z/OS Communications Server
2.5

SNA Resource Definition Samples

SC27-3676-50

Note:

Before using this information and the product it supports, be sure to read the general information under "Notices" on page 163.

This edition applies to Version 2 Release 5 of z/OS® (5650-ZOS), and to subsequent releases and modifications until otherwise indicated in new editions.

Last updated: 2021-09-11

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About this document

This document contains sample definitions to help system programmers define resources in a VTAM® network.

Requirement: Be aware that these samples are for illustrative purposes only; they are not intended to run in your network as presented here. You must make 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.

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

The information in this document includes descriptions of support for both IPv4 and IPv6 networking protocols. Unless explicitly noted, descriptions of IP protocol support concern IPv4. IPv6 support is qualified within the text.

This document refers to Communications Server data sets by their default SMP/E distribution library name. Your installation might, however, have different names for these data sets where allowed by SMP/E, your installation personnel, or administration staff. For instance, