connection.  AUTHLEN=YES is
the default.
```

```
***********************************************************************
* THE FOLLOWING IS A DEFINITION FOR CHANNEL ATTACHED PU 2.1           *
***********************************************************************
LSNA3A2  VBUILD TYPE=LOCAL
LSNA3APU PU    PUTYPE=2,CUADDR=051,ISTATUS=INACTIVE,XID=YES,           X
               VPACING=0,SSCPFM=USSSCS,MAXBFRU=15,                     X
               CONNTYPE=APPN,CPCP=YES,AUTHLEN=YES
APPL2    LU    LOCADDR=00,MODETAB=ISTINCLM,DLOGMOD=INTERACT
APPCAP06 LU    LOCADDR=00,MODETAB=ISTINCLM,DLOGMOD=INTERACT
L4A4956A LU    LOCADDR=00,MODETAB=ISTINCLM,DLOGMOD=D4A32781
L4A3767A LU    LOCADDR=00,MODETAB=ISTINCLM,DLOGMOD=D4A32782
ECHOB12  LU    LOCADDR=00,MODETAB=ISTINCLM,DLOGMOD=INTERACT
ECHOC12  LU    LOCADDR=00,MODETAB=ISTINCLM,DLOGMOD=INTERACT
L3270B   LU    LOCADDR=00,MODETAB=ISTINCLM,DLOGMOD=D4A32783
```

10.0 Chapter 10. LU Group Major Node

Subtopics:

10.1 About This Chapter

This chapter describes a sample LU group major node definition.

Dependent logical units that are attached through an IBM 3174 control unit can be defined dynamically to a VTAM network when the device containing the logical units powers on, rather than during major node activation.

VTAM defines dependent logical units dynamically by using model logical unit definitions, rather than predefined definitions. The dynamically defined logical unit definitions are updated, if needed, each time the device containing the logical units powers on. You can use this function to add, change, or relocate dependent logical units from a VTAM network without reactivating the major node.

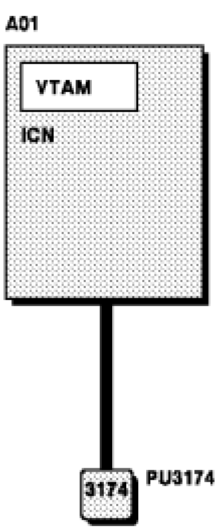

Figure 17. Dynamic Definition of Dependent LUs. Host A01 is an interchange node (ICN).

For more information on this function, including the process VTAM follows to dynamically define dependent logical units, refer to "Defining Dependent LUs Dynamically" in the *VTAM Network Implementation Guide*.

To enable dynamic definition of dependent logical units, you must code an LU group major node. The LU group major node defines one or more model LU groups, each of which contains a list of model LU definition statements.

Note: You cannot take advantage of the sift-down effect in the LU group major node.

IBM Library Server

10.2 Sample LU Group Major Node Definition

In the VBUILD definition statement, TYPE=LUGROUP defines this node to VTAM as an LU group major node.

The LUGROUP definition statement specifies the start of model LU group LUGRP. A model LU group ends when VTAM encounters either another LUGROUP definition statement or a VBUILD definition statement.

```
*  =====> BEGINNING OF DATA SET A01LUGRP
***********************************************************************
*  A01LUGRP -  VTAM LU GROUP MAJOR NODE FOR SDDLU                     *
***********************************************************************
A01LUGRP VBUILD TYPE=LUGROUP
LUGRP    LUGROUP
317@     LU     DLOGMOD=D4C32782,  ** DEFAULT LOGON MODE TABLE ENTRY ** X
                LOGAPPL=ECHOA01,   ** CONTROLLING PRIMARY LU         ** X
                USSTAB=AUSSTAB     ** USS TABLE NAME                 **
327@     LU     DLOGMOD=D4C32782,                                       X
                USSTAB=AUSSTAB,                                         X
                LOGAPPL=ECHOA01
@        LU     DLOGMOD=D4C32782,                                       X
                USSTAB=AUSSTAB,                                         X
                LOGAPPL=ECHOA01
*  =====> END OF DATA SET A01LUGRP
```

To enable dynamic definition of dependent logical units, you must also code the LUGROUP operand on the PU definition statement for the 3174. If you use the SDDLU (selection of definitions for dependent LUs) exit routine, you must also code the LUSEED operand on the 3174's PU definition statement. For a sample local SNA major node that specifies the LUGROUP and LUSEED operands on the 3174's PU definition statement, see topic 9.5.

IBM Library Server

11.0 Chapter 11. Model Major Node

Subtopics:

IBM Library Server

11.1 About This Chapter

This chapter contains samples of model major node definitions.

You can define switched peripheral nodes using either of the following:

- Dynamic PU definition (DYNPU operand)
- Dynamic switched definition facility.

This chapter illustrates you can utilize the dynamic switched definition facility by defining model major nodes. This facility requires model definition statements and an exit routine, which VTAM uses as follows:

1. A type 1, 2, or 2.1 device dials in to VTAM.

2. A configuration services XID exit routine uses the device's CPNAME (for type 2.1 devices) or IDBLK and IDNUM (for type 1 and 2 devices) to find the following additional information:

   - The device's physical unit name
   - The name of the appropriate physical unit model definition
   - The device's logical unit name
   - The name of the appropriate logical unit model definition.

3. The exit routine passes this information to VTAM.

4. VTAM uses the information and the appropriate model definitions to build the new devices in a dynamic switched major node (ISTDSWMN).

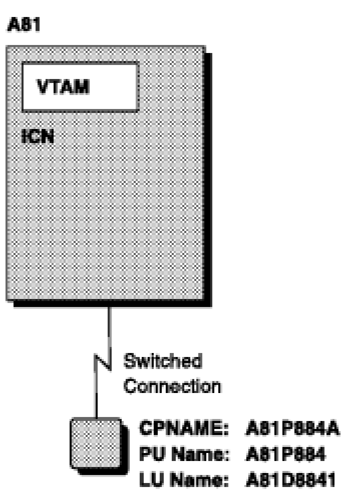

Figure 18. Dynamic Definition of a Switched Connection. Host A81 is an interchange node (ICN).

For more information on this function, refer to "Dynamically Defining Switched Resources" in the *VTAM Network Implementation Guide*.

For a sample configuration services XID exit routine, see "Configuration Services XID Exit Routine" in *VTAM Customization*.

IBM. Library Server

11.2 Defining a Model Major Node

To enable this function, you must first define a model major node whose minor nodes are model physical unit and logical unit definitions. The VBUILD definition statement defines this as a model major node (TYPE=MODEL). MODELLU is the model LU definition statement. MODELPU is the model PU definition statement.

Note: In a model major node the LU definition statements do not have to follow PU definition statements.

The model major node shown immediately below is used to dynamically define the switched connection depicted in Figure 18.

```
*  =====> BEGINNING OF DATA SET A81MODEL
***********************************************************************
*  A81MODEL - VTAM MODEL MAJOR NODE                                   *
***********************************************************************
A81MODEL VBUILD TYPE=MODEL
MODELPU PU ADDR=C1,            ** CHANNEL UNIT ADDRESS              **X
           ANS=CONTINUE,       ** AUTOMATIC NETWORK SHUTDOWN        **X
           AUTHLEN=YES,        ** AUTHORIZED TRANS PRIORITY         **X
           DISCNT=YES,         ** DISCONNECT DIAL CONNECTION        **X
           MAXDATA=256,        ** MAX RECEIVE DATA BYTE SIZE        **X
           MAXOUT=1,           ** MAX SEND BEFORE RESPONSE          **X
           MAXSESS=2,          ** MAX NUM OF LU-LU SESSIONS         **X
           NATIVE=NO,          ** NON-NATIVE CONNECTION             **X
           PASSLIM=1,          ** MAX NUM OF CONTIGUOUS PIUS        **X
           PUTYPE=2            ** PHYSICAL UNIT TYPE                **
MODELLU LU LOCADDR=1,          ** LOGICAL UNIT LOCAL ADDRESS        **X
           MODETAB=AMODETAB    ** LOGON MODE TABLE NAME             **
*  =====> END OF DATA SET A81MODEL
```

The sample model major node shown below corresponds to the sample configuration services XID exit routine (named ISTEXCCS) provided:

VSE A sample configuration services XID exit routine is located in ISTEXCCS.Z in the VTAM product library.

MVS A sample configuration services XID (ISTEXCCS) exit routine is provided on the sample library (SYS1.SAMPLIB).

VM A sample configuration services XID (ISTEXCCS ASSEMBLE) exit routine is provided on the LOCALSAM (2C2) disk.

The PU and LU names in this sample model major node match the names generated by the exit routine's algorithm.

```
***********************************************************************
*                                                                     *
* Descriptive name: VTAM Sample MODEL Major Node                      *
*                                                                     *
* Function: Defines model names that can be returned by VTAM's sample *
*           Configuration Services XID Exit Routine - ISTEXCCS.       *
***********************************************************************
ISTMODEL VBUILD TYPE=MODEL
***********************************************************************
*                                                                     *
* Model for IDBLK X'017' - PC 3270 Emulation                          *
*                                                                     *
***********************************************************************
PUMOD017 PU    ADDR=C1,                                               X
               ANS=CONT,                                              X
               PUTYPE=2
LUMOD017 LU    LOCADDR=2,                                             X
               MODETAB=ISTINCLM,                                      X
               USSTAB=ISTINCDT,                                       X
               PACING=1
***********************************************************************
*                                                                     *
* Model for IDBLK X'056' - AS/400(*)                                     *
*                                                                     *
***********************************************************************
PUMOD056 PU    ADDR=01,                                               X
               ANS=CONT,                                              X
               PUTYPE=2
LUMOD056 LU    LOCADDR=2,                                             X
               MODETAB=ISTINCLM,                                      X
               USSTAB=ISTINCDT,                                       X
               PACING=7
***********************************************************************
*                                                                     *
* Model for IDBLK X'05D' - OS/2 Communications Manager                *
*                                                                     *
***********************************************************************
PUMOD05D PU    ADDR=01,                                               X
               ANS=CONT,                                              X
               PUTYPE=2
LUMOD05D LU    LOCADDR=2,                                             X
               MODETAB=ISTINCLM,                                      X
               USSTAB=ISTINCDT,                                       X
               PACING=7
```

You can find another example of a model major node in "Dynamically Defining Switched Resources" in the *VTAM Network Implementation Guide*.

IBM Library Server

11.3 Defining a PU and an LU for the Configuration Services XID Exit Routine

The configuration services XID exit routine allows you to give VTAM information to create dynamic representations of switched devices without disrupting a switched network. You do not have to explicitly define a switched device to VTAM before the device attempts to dial in.

When an unknown device attempts to dial in:

1. If the device has a CPNAME, the exit checks for the device's definition in the CPNDEF definition file.

2. If the device has an IDBLK and IDNUM, the exit checks for the device's definition in the NIDDEF definition file.

3. If the device does not have a CPNAME, IDBLK, or IDNUM, or if the exit cannot find a definition for the device in CPNDEF or NIDDEF, the exit invokes a name generation function and creates the necessary PU and LU names.

The following is a sample CPNDEF definition file for the connection shown in Figure 18, where

- A81P884A is the CPNAME of the device.
- A81P884 is the device's physical unit name.
- MODELPU is the name of the appropriate physical unit model definition.
- A81D8841 is the device's logical unit name.
- MODELLU is the name of the appropriate logical unit model definition.

```
*********************************************************************
* A81P884A:  PU AND LU NAMES
*********************************************************************
A81P884A
         A81P884
         MODELPU
         A81D8841
         MODELLU
*********************************************************************
```

For a sample NIDDEF file, as well as another sample CPNDEF file, see

Appendix D, "Sample Configuration Services XID Exit Routine" in *VTAM Customization*.

11.4 Authorized Transmission Priority for LEN Connections

```
In the sample model major node in topic 11.2, AUTHLEN=YES specifies that a
session between two independent LUs through a subarea network will use the
same transmission priority for both type 2.1 LEN connections (entry and
exit).  AUTHLEN may only be specified where node type 2.1 is specified and
where the connection is attempted as an APPN connection.
```

11.5 Limiting Sessions for Switched Resources

In the sample model major node in topic 11.2, MAXSESS=2 specifies that the maximum number of concurrent LU-LU sessions in which an independent LU on MODELPU can participate is two.

11.6 Defining Subnetwork Boundaries

```
When the start option BN=YES is in effect, the operand NATIVE is used on
the PU definition statement to specify whether this link station
represents a connection to a native node.

The NATIVE operand on a PU definition statement specifies whether this
link station represents a connection to a native node.  NATIVE=NO is used
when both nodes have the same network ID, but a subnetwork boundary is
desired.  Thus, in the sample model major node in topic 11.2, NATIVE=NO on
the PU definition statement for MODELPU indicates that MODELPU represents
a connection to a nonnative node.  The NATIVE operand is required on only
one side of a network or subnetwork boundary.
```

IBM Library Server

12.0 Chapter 12. Network Control Program (NCP) Major Node

Subtopics:

IBM Library Server

12.1 About This Chapter

```
This chapter contains sample NCP major node definitions.

A Network Control Program (NCP) major node consists of the resources
attached to an NCP.  The attached resources (lines, physical units, and
logical units) are minor nodes.  VTAM requires the information in the NCP
major node to communicate with the NCP and its attached devices.

This chapter discusses the ways in which you can code NCP major node
definitions to aid in implementing various network configurations.
```

12.2 Channel-Attached NCP

To define a channel-attached NCP:

- Code one PCCU (programmed communication control unit) definition statement for each VTAM that is to activate the NCP. It is required and defines the VTAM functions that are provided for this NCP.
- Code one HOST definition statement for each host that activates the NCP. The HOST statement determines the amount of data that VTAM must be prepared to receive from the NCP over the channel.
- Code one BUILD definition statement. Information on the BUILD statement is used primarily by the NCP.
- Code a LINE and a PU definition statement for each channel adapter.

Note: The NETWORK and GWNAU definition statements are for the SNI function, which is only supported on MVS and VM.

For more information on channel-attached NCPs see the *VTAM Network Implementation Guide*.

The following sample NCP major node illustrates how a channel-attached NCP may be defined.

```
*  =====> BEGINNING OF DATA SET A03NCPB
*********   A03NCP - NCP FOR SAMPLES NETWORK   SUBAREA 03   *********
**********************************************************************
*     NCP NAME:    A03NCP                                           *
*     VER/REL:     V6 R2                                            *
*     SUBAREA:     A03    (GATEWAY: A03/B03/MODEL)                  *
*     BOX-TYPE:    3745                                             *
**********************************************************************
*                 --------  --------   --------                      *
*                | HOST  | | HOST  |  | HOST  |                      *
*                | A17N  | |A500N  |  | A82N  |                      *
*                 --------  --------   --------                      *
*                  |  |        |  |    |  |                          *
*           CA-1   |  |        |  | CA-3  |  |  CA-5                 *
*           TGN=1  |  |        |  | TGN=2 |  |  TGN=1                *
*                  |  |        |  |    |  |                          *
*                 -----------------------------                      *
*                |         NETID=NETA          |                     *
*                |         NCP A03NCP          |                     *
*          CA-7  |           SA=03             |                     *
*   ------- TGN=1 |---------------------------- |                     *
*  |HOST  |-------| NETID=NETB  |    MODEL     |                     *
*  |B01N  |-------|   SA=03     |    SA=31     |                     *
```

```
*  -------       ------------------------------                         *
***********************************************************************
*  LINE              FUNCTION
*  ----        ------------------------------
*  000         LEASED SDLC 9.6KB SNBU TO LINE 0 IN C04NCP IN NETC
*  001         MULTIPOINT SDLC LINE - DLU'S & ILU'S
*  002         BSC LEASED LINE
*  003         MULTIDROP SUBAREA FROM A04NCP
*  004         MULTIDROP SUBAREA FROM A04NCP
*  016         LEASED 56KB SUBAREA TO LINE 48 B31NCP IN NETB
*  020         LEASED 56KB DR
*  032         LEASED SDLC 9.6KB SNBU BACKUP TO C04NCP IN NETC
*  033         LEASED 9.6KB SUBAREA TO LINE 16 C04NCP IN NETC
*  034         LEASED 9.6KB DR
*  035         LEASED 9.6KB DR
*  048         LEASED 56KB SUBAREA TO LINE 16 B31NCP IN NETA
*  052         FULL DUPLEX 56KB FRAME RELAY
*              DLCI TO B31NCP 052
*  1036        FULL DUPLEX HPTSS FRAME RELAY
*              DLCI TO B31NCP 1036
*  1070        ETHERNET
*  1071        ETHERNET
*              NCST LU TO B31NCP
*              NCST LU TO A17N
*              NCST LU TO A01N
*  1088        TOKEN RING SUBAREA AND PERIPHERAL
*              SUBAREA LOGICAL TO B31NCP 1093 IN NETC (NETA,ANY)
*  1089        TOKEN RING PERIPHERAL ONLY
*  1092        TOKEN RING PERIPHERAL ONLY - DUPLICATE TIC
*  1093        TOKEN RING PERIPHERAL ONLY - DUPLICATE TIC
***********************************************************************
*     NCP OPTIONS MACRO - MISCELLANEOUS OPTIONS                        *
***********************************************************************
         OPTIONS NEWDEFN=(YES,ECHO)
***********************************************************************
*     VTAM PCCU MACRO - HOSTS THAT WILL ACTIVATE THIS NCP              *
***********************************************************************
APCCU1   PCCU  AUTOSYN=YES,                                             X
               BACKUP=YES,                                              X
               CDUMPDS=CSPDUMP,                                         X
               CONFGDS=CRNCKPT,                                         X
               DUMPDS=VTAMDUMP,                                         X
               GWCTL=SHR,                                               X
               MAXDATA=4096,                                            X
               MDUMPDS=MOSSDUMP,                                        X
               NETID=NETA,                                              X
               OWNER=A500N,                                             X
               SUBAREA=500,                                             X
               TGN=ANY
APCCU2   PCCU  AUTOSYN=YES,                                             X
               BACKUP=YES,                                              X
               CDUMPDS=CSPDUMP,                                         X
               CONFGDS=CRNCKPT,                                         X
               DUMPDS=VTAMDUMP,                                         X
               GWCTL=SHR,                                               X
               MAXDATA=4096,                                            X
               MDUMPDS=MOSSDUMP,                                        X
               NETID=NETA,                                              X
               OWNER=A17N,                                              X
               SUBAREA=17
APCCU3   PCCU  AUTOSYN=YES,                                             X
               BACKUP=YES,                                              X
               CDUMPDS=CSPDUMP,                                         X
               CONFGDS=CRNCKPT,                                         X
               DUMPDS=VTAMDUMP,                                         X
               GWCTL=SHR,                                               X
               MAXDATA=4096,                                            X
               MDUMPDS=MOSSDUMP,                                        X
               NETID=NETA,                                              X
               OWNER=A82N,                                              X
               SUBAREA=82
APCCU4   PCCU  AUTOSYN=YES,                                             X
               BACKUP=YES,                                              X
               CDUMPDS=CSPDUMP,                                         X
               CONFGDS=CRNCKPT,                                         X
               DUMPDS=VTAMDUMP,                                         X
               GWCTL=SHR,                                               X
               MAXDATA=4096,                                            X
               MDUMPDS=MOSSDUMP,                                        X
               NETID=NETB,                                              X
```

```
                OWNER=B01N,                                             X
                SUBAREA=01
**********************************************************************
*     NCP BUILD MACRO - NCP/CONTROLLER INFO                          *
**********************************************************************
A03NCP   BUILD ADDSESS=500,                                             X
                AUXADDR=500,                                            X
                BFRS=128,                                               X
                BRANCH=8000,                                            X
                CATRACE=(YES,255),                                      X
                CNLSQMAX=10000,                                         X
                CNLSQTIM=10,                                            X
                CSMSG=C3D9C9E340E2C9E340D4C5E2E2C1C7C540C6D6D940E2E24040X
                40C2C340E3C5D9D4C9D5C1D3,                               X
                CWALL=26,                                               X
                ENABLTO=30.0,                                           X
                ERLIMIT=16,                                             X
                GWSESAC=(YES,NODEFER,,1000,500,,10,11,12,13,14,15),     X
                HSBPOOL=6000,                                           X
                IPPOOL=NCP,                                             X
                IPRATE=(40,50),                                         X
                LOADLIB=NCPLOAD,                                        X
                LOCALTO=19.0,                                           X
                LTRACE=8,                                               X
                MAXSESS=250,                                            X
                MAXSSCP=8,                                              X
                MODEL=3745,                                             X
                NAMTAB=120,                                             X
                NETID=NETA,                                             X
                NEWNAME=A03NCP,                                         X
                NPA=(YES,DR),                                           X
                NUMHSAS=8,                                              X
                OLT=YES,                                                X
                PWROFF=YES,                                             X
                REMOTTO=20.0,                                           X
                SALIMIT=1023,                                           X
                SESSACC=(YES,ALL,,1000,500,,10,11,12,13,14,15),         X
                SLODOWN=12,                                             X
                SUBAREA=03,                                             X
                TRACE=(YES,100),                                        X
                TRANSFR=41,                                             X
                TYPGEN=NCP,                                             X
                TYPSYS=MVS,                                             X
                T2TIMER=(1.9,2.0,45),                                   X
                USGTIER=5,                                              X
                VERSION=V6R2,                                           X
                VRPOOL=150,                                             X
                VRTIMER0=(180,,50),                                     X
                VRTIMER1=(180,,50),                                     X
                VRTIMER2=(180,,50)
**********************************************************************
*     DYNAMIC CONTROL FACILITIES USED BY VTAM                        *
**********************************************************************
         SYSCNTRL OPTIONS=(BACKUP,                                      X
                BHSASSC,                                                X
                DLRID,                                                  X
                DVSINIT,                                                X
                ENDCALL,                                                X
                LNSTAT,                                                 X
                MODE,                                                   X
                NAKLIM,                                                 X
                RCNTRL,                                                 X
                RCOND,                                                  X
                RDEVQ,                                                  X
                RECMD,                                                  X
                RIMM,                                                   X
                SESINIT,                                                X
                SESSION,                                                X
                SSPAUSE,                                                X
                STORDSP,                                                X
                XMTLMT)
**********************************************************************
*     NCP HOST MACRO - CHANNEL ATTACHED HOST DEFINITIONS             *
**********************************************************************
A17N     HOST  BFRPAD=0,                                                X
                INBFRS=6,                                               X
                MAXBFRU=16,                                             X
                NETID=NETA,                                             X
                SUBAREA=17,                                             X
                UNITSZ=256
```

```
A82N     HOST  BFRPAD=0,                                                  X
               INBFRS=6,                                                  X
               MAXBFRU=16,                                                X
               NETID=NETA,                                                X
               SUBAREA=82,                                                X
               UNITSZ=256
A500N    HOST  BFRPAD=0,                                                  X
               INBFRS=6,                                                  X
               MAXBFRU=16,                                                X
               NETID=NETA,                                                X
               SUBAREA=500,                                               X
               UNITSZ=256
B01N     HOST  BFRPAD=0,                                                  X
               INBFRS=6,                                                  X
               MAXBFRU=16,                                                X
               NETID=NETB,                                                X
               SUBAREA=01,                                                X
               UNITSZ=256
 .
 .
 .
**********************************************************************
*     CHANNEL ADAPTER DEFINITIONS                                    *
**********************************************************************
A03CA1   GROUP LNCTL=CA,                                                  X
               CA=TYPE7,                                                  X
               NCPCA=ACTIVE,                                              X
               TIMEOUT=180.0
**********************************************************************
*     CA ADDR - 08            PHYSICAL PORT 1                        *
**********************************************************************
A03CP1   LINE  ADDRESS=P1,                                                X
               CASDL=420,                                                 X
               INBFRS=3,                                                  X
               DELAY=0.2
A03PP1A  PU    PUTYPE=5,                                                  X
               TGN=1
**********************************************************************
*     CA ADDR - 10            PHYSICAL PORT 3                        *
*     USED TO ESTABLISH CP-CP SESSIONS TO A500                       *
*     SEE ALSO MEMBER LCL011 IN VTAMLST                              *
**********************************************************************
A03CP3   LINE  ADDRESS=P3,                                                X
               CASDL=420,                                                 X
               INBFRS=3,                                                  X
               DELAY=0.2
A03PP3A  PU    PUTYPE=2,                                                  X
               CONNTYPE=APPN,CPCP=YES
**********************************************************************
*     CA ADDR - 00            PHYSICAL PORT 5                        *
*     USED TO ESTABLISH CP-CP SESSIONS TO A82                        *
*     SEE ALSO MEMBER LCL013 IN VTAMLST                              *
**********************************************************************
A03CP5   LINE  ADDRESS=P5,                                                X
               CASDL=420,                                                 X
               INBFRS=3,                                                  X
               NETID=NETA,                                                X
               DELAY=0.2
A03PP5A  PU    PUTYPE=2,                                                  X
               CONNTYPE=APPN,CPCP=YES
**********************************************************************
*     CA ADDR - 02            PHYSICAL PORT 7                        *
**********************************************************************
A03CP7   LINE  ADDRESS=P7,                                                X
               CASDL=420,                                                 X
               INBFRS=3,                                                  X
               NETID=NETB,                                                X
               DELAY=0.2
A03PP7A  PU    PUTYPE=5,                                                  X
               TGN=1
*********************************************************************
*     NON-NATIVE NETWORK DEFINITIONS FOR NETB                       *
*********************************************************************
NETB     NETWORK SUBAREA=03,SALIMIT=2047,NETID=NETB,                      *
               VRTIMER0=(180,,50),VRTIMER1=(180,,50),VRTIMER2=(180,,50)
         GWNAU NETID=NETA,NAME=A01N,NUMSESS=5,ELEMENT=1
         GWNAU NETID=NETA,NAME=A02N,NUMSESS=5,ELEMENT=2
         GWNAU NETID=NETA,NAME=A17N,NUMSESS=5,ELEMENT=3
         GWNAU NETID=NETA,NAME=A81N,NUMSESS=5,ELEMENT=4
```

```
         GWNAU NETID=NETA,NAME=A500N,NUMSESS=5,ELEMENT=5
         GWNAU NETID=NETC,NAME=C01N,NUMSESS=5,ELEMENT=6
         GWNAU NETID=NETA,NAME=A82N,NUMSESS=5,ELEMENT=7
         GWNAU NUMADDR=600
**********************************************************************
*     PATH DECK FOR NON-NATIVE NETB                                  *
**********************************************************************
         PATH  DESTSA=1,                                               *
               ER0=(1,1),ER2=(1,1),ER4=(1,1),ER6=(1,1),                *
               ER1=(31,1),ER3=(31,1),ER5=(31,1),ER7=(31,1),            *
               VR0=0,                                                  *
               VRPWS00=(1,3),VRPWS01=(1,3),VRPWS02=(1,3),              *
               VR1=1,                                                  *
               VRPWS10=(2,6),VRPWS11=(2,6),VRPWS12=(2,6),              *
               VR2=2,                                                  *
               VRPWS20=(2,6),VRPWS21=(2,6),VRPWS22=(2,6),              *
               VR3=3,                                                  *
               VRPWS30=(2,6),VRPWS31=(2,6),VRPWS32=(2,6),              *
               VR4=4,                                                  *
               VRPWS40=(3,9),VRPWS41=(3,9),VRPWS42=(3,9),              *
               VR5=5,                                                  *
               VRPWS50=(3,9),VRPWS51=(3,9),VRPWS52=(3,9),              *
               VR6=6,                                                  *
               VRPWS60=(3,9),VRPWS61=(3,9),VRPWS62=(3,9),              *
               VR7=7,                                                  *
               VRPWS70=(3,9),VRPWS71=(3,9),VRPWS72=(3,9)
         PATH  DESTSA=31,                                              *
               ER0=(31,1),ER2=(31,1),ER4=(31,1),ER6=(31,1),            *
               ER1=(31,1),ER3=(31,1),ER5=(31,1),ER7=(31,1),            *
               VR0=0,                                                  *
               VRPWS00=(1,3),VRPWS01=(1,3),VRPWS02=(1,3),              *
               VR1=1,                                                  *
               VRPWS10=(2,6),VRPWS11=(2,6),VRPWS12=(2,6),              *
               VR2=2,                                                  *
               VRPWS20=(2,6),VRPWS21=(2,6),VRPWS22=(2,6),              *
               VR3=3,                                                  *
               VRPWS30=(2,6),VRPWS31=(2,6),VRPWS32=(2,6),              *
               VR4=4,                                                  *
               VRPWS40=(3,9),VRPWS41=(3,9),VRPWS42=(3,9),              *
               VR5=5,                                                  *
               VRPWS50=(3,9),VRPWS51=(3,9),VRPWS52=(3,9),              *
               VR6=6,                                                  *
               VRPWS60=(3,9),VRPWS61=(3,9),VRPWS62=(3,9),              *
               VR7=7,                                                  *
               VRPWS70=(3,9),VRPWS71=(3,9),VRPWS72=(3,9)
         PATH  DESTSA=(75,1028,1027),                                  *
               ER0=(31,1),ER2=(31,1),ER4=(31,1),ER6=(31,1),            *
               ER1=(31,1),ER3=(31,1),ER5=(31,1),ER7=(31,1),            *
               VR0=0,                                                  *
               VRPWS00=(1,3),VRPWS01=(1,3),VRPWS02=(1,3),              *
               VR1=1,                                                  *
               VRPWS10=(2,6),VRPWS11=(2,6),VRPWS12=(2,6),              *
               VR2=2,                                                  *
               VRPWS20=(2,6),VRPWS21=(2,6),VRPWS22=(2,6),              *
               VR3=3,                                                  *
               VRPWS30=(2,6),VRPWS31=(2,6),VRPWS32=(2,6),              *
               VR4=4,                                                  *
               VRPWS40=(3,9),VRPWS41=(3,9),VRPWS42=(3,9),              *
               VR5=5,                                                  *
               VRPWS50=(3,9),VRPWS51=(3,9),VRPWS52=(3,9),              *
               VR6=6,                                                  *
               VRPWS60=(3,9),VRPWS61=(3,9),VRPWS62=(3,9),              *
               VR7=7,                                                  *
               VRPWS70=(3,9),VRPWS71=(3,9),VRPWS72=(3,9)
 .
 .
 .
***********************************************************************
*     NCP GENEND MACRO - END OF GEN                                   *
***********************************************************************
GENEND   GENEND
         END
*  =====> END OF DATA SET A03NCPB
```

12.3 NCP-Attached Switched Peripheral PUs

Switched peripheral PUs attached to an NCP are defined by VTAM with an NCP major node and a switched major node. Consider, for example, the configuration shown in [Figure 19](#).

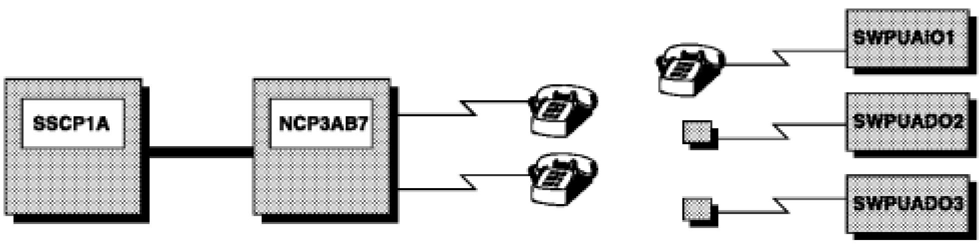

Figure 19. NCP-Attached Switched Peripheral PUs

The NCP major node NCP3AB7 defines two switched line groups, as shown in the following excerpt:

```
**********************************************************************
*
*        A U T O - D I A L   G R O U P
*
*        DIAL IN/OUT; PUTYPE=(1,2)
*
**********************************************************************
*
GP3AAIO1 GROUP LNCTL=SDLC,DIAL=YES,TYPE=NCP,POLLED=YES,                X
               CLOCKNG=EXT,DUPLEX=HALF,SPEED=9600
LN3AAIO1 LINE  ADDRESS=03B,CALL=INOUT,AUTO=23
P3AAIO1  PU    PUTYPE=(1,2),MAXLU=10
 .
 .
 .
**********************************************************************
*
*        A U T O - D I A L   G R O U P
*
*        DIAL OUT; PUTYPE=(2.1)
*
**********************************************************************
*
GP3AADO2 GROUP LNCTL=SDLC,DIAL=YES,TYPE=NCP,POLLED=YES,                X
               CLOCKNG=EXT,DUPLEX=HALF,SPEED=9600
*
LN3AADO2 LINE  ADDRESS=03E,CALL=OUT,AUTO=20
*
P3AADO2  PU    PUTYPE=2,MAXLU=10
```

```
*
```

```
The GROUP statement defines common characteristics for all the
NCP-attached links and devices that are defined under it.  For switched
connections, DIAL=YES must be specified on the GROUP statement.


The LINE statement identifies the switched SDLC link.  ADDRESS provides
the relative line number of the line.  CALL specifies whether VTAM, the
device, or both can set up switched connections over the line.


On the PU statement, no keywords need to be specified.  This PU statement
represents a "dummy" PU (PUX); the actual values for the PU are coded in
the switched major node.  The function of the PUX is to reserve the
network address for the actual switched PU.  If you decide to specify the
PUTYPE on the PUX (as in this example), it must match the PU type of the
switched PU.


The corresponding switched major node, which defines the PUs, the paths to
the PUs, and any LUs associated with the PUs, is shown and discussed in
"NCP-Attached Switched Peripheral PUs."
```

12.4 Switched SDLC Subarea Connection

One type of VTAM-to-VTAM NCP connection uses switched SDLC links between two communication controllers. This type of connection is called switched SDLC subarea connection.

The figure below shows switched SDLC connections between communication controllers A04 and A31.

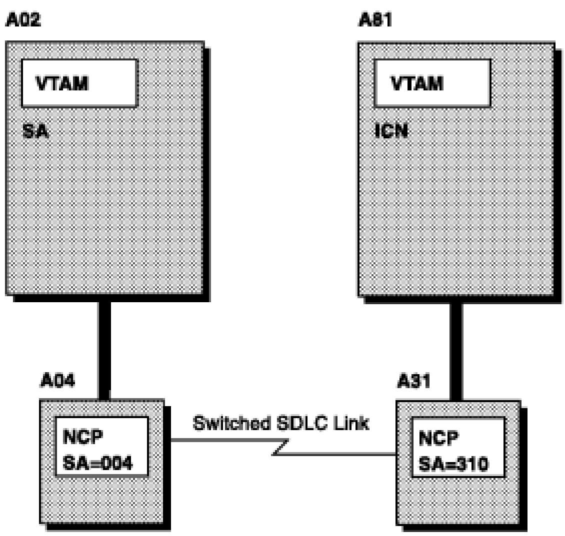

Figure 20. NCP-to-NCP Switched SDLC Connections. Host A02 is a subarea node (SA). Host A81 is an interchange node (ICN).

The VTAM at each end of the connection must define both of the following:

- A switched major node
- An NCP major node.

The switched major node definitions for the above configuration are found in "Switched SDLC Subarea Connection." The corresponding NCP major node definitions are given below.

Subtopics:

12.4.1 Defining an NCP Major Node for NCP A04

Group name A04GINN3 matches the one in the PATH definition statement in the switched major node for NCP A04 in topic 14.3.1.

```
***********************************************************************
* NCP NAME:    A04NCP                                                 *
***********************************************************************
* SDLC SUBAREA LINES - 9.6 KBPS LINK - TGN=1 - SWITCHED CONNECTION    *
*     CONNECT TO A31NCP LINE 003 OR 035 THROUGH 9.6 K MODEMS          *
*      - FOR LINE 003 IN A31NCP USE SWITCHED MAJOR NODE A02SAD03      *
*      - FOR LINE 035 IN A31NCP USE SWITCHED MAJOR NODE A02SAD35      *
***********************************************************************
 .
 .
 .
A04GINN3 GROUP ACTIVTO=300.0,                                          X
               DIAL=YES,                                               X
               LNCTL=SDLC,                                             X
               PUTYPE=4,                                               X
               SDLCST=(S04PRI,S04SEC),                                 X
               TGCONF=MULTI,                                           X
               TYPE=NCP
A04S03   LINE  ADDRESS=003,                                            X
               AUTO=010,                                               X
               BRKCON=CONNECTO,                                        X
               CALL=INOUT,                                             X
               CLOCKNG=EXT,                                            X
               DUPLEX=FULL,                                            X
               MLTGPRI=30,                                             X
               SPEED=9600
A04PU03  PU    PUTYPE=4
A04S35   LINE  ADDRESS=035,                                            X
               AUTO=042,                                               X
               BRKCON=CONNECTO,                                        X
               CALL=INOUT,                                             X
               CLOCKNG=EXT,                                            X
               DUPLEX=FULL,                                            X
               MLTGPRI=30,                                             X
               SPEED=9600
A04PU35  PU    PUTYPE=4
 .
 .
 .
***********************************************************************
```

12.4.2 Defining an NCP Major Node for NCP A31

Group name A31GINN3 matches the one in the PATH definition statement in the switched major node for NCP A31 in topic 14.3.2.

```
*********************************************************************
* NCP NAME:    A31NCP                                               *
*********************************************************************
* SDLC SUBAREA LINES - 9.6 KBPS LINK - TGN=1 - SWITCHED CONNECTION  *
*     CONNECT TO A04NCP LINE 003 OR 035 THROUGH 9.6 KBPS MODEMS     *
*      - FOR LINE 003 IN A04NCP USE SWITCHED MAJOR NODE A81SAD03    *
*      - FOR LINE 035 IN A04NCP USE SWITCHED MAJOR NODE A81SAD35    *
*********************************************************************
 .
 .
 .
A31GINN3 GROUP ACTIVTO=420.0,                                          X
               DIAL=YES,                                               X
               LNCTL=SDLC,                                             X
               PUTYPE=4,                                               X
               SDLCST=(S31PRI,S31SEC),                                 X
               TGCONF=MULTI,                                           X
               TYPE=NCP
A31S03   LINE  ADDRESS=003,                                            X
               AUTO=010,                                               X
               CALL=INOUT,                                             X
               CLOCKNG=EXT,                                            X
               DUPLEX=FULL,                                            X
               MLTGPRI=30,                                             X
               SPEED=9600
A31PU03  PU    PUTYPE=4
A31S35   LINE  ADDRESS=035,                                            X
               AUTO=042,                                               X
               CALL=INOUT,                                             X
               CLOCKNG=EXT,                                            X
               DUPLEX=FULL,                                            X
               MLTGPRI=30,                                             X
               SPEED=9600
A31PU35  PU    PUTYPE=4
 .
 .
 .
*********************************************************************
```

IBM. Library Server

12.5 Connecting Multiple Networks using SNA Network Interconnection (MVS, VM)

To interconnect subarea networks, at least one gateway NCP is required. The gateway NCP performs the address translation necessary for cross-network session traffic.

To illustrate how a gateway NCP is defined, consider NCP A03 in the network depicted in Figure 10. The NCP major node for A03, as shown in topic 12.2, specifies the GWCTL and NETID operands on the PCCU definition statements, thereby defining the NCP as a gateway NCP. The NETID operand on the BUILD definition statement specifies NETA as A03's native network. The NETWORK definition statement defines NETB as the network identifier of the nonnative network (the network attached to the gateway NCP). The GWNAU definition statements that follow the NETWORK statement define cross-network CDRMs to the nonnative network. Finally, the PATH definition statements that follow those GWNAU statements define routes for NETB that originate in the gateway NCP subarea.

For sample CDRM major nodes used in SNA network interconnection, see "Connecting Multiple Networks using SNA Network Interconnection (MVS, VM)."

12.6 Attaching Peripheral Nodes to VTAM using NTRI

NCP/Token-Ring Interconnection (NTRI) is an NCP function that allows a communication controller to attach to the IBM Token-Ring Local Area Network and that provides both subarea and peripheral node DLC services in the SNA network. In this section we discuss the peripheral node DLC services that NTRI provides to VTAM.

You implement this type of connection by defining both of the following:

- switched major node
- NCP major node.

The switched major node defines the peripheral nodes and associated logical units that are attached to the token ring.

The NCP major node defines both physical and logical resources:

- The token-ring interface coupler (TIC) connection for NTRI support is defined as a physical connection in a GROUP definition statement specifying ECLTYPE=PHYSICAL.

- The peripheral nodes that are attached to the token ring are defined as logical connections in a GROUP definition statement specifying ECLTYPE=LOGICAL.

The name specified for GRPNM (group name) in the PATH definition statement of the switched major node must match the name of the logical group definition in the NCP major node.

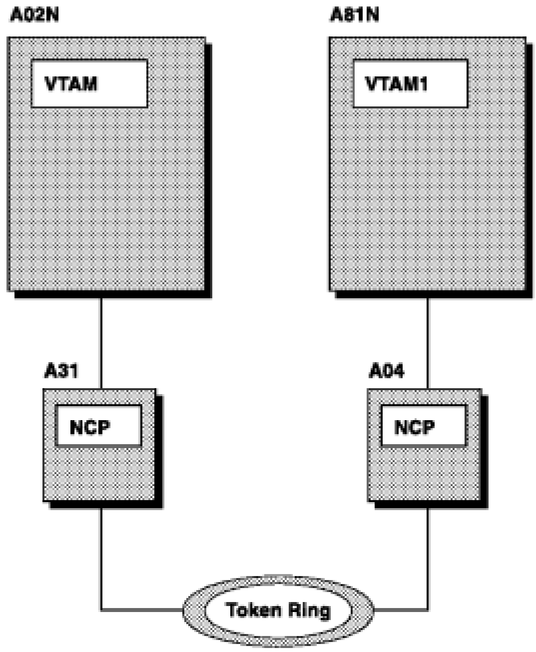

Figure 21. Peripheral Node Attachment to VTAM using NTRI

In the configuration illustrated in Figure 21 the communicating VTAMs A02N and A81N are defined as type 2.1 peripheral nodes to each other and are attached to the token ring network through NCP A31 and NCP A04.

The samples shown below are the logical line groups defined by the NCP major nodes for this configuration. For the sample switched major nodes used for this same configuration, see "NCP/Token-Ring Interconnection (NTRI) for Peripheral Nodes."

```
***********************************************************************
* NTRI PERIPHERAL LOGICAL LINES - USED WITH A31TR89                   *
***********************************************************************
A04BNNG1 GROUP ANS=CONTINUE,           CONTINUE IF HOST LOST          X
         AUTOGEN=20,                   NUMBER OF DEVICES ON THE LAN   X
         CALL=INOUT,                   CONNECTION OPTIONS             X
         ECLTYPE=LOGICAL,                                             X
         ISTATUS=ACTIVE,                                              X
         MODETAB=AMODETAB,                                            X
         NPACOLL=(YES,EXTENDED),                                      X
         PHYPORT=2,                    ASSOCIATE WITH PHYSICAL PORT   X
         RETRIES=(10,10,10,10),                                       X
         SRT=(100,10,YES),                                            X
         USSTAB=AUSSTAB,                                              X
  .      XMITDLY=NONE
  .
  .
***********************************************************************
* NTRI PERIPHERAL LOGICAL LINES                                       *
*    USED WITH A31TR88, A31TR89, A31TR92, AND/OR A31TR93              *
***********************************************************************
A31BNNG1 GROUP ANS=CONTINUE,       **  CONTINUE IF HOST LOST          X
         AUTOGEN=20,               **  NUMBER OF DEVICES ON THE LAN   X
         CALL=INOUT,               **  CONNECTION OPTIONS             X
         ECLTYPE=LOGICAL,                                             X
         ISTATUS=ACTIVE,                                              X
         MODETAB=AMODETAB,                                            X
         NPACOLL=(YES,EXTENDED),                                      X
         PHYPORT=NONE,             **  ASSOCIATE WITH PHYSICAL PORT   X
```

```
                RETRIES=(10,10,10,10),                                            X
                USSTAB=AUSSTAB,                                                   X
                XMITDLY=NONE
```

12.7 Connecting to a Connection Network using NTRI

VTAM can connect to a connection network on a token ring LAN through the NCP Token Ring interconnection (NTRI). An NCP can define multiple token ring connections for connection network in a single major node. These multiple connections can be to the same token ring or different token rings.

Note: NCP Version 7 Release 1 is required for NCP/Token-Ring interconnection support of connection network.

To define a connection to a connection network, include the following in the NCP major node:

- The GROUP statement for the NTRI physical lines must specify ECLTYPE=PHYSICAL. VTAM uses the ECLTYPE operand to detect lines used for peripheral devices connected through NTRI.

- The VNNAME operand must be coded on either the LINE or GROUP definition statements. VNNAME specifies a 1-17 character network-qualified CPNAME for the connection network. If VNNAME is coded on the GROUP definition statement, it sifts down to all the subordinate LINE statements.

- The VNGROUP operand must be coded on either the LINE or GROUP definition statements. VNGROUP specifies the name of the logical GROUP containing dial-out links through the connection network named on the VNNAME operand. If VNGROUP is coded on the GROUP definition statement, it sifts down to all the subordinate LINE statements.

The following sample code from an NCP major node definition illustrates NCP connection network support through NTRI.

```
*----------------------------------------------------------------------
*
*        T O K E N   R I N G   P E R I P H E R A L   P U S
*        (PHYSICAL GROUP/LINES/PUS)
*
*----------------------------------------------------------------------
*
GP4ATRP1 GROUP ECLTYPE=PHYSICAL,LNCTL=SDLC,DIAL=NO,                    X
               PUTYPE=1,XID=NO,ANS=CONTINUE,PUDR=NO
*
LN4ATR10 LINE  ADDRESS=010,PORTADD=01,LOCADD=40004A000010,CAPACITY=4M, X
               LANNAME=TOKBUS01,VNNAME=NETB.VN1,VNGROUP=GP4ATR10
*
P4ATR10  PU    ADDR=01,PUTYPE=1,ANS=CONTINUE
*
```

```
If CP-CP sessions are desired between two nodes on the connection network,
you must define a switched major node at the calling node.  This switched
major node should define a PU for any node on the connection network that
the calling-out node is to call.  Since DYNPU=YES is enforced
automatically when a session is established through the connection
network, it is not necessary for DYNPU=YES to be coded by the called
nodes.
```

IBM Library Server

12.8 NCP Type 2.1 Switched SDLC Casual Connection

In this section the samples describe a type 2.1 casual connection between two NCPs over a switched SDLC link. In this context, a casual connection occurs when you define the two VTAM-NCP combinations as type 2.1 peripheral nodes to each other (PUTYPE=2 and XID=YES on the PU definition statement).

In this configuration, VTAM A02N is channel-attached to NCP A04 and VTAM A81N is channel-attached to NCP A31. There are two switched SDLC connections between NCP A04 and NCP A31. For a picture of this type of configuration (albeit with one switched connection, instead of two), see Figure 20.

Each VTAM must define one NCP major node and two switched major nodes (one for each connection). The switched major node definitions are in "NCP Type 2.1 Switched SDLC Casual Connection." The relevant parts of the NCP major node definitions are below.

Note: The names of the logical line groups in the NCP major node must match the names specified by the GRPNM operand in the PATH statement of the switched major nodes.

```
**********************************************************************
*              CASUAL CONNECTION OVER SWITCHED LINE                  *
* CONNECT TO A31NCP LINE 004 OR LINE 036 THROUGH SWITCHED MODEMS     *
*     - FOR LINE 004 IN A31NCP USE SWITCHED MAJOR NODE A02CCN04      *
*     - FOR LINE 036 IN A31NCP USE SWITCHED MAJOR NODE A02CCN36      *
**********************************************************************
A04CCNG1 GROUP CALL=INOUT,                                           X
               DIAL=YES,                                             X
               LNCTL=SDLC,                                           X
               REPLYTO=3,                                            X
               TYPE=NCP,                                             X
               XMITDLY=23.5
A04CCN04 LINE  ADDRESS=(004,HALF),                                   X
               AUTO=011,                                             X
               CALL=INOUT,                                           X
               CLOCKNG=EXT,                                          X
               DUPLEX=HALF,                                          X
               PAUSE=1.0,                                            X
               ROLE=NEG
A04PC04  PU    AVGPB=140,                                            X
               PUTYPE=2,                                             X
               XID=YES
A04CCN36 LINE  ADDRESS=(036,HALF),                                   X
               AUTO=043,                                             X
               CALL=INOUT,                                           X
               CLOCKNG=EXT,                                          X
               DUPLEX=HALF,                                          X
               PAUSE=1.0,                                            X
               ROLE=NEG
A04PC36  PU    AVGPB=140,                                            X
               PUTYPE=2,                                             X
               XID=YES
```

```
***********************************************************************
*              CASUAL CONNECT OVER SWITCHED LINE                      *
* CONNECT TO A04NCP LINE 004, OR LINE 036 THROUGH SWITCHED MODEMS     *
*     - FOR LINE 004 IN A04NCP USE SWITCHED MAJOR NODE A81CCN04       *
*     - FOR LINE 036 IN A04NCP USE SWITCHED MAJOR NODE A81CCN36       *
***********************************************************************
A31CCNG1 GROUP DIAL=YES,CALL=INOUT,                                    X
               LNCTL=SDLC,                                             X
               REPLYTO=3,                                              X
               TYPE=NCP,                                               X
               XMITDLY=23.5
A31CCN04 LINE  ADDRESS=(004,HALF),                                     X
               AUTO=011,                                               X
               CALL=INOUT,                                             X
               CLOCKNG=EXT,                                            X
               DUPLEX=HALF,                                            X
               PAUSE=1.0,                                              X
               ROLE=NEG
A31PC41  PU    AVGPB=140,                                              X
               PUTYPE=2,                                               X
               XID=YES
A31CCN36 LINE  ADDRESS=(036,HALF),                                     X
               AUTO=043,                                               X
               CALL=INOUT,                                             X
               CLOCKNG=EXT,                                            X
               DUPLEX=HALF,                                            X
               PAUSE=1.0,                                              X
               ROLE=NEG
A31PC361 PU    AVGPB=140,                                              X
               PUTYPE=2,                                               X
               XID=YES
```

12.9 Type 2.1 Channel Connections between APPN Nodes

Type 2.1 channel connections can be used to connect two network nodes, or a network node and an end node. The following example shows how to connect an NCP in a composite network node to a network node.

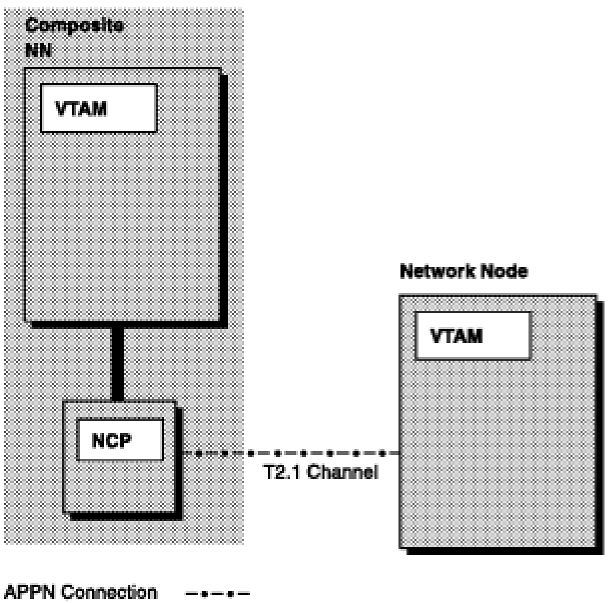

Figure 22. Type 2.1 Channel Connection between a Composite Network Node and a Network Node

To define this type of connection, you must define the following:

- Local SNA major node
- NCP major node.

The local SNA major node resides at the VTAM network node and the NCP major node resides at the VTAM host in the composite network node. Code PUTYPE=2 and XID=YES on the PU definition statement in the local SNA major node to define a peripheral type 2.1 node. Similarly, code PUTYPE=2 and XID=YES on the PU definition statement in the NCP major node to define a peripheral type 2.1 node.

To allow CP-CP sessions to be established between the two nodes, CONNTYPE=APPN and CPCP=YES must specified on the both of those PU definition statements, unless CONNTYPE=APPN and CPCP=YES have been specified as start options.

The CP-CP sessions are established through the NCP by activating the local

SNA major node from the network node and the line for the 2.1 channel from the VTAM composite node.

The following sample is taken from the NCP major node for this connection. The corresponding local SNA major node definition is found in "Type 2.1 Channel Connections Between APPN Nodes."

```
*------------------------------------------------------------------
*
*        L O C A L S N A   G R O U P S
*
*        DEFINITIONS FOR CHANNEL ATTACHED PU 2.1 (LOCAL SNA)
*
*------------------------------------------------------------------
*
 .
 .
 .
GRP3AAA1 GROUP LNCTL=CA,CA=TYPE5,NCPCA=ACTIVE
LN3AAA1  LINE  ADDRESS=04,TIMEOUT=840.0,CASDL=420.0,TRANSFR=255,       X
               INBFRS=128,ANS=CONT
P3A21AA1 PU    PUTYPE=2,OWNER=SSCP1A,XID=YES,                          X
               CONNTYPE=APPN,CPCP=YES,AUTHLEN=YES
```

12.10 Defining 3174 Polling Addresses

For a PU that is to be dynamically reconfigured, you can specify 3174 group addresses for PUs that are attached to peripheral nodes on a nonswitched SDLC link and that are to be dynamically reconfigured. Use of this dynamic reconfiguration capability requires, at a minimum, NCP V6R2.

GP3174=A1 on the NCP major node's PU definition statement specifies, in hexadecimal, the group poll address.

```
***********************************************************************
* NCP NAME:    B75NCP                                                 *
***********************************************************************
* LINE 016 - NORMAL GROUP POLL LINE WITH GP3174=A1 -- 3174#8 (FULL)   *
***********************************************************************
GRPOLL   GROUP LNCTL=SDLC,                                             X
               DIAL=NO,                                                X
               GP3174=A1
B75S16   LINE  ADDRESS=(016,FULL),                                     X
               CLOCKNG=EXT,                                            X
               DUPLEX=FULL,                                            X
               MODULO=8,                                               X
               PAUSE=2.0,                                              X
               MODETAB=NRFLOG,                                         X
               NRZI=NO,                                                X
               TRANSFR=20,                                             X
               USSTAB=AUSSTAB
* 3174 CONTROL TERMINALS
B75P16C1 PU    ADDR=C1,                                                X
               PUTYPE=2
B75L161A LU    LOCADDR=2,                                              X
               PACING=0
B75L161B LU    LOCADDR=3,                                              X
               PACING=0
* PS2N60
B75P16C2 PU    ADDR=C2,                                                X
               PUTYPE=2
B75L162A LU    LOCADDR=2,                                              X
               PACING=3
B75L162B LU    LOCADDR=3,                                              X
               PACING=3
B75L162C LU    LOCADDR=4,                                              X
               PACING=3
B75L162D LU    LOCADDR=5,                                              X
               PACING=3
* PS2N50
B75P16C3 PU    ADDR=C3,                                                X
               PUTYPE=2
B75L163A LU    LOCADDR=2,                                              X
               PACING=0
* PS2N51
B75P16C4 PU    ADDR=C4,                                                X
               PUTYPE=2
B75L164A LU    LOCADDR=2,                                              X
               PACING=0
***********************************************************************
```

IBM Library Server

12.11 Defining Retry Values

For a PU that is to be dynamically reconfigured, you can specify the time interval between retry sequences and the number of retry sequences for error recovery attempts made when problems occur during transmission over a link. Use of this dynamic reconfiguration capability requires, at a minimum, NCP V6R2.

In the RETRIES operands, 3 is the time interval in seconds between retry sequences and 5 is the number of retry sequences to be made.

Note: Dynamic reconfiguration of retry values on a nonswitched SDLC line does not allow you to specify the number of retries within each retry sequence.

```
***********************************************************************
* NCP NAME:    B75NCP                                                 *
***********************************************************************
*   LINE 075 - SWITCHED 3276 USING V25BIS=SS                          *
*   SWITCHED MAJOR NODE IS V25SDLC, LU IS B75L751A                    *
*   LINE 032 - SWITCHED 3276 USING V25BIS=SDLC                        *
*   SWITCHED MAJOR NODE IS V25SDLC, LU IS B75L321A                    *
***********************************************************************
GV25BIS  GROUP DIAL=YES,                                               X
               LNCTL=SDLC,                                             X
               REPLYTO=3,                                              X
               TYPE=NCP,                                               X
               USSTAB=HELLO,                                           X
               V25BIS=(YES,DLSDLC),                                    X
               XMITDLY=23.5
B75S75   LINE  ADDRESS=075,                                            X
               AUTO=YES,                                               X
               CALL=INOUT,                                             X
               CLOCKNG=INT,                                            X
               DUPLEX=HALF,                                            X
               PAUSE=1.0,                                              X
               REDIAL=(,3,5),                                          X
               RETRIES=(,3,5),                                         *
               RING=YES,                                               X
               SPEED=2400,                                             X
               V25BIS=(YES,DLSS)
B75P751  PU    AVGPB=140,                                              X
               PUTYPE=(1,2)
B75S32   LINE  ADDRESS=032,                                            X
               AUTO=YES,                                               X
               CALL=INOUT,                                             X
               CLOCKNG=EXT,                                            X
               DATMODE=FULL,                                           X
               DUPLEX=FULL,                                            X
               PAUSE=1.0,                                              X
               RETRIES=(,3,5),                                         *
               REDIAL=(,3,5),                                          X
               RING=YES,                                               X
               SPEED=1200,                                             X
               V25BIS=(YES,DLSDLC)
B75P321  PU    AVGPB=140,                                              X
```

```
               PUTYPE=(1,2)
***********************************************************************
```

IBM. Library Server

12.12 Dynamic Reconfiguration of PUs on a Frame Relay Line

Dynamic reconfiguration of PUs enables you to dynamically add and delete type 1 physical units to and from an NCP frame relay line. It also allows you to dynamically add and delete NCP FRSESET (frame relay switching equipment set) definition statements.

Use of dynamic reconfiguration requires, at a minimum, NCP V6R2.

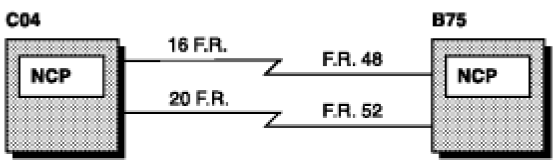

Figure 23. Dynamic reconfiguration of PUs on a frame relay line

Refer to "Dynamic Reconfiguration and Dynamic Change" in the *VTAM Resource Definition Reference* for information about the NCP definition statements that are validated by VTAM in association with dynamic reconfiguration for NCP frame relay resources.

Subtopics:

IBM Library Server

12.12.1 Defining a Frame Relay Line for NCP C04

FRELAY=PHYSICAL on the GROUP definition statement indicates that this is a frame relay physical line.

The SUBPORTS operand on the FRSESET definition statement specifies this line's primary frame relay PU type 1 partners and their optional backups.

The PU definition statements define the characteristics of the PU partners.

Note that there are no LU definition statements coded for frame relay lines.

```
***********************************************************************
* NCP NAME:    C04NCP                                                 *
***********************************************************************
* FRAME RELAY PHYSICAL GROUP - FULL DUPLEX                            *
***********************************************************************
C04FRGP1 GROUP FRELAY=PHYSICAL,                                        X
               ISTATUS=ACTIVE,                                         X
               TYPE=NCP
***********************************************************************
* FRAME RELAY PHYSICAL LINE 16  -  FULL DUPLEX 56 KB                  *
*                               -  CONNECTION TO B75NCP LINE 048      *
***********************************************************************
C04F16   LINE  ADDRESS=(016,FULL),                                     X
               MAXFRAME=2106,                                          X
               CLOCKNG=EXT,                                            X
               NRZI=NO,                                                X
               SPEED=56000
C04P16   PU    LMI=(ANSI,PRI),                                         X
               SPOLL=6,                                                X
               ERRORT=(3,4),                                           X
               TIMERS=(10,15)
C04P16A  PU    ADDR=50
C04P16B  PU    ADDR=51
C04P16C  PU    ADDR=60
* FRSE PU TO BE ADDED USING VTAM 4.1 PERM DR
*C04P16D PU    ADDR=52
***********************************************************************
* FRAME RELAY PHYSICAL LINE 20  -  FULL DUPLEX 56 KB                  *
*                               -  CONNECTION TO B75NCP LINE 052      *
***********************************************************************
C04F20   LINE  ADDRESS=(020,FULL),                                     X
               MAXFRAME=2106,                                          X
               CLOCKNG=EXT,                                            X
               NRZI=NO,                                                X
               SPEED=56000
C04P20   PU    LMI=(CCITT,PRI),                                        X
               SPOLL=6,                                                X
               ERRORT=(3,4),                                           X
               TIMERS=(10,15)
C04P20A  PU    ADDR=60
C04P20B  PU    ADDR=61
* FRSE PU TO BE ADDED USING VTAM 4.1 PERM DR
```

```
*C04P20D PU    ADDR=62
***********************************************************************
* FRAME RELAY PHYSICAL LINE 1028  -  FULL DUPLEX HPTSS                *
*                                 -  CONNECTION TO B31NCP LINE 1036   *
***********************************************************************
C04F1028 LINE  ADDRESS=(1028,FULL),                                    X
               MAXFRAME=2106,                                          X
               CLOCKNG=EXT,                                            X
               NRZI=NO,                                                X
               SPEED=1544000
C04P1028 PU    LMI=(CCITT,SEC),                                        X
               SPOLL=6,                                                X
               ERRORT=(3,4),                                           X
               TIMERS=(10,15)
C04P28A  PU    ADDR=1F
C04P28B  PU    ADDR=2F
C04P28C  PU    ADDR=50
* FRSE PU TO BE ADDED USING VTAM 4.1 PERM DR
*C04P28D PU    ADDR=3F
***********************************************************************
* FRSESET DEFINITIONS                                                 *
***********************************************************************
PVCSET1  FRSESET SUBPORTS=(C04P28A,C04P16A,,C04P20A)
PVCSET2  FRSESET SUBPORTS=(C04P28B,C04P16B,,C04P20B)
PVCSET3  FRSESET SUBPORTS=(C04P28C,C04P16C)
* FRSESET TO BE ADDED USING VTAM 4.1 PERM DR
*VCSET3  FRSESET SUBPORTS=(C04P28D,C04P16D,,C04P20D)
***********************************************************************
```

IBM Library Server

12.12.2 Defining a Frame Relay Line for NCP B75

FRELAY=PHYSICAL on the GROUP definition statement indicates that this is a frame relay physical line.

The SUBPORTS operand on the FRSESET definition statement specifies this line's primary frame relay PU type 1 partners and their optional backups.

The PU definition statements define the characteristics of the PU partners.

Note that there are no LU definition statements coded for frame relay lines.

```
***********************************************************************
* NCP NAME:    B75NCP                                                 *
***********************************************************************
* FRAME RELAY PHYSICAL GROUP - FULL DUPLEX                            *
***********************************************************************
B75FRGP1 GROUP FRELAY=PHYSICAL,                                         X
               ISTATUS=ACTIVE,                                          X
               TYPE=NCP,                                                X
               XMONLNK=YES
***********************************************************************
* FRAME RELAY PHYSICAL LINE 48  -  FULL DUPLEX 56KB                   *
***********************************************************************
B75F48   LINE  ADDRESS=(048,FULL),                                      X
               CLOCKNG=EXT,                                             X
               MAXFRAME=2106,                                           X
               NRZI=NO,                                                 X
               SPEED=56000
B75P48   PU    ERRORT=(3,4),                                            X
               LMI=(ANSI,SEC),                                          X
               SPOLL=6,                                                 X
               TIMERS=(10,15)
B75P48A  PU    ADDR=50
B75P48B  PU    ADDR=51
* FRSE PU TO BE ADDED USING VTAM 4.1 PERM DR
*B75P48C PU    ADDR=52
***********************************************************************
* FRAME RELAY PHYSICAL LINE 52  -  FULL DUPLEX 56KB                   *
***********************************************************************
B75F52   LINE  ADDRESS=(052,FULL),                                      X
               CLOCKNG=EXT,                                             X
               MAXFRAME=2106,                                           X
               NRZI=NO,                                                 X
               SPEED=56000
B75P52   PU    ERRORT=(3,4),                                            X
               LMI=(CCITT,SEC),                                         X
               SPOLL=6,                                                 X
               TIMERS=(10,15)
B75P52A  PU    ADDR=60
B75P52B  PU    ADDR=61
* FRSE PU TO BE ADDED USING VTAM 4.1 PERM DR
*B75P52C PU    ADDR=62
***********************************************************************
```

```
* FRAME RELAY PHYSICAL LINE 1036  -  FULL DUPLEX HPTSS                *
***********************************************************************
B75F1036 LINE  ADDRESS=(1036,FULL),                                    X
               CLOCKNG=EXT,                                            X
               MAXFRAME=2106,                                          X
               NRZI=NO,                                                X
               SPEED=1544000
B75P1036 PU    ERRORT=(3,4),                                           X
               LMI=(CCITT,SEC),                                        X
               SPOLL=6,                                                X
               TIMERS=(10,15)
B75P36A  PU    ADDR=1E
B75P36B  PU    ADDR=2E
* FRSE PU TO BE ADDED USING VTAM 4.1 PERM DR
*B75P36C PU    ADDR=3E
***********************************************************************
* FRSESET DEFINITIONS                                                 *
***********************************************************************
PVCSET1  FRSESET SUBPORTS=(B75P36A,B75P48A,,B75P52A)
PVCSET2  FRSESET SUBPORTS=(B75P36B,B75P48B,,B75P52B)
* FRSESET TO BE ADDED USING VTAM 4.1 PERM DR
*PVCSET3 FRSESET SUBPORTS=(B75P36C,B75P48C,,B75P52C)
***********************************************************************
```

IBM Library Server

12.13 X.25 NPSI Switched Subarea Short Hold Mode Connections

Two NCP subarea nodes can communicate across an X.25 packet switching data network with the support of the X.25 NPSI program product. Both permanent virtual circuit and switched virtual circuit connectivity options are supported. See Figure 24 for a picture of a multidomain connection across an X.25 network.

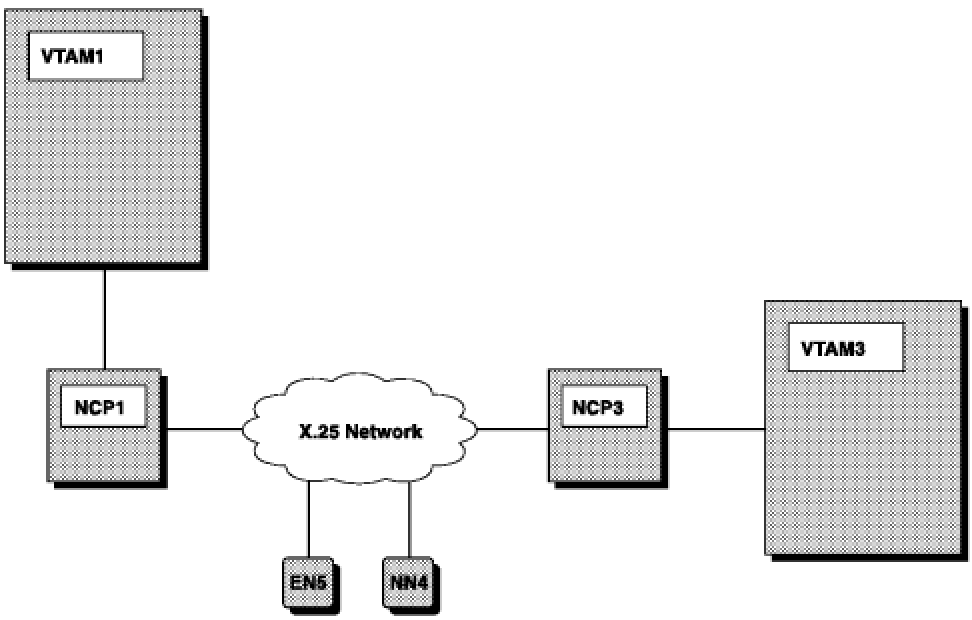

Figure 24. Multidomain X.25 Configuration

X.25 switched virtual circuit (SVC) subarea communication provides connectivity between two subarea nodes over switched virtual circuits. Short hold mode reduces the charge for SVCs, when charging is based on the length of connected time, by clearing the SVC during periods of inactivity and reestablishing the SVC when the connection is required to transmit information.

To define switched subarea short hold mode connections, resources must be defined in a an NCP major node and a switched major node on both sides of the connection.

In the NCP major node, you must define the physical circuit and one or more switched virtual circuits. The X25.MCH statement, which describes the physical circuit to X.25 NPSI, must adhere to the following requirements:

- SVCINN (the number of simultaneously active switched subarea connections) must be coded with a value equal to the number of

X25.LINE statements defined with DSTNODE=INN and TYPE=S.

- SHM=YES must be specified to permit short hold mode to be used by the subarea switched virtual circuit.

The definition of a switched virtual circuit consists of a SNA resource set and an X.25 resource set on both sides of the connection. The SNA resource set consists of the following:

- An X25.LINE statement that specifies TYPE=S|SWITCHED and DSTNODE=INN, indicating that the virtual circuit is connected to a subarea node. It also specifies a value for the operand NCPGRP, which is the label of the NCP GROUP statement that includes the virtual circuit.

- An X25.PU statement that specifies PUTYPE=4.

The X.25 resource set consists of an X25.VC statement that defines the virtual circuits to X.25 NPSI.

The definition requirements for the corresponding switched major node are found in topic 14.5.2.

For an example of an NCP major node that contains definitions necessary to establish a switched subarea short-hold mode connection, see the NCP major node named A71SADO below. For the corresponding switched major node definition, see topic 14.5.2.

```
**********************************************************************
*                                                                    *
*                            A 7 1 S A D O                           *
*                                                                    *
**********************************************************************
*                                                                    *
*     NCP NAME:    A71SAD - NCP 11.7                                 *
*     VER/REL:     V7R1                                              *
*     NPSI:        V3R7                                              *
*     SUBAREA:     A71N                                              *
*     BOX-TYPE:    3745                                              *
*                                                                    *
**********************************************************************
*     NCP OPTIONS MACRO                                              *
**********************************************************************
*
         OPTIONS NEWDEFN=(YES,ECHO),USERGEN=(X25NPSI,FNMNDFGN)
*
**********************************************************************
*     VTAM PCCU MACRO                                                *
**********************************************************************
*
APCCU1   PCCU  AUTOSYN=YES,BACKUP=YES,CDUMPDS=CSPDUMP,CONFGDS=CRNCKPT, X
               DUMPDS=VTAMDUMP,GWCTL=SHR,MAXDATA=8192,MDUMPDS=MOSSDUMP,X
               OWNER=A01N,SUBAREA=01
*
**********************************************************************
*     NCP BUILD MACRO - NCP/CONTROLLER INFO                          *
**********************************************************************
*
A71SAD   BUILD ADDSESS=5,                    *JSB                     X
               AUXADDR=5,                                             X
               BACKUP=500,                                            X
               BFRS=240,                                              X
               BRANCH=8000,                                           X
```

```
               CATRACE=(YES,255),                                      X
               CSMSG=C3D9C9E340E2C9E340D4C5E2E2C1C7C540C6D6D940E2E24040X
               40C2C340E3C5D9D4C9D5C1D3,                               X
               CNLSQMAX=50000,                                         X
               CNLSQTIM=60,                                            X
               CWALL=26,                                               X
               DYNPOOL=(79,78),                                        X
               ERASE=YES,                                              X
               ERLIMIT=16,                                             X
               LOADLIB=NCPLOAD,                                        X
               LTRACE=8,                                               X
               MAXSESS=250,                                            X
               MAXSSCP=8,                                              X
               MAXSUBA=100,                                            X
               MODEL=3745,                                             X
               MXRLINE=04,                                             X
               MXVLINE=60,                                             X
               NAMTAB=3,                                               X
               NETID=NETA,                                             X
               NEWNAME=A71SAD,          *JSB                           X
               NUMHSAS=100,                                            X
               OLT=YES,                                                X
               PWROFF=YES,                                             X
               SALIMIT=255,                                            X
               SLODOWN=12,                                             X
               SUBAREA=71,                                             X
               TRACE=(YES,100),                                        X
               TRANSFR=32,                                             X
               TWXID=(E8D6E4C3C1D3D311,C2C9C7D5C3D7C3C1D3D325),        X
               TYPGEN=NCP,                                             X
               TYPSYS=MVS,                                             X
               USGTIER=5,                                              X
               VERSION=V7R1,        * NCP Version                      X
               VRPOOL=1000,                                            X
               VRTIMER0=(10,10),                                       X
               VRTIMER1=(10,10),                                       X
               VRTIMER2=(10,10),                                       X
               X25.USGTIER=5,       * X.25 NPSI DEFINITIONS            X
               X25.SNAP=4000,       * 4K Snap Trace for DCR            X
               X25.MCHCNT=1,        * 7 MCH IN THIS GENERATION         X
               X25.PREFIX=X,        * ADDRESS PREFIX = 'X'             X
               X25.MAXPIU=64K,                                         X
               X25.PAHINDX=6,                                          X
               X25.IDNUMH=8         * 1ST DIGIT OF IDNUM IN SMN
*
***********************************************************************
*              DYNAMIC CONTROL FACILITIES USED BY VTAM                *
***********************************************************************
*
         SYSCNTRL OPTIONS=(BACKUP,BHSASSC,DLRID,DVSINIT,ENDCALL,       X
               LNSTAT,MODE,NAKLIM,RCNTRL,RCOND,RDEVQ,RECMD,RIMM,       X
               SESINIT,SESSION,SSPAUSE,STORDSP,XMTLMT)
*
***********************************************************************
*          NCP HOST MACRO - CHANNEL ATTACHED HOST DEFINITIONS         *
***********************************************************************
*
A01N     HOST  BFRPAD=0,INBFRS=6,MAXBFRU=32,SUBAREA=01,                X
               UNITSZ=256
*
***********************************************************************
*                   PATH DECK FOR NATIVE NETWORK                      *
***********************************************************************
*
***********************************************************************
*                      PATH TO OWNING HOST                            *
***********************************************************************
*
         PATH  DESTSA=01,                                              X
               ER0=(01,1),ER1=(01,1),ER2=(01,1),ER3=(01,1),            X
               ER4=(01,1),ER5=(01,1),ER6=(01,1),ER7=(01,1),            X
               ER8=(01,1),ER9=(01,1),                                  X
               VR0=0,                                                  X
               VRPWS00=(9,200),VRPWS01=(9,200),VRPWS02=(9,200),        X
               VR1=1,                                                  X
               VRPWS10=(9,200),VRPWS11=(9,200),VRPWS12=(9,200),        X
               VR2=2,                                                  X
               VRPWS20=(9,200),VRPWS21=(9,200),VRPWS22=(9,200),        X
               VR3=3,                                                  X
               VRPWS30=(9,200),VRPWS31=(9,200),VRPWS32=(9,200),        X
               VR4=4,                                                  X
```

```
               VRPWS40=(9,200),VRPWS41=(9,200),VRPWS42=(9,200),       X
               VR5=5,                                                 X
               VRPWS50=(9,200),VRPWS51=(9,200),VRPWS52=(9,200),       X
               VR6=6,                                                 X
               VRPWS60=(9,200),VRPWS61=(9,200),VRPWS62=(9,200),       X
               VR7=7,                                                 X
               VRPWS70=(9,200),VRPWS71=(9,200),VRPWS72=(9,200)
*
         PATH  DESTSA=(04,02),                                        X
               ER0=(04,1),ER1=(04,1),ER2=(04,1),ER3=(04,1),           X
               ER4=(04,1),ER5=(04,1),ER6=(04,1),ER7=(04,1),           X
               ER8=(04,1),ER9=(04,1),                                 X
               VR0=0,                                                 X
               VRPWS00=(9,200),VRPWS01=(9,200),VRPWS02=(9,200),       X
               VR1=1,                                                 X
               VRPWS10=(9,200),VRPWS11=(9,200),VRPWS12=(9,200),       X
               VR2=2,                                                 X
               VRPWS20=(9,200),VRPWS21=(9,200),VRPWS22=(9,200),       X
               VR3=3,                                                 X
               VRPWS30=(9,200),VRPWS31=(9,200),VRPWS32=(9,200),       X
               VR4=4,                                                 X
               VRPWS40=(9,200),VRPWS41=(9,200),VRPWS42=(9,200),       X
               VR5=5,                                                 X
               VRPWS50=(9,200),VRPWS51=(9,200),VRPWS52=(9,200),       X
               VR6=6,                                                 X
               VRPWS60=(9,200),VRPWS61=(9,200),VRPWS62=(9,200),       X
               VR7=7,                                                 X
               VRPWS70=(9,200),VRPWS71=(9,200),VRPWS72=(9,200)
*
**********************************************************************
*     NCP POOL MACROS - DYN RECONFIG & SWITCHED SDLC LINKS           *
**********************************************************************
*
     PUDRPOOL  NUMBER=1
     LUDRPOOL  NUMILU=5,NUMTYP1=1,NUMTYP2=5
*
**********************************************************************
*                                                                    *
*                 X.25 NPSI NETWORK DEFINITIONS                      *
*                                                                    *
**********************************************************************
*
PADCHAR1 X25.PAD  INDEX=1,PADPARM=NULL
PADCHAR2 X25.PAD  INDEX=2,PADPARM=070108000100
PADCHAR3 X25.PAD  INDEX=3,PADPARM=070208000100
PADCHAR4 X25.PAD  INDEX=4,PADPARM=070508000100
PADCHAR5 X25.PAD  INDEX=5,PADPARM=070808000100
PADCHAR6 X25.PAD  INDEX=6,PADPARM=070808000100
*
TRANS1   X25.TRAN    USER=1,                                          X
               DCIN0=00010203372D2E2F1605250B0C0D0E0F,                X
               DCIN1=101112133C5A322618193F271C1D1E1F,                X
               DCIN2=404F7F7B5B6C507D4D5D5C4E6B604B61,                X
               DCIN3=F0F1F2F3F4F5F6F7F8F97A5E4C7E6E6F,                X
               DCIN4=43C1C2C3C4C5C6C7C8C9D1D2D3D4D5D6,                X
               DCIN5=D7D8D9E2E3E4E5E6E7E8E9AD51BD5F6D,                X
               DCIN6=79818283848586878889919293949596,                X
               DCIN7=979899A2A3A4A5A6A7A8A98BBA9BA107,                X
               DCIN8=80DCC083DA7C86E08FC9D08B568D8E8F,                X
               DCIN9=909192FBFB95969798999A9B9C9D9E9F,                X
               DCINA=A0A1A2A3A4A5A6A7A8A9AA64ACADAEAF,                X
               DCINB=B0B1B2FAECB5B6B7B8B9BABBBCBDBEBC,                X
               DCINC=ABCBCCEBBF8FC6C7ABC9CACBCCCDCECF,                X
               DCIND=D0D1D2D3D4D5D6D7D8BBACDBDCDDDEDF,                X
               DCINE=E0E1E2E3E4E5E6E7E8E9EAEBECEDEEEF,                X
               DCINF=F0F1F2F3F4F5F6F7B0F9FAFBFCFDFEFF,                X
               DCOT0=000102033A093A7F3A3A3A0B0C0D0E0F,                X
               DCOT1=101112133A0A087F18193A3A1C1D1E1F,                X
               DCOT2=3A3A3A3A3A0A171B3A3A3A3A3A050607,                X
               DCOT3=3A3A163A3A3A3A043A3A3A3A14153A1A,                X
               DCOT4=203A3A403A3A3A3A3A3A5B2E3C282B21,                X
               DCOT5=265C3A3A3A3A8C3A3A3A15242A293B5E,                X
               DCOT6=2D2F3A3AAB3A3A3A3A3A7C2C255F3E3F,                X
               DCOT7=3A3A3A3A3A3A3A3A3A603A2385273D22,                X
               DCOT8=3A616263646566676869 3A7B3A3A3AC5,                X
               DCOT9=3A6A6B6C6D6E6F7071723A7D3A3A3A3A,                X
               DCOTA=3A7E737475767778797A3AC0DA5B3A3A,                X
               DCOTB=F83A3A3A3A3A3A3A3A3AD9BF5D3AC4,                  X
               DCOTC=8241424344454647484 93AC1C23A3A3A,                X
               DCOTD=8A4A4B4C4D4E4F505152843A813A3AFF,                X
               DCOTE=873A535455565758595A3AC3B43A3A3A,                X
```

```
               DCOTF=30313233343536373839B393883A3A3A
*                     0 1 2 3 4 5 6 7 8 9 A B C D E F
*
***********************************************************************
*                     X25.NET DEFINITIONS          *
***********************************************************************
*
RTPNET  X25.NET CPHINDX=7,OUHINDX=19,DM=YES,RESETINO=NO,RFAC=BLCUG,   X
               R20=2,R22=2,R23=2,CAUSE=CCITT,NSTDFAC=(00,04,04,08),    X
               DCI=YES
*
        X25.VCCPT INDEX=1,MAXPKTL=4096,VWINDOW=127
        X25.VCCPT INDEX=2,MAXPKTL=4096,VWINDOW=127
        X25.VCCPT INDEX=3,MAXPKTL=4096,VWINDOW=127
        X25.VCCPT INDEX=4,MAXPKTL=4096,VWINDOW=127
        X25.VCCPT INDEX=5,MAXPKTL=4096,VWINDOW=127
        X25.VCCPT INDEX=6,MAXPKTL=4096,VWINDOW=127
        X25.VCCPT INDEX=7,MAXPKTL=4096,VWINDOW=127
*
        X25.OUFT INDEX=1
        X25.OUFT INDEX=2,OPTFACL=420707430202
        X25.OUFT INDEX=3,OPTFACL=420707430303,USRFILD=1234567890
        X25.OUFT INDEX=4,OPTFACL=420A0A430F0F
*
***********************************************************************
*                   S A D  C O N N E C T I O N S                      *
*                                                                     *
*         LINE 001 SAD INN Connection SNI NETID=NETA / SA=03          *
***********************************************************************
*
***********************************************************************
*                  PHYSICAL LINE DEFINITIONS                          *
***********************************************************************
*
MCH1028  X25.MCH ADDRESS=1028,                                         X
               RESETPVC=YES,                                           X
               RNRTIMER=30,                                            X
               RNRPKT=YES,                                             X
               FRMLGTH=4100,                                           X
               PKTMODL=128,                                            X
               MMODULO=128,                                            X
               MWINDOW=127,                                            X
               ANS=CONT,                                               X
               DBIT=YES,                                               X
               GATE=NO,                                                X
               LCGDEF=(0,1),                                           X
               LCN0=NOTUSED,                                           X
               LLCLIST=LLC3,                                           X
               LSPRI=NO,                                               X
               LUNAME=AU1028,                                          X
               MBITCHN=YES,                                            X
               NCPGRP=AM1028,                                          X
               NDRETRY=3,                                              X
               NPRETRY=7,                                              X
               PHYSRSC=NO,                                             X
               PUNAME=APA28,                                           X
               SDRTCNT=1,                                              X
               SDRTIME=10,                                             X
               SHM=YES,                                                X
               SPEED=1843200,                                          X
               STATION=DTE,                                            X
               SVCINN=1,                                               X
               TDTIMER=3,                                              X
               TPTIMER=10,                                             X
               XMONLNK=YES
*
***********************************************************************
*                   LOGICAL LINE DEFINITIONS                          *
***********************************************************************
*
         X25.LCG LCGN=0
*
ALA28GGH X25.LINE DSTNODE=INN,CALL=INOUT,SPAN=OPER1,TYPE=S,            X
               NCPGRP=AGA28SAD
APA28GGH X25.PU ISTATUS=INACTIVE,PUTYPE=4
AUA28GGH X25.VC LCN=1,TYPE=S,OUFINDX=1,VCCINDX=7,CALL=INOUT,           X
               ISTATUS=ACTIVE,HEXNAME=NO,SPAN=OPER1,SUFFIX=1,          X
               PRFLINE=AM28RESL,PRFPU=AM28RESP,PRFLU=AM28RESU
*
***********************************************************************
```

```
*                       END OF X.25 DEFINITIONS                           *
***************************************************************************
*
          X25.END
***************************************************************************
*      CHANNEL ADAPTER DEFINITIONS                                        *
***************************************************************************
*
A71CA     GROUP LNCTL=CA,CA=TYPE7,NCPCA=ACTIVE,DELAY=0.0,NPACLOO=NO
                MAXBFRU=96,CASDL=420,TIMEOUT=180,ISTATUS=ACTIVE
*
A71C01    LINE  ADDRESS=P1,CASDL
A71P01A   PU    PUTYPE=5,TGN=1
*
A71C03    LINE  ADDRESS=P3,CASDL
A71P03A   PU    PUTYPE=5,TGN=1
*
A71C05    LINE  ADDRESS=P5,CASDL
A71P05A   PU    PUTYPE=5,TGN=1
*
A71C07    LINE  ADDRESS=P7,CASDL
A71P07A   PU    PUTYPE=5,TGN=1
*
GENEND    GENEND
          END
```

12.14 Authorized Transmission Priority for LEN Connections

In the PU definition statement for P3A21AA1 in topic 12.9, AUTHLEN=YES specifies that a session between two independent LUs through a subarea network will use the same transmission priority for both type 2.1 LEN connections (entry and exit). AUTHLEN may only be specified for node type 2.1. AUTHLEN=YES is the default.

12.15 Limiting Sessions for Switched Resources

In the excerpt below, taken from a sample NCP major node, MAXSESS=2 specifies that the maximum number of concurrent LU-LU sessions in which the independent LU A03I34A1 can participate is two.

```
**********************************************************************
*     ADDRESS 34 = 9.6 FDX ( DR CAPABLE ) WITH 5 DLU &  5 ILU EACH   *
**********************************************************************
A03S34   LINE  ADDRESS=(034,FULL),                                     X
               CLOCKNG=EXT,                                            X
               DUPLEX=FULL,                                            X
               ISTATUS=ACTIVE,                                         X
               MAXPU=25,                                               X
               MODETAB=AMODETAB,                                       X
               NRZI=YES,                                               X
               PACING=7,                                               X
               PUDR=YES,                                               X
               RETRIES=(5,5,5),                                        X
               SPEED=9600
         SERVICE MAXLIST=25
A03P34A  PU    ADDR=C1,                                                X
               XID=YES
A03D34A1 LU    LOCADDR=01
A03D34A2 LU    LOCADDR=02
A03D34A3 LU    LOCADDR=03
A03D34A4 LU    LOCADDR=04
A03D34A5 LU    LOCADDR=05
A03I34A1 LU    LOCADDR=0,RESSCB=5,MAXSESS=2
A03I34A2 LU    LOCADDR=0,RESSCB=5
A03I34A3 LU    LOCADDR=0,RESSCB=5
A03I34A4 LU    LOCADDR=0,RESSCB=5
A03I34A5 LU    LOCADDR=0,RESSCB=5
```

IBM Library Server

12.16 Delayed Activation of Logical Lines

Delayed activation of logical lines enables you to perform an orderly activation of a physical resource and its associated logical resources. Because there is a hierarchical relationship between the physical resources (line and physical unit) and the logical lines, you can use this function to implicitly activate a logical line when the physical resources are explicitly activated.

This function creates a hierarchy between a logical line group that has a PHYSRSC operand coded on the GROUP definition statement in an NCP major node, and the physical resource indicated by the PHYSRSC operand. You can use this function for the following resources:

- NCP/Token-Ring interconnection (NTRI) physical resources (line and PU) and logical lines for intermediate network node link stations, as shown in this sample

- NCP Packet Switching Interface (NPSI) physical resources (line and PU) and logical lines

- Frame relay physical resources (line and PU) and logical lines.

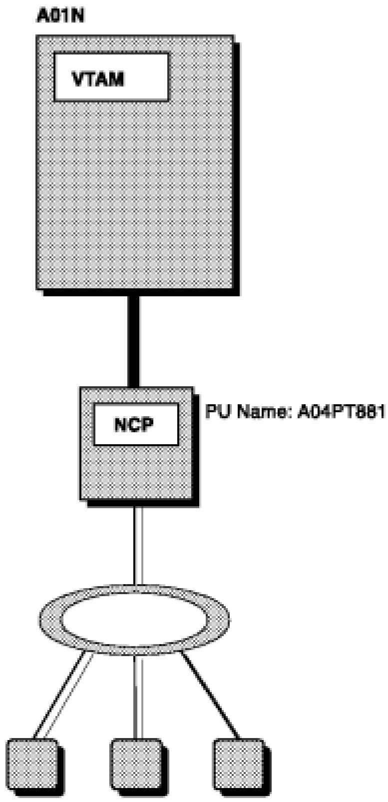

Figure 25. An NCP/Token-Ring Interconnection (NTRI) Connection. Host A01 is an interchange node (ICN).

For more information on delayed activation of logical lines and NTRI support, see the "Delayed Activation of Logical Lines" in the *VTAM Network Implementation Guide*.

For more information on the PHYSRSC operand, see "PHYSRSC" in the *VTAM Resource Definition Reference*.

Subtopics:

12.16.1 Defining an NCP Major Node for Delayed Activation

The NTRI connection requires an NCP major node with both physical and logical resources defined:

- The token-ring interface coupler (TIC) connection for NTRI support is defined as a physical connection, which is generated as a nonswitched duplex line.

  In this sample, A0437CS is the LAN NTRI physical group.

  ADDRESS=(2080,FULL) identifies 2080 as the relative address of the TIC on the 3745 communication controller. FULL is required for a NTRI physical line, and indicates that this is a duplex facility.

  LOCADD=400000000041 identifies the TIC address on the token ring. Any peripheral node that is attached to the token ring and needs to communicate through the 3745 TIC must use this address.

- ECLTYPE=(LOG,PER) indicates that the peripheral nodes that are attached to the token ring are defined as logical connections, which are generated as switched half-duplex lines.

  In this sample, A04BNNG3 is the LAN NTRI logical group.

  PHYSRSC=A04P2080 indicates that lines in this group are logical resources dependent on a higher level (physical) resource, in this case NCP A04P2080.

```
***********************************************************************
* NCP NAME:   A04NCP
***********************************************************************
* NCP/TOKEN RING INTERCONNECT PHYSICAL LINE
***********************************************************************
* 37CS PHYSICAL CONNECTIONS
***********************************************************************
A0437CS  GROUP ADAPTER=TIC3,                                            X
               ANS=CONTINUE,                                            X
               DIAL=NO                                                  X
               ECLTYPE=(PHY,ANY),                                       X
               ISTATUS=ACTIVE,                                          X
               LNCTL=SCLC,                                              X
               PUDR=NO,                                                 X
               PUTYPE=1,                                                X
               TYPE=NCP,                                                X
               RETRIES=(20,5,5),                                        X
               XID=NO
A04L2080 LINE  ADAPTER=TIC3,                                            X
               ADDRESS=(2080,FULL),                                     X
```

```
               ANS=CONT,                                              X
               BEACTO=50,                                             X
               LOCADD=400000009021,                                   X
               LSPRI=NO,                                              X
               MAXTSL=288,                                            X
               PORTADD=7,                                             X
               TRSPEED=16
*
A04P2080 PU    ANS=CONT,                                              X
               INNPORT=YES,                                           X
               PUDR=NO,                                               X
               PUTYPE=1,                                              X
               XMONLNK=YES                                            X
*
***********************************************************************
* 37CS PHYSICAL CONNECTIONS
***********************************************************************
A04BNNG3 GROUP ANS=CONT,                                              X
               AUTOGEN=5,                                             X
               CALL=INOUT,                                            X
               ECLTYPE=(LOG,PER),                                     X
               ISTATUS=ACTIVE,                                        X
               LINEAUT=YES,                                           X
               LNCTL=SDLC,                                            X
               PHYSRSC=A04P2080,                                      X
               PUTYPE=2,                                              X
               TYPE=NCP
***********************************************************************
```

12.17 IPL/Dump Contention Improvements

You can automatically dump or IPL the same NCP from more than one channel-attached VTAM. (You can code AUTODMP=YES and AUTOIPL=YES on multiple VTAMs for the same NCP.)

If the NCP is already being IPLed or dumped by one VTAM and it receives a request for an IPL or dump from another VTAM, the second request is rejected and the operator is informed that the second VTAM is waiting for the communications controller to become available. When the contending operation completes, VTAM will restart the requested IPL or dump operation if the state of the communications controller indicates that it is required.

Note: More than one host might take a dump successfully.

This function requires Advanced Communications Function/System Support Programs (ACF/SSP) Version 3 Release 7 or a subsequent release.

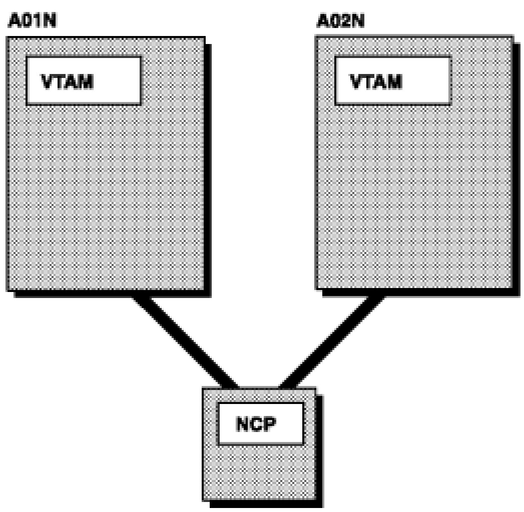

Figure 26. A Shared NCP. Either VTAM can automatically dump or IPL the NCP.

For more information on sharing an NCP, including owning resources, defining owners and backup owners, and dumping or IPLing a shared NCP, see the *VTAM Network Implementation Guide*.

For more information on the AUTODMP and AUTOIPL operands, see the *VTAM Resource Definition Reference*.

Subtopics:

12.17.1 Defining PCCU Definition Statements for an NCP

This sample shows PCCU definition statements for hosts A01N and A02N. Either host can activate this NCP.

AUTODMP=YES indicates that a dump of communication controller storage will be taken automatically after an unrecoverable failure in the NCP or the communication controller.

AUTOIPL=YES indicates that VTAM should automatically load another copy of the NCP and restart it after either an unrecoverable failure occurs in the NCP or the communication controller, or a dump is taken of the controller.

The AUTODMP operand is valid only if you also code a DUMPDS operand. Here, DUMPDS=VTAMDUMP indicates that file VTAMDUMP will contain the storage dump of the communication controller.

DUMPLD=YES indicates that the communication controller will attempt to dump and load the NCP. If the dump and load by the communication controller is successful, the AUTODMP and AUTOIPL operands are ignored.

BACKUP=YES indicates that a backup host can take over this NCP's resources.

The OWNER operands associate hosts A01N and A02N with their respective PCCU definition statements.

```
***********************************************************************
* PCCU DEFINITION STATEMENTS FOR AUTOMATIC DUMP AND IPL
***********************************************************************
APCCU1   PCCU  AUTODMP=YES,                                            X
               AUTOIPL=YES,                                            X
               AUTOSYN=YES,                                            X
               BACKUP=YES,                                             X
               CDUMPDS=CSPDUMP,                                        X
               CONFGDS=CRNCKPT,                                        X
               DUMPDS=VTAMDUMP,                                        X
               DUMPLD=YES,                                             X
               MAXDATA=4096,                                           X
               MDUMPDS=MOSSDUMP,                                       X
               NETID=NETA,                                             X
               OWNER=A01N,                                             X
               SUBAREA=01,                                             X
               TGN=10
APCCU2   PCCU  AUTODMP=YES,                                            X
               AUTOIPL=YES,                                            X
               AUTOSYN=YES,                                            X
               BACKUP=YES,                                             X
               CDUMPDS=CSPDUMP,                                        X
               CONFGDS=CRNCKPT,                                        X
               DUMPDS=VTAMDUMP,                                        X
               DUMPLD=YES,                                             X
```

```
                  MAXDATA=4096,                                        X
                  MDUMPDS=MOSSDUMP,                                    X
                  NETID=NETA,                                          X
                  OWNER=A02N,                                          X
                  SUBAREA=02,                                          X
                  TGN=10
      ***********************************************************************
```

12.18 Defining Spare SDLC Lines

You can define a spare line in your NCP definition for physical line slots that have no physical lines attached. The spare line acts as a place holder for a physical line to be attached later. You can also specify that a line attached to the line slot and that is in use can be redefined later as a spare line.

3745-attached SDLC peripheral lines can be generated as spare lines, as redefinable lines, or as neither. A spare line is not in use and cannot be activated. A redefinable line can be activated and used.

When you generate a spare line in NCP, you create a line address to which you can later add a physical line. When you code spare and redefinable lines, you define the characteristics of the physical line that will be added to or removed from your communication controller.

On the GROUP definition statement code TYPE=NCP to specify that the line is initially a spare line, a redefinable line, or neither.

On the LINE definition statement:

- Code USE=SPARE to define the line as initially a spare line. This line is being defined for later use, although there is no line physically attached to the line slot in the NCP.

- Code USE=REDEF to define the line as initially a redefinable line. This line is in use and has the capability of being changed to a spare line.

Note: The MODIFY LINEDEF command allows you to dynamically change the definition of a redefinable line, where a redefinable line is an SDLC line that has been defined in an NCP major node with USE=REDEF or USE=SPARE.

```
***********************************************************************
* DEFINITION STATEMENTS FOR SPARE SDLC LINES
***********************************************************************
**********************************************************************
*      LINE 384 --- USE=SPARE
**********************************************************************
SDLCGRP  GROUP ACTIVTO=60.0,                                          X
               ANS=CONT,                                              X
               AVGPB=128,                                             X
               CLOCKNG=EXT,                                           X
               DIAL=NO,                                               X
               DUPLEX=FULL,                                           X
               IRETRY=YES,                                            X
               ISTATUS=INACTIVE,                                      X
               LNCTL=SDLC,                                            X
```

```
               MAXDATA=256,                                            X
               MAXOUT=1,                                               X
               MODETAB=NCP108,                                         X
               NPACOLL=YES,                                            X
               NPATP=YES,                                              X
               NRZI=NO,                                                X
               PASSLIM=2,                                              X
               PACING=7,                                               X
               PUDR=NO,                                                X
               PUTYPE=2,                                               X
               REPLYTO=5,                                              X
               RETRIES=(,3,5),                                         X
               TYPE=NCP,                                               X
               USSTAB=AUSSTAB
*
L384     LINE  ADDRESS=384,USE=SPARE
P3841    PU    ADDR=C1
T3841A   LU    LOCADDR=2
**********************************************************************
*     LINE 385 --- USE=REDEF
**********************************************************************
SDLCGRP1 GROUP ACTIVTO=60.0,                                           X
               ANS=CONT,                                               X
               AVGPB=128,                                              X
               CLOCKNG=EXT,                                            X
               DIAL=NO,                                                X
               DUPLEX=FULL,                                            X
               IRETRY=YES,                                             X
               ISTATUS=INACTIVE,                                       X
               LNCTL=SDLC,                                             X
               MAXDATA=256,                                            X
               MAXOUT=1,                                               X
               MODETAB=NCP108,                                         X
               NPACOLL=YES,                                            X
               NPATP=YES,                                              X
               NRZI=NO,                                                X
               PASSLIM=2,                                              X
               PACING=7,                                               X
               PUDR=NO,                                                X
               PUTYPE=2,                                               X
               REPLYTO=5,                                              X
               RETRIES=(,3,5),                                         X
               TYPE=NCP,                                               X
               USSTAB=AUSSTAB
*
L385     LINE  ADDRESS=385,USE=REDEF
P3851    PU    ADDR=C1
T3851A   LU    LOCADDR=2
T3851B   LU    LOCADDR=3
T3851C   LU    LOCADDR=4
T3851D   LU    LOCADDR=5
T3851E   LU    LOCADDR=6
T3851F   LU    LOCADDR=7
T3851G   LU    LOCADDR=8
T3851H   LU    LOCADDR=9
P3852    PU    ADDR=C2
T3852A   LU    LOCADDR=2
T3852B   LU    LOCADDR=3
T3852C   LU    LOCADDR=4
T3852D   LU    LOCADDR=5
T3852E   LU    LOCADDR=6
T3852F   LU    LOCADDR=7
T3852G   LU    LOCADDR=8
T3852H   LU    LOCADDR=9
**********************************************************************
```

12.19 Frame Relay Networks Over Token-Ring Connections

Frame relay networks over token-ring connections allow users who interconnect NCPs with token ring to provide a private frame relay network over these token-ring connections without the need for additional physical lines.

Frame relay over token-ring resources include a PU type 1 defined on a token-ring physical line and leased logical lines associated with this PU with multiple type 1 PUs.

Code ECLTYPE=(PHYSICAL,ANY) on the GROUP definition statement to specify NTRI physical resources.

```
***********************************************************************
*  PHYSICAL DEFINITIONS FOR FRAME RELAY PORTS                        *
***********************************************************************
*
A31NTRI1 GROUP ECLTYPE=(PHYSICAL,ANY),                               X
               USSTAB=AUSSTAB,                                       X
               ISTATUS=ACTIVE,                                       X
               ADAPTER=TIC2,                                         X
               ANS=CONTINUE,                                         X
               TRSPEED=16,                                           X
               XID=NO
*
A31TR88  LINE  ADDRESS=(1088,FULL),                                  X
               PORTADD=88,                                           X
               MAXTSL=1028,                                          X
               MAXFRAME=4096,                                        X
               XMONLNK=YES,                                          X
               LOCADD=400003101088
A31PU88A PU    PUTYPE=1
*
A31PU88B PU    NETWORK=FRELAY,COMRATE=(,1),PUTYPE=1,ADDR=03
*
A31TR89  LINE  ADDRESS=(1089,FULL),                                  X
               PORTADD=89,                                           X
               MAXTSL=1028,                                          X
               MAXFRAME=4096,                                        X
               XMONLNK=YES,                                          X
               LOCADD=400003101089
A31PU89A PU    PUTYPE=1
*
A31PU89B PU    NETWORK=FRELAY,COMRATE=(,1),PUTYPE=1,ADDR=03
*
*
A31TR92  LINE  ADDRESS=(1092,FULL),                                  X
               PORTADD=92,                                           X
               MAXTSL=1028,                                          X
               MAXFRAME=4096,                                        X
               XMONLNK=YES,                                          X
               LOCADD=400003101092
A31PU92A PU    PUTYPE=1
*
A31PU92B PU    NETWORK=FRELAY,COMRATE=(,1),PUTYPE=1,ADDR=03
```

```
*
A31TR93  LINE  ADDRESS=(1093,FULL),                                    X
               PORTADD=93,                                             X
               MAXTSL=1028,                                            X
               MAXFRAME=4096,                                          X
               XMONLNK=YES,                                            X
               LOCADD=400003101093
A31PU93A PU    PUTYPE=1
*
A31PU93B PU    NETWORK=FRELAY,COMRATE=(,1),PUTYPE=1,ADDR=03
*
***********************************************************************
```

Code ECLTYPE=(LOGICAL,FRELAY) on the GROUP definition statement to specify that the group, subordinate lines and PUs be treated as frame relay resources.

On the PHYSRSC operand, specify the name of the frame relay over token-ring physical PU (NETWORK=PU on the PU definition statement) defined on the token-ring physical line.

```
***********************************************************************
*  LOGICAL DEFINITIONS FOR FRAME RELAY PORT A31PU89B                  *
***********************************************************************
*
A31FRTG2 GROUP ECLTYPE=(LOGICAL,FRELAY),PUTYPE=1,TYPE=NCP,DIAL=NO,     X
               LNCTL=SDLC,LINEADD=NONE,COMPOWN=YES,RETRIES=(6,0,0,6),  X
               PHYSRSC=A31PU89B,PUDR=YES
A31LFR1B LINE  MAXFRAME=4096,NPACOLL=(YES,EXTENDED),MAXPU=240,         X
               COMRATE=(,1)
A31LM89A PU    LMI=ANSI,ANS=CONT,ADDR=C4400000711089
A31P8920 PU    ADDR=20
A31P8921 PU    ADDR=21
A31P8922 PU    ADDR=22
A31P8923 PU    ADDR=23
A31P8924 PU    ADDR=24
A31P8925 PU    ADDR=25
A31P8926 PU    ADDR=26
A31P8927 PU    ADDR=27
A31P8928 PU    ADDR=28
A31P8929 PU    ADDR=29
A31P8930 PU    ADDR=30
A31P8931 PU    ADDR=31
*
A31P8950 PU    ADDR=50
A31P8951 PU    ADDR=51
A31P8952 PU    ADDR=52
A31P8953 PU    ADDR=53
A31P8954 PU    ADDR=54
A31P8955 PU    ADDR=55
A31P8956 PU    ADDR=56
A31P8957 PU    ADDR=57
A31P8958 PU    ADDR=58
A31P8959 PU    ADDR=59
A31P895A PU    ADDR=5A
A31P895B PU    ADDR=5B
A31P895C PU    ADDR=5C
A31P895D PU    ADDR=5D
A31P895E PU    ADDR=5E
A31P895F PU    ADDR=5F
A31P8999 PU    ADDR=99
***********************************************************************
```

IBM Library Server

13.0 Chapter 13. Packet Major Node (VM, VSE)

Subtopics:

13.1 About This Chapter

This chapter contains sample packet major node definitions.

This chapter discusses how packet major node definitions can be used in the definition of the following types of connections:

- "X.25 DTE-to-DTE Permanent Virtual Circuit Connection"
- "An X.25 DTE-to-DTE Switched Virtual Circuit Connection"

13.2 X.25 DTE-to-DTE Permanent Virtual Circuit Connection

With DTE-to-DTE support, two DTEs can be connected using modems or a modem eliminator, and can communicate without an intervening X.25 packet switched data network (PSDN). One of the DTEs acts as a DCE. The following requirements and restrictions apply:

- DTE-to-DTE connections are supported on any ES/9000 series TCS (Telecommunications Subsystem) X.25 port attached to a permanent virtual circuit.

- For each DTE, the NETTYPE operand on the PORT definition statement of the packet major node identifies the role **of the other DTE**. For example, if you code NETTYPE=DTE, this DTE will assume the role of the DCE, and the other will assume the role of the DTE. If you code NETTYPE=DCE, this DTE will assume the role of the DTE, and the other will assume the role of the DCE.

- One of the DTEs must be coded with NETTYPE=DCE, and the other with NETTYPE=DTE. If both are coded with NETTYPE=DTE, or both with NETTYPE=DCE, you will get unpredictable results.

- For the DTE coded with NETTYPE=DTE, you must code the VCALLS operand on the PORT definition statement of the packet major node from the perspective of the other DTE. That is, the **incoming** channels that you code on VCALLS will be used as **outgoing** channels by this DTE.

- DTE-to-DTE connections are supported in both single-domain and multiple-domain environments. There is no support for multiple-network environments.

- You cannot connect together more than two VTAM hosts.

This sample shows an X.25 DTE-to-DTE permanent virtual circuit connection in a multiple-domain configuration.

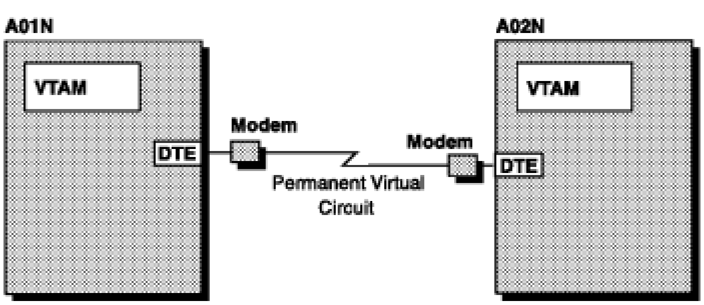

Figure 27. An X.25 DTE-to-DTE Permanent Virtual Circuit Multiple-Domain Configuration

For more information on implementing DTE-to-DTE support, see the *VTAM Network Implementation Guide*.

Subtopics:

13.2.1 Defining NETTYPE, VCALLS, and PWINDOW for Host A01N

TYPE=PACKET on the VBUILD definition statement indicates that this is a packet major node.

Host A01N is coded with NETTYPE=DTE on the PORT definition statement of the packet major node, which means:

- A01N will act as the DCE.
- A02N will act as the DTE.
- A01N's VCALLS operand must be coded from the perspective of A02N. That is, A01N's VCALLS must match A02N's VCALLS.

In addition, A01N's PWINDOWs must match A02N's PWINDOWs. The PWINDOW operand specifies window size.

```
************************************************************************
* PACKET MAJOR NODE FOR HOST A01N
************************************************************************
X25PORT2 VBUILD TYPE=PACKET
PORTZ    PORT  CUADDR=(803,80B),                                        X
               NETTYPE=DTE,                                             X
               VCALLS=(,,013,04C,,),                                    X
               CHARGACC=NO,                                             X
               CHARGE=NO,                                               X
               DIALNO=90201234519,                                      X
               MAXOUT=7,                                                X
               NETLEVEL=84,                                             X
               PLENGTH=128,                                             X
               PMOD=8,                                                  X
               PWINDOW=7,                                               X
               REPLYTO=5,                                               X
               RETRIES=31
X25VCPM  VCPARMS LC=(001,008),                                          X
               PWINDOW=7,                                               X
               PLENGTH=128
X25PVC2  GROUP DIAL=NO,                                                 X
               LNCTL=SDLC,                                              X
               ISTATUS=INACTIVE
XLNPVC   LINE  ISTATUS=INACTIVE,                                        X
               ADDRESS=008,                                             X
               MODETAB=AMODETAB
XPU2     PU    PUTYPE=2,                                                X
               XID=YES,                                                 X
               ADDR=C2
ECHO02   LU    LOCADDR=0
ECHOA02  LU    LOCADDR=0
X25PVC5  GROUP DIAL=NO,                                                 X
               LNCTL=SDLC,                                              X
               ISTATUS=INACTIVE
XLINE01  LINE  ISTATUS=INACTIVE,                                        X
               ADDRESS=005
XPU01    PU    PUTYPE=5,                                                X
               SUBAREA=02
```

```
***********************************************************************
```

13.2.2 Defining NETTYPE, VCALLS, and PWINDOW for Host A02N

Host A02N is coded with NETTYPE=DCE on the PORT definition statement of the packet major node, which means A01N will act as the DCE and A02N will act as the DTE.

In addition, A02N's PWINDOWs must match A01N's PWINDOWs.

```
*********************************************************************
* PACKET MAJOR NODE FOR HOST A02N
*********************************************************************
X25PORT  VBUILD TYPE=PACKET
PORTB    PORT  CUADDR=(803,80B),                                    X
               NETTYPE=DCE,                                         X
               VCALLS=(,,013,04C,,),                                X
               CHARGACC=NO,                                         X
               CHARGE=NO,                                           X
               DIALNO=90201234519,                                  X
               MAXOUT=7,                                            X
               NETLEVEL=84,                                         X
               PLENGTH=128,                                         X
               PMOD=8,                                              X
               PWINDOW=7,                                           X
               REPLYTO=5,                                           X
               RETRIES=31
X25VCPM  VCPARMS LC=(001,008),                                      X
               PWINDOW=7,                                           X
               PLENGTH=128
X25PVC2  GROUP DIAL=NO,                                             X
               LNCTL=SDLC,                                          X
               ISTATUS=INACTIVE
XLNPVC   LINE  ISTATUS=INACTIVE,                                    X
               ADDRESS=008,                                         X
               MODETAB=AMODETAB
XPU2     PU    PUTYPE=2,                                            X
               XID=YES,                                             X
               ADDR=C2
ECHO01   LU    LOCADDR=0
ECHOA01  LU    LOCADDR=0
X25PVC5  GROUP DIAL=NO,                                             X
               LNCTL=SDLC,                                          X
               ISTATUS=INACTIVE
XLINE01  LINE  ISTATUS=INACTIVE,                                    X
               ADDRESS=005
XPU01    PU    PUTYPE=5,                                            X
               SUBAREA=01
*********************************************************************
```

IBM Library Server

13.3 An X.25 DTE-to-DTE Switched Virtual Circuit Connection

A switched virtual circuit appears to VTAM as an SDLC switched line.

You define an X.25 packet switched data network (PSDN) using a packet major node and a switched major node for any switched lines.

This sample shows an X.25 DTE-to-DTE switched virtual circuit connection in a multiple-domain configuration.

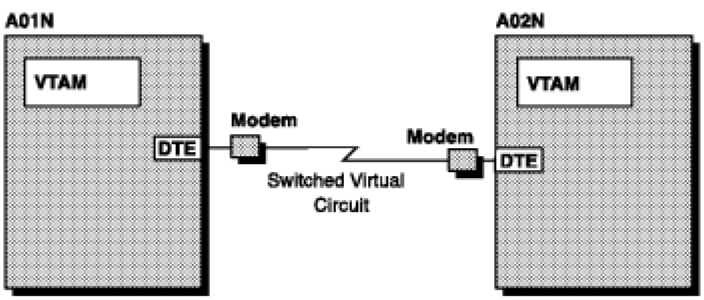

Figure 28. An X.25 DTE-to-DTE Switched Virtual Circuit Multiple-Domain Configuration

For more information on implementing DTE-to-DTE support, see the *VTAM Network Implementation Guide*.

Subtopics:

13.3.1 Defining NETTYPE, VCALLS, and PWINDOW for Host A01N

Host A01N is coded with NETTYPE=DTE on the PORT definition statement of the packet major node, which means:

- A01N will act as the DCE.
- A02N will act as the DTE.
- A01N's VCALLS operand must be coded from the perspective of A02N. That is, A01N's VCALLS must match A02N's VCALLS.

In addition, A01N's PWINDOWs must match A02N's PWINDOWs.

Group names A01SVC1 and A01SVC2 match the GRPNMs on the PATH definition statements in the switched major node for A01N. For more information, see "Defining a Switched Major Node for Host A01N."

```
***********************************************************************
* PACKET MAJOR NODE FOR HOST A01N
***********************************************************************
A01X25P2 VBUILD TYPE=PACKET
PORTA01  PORT  CUADDR=(802,80A),                                      X
               NETTYPE=DTE,                                           X
               VCALLS=(,,13,23,,),                                    X
               CHARGACC=NO,                                           X
               CHARGE=NO,                                             X
               DIALNO=90201234517,                                    X
               MAXOUT=7,                                              X
               NETLEVEL=84,                                           X
               PLENGTH=128,                                           X
               PMOD=8,                                                X
               PWINDOW=7,                                             X
               REPLYTO=5,                                             X
               RETRIES=31
X25VCPM  VCPARMS LC=(001,008),                                        X
               PWINDOW=7,                                             X
               PLENGTH=128
A01SVC1  GROUP DIAL=YES,                                              X
               ISTATUS=INACTIVE,                                      X
               LNCTL=SDLC,                                            X
               CALL=INOUT,                                            X
               SUBADIAL=YES
XLNSVC   LINE  ISTATUS=INACTIVE
XPU2S    PU
A01SVC2  GROUP DIAL=YES,                                              X
               ISTATUS=INACTIVE,                                      X
               LNCTL=SDLC,                                            X
               CALL=INOUT
XLNSVC2  LINE  ISTATUS=INACTIVE
XPU2S2   PU
***********************************************************************
```

13.3.2 Defining NETTYPE, VCALLS, and PWINDOW for Host A02N

Host A02N is coded with NETTYPE=DCE on the PORT definition statement of the packet major node, which means A01N will act as the DCE and A02N will act as the DTE.

In addition, A02N's PWINDOWs must match A01N's PWINDOWs.

Group names A02SVC1 and A02SVC2 match the GRPNMs on the PATH definition statements in the switched major node for A02N. See "Defining a Switched Major Node for Host A02N."

```
***********************************************************************
* PACKET MAJOR NODE FOR HOST A02N
***********************************************************************
A02X25P2 VBUILD TYPE=PACKET
PORTA02  PORT  CUADDR=(802,80A),                                        X
               NETTYPE=DCE,                                             X
               VCALLS=(,,13,23,,),                                      X
               CHARGACC=NO,                                             X
               CHARGE=NO,                                               X
               DIALNO=90201234517,                                      X
               MAXOUT=7,                                                X
               NETLEVEL=84,                                             X
               PLENGTH=128,                                             X
               PMOD=8,                                                  X
               PWINDOW=7,                                               X
               REPLYTO=5,                                               X
               RETRIES=31
X25VCPM  VCPARMS LC=(001,008),                                          X
               PWINDOW=7,                                               X
               PLENGTH=128
A02SVC1  GROUP DIAL=YES,                                                X
               ISTATUS=INACTIVE,                                        X
               LNCTL=SDLC,                                              X
               CALL=INOUT,                                              X
               SUBADIAL=YES
XLNSVC   LINE  ISTATUS=INACTIVE
XPU2S    PU
A02SVC2  GROUP DIAL=YES,                                                X
               ISTATUS=INACTIVE,                                        X
               LNCTL=SDLC,                                              X
               CALL=INOUT
XLNSVC2  LINE  ISTATUS=INACTIVE
XPU2S2   PU
***********************************************************************
```

14.0 Chapter 14. Switched Major Node

Subtopics:

14.1 About This Chapter

This chapter contains sample switched major node definitions.

IBM Library Server

14.2 NCP-Attached Switched Peripheral PUs

Switched peripheral PUs attached to an NCP are defined by VTAM with one or more switched major nodes and an NCP major node. Consider, for example, the configuration shown in Figure 19. The switched major node SWND3AB7 defines three PUs, the paths to each PU, and the LUs associated with each PU, as shown in the following excerpt: (The corresponding NCP major node, which defines the switched line groups, is shown and discussed in "NCP-Attached Switched Peripheral PUs.")

```
SWND3AB7 VBUILD TYPE=SWNET,MAXNO=35,MAXGRP=9
*********************************************************************
*
*  AUTOMATIC DIAL IN/OUT GROUPS - GP3AAIO1, GP3AAIO2
*
*********************************************************************
*
*  NCP SWITCHED SDLC CONNECTION TO PU_T2.0
*
*********************************************************************
SWPUAIO1 PU     ADDR=01,IDBLK=001,IDNUM=00001,                       X
                MAXPATH=1,MAXDATA=256,                               X
                PUTYPE=2,MAXOUT=1,PASSLIM=1,                         X
                ISTATUS=INACTIVE,IRETRY=NO,DISCNT=YES,               X
                SSCPFM=USSSCS
PATHAIO1 PATH   DIALNO=PATH21A-890-3333,PID=1,GID=1,GRPNM=GP3AAIO1
SL1DAIO1 LU     LOCADDR=1,PACING=(1,1),VPACING=2,                    X
                MODETAB=MODETAB2
SL1DAIO2 LU     LOCADDR=2,                                           X
                PACING=(1,1),VPACING=2,ISTATUS=ACTIVE
SL1DAIO3 LU     LOCADDR=3,                                           X
                PACING=(1,1),VPACING=2,ISTATUS=ACTIVE
*--------------------------------------------------------------------
*
*  NCP SWITCHED SDLC CONNECTION TO LEN PU_T2.1
*
*--------------------------------------------------------------------
SWPUADO2 PU     ADDR=09,IDBLK=009,IDNUM=00009,CPNAME=LEN090,         X
                MAXPATH=1,MAXDATA=256,                               X
                PUTYPE=2,MAXOUT=1,PASSLIM=1,                         X
                ISTATUS=INACTIVE,IRETRY=NO,DISCNT=YES,               X
                SSCPFM=USSSCS,CONNTYPE=LEN
PATHADO2 PATH   DIALNO=PATH21D-890-3333,PID=4,GID=1,GRPNM=GP3AADO2
SL2IADO1 LU     LOCADDR=0,PACING=(1,1),VPACING=2,                    X
                MODETAB=MODETAB2,RESSCB=1
SL2IADO2 LU     LOCADDR=0,RESSCB=2,                                  X
                PACING=(1,1),VPACING=2,ISTATUS=ACTIVE
*--------------------------------------------------------------------
*
*  NCP SWITCHED SDLC CONNECTION TO LEN PU_T2.1
*
*--------------------------------------------------------------------
SWPUADO3 PU     ADDR=10,IDBLK=010,IDNUM=00010,                       X
                MAXPATH=1,MAXDATA=256,                               X
                PUTYPE=2,MAXOUT=1,PASSLIM=1,                         X
                ISTATUS=INACTIVE,IRETRY=NO,DISCNT=YES,               X
                SSCPFM=USSSCS,ANS=CONTINUE,CONNTYPE=LEN
PATHADO3 PATH   DIALNO=PATH21E-890-3333,PID=5,GID=1,GRPNM=GP3AADO2
SL3DADO1 LU     LOCADDR=6,PACING=(1,1),VPACING=2,                    X
                MODETAB=MODETAB2
```

```
  SL3IADO2 LU     LOCADDR=0,RESSCB=1,                                    X
                  PACING=(1,1),VPACING=2,ISTATUS=ACTIVE
```

In the preceding sample, the PATH statement defines the path to the PU:

- DIALNO specifies the dial information used to initiate the connection with a PU over the switched link. Thus, PATHAIO1 specifies PATH21A-890-3333 as the dial information used to initiate a connection with SWPUAIO1 over the line LN3AAIO1 (defined in the NCP major node).

- GRPNM identifies the name of a GROUP statement (in the corresponding NCP major node) that defines a group of SDLC switched links. Thus, PATHAIO1 in the switched major node identifies GP3AAIO1 as the name of the switched line group defined by the NCP major node.

If you examine the PATH definitions for SWPUADO2 and SWPUADO3, you will notice that they specify the same group, GP3AADO2. Since this group only has one line defined, only one of these PUs can be connected at a given time.

14.3 Switched SDLC Subarea Connection

One type of VTAM-to-VTAM NCP connection uses switched SDLC links between two communication controllers. This type of connection is called switched SDLC subarea connection.

The figure below shows switched SDLC connections between communication controllers A04 and A31.

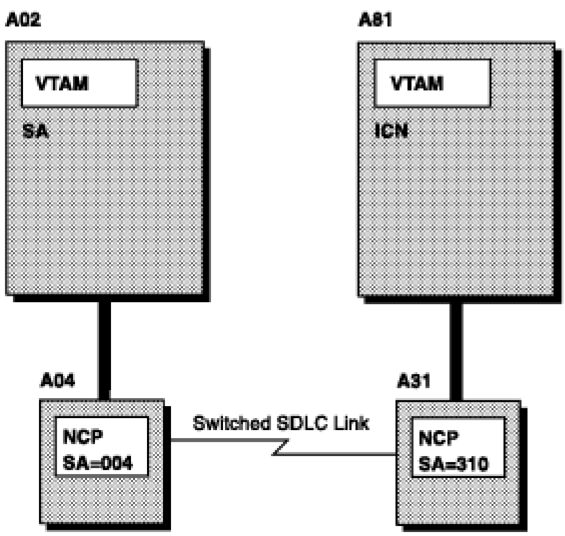

Figure 29. NCP-to-NCP Switched SDLC Connections. Host A02 is a subarea node (SA). Host A81 is an interchange node (ICN).

The VTAM at each end of the connection must define both of the following:

- A switched major node
- An NCP major node

The PU definition statements in the switched major node define subareas attached over switched lines that can be dialed into or dialed out from a communication controller using NCP. The PATH definition statements in the switched major node define the possible paths to be used to establish connection between the communication controller or host processor and the other subarea.

The NCP major node definition specifies GROUP definition statements that define switched line groups. These switched line groups specify LINE definition statements that define the lines and PU definition statements that represent the ports for the PUs that can be connected to the NCP on that line.

Note: An automatic calling unit (ACU) is required for switched SDLC subarea connection.

For more information on this type of connection, refer to the *VTAM Network Implementation Guide*. Sample switched major node definitions for the connection shown in Figure 5 are given below. The corresponding NCP major node definitions are found in "Switched SDLC Subarea Connection."

Subtopics:

IBM Library Server

14.3.1 Defining Switched SDLC Subarea Connections for NCP A04

The VBUILD definition statement defines the beginning of this switched major node (TYPE=SWNET).

The PU definition statement defines subarea 310 in Figure 29, attached over a switched line that can be dialed into or dialed out from NCP A04. IDNUM=00003 must match the IDNUM at the other end of the switched line (see "Defining Switched SDLC Subarea Connection for NCP A31").

For dial-out operations, the PATH definition statement defines the path to be used to establish connection with the other subarea. GRPNM=A04GINN3 matches the name on the GROUP definition statement in the NCP major node for NCP A04 in topic 12.4.1. The PATH definition statement also defines the dial-out telephone number (DIALNO=PATH21A-890-3333).

```
*  =====> BEGINNING OF DATA SET A02SAD03
**********************************************************************
*   A02SAD03 - VTAM SWITCHED MAJOR NODE -  SUBAREA A02               *
**********************************************************************
*   SDLC SAD CONNECTION FROM A04 TO A31                              *
**********************************************************************
A02SAD03 VBUILD TYPE=SWNET,          ** SWITCHED MAJOR NODE        ** X
               MAXGRP=9,             ** NUMBER UNIQUE PATH GROUPS  ** X
               MAXNO=9               ** NUMBER UNIQUE PHONE NUMBERS **
A31PU3   PU    ADDR=C1,              ** STATION ADDRESS            ** X
               ANS=STOP,             ** AUTOMATIC NETWORK SHUTDOWN ** X
               IDNUM=00003,          ** DEVICE IDENTIFICATION NUM  ** X
               DATMODE=FULL,         ** DEVICE IDENTIFICATION NUM  ** X
               MAXDATA=5000,         ** MAX NUM BYTES IN ONE PIU   ** X
               MAXPATH=1,            ** NUM DIAL PATHS FOR PU      ** X
               NETID=NETA,           ** NETWORK IDENTIFIER         ** X
               PUTYPE=4,             ** PHYSICAL UNIT TYPE         ** X
               SUBAREA=310,          ** DESTINATION SUBAREA        ** X
               TGN=1                 ** TRANSMISSION GROUP NUMBER  **
         PATH  DIALNO=PATH21A-890-3333, ** TELEPHONE NUMBER        ** X
               GID=1,                ** GROUP IDENTIFIER           ** X
               GRPNM=A04GINN3,       ** SWITCHED GROUP NAME        ** X
               PID=1,                ** PATH IDENTIFIER            ** X
               REDIAL=1              ** DIAL RETRY NUMBER          **
*  =====> END OF DATA SET A02SAD03
```

14.3.2 Defining Switched SDLC Subarea Connection for NCP A31

The VBUILD definition statement defines the beginning of this switched major node (TYPE=SWNET).

The PU definition statement defines subarea 004 in Figure 29, attached over a switched line that can be dialed into or dialed out from NCP A04. IDNUM=00003 must match the IDNUM at the other end of the switched line (see sample on topic 14.3.1).

For dial-out operations, the PATH definition statement defines the path to be used to establish connection with the other subarea. GRPNM=A31GINN3 matches the name on the GROUP definition statement in the NCP major node for NCP A31 in topic 12.4.2. The PATH definition statement also defines the dial-out telephone number (DIALNO=PATH21D-890-3333).

```
*  =====> BEGINNING OF DATA SET A81SAD03
**********************************************************************
*   A81SAD03 - VTAM SWITCHED MAJOR NODE -  ICN A81                   *
**********************************************************************
*   SDLC SAD CONNECTION FROM A31 TO A04                              *
**********************************************************************
A81SAD03 VBUILD TYPE=SWNET,          ** SWITCHED MAJOR NODE          ** X
               MAXGRP=9,             ** NUMBER UNIQUE PATH GROUPS    ** X
               MAXNO=9               ** NUMBER UNIQUE PHONE NUMBERS **
A04PU3   PU    ADDR=C1,              ** STATION ADDRESS              ** X
               ANS=CONT,             ** AUTOMATIC NETWORK SHUTDOWN   ** X
               IDNUM=00003,          ** DEVICE IDENTIFICATION NUM    ** X
               MAXDATA=5000,         ** MAX NUM BYTES IN ONE PIU     ** X
               DATMODE=FULL,         ** MAX NUM BYTES IN ONE PIU     ** X
               MAXPATH=2,            ** NUM DIAL PATHS FOR PU        ** X
               NETID=NETA,           ** NETWORK IDENTIFIER           ** X
               PUTYPE=4,             ** PHYSICAL UNIT TYPE           ** X
               SUBAREA=004,          ** DESTINATION SUBAREA          ** X
               TGN=1                 ** TRANSMISSION GROUP NUMBER    **
         PATH  DIALNO=PATH21D-890-3333,** TELEPHONE NUMBER           ** X
               GID=1,                ** GROUP IDENTIFIER             ** X
               GRPNM=A31GINN3,       ** SWITCHED GROUP NAME          ** X
               PID=1,                ** PATH IDENTIFIER              ** X
               REDIAL=1              ** DIAL RETRY NUMBER            **
*  =====> END OF DATA SET A81SAD03
```

IBM Library Server

14.4 NCP/Token-Ring Interconnection (NTRI) for Peripheral Nodes

NCP/Token-Ring Interconnection (NTRI) is an NCP function that allows a communication controller to attach to the IBM Token-Ring Local Area Network and that provides both subarea and peripheral node DLC services in the SNA network. In this section we discuss the peripheral node DLC services that NTRI provides to VTAM.

You implement this type of connection by defining both of the following:

- Switched major node
- NCP major node.

The switched major node defines the peripheral nodes and associated logical units that are attached to the token ring.

The NCP major node defines both physical and logical resources:

- The token-ring interface coupler (TIC) connection for NTRI support is defined as a physical connection in a GROUP definition statement specifying ECLTYPE=PHYSICAL.

- The peripheral nodes that are attached to the token ring are defined as logical connections in a GROUP definition statement specifying ECLTYPE=LOGICAL.

The name specified for GRPNM (group name) in the PATH definition statement of the switched major node must match the name of the logical group definition in the NCP major node.

In the configuration illustrated here, the communicating VTAMs A02N and A81N are defined as type 2.1 peripheral nodes to each other and are attached to the token-ring network through NCP A31 and NCP A04.

Below are four sample switched major nodes for the NTRI peripheral node connection.

For the corresponding sample NCP major nodes used in this configuration, see "Attaching Peripheral Nodes to VTAM using NTRI." For more information on NTRI connections, see the *VTAM Network Implementation Guide*.

Subtopics:

14.4.1 Switched Major Node for Line 1088 from NCP A31

Code a PU definition statement for each physical unit in the switched major node. In this sample of a switched major node residing on the A02N node, the CPNAME operand on the PU definition statement specifies A81N as the control point name of a type 2.1 peripheral node. The CPNAME operand must be used for a switched connection, when the type 2.1 peripheral node is a VTAM. For VTAM to locate the physical and logical unit definitions, the value of the CPNAME operand on the switched line definition must be the same as the value of the SSCPNAME start option in the attaching VTAM type 2.1 peripheral node.

Code a PATH definition statement in the switched major node to allow VTAM to establish the connection to the token-ring attached peripheral node. In this sample, the NTRIPTH PATH statement specifies for the DIALNO operand the value 0204400000003131, where 02 is the token-ring interface coupler (TIC) number of the communication controller, 04 is the service access point (SAP) address of the terminal, and 400000003131 are the last six bytes of the terminal's ring-station address. DIALNO is required if the physical unit is used as a dial-out physical unit.

Because a dial-out connection will be made to the PU associated with this PATH definition statement, the GRPNM operand is required. The name coded for the GROUP definition statement in the NCP major node must match the GRPNM operand on the PATH definition statement in the switched major node. Therefore, by specifying GRPNM=A04BNNG1, you are restricting the users that can dial into your system to the users in the group A04BNNG1.

```
*  =====> BEGINNING OF DATA SET A02S1088
***********************************************************************
*   A02S1088 - VTAM SWITCHED MAJOR NODE -  SUBAREA A02                *
*            - CONNECTS TO A31 LINE 1088                              *
***********************************************************************
*   NTRI CASUAL CONNECTION FROM A02 TO A81                            *
***********************************************************************
A02S1088 VBUILD TYPE=SWNET,          ** SWITCHED MAJOR NODE          ** X
               MAXGRP=9,             ** NUMBER UNIQUE PATH GROUPS    ** X
               MAXNO=9               ** NUMBER UNIQUE PHONE NUMBERS  **
NTRI0488 PU    ADDR=04,              ** STATION ADDRESS              ** X
               CPNAME=A81N,          ** DESTINATION SSCP NAME        ** X
               MAXPATH=2,            ** NUM DIAL PATHS FOR PU        ** X
               PUTYPE=2              ** PHYSICAL UNIT TYPE           **
NTRIPTH  PATH  DIALNO=0204400000003131, ** TELEPHONE NUMBER          ** X
               GRPNM=A04BNNG1        ** SWITCHED GROUP NAME          **
APPLA81  LU    LOCADDR=0,            ** LOGICAL UNIT LOCAL ADDRESS   ** X
               MAXSESS=2,            ** SESSION LIMIT                ** X
               MODETAB=AMODETAB      ** LOGON MODE TABLE NAME        **
*  =====> END OF DATA SET A02S1088
```

14.4.2 Limiting Sessions for Switched Resources

```
In the preceding sample switched major node, MAXSESS=2 specifies that the
maximum number of concurrent LU-LU sessions in which APPLA81 can
participate is two.
```

IBM Library Server

14.4.3 Switched Major Node for Line 1092 from NCP A31

In this sample of a switched major node residing on the A02N node, the CPNAME operand on the PU definition statement specifies A81N as the control point name of a type 2.1 peripheral node. The CPNAME operand must be used for a switched connection, when the type 2.1 peripheral node is a VTAM.

Code a PATH definition statement in the switched major node to allow VTAM to establish the connection to the token-ring-attached peripheral node. In this sample, the NTRIPTH PATH statement specifies for the DIALNO operand the value 0204400000003135, where 02 is the token-ring interface coupler (TIC) number of the communication controller, 04 is the service access point (SAP) address of the terminal, and 400000003135 are the last six bytes of the terminal's ring-station address. DIALNO is required if the physical unit is used as a dial-out physical unit.

Because a dial-out connection will be made to the PU associated with this PATH definition statement, the GRPNM operand is required. The name coded for the GROUP definition statement in the NCP major node must match the GRPNM operand on the PATH definition statement in the switched major node. Therefore, by specifying GRPNM=A04BNNG1, you are restricting the users that can dial into your system to the users in the group A04BNNG1.

```
*  =====> BEGINNING OF DATA SET A02S1092
**********************************************************************
*   A02S1092 - VTAM SWITCHED MAJOR NODE -  SUBAREA A02               *
*            - CONNECTS TO A31 LINE 1092                             *
**********************************************************************
*   NTRI CASUAL CONNECTION FROM A04 TO A31                           *
**********************************************************************
A02S1092 VBUILD TYPE=SWNET,          ** SWITCHED MAJOR NODE         ** X
               MAXGRP=9,             ** NUMBER UNIQUE PATH GROUPS   ** X
               MAXNO=9               ** NUMBER UNIQUE PHONE NUMBERS **
NTRI0492 PU    ADDR=04,              ** STATION ADDRESS             ** X
               CPNAME=A81N,          ** DESTINATION SSCP NAME       ** X
               MAXPATH=2,            ** NUM DIAL PATHS FOR PU       ** X
               PUTYPE=2              ** PHYSICAL UNIT TYPE          **
NTRIPTH  PATH  DIALNO=0204400000003135, ** TELEPHONE NUMBER         ** X
               GRPNM=A04BNNG1        ** SWITCHED GROUP NAME         **
APPLA81  LU    LOCADDR=0,            ** LOGICAL UNIT LOCAL ADDRESS  ** X
               MODETAB=AMODETAB      ** LOGON MODE TABLE NAME       **
*  =====> END OF DATA SET A02S1092
```

14.4.4 Switched Major Node for Line 1089 from NCP A04

In this sample of a switched major node residing on the A81N node, the CPNAME operand on the PU definition statement specifies A02N as the control point name of a type 2.1 peripheral node. The CPNAME operand must be used for a switched connection, when the type 2.1 peripheral node is a VTAM.

Code a PATH definition statement in the switched major node to allow VTAM to establish the connection to the token-ring-attached peripheral node. In this sample, the PATH statement named NTRIPTH specifies for the DIALNO operand the value 0204400000000032, where 02 is the token-ring interface coupler (TIC) number of the communication controller, 04 is the service access point (SAP) address of the terminal, and 400000000032 are the last six bytes of the terminal's ring-station address. DIALNO is required if the physical unit is used as a dial-out physical unit.

Because a dial-out connection will be made to the PU associated with this PATH definition statement, the GRPNM operand is required. The name coded for the GROUP definition statement in the NCP major node must match the GRPNM operand on the PATH definition statement in the switched major node. Therefore, by specifying GRPNM=A31BNNG1, you are restricting the users that can dial into your system to the users in the group A31BNNG1.

```
*  =====> BEGINNING OF DATA SET A81S1089
***********************************************************************
*   A81S1089 - VTAM SWITCHED MAJOR NODE -   ICN   A81                *
***********************************************************************
*   NTRI CASUAL CONNECTION FROM A81 TO A02                           *
***********************************************************************
A81S1089 VBUILD TYPE=SWNET,           ** SWITCHED MAJOR NODE          ** X
               MAXGRP=9,              ** NUMBER UNIQUE PATH GROUPS    ** X
               MAXNO=9                ** NUMBER UNIQUE PHONE NUMBERS  **
NTRI3189 PU    ADDR=04,               ** STATION ADDRESS              ** X
               CPNAME=A02N,           ** DESTINATION SSCP NAME        ** X
               MAXPATH=2,             ** NUM DIAL PATHS FOR PU        ** X
               PUTYPE=2               ** PHYSICAL UNIT TYPE           **
NTRIPTH  PATH  DIALNO=0204400000000032, ** TELEPHONE NUMBER           ** X
               GRPNM=A31BNNG1         ** SWITCHED GROUP NAME          **
APPLA02  LU    LOCADDR=0,             ** LOGICAL UNIT LOCAL ADDRESS   ** X
               MODETAB=AMODETAB       ** LOGON MODE TABLE NAME        **
*  =====> END OF DATA SET A81S1089
```

14.4.5 Switched Major Node for Line 1093 from NCP A04

In this sample of a switched major node residing on the A81N node, the CPNAME operand on the PU definition statement specifies A02N as the control point name of a type 2.1 peripheral node. The CPNAME operand must be used for a switched connection, when the type 2.1 peripheral node is a VTAM.

Code a PATH definition statement in the switched major node to allow VTAM to establish the connection to the token-ring-attached peripheral node. In this sample, the NTRIPTH PATH statement specifies for the DIALNO operand the value 0204400000000036, where 02 is the token-ring interface coupler (TIC) number of the communication controller, 04 is the service access point (SAP) address of the terminal, and 400000000036 are the last six bytes of the terminal's ring-station address. DIALNO is required if the physical unit is used as a dial-out physical unit.

Because a dial-out connection will be made to the PU associated with this PATH definition statement, the GRPNM operand is required. The name coded for the GROUP definition statement in the NCP major node must match the GRPNM operand on the PATH definition statement in the switched major node. Therefore, by specifying GRPNM=A31BNNG1, you are restricting the users that can dial into your system to the users in the group A31BNNG1.

```
*   =====> BEGINNING OF DATA SET A81S1093
***********************************************************************
*    A81S1093 - VTAM SWITCHED MAJOR NODE -   ICN   A81                *
***********************************************************************
*    NTRI CASUAL CONNECTION FROM A81 TO A02                           *
***********************************************************************
A81S1093 VBUILD TYPE=SWNET,           ** SWITCHED MAJOR NODE          ** X
               MAXGRP=9,              ** NUMBER UNIQUE PATH GROUPS    ** X
               MAXNO=9                ** NUMBER UNIQUE PHONE NUMBERS **
NTRI3193 PU    ADDR=04,               ** STATION ADDRESS              ** X
               CPNAME=A02N,           ** DESTINATION SSCP NAME        ** X
               MAXPATH=2,             ** NUM DIAL PATHS FOR PU        ** X
               PUTYPE=2               ** PHYSICAL UNIT TYPE           **
NTRIPTH  PATH  DIALNO=0204400000000036, ** TELEPHONE NUMBER           ** X
               GRPNM=A31BNNG1         ** SWITCHED GROUP NAME          **
APPLA02  LU    LOCADDR=0,             ** LOGICAL UNIT LOCAL ADDRESS   ** X
               MODETAB=AMODETAB       ** LOGON MODE TABLE NAME        **
*   =====> END OF DATA SET A81S1093
```

14.4.6 Expanded Dial Support

VTAM V4R2 introduces expanded dial information that enables a user of NCP V7R1 to specify up to 250 bytes of signal information on the PATH definition statement of a switched major node. This function also enables a VTAM application program to supply up to 250 bytes of signal data.

VTAM can translate the signal information coded on the PATH definition statement from a variety of input data, including

- Binary coded decimal
- Compressed alphanumeric
- Decimal
- EBCDIC
- Hexadecimal.

The expanded dial information offered in VTAM V4R2 allows greater flexibility in specifying dial information and supports more detailed signal information. The DLCADDR operand on the PATH definition statement of the switched major node is used to specify this expanded dial information.

For more information on expanded dial information, see "DLCADDR" in the *VTAM Resource Definition Reference*.

The following excerpt from a switched major node illustrates the use of expanded dial information in conjunction with a token-ring DLC.

```
*******************************************************************
NTRI Sample
*******************************************************************

F88PH505 PATH  GID=2,GRPNM=A71BNNG1,                                X
               DLCADDR=(1,C,TR),          DLC Type                  X
               DLCADDR=(2,X,06),          PORTADD                   X
               DLCADDR=(3,X,04),          Destination SAP           X
               DLCADDR=(4,X,400000010001) Destination NTRI Address
NTLU0505 LU    LOCADDR=2,DLOGMOD=D6327802,VPACING=63,               X
               FEATUR2=EDATS,PACING=63,USSTAB=AUSSTAB
```

14.5 X.25 NCP Packet Switching Interface (NPSI) Connections

```
The X.25 NCP Packet Switching Interface NPSI 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 CCITT.  For a VTAM MVS system to attach to X.25 through a port owned
by VTAM, it must do so via NPSI.
```

Subtopics:

14.5.1 Single-Domain Connections

You can implement communication between an SNA host node and an SNA peripheral node by installing X.25 NPSI in the NCP at the host site. For more information on implementing this type of configuration, refer to *X.25 Network Control Program Packet Switching Interface Planning and Installation*.

14.5.2 NPSI X.25 Switched Subarea Short Hold Mode Connections

NPSI also supports multidomain connections. Two NCP subarea nodes can communicate across an X.25 packet switching data network with the support of the X.25 NPSI program product. Both permanent virtual circuit and switched virtual circuit connectivity options are supported. See Figure 24 for a picture of a multidomain connection across an X.25 network.

X.25 switched virtual circuit (SVC) subarea communication provides connectivity between two subarea nodes over switched virtual circuits. Short hold mode reduces the charge for SVCs, when charging is based on the length of connected time, by clearing the SVC during periods of inactivity and reestablishing the SVC when the connection is required to transmit information.

To define switched subarea short hold mode connections, resources must be defined in a switched major node and an NCP major node on both sides of the connection.

In the switched major node,

- SHM=YES must be specified in the PATH statement associated with the PU definition that is selected when the two link stations make contact.

- Each PATH statement must specify on the GRPNM keyword the label of the NCP GROUP statement that includes the virtual circuit. This label is defined by the NCPGRP keyword of the X25.LINE definition statement of the NCP major node.

- DIALNO is required on the PATH statement to permit outgoing calls.

- The SHMTIM operand may be coded on the PATH statement to specify the time, in seconds and tenths of seconds, to be used as the short-hold mode timer for a short-hold mode connection.

- The PU statements prior to the PATH statements must specify PUTYPE=4 or PUTYPE=5.

For instructions on how to code the NCP major node, see topic 12.13.

For an example of a switched major node that defines one side of a switched subarea short-hold mode connection, see the switched major node named A01SADSM below. For the corresponding NCP major node definition, see topic 12.13.

```
A01SADSM VBUILD MAXGRP=5,MAXNO=5,TYPE=SWNET
*
********************************************************************
* SAD CONNECTION TO SUBAREA 02                                     *
********************************************************************
*
SADPU01  PU    SUBAREA=02,ADDR=01,ANS=CONT,IDNUM=88888,MAXDATA=1024,   X
               MAXPATH=2,MAXOUT=7,TGN=1,PUTYPE=4
SADPATH1 PATH  DIALNO=5551234531*555123453210701,GID=128,PID=01,       X
               SHM=YES,SHMTIM=1000,GRPNM=AGA28SAD
*
```

14.5.3 Expanded Dial Support

VTAM V4R2 introduces expanded dial information that enables a user of NPSI V3R7 to specify up to 250 bytes of signal information on the PATH definition statement of a switched major node. This function also enables a VTAM application program to supply up to 250 bytes of signal data.

VTAM can translate the signal information coded on the PATH definition statement from a variety of input data, including

- Binary coded decimal
- Compressed alphanumeric
- Decimal
- EBCDIC
- Hexadecimal

The expanded dial information offered in VTAM V4R2 allows greater flexibility in specifying dial information and supports more detailed signal information.

The DLCADDR operand on the PATH definition statement of the switched major node is used to specify this expanded dial information.

For more information on expanded dial information, see "DLCADDR" in the *VTAM Resource Definition Reference*.

In the example below, each DLCADDR operand specifies a subfield that is identified by the subfield identifier--the first number enclosed in parentheses. Thus,

Subfield Identifier	Meaning
1	DLC type identifier (X25)
20	Dial information used to initiate a connection with a physical unit over a switched link
30	The User Facilities

In addition, the dial information in subfield 20 is broken down as follows:

5551234571	Address of the called DTE
5551234504	Address of the calling DTE
2	The one-digit VC code that determines the LLC type

01	Points to the VCCPT definitions in the NPSI deck
01	Points to the OUFT definitions in the NPSI deck
81002	5-character IDNUM (valid only for LLC0 and LLC5)

```
*******************************************************************
NPSI Sample - Expanded Dial Support
*******************************************************************

PCNEP001 PU    ADDR=01,PACING=1,DISCNT=YES,MAXDATA=263,MAXPATH=1,      *
               MAXOUT=1,ANS=CONT,PUTYPE=1,IDNUM=81002,IDBLK=069,       *
               VPACING=2
PCPTH002 PATH  GRPNM=AG001SVC,GID=128,PID=01,                          *
               DLCADDR=(1,C,X25),                                      *
               DLCADDR=(20,C,5551234571*555123450420101*81002),        *
               DLCADDR=(30,X,420707430404),                            *
PCNEL001 LU    LOCADDR=0,LOGAPPL=TPNS01
```

IBM Library Server

14.6 NCP Type 2.1 Switched SDLC Casual Connection

In this section the samples describe a type 2.1 casual connection between two NCPs over a switched SDLC link. In this context, a casual connection occurs when you define the two VTAM-NCP combinations as type 2.1 peripheral nodes to each other.

In this configuration, VTAM A02N is channel-attached to NCP A04 and VTAM A81N is channel-attached to NCP A31. There are two switched SDLC connections between NCP A04 and NCP A31. For a picture of this type of configuration (albeit with one switched connection, instead of two), see Figure 29.

Each VTAM must define one NCP major node and two switched major nodes (one for each connection).

Switched major nodes A02CCN04 and A02CCN36 reside on VTAM A02N and define switched SDLC casual connections from NCP A04 to NCP A31. Switched major nodes A81CCN04 and A81CCN36 reside on VTAM A81N and define switched SDLC casual connections from NCP A31 to NCP A04.

Note that for a switched connection, when the type 2.1 peripheral node is a VTAM, the CPNAME operand must be used. The CPNAME operand specifies the control point name of the type 2.1 peripheral node.

The NCP major node definitions are in "NCP Type 2.1 Switched SDLC Casual Connection." The switched major node definitions are below.

Note: The names of the logical line groups in the NCP major node must match the names specified by the GRPNM operand in the PATH statement of the switched major nodes.

Subtopics:

14.6.1 SDLC Casual Connections from NCP A04 to NCP A31

```
*  =====> BEGINNING OF DATA SET A02CCN04
**********************************************************************
*   A02CCN04 - VTAM SWITCHED MAJOR NODE -   SUBAREA A02              *
**********************************************************************
*   SDLC CASUAL CONNECTION FROM A04 TO A31                           *
**********************************************************************
A02CCN04 VBUILD TYPE=SWNET,          ** SWITCHED MAJOR NODE          ** X
               MAXGRP=9,             ** NUMBER UNIQUE PATH GROUPS    ** X
               MAXNO=9               ** NUMBER UNIQUE PHONE NUMBERS **
SWCH0404 PU    ADDR=C1,              ** STATION ADDRESS              ** X
               ANS=CONT,             ** AUTOMATIC NETWORK SHUTDOWN   ** X
               ASDP=YES,             ** DYN DIAL - SEE A02APPLS      ** X
               CPNAME=A81N,          ** DESTINATION SSCP NAME        ** X
               MAXDATA=256,          ** MAX NUM BYTES IN ONE PIU     ** X
               MAXPATH=2,            ** NUM DIAL PATHS FOR PU        ** X
               PUTYPE=2              ** PHYSICAL UNIT TYPE           **
SWCPTH04 PATH  DIALNO=47667,         ** TELEPHONE NUMBER             ** X
               GID=1,                ** GROUP IDENTIFIER             ** X
               GRPNM=A04CCNG1,       ** SWITCHED GROUP NAME          ** X
               PID=1,                ** PATH IDENTIFIER              ** X
               REDIAL=4              ** DIAL RETRY NUMBER            **
APPLA81  LU    LOCADDR=0,            ** LOGICAL UNIT LOCAL ADDRESS   ** X
               MODETAB=AMODETAB,     ** LOGON MODE TABLE NAME        ** X
               PACING=(1,1)          ** LU - BOUNDARY NODE PACING    **
*  =====> END OF DATA SET A02CCN04
```

```
*  =====> BEGINNING OF DATA SET A02CCN36
**********************************************************************
*   A02CCN36 - VTAM SWITCHED MAJOR NODE -   SUBAREA A02              *
**********************************************************************
*   SDLC CASUAL CONNECTION FROM A04 TO A31                           *
**********************************************************************
A02CCN36 VBUILD TYPE=SWNET,          ** SWITCHED MAJOR NODE          ** X
               MAXGRP=9,             ** NUMBER UNIQUE PATH GROUPS    ** X
               MAXNO=9               ** NUMBER UNIQUE PHONE NUMBERS **
SWCH0436 PU    ADDR=C1,              ** STATION ADDRESS              ** X
               ASDP=YES,             ** DYN DIAL - SEE A02APPLS      ** X
               ANS=CONT,             ** AUTOMATIC NETWORK SHUTDOWN   ** X
               CPNAME=A81N,          ** DESTINATION SSCP NAME        ** X
               MAXDATA=256,          ** MAX NUM BYTES IN ONE PIU     ** X
               MAXPATH=2,            ** NUM DIAL PATHS FOR PU        ** X
               PUTYPE=2              ** PHYSICAL UNIT TYPE           **
SWCPTH36 PATH  DIALNO=47667,         ** TELEPHONE NUMBER - DIAL47    ** X
               GID=1,                ** GROUP IDENTIFIER             ** X
               GRPNM=A04CCNG1,       ** SWITCHED GROUP NAME          ** X
```

```
               PID=1,                ** PATH IDENTIFIER              ** X
               REDIAL=4              ** DIAL RETRY NUMBER            **
APPLA81  LU    LOCADDR=0,            ** LOGICAL UNIT LOCAL ADDRESS   ** X
               MODETAB=AMODETAB,     ** LOGON MODE TABLE NAME        ** X
               PACING=(1,1)          ** LU - BOUNDARY NODE PACING    **
*  =====> END OF DATA SET A02CCN36
```

14.6.2 SDLC Casual Connections from NCP A31 to NCP A04

```
*  =====> BEGINNING OF DATA SET A81CCN04
**********************************************************************
*   A81CCN04 - VTAM SWITCHED MAJOR NODE -   ICN A81                  *
**********************************************************************
*   SDLC CASUAL CONNECTION FROM A31 TO A04                           *
**********************************************************************
A81CCN04 VBUILD TYPE=SWNET,           ** SWITCHED MAJOR NODE         ** X
               MAXGRP=9,              ** NUMBER UNIQUE PATH GROUPS   ** X
               MAXNO=9                ** NUMBER UNIQUE PHONE NUMBERS **
SWCH3104 PU    ADDR=C1,               ** STATION ADDRESS             ** X
               ANS=CONT,              ** AUTOMATIC NETWORK SHUTDOWN  ** X
               CPNAME=A02N,           ** DESTINATION SSCP NAME       ** X
               MAXDATA=256,           ** MAX NUM BYTES IN ONE PIU    ** X
               MAXPATH=2,             ** NUM DIAL PATHS FOR PU       ** X
               PUTYPE=2               ** PHYSICAL UNIT TYPE          **
SWCPTH04 PATH  DIALNO=45412,          ** TELEPHONE NUMBER - DIAL45   ** X
               GID=1,                 ** GROUP IDENTIFIER            ** X
               GRPNM=A31CCNG1,        ** SWITCHED GROUP NAME         ** X
               PID=1,                 ** PATH IDENTIFIER             ** X
               REDIAL=4               ** DIAL RETRY NUMBER           **
APPLA02  LU    LOCADDR=0,             ** LOGICAL UNIT LOCAL ADDRESS  ** X
               MODETAB=AMODETAB,      ** LOGON MODE TABLE NAME       ** X
               PACING=(1,1)           ** LU - BOUNDARY NODE PACING   **
*  =====> END OF DATA SET A81CCN04
```

```
*  =====> BEGINNING OF DATA SET A81CCN36
**********************************************************************
*   A81CCN36 - VTAM SWITCHED MAJOR NODE -   ICN A81                  *
**********************************************************************
*   SDLC CASUAL CONNECTION FROM A31 TO A04                           *
**********************************************************************
A81CCN36 VBUILD TYPE=SWNET,           ** SWITCHED MAJOR NODE         ** X
               MAXGRP=9,              ** NUMBER UNIQUE PATH GROUPS   ** X
               MAXNO=9                ** NUMBER UNIQUE PHONE NUMBERS **
SWCH3136 PU    ADDR=C1,               ** STATION ADDRESS             ** X
               ANS=CONT,              ** AUTOMATIC NETWORK SHUTDOWN  ** X
               CPNAME=A02N,           ** DESTINATION SSCP NAME       ** X
               MAXDATA=256,           ** MAX NUM BYTES IN ONE PIU    ** X
               MAXPATH=2,             ** NUM DIAL PATHS FOR PU       ** X
               PUTYPE=2               ** PHYSICAL UNIT TYPE          **
SWCPTH36 PATH  DIALNO=45412,          ** TELEPHONE NUMBER - DIAL45   ** X
               GID=1,                 ** GROUP IDENTIFIER            ** X
               GRPNM=A31CCNG1,        ** SWITCHED GROUP NAME         ** X
               PID=1,                 ** PATH IDENTIFIER             ** X
               REDIAL=4               ** DIAL RETRY NUMBER           **
```

```
APPLA02  LU    LOCADDR=0,            ** LOGICAL UNIT LOCAL ADDRESS  ** X
               MODETAB=AMODETAB,     ** LOGON MODE TABLE NAME       ** X
               PACING=(1,1)          ** LU - BOUNDARY NODE PACING   **
*  =====> END OF DATA SET A81CCN36
```

14.7 Attaching a Peripheral Node over an IBM 3172 Interconnect Controller

In the following example, a PS/2 (not shown) is connected to VTAM through a 3172-token ring connection.

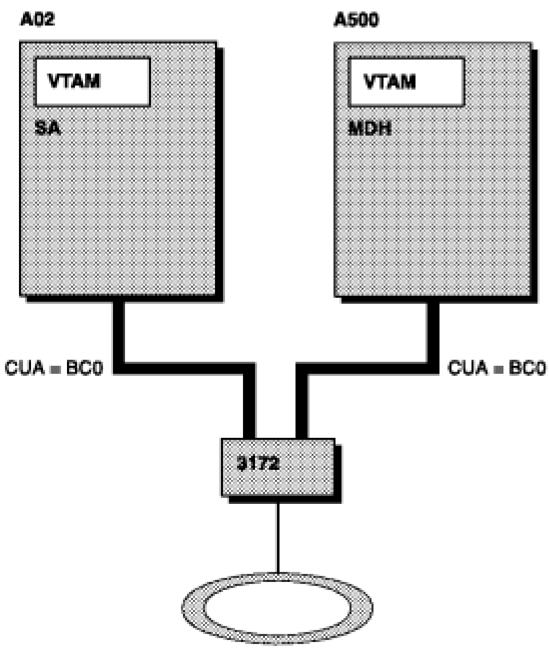

Figure 30. LAN Support through an IBM 3172. Host A02 is a subarea node (SA). Host A500 is a migration data host (MDH).

The switched major node below, together with the external communication adapter major node in "XCA Major Node for Host A02 (Token-Ring LAN)," defines the switched connection to this peripheral node.

In the switched major node, the PU definition statement defines peripheral physical units on switched lines that can be dialed into or out from the host through the 3172 Interconnect Controller. For the Personal System/2(*) attached to the LAN, the CPNAME operand is coded and PUTYPE is specified as 2, indicating that the Personal System/2 is defined as a type 2.1 peripheral node.

For dial-out operations, the PATH definition statement defines the paths used to connect the physical unit to the host through the 3172 Interconnect Controller. Thus, DIALNO specifies the telephone number (in EBCDIC) used to initiate a connection with the Personal System/2 (PS/2). GRPNM=GP2BC1 on the PATH statement matches the group name in the external communication adapter major node for host A02.

The LU definition statements define the LUs associated with the Personal System/2.

```
*  =====> BEGINNING OF DATA SET SWPS2
**********************************************************************
*  SWPS2     SWITCHED MAJOR NODE FOR 3172/LAN
**********************************************************************
SWBC0  VBUILD  TYPE=SWNET,                                              X
               MAXNO=8,                                                 X
               MAXGRP=8
**********************************************************************
* DIAL IN/OUT GROUPS
**********************************************************************
PS2      PU    ADDR=01,                                                 X
               CPNAME=PS2B101,                                          X
               DISCNT=YES,                                              X
               IRETRY=YES,                                              X
               LOGTAB=INTERP,                                           X
               MAXDATA=256,                                             X
               MAXPATH=5,                                               X
               MODETAB=AMODETAB,                                        X
               PUTYPE=2,                                                X
               USSTAB=AUSSTAB
**********************************************************************
*NOTE:  THE LAST 8 DIGITS OF DIALNO ARE THE MAC FOR THE PS/2.
*       GRPNM IS THE GROUP LABEL FOR THE SWITCHED LINE FOUND IN THE
*       EXTERNAL COMMUNICATION ADAPTER (XCA) MAJOR NODE
**********************************************************************
PTH1A11  PATH  DIALNO=01044000077777B1,                                 X
               GRPNM=GP2BC1
PS2B1011 LU    DLOGMOD=M23278I,                                         X
               ISTATUS=INACTIVE,                                        X
               LOCADDR=2
PS2B1012 LU    DLOGMOD=M23278I,                                         X
               ISTATUS=INACTIVE,                                        X
               LOCADDR=3
PS2B1013 LU    DLOGMOD=M23278I,                                         X
               ISTATUS=INACTIVE,                                        X
               LOCADDR=4
PS2B1014 LU    DLOGMOD=M23278I,                                         X
               ISTATUS=INACTIVE,                                        X
               LOCADDR=5
*  =====> END OF DATA SET SWPS2
```

To permit the establishment of a SSCP-PU session for SNA management services communications between the IBM 3172 and NetView, you must define both an XCA major node that specifies the operand MEDIUM=BOXMGR on the PORT definition statement, and a switched major node definition that specifies an IDBLK value of 074 and a PUTYPE of 2 on the PU definition statement. The switched major node for the PU of the 3172 does not need a PATH statement, and there should be no LU definitions. A sample switched major node definition follows:

```
**********************************************************************
*                                                                    *
*   SBOXMU01 - VTAM SWITCHED MAJOR NODE FOR BOX MANAGER FOR 3172     *
*                                                                    *
*   DESCRIPTION: VTAM SMN MATCHING 3172 XCA MAJOR NODE -             *
*                ALLOWS BOX MANAGER CONNECTION                       *
**********************************************************************
```

```
BXMU01   VBUILD TYPE=SWNET,MAXGRP=8,MAXNO=50
SWPBXM01 PU     MAXPATH=5,MAXDATA=256,ADDR=01,PUTYPE=2,IDNUM=12301,     X
               DISCNT=YES,DYNLU=YES,NETID=NETA,IDBLK=074
```

For the corresponding XCA major node, see "XCA Major Node for a Box Manager (Token-Ring LAN)."

14.8 CP-CP Sessions through 3172-Attached Token-Bus LAN

```
A 3172 connection can be used to establish CP-CP sessions between two
network nodes, or between a network node and an end node.  The following
example shows how to establish CP-CP sessions between two network nodes
across a 3172-attached token-bus LAN.  See "CP-CP Sessions through
3172-attached Token-Bus LAN" for the resource definition requirements for
such a connection.  The sample XCA major node definitions are found in
that same section.  The sample switched major node definitions are shown
below.
```

Subtopics:

14.8.1 Switched Major Node for Token-Bus LAN in Network Node SSCP1A

```
**********************************************************************
*
*  NAME:     SWXCA1A  (SWITCHED MAJOR NODE FOR HOST SSCP1A
*                      FOR 3172 TESTING)
*
*  USE:      TO BE USED IN CONJUNCTION WITH HOST SSCP1A
*            XCA MAJOR NODE XCA1A. THE GROUP NAMES ON
*            THE PU POINT BACK TO THE XCA LOGICAL GROUPS.
*
*            THIS DEFINES THE SWITCHED PU'S FOR APPN CONNECTIONS.
*
**********************************************************************
SWXCA1A  VBUILD TYPE=SWNET,MAXNO=256,MAXGRP=256
*
SW1A2A   PU    MAXPATH=5,MAXDATA=256,ADDR=03,                          X
               CPNAME=SSCP2A,CPCP=YES,                                 X
               PUTYPE=2
PATH2A   PATH  DIALNO=0104004A11111111,                                X
               GRPNM=GP1A2A
SWLU2A0  LU    LOCADDR=0,ISTATUS=INACTIVE
*
```

Note that the value GP1A2A on the GRPNM operand of the PATH statement matches the name of the switched line group in the XCA major node in SSCP1A (see "XCA Major Node for Token-Bus LAN in Network Node SSCP1A").

14.8.2 Switched Major Node for Token-Bus LAN in Network Node SSCP2A

```
**********************************************************************
*
*  NAME:     SWXCA2A  (SWITCHED MAJOR NODE FOR HOST SSCP2A
*                      FOR 3172 TESTING)
*
*  USE:      TO BE USED IN CONJUNCTION WITH HOST SSCP2A
*            XCA MAJOR NODE XCA2A. THE GROUP NAMES ON
*            THE PU POINT BACK TO THE XCA LOGICAL GROUPS.
*
*            THIS DEFINES THE SWITCHED PU'S FOR APPN CONNECTIONS.
*
**********************************************************************
SWXCA2A  VBUILD TYPE=SWNET,MAXNO=256,MAXGRP=256
*
SW2A1A   PU    MAXPATH=5,MAXDATA=256,ADDR=01,                         X
               CPNAME=SSCP1A,CPCP=YES,                                X
               PUTYPE=2
PATH1A   PATH  DIALNO=0104003A11111111,                               X
               GRPNM=GP2A1A
SWLU1A0  LU    LOCADDR=0,ISTATUS=INACTIVE
*
```

14.9 Authorized Transmission Priority for LEN Connections

In the A81SMNCP switched major node below, AUTHLEN=YES specifies that a session between two independent LUs through a subarea network will use the same transmission priority for both type 2.1 LEN connections (entry and exit). AUTHLEN may only be specified where type 2.1 is specified and the connection is to be attempted as an APPN connection. AUTHLEN=YES is the default.

```
*  =====> BEGINNING OF DATA SET A81SMNCP
***********************************************************************
*    A81SMNCP - SWITCHED MAJOR NODE FOR A81N                          *
***********************************************************************
         VBUILD  TYPE=SWNET,   ** SWITCHED MAJOR NODE                **X
               MAXGRP=2,       ** NUMBER OF UNIQUE PATH GROUPS        **X
               MAXNO=4         ** NUMBER OF UNIQUE TELEPHONE NUMBERS **
* CONNECTION TO A01 THROUGH A31NCP (A31TR88) AND A04NCP (A04TR89)
A01PU    PU    ADDR=C1,        ** LINK STATION ADDRESS                **X
               ANS=CONTINUE,   ** AUTOMATIC NETWORK SHUTDOWN VALUE    **X
               AUTHLEN=YES,    ** AUTHORIZED TRANSMISSION PRIORITY    **X
               CONNTYPE=APPN,  ** CONNECTION TYPE                     **X
               CPCP=YES,       ** CP-CP SESSION SUPPORT               **X
               CPNAME=A01N,    ** CONTROL POINT NAME                  **X
               IDBLK=056,      ** ID BLOCK                            **X
               IDNUM=32395,    ** ID NUMBER                           **X
               ISTATUS=ACTIVE, ** INITIAL ACTIVATION STATUS           **X
               MAXDATA=256,    ** MAXIMUM DATA RECEIVED               **X
               MAXOUT=7,       ** MAXIMUM DATA SENT                   **X
               MAXPATH=3,      ** NUMBER OF DIAL PATHS                **X
               PACING=7,       ** DATA FLOW PACING                    **X
               PASSLIM=5,      ** NUMBER OF PIUS                      **X
               PUTYPE=2,       ** PHYSICAL UNIT TYPE                  **X
               SSCPFM=FSS,     ** RU TYPES SUPPORTED                  **X
               VPACING=14      ** VTAM PACING                         **
PATH01   PATH  DIALNO=0104400000000032,     ** TELEPHONE NUMBER       **X
               GID=5,          ** GROUP IDENTIFIER                    **X
               GRPNM=A31BNNG1, ** GROUP NAME                          **X
               PID=1,          ** PATH IDENTIFIER                     **X
               REDIAL=3,       ** NUMBER OF REDIALS                   **X
               USE=YES         ** IS PATH INITIALLY USABLE            **
*  =====> END OF DATA SET A81SMNCP
```

IBM Library Server

14.10 Dependent LU Server Function

The dependent LU server (DLUS) function of VTAM facilitates conversion from a subarea environment to an APPN environment, allowing you to maintain central management of remote dependent LUs while benefiting from APPN throughout a network.

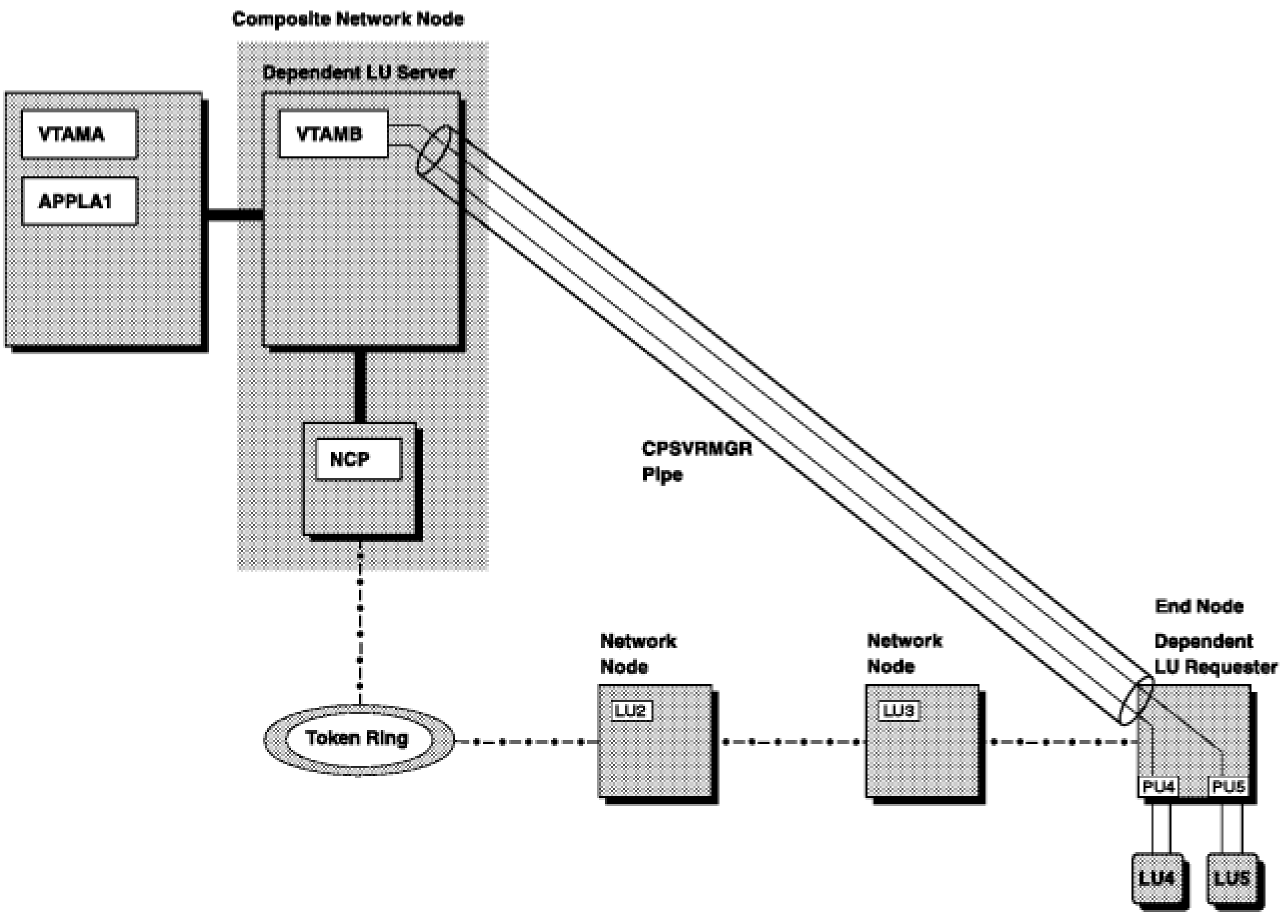

Figure 31. VTAM Functioning as a Dependent LU Server

Two LU 6.2 sessions (one inbound, one outbound) are established between a dependent LU server (DLUS) node (an APPN network node) and a dependent LU requester (DLUR) node (an APPN end node or network node that owns dependent LUs). These LU 6.2 sessions are collectively known as the CPSVRMGR pipe. The CPSVRMGR pipe sessions must be established over APPN and VRTG links only.

SSCP-PU and SSCP-LU session flows use the CPSVRMGR pipe. An SSCP-PU session is established between the DLUS node and the dependent LU's owning PU, and an SSCP-LU session is established between the DLUS node and the dependent LU. Session initiation flows for the dependent LU are sent over the SSCP-LU session, and VTAM can use subarea or APPN flows to initiate the LU-LU session.

Subtopics:

14.10.1 DLUR-initiated Connection (Dial-In)

```
Activation of the PU can be either DLUR-initiated or DLUS-initiated.  For
DLUR-initiated PU activation, no system definition is required.  Instead,
the dynamic switched definition facility is used to dynamically define the
PU.  For information on this facility, see the VTAM Network Implementation
Guide.  Alternatively, you can code a switched major node for the
DLUR-supported PU.  For instance, in the case where the DLUR is in
Communications Manager/2, you can code a switched major node that
specifies IDBLK and IDNUM values that, when combined, match the value
specified for NODE_ID in the Communications Manager/2
DEFINE_DEPENDENT_LU_SERVER definition statement.
```

14.10.2 DLUS-initiated Connection (Dial-Out)

For DLUS-initiated PU activation, define the dependent LU requester by specifying the DLURNAME and DLCADDR operands on the PATH definition statement in a switched major node residing on the DLUS node. DLURNAME specifies the CP name of the DLUR that owns the PU. If you do not code the network ID of the DLUR, it defaults to the network ID of the dependent LU server. DLCADDR specifies data link control (DLC) information used by the DLUR to locate the PU. In addition, specify the MAXDLUR operand on the VBUILD definition statement to indicate the maximum number of unique DLURs defined for this switched major node.

You may also specify DWACT=YES on the PU statement to ensure that VTAM initiates the connection as soon as the major node is activated. Otherwise, a VARY DIAL command will need to be performed on the physical unit after activation.

14.10.3 Sample Switched Major Node for a Dependent LU Server

The following example shows a switched major node for a Dependent LU Server. It defines DLURs for the PUs and LUs that will use this host as a dependent LU server (DLUS). This deck is valid only for network nodes or interchange nodes.

The MAXDLUR operand on the VBUILD definition statement specifies 20 as the maximum number of unique DLUR node definitions in this switched major node deck.

All the PU definition statements specify values for the IDBLK and IDNUM operands, indicating that these are all DLUR PUs that can initiate a CPSVRMGR connection by dialing in.

Both the DLURNAME and DLCADDR operands are coded on the PATH statements, indicating that the dependent LU server has the capability of initiating the CPSVRMGR connection to all the specified DLUR PUs by performing a dial-out. The DLURNAME operand on the PATH statements identifies:

- NNCPA1 as the DLUR that owns PUs AA1PUA, AA1PUC, AA1PUD, and AA1PUE
- NNCPA3 as the DLUR that owns PU AA3PUA
- ENCPA4 as the DLUR that owns PU AA4PUA.

If the DLUS and the DLUR are in different networks, the name assigned to DLURNAME must be network-qualified.

The first DLCADDR entry on the PATH definition statement contains information that identifies the DLC type. For instance, in the PATH definition statement labeled PATHAA1A, the first DLCADDR entry specifies (1,C,INTPU):

1	The first DLCADDR entry must have a subfield_id of 1.
C	The data format of the dial information is EBCDIC.
INTPU	The DLC type is internal PU.

For the Communications Manager/2's implementation of the DLUR, DLCADDR=(1,C,INTPU) must be coded for the first DLCADDR entry because the only DLC type supported by this implementation is internal PU.

The remaining DLCADDR entries define the DLC signaling information (addresses and dial digits) for each DLC type. In the same PATH definition statement, this information is specified as (2,X,056A1001):

2	This subfield_id is specified by the DLC type.
X	The data format of the dial information is hexadecimal.
056A1001	This is the DLC signaling information.

The value 056A1001 matches the IDBLK and IDNUM values, 056 and A1001, respectively, specified on the PU definition statement. In addition to this matching requirement, the IDBLK/IDNUM specified in the switched major node must also match the NODE_ID value specified in the Communications Manager/2 response file (RSP) or node definition file (NDF), for the associated LOGICAL_LINK statement. For sample Communications Manager/2 RSP and NDF files for DLUR, see "Sample Communications Manager/2 NDF File for DLUR" in the *VTAM Network Implementation Guide*.

The LOCADDR coded on the LU definition statement in the switched major node must match the NAU_ADDRESS value, for a specific DLUR-supported LU, that is defined in the Communications Manager/2 RSP or NDF files.

```
**********************************************************************
*   SWDLR1A  - SWITCHED DECK FOR DLUS/DLUR (DEPENDENT LU SERVER)
*              TESTING
**********************************************************************
*
SWDLRALL VBUILD TYPE=SWNET,MAXNO=20,MAXGRP=20,MAXDLUR=20
*
**********************************************************************
* INTERNAL PU_T2.0 IN DLUR NETA.NNCPA1
**********************************************************************
*
AA1PUA   PU     ADDR=01,                ** LINK STATION ADDRESS     **   X
                IDBLK=056,              ** DEVICE TYPE              **   X
                IDNUM=A1001,            ** SERIAL NUMBER OF DEVICE  **   X
                ISTATUS=ACTIVE,         ** BECOMES ACTIVE WITH NODE **   X
                MAXPATH=1               ** NUMBER OF DIAL PATHS     **
PATHAA1A PATH   PID=1,                  ** PATH IDENTIFIER          **   X
                DLURNAME=NETA.NNCPA1,   ** NAME OF DLUR FOR PU      **   X
                DLCADDR=(1,C,INTPU),    ** DLC TYPE INFORMATION     **   X
                DLCADDR=(2,X,056A1001)  ** DLC SIGNAL INFORMATION   **
AA1LUA1  LU     LOCADDR=1,              ** LU'S LOCAL ADDRESS       **   X
                PACING=(1,1),                                            X
                VPACING=2,                                               X
                MODETAB=MODETAB2
AA1LUA2  LU     LOCADDR=2,                                               X
                PACING=(1,1),                                            X
                VPACING=2,                                               X
                MODETAB=MODETAB2
AA1LUA3  LU     LOCADDR=3,                                               X
                PACING=(1,1),                                            X
                VPACING=2,                                               X
                MODETAB=MODETAB2
AA1LUA4  LU     LOCADDR=4,                                               X
                PACING=(1,1),                                            X
                VPACING=2,                                               X
                MODETAB=MODETAB2
 .
 .
 .
**********************************************************************
* EXTERNAL PU_T2.0 ON TOKEN RING ON DLUR NETA.NNCPA1
**********************************************************************
*
AA1PUC   PU     ADDR=03,                                                 X
                IDBLK=056,                                               X
                IDNUM=A1003,                                             X
                ISTATUS=ACTIVE,                                          X
                MAXPATH=1
PATHAA1C PATH   PID=1,                                                   X
                DLURNAME=NETA.NNCPA1,                                    X
                DLCADDR=(1,C,TR),                                        X
                DLCADDR=(2,X,056A1003),                                  X
                DLCADDR=(3,X,04),                                        X
                DLCADDR=(4,X,4000056A1003)
AA1LUC1  LU     LOCADDR=1,                                               X
                PACING=(1,1),                                            X
                VPACING=2,                                               X
                MODETAB=MODETAB2
AA1LUC2  LU     LOCADDR=2,                                               X
```

```
               PACING=(1,1),                                        X
               VPACING=2,                                           X
               MODETAB=MODETAB2
AA1LUC3  LU    LOCADDR=3,                                           X
               PACING=(1,1),                                        X
               VPACING=2,                                           X
               MODETAB=MODETAB2
AA1LUC4  LU    LOCADDR=4,                                           X
               PACING=(1,1),                                        X
               VPACING=2,                                           X
               MODETAB=MODETAB2
*********************************************************************
* EXTERNAL PU_T2.1 ON TOKEN RING ON DLUR NETA.NNCPA1
*********************************************************************
*
AA1PUD   PU    ADDR=04,                                             X
               IDBLK=056,                                           X
               IDNUM=A1004,                                         X
               CPNAME=LENCPA14,                                     X
               ISTATUS=ACTIVE,                                      X
               MAXPATH=1
PATHAA1D PATH  PID=1,                                               X
               DLURNAME=NETA.NNCPA1,                                X
               DLCADDR=(1,C,TR),                                    X
               DLCADDR=(2,X,056A1004),                              X
               DLCADDR=(3,X,04),                                    X
               DLCADDR=(4,X,4000056A1004)
AA1LUD1  LU    LOCADDR=1,                                           X
               PACING=(1,1),                                        X
               VPACING=2,                                           X
               MODETAB=MODETAB2
AA1LUD2  LU    LOCADDR=2,                                           X
               PACING=(1,1),                                        X
               VPACING=2,                                           X
               MODETAB=MODETAB2
AA1LUD3  LU    LOCADDR=3,                                           X
               PACING=(1,1),                                        X
               VPACING=2,                                           X
               MODETAB=MODETAB2
AA1LUD4  LU    LOCADDR=4,                                           X
               PACING=(1,1),                                        X
               VPACING=2,                                           X
               MODETAB=MODETAB2
*********************************************************************
* EXTERNAL PU_T2.1 ON TOKEN RING ON DLUR NETA.NNCPA1
* NOTE: THIS PU IS NONNATIVE NETWORK ATTACH (NETQ).
*********************************************************************
*
AA1PUE   PU    ADDR=05,                                             X
               IDBLK=056,                                           X
               IDNUM=A1005,                                         X
               CPNAME=LENCPA15,                                     X
               ISTATUS=ACTIVE,                                      X
               MAXPATH=1
PATHAA1E PATH  PID=1,                                               X
               DLURNAME=NETA.NNCPA1,                                X
               DLCADDR=(1,C,TR),                                    X
               DLCADDR=(2,X,056A1005),                              X
               DLCADDR=(3,X,04),                                    X
               DLCADDR=(4,X,4000056A1005)
AA1LUE1  LU    LOCADDR=1,                                           X
               PACING=(1,1),                                        X
               VPACING=2,                                           X
               MODETAB=MODETAB2
AA1LUE2  LU    LOCADDR=2,                                           X
               PACING=(1,1),                                        X
               VPACING=2,                                           X
               MODETAB=MODETAB2
 .
 .
 .
*********************************************************************
* INTERNAL PU_T2.0 IN DLUR NETA.NNCPA3
*********************************************************************
*
AA3PUA   PU    ADDR=07,                                             X
               IDBLK=056,                                           X
               IDNUM=A3001,                                         X
               ISTATUS=ACTIVE,                                      X
               MAXPATH=1
```

```
PATHAA3A PATH  PID=1,                                                 X
               DLURNAME=NETA.NNCPA3,                                  X
               DLCADDR=(1,C,INTPU),                                   X
               DLCADDR=(2,X,056A3001)
AA3LUA1  LU    LOCADDR=1,                                             X
               PACING=(1,1),                                          X
               VPACING=2,                                             X
               MODETAB=MODETAB2
AA3LUA2  LU    LOCADDR=2,                                             X
               PACING=(1,1),                                          X
               VPACING=2,                                             X
               MODETAB=MODETAB2
AA3LUA3  LU    LOCADDR=3,                                             X
               PACING=(1,1),                                          X
               VPACING=2,                                             X
               MODETAB=MODETAB2
AA3LUA4  LU    LOCADDR=4,                                             X
               PACING=(1,1),                                          X
               VPACING=2,                                             X
               MODETAB=MODETAB2
**********************************************************************
* INTERNAL PU_T2.0 IN DLUR NETA.ENCPA4
**********************************************************************
*
AA4PUA   PU    ADDR=08,                                               X
               IDBLK=056,                                             X
               IDNUM=A4001,                                           X
               ISTATUS=ACTIVE,                                        X
               MAXPATH=1
PATHAA4A PATH  PID=1,                                                 X
               DLURNAME=NETA.ENCPA4,                                  X
               DLCADDR=(1,C,INTPU),                                   X
               DLCADDR=(2,X,056A4001)
AA4LUA1  LU    LOCADDR=1,                                             X
               PACING=(1,1),                                          X
               VPACING=2,                                             X
               MODETAB=MODETAB2
AA4LUA2  LU    LOCADDR=2,                                             X
               PACING=(1,1),                                          X
               VPACING=2,                                             X
               MODETAB=MODETAB2
AA4LUA3  LU    LOCADDR=3,                                             X
               PACING=(1,1),                                          X
               VPACING=2,                                             X
               MODETAB=MODETAB2
AA4LUA4  LU    LOCADDR=4,                                             X
               PACING=(1,1),                                          X
               VPACING=2,                                             X
               MODETAB=MODETAB2
```

For more information on VTAM's DLUS function, Communication Manager/2's DLUR support, and sample Communication Manager/2 NDF and RSP files, see the *VTAM Network Implementation Guide*.

14.11 Frame-Relay

For frame-relay, the following excerpt from a switched major node illustrates the use of expanded dial information on the DLCADDR operand of the PATH statement.

```
************************************************************************
Frame Relay Sample
************************************************************************

PATH0101 PATH  GID=2,GRPNM=FRLGA28,                                     X
               DLCADDR=(1,C,FRELAY),     DLC Type                       X
               DLCADDR=(2,D,6),          PORTADD                        X
               DLCADDR=(3,D,4),          Destination SAP                X
               DLCADDR=(4,X,10)          DLCI
FRLU0101 LU    LOCADDR=2,DLOGMOD=D6327802,USSTAB=AUSSTAB
*
NTPC0505 PU    ADDR=C1,PUTYPE=2,IDBLK=017,IDNUM=00505,MAXPATH=4,        X
               DLOGMOD=D6327802,MAXOUT=3,ANS=CONTINUE,ASDP=YES
```

14.12 Application-Supplied Operands for Switched Connections

A physical unit is authorized to accept application-supplied dial-out information using the ASDP operand on the PU definition statement of the switched major node.

In the sample switched major node below, physical unit SWCH0404 is authorized to accept application-supplied dial-out parameters (ASDP=YES).

The DIALNO operand in the PATH definition statement is required, but with ASDP=YES an application can supply its own dial number digits, overriding the number specified on DIALNO.

For a sample application program major node that is authorized to supply dial-out information, see "Application-Supplied Information for Switched Connections."

```
*  =====> BEGINNING OF DATA SET A02CCN04
***********************************************************************
*    A02CCN04 - VTAM SWITCHED MAJOR NODE -  SUBAREA A02               *
***********************************************************************
*    SDLC CASUAL CONNECTION FROM A04 TO A31                           *
***********************************************************************
A02CCN04 VBUILD TYPE=SWNET,         ** SWITCHED MAJOR NODE         ** X
               MAXGRP=9,            ** NUMBER UNIQUE PATH GROUPS   ** X
               MAXNO=9              ** NUMBER UNIQUE PHONE NUMBERS **
SWCH0404 PU    ADDR=C1,             ** STATION ADDRESS             ** X
               ANS=CONT,            ** AUTOMATIC NETWORK SHUTDOWN  ** X
               ASDP=YES,            ** DYN DIAL - SEE A02APPLS     ** X
               CPNAME=A81N,         ** DESTINATION SSCP NAME       ** X
               MAXDATA=256,         ** MAX NUM BYTES IN ONE PIU    ** X
               MAXPATH=2,           ** NUM DIAL PATHS FOR PU       ** X
               PUTYPE=2             ** PHYSICAL UNIT TYPE          **
SWCPTH04 PATH  DIALNO=47667,        ** TELEPHONE NUMBER            ** X
               GID=1,               ** GROUP IDENTIFIER            ** X
               GRPNM=A04CCNG1,      ** SWITCHED GROUP NAME         ** X
               PID=1,               ** PATH IDENTIFIER             ** X
               REDIAL=4             ** DIAL RETRY NUMBER           **
APPLA81  LU    LOCADDR=0,           ** LOGICAL UNIT LOCAL ADDRESS  ** X
               MODETAB=AMODETAB,    ** LOGON MODE TABLE NAME       ** X
               PACING=(1,1)         ** LU - BOUNDARY NODE PACING   **
*  =====> END OF DATA SET A02CCN04
```

14.13 Delayed Disconnection

The delayed disconnection function enables you to specify how long VTAM delays disconnection of switched resources to provide sufficient time for another LU-LU session to be started. On the DISCNT operand of the PU definition statement you code the DELAY keyword and a time value (in seconds) in the range 1-255 to specify that VTAM disconnects the physical unit if no LU-LU sessions exist after the value specified expires. If a value is not specified, the current value for the DISCNTIM start option is used (see topic 19.3.)

For example, in the sample switched major node that follows, the delay value for both SWPUAIO1 and SWPUADO1 would be 15 seconds if the default value is taken for DISCNTIM start option. The delay value for SWPUAI04 is 122 seconds.

```
**********************************************************************
*
*
SWND3A84 VBUILD TYPE=SWNET,MAXNO=35,MAXGRP=9
*
*       AUTOMATIC DIAL IN/OUT GROUP - GP3AAIO1
*
SWPUAIO1 PU     ADDR=01,IDBLK=001,IDNUM=00001,                         X
                MAXPATH=1,MAXDATA=256,                                 X
                PUTYPE=2,MAXOUT=1,PASSLIM=1,                           X
                ISTATUS=INACTIVE,IRETRY=NO,DISCNT=(DELAY,F),           X
                SSCPFM=USSSCS
PATHAIO1 PATH   DIALNO=PATH21A-890-3333,PID=1,GID=1,GRPNM=GP3AAIO1
SL1DAIO1 LU     LOCADDR=1,PACING=(1,1),VPACING=2,                      X
                MODETAB=MODETAB2
SL1DAIO2 LU     LOCADDR=2,                                             X
                PACING=(1,1),VPACING=2,ISTATUS=ACTIVE
SL1DAIO3 LU     LOCADDR=3,                                             X
                PACING=(1,1),VPACING=2,ISTATUS=ACTIVE
*
SWPUAIO4 PU     ADDR=04,IDBLK=004,IDNUM=00004,                         X
                MAXPATH=1,MAXDATA=256,                                 X
                PUTYPE=1,MAXOUT=1,PASSLIM=1,                           X
                ISTATUS=INACTIVE,IRETRY=NO,DISCNT=(DELAY,NF,122),      X
                SSCPFM=USSSCS
PATHAIO4 PATH   DIALNO=PATH21F-890-3333,PID=6,GID=1,GRPNM=GP3AAIO1
SL4DAIO1 LU     LOCADDR=7,PACING=(1,1),VPACING=2,                      X
                MODETAB=MODETAB2
SL4DAIO2 LU     LOCADDR=8,                                             X
                PACING=(1,1),VPACING=2,ISTATUS=ACTIVE
*
*       AUTOMATIC DIAL OUT GROUP - GP3AADO1
*
SWPUADO1 PU     ADDR=05,IDBLK=005,IDNUM=00005,                         X
                MAXPATH=1,MAXDATA=256,                                 X
                PUTYPE=2,MAXOUT=1,PASSLIM=1,                           X
                ISTATUS=INACTIVE,IRETRY=NO,DISCNT=(DELAY,F),           X
                SSCPFM=USSSCS
PATHADO1 PATH   DIALNO=PATH21A-890-3333,PID=1,GID=1,GRPNM=GP3AADO1,    X
                REDIAL=0
SL1DADO1 LU     LOCADDR=1,PACING=(1,1),VPACING=2,                      X
                MODETAB=MODETAB2
SL1DADO2 LU     LOCADDR=2,                                             X
                PACING=(1,1),VPACING=2,ISTATUS=ACTIVE
*
 .
```

.
.

IBM Library Server

14.14 Defining Subnetwork Boundaries

The NATIVE operand on a PU definition statement specifies whether this link station represents a connection to a native node. NATIVE=NO is used when both nodes have the same network ID, but a subnetwork boundary is desired.

Consider, for example, two network nodes, SSCP1A and SSCP2A, which are defined with the same NETID, but which reside in different subnetworks. Thus, in the first sample switched major node shown below, NATIVE=NO on the PU definition statement for SW1A2A indicates that SW1A2A represents a connection to the nonnative node SSCP2A. In the second sample switched major node shown below, NATIVE=NO on the PU definition statement for SW2A1A indicates that SW2A1A represents a connection to the nonnative node SSCP1A.

```
**********************************************************************
*
*  NAME:     SWXCA1A  (SWITCHED MAJOR NODE FOR HOST 1A)
*
*  USE:      TO BE USED IN CONJUNCTION WITH HOST 1A
*            XCA MAJOR NODE XCA1A. THE GROUP NAMES ON
*            THE PU POINT BACK TO THE XCA LOGICAL GROUPS.
*
*            THIS DEFINES THE SWITCHED PU'S FOR APPN CONNECTIONS.
*
*
*  NOTE:     TO OVERRIDE THE CPCP=YES OPERAND ON THE PU
*            STATEMENT, ACTIVATE THE PU WITH KEYWORD CPCP=NO.
*
*
**********************************************************************
SWXCA1A  VBUILD TYPE=SWNET,MAXNO=256,MAXGRP=256
*
SW1A2A   PU     IDBLK=003,IDNUM=00003,MAXPATH=5,MAXDATA=256,ADDR=03,    X
                CPNAME=SSCP2A,CPCP=YES,NATIVE=NO,                       X
                PUTYPE=2
PATH2A   PATH   DIALNO=0108004A11111111,                                X
                GRPNM=GP1A2A
SWLU2A0  LU     LOCADDR=0,ISTATUS=INACTIVE
 .
 .
 .
```

```
**********************************************************************
```

```
*
*   NAME:     SWXCA2A  (SWITCHED MAJOR NODE FOR HOST 2A)
*
*   USE:      TO BE USED IN CONJUNCTION WITH HOST 2A
*             XCA MAJOR NODE XCA2A. THE GROUP NAMES ON
*             THE PU POINT BACK TO THE XCA LOGICAL GROUPS.
*
*             THIS DEFINES THE SWITCHED PU'S FOR APPN CONNECTIONS.
*
*   NOTE:     TO OVERRIDE THE CPCP=YES OPERAND ON THE PU
*             STATEMENT, ACTIVATE THE PU WITH KEYWORD CPCP=NO.
*
**********************************************************************
SWXCA2A  VBUILD TYPE=SWNET,MAXNO=256,MAXGRP=256
*
SW2A1A   PU    IDBLK=001,IDNUM=00001,MAXPATH=5,MAXDATA=256,ADDR=01,    X
               CPNAME=SSCP1A,CPCP=YES,NATIVE=NO,                       X
               PUTYPE=2
PATH1A   PATH  DIALNO=0108003A11111111,                                X
               GRPNM=GP2A1A
SWLU1A0  LU    LOCADDR=0,ISTATUS=INACTIVE
 .
 .
 .
*
```

14.15 Switched Major Node for SDLC ICA Peripheral Node Connection (VM, VSE)

The value ICAGR1 on the GRPNM operand of the PATH statement matches the name of the switched line group in the corresponding channel-attachment major node.

See "Switched SDLC Line for a Peripheral Node Connection."

```
*  =====> BEGINNING OF DATA SET A01SMN
**********************************************************************
*  NAME:     A01SMN
*  USE:      SDLC SWITCHED MAJOR NODE DEFINITION FOR T2.1-T2.1
*            CONNECTION
**********************************************************************
A01SMN   VBUILD TYPE=SWNET,                                            X
               MAXGRP=9,                                               X
               MAXNO=9
SWPUT21  PU    ADDR=C1,                                                X
               MAXDATA=265,                                            X
               CPNAME=A02N,                                            X
               IDNUM=00001,                                            X
               MAXPATH=2,                                              X
               PUTYPE=2,                                               X
               ANS=CONT,                                               X
               MAXOUT=7,                                               X
               IDBLK=002
PATH21   PATH  DIALNO=45442,                                           X
               GID=1,                                                  X
               PID=1,                                                  X
               REDIAL=2,                                               X
               GRPNM=ICAGR1
ECHOA02  LU    LOCADDR=0
*  =====> END OF DATA SET A01SMN
```

IBM Library Server

14.16 Switched Major Node for SDLC ICA Subarea Connection (VM, VSE)

On the PU definition statement, SUBAREA=111 defines the adjacent subarea that is attached using the switched line. PUTYPE=4 defines the physical unit as an NCP.

For dial-out operations, the PATH definition statement defines the possible paths to be used to establish connection between an ES/9000 series processor and the other host processor or communication controller.

The value GSW101 on the GRPNM operand of the PATH statement matches the name of the switched line group in the corresponding CA major node.

The following sample shows the definition statements for a switched major node for switched subarea connections in an environment with an ES/9000 series processor.

```
*   =====> BEGINNING OF DATA SET SWN112
SWN112   VBUILD TYPE=SWNET,          SDLC SWITCHED MAJOR NODE           X
                MAXGRP=1,            MAXIMUM PATH GROUPS                X


.
.
.
                MAXNO=2              UNIQUE TELEPHONE NUMBERS
*
PU2      PU     ADDR=C1,             PU TYPE 4 STATION ADDRESS          X
                ANS=CONTINUE,        LINK CONNECTION AFTER VTAM FAILURE X
                MAXDATA=265,         MAXIMUM DATA TRANSFER              X
                SUBAREA=111,         SUBAREA ADDRESS NUMBER             X
                IDNUM=11101,         IDENTIFICATION NUMBER              X
                PUYPE=4,             PHYSICAL UNIT TYPE = NCP           X


.
.
.
                TGN=3                TRANSMISSION GROUP NUMBER
*
         PATH   DIALNO=1234567,      DIAL OUT TELEPHONE NUMBER          X
                GID=1,               GROUP IDENTIFIER                   X
                PID=1,               PATH IDENTIFIER                    X
                GRPNM=GSW101,        GROUP NAME                         X


.
.
.
                REDIAL=2             RETRY DIAL OPERATION TWICE
*   =====> END OF DATA SET SWN112
```

For the corresponding channel-attachment major node, see "Switched SDLC Line for a Subarea Connection."

IBM Library Server

14.17 Switched Major Node for LAN Peripheral Connection (VM, VSE)

A station attached to the token-ring must be defined to VTAM using a switched major node.

The PU and LU definition statements define peripheral physical and logical units on switched lines that can be dialed in to or dialed out from a processor through its IBM Token-Ring Subsystem Controller or a processor through its multi-protocol communication subsystem. You define these lines in switched line groups in the LAN major node.

For dial-out operations, the PATH definition statement defines the possible paths to be used to establish connection between a processor with its IBM Token-Ring Subsystem Controller or a processor with its multi-protocol communication subsystem.

The following sample shows a switched major node for LAN connections:

```
*  =====> BEGINNING OF DATA SET TRNSW840
**********************************************************************
*  NAME:     TRNSW840
*  USE:      SDLC SWITCHED MAJOR NODE DEFINITION FOR T2.1-T2.1
*            CONNECTION
**********************************************************************
TRNSW840 VBUILD TYPE=SWNET,                                          X


.
.
.
                MAXNO=50              **  MAXIMUM UNIQUE DIALNO
*
PU2      PU     IDBLK=017,            **  BLOCK IDENTIFICATION         X
                IDNUM=00013,          **  IDENTIFICATION NUMBER        X
                LANACK=(5.0,2),       **  LAN ACKNOWLEDGMENT VALUES    X
                LANCON=(10.0,5),      **  LAN CONNECTION VALUES        X
                LANINACT=25.5,        **  LAN INACTIVITY VALUE         X
                LANRESP=(25.4,9),     **  LAN RESPONSE VALUES          X
                MAXPATH=4,                                             X


.
.
.
                MACADDR=400000000013 **  LAN MAC ADDRESS
*
LANPATH2 PATH   GRPNM=GP2LAN,         **  LAN GROUP IN LAN MAJOR NODE   X
                DIALNO=400000000013
LU2      LU     LOCADDR=2,                                             X


.
.
.
                VPACING=0             **  NO VTAM TO BOUNDARY FUNCTION PACING
*
PU3      PU     IDBLK=017,            **  BLOCK IDENTIFICATION         X
                IDNUM=00017,          **  IDENTIFICATION NUMBER        X
```

```
.
.
.               LANSW=YES           **  LAN STATION IS LAN CAPABLE
*
LU3      LU     LOCADDR=2           **  DEPENDENT LOGICAL UNIT
*  =====> END OF DATA SET TRNSW840
```

For the corresponding LAN major node, see "LAN Major Node for Peripheral Nodes."

14.18 Switched Major Node for X.25 DTE-to-DTE SVC Connection (VM, VSE)

You define an X.25 packet switched data network (PSDN) using a packet major node and a switched major node for any switched lines.

Subtopics:

IBM Library Server

14.18.1 Defining a Switched Major Node for Host A01N

GRPNM=A01SVC1 and GRPNM=A01SVC2 match those on the GROUP definition statements in A01N's packet major node.

See "An X.25 DTE-to-DTE Switched Virtual Circuit Connection."

```
***********************************************************************
* SWITCHED MAJOR NODE FOR HOST A01N
***********************************************************************
A01X25SW VBUILD TYPE=SWNET,                                            X
               MAXGRP=9,                                               X
               MAXNO=9
XPU2S    PU    ADDR=C1,                                                X
               MAXDATA=265,                                            X
               SUBAREA=02,                                             X
               IDNUM=0C004,                                            X
               MAXPATH=2,                                              X
               PUTYPE=5,                                               X
               TGN=174,                                                X
               NETID=NETA
         PATH  DIALNO=90201234517,                                     X
               GID=1,                                                  X
               PID=1,                                                  X
               REDIAL=4,                                               X
               GRPNM=A01SVC1
XPU2S2   PU    ADDR=C2,                                                X
               MAXDATA=265,                                            X
               IDNUM=0C024,                                            X
               MAXPATH=2,                                              X
               IDBLK=017,                                              X
               PUTYPE=2,                                               X
               NETID=NETA,                                             X
               CPNAME=A02N
         PATH  DIALNO=90201234517,                                     X
               GID=1,                                                  X
               PID=1,                                                  X
               REDIAL=4,                                               X
               GRPNM=A01SVC2
***********************************************************************
```

IBM Library Server

14.18.2 Defining a Switched Major Node for Host A02N

You define an X.25 packet switched data network (PSDN) using a packet major node and a switched major node for any switched lines.

GRPNM=A02SVC1 and GRPNM=A02SVC2 match those on the GROUP definition statements in A02N's packet major node.

See "An X.25 DTE-to-DTE Switched Virtual Circuit Connection."

```
***********************************************************************
* SWITCHED MAJOR NODE FOR HOST A02N
***********************************************************************
A02X25SW VBUILD TYPE=SWNET,                                            X
               MAXGRP=9,                                               X
               MAXNO=9
XPU2S    PU    ADDR=C1,                                                X
               MAXDATA=265,                                            X
               SUBAREA=02,                                             X
               IDNUM=0C004,                                            X
               MAXPATH=2,                                              X
               PUTYPE=5,                                               X
               TGN=174,                                                X
               NETID=NETA
         PATH  DIALNO=90201234518,                                     X
               GID=1,                                                  X
               PID=1,                                                  X
               REDIAL=4,                                               X
               GRPNM=A02SVC1
XPU2S2   PU    ADDR=C2,                                                X
               MAXDATA=265,                                            X
               IDNUM=0C024,                                            X
               MAXPATH=2,                                              X
               IDBLK=017,                                              X
               PUTYPE=2,                                               X
               NETID=NETA,                                             X
               CPNAME=A01N
         PATH  DIALNO=90201234518,                                     X
               GID=1,                                                  X
               PID=1,                                                  X
               REDIAL=4,                                               X
               GRPNM=A02SVC2
***********************************************************************
```

IBM Library Server

14.18.3 Switched Major Node for X.21 SHM/MPS

```
Code SHOLD=YES on the PATH defintion statement to specify to VTAM that
this path is an X.21 SHM/MPS path.


GRPNM=GROUP01 and GRPNM=GROUP02 on the PATH definition statement match
those on the GROUP definition statements in the corresponding channel
adapter major node


See "X.21 Short Hold Mode/Multiple Port Sharing (SHM/MPS)."
```

```
*  =====> BEGINNING OF DATA SET SWNDX21
***********************************************************************
*  NAME:     SWNDX21
*  USE:      X.21 SHM/MPS ICA SWITCHED DECK
***********************************************************************
*
SWNDX21  VBUILD TYPE=SWNET,MAXNO=25,MAXGRP=5
*
***********************************************************************
* DIAL IN/OUT SHM PU_T2 (GROUP01,GROUP02)
***********************************************************************
X21SWPU1 PU     ADDR=C1,                                               X
                PUTYPE=2,                                              X
                IDBLK=021,IDNUM=00010,                                 X
                MAXPATH=2,                                             X
                MAXDATA=256,                                           X
                MAXOUT=1,                                              X
                IRETRY=YES,                                            X
                DISCNT=YES,                                            X
                ISTATUS=ACTIVE
X21PTH11 PATH   DIALNO=ICAX211-9-444-0011,                             X
                GID=1,                                                 X
                PID=1,                                                 X
                USE=YES,                                               X
                SHOLD=YES,                                             X
                GRPNM=GROUP01
X21PTH12 PATH   DIALNO=ICAX211-9-444-0012,                             X
                GID=2,                                                 X
                PID=2,                                                 X
                USE=NO,                                                X
                SHOLD=YES,                                             X
                GRPNM=GROUP02
X21SLU11 LU     LOCADDR=1,                                             X
                ISTATUS=ACTIVE
X21SLU12 LU     LOCADDR=2,                                             X
                ISTATUS=ACTIVE
*
***********************************************************************
* DIAL IN/OUT SHM PU_T2 (GROUP01)
***********************************************************************
X21SWPU2 PU     ADDR=C2,                                               X
                PUTYPE=2,                                              X
                IDBLK=021,IDNUM=00020,                                 X
                MAXPATH=1,                                             X
                MAXDATA=256,                                           X
                MAXOUT=1,                                              X
                IRETRY=YES,                                            X
                DISCNT=YES,                                            X
                ISTATUS=ACTIVE
X21PTH21 PATH   DIALNO=ICAX211-9-444-0021,                             X
```

```
               GID=1,                                                  X
               PID=1,                                                  X
               USE=YES,                                                X
               SHOLD=YES,                                              X
               GRPNM=GROUP01
X21SLU21 LU    LOCADDR=1,                                              X
               ISTATUS=ACTIVE
X21SLU22 LU    LOCADDR=2,                                              X
               ISTATUS=ACTIVE
*
*  =====> END OF DATA SET SWNDX21
```

IBM Library Server

15.0 Chapter 15. TCP/IP Major Node (MVS)

Subtopics:

IBM. Library Server

15.1 About This Chapter

This chapter contains sample TCP/IP major node definitions.

The VTAM V4R2 AnyNet host feature permits SNA-to-SNA communication over a Transmission Control Protocol/Internet Protocol (TCP/IP) network. The specific configurations it supports include the following:

- VTAM to VTAM over a single IP network
- VTAM to Communications Manager/2 over a single IP network
- VTAM to AIX(*) SNA Server over a single IP network
- VTAM as a multiprotocol transport networking (MPTN) gateway between an SNA network and an IP network.

The following must be defined for SNA access to the IP network:

- a TCP/IP major node
- a CDRSC definition for the destination LU in the IP network.

For more information on the types of configurations supported by AnyNet and how to define them, see *VTAM AnyNet Feature for V4R2: Guide to SNA over TCP/IP*.

IBM Library Server

15.2 Defining the TCP/IP Major Node

The TCP/IP major node defines the TCP/IP network to VTAM. It is defined as a single nonswitched major node with no switched lines and no LUs. The major node consists of a VBUILD definition statement that specifies TYPE=TCP, plus at least one of each of the following:

GROUP Defines the group for the line in the TCP/IP major node.

LINE Defines the line for the TCP/IP major node.

PU Defines the physical unit for a TCP/IP major node. You must define the TCP/IP PU as type 2.1, but it cannot be an APPN PU.

You can define more than one GROUP, LINE, and PU in a single TCP/IP major node; however, only one LINE and one PU can be active at one time. For more information on defining the TCP/IP major node, see *VTAM AnyNet Feature for V4R2: Guide to SNA over TCP/IP*.

Subtopics:

15.2.1 Defining a TCP/IP Major Node for Network A

In the sample TCP/IP Major Node for Network A (see below), the VBUILD definition statement is required to define the major node. The CONTIMER operand specifies the length of time, in seconds, that VTAM should wait for the MPTN (multi-protocol transport networking) connection to be established after the TCP connection has been activated. If the MPTN connection is not established within the time specified by CONTIMER, the session initiation fails. In the sample, a value of 30 seconds (the default value) is specified for CONTIMER.

The DGTIMER operand specifies the length of time, in seconds, between retries of sending a datagram for SNA expedited data, SNA session termination requests, or an MPTN KEEPALIVE datagram to a remote system using SNA over TCP/IP. DGTIMER=30 indicates that the interval between retries is 30 seconds.

The DSNSUFX operand specifies the domain name suffix to be used when VTAM creates an IP domain name from an SNA LU name and SNA network ID. The DSNSUFX operand ensures that any SNA LU name and SNA network ID specified in the form *luname.netid* is distinct from any existing IP domain name. In this example, SNA.IBM.COM is the default value for DSNSUFX.

EXTIMER specifies the length of time, in seconds, between sending expedited data over the TCP connection associated with an SNA session and sending the SNA expedited data using a datagram. The value specified here--3 seconds--is the default value.

IATIMER specifies the length of time, in seconds, that VTAM allows two IP addresses to remain inactive before sending an MPTN KEEPALIVE datagram to test the connectivity between the two IP addresses. The default value is 120 seconds.

The PORT operand specifies the TCP and UDP (User Datagram Protocol) protocol port that VTAM uses to support SNA sessions over an IP network. The default value is 397. All nodes that establish SNA sessions over an IP network must use the same PORT number if those nodes are to communicate with each other. Since 397 is the well-defined port reserved for SNA over TCP/IP communication, it is recommended that you use the default.

The TCB operand specifies the number of MVS subtasks that can be used by VTAM to access TCP/IP. Each MVS subtask can handle up to 120 sessions. The default TCB value is 10.

The TCPIPJOB operand on the VBUILD statement specifies TCPST as the TCP/IP job name used to start the TCP/IP address space. The value assigned to TCPIPJOB must match the name specified on the TCPIPJOBNAME statement in the TCP/IP data file.

The name of the PU definition statement, TCPPU1, provides the minor node name of the PU represented by this definition statement. This name is used to represent an adjacent link station (ALS) for an LU to which a session is to be established over an IP network. This ALS name is used by the following:

° ALSLIST operand on the CDRSC definition statement

° ALS selection function on the session management exit routine.

```
*  =====> BEGINNING OF DATA SET TCPMNA
***********************************************************************
*  TCPMNA    -  TCP/IP MAJOR NODE FOR NETWORK A
***********************************************************************
TCPMN1   VBUILD TYPE=TCP,                ** TCP/IP MAJOR NODE         ** X
                CONTIMER=30,             ** MPTN CONNECTION TIMER     ** X
                DGTIMER=30,              ** DATAGRAM RETRY TIMER      ** X
                DSNSUFX=SNA.IBM.COM,     ** DOMAIN NAME SUFFIX        ** X
                EXTIMER=3,               ** EXPEDITED DATA TIMER      ** X
                IATIMER=120,             ** INACTIVE ADDRESS TIMER    ** X
                PORT=397,                ** TCP/UDP PROTOCOL PORT     ** X
                TCB=10,                  ** MVS SUBTASKS FOR TCP/IP   ** X
                TCPIPJOB=TCPST           ** TCP/IP JOB NAME           **
TCPGRP1  GROUP ISTATUS=INACTIVE
TCPLINE1 LINE
TCPPU1   PU  NETID=NETA
*  =====> END OF DATA SET TCPMNA
```

15.3 Defining the TCP/IP LU as a Cross-Domain Resource

If VTAM initiates an LU-LU session to an LU located in the IP network, you need to define the LU to VTAM using a CDRSC definition statement or using the ALS selection function of the session management exit routine. A CDRSC definition for an LU in the IP network must utilize the ALSLIST operand to point to the TCP/IP PU defined in the TCP/IP major node. For examples of CDRSC definitions that use ALSLIST to point to the TCP/IP PU, see "Using CDRSC Definition Statements for Independent LUs."

If an IP-attached LU initiates a session with VTAM, VTAM can define the LU dynamically.

IBM. Library Server

16.0 Chapter 16. Transport Resource List Major Node

Subtopics:

IBM Library Server

16.1 About This Chapter

This chapter contains sample transport resource list major node definitions.

A transport resource list major node is used, along with a local SNA major node, to define an APPN host-to-host channel connection. APPN host-to-host channels enable you to use APPN protocols between two channel-attached APPN nodes.

Note: To use this function, you need to have at least one multipath channel defined between the two nodes. This multipath channel may be an ESCON(*) channel, an IBM 3088 or a virtual channel-to-channel connection. Furthermore, you must be running MVS/ESA at the V4R3 level or later.

To define a transport resource list major node, code the following definition statements:

- One VBUILD TYPE=TRL definition statement to begin the transport resource list major node.
- One TRLE (transport resource list element) definition statement for each multipath channel connection that is being used by the APPN host-to-host connection.

In addition to the transport resource list major node, you must also define a local SNA major node that defines the channel connection to the adjacent VTAM as an APPN PU. The PU definition statement in the local SNA major node must specify the TRLE operand to identify the particular transport resource list element to be used for the PU.

When an adjacent link station is activated, the TRLE operand on the PU definition statement identifies which TRLE definition statement VTAM uses to route data over the channel. See "APPN Host-to-Host Channel Connection" for a sample local SNA major node used for APPN host-to-host channel connection.

For additional information on APPN host-to-host channel connections, please refer to "Using Type 2.1 Channel Connections between APPN Nodes" in the *VTAM Network Implementation Guide*.

16.2 Sample Transport Resource List Major Node Definitions

The following example shows transport resource list (TRL) major node definitions for the two hosts shown in Figure 32. Each TRL major node describes the transport characteristics of the multipath channel that is being used by the APPN host-to-host connection.

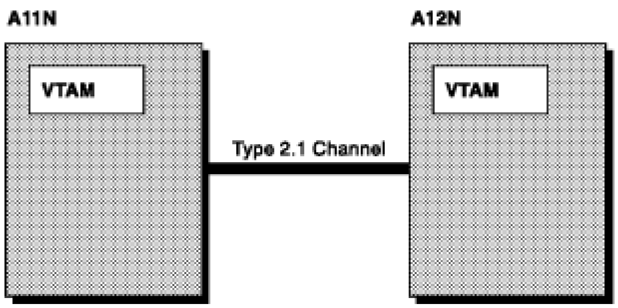

Figure 32. APPN Host-to-Host Channel Connection

LNCTL=MPC indicates that the link is a multipath channel-attachment link that can be used as an APPN host-to-host connection.

The READ operand specifies the subchannel addresses used to read data from the adjacent host. The WRITE operand specifies the subchannel addresses used to write data to the adjacent host.

For each subchannel address on the READ operand, the corresponding subchannel address is coded on the WRITE operand in the adjacent host to provide a complete path. The READ subchannel address and the corresponding WRITE subchannel address must reference the same physical connection between the two nodes; the two addresses do not need to be identical. For example, node A11N can have a READ subchannel address of BC0 and node A12N can have a corresponding WRITE subchannel address of BD0 as long as A11N's BC0 is physically connected to A12N's BD0.

Notice that although a pair of subchannel addresses is defined in this sample, the subchannel addresses can be defined as a single address, a range of addresses, or both.

MAXBFRU=6 specifies that VTAM uses six 4K buffer pages to receive data when activating the multipath channel.

REPLYTO=3.0 specifies that VTAM waits 3 seconds for completion of a multipath channel (MPC) XID I/O operation after starting a channel program. If this timeout expires, a message is written to inform the operator that a timeout has occurred.

```
***********************************************************************
* TRL Major Node for A11N                                             *
***********************************************************************
************************************************
* TRANSPORT RESOURCE LIST MAJOR NODE FOR       *
* APPN HOST-TO-HOST CHANNEL.                   *
* LINE AND PU STATEMENTS AND A TG              *
* CODED SO THAT IT FLOWS OVER TWO SEPARATE     *
* CHANNELS (CHPID'S).                          *
************************************************
MPCTRL  VBUILD TYPE=TRL,CONFGDS=CTC1011
* VIRTUAL CONNECTIONS USING TWO CHANNEL PATH IDS TO A12N
MPC1    TRLE   LNCTL=MPC,                                              X
               READ=(BC0,BE0),                                         X
               WRITE=(BC1,BE1),                                        X
               MAXBFRU=6,                                              X
               REPLYTO=3.0
```

```
***********************************************************************
* TRL Major Node for A12N                                             *
***********************************************************************
************************************************
* TRANSPORT RESOURCE LIST MAJOR NODE FOR       *
* APPN HOST-TO-HOST CHANNEL.                   *
* LINE AND PU STATEMENTS AND A TG              *
* CODED SO THAT IT FLOWS OVER TWO SEPARATE     *
* CHANNELS (CHPID'S).                          *
************************************************
MPCTRL  VBUILD TYPE=TRL,CONFGDS=CTC1011
* VIRTUAL CONNECTIONS USING TWO CHANNEL PATH IDS TO A11N
MPC1    TRLE   LNCTL=MPC,                                              X
               READ=(BC1,BE1),                                         X
               WRITE=(BC0,BE0),                                        X
               MAXBFRU=6,                                              X
               REPLYTO=3.0
```

17.0 Chapter 17. Defining a VSCS Application and Non-SNA Terminal (VM)

Subtopics:

IBM Library Server

17.1 About This Chapter

This chapter shows how to define a VSCS application and a non-SNA terminal, and how to establish a session between them.

VM/SNA console support (VSCS) is a VTAM application program that allows a terminal in an SNA network to act as the console of a virtual machine.

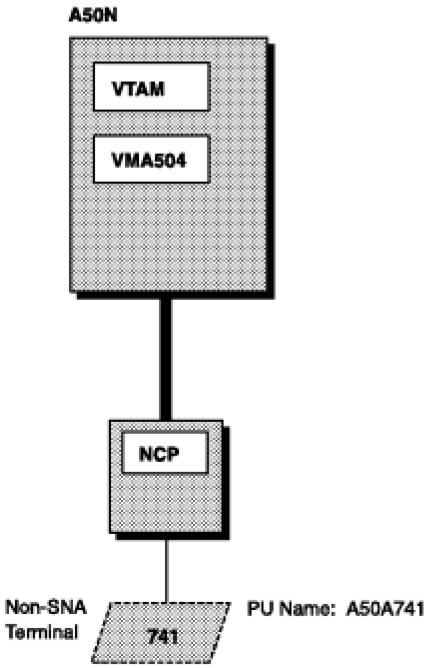

Figure 33. A VSCS Configuration

For more information on VSCS, see the *VTAM Network Implementation Guide*.

17.2 Defining VSCS Application VMA504

This application is identified using ACBNAME=VM4.

```
**********************************************************************
* DEFINING A VSCS APPLICATION FOR HOST A50N
**********************************************************************
VMA504   APPL  AUTH=(ACQ,PASS),                                        X
               ACBNAME=VM4,                                            X
               PRTCT=PRT4,                                             X
               AUTHEXIT=YES,                                           X
               SONSCIP=YES
**********************************************************************
```

17.3 Defining Non-SNA Terminal A50A741

A50A741 is the name and 741 is the device address of the terminal.

```
**********************************************************************
* DEFINING A NON-SNA TERMINAL FOR HOST A50N
**********************************************************************
         LBUILD
A50A741  LOCAL CUADDR=741,                                           X
               TERM=3277,                                            X
               FEATUR2=(NOEDATS,MODEL2),                             X
               ISTATUS=ACTIVE,                                       X
               MODETAB=AMODETAB,                                     X
               MDLENT=ENTRY1,                                        X
               LOGAPPL=ECHO01,                                       X
               LOGTAB=INTERP,                                        X
               DLOGMOD=D4B32782,                                     X
               USSTAB=AUSSTAB
**********************************************************************
```

IBM Library Server

17.4 Establishing a VSCS Session Using DTIGEN

```
The VSCS DTIGEN macroinstruction is used to generate the VSCS
initialization parameters and start options used by VSCS when started with
the DTIUSERx, i.e. 'START PARM=4'.  APPLID must match either the
application name or the ACB name of the application.  Here it matches the
ACB name, VM4.
```

```
***********************************************************************
* DTIGEN
***********************************************************************
DTIUSER4 DTIGEN DTIUSER=4,                                             X
               APPLID=VM4
         END
***********************************************************************
```

18.0 Chapter 18. Path Definition Statements

Subtopics:

IBM Library Server

18.1 About This Chapter

This chapter describes sample path definitions.

Communication between two network accessible units (NAUs) over a subarea connection requires a definition of at least one route connecting them. This definition includes a physical and logical path between the two. PATH definition statements are the representations of the routes VTAM takes to communicate with other subarea nodes. Paths are only defined for hosts with subarea function.

The physical path between two subarea nodes is an explicit route (ER). The logical path between two subarea nodes is a virtual route (VR). PATH definition statements define both explicit routes and virtual routes. You may code one PATH definition statement for each destination subarea, or you may code a single PATH definition statement defining the routes to multiple destination subareas.

The first operand on a PATH definition statement is typically the DESTSA operand. DESTSA specifies the destination subarea numbers for which this PATH statement is defining routes. The numbers specified must not exceed the value specified on the MXSUBNUM start option.

On a PATH definition statement, the operands ER0-ER15 define explicit routes to adjacent subareas. Each ERx operand specifies the subarea number of the adjacent subarea and, optionally, a transmission group number for the explicit route being defined. The *x* in the ERx operand designates the number of the explicit route.

The operands VR0-VR7 associate a virtual route with an explicit route. explicit routes to adjacent subareas. Each VRx operand specifies the explicit route number to which the virtual route is mapped. The *x* in the VRx operand designates the number of the virtual route.

In addition, the VRPWS00-VRPWS72 operands specify the pacing window size for combinations of virtual routes and transmission priorities.

You do not need to define PATH definitions for APPN connections.

For more information about paths, see the *VTAM Network Implementation Guide*.

The remainder of this chapter shows path definitions for each of the subarea-capable nodes in the network depicted in Figure 10.

18.2 Path Definitions for Interchange Node A01N

```
*   =====> BEGINNING OF DATA SET A01PATHS
***********************************************************************
*       A01PATHS   -  VTAM PATH DEFINITIONS  -  ICN A01               *
***********************************************************************
         PATH  DESTSA=(2,3,4,17,81,310,500),          **DEST SUBAREA** *
               ER0=(4,1),            ** EXPLICIT ROUTE - ADJSUB,TGN ** *
               ER1=(4,1),                                              *
               ER2=(4,1),                                              *
               ER3=(4,1),                                              *
               ER4=(2,1),                                              *
               ER5=(81,1),                                             *
               ER6=(500,1),                                            *
               ER7=(2,1),                                              *
               VR0=0,          ** VIRTUAL TO EXPLICIT ROUTE MAPPING ** *
               VRPWS00=(1,3),  ** PACING WINDOW SIZE - MIN,MAX      ** *
               VRPWS01=(1,3),VRPWS02=(1,3),                            *
               VR1=1,                                                  *
               VRPWS10=(2,6),VRPWS11=(2,6),VRPWS12=(2,6),              *
               VR2=2,                                                  *
               VRPWS20=(2,6),VRPWS21=(2,6),VRPWS22=(2,6),              *
               VR3=3,                                                  *
               VRPWS30=(2,6),VRPWS31=(2,6),VRPWS32=(2,6),              *
               VR4=4,                                                  *
               VRPWS40=(3,9),VRPWS41=(3,9),VRPWS42=(3,9),              *
               VR5=5,                                                  *
               VRPWS50=(3,9),VRPWS51=(3,9),VRPWS52=(3,9),              *
               VR6=6,                                                  *
               VRPWS60=(3,9),VRPWS61=(3,9),VRPWS62=(3,9),              *
               VR7=7,                                                  *
               VRPWS70=(3,9),VRPWS71=(3,9),VRPWS72=(3,9)
*   =====> END OF DATA SET A01PATHS
```

18.3 Path Definitions for Subarea Node A02N

```
*   =====> BEGINNING OF DATA SET A02PATHS
***********************************************************************
*       A02PATHS  -  VTAM PATH DEFINITIONS  -  SUBAREA A02            *
***********************************************************************
         PATH  DESTSA=(1,3,4,17,81,310,500),          **DEST SUBAREA** X
               ER0=(4,1),              ** EXPLICIT ROUTE - ADJSUB,TGN ** X
               ER1=(4,1),                                              X
               ER2=(4,1),                                              X
               ER3=(4,1),                                              X
               ER4=(1,1),                                              X
               ER5=(500,1),                                            X
               ER6=(81,1),                                             X
               ER7=(1,1),                                              X
               VR0=0,          ** VIRTUAL TO EXPLICIT ROUTE MAPPING ** X
               VRPWS00=(1,3),  ** PACING WINDOW SIZE - MIN,MAX      ** X
               VRPWS01=(1,3),VRPWS02=(1,3),                            X
               VR1=1,                                                  X
               VRPWS10=(2,6),VRPWS11=(2,6),VRPWS12=(2,6),              X
               VR2=2,                                                  X
               VRPWS20=(2,6),VRPWS21=(2,6),VRPWS22=(2,6),              X
               VR3=3,                                                  X
               VRPWS30=(2,6),VRPWS31=(2,6),VRPWS32=(2,6),              X
               VR4=4,                                                  X
               VRPWS40=(3,9),VRPWS41=(3,9),VRPWS42=(3,9),              X
               VR5=5,                                                  X
               VRPWS50=(3,9),VRPWS51=(3,9),VRPWS52=(3,9),              X
               VR6=6,                                                  X
               VRPWS60=(3,9),VRPWS61=(3,9),VRPWS62=(3,9),              X
               VR7=7,                                                  X
               VRPWS70=(3,9),VRPWS71=(3,9),VRPWS72=(3,9)
*   =====> END OF DATA SET A02PATHS
```

18.4 Path Definitions for Interchange Node A17N

```
*  =====> BEGINNING OF DATA SET A17PATHS
***********************************************************************
*       A17PATHS  -  VTAM PATH DEFINITIONS  -  ICN A17                *
***********************************************************************
         PATH  DESTSA=(1,2,3,4,81,310),      ** DESTINATION SUBAREA **  X
               ER0=(3,1),             ** EXPLICIT ROUTE - ADJSUB,TGN ** X
               ER1=(3,1),                                               X
               ER2=(3,1),                                               X
               ER3=(3,1),                                               X
               ER4=(3,1),                                               X
               ER5=(3,1),                                               X
               ER6=(3,1),                                               X
               ER7=(3,1),                                               X
               VR0=0,           ** VIRTUAL TO EXPLICIT ROUTE MAPPING ** X
               VRPWS00=(1,3),   ** PACING WINDOW SIZE - MIN,MAX      ** X
               VRPWS01=(1,3),VRPWS02=(1,3),                             X
               VR1=1,                                                   X
               VRPWS10=(2,6),VRPWS11=(2,6),VRPWS12=(2,6),               X
               VR2=2,                                                   X
               VRPWS20=(2,6),VRPWS21=(2,6),VRPWS22=(2,6),               X
               VR3=3,                                                   X
               VRPWS30=(2,6),VRPWS31=(2,6),VRPWS32=(2,6),               X
               VR4=4,                                                   X
               VRPWS40=(3,9),VRPWS41=(3,9),VRPWS42=(3,9),               X
               VR5=5,                                                   X
               VRPWS50=(3,9),VRPWS51=(3,9),VRPWS52=(3,9),               X
               VR6=6,                                                   X
               VRPWS60=(3,9),VRPWS61=(3,9),VRPWS62=(3,9),               X
               VR7=7,                                                   X
               VRPWS70=(3,9),VRPWS71=(3,9),VRPWS72=(3,9)
         PATH  DESTSA=500,            ** DESTINATION SUBAREA **         X
               ER0=(3,1),             ** EXPLICIT ROUTE - ADJSUB,TGN ** X
               ER1=(3,1),                                               X
               ER2=(500,2),                                             X
               ER3=(500,3),                                             X
               ER4=(3,1),                                               X
               ER5=(3,1),                                               X
               ER6=(3,1),                                               X
               ER7=(3,1),                                               X
               VR0=0,           ** VIRTUAL TO EXPLICIT ROUTE MAPPING ** X
               VRPWS00=(1,3),   ** PACING WINDOW SIZE - MIN,MAX      ** X
               VRPWS01=(1,3),VRPWS02=(1,3),                             X
               VR1=1,                                                   X
               VRPWS10=(2,6),VRPWS11=(2,6),VRPWS12=(2,6),               X
               VR2=2,                                                   X
               VRPWS20=(2,6),VRPWS21=(2,6),VRPWS22=(2,6),               X
               VR3=3,                                                   X
               VRPWS30=(2,6),VRPWS31=(2,6),VRPWS32=(2,6),               X
               VR4=4,                                                   X
               VRPWS40=(3,9),VRPWS41=(3,9),VRPWS42=(3,9),               X
               VR5=5,                                                   X
               VRPWS50=(3,9),VRPWS51=(3,9),VRPWS52=(3,9),               X
               VR6=6,                                                   X
               VRPWS60=(3,9),VRPWS61=(3,9),VRPWS62=(3,9),               X
               VR7=7,                                                   X
               VRPWS70=(3,9),VRPWS71=(3,9),VRPWS72=(3,9)
*  =====> END OF DATA SET A17PATHS
```

18.5 Path Definitions for Migration Data Host A500N

```
*   =====> BEGINNING OF DATA SET A50PATHS
***********************************************************************
*       A50PATHS  -  VTAM PATH DEFINITIONS  -  MDH A500                *
***********************************************************************
         PATH  DESTSA=(1,2,4,81,310),     ** DESTINATION SUBAREA **    X
               ER0=(3,1),            ** EXPLICIT ROUTE - ADJSUB,TGN ** X
               ER1=(3,2),                                              X
               ER2=(17,2),                                             X
               ER3=(17,3),                                             X
               ER4=(81,1),                                             X
               ER5=(2,1),                                              X
               ER6=(1,1),                                              X
               ER7=(81,1),                                             X
               VR0=0,          ** VIRTUAL TO EXPLICIT ROUTE MAPPING ** X
               VRPWS00=(1,3),  ** PACING WINDOW SIZE - MIN,MAX      ** X
               VRPWS01=(1,3),VRPWS02=(1,3),                            X
               VR1=1,                                                  X
               VRPWS10=(2,6),VRPWS11=(2,6),VRPWS12=(2,6),              X
               VR2=2,                                                  X
               VRPWS20=(2,6),VRPWS21=(2,6),VRPWS22=(2,6),              X
               VR3=3,                                                  X
               VRPWS30=(2,6),VRPWS31=(2,6),VRPWS32=(2,6),              X
               VR4=4,                                                  X
               VRPWS40=(3,9),VRPWS41=(3,9),VRPWS42=(3,9),              X
               VR5=5,                                                  X
               VRPWS50=(3,9),VRPWS51=(3,9),VRPWS52=(3,9),              X
               VR6=6,                                                  X
               VRPWS60=(3,9),VRPWS61=(3,9),VRPWS62=(3,9),              X
               VR7=7,                                                  X
               VRPWS70=(3,9),VRPWS71=(3,9),VRPWS72=(3,9)
         PATH  DESTSA=17,    ** DESTINATION SUBAREA **                 X
               ER0=(3,1),            ** EXPLICIT ROUTE - ADJSUB,TGN ** X
               ER1=(3,2),                                              X
               ER2=(17,2),                                             X
               ER3=(17,3),                                             X
               ER4=(81,1),                                             X
               ER5=(2,1),                                              X
               ER6=(1,1),                                              X
               ER7=(81,1),                                             X
               VR0=0,          ** VIRTUAL TO EXPLICIT ROUTE MAPPING ** X
               VRPWS00=(1,3),  ** PACING WINDOW SIZE - MIN,MAX      ** X
               VRPWS01=(1,3),VRPWS02=(1,3),                            X
               VR1=1,                                                  X
               VRPWS10=(2,6),VRPWS11=(2,6),VRPWS12=(2,6),              X
               VR2=2,                                                  X
               VRPWS20=(2,6),VRPWS21=(2,6),VRPWS22=(2,6),              X
               VR3=3,                                                  X
               VRPWS30=(2,6),VRPWS31=(2,6),VRPWS32=(2,6),              X
               VR4=4,                                                  X
               VRPWS40=(3,9),VRPWS41=(3,9),VRPWS42=(3,9),              X
               VR5=5,                                                  X
               VRPWS50=(3,9),VRPWS51=(3,9),VRPWS52=(3,9),              X
               VR6=6,                                                  X
               VRPWS60=(3,9),VRPWS61=(3,9),VRPWS62=(3,9),              X
               VR7=7,                                                  X
               VRPWS70=(3,9),VRPWS71=(3,9),VRPWS72=(3,9)
         PATH  DESTSA=(3),           ** DESTINATION SUBAREA **         X
               ER0=(3,1),            ** EXPLICIT ROUTE - ADJSUB,TGN ** X
```

```
                    ER1=(3,2),                                                    X
                    ER2=(17,2),                                                   X
                    ER3=(17,3),                                                   X
                    ER4=(81,1),                                                   X
                    ER5=(2,1),                                                    X
                    ER6=(1,1),                                                    X
                    ER7=(81,1),                                                   X
                    VR0=0,          ** VIRTUAL TO EXPLICIT ROUTE MAPPING **      X
                    VRPWS00=(1,3),  ** PACING WINDOW SIZE - MIN,MAX      **      X
                    VRPWS01=(1,3),VRPWS02=(1,3),                                  X
                    VR1=1,                                                        X
                    VRPWS10=(2,6),VRPWS11=(2,6),VRPWS12=(2,6),                    X
                    VR2=2,                                                        X
                    VRPWS20=(2,6),VRPWS21=(2,6),VRPWS22=(2,6),                    X
                    VR3=3,                                                        X
                    VRPWS30=(2,6),VRPWS31=(2,6),VRPWS32=(2,6),                    X
                    VR4=4,                                                        X
                    VRPWS40=(3,9),VRPWS41=(3,9),VRPWS42=(3,9),                    X
                    VR5=5,                                                        X
                    VRPWS50=(3,9),VRPWS51=(3,9),VRPWS52=(3,9),                    X
                    VR6=6,                                                        X
                    VRPWS60=(3,9),VRPWS61=(3,9),VRPWS62=(3,9),                    X
                    VR7=7,                                                        X
                    VRPWS70=(3,9),VRPWS71=(3,9),VRPWS72=(3,9)
      *  =====> END OF DATA SET A50PATHS
```

18.6 Path Definitions for Interchange Node A81N

```
*  =====> BEGINNING OF DATA SET A81PATHS
***********************************************************************
*      A81PATHS  -  VTAM PATH DEFINITIONS  -  ICN  A81                *
***********************************************************************
         PATH  DESTSA=(1,2,3,4,17,310,500),           **DEST SUBAREA** X
               ER0=(310,1),          ** EXPLICIT ROUTE - ADJSUB,TGN ** X
               ER1=(310,255),                                          X
               ER2=(310,1),                                            X
               ER3=(310,255),                                          X
               ER4=(500,1),                                            X
               ER5=(1,1),                                              X
               ER6=(2,1),                                              X
               ER7=(500,1),                                            X
               VR0=0,          ** VIRTUAL TO EXPLICIT ROUTE MAPPING ** X
               VRPWS00=(1,3),  ** PACING WINDOW SIZE - MIN,MAX      ** X
               VRPWS01=(1,3),VRPWS02=(1,3),                            X
               VR1=1,                                                  X
               VRPWS10=(2,6),VRPWS11=(2,6),VRPWS12=(2,6),              X
               VR2=2,                                                  X
               VRPWS20=(2,6),VRPWS21=(2,6),VRPWS22=(2,6),              X
               VR3=3,                                                  X
               VRPWS30=(2,6),VRPWS31=(2,6),VRPWS32=(2,6),              X
               VR4=4,                                                  X
               VRPWS40=(3,9),VRPWS41=(3,9),VRPWS42=(3,9),              X
               VR5=5,                                                  X
               VRPWS50=(3,9),VRPWS51=(3,9),VRPWS52=(3,9),              X
               VR6=6,                                                  X
               VRPWS60=(3,9),VRPWS61=(3,9),VRPWS62=(3,9),              X
               VR7=7,                                                  X
               VRPWS70=(3,9),VRPWS71=(3,9),VRPWS72=(3,9)
*  =====> END OF DATA SET A81PATHS
```

18.7 Path Definitions for Interchange Node B01N

```
*  =====> BEGINNING OF DATA SET B01PATHS
***********************************************************************
*      B01PATHS  -  VTAM PATH DEFINITIONS  -  ICN B01                  *
***********************************************************************
         PATH  DESTSA=(75,1028),                        **DEST SUBAREA** X
               ER0=(75,1),            ** EXPLICIT ROUTE - ADJSUB,TGN ** X
               ER1=(31,1),                                               X
               ER2=(75,1),                                               X
               ER3=(75,1),                                               X
               ER4=(75,1),                                               X
               ER5=(75,1),                                               X
               ER6=(75,1),                                               X
               ER7=(75,1),                                               X
               VR0=0,           ** VIRTUAL TO EXPLICIT ROUTE MAPPING ** X
               VRPWS00=(1,3),   ** PACING WINDOW SIZE - MIN,MAX      ** X
               VRPWS01=(1,3),VRPWS02=(1,3),                              X
               VR1=1,                                                    X
               VRPWS10=(2,6),VRPWS11=(2,6),VRPWS12=(2,6),                X
               VR2=2,                                                    X
               VRPWS20=(2,6),VRPWS21=(2,6),VRPWS22=(2,6),                X
               VR3=3,                                                    X
               VRPWS30=(2,6),VRPWS31=(2,6),VRPWS32=(2,6),                X
               VR4=4,                                                    X
               VRPWS40=(3,9),VRPWS41=(3,9),VRPWS42=(3,9),                X
               VR5=5,                                                    X
               VRPWS50=(3,9),VRPWS51=(3,9),VRPWS52=(3,9),                X
               VR6=6,                                                    X
               VRPWS60=(3,9),VRPWS61=(3,9),VRPWS62=(3,9),                X
               VR7=7,                                                    X
               VRPWS70=(3,9),VRPWS71=(3,9),VRPWS72=(3,9)
         PATH  DESTSA=3,                                                 X
               ER0=(3,1),                                                X
               ER1=(31,1),                                               X
               ER2=(3,1),                                                X
               ER3=(31,1),                                               X
               ER4=(3,1),                                                X
               ER5=(31,1),                                               X
               ER6=(3,1),                                                X
               ER7=(31,1),                                               X
               VR0=0,                                                    X
               VRPWS00=(1,3),VRPWS01=(1,3),VRPWS02=(1,3),                X
               VR1=1,                                                    X
               VRPWS10=(2,6),VRPWS11=(2,6),VRPWS12=(2,6),                X
               VR2=2,                                                    X
               VRPWS20=(2,6),VRPWS21=(2,6),VRPWS22=(2,6),                X
               VR3=3,                                                    X
               VRPWS30=(2,6),VRPWS31=(2,6),VRPWS32=(2,6),                X
               VR4=4,                                                    X
               VRPWS40=(3,9),VRPWS41=(3,9),VRPWS42=(3,9),                X
               VR5=5,                                                    X
               VRPWS50=(3,9),VRPWS51=(3,9),VRPWS52=(3,9),                X
               VR6=6,                                                    X
               VRPWS60=(3,9),VRPWS61=(3,9),VRPWS62=(3,9),                X
               VR7=7,                                                    X
               VRPWS70=(3,9),VRPWS71=(3,9),VRPWS72=(3,9)
         PATH  DESTSA=31,                                                X
               ER0=(3,1),                                                X
               ER1=(31,1),                                               X
```

```
                 ER2=(3,1),                                                      X
                 ER3=(31,1),                                                     X
                 ER4=(3,1),                                                      X
                 ER5=(31,1),                                                     X
                 ER6=(3,1),                                                      X
                 ER7=(31,1),                                                     X
                 VR0=0,                                                          X
                 VRPWS00=(1,3),VRPWS01=(1,3),VRPWS02=(1,3),                      X
                 VR1=1,                                                          X
                 VRPWS10=(2,6),VRPWS11=(2,6),VRPWS12=(2,6),                      X
                 VR2=2,                                                          X
                 VRPWS20=(2,6),VRPWS21=(2,6),VRPWS22=(2,6),                      X
                 VR3=3,                                                          X
                 VRPWS30=(2,6),VRPWS31=(2,6),VRPWS32=(2,6),                      X
                 VR4=4,                                                          X
                 VRPWS40=(3,9),VRPWS41=(3,9),VRPWS42=(3,9),                      X
                 VR5=5,                                                          X
                 VRPWS50=(3,9),VRPWS51=(3,9),VRPWS52=(3,9),                      X
                 VR6=6,                                                          X
                 VRPWS60=(3,9),VRPWS61=(3,9),VRPWS62=(3,9),                      X
                 VR7=7,                                                          X
                 VRPWS70=(3,9),VRPWS71=(3,9),VRPWS72=(3,9)
*  =====> END OF DATA SET B01PATHS
```

IBM Library Server

18.8 Path Definitions for Interchange Node B128N

```
*   =====> BEGINNING OF DATA SET B28PATHS
***********************************************************************
*       B28PATHS   -   VTAM PATH DEFINITIONS   -   ICN B128            *
***********************************************************************
         PATH  DESTSA=(1,3,31,75),                       **DEST SUBAREA** X
               ER0=(75,1),           ** EXPLICIT ROUTE - ADJSUB,TGN ** X
               ER1=(75,1),                                                X
               ER2=(75,1),                                                X
               ER3=(75,1),                                                X
               ER4=(75,1),                                                X
               ER5=(75,1),                                                X
               ER6=(75,1),                                                X
               ER7=(75,1),                                                X
               VR0=0,          ** VIRTUAL TO EXPLICIT ROUTE MAPPING ** X
               VRPWS00=(1,3),  ** PACING WINDOW SIZE - MIN,MAX      ** X
               VRPWS01=(1,3),VRPWS02=(1,3),                               X
               VR1=1,                                                     X
               VRPWS10=(2,6),VRPWS11=(2,6),VRPWS12=(2,6),                 X
               VR2=2,                                                     X
               VRPWS20=(2,6),VRPWS21=(2,6),VRPWS22=(2,6),                 X
               VR3=3,                                                     X
               VRPWS30=(2,6),VRPWS31=(2,6),VRPWS32=(2,6),                 X
               VR4=4,                                                     X
               VRPWS40=(3,9),VRPWS41=(3,9),VRPWS42=(3,9),                 X
               VR5=5,                                                     X
               VRPWS50=(3,9),VRPWS51=(3,9),VRPWS52=(3,9),                 X
               VR6=6,                                                     X
               VRPWS60=(3,9),VRPWS61=(3,9),VRPWS62=(3,9),                 X
               VR7=7,                                                     X
               VRPWS70=(3,9),VRPWS71=(3,9),VRPWS72=(3,9)
*   =====> END OF DATA SET B28PATHS
```

IBM Library Server

18.9 Path Definitions for Subarea Node C01N

```
*   =====> BEGINNING OF DATA SET C01PATHS
***********************************************************************
*       C01PATHS - VTAM PATH DEFINITIONS - SUBAREA C01               *
***********************************************************************
         PATH  DESTSA=3,                                **DEST SUBAREA** *
               ER0=(4,1),         **  EXPLICIT ROUTE - ADJSUB,TGN   **   *
               ER1=(3,1),                                                *
               VR0=1,         ** VIRTUAL TO EXPLICIT ROUTE MAPPING **    *
               VRPWS00=(1,3), ** PACING WINDOW SIZE - MIN,MAX      **    *
               VRPWS01=(1,3),VRPWS02=(1,3),                              *
               VR1=0,                                                    *
               VRPWS10=(3,9),VRPWS11=(3,9),VRPWS12=(3,9)
         PATH  DESTSA=4,                                                 *
               ER0=(3,1),ER1=(4,1),                                      *
               VR0=1,                                                    *
               VRPWS00=(1,3),VRPWS01=(1,3),VRPWS02=(1,3),                *
               VR1=0,                                                    *
               VRPWS10=(3,9),VRPWS11=(3,9),VRPWS12=(3,9)
         PATH  DESTSA=31,                                                *
               ER0=(3,1),ER1=(4,1),                                      *
               VR0=0,                                                    *
               VRPWS00=(2,6),VRPWS01=(2,6),VRPWS02=(2,6),                *
               VR1=1,                                                    *
               VRPWS10=(2,6),VRPWS11=(2,6),VRPWS12=(2,6)
*   =====> END OF DATA SET C01PATHS
```

19.0 Chapter 19. VTAM Start Option Lists

Subtopics:

19.1 About This Chapter

This chapter contains sample VTAM start option lists for defining VTAM nodes.

For more information about the different types of VTAM nodes, see "VTAM Nodes" in the *VTAM Network Implementation Guide*.

For more information about start options and configuration lists, see the *VTAM Network Implementation Guide* and the *VTAM Resource Definition Reference*.

19.2 Default VTAM Start Option List

ATCSTR00 is the default start option list provided in the VTAM definition library. If ATCSTR00 is the only start option list you use for a particular node, that node will be initialized as a subarea VTAM node.

The start options lists included in this section for VM and VSE are not provided in the VTAM definition library, but are included here as sample start option lists.

The CACHETI start option defines the number of minutes that routing information about a previous locate search is stored. The default is 8 minutes. The range of permissible values is 0-1440 minutes.

The CDRSCTI start option specifies the minimum amount of time for which the system retains a dynamically defined subarea cross-domain resource after the last session with the resource has been terminated. CDRSCTI=480 indicates the default value (480 seconds or 8 minutes).

MVS,VSE The COLD start option instructs VTAM to restore each major node to its initial status as defined by the user.

The CMPVTAM start option specifies the maximum compression level allowed for sessions involving the host's application programs. CMPVTAM=0 indicates that no compression is allowed.

MVS,VM The CSA24 start option specifies the maximum amount of 24-bit addressable CSA that can be used by VTAM. CSA24=0 specifies that no limit is enforced on the amount of 24-bit addressable CSA used by VTAM.

MVS,VM The CSALIMIT start option specifies the maximum amount of CSA that can be used by VTAM. CSALIMIT=0 specifies that no limit is enforced on the amount of 24-bit addressable CSA used by VTAM.

The DATEFORM start option specifies the format of the start date for an automatic scheduled IPL. DATEFRM=MDY represents the date format MM/DD/YY.

MVS,VM The DLRTCB specifies the largest number of task control blocks (TCBs) used by VTAM for dump/load/restart subtasks and file I/O services. For an APPN network node, you should specify at least 3 for DLRTCB. Two TCBs are needed to process directory services data sets and topology and routing services data sets, and one TCB is needed for other dump/load/restart functions. A value less than 3 can cause VTAM initialization to stall, or suspend a session initiation for a function requiring a TCB until a TCB becomes available. The default value for DLRTCB is 32 TCBs.

MVS,VM GWSSCP=YES specifies that the SSCP can be a gateway SSCP.

The HOTIOTRM start option specifies the percentage of the current size of the IO buffer pool that a single LU-LU session must have allocated to it to cause VTAM to automatically terminate all sessions between the two logical units. HOTIOTRM=0 (the default value) indicates that VTAM will not terminate sessions based on IO buffer pool usage.

MVS,VSE The NODELIST start option specifies the name of the configuration restart file in which VTAM maintains a list of all currently active major nodes.

VSE The SGA24 start option specifies the maximum amount of 24-bit addressable system GETVIS area (SGA) that can be used by VTAM. SGA24=0 specifies that no limit is enforced on the amount of 24-bit addressable SGA used by VTAM.

The SRCHRED start option allows you to specify whether this node can reduce searches for resources which are found to be unreachable. SRCHRED=ON indicates that search reduction is to be performed. You can change the SRCHRED value with the MODIFY VTAMOPTS command while VTAM is running.

If you specify SRCHRED=ON, you can use the SRCOUNT start option to specify how many search requests must fail before VTAM performs another resource discovery search. The default value is 10 search requests.

In addition, if search reduction has been specified, you can specify the number of seconds during which VTAM does not conduct searches for an unreachable resource by specifying the SRTIMER start option. The default value is 30 seconds.

For a specific cross-domain resource or group of cross-domain resources, the values on the SRTIMER and SRCOUNT start options are overridden by the values on the SRTIMER and SRCOUNT operands of the CDRSC definition statement. See "Eliminating and Reducing Searches for Unavailable Resources."

The SSCPDYN start option specifies whether VTAM dynamically adds entries to the adjacent SSCP table. SSCPDYN=YES (the default) specifies that 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.

The SSCPORD start option specifies whether VTAM, when establishing sessions, searches the adjacent SSCP table in priority order (the default) or in the order in which the table is defined. SSCPORD=PRIORITY specifies that VTAM gives priority to the SSCP that owns the destination LU (if known), then to SSCPs for which the most recent session attempt succeeded. The combination of SSCPORD=PRIORITY and SSCPDYN=YES 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.

With the SIT enhancements in V4R2, when you activate a scanner interface trace for an NCP target adapter you can specify that trace points be activated either at the target adapter only, the controller bus processor only, or at both trace points. The TRACEPT operand on the TRACE,TYPE=SIT start option (not coded in sample) specifies the point in the microcode at which tracing should be activated. If this value is not coded, tracing is done for all valid trace points. For information on which values are defined and what they mean, refer to the *NCP, SSP, EP Trace Analysis Handbook*.

Subtopics:

IBM Library Server

19.2.1 Default VTAM Start Option List (MVS)

```
*  =====> BEGINNING OF DATA SET ATCSTR00
**********************************************************************
*   ATCSTR00 - VTAM START LIST FOR A SUBAREA NODE - DEFAULT LIST     *
**********************************************************************
         ALSREQ=NO,                  ** ADJ LINK STAT IN ALS LIST    **X
         ASYDE=TERM,                 ** ASYNCH DEVICE SESSION TERM   **X
         BSCMDRS=(STATS,INOPS),      ** REPORT BISYNC INOP STATS     **X
         CACHETI=8,                   ** CACHE TIMER VALUE           **X
         CDRSCTI=480,                ** DYNAMIC CDRSC INTERVAL       **X
         CMPVTAM=0,                  ** MAX HOST APPL COMPRESSION    **X
         COLD,                       ** CONFIG RESTART STATUS        **X
         CSALIMIT=0,                 ** MAXIMUM CSA LIMIT            **X
         CSA24=0,                    ** 24 BIT ADDR STORAGE LIMIT    **X
         DATEFORM=MDY,               ** AUTO IPL DATE FORM           **X
         DLRTCB=32,                  ** NCP DUMP/LOAD/RESTART TCBS   **X
         DYNASSCP=YES,               ** DYNA SESS REQ ROUTE TO ADJS  **X
         DYNLU=YES,                  ** DYNAMIC DLU CAPABILITY       **X
         ENCRYPTN=NO,                ** APPL ENCRYPTION CAPABILITY   **X
         GWSSCP=YES,                 ** GATEWAY SSCP CAPABILITY      **X
         HOTIOTRM=0,                 ** HOT I/O TERMINATION          **X
         IOINT=180,                  ** OUTSTANDING RESPONSE DISPLAY **X
         MAXSUBA=15,                 ** HIGHEST SUBAREA VALUE        **X
         MSGMOD=NO,                  ** VTAM MODULE MESSAGE DISPLAY  **X
         NCPBUFSZ=512,               ** NCP LOAD/DUMP RU SIZE        **X
         NMVTLOG=NPDA,               ** NMVT RECORDING               **X
         NODELST=NODEDS1,            ** WARM RESTART NODE LIST       **X
         PPOLOG=NO,                  ** PPO LOG RECORDING            **X
         PROMPT,                     ** START OPTIONS PROMPT         **X
         SDLCMDRS=(STATS,INOPS),     ** REPORT SDLC INOP STATS       **X
         SONLIM=(60,30),             ** IO BUF % FOR SESS OUT NOTIFY **X
         SRCHRED=ON,                 ** PERFORM SEARCH REDUCTION     **X
         SRCOUNT=10,                 ** SEARCH REDUCTION COUNT LIMIT **X
         SRTIMER=30,                 ** SEARCH REDUCTION TIME LIMIT  **X
         SSCPDYN=YES,                ** DYNAMIC ADD ENTRY TO ADJSSCP **X
         SSCPORD=PRIORITY,           ** ADJSSCP SEARCH ORDER         **X
         SUPP=NOSUP,                 ** VTAM MESSAGE CLASS SUPPRESS  **X
         TNSTAT,TIME=60,             ** TUNING STATISTICS            **X
         XNETALS=YES,                ** NON NATIVE NET CONNECTIVITY  **X
    TRACE,TYPE=VTAM,MODE=INT,OPT=NONE,SIZE=50,  DEFAULT OPTIONS ONLY **X
         USSTAB=ISTINCNO,            ** VTAM MESSAGE & COMMAND TABLE **X
         APBUF=(16,,2,,1,3),         ** 24 BIT CSA BUFFER            **X
         BSBUF=(100,,0,,25,60),      ** BOUNDARY LU SESSION BUFFER   **X
         CRPLBUF=(100,,0,,1,29),     ** APPL REQUEST BUFFER          **X
         IOBUF=(100,384,5,,1,30),    ** PIU INPUT/OUTPUT BUFFER      **X
         LFBUF=(25,,0,,1,1),         ** ACTIVE APPL BUFFER EAS < 30  **X
         LPBUF=(70,,0,,5,1),         ** ACTIVE VTAM PROCESS BUFFER   **X
         SFBUF=(51,,0,,1,1),         ** ACTIVE APPL BUFFER EAS >= 30 **X
         SPBUF=(10,,0,,1,1),         ** LARGE MESSAGE REQUEST BUFFER **X
         XDBUF=(6,,0,,1,5)           ** XID EXCHANGE PROCESS BUFFER  **
*  =====> END OF DATA SET ATCSTR00
```

IBM Library Server

19.2.2 VTAM Start Option List (VM)

```
*  =====> BEGINNING OF DATA SET ATCSTR22 FOR VM
**********************************************************************
*   ATCSTR22 - VTAM START LIST FOR A SUBAREA NODE                    *
**********************************************************************
         ALSREQ=NO,                   ** ADJ LINK STAT IN ALS LIST    **X
         ASYDE=TERM,                  ** ASYNCH DEVICE SESSION TERM   **X
         BSCMDRS=(STATS,INOPS),       ** REPORT BISYNC INOP STATS     **X
         CACHETI=8,                    ** CACHE TIMER VALUE           **X
         CDRSCTI=480,                 ** DYNAMIC CDRSC INTERVAL       **X
         CMPVTAM=0,                   ** MAX HOST APPL COMPRESSION    **X
         CSALIMIT=0,                  ** MAXIMUM CSA LIMIT            **X
         CSA24=0,                     ** 24 BIT ADDR STORAGE LIMIT    **X
         DATEFRM=MDY,                 ** AUTO IPL DATE FORM           **X
         DLRTCB=32,                   ** NCP DUMP/LOAD/RESTART TCBS   **X
         DYNASSCP=YES,                ** DYNA SESS REQ ROUTE TO ADJS  **X
         DYNLU=YES,                   ** DYNAMIC DLU CAPABILITY       **X
         GWSSCP=YES,                  ** GATEWAY SSCP CAPABILITY      **X
         HOTIOTRM=0,                  ** HOT I/O TERMINATION          **X
         IOINT=180,                   ** OUTSTANDING RESPONSE DISPLAY **X
         MAXSUBA=15,                  ** HIGHEST SUBAREA VALUE        **X
         MSGMOD=NO,                   ** VTAM MODULE MESSAGE DISPLAY  **X
         NCPBUFSZ=512,                ** NCP LOAD/DUMP RU SIZE        **X
         NMVTLOG=NPDA,                ** NMVT RECORDING               **X
         PPOLOG=NO,                   ** PPO LOG RECORDING            **X
         PROMPT,                      ** START OPTIONS PROMPT         **X
         SDLCMDRS=(STATS,INOPS),      ** REPORT SDLC INOP STATS       **X
         SONLIM=(60,30),              ** IO BUF % FOR SESS OUT NOTIFY **X
         SRCHRED=ON,                  ** PERFORM SEARCH REDUCTION     **X
         SRCOUNT=10,                  ** SEARCH REDUCTION COUNT LIMIT **X
         SRTIMER=30,                  ** SEARCH REDUCTION TIME LIMIT  **X
         SSCPDYN=YES,                 ** DYNAMIC ADD ENTRY TO ADJSSCP **X
         SSCPORD=PRIORITY,            ** ADJSSCP SEARCH ORDER         **X
         SUPP=NOSUP,                  ** VTAM MESSAGE CLASS SUPPRESS  **X
         TNSTAT,TIME=60,              ** TUNING STATISTICS            **X
         XNETALS=YES,                 ** NON NATIVE NET CONNECTIVITY  **X
    TRACE,TYPE=VTAM,MODE=INT,OPT=NONE,SIZE=50,  DEFAULT OPTIONS ONLY **X
         USSTAB=ISTINCNO,             ** VTAM MESSAGE & COMMAND TABLE **X
         BSBUF=(100,,0,,25,60),       ** BOUNDARY LU SESSION BUFFER   **X
         CRPLBUF=(100,,0,,1,29),      ** APPL REQUEST BUFFER          **X
         IOBUF=(100,384,5,,1,30),     ** PIU INPUT/OUTPUT BUFFER      **X
         LFBUF=(25,,0,,1,1),          ** ACTIVE APPL BUFFER EAS < 30  **X
         LPBUF=(70,,0,,5,1),          ** ACTIVE VTAM PROCESS BUFFER   **X
         SFBUF=(51,,0,,1,1),          ** ACTIVE APPL BUFFER EAS >= 30 **X
         SPBUF=(10,,0,,1,1),          ** LARGE MESSAGE REQUEST BUFFER **X
         XDBUF=(6,,0,,1,5)            ** XID EXCHANGE PROCESS BUFFER  **
*  =====> END OF DATA SET ATCSTR22 FOR VM
```

IBM Library Server

19.2.3 VTAM Start Option List (VSE)

```
*  =====> BEGINNING OF DATA SET ATCSTR22 FOR VSE
***********************************************************************
*   ATCSTR22 - VTAM START LIST FOR A SUBAREA NODE                     *
***********************************************************************
         ALSREQ=NO,                   ** ADJ LINK STAT IN ALS LIST    **X
         ASYDE=TERM,                  ** ASYNCH DEVICE SESSION TERM   **X
         BSCMDRS=(STATS,INOPS),       ** REPORT BISYNC INOP STATS     **X
         CACHETI=8,                   ** CACHE TIMER VALUE            **X
         CDRSCTI=480,                 ** DYNAMIC CDRSC INTERVAL       **X
         CMPVTAM=0,                   ** MAX HOST APPL COMPRESSION    **X
         COLD,                        ** CONFIG RESTART STATUS        **X
         DATEFRM=MDY,                 ** AUTO IPL DATE FORM           **X
         DYNASSCP=YES,                ** DYNA SESS REQ ROUTE TO ADJS  **X
         DYNLU=YES,                   ** DYNAMIC DLU CAPABILITY       **X
         HOTIOTRM=0,                  ** HOT I/O TERMINATION          **X
         IOINT=180,                   ** OUTSTANDING RESPONSE DISPLAY **X
         MAXSUBA=15,                  ** HIGHEST SUBAREA VALUE        **X
         MSGMOD=NO,                   ** VTAM MODULE MESSAGE DISPLAY  **X
         NCPBUFSZ=512,                ** NCP LOAD/DUMP RU SIZE        **X
         NMVTLOG=NPDA,                ** NMVT RECORDING               **X
         NODELST=NODEDS1,             ** WARM RESTART NODE LIST       **X
         PPOLOG=NO,                   ** PPO LOG RECORDING            **X
         PROMPT,                      ** START OPTIONS PROMPT         **X
         SGA24=0,                     ** NO SGA LIMIT                 **X
         SDLCMDRS=(STATS,INOPS),      ** REPORT SDLC INOP STATS       **X
         SONLIM=(60,30),              ** IO BUF % FOR SESS OUT NOTIFY **X
         SRCHRED=ON,                  ** PERFORM SEARCH REDUCTION     **X
         SRCOUNT=10,                  ** SEARCH REDUCTION COUNT LIMIT **X
         SRTIMER=30,                  ** SEARCH REDUCTION TIME LIMIT  **X
         SSCPDYN=YES,                 ** DYNAMIC ADD ENTRY TO ADJSSCP **X
         SSCPORD=PRIORITY,            ** ADJSSCP SEARCH ORDER         **X
         SUPP=NOSUP,                  ** VTAM MESSAGE CLASS SUPPRESS  **X
         TNSTAT,TIME=60,              ** TUNING STATISTICS            **X
         XNETALS=YES,                 ** NON NATIVE NET CONNECTIVITY  **X
    TRACE,TYPE=VTAM,MODE=INT,OPT=NONE,SIZE=50,  DEFAULT OPTIONS ONLY **X
         USSTAB=ISTINCNO,             ** VTAM MESSAGE & COMMAND TABLE **X
         BSBUF=(100,,0,,25,60),       ** BOUNDARY LU SESSION BUFFER   **X
         CRPLBUF=(100,,0,,1,29),      ** APPL REQUEST BUFFER          **X
         IOBUF=(100,384,5,,1,30),     ** PIU INPUT/OUTPUT BUFFER      **X
         LFBUF=(25,,0,,1,1),          ** ACTIVE APPL BUFFER EAS < 30  **X
         LPBUF=(70,,0,,5,1),          ** ACTIVE VTAM PROCESS BUFFER   **X
         SFBUF=(51,,0,,1,1),          ** ACTIVE APPL BUFFER EAS >= 30 **X
         SPBUF=(10,,0,,1,1),          ** LARGE MESSAGE REQUEST BUFFER **X
         XDBUF=(6,,0,,1,5)            ** XID EXCHANGE PROCESS BUFFER  **
*  =====> END OF DATA SET ATCSTR22 FOR VSE
```

IBM Library Server

19.3 Subarea Node Start Option List

A VTAM subarea node uses SSCP-SSCP, SSCP-PU, SSCP-LU and LU-LU sessions to control communications in its network. It does not provide APPN function. Subarea nodes depend on routing definitions such as path, virtual route (VR) and explicit route (ER). For more information about VTAM in a subarea network, see Chapter 7, "Implementing a Subarea Network" in the *VTAM Network Implementation Guide*.

The following sample shows the VTAM start options for A02. Not coding the NODETYPE start option is what makes this node a subarea node.

NETID, SSCPID, and SSCPNAME are required start options. HOSTPU is not required, however, it is recommended if you are using NetView. The CONFIG start option identifies a unique name of the configuration list to be activated when VTAM starts.

The AMOUNT operand on the TRACE,TYPE=BUF start option specifies whether VTAM records part of all of the data that is transmitted in inbound and outbound message buffers. AMT=P specifies that records data in trace records with a maximum size of 256 bytes.

The AUTHLEN start option indicates whether VTAM will pass the transmission priority specified by the entry LEN node to another LEN node. AUTHLEN=YES (the default value) specifies that it will.

AUTORTRY specifies whether adjacent node activation will cause a retry of pending automatic logon requests and, if it does, what kinds of adjacent nodes will cause such retries upon activation. AUTORTRY=AUTOCAP (the default) specifies that such requests are retried only when an adjacent CDRM or an adjacent CP that supports automatic logon is activated.

The AUTOTI start option allows you to specify how often pending automatic logon requests owned by this host are retried. AUTOTI=0 (the default) specifies that such requests are not retried periodically.

The CDRDYN start option specifies whether the host is authorized to dynamically define CDRSC representation of resources. CDRDYN=YES, the default, authorizes this host to dynamically define a cross-domain, cross-network, or APPN resource that has no predefined CDRSC entry.

The CINDXSIZ start option specifies the maximum size of the CID and CONVID index tables. The default value is 8176 bytes.

MVS,VSE The CMPMIPS start option is used by VTAM to determine the amount of time the adaptive compression tables are in adaptive mode versus being static. The higher the value specified, the greater the amount of time spent in adaptive mode and, consequently, the more efficient the compression and the more CPU cycles that are consumed. CMPMIPS=50 provides the most effective beginning balance between compression efficiency and CPU usage. The CMPMIPS value is meaningful only if the value for CMPVTAM is greater than 1.

The CMPVTAM start option specifies the maximum compression level allowed for sessions involving the host's application programs. CMPVTAM=3 specifies that the medium adaptive compression table is to be used.

CPCDRSC=YES specifies that VTAM allows applications or LUs to initiate and establish sessions to a dynamic LEN CP ILU.

The DISCNTIM start option specifies the amount of time that VTAM delays deactivation of the SSCP-PU session when there are no outstanding LU-LU session requests. This option is valid only for PU types 2 and 2.1 that have DISCNT=DELAY specified on the PU definition statement. DISCNTIM=15 (the default value) specifies this amount of time as 15 seconds. You can change the value of DISCNTIM with the MODIFY VTAMOPTS command while VTAM is running.

The DSPLYMAX start option limits the number of messages displayed when the DISPLAY RSCLIST and DISPLAY STORUSE commands are issued. DSPLYMAX=100 (the default value) will therefore limit the number of messages displayed to 100 when either of those two commands are entered. The range of valid values is 1-65535. You can change the value of DSPLYMAX with the MODIFY VTAMOPTS command while VTAM is running.

Wildcard values enable an operator to expand a display by substituting special symbols (for example, * and ?) to represent unspecified characters in the name of a resource. The DSPLYWLD=FULLWILD start option specifies that wildcards are permitted in DISPLAY commands from all network operators, and that wildcards are permitted in DISPLAY commands from program operator applications whose APPL or GROUP definition statements indicate DSPLYWLD=YES.

The ENHADDR start option specifies whether VTAM can assign element addresses greater than 65,535 (high-order addresses) to resources establishing sessions within this subarea. ENHADDR=NO (the default) indicates that VTAM cannot assign such element addresses.

The FLDTAB start option specifies whether VTAM suppresses duplicate messages sent to the operator console or system hardcopy log and, if it does, whether to use the IBM-supplied message flooding prevention table or a user-specified table. FLDTAB=ISTMSFLD (the default value) indicates that VTAM uses the internal message flooding table supplied by IBM to suppress duplicate messages.

The IDTYPE operand on the TRACE start option specifies the type of resource that the ID operand names. IDTYPE=SSCP indicates that the name on the ID operand is an SSCP.

The Automatic Recovery from an Outstanding Session Request function in V4R2 provides the IOPURGE start option as a way for you to cancel session requests that fail to complete in a certain amount of time. The IOPURGE start option specifies the time interval after which I/O requests are purged and VTAM continues as if it had received negative responses from those requests. IOPURGE=3M specifies the time interval to be 3 minutes.

The ISTCOSDF start option specifies the resource types that can use the ISTCOSDF logmode entry. This entry is used when the logmode name specified for the session is not found. ISTCOSDF=INDLU (the default value) indicates that ISTCOSDF is restricted to use by independent LUs.

The LISTBKUP start option specifies the action to be taken if there is an error in the start file. LISTBKUP=ZZ specifies that file ATCSTRZZ is to be processed if an error is detected.

The MAINTLVL start option specifies which maintenance level is running on the host.

The SRCHRED start option specifies whether this node can reduce searches for resources which are found to be unreachable. SRCHRED=OFF, the default value, specifies that this node does not reduce searches. You can change the SRCHRED value with the MODIFY VTAMOPTS command while VTAM is running.

The SWNORDER start option specifies the way VTAM locates a switched PU. SWNORDER=CPNAME (the default value) specifies that VTAM searches for a switched PU by the CPNAME first and then, if not yet found, by the station identifier (IDBLK and IDNUM operands on the PU definition statement for the switched major nodes).

Subtopics:

IBM Library Server

19.3.1 Subarea Node Start Option List for MVS and VSE

```
*   =====> BEGINNING OF DATA SET ATCSTR02 FOR MVS AND VSE
***********************************************************************
*    ATCSTR02 - VTAM START LIST FOR A SUBAREA NODE - SUBAREA A02      *
***********************************************************************
         LISTBKUP=ZZ,             ** BACKUP START OPTIONS LIST        ** X
         AUTHLEN=YES,             ** WILL FORWARD TRANS PRIORITY      ** X
         AUTORTRY=AUTOCAP,        ** AUTOLOGON RETRY ACTIVATION VALUE ** X
         CDRDYN=YES,              ** DYNAMIC CDRSC DEFINITION         ** X
         AUTOTI=0,                ** NO PERIODIC AUTOLOGON RETRIES    ** X
         CINDXSIZ=8176,           ** CIT & CONVT INDEX TABLE SIZE     ** X
         CMPMIPS=50,              ** ADAPTIVE COMPRESSION CPU USAGE   ** X
         CMPVTAM=3,               ** MEDIUM ADAPTIVE COMPRESSION TABLE** X
         CONFIG=02,               ** MAJOR NODE ACTIVATION CONFIG LIST** X
         CPCDRSC=YES,             ** SESSIONS TO DYNAMIC LEN CP ILU   ** X
         DISCNTIM=15,             ** SSCP-PU DEACTIVATION DELAY       ** X
         DSPLYMAX=100,            ** MESSAGE LIMIT FOR DISPLAY COMMAND** X
         DSPLYWLD=FULLWILD,       ** WILDCARDS PERMITTED              ** X
         ENHADDR=NO,              ** NO HIGH-ORDER ELEMENT ADDRESSES  ** X
         FLDTAB=ISTMSFLD,         ** MESSAGE FLOODING PREVENTION      ** X
         HOSTPU=A02NPU,           ** HOST SUBAREA PU NETWORK NAME     ** X
         HOSTSA=02,               ** UNIQUE SUBAREA ADDRESS           ** X
         IOPURGE=3M,              ** TIMER FOR I/O REQUESTS           ** X
         ISTCOSDF=INDLU,          ** ISTCOSDF RESOURCE TYPES          ** X
         NETID=NETA,              ** HOST NETWORK IDENTIFIER          ** X
         SRCHRED=OFF,             ** SEARCH REDUCTION SETTING         ** X
         SSCPID=02,               ** UNIQUE SSCP IDENTIFIER           ** X
         SSCPNAME=A02N,           ** GATEWAY SSCP NAME                ** X
         SWNORDER=CPNAME,         ** SWITCHED PU SEARCH ORDER         ** X
         TRACE,TYPE=BUF,ID=VTAM,AMT=P,IDTYPE=SSCP
*   =====> END OF DATA SET ATCSTR02 FOR MVS AND VSE
```

IBM Library Server

19.3.2 Subarea Node Start Option List for VM

```
*  =====> BEGINNING OF DATA SET ATCSTR02 FOR VM
***********************************************************************
*    ATCSTR02 - VTAM START LIST FOR A SUBAREA NODE - SUBAREA A02      *
***********************************************************************
         LISTBKUP=ZZ,            ** BACKUP START OPTION LIST         ** X
         AUTHLEN=YES,            ** WILL FORWARD TRANS PRIORITY      ** X
         AUTORTRY=AUTOCAP,       ** AUTOLOGON RETRY ACTIVATION VALUE ** X
         CDRDYN=YES,             ** DYNAMIC CDRSC DEFINITION         ** X
         AUTOTI=0,               ** NO PERIODIC AUTOLOGON RETRIES    ** X
         CINDXSIZ=8176,          ** CIT & CONVT INDEX TABLE SIZE     ** X
         CMPVTAM=0,              ** NO COMPRESSION                   ** X
         CONFIG=02,              ** MAJOR NODE ACTIVATION CONFIG LIST** X
         CPCDRSC=YES,            ** SESSIONS TO DYNAMIC LEN CP ILU   ** X
         DISCNTIM=15,            ** SSCP-PU DEACTIVATION DELAY       ** X
         DSPLYMAX=100,           ** MESSAGE LIMIT FOR DISPLAY COMMAND** X
         DSPLYWLD=FULLWILD,      ** WILDCARDS PERMITTED              ** X
         ENHADDR=NO,             ** NO HIGH-ORDER ELEMENT ADDRESSES  ** X
         FLDTAB=ISTMSFLD,        ** MESSAGE FLOODING PREVENTION      ** X
         HOSTPU=A02NPU,          ** HOST SUBAREA PU NETWORK NAME     ** X
         HOSTSA=02,              ** UNIQUE SUBAREA ADDRESS           ** X
         IOPURGE=3M,             ** TIMER FOR I/O REQUESTS           ** X
         ISTCOSDF=INDLU,         ** ISTCOSDF RESOURCE TYPES          ** X
         MAINTLVL=VPTF9503,      ** MAINTENANCE LEVEL                ** X
         NETID=NETA,             ** HOST NETWORK IDENTIFIER          ** X
         SRCHRED=OFF,            ** SEARCH REDUCTION SETTING         ** X
         SSCPID=02,              ** UNIQUE SSCP IDENTIFIER           ** X
         SSCPNAME=A02N,          ** GATEWAY SSCP NAME                ** X
         SWNORDER=CPNAME,        ** SWITCHED PU SEARCH ORDER         ** X
         TRACE,TYPE=BUF,ID=VTAM,AMT=P,IDTYPE=SSCP
*  =====> END OF DATA SET ATCSTR02 FOR VM
```

IBM Library Server

19.4 Network Node Start Option List

A VTAM network node is an APPN node that supports its own end users and the end nodes it serves by providing directory and route selection services. Network nodes and their interconnections form an intermediate routing network. The VTAM network node performs searches of the network to locate resources and calculates the best session route from the node of the primary LU to the node of the secondary LU, based on user-specified criteria. Network nodes **do not** depend on routing definitions such as path, virtual route (VR) and explicit route (ER).

Network nodes can be classified into two basic categories: pure network nodes, which provide APPN function only, and interchange nodes, which provide both APPN and subarea function. An interchange node together with any NCPs it owns is known as a composite network node. In addition, a border node is an APPN network node that interconnects APPN networks having independent topology databases in order to support LU-LU sessions between these networks. When a network node supports the LUs on attached end nodes it is known as a network node server. Finally, you can configure any network node to act as a central directory server, which builds and maintains a directory of resources throughout the network.

In this section, we show a sample start option list for a pure network node. For information about VTAM in an APPN network, see "Part 4. Implementing APPN in Your Network" in the *VTAM Network Implementation Guide*.

The following sample shows the start options for SSCPEA. It is the combination of NODETYPE=NN and HOSTSA not coded that defines this node as a pure APPN network node. Pure network nodes have no subarea function.

The APPNCOS start option specifies the APPN class of service to be used if a requested class of service cannot be found in the topology and routing services class-of-service database. APPNCOS=NONE is the default value.

AUTORTRY specifies whether adjacent node activation will cause a retry of pending automatic logon requests and, if it does, what kinds of adjacent nodes will cause such retries upon activation. AUTORTRY=AUTOCAP (the default) specifies that such requests are retried only when an adjacent CDRM or an adjacent CP that supports automatic logon is activated.

The AUTOTI start option allows you to specify how often pending automatic logon requests owned by this host are retried. AUTOTI=0 (the default) specifies that such requests are not retried periodically.

The CINDXSIZ start option specifies the maximum size of the CID and CONVID index tables. The default value is 8176 bytes.

CPCP=YES enables this node for CP-CP sessions with all adjacent APPN nodes.

The BN start option specifies whether this node is to provide extended border node function. An extended border node supports intermediate network routing, allowing it to support LU-LU sessions that do not terminate in its native network. BN=NO (the default value) specifies that it does not provide that function. The BN start option is meaningful only for nodes that specify NODETYPE=NN.

NETID, SSCPID, and SSCPNAME are required start options. The SSCPNAME option specifies the name of the VTAM SSCP or CP. HOSTPU is not required, however, it is recommended if you are using NetView. The CONFIG start option identifies a unique name of the configuration list to be activated when VTAM starts.

The start option CDSERVR=NO specifies that this network node will not be a central directory server. NO is the default value.

The CONNTYPE start option specifies for a type 2.1 PU whether the connection is established as a LEN connection or attempted as an APPN connection. CONNTYPE=APPN (the default) specifies that the connection is attempted as an APPN connection.

The DISCNTIM start option specifies the amount of time that VTAM delays deactivation of the SSCP-PU session when there are no outstanding LU-LU session requests. This option is valid only for PU types 2 and 2.1 that have DISCNT=DELAY specified on the PU definition statement. DISCNTIM=15 (the default value) specifies this amount of time as 15 seconds. You can change the value of DISCNTIM with the MODIFY VTAMOPTS command while VTAM is running.

MVS,VM The DLRTCB specifies the largest number of task control blocks (TCBs) used by VTAM for dump/load/restart subtasks and file I/O services. For an APPN network node, you should specify at least 3 for DLRTCB. Two TCBs are needed to process directory services data sets and topology and routing services data sets, and one TCB is needed for other dump/load/restart functions. A value less than 3 can cause VTAM initialization to stall, or suspend a session initiation for a function requiring a TCB until a TCB becomes available. The default value for DLRTCB is 32 TCBs.

The DIRSIZE start option helps control the size of the directory services database on a VTAM network node. DIRSIZE specifies the maximum number of dynamic APPN resources that VTAM stores in that database. Once the number specified is reached, storage from the oldest resources is freed and reused. DIRSIZE=0 (the default value) specifies that no limit is enforced for the number of dynamic APPN resources in the directory services database. You can change the value of DIRSIZE with the MODIFY VTAMOPTS command while VTAM is running.

The DIRTIME start option also helps control the size of the directory services database on a VTAM network node. DIRTIME indicates how long an unused resource may remain in the database; the default is 8 days (DIRTIME=8D). You can change the value of DIRTIME with the MODIFY VTAMOPTS command while VTAM is running.

DYNADJCP=YES indicates that adjacent control point (ADJCP) minor nodes are allowed to be created dynamically and placed in the dynamic adjacent control point major node (ISTADJCP).

DYNLU=YES directs VTAM to dynamically allocate host representations of independent LUs during session activation. There is no need for you to predefine your independent LUs if you specify this start option.

The ENHADDR start option specifies whether VTAM can assign element addresses greater than 65,535 (high-order addresses) to resources establishing sessions within this subarea. ENHADDR=NO (the default) indicates that VTAM cannot assign such element addresses.

The NUMTREES start option specifies the limit for the number of routing trees retained in the topology and routing services tree cache. The default is 100 routing trees (NUMTREES=100).

The RESUSAGE start option specifies the number of times a resource can be used during route selection before the resource is considered overused.

The default is 100 times (RESUSAGE=100).

ROUTERES=1 indicates that it is highly desirable to have this node provide intermediate session routing. During route calculation, this value would be compared with the ROUTERES values of other network nodes.

The start option INITDB specifies whether the directory services and topology and routing services databases are loaded when VTAM is started. INITDB=ALL (the default value) specifies that both databases are loaded at that time. The INITDB start option is meaningful only if the NODETYPE=NN start option is also specified.

The setting of the SSEARCH start option determines whether the subarea network is searched when search requests from the APPN network arrive at an interchange node. SSEARCH=YES (the default value) indicates that the subarea network is to be searched. Resources in the domain of the interchange node are found even if SSEARCH=NO is specified. You can change the value of SSEARCH with the MODIFY VTAMOPTS command while VTAM is running.

MVS,VM The VERIFYCP start option is used to specify whether VTAM is to perform LU-LU session-level verification during activation of LU 6.2 sessions involving control points. VERIFYCP=NONE specifies that no verification of the partner LU's identity is to take place during session activation.

The TRACE,TYPE=VTAM,OPT=ALL start option indicates that all VTAM internal trace options should be started. **MVS** This includes tracing the coupling facility structure for the generic resources function (OPTION=CFS).

Subtopics:

IBM Library Server

19.4.1 Network Node Start Option List for MVS and VM

```
*  =====> BEGINNING OF DATA SET ATCSTREA FOR MVS AND VM
***********************************************************************
*  NAME:     ATCSTREA (VTAM START LIST FOR HOST EA)
***********************************************************************
APPNCOS=NONE,             NO BACKUP APPN CLASS OF SERVICE             X
SSCPID=4,                 HOST ID                                     X
SSCPNAME=SSCPEA,          HOST NAME                                   X
CONFIG=EA,                START CONFIG LIST                           X
NETID=NETA,               IN NETA                                     X
NODETYPE=NN,              PURE APPN NN, NO SUBAREA CAPABILITIES       X
AUTORTRY=AUTOCAP,         AUTOLOGON RETRY ACTIVATION VALUE            X
AUTOTI=0,                 NO PERIODIC AUTOLOGON RETRIES               X
BN=NO,                    NO EXTENDED BORDER NODE FUNCTION            X
CDSERVR=NO,               NOT A CENTRAL DIRECTORY SERVER              X
CINDXSIZ=8176,            CIT & CONVT INDEX TABLE SIZE                X
CONNTYPE=APPN,            APPN CONNECTIONS FOR APPN PUS               X
CPCP=YES,                 CP-CP SESSION CAPABLE                       X
DIRSIZE=0,                NO UPPER LIMIT ON DYNAMIC APPN RESOURCES    X
DIRTIME=8D,               AFTER 8 DAYS UNUSED APPN RESOURCES DELETED  X
DISCNTIM=15,              SSCP-PU DEACTIVATION DELAY                  X
DLRTCB=32,                TCBS FOR DUMP/LOAD/RESTART AND FILE I/O     X
DYNADJCP=YES,             DYNAMIC ADJACENT CP                         X
DYNLU=YES,                DYNAMIC LU                                  X
ENHADDR=NO,               NO HIGH-ORDER ELEMENT ADDRESSES FOR PLUS    X
INITDB=ALL,               LOAD APPN DATABASES AT VTAM START           X
NUMTREES=100,             ROUTING TREES LIMIT                         X
RESUSAGE=100,             RESOURCE USAGE LIMIT                        X
SSEARCH=YES,              SEARCH IN SUBAREA NETWORK                   X
VERIFYCP=NONE,            VERIFY CP (DEFAULT)                         X
TRACE,TYPE=VTAM,OPT=ALL,SIZE=200, ALL INTERNAL TRACE TYPES STARTED     X
CRPLBUF=(200),            PAGEABLE RPL POOL                           X
LFBUF=(100,,10,,10,33),   FIXED LARGE BUFFER POOL                     X
LPBUF=(64,,4,,4,22),      PAGEABLE LARGE BUFFER POOL                  X
SFBUF=(60),               FIXED SMALL BUFFER POOL                     X
SPBUF=(32),               PAGEABLE SMALL BUFFER POOL                  X
ROUTERES=1                ROUTE ADDITION RESISTANCE VALUE
*  =====> END OF DATA SET ATCSTREA FOR MVS AND VM
```

19.4.2 Network Node Start Option List for VSE

```
*   =====> BEGINNING OF DATA SET ATCSTREA FOR VSE
**********************************************************************
*   NAME:     ATCSTREA (VTAM START LIST FOR HOST EA)
**********************************************************************
APPNCOS=NONE,              NO BACKUP APPN CLASS OF SERVICE              X
SSCPID=4,                  HOST ID                                      X
SSCPNAME=SSCPEA,           HOST NAME                                    X
CONFIG=EA,                 START CONFIG LIST                            X
NETID=NETA,                IN NETA                                      X
NODETYPE=NN,               PURE APPN NN, NO SUBAREA CAPABILITIES        X
AUTORTRY=AUTOCAP,          AUTOLOGON RETRY ACTIVATION VALUE             X
AUTOTI=0,                  NO PERIODIC AUTOLOGON RETRIES                X
BN=NO,                     NO EXTENDED BORDER NODE FUNCTION             X
CDSERVR=NO,                NOT A CENTRAL DIRECTORY SERVER               X
CINDXSIZ=8176,             CIT & CONVT INDEX TABLE SIZE                 X
CONNTYPE=APPN,             APPN CONNECTIONS FOR APPN PUS                X
CPCP=YES,                  CP-CP SESSION CAPABLE                        X
DIRSIZE=0,                 NO UPPER LIMIT ON DYNAMIC APPN RESOURCES     X
DIRTIME=8D,                AFTER 8 DAYS UNUSED APPN RESOURCES DELETED   X
DISCNTIM=15,               SSCP-PU DEACTIVATION DELAY                   X
DYNADJCP=YES,              DYNAMIC ADJACENT CP                          X
DYNLU=YES,                 DYNAMIC LU                                   X
ENHADDR=NO,                NO HIGH-ORDER ELEMENT ADDRESSES FOR PLUS     X
INITDB=ALL,                LOAD APPN DATABASES AT VTAM START            X
NUMTREES=100,              ROUTING TREES LIMIT                          X
RESUSAGE=100,              RESOURCE USAGE LIMIT                         X
SSEARCH=YES,               SEARCH IN SUBAREA NETWORK                    X
TRACE,TYPE=VTAM,OPT=ALL,SIZE=200, ALL INTERNAL TRACE TYPES STARTED      X
CRPLBUF=(200),             PAGEABLE RPL POOL                            X
LFBUF=(100,,10,,10,33),    FIXED LARGE BUFFER POOL                      X
LPBUF=(64,,4,,4,22),       PAGEABLE LARGE BUFFER POOL                   X
SFBUF=(60),                FIXED SMALL BUFFER POOL                      X
SPBUF=(32),                PAGEABLE SMALL BUFFER POOL                   X
ROUTERES=1                 ROUTE ADDITION RESISTANCE VALUE
*   =====> END OF DATA SET ATCSTREA FOR VSE
```

19.5 End Node Start Option List

An end node is an APPN node that relies on the services of a network node to provide directory and route selection services. It does this by registering its resources to a network node server. An end node is conceptually located on the periphery of an APPN network, as shown in Figure 34.

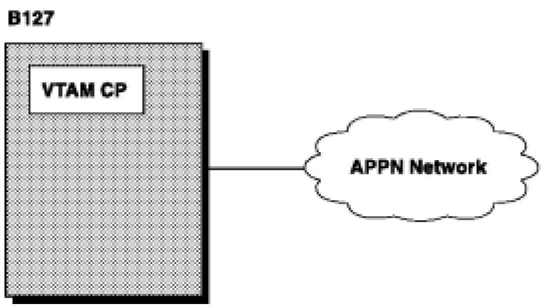

Figure 34. VTAM End Node B127 in an APPN Network

The following sample shows the start options for B127. It is the combination of NODETYPE=EN and HOSTSA not coded that defines this node as a pure end node. CPCP=YES allows this end node to activate CP-CP sessions with an adjacent network node, acting as the end node's network node server The end node is permitted to activate CP-CP sessions with only one adjacent network node (its network node server) at a time.

NETID, SSCPID, and SSCPNAME are required start options. HOSTPU is not required. However, it is recommended if you are using NetView because NetView uses the name specified to determine which VTAM host physical unit it is tracing. The CONFIG start option identifies a unique name of the configuration list to be activated when VTAM starts.

The CINDXSIZ start option specifies the maximum size of the CID and CONVID index tables. The default value is 8176 bytes.

The CONNTYPE start option specifies for a type 2.1 PU whether the connection is established as a LEN connection or attempted as an APPN connection. CONNTYPE=APPN (the default) specifies that the connection is attempted as an APPN connection.

MVS,VM The VERIFYCP start option is used to specify whether VTAM is to perform LU-LU session-level verification during activation of LU 6.2 sessions involving control points. VERIFYCP=NONE specifies that no verification of the partner LU's identity is to take place during session activation.

Subtopics:

19.5.1 End Node Start Option List for MVS and VM

```
*   =====> BEGINNING OF DATA SET ATCSTR27 FOR MVS AND VM
**********************************************************************
*    ATCSTR27 - VTAM START LIST FOR AN APPN END NODE - B127          *
**********************************************************************
         CINDXSIZ=8176,          ** CIT & CONVT INDEX TABLE SIZE     **X
         CONFIG=27,              ** MAJOR NODE ACTIVATION CONFIG LIST **X
         CONNTYPE=APPN,          ** APPN CONNECTION TO APPN PU       **X
         CPCP=YES,               ** CP-CP SESSION                    **X
         HOSTPU=B127NPU,         ** HOST SUBAREA PU NETWORK NAME     **X
         NETID=NETB,             ** HOST NETWORK IDENTIFIER          **X
         NODETYPE=EN,            ** END NODE                         **X
         SSCPID=1027,            ** UNIQUE SSCP IDENTIFIER           **X
         VERIFYCP=NONE,          ** PARTNER LU VERIFICATION          **X
         SSCPNAME=B127N          ** GATEWAY SSCP NAME                **
*   =====> END OF DATA SET ATCSTR27 FOR MVS AND VM
```

19.5.2 End Node Start Option List for VSE

```
*   =====> BEGINNING OF DATA SET ATCSTR27 FOR VSE
***********************************************************************
*    ATCSTR27 - VTAM START LIST FOR AN APPN END NODE - B127           *
***********************************************************************
         CINDXSIZ=8176,          ** CIT & CONVT INDEX TABLE SIZE      **X
         CONFIG=27,              ** MAJOR NODE ACTIVATION CONFIG LIST **X
         CONNTYPE=APPN,          ** APPN CONNECTION TO APPN PU        **X
         CPCP=YES,               ** CP-CP SESSION                     **X
         HOSTPU=B127NPU,         ** HOST SUBAREA PU NETWORK NAME      **X
         NETID=NETB,             ** HOST NETWORK IDENTIFIER           **X
         NODETYPE=EN,            ** END NODE                          **X
         SSCPID=1027,            ** UNIQUE SSCP IDENTIFIER            **X
         SSCPNAME=B127N          ** GATEWAY SSCP NAME                 **
*   =====> END OF DATA SET ATCSTR27 FOR VSE
```

IBM Library Server

19.6 Interchange Node Start Option List

An interchange node combines the function of a subarea node and a network node. It resides on the border of an APPN network and a subarea network. It provides protocol conversion between subarea and APPN networks to enable the integration of APPN and subarea networks. For more information about interchange nodes, see the *VTAM Network Implementation Guide*.

Below is the start list for A01. It is the combination of NODETYPE=NN and HOSTSA=01 as shown below that defines this node as an interchange node. CPCP=YES enables this node for CP-CP sessions with all adjacent APPN nodes.

NETID, SSCPID, and SSCPNAME are required start options. HOSTPU is not required. However, it is recommended if you are using NetView. The CONFIG start option identifies a unique name of the configuration list to be activated when VTAM starts.

The CINDXSIZ start option specifies the maximum size of the CID and CONVID index tables. The default value is 8176 bytes.

DYNLU=YES enables dynamic definition of independent LUs using CDRSC definitions.

AUTHLEN=YES means that VTAM will forward the transmission priority specified from one LEN node to another LEN node.

AUTORTRY specifies whether adjacent node activation will cause a retry of pending automatic logon requests and, if it does, what kinds of adjacent nodes will cause such retries upon activation. AUTORTRY=AUTOCAP (the default) specifies that such requests are retried only when an adjacent CDRM or an adjacent CP that supports automatic logon is activated.

The AUTOTI start option allows you to specify how often pending automatic logon requests owned by this host are retried. AUTOTI=0 (the default) specifies that such requests are not retried periodically.

The BN start option specifies whether this node is to provide extended border node function. BN=NO (the default value) specifies that it does not provide this function. The BN start option is meaningful only for nodes that specify NODETYPE=NN.

The start option CDSERVR=NO specifies that this network node will not be a central directory server. NO is the default value.

The DISCNTIM start option specifies the amount of time that VTAM delays deactivation of the SSCP-PU session when there are no outstanding LU-LU session requests. This option is valid only for PU types 2 and 2.1 that have DISCNT=DELAY specified on the PU definition statement. DISCNTIM=15 (the default value) specifies this amount of time as 15 seconds. You can change the value of DISCNTIM with the MODIFY VTAMOPTS command while VTAM is running.

DYNADJCP=YES specifies that ADJCP minor nodes will be created as needed and placed in the ISTADJCP major node. This option defaults to YES.

The start option INITDB specifies whether the directory services and topology and routing services databases are loaded when VTAM is started. INITDB=ALL (the default value) specifies that both databases are loaded at that time. The INITDB start option is meaningful only if the NODETYPE=NN start option is also specified.

ENHADDR=YES specifies that VTAM can assign element addresses greater than 65,535 for PLUs.

NQNMODE=NQNAME indicates that VTAM defines cross-network resources by their network-qualified names only.

The ROUTERES (routing resistance) start option is used to specify the relative desirability for this node to perform the intermediate session routing function. The value specified must be in the range 0-255. The lower the value, the more desirable it is to have this node provide intermediate session routing. Therefore, ROUTERES=1 indicates that it is highly desirable to have A02 provide this function.

MVS,VM The SECLVLCP start option specifies whether VTAM uses the basic or enhanced protocol for session-level security verification during activation of an LU 6.2 session involving a control point. SECLVLCP=ADAPT (the default) specifies that VTAM will negotiate whether to use the basic or enhanced protocol.

The SORDER start option controls the order in which the APPN and subarea networks are searched when a search request for an unknown LU is received at this node from the subarea network. SORDER=APPN (the default value) specifies that the APPN network is to be searched first. The user may specify that the subarea network is to be searched first (SORDER=SUBAREA).

The SWNORDER start option specifies the way VTAM locates a switched PU. SWNORDER=CPNAME (the default value) specifies that VTAM searches for a switched PU by the CPNAME first and then, if not yet found, by the station identifier (IDBLK and IDNUM operands on the PU definition statement for the switched major nodes).

MVS,VM The VERIFYCP start option is used to specify whether VTAM is to perform LU-LU session-level verification during activation of LU 6.2 sessions involving control points. VERIFYCP=OPTIONAL specifies that verification of the identity of certain partner LUs is to take place during session activation.

The VRTG start option indicates whether VR-based transmission group connections are to be activated when SSCP-SSCP sessions are established for this node. This option is valid only for interchange nodes and migration data hosts. VRTG=YES indicates that such connections are activated when SSCP-SSCP sessions are established. You can change the value of VRTG with the MODIFY VTAMOPTS command while VTAM is running.

The VRTGCPCP start option indicates whether CP-CP sessions are supported over the VR-based transmission group. This option is meaningful only for interchange nodes and migration data hosts that also specify VRTG=YES. VRTGCPCP=YES (the default value) indicates that CP-CP sessions are supported over VR-based transmission groups.

Subtopics:

19.6.1 Interchange Node Start Option List for MVS and VM

```
*  =====> BEGINNING OF DATA SET ATCSTR01 FOR MVS AND VM
**********************************************************************
*   ATCSTR01 - VTAM START LIST FOR AN ICN NODE - A01                 *
**********************************************************************
         AUTHLEN=YES,            ** AUTHORIZE LEN PRIORITY           **X
         AUTORTRY=AUTOCAP,                                           **X
         AUTOTI=0,                                                   **X
         BN=NO,                  ** NO EXTENDED BORDER NODE FUNCTION **X
         CDSERVR=NO,             ** NOT A CENTRAL DIRECTORY SERVER   **X
         CINDXSIZ=8176,          ** CIT & CONVT INDEX TABLE SIZE     **X
         CONFIG=01,              ** MAJOR NODE ACTIVATION CONFIG LIST **X
         CPCP=YES,               ** CP-CP SESSION CAPABLE            **X
         DISCNTIM=15,            ** SSCP-PU DEACTIVATION DELAY       **X
         DYNADJCP=YES,           ** DYNAMIC ADJACENT CP (DEFAULT)    **X
         DYNLU=YES,              ** DYNAMIC LU                       **X
         ENHADDR=YES,            ** CAN USE HIGH ORDER ELEMENT ADDRESS**X
         HOSTPU=A01NPU,          ** HOST SUBAREA PU NETWORK NAME     **X
         HOSTSA=01,              ** UNIQUE SUBAREA ADDRESS           **X
         INITDB=ALL,             ** BOTH DS AND TRS DATABASES LOADED **X
         MSGLEVEL=V4R1,          ** MESSAGES                         **X
         NETID=NETA,             ** HOST NETWORK IDENTIFIER          **X
         NODETYPE=NN,            ** ICN NETWORK NODE                 **X
         NQNMODE=NQNAME,         ** FULLY QUALIFIED NAMES USED       **X
         ROUTERES=1,             ** ROUTING RESISTANCE               **X
         SECLVLCP=ADAPT,         ** SESSION-LVL SECURITY VERIFICATION **X
         SORDER=APPN,            ** APPN NETWORK SEARCHED FIRST      **X
         SSCPID=01,              ** UNIQUE SSCP IDENTIFIER           **X
         SSCPNAME=A01N,          ** GATEWAY SSCP NAME                **X
         SWNORDER=CPNAME,        ** SWITCHED PU SEARCH ORDER         **X
         VRTG=YES,               ** VR-BASED TG SUPPORTED            **X
         VRTGCPCP=YES,           ** CP-CP SESSIONS OVER VRTG LINKS   **X
         VERIFYCP=OPTIONAL       ** VERIFY CP OPTIONAL               **
*  =====> END OF DATA SET ATCSTR01 FOR MVS AND VM
```

IBM Library Server

19.6.2 Interchange Node Start Option List for VSE

```
*   =====> BEGINNING OF DATA SET ATCSTR01 FOR VSE
**********************************************************************
*    ATCSTR01 - VTAM START LIST FOR AN ICN NODE - A01                *
**********************************************************************
         AUTHLEN=YES,            ** AUTHORIZE LEN PRIORITY            **X
         AUTORTRY=AUTOCAP,                                            **X
         AUTOTI=0,                                                    **X
         BN=NO,                  ** NO EXTENDED BORDER NODE FUNCTION  **X
         CDSERVR=NO,             ** NOT A CENTRAL DIRECTORY SERVER    **X
         CINDXSIZ=8176,          ** CIT & CONVT INDEX TABLE SIZE      **X
         CONFIG=01,              ** MAJOR NODE ACTIVATION CONFIG LIST **X
         CPCP=YES,               ** CP-CP SESSION CAPABLE             **X
         DISCNTIM=15,            ** SSCP-PU DEACTIVATION DELAY        **X
         DYNADJCP=YES,           ** DYNAMIC ADJACENT CP (DEFAULT)     **X
         DYNLU=YES,              ** DYNAMIC LU                        **X
         ENHADDR=YES,            ** CAN USE HIGH ORDER ELEMENT ADDRESS**X
         HOSTPU=A01NPU,          ** HOST SUBAREA PU NETWORK NAME      **X
         HOSTSA=01,              ** UNIQUE SUBAREA ADDRESS            **X
         INITDB=ALL,             ** BOTH DS AND TRS DATABASES LOADED  **X
         MSGLEVEL=V4R1,          ** MESSAGES                          **X
         NETID=NETA,             ** HOST NETWORK IDENTIFIER           **X
         NODETYPE=NN,            ** ICN NETWORK NODE                  **X
         NQNMODE=NQNAME,         ** FULLY QUALIFIED NAMES USED        **X
         ROUTERES=1,             ** ROUTING RESISTANCE                **X
         SORDER=APPN,            ** APPN NETWORK SEARCHED FIRST       **X
         SSCPID=01,              ** UNIQUE SSCP IDENTIFIER            **X
         SSCPNAME=A01N,          ** GATEWAY SSCP NAME                 **X
         SWNORDER=CPNAME,        ** SWITCHED PU SEARCH ORDER          **X
         VRTG=YES,               ** VR-BASED TG SUPPORTED             **X
         VRTGCPCP=YES            ** CP-CP SESSIONS OVER VRTG LINKS
*   =====> END OF DATA SET ATCSTR01 FOR VSE
```

19.7 Composite Network Node Start Option List

A composite network node is composed of a VTAM and any NCPs that it owns. In an APPN network, it functions as a network node and appears to the APPN network as a single node.

A composite network node is defined by coding the HOSTSA start option, specifying the NODETYPE start option as NN, and by activating an NCP from that VTAM. If the composite network node has APPN connections through its NCP, the NCP needs to be at Version 6 Release 2 or greater. In addition, for border node or connection network connections, the NCP needs to be at Version 7 Release 1 or greater.

For an example of a start option list used by a composite network node, see "Interchange Node Start Option List."

For more information about composite network nodes, see the *VTAM Network Implementation Guide*.

IBM Library Server

19.8 Migration Data Host Start Option List

A migration data host (MDH) combines the function of an end node with the function and role of a subarea data host. It resides on the border of an APPN network and a subarea network. For more information about migration data hosts, see the *VTAM Network Implementation Guide*.

The following sample is the start list for A01. It is the combination of NODETYPE=EN and the HOSTSA start option as shown below that defines this node as a migration data host (MDH). CPCP=YES allows this end node to activate CP-CP sessions with an adjacent network node, acting as the end node's network node server. The end node is permitted to activate CP-CP sessions with only one adjacent network node (its network node server) at a time.

NETID, SSCPID, and SSCPNAME are required start options. HOSTPU is not required, however, it is recommended if you are using NetView. The CONFIG start option identifies a unique name of the configuration list to be activated when VTAM starts.

The CINDXSIZ start option specifies the maximum size of the CID and CONVID index tables. The default value is 8176 bytes.

DYNLU=YES enables dynamic definition of independent LUs using CDRSC definitions.

MVS,VM GWSSCP=NO should always be coded for migration data hosts. If it is not, the node will start successfully, but an error message will be issued.

MSGLEVEL=V4R2 specifies that VTAM issues the V4R2 version of messages listed in "Message Text for BASE and Version 4 Messages" in *VTAM Messages and Codes*.

The SORDER start option controls the order in which the APPN and subarea networks are searched when a search request for an unknown LU is received at this node from the subarea network. SORDER=APPN (the default value) specifies that the APPN network is to be searched first. The user may specify that the subarea network is to be searched first (SORDER=SUBAREA).

MVS,VM The VERIFYCP start option is used to specify whether VTAM is to perform LU-LU session-level verification during activation of LU 6.2 sessions involving control points. VERIFYCP=NONE specifies that no verification of the partner LU's identity is to take place during session activation.

VRTG=YES indicates that a VR-based transmission group connection is to be activated whenever SSCP-SSCP sessions are established for this node. Since both the NODETYPE and HOSTSA start options were used, VRTGCPCP=YES, indicating that CP-CP sessions are supported over VR-based transmission groups, is taken as the default.

SRCHRED=ON specifies that this node reduces searches for resources which are found to be unreachable. The default value for SRCHRED is OFF.

SRCOUNT=100 specifies that requests for a resource are to be limited to 100 before VTAM attempts to locate the resource again. SRCOUNT is meaningful only if search reduction is active. The default value for SRCOUNT is 10.

SRTIMER=1000 specifies that VTAM will not conduct a search for an unreachable resource until 1000 seconds have elapsed.

ENHADDR=YES specifies that VTAM can assign element addresses greater than 65,535 for PLUs.

The TRACE,TYPE=VTAM,OPT=ALL start option indicates that all VTAM internal trace options should be started. **MVS** This includes tracing the coupling facility structure for the generic resources function (OPTION=CFS).

Subtopics:

IBM Library Server

19.8.1 Migration Data Host Start Option List for MVS AND VM

```
*  =====> BEGINNING OF DATA SET ATCSTRV1 FOR MVS AND VM
***********************************************************************
*   ATCSTRV1 - VTAM START LIST FOR A MIGRATION DATA HOST NODE - A01N *
**********************************************************************
SSCPID=010001,            HOST ID                                      X
MSGLEVEL=V4R2,            VTAM V4R2 VERSION OF VTAM MESSAGES           X
SORDER=APPN,              APPN NETWORK SEARCHED FIRST                  X
MSGMOD=NO,                DO NOT IDENTIFY MESSAGE-ISSUING VTAM MODULE  X
SSCPNAME=A01N,            HOST NAME                                    X
CONFIG=01,                START CONFIG                                 X
CINDXSIZ=8176,            CIT & CONVT INDEX TABLE SIZE                 X
NETID=NETA,               IN NETA                                      X
NQNMODE=NQNAME,           FULLY QUALIFIED NAMES USED                   X
NODETYPE=EN,              END NODE                                     X
HOSTSA=01,                SUBAREA HOST NUMBER                          X
GWSSCP=NO,                SSCP CAN NOT BE A GATEWAY SSCP               X
DYNLU=YES,                DYNAMIC LU                                   X
VRTG=YES,                 VIRTUAL ROUTE-BASED TRANSMISSION GROUPS      X
SRCHRED=ON,               SEARCH REDUCTION FOR UNREACHABLE RESOURCES   X
SRCOUNT=100,              SEARCH REDUCTION RESOURCE REQUEST LIMIT      X
SRTIMER=1000,             SEARCH REDUCTION TIME LIMIT                  X
TRACE,                    VTAM INTERNAL TRACE OPTIONS                  X
TYPE=VTAM,                                                             X
OPT=ALL,                  ALL INTERNAL TRACE TYPES STARTED             X
SIZE=500,                 NUMBER OF PAGES IN INTERNAL TRACE TABLE      X
XNETALS=YES,              ALLOWS CONNECTION TO ADJACENT NETWORKS       X
ENHADDR=YES,              CAN USE HIGH ORDER ELEMENT ADDRESSES FOR PLUSX
CPCP=YES,                 CP-CP SESSION                                X
DYNADJCP=YES,             DYNAMIC ADJACENT CP (DEFAULT)                X
VERIFYCP=NONE,            VERIFY CP (DEFAULT)                          X
CRPLBUF=(200),            PAGEABLE RPL POOL                            X
LFBUF=(100,,10,,10,33),   FIXED LARGE BUFFER POOL                      X
LPBUF=(64,,4,,4,22),      PAGEABLE LARGE BUFFER POOL                   X
SFBUF=(60),               FIXED SMALL BUFFER POOL                      X
SPBUF=(32)                PAGEABLE SMALL BUFFER POOL
*  =====> END OF DATA SET ATCSTRV1 FOR MVS AND VM
```

19.8.2 Migration Data Host Start Option List for VSE

```
*   =====> BEGINNING OF DATA SET ATCSTRV1 FOR VSE
***********************************************************************
*    ATCSTRV1 - VTAM START LIST FOR A MIGRATION DATA HOST NODE - A01N *
***********************************************************************
SSCPID=010001,            HOST ID                                      X
MSGLEVEL=V4R2,            VTAM V4R2 VERSION OF VTAM MESSAGES           X
SORDER=APPN,              APPN NETWORK SEARCHED FIRST                  X
MSGMOD=NO,                DO NOT IDENTIFY MESSAGE-ISSUING VTAM MODULE  X
SSCPNAME=A01N,            HOST NAME                                    X
CONFIG=01,                START CONFIG                                 X
CINDXSIZ=8176,            CIT & CONVT INDEX TABLE SIZE                 X
NETID=NETA,               IN NETA                                      X
NQNMODE=NQNAME,           FULLY QUALIFIED NAMES USED                   X
NODETYPE=EN,              END NODE                                     X
HOSTSA=01,                SUBAREA HOST NUMBER                          X
DYNLU=YES,                DYNAMIC LU                                   X
VRTG=YES,                 VIRTUAL ROUTE-BASED TRANSMISSION GROUPS      X
SRCHRED=ON,               SEARCH REDUCTION FOR UNREACHABLE RESOURCES   X
SRCOUNT=100,              SEARCH REDUCTION RESOURCE REQUEST LIMIT      X
SRTIMER=1000,             SEARCH REDUCTION TIME LIMIT                  X
TRACE,                    VTAM INTERNAL TRACE OPTIONS                  X
TYPE=VTAM,                                                             X
OPT=ALL,                  ALL INTERNAL TRACE TYPES STARTED             X
SIZE=500,                 NUMBER OF PAGES IN INTERNAL TRACE TABLE      X
XNETALS=YES,              ALLOWS CONNECTION TO ADJACENT NETWORKS       X
ENHADDR=YES,              CAN USE HIGH ORDER ELEMENT ADDRESSES FOR PLUSX
CPCP=YES,                 CP-CP SESSION                                X
DYNADJCP=YES,             DYNAMIC ADJACENT CP (DEFAULT)                X
CRPLBUF=(200),            PAGEABLE RPL POOL                            X
LFBUF=(100,,10,,10,33),   FIXED LARGE BUFFER POOL                      X
LPBUF=(64,,4,,4,22),      PAGEABLE LARGE BUFFER POOL                   X
SFBUF=(60),               FIXED SMALL BUFFER POOL                      X
SPBUF=(32)                PAGEABLE SMALL BUFFER POOL
*   =====> END OF DATA SET ATCSTRV1 FOR VSE
```

19.9 Start Option List with Border Node Support

A VTAM border node (BN=YES) is an extension to VTAM network node capabilities which allows APPN connectivity between APPN networks and allows partitioning of APPN networks into smaller subnetworks to reduce topology and search activity.

Note: NCP Version 7 Release 1 or later is required for border node function through an NCP.

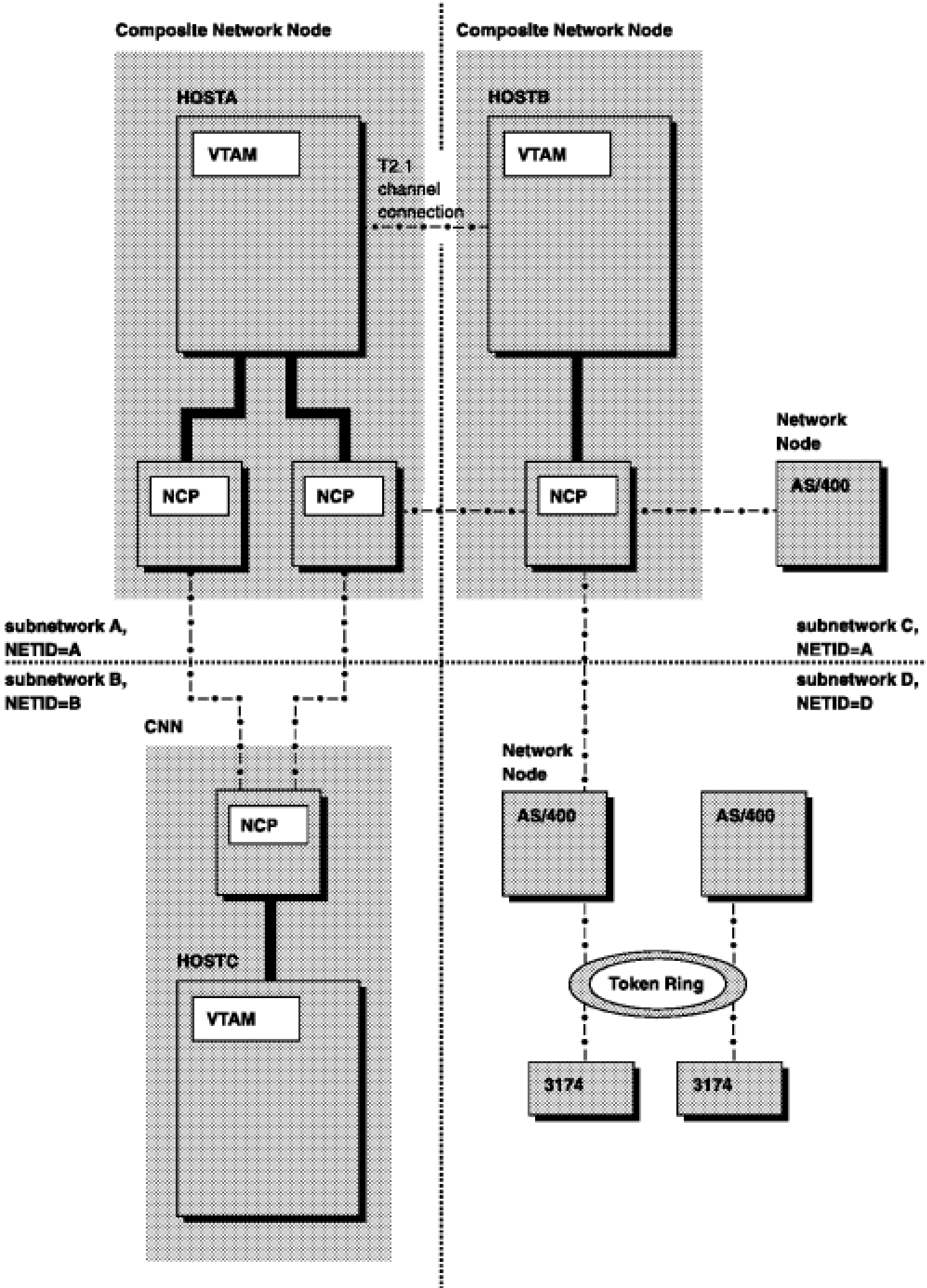

Figure 35. APPN Subnetworks through APPN Multiple Network Connectivity Support

VTAM border node implements extended border node function, which allows two types of subnetwork boundaries. An extended subnetwork boundary interconnects two extended border nodes. A peripheral subnetwork boundary interconnects a border node with a network node which does not have the extended border node function. While the peripheral boundary allows more flexibility concerning the capabilities of the partner node across the boundary, it is limited to supporting searches and sessions where either the origin or destination of the search resides in the subnetwork of the nonnative partner node. See "APPN Multiple Network Connectivity" in the *VTAM Network Implementation Guide* for more information about border nodes.

In Figure 35, the subnetwork boundary between HOSTA and HOSTB is an extended boundary, provided both VTAMs were started with BN=YES. The boundary between HOSTB and the AS/400 in NETID D is a peripheral boundary since the AS/400 does not have extended border node capabilities.

In topic 19.9 is a start list for an APPN interchange node implementing the border node function.

The BNDYN start option controls the level of dynamics that VTAM uses when routing a request across APPN subnetwork boundaries. BNDYN=NONE defeats dynamics and requires that adjacent cluster routing lists be defined for all cross-subnetwork routing. BNDYN=LIMITED allows cross-subnetwork routing targets which match the destination resource's NETID to be included dynamically, in addition to any cross-subnetwork routing targets through which this node has learned the destination resource's NETID. BNDYN=FULL will exhaustively search all active cross-subnetwork targets in its search for the destination resource. The BNDYN start option is valid only when BN=YES for this node.

The BNORD start option is used to control the search order when searching across subnetwork boundaries. BNORD=PRIORITY (the default) tells VTAM that in performing cross-subnetwork searches VTAM should give preference to nodes for which the most recent search was successful and to nodes whose NETID matches the DLU's NETID. BNORD=DEFINED specifies that searches are performed in the order that you define border nodes and nonnative network nodes. The BNORD start option is valid only when BN=YES for this node.

The SNVC (subnetwork visit count) start option is a number between 1-255 that specifies the maximum number of subnetworks that the border node will search when looking for a resource. SNVC=1 restricts the search to the current network. Thus, SNVC=4 restricts the search to networks three hops away. This start option is valid only when BN=YES for this node.

```
*  =====> BEGINNING OF DATA SET ATCSTR01
***********************************************************************
*   ATCSTR01 - VTAM START LIST FOR AN ICN NODE - A01                 *
***********************************************************************
         BN=YES,                 ** BORDER NODE                      **X
         BNDYN=FULL,             ** DYNAMIC ADJCLUST TABLE           **X
         BNORD=PRIORITY,         ** TABLE SEARCH ORDER               **X
         CONFIG=01,              ** MAJOR NODE ACTIVATION CONFIG LIST **X
         CPCP=YES,               ** CP-CP SESSION CAPABLE            **X
         DYNLU=YES,              ** DYNAMIC LU                       **X
         HOSTPU=A01NPU,          ** HOST SUBAREA PU NETWORK NAME     **X
         HOSTSA=01,              ** UNIQUE SUBAREA ADDRESS           **X
         NETID=NETA,             ** HOST NETWORK IDENTIFIER          **X
         NODETYPE=NN,            ** NETWORK NODE                     **X
         SNVC=4,                 ** SUBNETWORK VISIT COUNT           **X
         SSCPID=01,              ** UNIQUE SSCP IDENTIFIER           **X
         SSCPNAME=A01N           ** GATEWAY SSCP NAME                **
*  =====> END OF DATA SET ATCSTR01
```

To customize routing for a VTAM border node to match the requirements of your installation, VTAM offers the ability to define adjacent cluster routing lists. For more information on these lists, see "Adjacent Cluster Routing List."

An APPN network boundary is automatically established when two APPN network nodes have differing network identifiers. In addition, you can also create a subnetwork boundary by coding the NATIVE operand on the ADJCP statement or PU statement representing a partner APPN network node. For an example of a subnetwork boundary for a local SNA PU (using APPN host to host channel) see "Defining Subnetwork Boundaries."

19.10 Central Directory Server Start Option List

A central directory server is a network node that builds and maintains a directory of resources throughout the network. This directory reduces the number of network broadcast searches to at most one per resource. VTAM network nodes and end nodes register their resources with a central directory server. For additional information on VTAM central directory servers, see the *VTAM Network Implementation Guide*.

In the sample start option list below, the start option CDSERVR=YES means that this node will be a central directory server. Only network nodes can be central directory servers.

NETID, SSCPID, and SSCPNAME are required start options. HOSTPU is not required, however, it is recommended if you are using NetView. The CONFIG start option identifies a unique name of the configuration list to be activated when VTAM starts.

```
*  =====> BEGINNING OF DATA SET ATCSTR82
**********************************************************************
*   ATCSTR82 - VTAM START LIST FOR AN APPN NETWORK NODE (PURE) - A82 *
**********************************************************************
        CDSERVR=YES,           ** CENTRAL DIRECTORY SERVER          **X
        CONFIG=82,             ** MAJOR NODE ACTIVATION CONFIG LIST **X
        CPCP=YES,              ** CPCP SESSION                      **X
        DYNLU=YES,             ** DYNAMIC LU                        **X
        HOSTPU=A82NPU,         ** HOST SUBAREA PU NETWORK NAME      **X
        NETID=NETA,            ** HOST NETWORK IDENTIFIER           **X
        NODETYPE=NN,           ** NETWORK NODE                      **X
        SSCPID=82,             ** UNIQUE SSCP IDENTIFIER            **X
        SSCPNAME=A82N          ** GATEWAY SSCP NAME                 **
*  =====> END OF DATA SET ATCSTR82
```

20.0 Chapter 20. Configuration Lists

Subtopics:

20.1 About This Chapter

This chapter contains sample configuration lists.

A configuration list specifies the resources that are to be activated automatically when you start VTAM. Writing a configuration list:

- Reduces the amount of operator involvement and the chance of entering incorrect information

- Enables VTAM to initialize the domain faster.

Each entry in the configuration list identifies the name of a member of the VTAM definition library. For more information on implementing configuration lists, see "Configuration Lists" in the *VTAM Network Implementation Guide*.

IBM Library Server

20.2 Configuration List for an Interchange Node

```
*   =====> BEGINNING OF DATA SET ATCCON01
**********************************************************************
*    ATCCON01 - VTAM CONFIG LIST FOR AN APPN ICN NODE - A01          *
**********************************************************************
         A01ADJ,                 ** ADJACENT SSCP TABLE                **X
         A01APPLS,               ** HOST APPLICATIONS                  **X
         A01CDRM,                ** CROSS DOMAIN RESOURCE MANAGERS     **X
         A01CDRSC,               ** CROSS DOMAIN RESOURCES             **X
         A01LOCAL,               ** LOCAL NON-SNA TERMINALS            **X
         A01PATHS                ** PATH TABLES
*   =====> END OF DATA SET ATCCON01
```

IBM Library Server

20.3 Configuration List for a Subarea Node

```
*   =====> BEGINNING OF DATA SET ATCCON02
***********************************************************************
*    ATCCON02 - VTAM CONFIG LIST FOR A SUBAREA NODE - SUBAREA A02     *
***********************************************************************
         A02ADJ,                 ** ADJACENT SSCP TABLE                **X
         A02APPLS,               ** HOST APPLICATIONS                  **X
         A02CDRM,                ** CROSS DOMAIN RESOURCE MANAGERS     **X
         A02CDRSC,               ** CROSS DOMAIN RESOURCES             **X
         A02LOCAL,               ** LOCAL NON-SNA TERMINALS            **X
         A02PATHS                ** PATH TABLES
*   =====> END OF DATA SET ATCCON02
```

20.4 Configuration List for a Network Node

```
As you will notice below, the configuration list for an APPN network node
does not include entries for an adjacent SSCP table, cross-domain resource
manager major node, cross-domain resource major node, or path table.
Since an APPN network node does not have subarea capability, these
resources have no meaning for that node.
```

```
 *  =====> BEGINNING OF DATA SET ATCCON82
 **********************************************************************
 *   ATCCON82 - VTAM CONFIG LIST FOR AN APPN NETWORK NODE - A82       *
 **********************************************************************
          A82APPLS,             ** HOST APPLICATIONS                  **X
          A82LOCAL              ** LOCAL NON-SNA TERMINALS
 *  =====> END OF DATA SET ATCCON82
```

20.5 Configuration List for a Migration Data Host Node

```
*   =====> BEGINNING OF DATA SET ATCCON50
**********************************************************************
*    ATCCON50 - VTAM CONFIG LIST FOR AN APPN MDH NODE - A500         *
**********************************************************************
         A50ADJ,                ** ADJACENT SSCP TABLE               **X
         A50APPLS,              ** HOST APPLICATIONS                 **X
         A50CDRM,               ** CROSS DOMAIN RESOURCE MANAGERS    **X
         A50CDRSC,              ** CROSS DOMAIN RESOURCES            **X
         A50LOCAL,              ** LOCAL NON-SNA TERMINALS           **X
         A50PATHS               ** PATH TABLES
*   =====> END OF DATA SET ATCCON50
```

20.6 Configuration List for an End Node

As you will notice below, the configuration list for an APPN end node does not include entries for an adjacent SSCP table, cross-domain resource manager major node, cross-domain resource major node, or path table. Since an APPN end node does not have subarea capability, these resources have no meaning for that node.

```
*  =====> BEGINNING OF DATA SET ATCCON27
**********************************************************************
*   ATCCON27 - VTAM CONFIG LIST FOR AN APPN END NODE - B127          *
**********************************************************************
         B27APPLS,             ** HOST APPLICATIONS                 **X
         B27LOCAL              ** LOCAL NON-SNA TERMINALS
*  =====> END OF DATA SET ATCCON27
```

21.0 Chapter 21. Table Definitions

Subtopics:

21.1 About This Chapter

```
This chapter contains sample definitions (or references sample
definitions) for VTAM's user-defined tables.
```

IBM Library Server

21.2 Adjacent SSCP Table

The adjacent SSCP table is only used by nodes with subarea capability. Thus, nodes which have APPN capability but not subarea capability do not use adjacent SSCP tables.

The adjacent SSCP table contains lists of adjacent SSCPs that can be in session with a host VTAM or be used to establish sessions with SSCPs in other networks. VTAM searches other SSCPs when it receives a session request for a resource that is not in its domain. First, it sends a session initiation request to the SSCP specified in the CDRM operand of that resource's CDRSC statement. If a CDRM is not coded, and you have defined a default SSCP list, VTAM sends the session setup request for the undefined destination logical unit to each SSCP in the list until either the owning SSCP is found or the end of the list is reached. You can also allow VTAM to dynamically define an adjacent SSCP table by coding the start option DYNASSCP=YES or letting it default.

To improve SSCP search performance, you can use the adjacent SSCP selection function of the session management exit routine to shorten or reorder the list of adjacent SSCPs to which an LU-LU session request is directed.

For more information about adjacent SSCP tables, see the *VTAM Network Implementation Guide* and the *VTAM Resource Definition Reference*.

The adjacent SSCP tables for the subarea-capable nodes in the network depicted by Figure 10 are shown below.

Subtopics:

IBM Library Server

21.2.1 Adjacent SSCP Table for Host C01

The first two ADJCDRM statements in the following sample comprise a default SSCP list because they are not preceded by any CDRM or NETWORK statement. A17N and B01N comprise a default list that C01 will use for routing throughout the SNA-interconnected network when either of the following is true:

- The network of the destination logical unit (DLU) is unknown.
- The destination network's ID is known, but no adjacent SSCP tables are defined which correspond to the destination network.

The default list for NETA is A17N and B01N. The default list for NETB is B01N and A17N.

If the destination CDRM is known to be A17N, A500N, or A01N in network NETA, the adjacent list is comprised of A17N.

```
*  =====> BEGINNING OF DATA SET C01ADJ
*********************************************************************
C01N      VBUILD TYPE=ADJSSCP
A17N     ADJCDRM
B01N     ADJCDRM
*************************************************
*     NETWORKA   ADJSSCPS                       *
*************************************************
NETA     NETWORK  NETID=NETA
A17N     ADJCDRM
B01N     ADJCDRM
A17N     CDRM
A500N    CDRM
A01N     CDRM
A17N     ADJCDRM
A02N     CDRM
A17N     ADJCDRM
A81N     CDRM
A17N     ADJCDRM
*************************************************
*     NETWORKB   ADJSSCPS                       *
*************************************************
NETB     NETWORK  NETID=NETB
B01N     ADJCDRM
A17N     ADJCDRM
B01N     CDRM
B128N    CDRM
B01N     ADJCDRM
A17N     ADJCDRM
*  =====> END OF DATA SET C01ADJ
```

21.2.2 Adjacent SSCP Table for Host A01

```
*   =====> BEGINNING OF DATA SET A01ADJ
*********************************************************************
A01N       VBUILD TYPE=ADJSSCP
A02N      ADJCDRM
A17N      ADJCDRM
A81N      ADJCDRM
A500N     ADJCDRM
*************************************************
*     NETWORKB   ADJSSCPS                       *
*************************************************
NETB      NETWORK  NETID=NETB
B01N      ADJCDRM
A17N      ADJCDRM
B01N      CDRM
B128N     CDRM
B01N      ADJCDRM
A17N      ADJCDRM
*************************************************
*     NETWORKC   ADJSSCPS                       *
*************************************************
NETC      NETWORK  NETID=NETC
C01N      CDRM
C01N      ADJCDRM
A17N      ADJCDRM
*   =====> END OF DATA SET A01ADJ
```

IBM Library Server

21.2.3 Adjacent SSCP Table for Host A02

```
*   =====> BEGINNING OF DATA SET A02ADJ
*********************************************************************
A02N      VBUILD TYPE=ADJSSCP
A01N     ADJCDRM
A17N     ADJCDRM
A81N     ADJCDRM
A500N    ADJCDRM
*************************************************
*     NETWORKB   ADJSSCPS                       *
*************************************************
NETB     NETWORK  NETID=NETB
B01N     ADJCDRM
A17N     ADJCDRM
B01N     CDRM
B128N    CDRM
B01N     ADJCDRM
A17N     ADJCDRM
*************************************************
*     NETWORKC   ADJSSCPS                       *
*************************************************
NETC     NETWORK  NETID=NETC
C01N     ADJCDRM
A17N     ADJCDRM
*   =====> END OF DATA SET A02ADJ
```

21.2.4 Adjacent SSCP Table for Host A17

```
*  =====> BEGINNING OF DATA SET A17ADJ
**********************************************************************
A17N      VBUILD TYPE=ADJSSCP
A01N     ADJCDRM
A02N     ADJCDRM
A81N     ADJCDRM
A500N    ADJCDRM
B01N     ADJCDRM
C01N     ADJCDRM
*************************************************
*     NETWORKB   ADJSSCPS                      *
*************************************************
NETB     NETWORK  NETID=NETB
B01N     ADJCDRM
C01N     ADJCDRM
B01N     CDRM
B128N    CDRM
B01N     ADJCDRM
*************************************************
*     NETWORKC   ADJSSCPS                      *
*************************************************
NETC     NETWORK  NETID=NETC
C01N     ADJCDRM
B01N     ADJCDRM
*  =====> END OF DATA SET A17ADJ
```

21.2.5 Adjacent SSCP Table for Host A500

```
*  =====> BEGINNING OF DATA SET A50ADJ
*********************************************************************
A500N     VBUILD TYPE=ADJSSCP
A01N     ADJCDRM
A02N     ADJCDRM
A17N     ADJCDRM
A81N     ADJCDRM
*************************************************
*     NETWORKB   ADJSSCPS                       *
*************************************************
NETB     NETWORK  NETID=NETB
B01N     ADJCDRM
A17N     ADJCDRM
B01N     CDRM
B128N    CDRM
B01N     ADJCDRM
A17N     ADJCDRM
*************************************************
*     NETWORKC   ADJSSCPS                       *
*************************************************
NETC     NETWORK  NETID=NETC
C01N     ADJCDRM
A17N     ADJCDRM
*  =====> END OF DATA SET A50ADJ
```

21.2.6 Adjacent SSCP Table for Host A81

```
*   =====> BEGINNING OF DATA SET A81ADJ
*********************************************************************
A81N       VBUILD TYPE=ADJSSCP
A01N      ADJCDRM
A02N      ADJCDRM
A17N      ADJCDRM
A500N     ADJCDRM
*************************************************
*     NETWORKB   ADJSSCPS                       *
*************************************************
NETB      NETWORK  NETID=NETB
B01N      ADJCDRM
A17N      ADJCDRM
B01N      CDRM
B128N     CDRM
B01N      ADJCDRM
A17N      ADJCDRM
*************************************************
*     NETWORKC   ADJSSCPS                       *
*************************************************
NETC      NETWORK  NETID=NETC
C01N      ADJCDRM
A17N      ADJCDRM
*   =====> END OF DATA SET A81ADJ
```

21.2.7 Adjacent SSCP Table for Host B01

```
*   =====> BEGINNING OF DATA SET B01ADJ
*********************************************************************
B01N       VBUILD TYPE=ADJSSCP
B128N     ADJCDRM
A17N      ADJCDRM
*************************************************
*     NETWORKA   ADJSSCPS                       *
*************************************************
NETA      NETWORK  NETID=NETA
A17N      ADJCDRM
A17N      CDRM
A500N     CDRM
A01N      CDRM
A17N      ADJCDRM
A02N      CDRM
A17N      ADJCDRM
A81N      CDRM
A17N      ADJCDRM
*************************************************
*     NETWORKC   ADJSSCPS                       *
*************************************************
NETC      NETWORK  NETID=NETC
C01N      ADJCDRM
A17N      ADJCDRM
*   =====> END OF DATA SET B01ADJ
```

21.2.8 Adjacent SSCP Table for Host B128

```
*   =====> BEGINNING OF DATA SET B28ADJ
B128N      VBUILD TYPE=ADJSSCP
B01N      ADJCDRM
*************************************************
*     NETWORKA    ADJSSCPS                      *
*************************************************
NETA      NETWORK  NETID=NETA
A17N      ADJCDRM
B01N      ADJCDRM
A17N      CDRM
A500N     CDRM
A01N      CDRM
A17N      ADJCDRM
A02N      CDRM
A17N      ADJCDRM
A81N      CDRM
A17N      ADJCDRM
*************************************************
*     NETWORKC    ADJSSCPS                      *
*************************************************
NETC      NETWORK  NETID=NETC
C01N      ADJCDRM
B01N      ADJCDRM
A17N      ADJCDRM
*   =====> END OF DATA SET B28ADJ
```

IBM Library Server

21.2.9 Defining an Adjacent SSCP List for CDRSCs

You can assign a list of adjacent SSCPs to a CDRSC as the route to use for cross-domain and cross-network session requests. The list defines the only routes available when establishing a session with this resource. If these routes are not available, the session fails. This function should be used when close control of route selection is desirable.

To define a list of adjacent SSCPs code an ADJLIST definition statement in the adjacent SSCP table. VTAM builds the adjacent SSCP list from the ADJCDRM definition statements which follow one or more ADJLIST statements.

The name of the ADJLIST definition statement defines the name of the adjacent SSCP list. This name is used by the ADJLIST operand on the CDRSC definition statement for a resource to specify which adjacent SSCPs should be used for all session setup requests for that resource. Only one adjacent list may be specified for a specific cross-domain resource.

The sample adjacent SSCP table below defines four adjacent SSCP lists: LIST1, LIST2, LIST3, and LIST4. LIST1 and LIST3 are identical. See "Adjacent SSCP Lists for CDRSCs" for the corresponding CDRSC cross-domain resource major node. That cross-domain resource major node defines cross-domain resources that specify LIST1, LIST2, LIST3, and LIST4 as their adjacent SSCP lists.

The NETID operand is omitted from the NETWORK statement labeled NETB, indicating that the three ADJCDRM statements that follow define a default SSCP list for all networks.

For more information on implementation of adjacent SSCP lists, see the *VTAM Network Implementation Guide*.

```
***********************************************************************
*        ADJSSCP DECK  =  ADJ7B      FOR HOST  SSCP7B                 *
***********************************************************************
*
ADJ7B    VBUILD  TYPE=ADJSSCP
*
LIST1    ADJLIST                    * list1 and List3 are identical lists
LIST3    ADJLIST
SSCP1A   ADJCDRM                    * sscp1a tried first
SSCP9C   ADJCDRM                    * sscp9c tried next if sscp1a fails
*                                   * no other sscps will be tried
*
LIST2    ADJLIST
SSCP9C   ADJCDRM
SSCP1A   ADJCDRM
*
LIST4    ADJLIST                    * use list4 if only sscp1a to be used
SSCP1A   ADJCDRM
*
NETB     NETWORK
*
```

```
SSCP1A   ADJCDRM
SSCP2A   ADJCDRM
SSCP9C   ADJCDRM
*
NETA     NETWORK NETID=NETA
*
SSCP2A   ADJCDRM
SSCP1A   ADJCDRM
*
NETC     NETWORK NETID=NETC
*
SSCP9C   ADJCDRM
```

21.3 Adjacent Cluster Routing List

The adjacent cluster (ADJCLUST) routing list allows you to define which adjacent APPN subnetworks a VTAM border node should search. For each adjacent subnetwork, you can define a list that specifies the adjacent nodes to which a search request is sent. Adjacent cluster routing lists require that the host nodes at which they are installed be defined with the BN=YES start option.

In the sample adjacent cluster table shown below, the VBUILD definition statement identifies A50ADJC1 as an adjacent cluster routing list.

The NETWORK definition statement optionally specifies the NETID operand and the SNVC (subnet visit count) operand. A NETWORK definition statement indicates the beginning of the definition of a list of adjacent nodes that should be searched when VTAM receives a request to search for a resource with a NETID matching one of those specified on the NETWORK definition statement. Thus, the second NETWORK statement begins the definition of a routing list that is used if the search request is for a resource with the network ID NETA. In addition, the SNVC=5 coded on the third NETWORK statement indicates that the maximum number of subnetworks this border node will search when looking for a resource with either network ID NETB or network ID NETC is 4.

By not coding NETID, you define a default routing list, as illustrated by the first NETWORK definition statement. This routing list is used if

- a nonnetwork qualified request is received, or
- a network qualified request is received and the NETID specified is not defined in any NETWORK statement.

The nodes that make up the routing list are defined by the NEXTCP definition statements that follow the NETWORK definition statement. Thus, if a search request arrives specifying a resource with NETA as a network ID, NETA.A81N is the next node to be searched for that resource.

The SNVC operand, specified on either the NETWORK or NEXTCP statement, overrides the value of the SNVC start option for this host. In addition, the SNVC value on the NEXTCP statement overrides the SNVC value on the preceding NETWORK statement if the SNVC value on the NEXTCP statement is lower. See "Start Option List with Border Node Support" for examples of how to code border node start options.

```
A50ADJC1 VBUILD TYPE=ADJCLUST
*
         NETWORK                        * Default routing list
A81N     NEXTCP CPNAME=NETA.A81N
B01N            CPNAME=NETB.B01N,
```

```
         NEXTCP                  SNVC=4
*
         NETWORK NETID=NETA               * NETA routing list
A81N     NEXTCP CPNAME=NETA.A81N
*
         NETWORK NETID=(NETB,NETC),SNVC=5 * Routing list for NETA,NETB
C01N     NEXTCP CPNAME=NETC.C01N
B01N     NEXTCP CPNAME=NETB.B01N,SNVC=4
```

For more information about adjacent cluster tables, see the *VTAM Network Implementation Guide*.

IBM Library Server

21.4 Border Node Class-of-Service Mapping Definitions

The border node class-of-service (COS) mapping definitions (BNCOSMAP) enable you to define how the COS name from an adjacent APPN network (that is, a nonnative COS name) should be mapped to the local network COS name (that is, the native COS name). The border node COS mapping definitions enables each subnetwork to maintain its own COS names.

A sample BNCOSMAP is found in "Border Node COS Mapping Definitions" in the *VTAM Resource Definition Reference*. Another one is included below. The VBUILD definition statement marks the beginning of the BNCOSMAP table. A NETWORK definition statement is coded for each network for which you are defining a BNCOSMAP table. The NETID operand on the NETWORK statement specifies the network identifier of the adjacent network. The MAPSTO definition statement defines the native and nonnative APPN COS mappings. As an example, for NETB, the nonnative COS name #CONNECT maps to the native COS name #INTER.

```
*   =====> BEGINNING OF DATA SET COSMAP BNLB10
COSMAP   VBUILD   TYPE=BNCOSMAP
NETWORKB NETWORK  NETID=NETB           ADJACENT NETWORK ID
#CONNECT MAPSTO COS=#INTER             MAP COS
COS2     MAPSTO COS=COSB               MAP COS
NETWORKC NETWORK  NETID=NETC           ADJACENT NETWORK ID
COS8     MAPSTO COS=COSY               MAP COS
COS9     MAPSTO COS=COSZ               MAP COS
NETWORKA NETWORK  NETID=NETA           ADJACENT NETWORK ID
#INTER   MAPSTO COS=SNASVCMG           MAP COS
SNASVCMG MAPSTO COS=#CONNECT           MAP COS
#CONNECT MAPSTO COS=#INTER             MAP COS
*   =====> END OF DATA SET COSMAP BNLB10
```

For more information on BNCOSMAP, see the *VTAM Resource Definition Reference*.

21.5 Subarea Class-of-Service Mapping Table

A class of service specifies a set of performance characteristics used in routing data between two subareas. To define subarea classes of service, create a class-of-service (COS) table with entries containing lists of routes grouped together on the basis of characteristics, such as security (MVS,VM), transmission priority, and bandwidth.

VTAM does not provide a default subarea COS table. Any user-specified COS table for routes entirely contained within the same network must be named ISTSDCOS. For information on COS tables for interconnected networks, see "Handling Class-of-Service Tables" in the *VTAM Network Implementation Guide*.

A sample subarea COS table for routes contained entirely within a single network is shown below. The COSTAB macroinstruction begins the COS table. Each COS macroinstruction defines a class-of-service entry. The VR operand specifies one or more ordered pairs of numbers, where the first number is a virtual route number and the second number is a transmission priority indicator number. The SUBSTUT operand (which is defaulted in each of the COS entries to NO) indicates whether this entry will be substituted when VTAM does not recognize the COS name that is specified. Only one entry in the COS table is allowed to specify SUBSTUT=YES.

The COS entry named ISTVTCOS specifies the routes used for SSCP sessions (SSCP-SSCP, SSCP-PU, and SSCP-LU).

The unnamed COS entry is used when either of the following are true:

- No class-of-service name is obtained from the logon mode entry for an LU-LU session
- No ISTVTCOS entry exists in the COS table, and an SSCP session has been requested.

You need not define a COS table if the only COS names to be used are ISTVTCOS and the unnamed class of service; VTAM uses its own class-of-service defaults.

For more information on subarea class-of-service tables generally, see the *VTAM Network Implementation Guide* and the *VTAM Resource Definition Reference*.

```
ISTSDCOS COSTAB
COS1     COS   VR=((0,1),(1,1),(2,1),(3,1),(4,1),(5,1))
*
*
COS2     COS   VR=((0,1),(2,1),(1,1),(3,1),(4,1),(5,1))
```

```
*
*
COS3     COS   VR=((0,1),(3,1),(2,1),(1,1),(4,1),(5,1))
*
*
COS4     COS   VR=((0,1),(4,1),(2,1),(3,1),(1,1),(5,1))
*
*
COS5     COS   VR=((0,1),(5,1),(2,1),(3,1),(4,1),(1,1))
*
*
COS6     COS   VR=((1,1),(0,1),(2,1),(3,1),(4,1),(5,1))
*
*
COS7     COS   VR=((1,1),(2,1),(0,1),(3,1),(4,1),(5,1))
*
*
COS8     COS   VR=((1,1),(3,1),(2,1),(0,1),(4,1),(5,1))
*
*
COS9     COS   VR=((1,1),(4,1),(2,1),(3,1),(0,1),(5,1))
*
*
COS10    COS   VR=((1,1),(5,1),(2,1),(3,1),(4,1),(0,1))
*
*
COS11    COS   VR=((2,1),(0,1),(1,1),(3,1),(4,1),(5,1))
*
*
COS12    COS   VR=((2,1),(1,1),(0,1),(3,1),(4,1),(5,1))
*
*
COS13    COS   VR=((2,1),(3,1),(0,1),(1,1),(4,1),(5,1))
*
*
COS14    COS   VR=((2,1),(4,1),(0,1),(3,1),(1,1),(5,1))
*
*
COS15    COS   VR=((2,1),(5,1),(0,1),(3,1),(4,1),(1,1))
*
*
COS16    COS   VR=((3,1),(0,1),(2,1),(1,1),(4,1),(5,1))
*
*
COS17    COS   VR=((3,1),(1,1),(2,1),(0,1),(4,1),(5,1))
*
*
COS18    COS   VR=((3,1),(2,1),(1,1),(0,1),(4,1),(5,1))
*
*
COS19    COS   VR=((3,1),(4,1),(2,1),(0,1),(1,1),(5,1))
*
*
COS20    COS   VR=((3,1),(5,1),(2,1),(0,1),(4,1),(1,1))
*
*
COS21    COS   VR=((4,1),(0,1),(2,1),(3,1),(1,1),(5,1))
*
*
COS22    COS   VR=((4,1),(1,1),(2,1),(3,1),(0,1),(5,1))
*
*
COS23    COS   VR=((4,1),(2,1),(1,1),(3,1),(0,1),(5,1))
*
*
COS24    COS   VR=((4,1),(3,1),(2,1),(1,1),(0,1),(5,1))
*
*
COS25    COS   VR=((4,1),(5,1),(2,1),(3,1),(0,1),(1,1))
*
*
COS26    COS   VR=((5,1),(0,1),(2,1),(3,1),(4,1),(1,1))
*
*
COS27    COS   VR=((5,1),(1,1),(2,1),(3,1),(4,1),(0,1))
*
*
COS28    COS   VR=((5,1),(2,1),(1,1),(3,1),(4,1),(0,1))
*
*
COS29    COS   VR=((5,1),(3,1),(2,1),(1,1),(0,1),(0,1))
```

```
*
*
COS30    COS   VR=((5,1),(4,1),(2,1),(3,1),(1,1),(0,1))
*
*
COS31    COS   VR=((0,2),(1,2),(2,2),(3,2),(4,2),(5,2))
*
*
COS32    COS   VR=((0,2),(2,2),(1,2),(3,2),(4,2),(5,2))
*
*
COS97    COS   VR=((0,2),(3,2),(1,2),(2,2),(4,2),(5,2))
*
*
MINCOS1  COS   VR=((3,2),(0,2),(1,2),(2,2),(4,2),(5,2))
*
*
MINCOS2  COS   VR=((3,2),(1,2),(0,2),(2,2),(4,2),(5,2))
*
*
MINCOS3  COS   VR=((3,2),(2,2),(0,2),(1,2),(4,2),(5,2))
*
*
BTBCOS1  COS   VR=((4,2),(0,2),(1,2),(2,2),(3,2),(5,2))
*
*
BTBCOS2  COS   VR=((4,2),(1,2),(0,2),(2,2),(3,2),(5,2))
*
*
BTBCOS3  COS   VR=((4,2),(2,2),(0,2),(1,2),(3,2),(5,2))
*
*
SHR3COS1 COS   VR=((5,2),(0,2),(1,2),(2,2),(3,2),(4,2))
*
*
SHR3COS2 COS   VR=((5,2),(1,2),(0,2),(2,2),(3,2),(4,2))
*
*
SHR3COS3 COS   VR=((5,2),(2,2),(0,2),(1,2),(3,2),(4,2))
*
*
ROUTECOS COS   VR=((7,0))
*
*
         COS   VR=((7,2),(0,2),(1,2),(2,2),(3,2),(4,2))
*
*
ISTVTCOS COS   VR=((0,0),(1,0),(2,0),(3,0),(4,0),(5,0),(6,0))
*
         COSEND
```

IBM Library Server

21.6 APPN Class-of-Service Table

The IBM-supplied default APPN classes of service are supplied as follows:

MVS The IBM-supplied classes of service are shipped with the name COSAPPN in SYS1.ASAMPLIB and should be copied into SYS1.VTAMLST at VTAM installation.

VM The IBM-supplied classes of service are shipped with the name COSAPPN VTAMLST on the LOCALSAM DISK (2c2).

VSE The IBM-supplied classes of service are shipped with the name COSAPPN in the VSE/VTAM production sublibrary.

You do not need to create APPN classes of service unless your network has special requirements.

The APPNCOS definition statement marks the beginning of the definition of an APPN class-of-service. The PRIORITY operand on the APPNCOS statement indicates the transmission priority assigned to the class-of-service. The NETWORK transmission priority of NETWORK, which is used for APPN network services traffic, is valid only for the CPSVCMG and SNASVCMG classes of service.

The LINEROW definition statement contains the operands that specify line characteristics. The NODEROW definition statement contains the operands that specify node characteristics.

The values specified for the UPARM1, UPARM2 and UPARM3 operands are used to change the path of a route through a network. Refer to Appendix H, "Forcing an APPN Route in a VTAM Network" in the *VTAM Network Implementation Guide* for an example of using the UPARM operands.

The default COSAPPN table is shown in "APPN Class-of-Service (COS) Definitions (COSAPPN)" in the *VTAM Resource Definition Reference*.

For more information on APPN COS definitions, "APPN Class-of-Service Definitions" in the *VTAM Resource Definition Reference*.

IBM Library Server

21.7 Network Node Server List

A network node server is a network node that provides resource location and route selection services to the LUs it serves. A network node server list is defined at a given end node to specify the adjacent network nodes that can act as that end node's network node server. Without a network node server list, an end node establishes CP-CP sessions with the first acceptable network node that it becomes aware of, and this network node then acts as the end node's server.

A network node server list allows you to control which network node is selected by an end node to be its server. For example, you might want to shield a particular network node from network node server responsibilities; acting as a server does involve some overhead, such as originating search requests and issuing domain broadcasts. You might also want to isolate particular end nodes from certain network nodes for security reasons.

To create a network node server list, create a VTAMLST member containing a VBUILD TYPE=NETSRVR definition statement, and one or more NETSRVR definition statements. This member should be installed at the end node. Each NETSRVR definition statement that has a name in its name field corresponds to a specific network node that you want in that list, where the name is the CPNAME of the network node. If desired, you can also include as the last statement in the list a NETSRVR definition statement with no name in its name field. This "nameless" entry allows the end node to select any other known adjacent network node that meets the defined criteria as its network node server.

Below are some sample network node server lists. The first two specify ORDER=FIRST on the VBUILD; the last two specify ORDER=NEXT. ORDER=FIRST specifies that the end node always attempts to find a network node server from the network node server list starting with the first entry. Thus, a prioritized list is created where the most preferred network node server is the first entry, the second most preferred is the second entry, and so on. ORDER=NEXT specifies that the end node attempts to find a network node server starting with the next entry after the network node selected the last time the list was used. When the bottom of the list is encountered, the first entry in the list is considered to be the next entry. Thus, network nodes are selected in a round-robin manner and no preference is given to one node in the list over another node. ORDER=FIRST is the default value.

The SLUINIT operand on the NETSRVR statement is used to restrict the network node server to one that has the same level of support for SLU-initiated sessions as the end node. SLUINIT=REQ (the default) specifies that CP-CP sessions can only be established with a network node that supports SLU-initiated sessions. If you define SLUINIT=OPT, then CP-CP sessions are established with a network node server regardless of whether the network node supports SLU-initiated sessions.

The default network node server list at an end node is considered to be a list consisting of a nameless entry only.

More information on implementing network node server lists is found in the *VTAM Network Implementation Guide* and the *VTAM Resource Definition Reference*.

```
*  =====> BEGINNING OF DATA SET NNSLISTM
************************************************************************
*    SAMPLE NETWORK NODE SERVER LIST WITH PRIORITY PROCESSING          *
************************************************************************
NNSLIST3   VBUILD TYPE=NETSRVR,ORDER=FIRST
NRRF0001   NETSRVR SLUINIT=OPT
           NETSRVR SLUINIT=OPT
*  =====> END OF DATA SET NNSLISTM
```

```
*  =====> BEGINNING OF DATA SET NNSLIST0
************************************************************************
*    SAMPLE NETWORK NODE SERVER LIST WITH ROUND-ROBIN PROCESSING       *
************************************************************************
NNSLIST1   VBUILD TYPE=NETSRVR,ORDER=NEXT
A500N      NETSRVR
*  =====> END OF DATA SET NNSLIST0
```

```
*  =====> BEGINNING OF DATA SET NNSLIST1
************************************************************************
*    SAMPLE NETWORK NODE SERVER LIST WITH ROUND-ROBIN PROCESSING       *
************************************************************************
NNSLIST1   VBUILD TYPE=NETSRVR,ORDER=NEXT
A500N      NETSRVR
A01N       NETSRVR
A02N       NETSRVR
C11N       NETSRVR NETID=NETC
NS2N63     NETSRVR SLUINIT=OPT
CP400C     NETSRVR SLUINIT=OPT
*  =====> END OF DATA SET NNSLIST1
```

```
*  =====> BEGINNING OF DATA SET NNSLIST2
************************************************************************
*    SAMPLE NETWORK NODE SERVER LIST WITH PRIORITY PROCESSING          *
************************************************************************
NNSLIST2   VBUILD TYPE=NETSRVR,ORDER=FIRST
NS2NUM3    NETSRVR
A500N      NETSRVR
A01N       NETSRVR
A02N       NETSRVR
CP400A     NETSRVR
NETC.C11N  NETSRVR
*  =====> END OF DATA SET NNSLIST2
```

IBM Library Server

21.8 Message-Flooding Prevention Table

VTAM's message-flooding prevention facility identifies and suppresses duplicate messages that are issued in rapid succession. This reduces the possibility of duplicate messages flooding the operator console and concealing critical information.

For each candidate message, the message flooding prevention table contains the criteria that must be met before VTAM suppresses duplicate messages and whether suppressed messages are sent to the hardcopy log. The suppression criteria include the amount of time between the original and subsequent messages, and an indication of which variable text fields are to be compared. If the message is reissued within the specified time interval and the specified variable text fields contain the same information, VTAM suppresses the message.

A message-flooding prevention table is defined using the new FLDTAB, FLDENT, and FLDEND definition statements.

The IBM-supplied default message-flooding prevention table is named ISTMSFLD. The sample definition for ISTMSFLD is found in "Message Flooding Table (ISTMSFLD)" in the *VTAM Resource Definition Reference*.

For information on how to customize the message-flooding prevention table, see "Message-Flooding Prevention Table" in the *VTAM Resource Definition Reference*.

The FLDTAB start option specifies whether VTAM is to use a message-flooding prevention table. If it is desired, FLDTAB also specifies whether the table to be used is the IBM-supplied table or a user-defined table. See topic 19.3 for more information.

For information on how to use the VTAM MODIFY command to change which message-flooding prevention table is used by VTAM, see "MODIFY TABLE Command" in the *VTAM Operation*.

IBM Library Server

21.9 APPN Transmission Group Profile Definitions

A transmission group profile defines the following set of characteristics for a transmission group:

- Capacity (effective capacity of the link that comprises the TG, in either kilobits or megabits per second)
- Cost-per-byte-transmitted (on a scale of 0 to 255)
- Cost-per-unit-of-time (on a scale of 0 to 255)
- Maximum propagation delay of the link (maximum time needed for a signal to travel from one end of the link to the other)
- **MVS,VM** Security (the security level of the transmission group).

When an adjacent link station (PU) is activated, VTAM attempts to locate the TG profile specified by the TGP operand of its PU definition statement.

For more information on transmission group profiles, see "APPN Transmission Group Profile" in the *VTAM Resource Definition Reference*.

The IBM-supplied APPN TG Profile Definitions are found in IBMTGPS. The sample definition for IBMTGPS is found in "APPN Transmission Group (TG) Profile Definitions (IBMTGPS)" in the *VTAM Resource Definition Reference*.

21.10 Model Name Table

The model name table contains model names that can be passed to VTAM application programs in their LOGON exits. VTAM application programs use the model names to create dynamic definitions for their session-partner resources. IBM does not supply a default model name table.

Operands on an SLU's resource definition associate that SLU with the proper model name data. The MDLTAB operand specifies the model name table to be used and the MDLENT operand specifies the proper entry within the table.

In the sample model name table below, MTAB3 is the name of the model name table. ENTRY1 is the name of the first model name table entry. ENTRY1 specifies JOHN as the model name expected by the subsystem for the terminal. JOHN is therefore the default model name to be used with any PLU.

ENTRY2 is the name of the second model name table entry. ENTRY2 specifies PAUL as the model name expected by the subsystem for the terminal. The first MDLPLU macroinstruction defines model name data for the PLU named APPL1. The model name JONES is sent to the application or to the subsystem during session initiation. The second MDLPLU macroinstruction defines model name data for the PLU named APPL3. That the MODEL operand is omitted from this macroinstruction means that no model name is sent to the application or subsystem during session initiation.

```
MTAB3    MDLTAB
ENTRY1   MDLENT MODEL=JOHN
ENTRY2   MDLENT MODEL=PAUL
ENT2PLU1 MDLPLU PLU=APPL1,MODEL=JONES
ENT2PLU2 MDLPLU PLU=APPL3
```

IBM Library Server

21.11 Associated LU Table

An associated LU table contains associated LU names that can be passed to VTAM application programs in their logon exits. VTAM application programs use the associated LU names to create dynamic definitions for their session-partner resources. These names specify primary and alternate printers that are logically related to the SLU.

Operands on an SLU's resource definition associate that SLU with the proper associated LU data. The ASLTAB operand specifies the associated LU table to be used, and the ASLENT operand specifies the proper entry within the table.

In the sample associated LU table below, the ASLTAB macroinstruction indicates the beginning of the table. The ASLENT macroinstruction indicates the start of an associated LU table entry and optionally builds a default set of associated LU data. ENTRY1 in the table below can be used as an illustration. It specifies ALPHONSE as the primary printer associated with the terminal identified in the SLU's network, and BOREGARD as the alternate printer associated with the terminal as identified in the SLU's network. VTAM uses these values for all PLUs associated with the SLU except for PLUs APPL1 and APPL3. APPL1 will not receive any associated LU data. For APPL3, the primary printer to be associated with the SLU is CHUCK.

```
ATAB1    ASLTAB
ENTRY1   ASLENT PRINTER1=ALPHONSE,PRINTER2=BOREGARD
ENT1PLU1 ASLPLU PLU=APPL1
ENT1PLU2 ASLPLU PLU=APPL3,PRINTER1=CHUCK
ENTRY2   ASLENT PRINTER2=DELBERT
ENT2PLU1 ASLPLU PLU=APPL4,PRINTER1=EDWINA,PRINTER2=FRITZ
ENT2PLU2 ASLPLU PLU=APPL1
ENT2PLU3 ASLPLU PLU=APPL3,PRINTER1=GIGI,PRINTER2=HORACE
```

For more information on associated LU tables, see "Associated LU Table" in the *VTAM Resource Definition Reference*.

21.12 Session Awareness Data Filter (MVS)

VTAM provides a filter to reduce the amount of session awareness (SAW) data that is passed to communication network management (CNM) application programs, such as the NetView program. Using the SAW data filter, only data for sessions that match predefined PLU-SLU name combinations is sent over the CNM interface to the CNM application program.

VTAM includes a default filter, ISTMGC10 in VTAMLIB, that allows data for all sessions to be passed across the CNM interface. You can modify ISTMGC10 or replace it with one of your own using the MODIFY TABLE command.

The text of ISTMGC10 is included below. The KEEPMEM macroinstruction defines the beginning of the data filter and is used to name the filter. The KCLASS macroinstruction below directs VTAM to pass SAW data over the CNM interface for the sessions defined in a subsequent MAPSESS macroinstruction. SAW=YES is the default value. The MAPSESS macroinstruction below specifies that, for any combination of PLU name and SLU name, the KCLASS instruction named DOSAW should be used by VTAM to determine whether SAW data is passed over the CNM interface. That is, VTAM will pass SAW data over the CNM interface for all sessions. The END macroinstruction indicates the end of the SAW data filter.

For more information on implementing your own SAW data filter, see "Session Awareness (SAW) Data Filter (MVS)" in the *VTAM Resource Definition Reference*.

```
ISTMGC10 KEEPMEM START
DOSAW    KCLASS SAW=YES
         MAPSESS KCLASS=DOSAW,PRI=*,SEC=*
         KEEPMEM STOP
         END
```

IBM Library Server

21.13 Logon Mode Table

A logon mode is a set of session protocols expressed as a string of characters called session parameters. These session parameters describe how the session is to be conducted in terms of data compression, data encryption, pacing, class-of-service, RU size, and so on. A logon mode table contains definitions for one or more logon modes.

VTAM has an IBM-supplied logon mode table named ISTINCLM that provides generally accepted session protocols for a basic list of IBM device types. You can define a supplemental logon mode table, and you can then associate it with a logical unit by specifying the table's name in the MODETAB operand of the logical unit's definition statement.

For more information on implementing a logon mode table, see "Logon Mode Table" in the *VTAM Resource Definition Reference*.

A listing of the default logon mode tables for MVS, VM and VSE can be found in the *VTAM Resource Definition Reference*.

IBM Library Server

21.14 Session-Level Unformatted System Services Table

The session-level unformatted system services (USS) table contains:

- Definitions for terminal user commands (such as LOGON) that can be received from a terminal
- Messages that VTAM sends to a terminal
- A translation table that is used for character-coded input from the terminal.

The session-level USS table converts character-coded commands that follow the USS command syntax into field-formatted SNA requests. The default session-level USS table is named ISTINCDT.

You can create a supplementary session-level USS table using USS macroinstructions to redefine the VTAM terminal operator commands or messages that you want to change. To associate the new terminal operator commands or messages with a specific LU, either specify the name of the supplementary table on the USSTAB operand of the LU's definition statement or specify the LANGTAB operand on any of the three terminal operator commands: LOGON, LOGOFF, and IBMTEST.

For more information on implementing your own session-level USS table, refer to "Unformatted System Services (USS) Tables" in the *VTAM Resource Definition Reference*.

A listing of the default session-level USS tables for MVS, VM and VSE can be found in the *VTAM Resource Definition Reference*.

21.15 Operation-Level Unformatted System Services Table

The operation-level unformatted system services (USS) table contains USS commands (such as DISPLAY ROUTE) that can be received from the VTAM operator or a program operator application and messages issued in response to those commands. The default operation-level USS table is named ISTINCNO.

You can create a supplementary operation-level USS table using USS macroinstructions to redefine the VTAM operator commands or messages that you want to change. To specify a supplementary operation-level USS table for the VTAM operator, specify the name of the table on the USSTAB start option. To specify a supplementary operation-level USS table for the program operator, use the SSCPFM and USSTAB operands of the program operator's APPL definition statement.

For more information on implementing your own operation-level USS table, see "Unformatted System Services (USS) Tables" in the *VTAM Resource Definition Reference*.

A listing of the default operation-level USS tables for MVS, VM and VSE can be found in the *VTAM Resource Definition Reference*.

IBM Library Server

21.16 Interpret Table

When VTAM receives a logon or logoff request, it uses the interpret table to determine which application program is to be notified. The standard logon procedure should meet the needs of most installations. But you can write your own interpret table for special circumstances. For example, the logon sequence you want to use might not follow the syntax for USS commands.

In the sample interpret table below, DINTAB is specified as the name of the interpret table. The first LOGCHAR macroinstruction defines 'ITAPPL1' as the required part of the logon message for the application program named NETAPPL1. The fourth LOGCHAR macroinstruction defines 'IUVAPPL1' as the required part of the logon message for the USERVAR named UVAPPL1. The ENDINTAB macroinstruction defines the end of the table.

For more information on interpret tables, see "Interpret Table" in the *VTAM Resource Definition Reference*.

```
***********************************************************************
*   INTERPRET TABLE                                                   *
***********************************************************************
XDINTAB  INTAB
         LOGCHAR APPLID=(APPLICID,NETAPPL1),SEQNCE='ITAPPL1'
         LOGCHAR APPLID=(APPLICID,NETAPPL2),SEQNCE='ITAPPL2'
         LOGCHAR APPLID=(APPLICID,NETAPPL3),SEQNCE='ITAPPL3'
         LOGCHAR APPLID=(APPLICID,NETAPPL5),SEQNCE='ITUVAPPL'
         LOGCHAR APPLID=(USERVAR,UVAPPL1),SEQNCE='IUVAPPL1'
         LOGCHAR APPLID=(USERVAR,UVAPPL2),SEQNCE='IUVAPPL2'
         LOGCHAR APPLID=(USERVAR,UVAPPL3),SEQNCE='IUVAPPL3'
         LOGCHAR APPLID=(USERVAR,UVAPPL),SEQNCE='ITUVAPPL'
         LOGCHAR APPLID=(USERVAR,UVAPPL),SEQNCE='UVAPPL1'
         ENDINTAB
         END
```

21.17 CNM Routing Table

VTAM refers to a communication network management (CNM) routing table to determine which CNM application program is to receive an unsolicited network-services request unit that requires further processing. The IBM-supplied default CNM routing table is named ISTMGC01. For any user-written application program to use the CNM interface to receive unsolicited request units, write a supplemental table with an entry for each RU. This table should be named ISTMGC00.

A CNM routing table consists of a 12-byte header entry and routing table entries. The 12-byte header entry contains the size and number of routing table entries that follow it. Each routing table entry contains the network services RU type to be routed, followed by the application program name to which the network services RU is to be routed.

A listing of the IBM-supplied CNM routing table for MVS is found in Appendix A, "IBM-Supplied CNM Routing Table (MVS)" in *VTAM Customization*.

For detailed information on how to implement a user-written CNM routing table for MVS, see "CNM Routing Table (MVS)" in *VTAM Customization*.

IBM Library Server

21.18 CPS Retry Table (VSE)

X.21 call progress signal (CPS) retry allows X.21 network users to retry **non-retriable** call progress signals which are appropriate to their Post Telephone and Telegraph Administration (PTT) system by specifying the appropriate information in a CPS retry table.

A sample CPS retry table is found in Appendix A, "Sample X.21 Call Progress Signal Retry Table (VSE)", in the *VTAM Resource Definition Reference*.

For detailed information on how to implement a CPS retry tale, see "X.21 Call Progress Signal Retry" in the *VTAM Resource Definition Reference*.

BACK_1 Glossary, Bibliography, and Index

Subtopics:

Glossary

For definitions of the terms and abbreviations used in this book, refer to the *VTAM Glossary*.

IBM Library Server

Bibliography

Subtopics:

IBM. Library Server

BACK_1.BIBLIOGRAPHY.1 VTAM V4R2 Publications

Following are descriptions of the books in the VTAM V4R2 library for the MVS/ESA, VM/ESA, and VSE/ESA operating systems. The books are arranged here according to the tasks they describe:

- Planning
- Installation, Resource Definition, and Tuning
- Customization
- Operation
- Writing Application Programs
- Diagnosis
- Quick Reference.

The complete set of unlicensed books in this section can be ordered using a single order number, SBOF-4394 for MVS, SBOF-7001 for VM, and SBOF-7002 for VSE.

Subtopics:

BACK_1.BIBLIOGRAPHY.1.1 Softcopy Information

Subtopics:

-

BACK_1.BIBLIOGRAPHY.1.1.1 IBM Networking Softcopy Collection Kit CD-ROM (SK2T-6012)

The softcopy library contains softcopy versions of the licensed and unlicensed books for VTAM V4R2 and the VTAM AnyNet Feature for V4R2 for MVS/ESA.

All of the unlicensed and licensed VTAM books described in this section are available in softcopy on this CD-ROM. These softcopy files can be read using any of the IBM BookManager READ programs. They can also be read with the IBM Library Reader program shipped on this CD.

In addition, this CD contains the Online Message Facility. The Online Message Facility is an OS/2 program that provides online access to information from *VTAM Messages and Codes* and other BookManager softcopy books. The facility helps network operators and system programmers operate and diagnose problems without interrupting those tasks.

The CD also contains softcopy of the unlicensed books of many other products.

BACK_1.BIBLIOGRAPHY.1.2 Marketing Information

```
A Networking Overview and the following IBM Networking Previews are
available:

°   AnyNet
°   VTAM.

Ask your IBM marketing representative for more information.
```

BACK_1.BIBLIOGRAPHY.1.3 Planning

Subtopics:

BACK_1.BIBLIOGRAPHY.1.3.1 Planning for NetView, NCP, and VTAM (SC31-7122)

```
This book helps you plan for new products or for migrating to new releases
of networking products.  It describes product functions, explains benefits
you can gain from using them in different situations, and address
cross-product implications.  The book contains cross-task reference
information and storage estimates.
```

BACK_1.BIBLIOGRAPHY.1.3.2 Planning for Integrated Networks (SC31-7123)

```
This book helps you plan for SNA (subarea and APPN) and TCP/IP networks.
It includes discussion of protocol strategies, migration scenarios,
processing goals, and management considerations.
```

IBM Library Server

BACK_1.BIBLIOGRAPHY.1.3.3 Planning Aids: Pre-Installation Planning Checklist for NetView, NCP, and VTAM (SX75-0092)

```
This checklist identifies important tasks to consider and complete before
you begin to install these product.  The document can be reproduced and
folded to fit easily in a pocket or folder for quick reference and easy
portability.
```

BACK_1.BIBLIOGRAPHY.1.3.4 VTAM Licensed Program Specifications (GC31-6490)

This flyer is the warranty for VTAM and includes:

- A list of new functions
- Descriptions of VTAM features
- Machine requirements
- Programming requirements.

BACK_1.BIBLIOGRAPHY.1.3.5 VTAM Release Guide for MVS/ESA (GC31-6492)

```
This guide provides an overview of the new functions in VTAM V4R2 and
includes:

 °    Advantages of new functions
 °    Planning considerations for new functions
 °    Effect of new functions on existing functions
 °    Changes to commands, definition statements, and messages
 °    Programming requirements, such as the release of NCP required.
```

BACK_1.BIBLIOGRAPHY.1.3.6 VTAM Release Guide for VM/ESA (GC31-8089)

This guide provides an overview of the new functions in VTAM V4R2 and includes:

- Advantages of new functions
- Planning considerations for new functions
- Effect of new functions on existing functions
- Changes to commands, definition statements, and messages
- Programming requirements, such as the release of NCP required.

BACK_1.BIBLIOGRAPHY.1.3.7 VTAM Release Guide for VSE/ESA (GC31-8090)

This guide provides an overview of the new functions in VTAM V4R2 and includes:

- Advantages of new functions
- Planning considerations for new functions
- Effect of new functions on existing functions
- Changes to commands, definition statements, and messages
- Programming requirements, such as the release of NCP required.

BACK_1.BIBLIOGRAPHY.1.3.8 VTAM Migration Guide for MVS/ESA (GC31-6491)

```
This guide helps you upgrade VTAM V4R1, V3R4.2, V3R4.1, V3R4, or V3R3 to
VTAM V4R2.  It includes:

°   Planning to upgrade to VTAM V4R2
    -   Upward and downward compatibility
    -   Software and hardware requirements
    -   Storage requirements
    -   Impacts of new functions and enhancements performed without
        changes to user interfaces
    -   Changes to installation process
°   Upgrading user interfaces to VTAM V4R2
    -   Changes to start options
    -   Changes to buffer pools
    -   Changes to definition statements
    -   Changes to IBM-supplied default user-definable tables and modules
    -   Changes to user-definable table macroinstructions
    -   Changes to commands
    -   Changes to messages
    -   Changes to VTAM application programming interface
    -   Changes to installation-wide exit routines
    -   Changes to control blocks
°   Implementing optional functions and enhancements introduced in VTAM
    V4R2
    -   Overview of each new function and enhancement introduced since
        VTAM V3R3
    -   Pointers to other books in the library where implementation
        details can be found.
```

IBM Library Server

BACK_1.BIBLIOGRAPHY.1.3.9 VTAM Migration Guide for VM/ESA (GC31-8071)

```
This guide helps you upgrade VTAM V3R4.1 or V3R4 to VTAM V4R2.  It
includes:

°   Planning to upgrade to VTAM V4R2
    -   Upward and downward compatibility
    -   Software and hardware requirements
    -   Storage requirements
    -   Impacts of new functions and enhancements performed without
        changes to user interfaces
    -   Changes to installation process
°   Upgrading user interfaces to VTAM V4R2
    -   Changes to start options
    -   Changes to buffer pools
    -   Changes to definition statements
    -   Changes to IBM-supplied default user-definable tables and modules
    -   Changes to user-definable table macroinstructions
    -   Changes to commands
    -   Changes to messages
    -   Changes to VTAM application programming interface
    -   Changes to installation-wide exit routines
    -   Changes to control blocks
°   Implementing optional functions and enhancements introduced in VTAM
    V4R2
    -   Overview of each new function and enhancement introduced since
        VTAM V3R4
    -   Pointers to other books in the library where implementation
        details can be found.
```

BACK_1.BIBLIOGRAPHY.1.3.10 VTAM Migration Guide for VSE/ESA (GC31-8072)

```
This guide helps you upgrade VTAM V3R4, V3R3, or V3R2 to VTAM V4R2.  It
includes:

°   Planning to upgrade to VTAM V4R2
    -   Upward and downward compatibility
    -   Software and hardware requirements
    -   Storage requirements
    -   Impacts of new functions and enhancements performed without
        changes to user interfaces
    -   Changes to installation process
°   Upgrading user interfaces to VTAM V4R2
    -   Changes to start options
    -   Changes to buffer pools
    -   Changes to definition statements
    -   Changes to IBM-supplied default user-definable tables and modules
    -   Changes to user-definable table macroinstructions
    -   Changes to commands
    -   Changes to messages
    -   Changes to VTAM application programming interface
    -   Changes to installation-wide exit routines
    -   Changes to control blocks
°   Implementing optional functions and enhancements introduced in VTAM
    V4R2
    -   Overview of each new function and enhancement introduced since
        VTAM V3R2
    -   Pointers to other books in the library where implementation
        details can be found.
```

BACK_1.BIBLIOGRAPHY.1.3.11 Estimating Storage for VTAM (SK2T-2007)

```
This interactive program helps you estimate the storage requirements for
VTAM.  The diskette includes:

°   Step-by-step procedures
°   Formulas used to calculate storage.
```

BACK_1.BIBLIOGRAPHY.1.3.12 VTAM Overview for VM/ESA and VSE/ESA (GC31-8114)

```
This document is designed to be used with each book of the VTAM library.
It helps you understand which functions are included with each package
available for VTAM V4R2 for VM/ESA and VSE/ESA.

°   VTAM V4R2 Client/Server
°   VTAM V4R2 MultiDomain
°   VTAM V4R2 InterEnterprise.

It also provides instructions for how to order a particular package.
```

BACK_1.BIBLIOGRAPHY.1.3.13 VTAM Glossary (GC31-6558)

```
This glossary defines terms and abbreviations for VTAM and related
products. It includes information from the IBM Dictionary of Computing,
SC20-1699.
```

BACK_1.BIBLIOGRAPHY.1.4 Installation, Resource Definition, and Tuning

Subtopics:

BACK_1.BIBLIOGRAPHY.1.4.1 VTAM Network Implementation Guide (SC31-6494)

This book presents the major concepts involved in implementing a VTAM network, and includes:

- Buffer pools, slowdown, pacing, storage considerations
- Implementation considerations
- Installation procedures
- Sample major node definitions
- Migration considerations
- Tables and filters
- TSO, VSCS, VCNS, and other programs that run with VTAM
- Tuning procedures
- VTAM start options.

Use this book in conjunction with the *VTAM Resource Definition Reference*.

BACK_1.BIBLIOGRAPHY.1.4.2 VTAM Resource Definition Reference (SC31-6498)

This book describes each VTAM definition statement, start option, and macroinstruction for user tables. It also describes NCP definition statements that affect VTAM. The information includes:

- IBM-supplied default tables (logon mode, USS and X.25)
- DTIGEN macroinstruction (VSCS start options)
- Major node definitions
- User-defined tables and filters
- VTAM start options.

If you are unfamiliar with the major concepts involved in implementing a VTAM network, use this book in conjunction with the *VTAM Network Implementation Guide*.

BACK_1.BIBLIOGRAPHY.1.4.3 VTAM Resource Definition Samples (SC31-6499)

```
This book contains sample definitions to help you implement VTAM functions
in your networks, and includes sample major node definitions.
```

Use this book in conjunction with the *VTAM Network Implementation Guide* and *VTAM Resource Definition Reference*.

BACK_1.BIBLIOGRAPHY.1.5 Operation

Subtopics:

BACK_1.BIBLIOGRAPHY.1.5.1 VTAM Operation (SC31-6495)

This book serves as a reference for programmers and operators requiring detailed information about specific operator commands. The information includes:

- VTAM commands and start options
- Logon manager commands
- DISPLAY output examples (messages received)
- VSCS commands.

BACK_1.BIBLIOGRAPHY.1.5.2 VTAM Operation Quick Reference (SX75-0205)

```
This book contains essential information about VTAM and VSCS operator
commands.
```

BACK_1.BIBLIOGRAPHY.1.5.3 VTAM Messages and Codes (SC31-6493)

This book describes messages, codes, and other information associated with VTAM messages and includes:

- Messages:
  - ELM messages for logon manager
  - IKT messages for TSO/VTAM
  - IST messages for VTAM network operators
  - ISU messages for sockets-over-SNA
  - USS messages
  - VSCS messages
- Codes and other information that display in VTAM messages:
  - Abend codes
  - Command and RU types in VTAM messages
  - Node and ID types in VTAM messages
  - Return codes for macroinstructions including ACB OPEN and CLOSE macroinstruction error fields, RTNCD-FDB2 return code combinations, and LU 6.2 RCPRI-RCSEC return codes
  - Sense codes including VTAM sense code hints, SNA sense field values for RPL-based macroinstructions, and 3270 SNA and non-SNA device sense fields
  - Status codes including resource status and session state codes
  - Wait state event codes and IDs
- Supplemental message-related information:
  - Message additions, deletions, and changes
  - Message flooding prevention
  - Message groups and subgroups
  - Message routing and suppression including descriptor codes, routing codes, and suppression levels for ELM, IKT, IST, and ISU messages

```
     -   Message text and description formats

     -   Message text of MSGLVL option messages including general
         information on the MSGLVL option

     -   Message text of all VTAM network operator messages including
         variable field lengths

     -   Online Message Facility.
```

BACK_1.BIBLIOGRAPHY.1.5.4 Using IBM CommandTree/2 (SC31-7013)

```
IBM CommandTree/2 is a workstation product that enables an operator to
construct commands and send them to a specified destination for
processing.  The VTAM command set library includes:


°    VTAM commands
°    Logon manager commands
°    Help for commands and start options.
°    VSCS commands
```

BACK_1.BIBLIOGRAPHY.1.6 Customization

Subtopics:

BACK_1.BIBLIOGRAPHY.1.6.1 VTAM Customization (LY43-0063)

This book enables you to customize VTAM, and includes:

- Communication network management (CNM) routing table
- Installing tables and modules in VM
- Logon-interpret routine requirements
- Logon manager installation-wide exit routine for the CLU search exit
- VSCS data manipulation installation-wide exit routine
- TSO/VTAM installation-wide exit routines
- VTAM installation-wide exit routines:
  - Command verification exit (ISTCMMND)
  - Configuration services XID exit (ISTEXCCS) with description of IBM-supplied default exit
  - Directory services management exit (ISTEXCDM)
  - Generic resource resolution exit (ISTEXCGR)
  - SDDLU exit (ISTEXCSD) with description of IBM-supplied default exit
  - Session accounting exit (ISTAUCAG)
  - Session authorization exit (ISTAUCAT)
  - Session management exit (ISTEXCAA) with example
  - TPRINT processing exit (ISTRAEUE)
  - USERVAR exit (ISTEXCUV) with description of IBM-supplied default exit
  - Virtual route pacing window size calculation exit (ISTPUCWC)
  - Virtual route selection exit (ISTEXCVR).

IBM Library Server

BACK_1.BIBLIOGRAPHY.1.7 Writing Application Programs

Subtopics:

BACK_1.BIBLIOGRAPHY.1.7.1 VTAM Programming (SC31-6496)

```
This book 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.  The information includes:

°    API concepts
     -    Cryptography
     -    RUs and exchanges
     -    Session establishment and termination
°    BIND area format
°    Communication Network Management Interface
°    Dictionary of VTAM macroinstructions
°    OPEN or CLOSE errors
°    Operating system differences
°    Program Operator Coding requirements
°    RAPI DSECTs and control block mappings
°    RAPI global variables
°    Resource-identification and access-method-support vector lists
°    RPL-based macroinstructions
°    RPL RTNCD,FDB2 codes
°    User exit routines.
```

BACK_1.BIBLIOGRAPHY.1.7.2 VTAM Programming for LU 6.2 (SC31-6497)

```
This book describes the VTAM LU 6.2 programming interface for host
application programs.  This book applies 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 book.)  The information
includes:

 °   Allocating and deallocating conversations
 °   APPCCMD macroinstructions and LU 6.2 DSECTs
 °   BIND image and response and ISTDBIND
 °   Conversation states
 °   Description and use of the following control blocks:
     -   CNOS session limits control block
     -   DEFINE control block
     -   DISPLAY control block
     -   RESTORE control block
 °   FMH-5 and PIP data
 °   LU 6.2 global variables
 °   Resource-identification and access-method-support vector lists
 °   RCPRI,RCSEC codes
 °   Sample program for retrieving RESTORE information
 °   Sample VTAM LU 6.2 application program
 °   Session- and conversation-level security and data encryption
 °   Sending and receiving data
 °   Sense codes for FMH-7 and UNBIND
 °   Summary of register usage
 °   Sync point services
 °   User exit routines.
```

BACK_1.BIBLIOGRAPHY.1.8 Diagnosis

Subtopics:

BACK_1.BIBLIOGRAPHY.1.8.1 VTAM Diagnosis (LY43-0065)

```
This book helps you identify a VTAM problem, classify it, and collect
information about it before you call the IBM Support Center.  The
information collected includes traces, dumps, and other problem
documentation.  The information includes:
```

- Command syntax for running traces and collecting and analyzing dumps
- VIT entries
- Procedures for collecting documentation (VTAM, VSCS, TSO)
- VTAM internal trace and VIT analysis tool
- FFST Probes
- Channel programs
- Flow diagrams
- Procedures for locating buffer pools
- VSCS dump and traces
- CPCB operation codes
- Storage and control block ID codes
- PIU discard reason codes
- Offset names and locations for VTAM buffer pools

BACK_1.BIBLIOGRAPHY.1.8.2 VTAM Data Areas for MVS/ESA (LY43-0064)

```
This book describes VTAM data areas and can be used to read a VTAM dump.
It is intended for IBM programming service representatives and customer
personnel who are diagnosing problems with VTAM.
```

BACK_1.BIBLIOGRAPHY.1.8.3 VTAM Data Areas for VM/ESA (LY43-0103)

```
This book describes VTAM data areas and can be used to read a VTAM dump.
It is intended for IBM programming service representatives and customer
personnel who are diagnosing problems with VTAM.
```

BACK_1.BIBLIOGRAPHY.1.8.4 VTAM Data Areas for VSE/ESA (LY43-0104)

```
This book describes VTAM data areas and can be used to read a VTAM dump.
It is intended for IBM programming service representatives and customer
personnel who are diagnosing problems with VTAM.
```

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BACK_1.BIBLIOGRAPHY.1.9 VTAM AnyNet Feature for V4R2 for MVS/ESA

Subtopics:

BACK_1.BIBLIOGRAPHY.1.9.1 VTAM AnyNet Feature for V4R2: Guide to Sockets over SNA Gateway for OS/2 (SC31-6528)

```
This guide provides information to help you install, configure, use, and
diagnose the sockets-over-SNA-gateway function for OS/2.  This function
allows socket applications running on a TCP/IP network to communicate with
socket applications running on an SNA network.
```

BACK_1.BIBLIOGRAPHY.1.9.2 VTAM AnyNet Feature for V4R2: Guide to Sockets over SNA (SC31-6526)

```
This guide provides information to help you install, configure, use, and
diagnose Sockets over SNA.  It also provides information to help you
prepare application programs to use sockets over SNA.
```

BACK_1.BIBLIOGRAPHY.1.9.3 VTAM AnyNet Feature for V4R2: Guide to SNA over TCP/IP (SC31-6527)

```
This guide provides information to help you install, configure, use, and
diagnose SNA over TCP/IP.
```

BACK_1.BIBLIOGRAPHY.1.10 MPTN Architecture Publications

Networking Blueprint Executive Overview (GC31-7057)

Multiprotocol Transport Networking: Technical Overview (GC31-7073)

Multiprotocol Transport Networking: Formats (GC31-7074)

BACK_1.BIBLIOGRAPHY.1.11 APPC Application Suite Feature for V4R2 for MVS/ESA

Subtopics:

BACK_1.BIBLIOGRAPHY.1.11.1 APPC Application Suite User's Guide (SC31-6532)

```
This book documents the end-user interface (concepts, commands, and
messages) for the AFTP, ANAME, and APING facilities of the APPC
Application Suite for MVS/ESA.  Although it's primary audience is the end
user, administrators and application programmers may also find it useful.
```

BACK_1.BIBLIOGRAPHY.1.11.2 APPC Application Suite Administration (SC31-6533)

```
This book contains the information that administrators need to configure
the APPC Application Suite for MVS/ESA and to manage the APING, ANAME,
AFTP, and A3270 servers.
```

BACK_1.BIBLIOGRAPHY.1.11.3 APPC Application Suite Programming (SC31-6534)

```
   This book provides the information application programmers need to add the
   functions of the AFTP and ANAME APIs to their application programs.
```

Index

Numerics

A

B

C

D

E

F

G

H

I

L

M

N

O

P

R

S

T

U

V

W

X

BACK_2 Communicating Your Comments to IBM

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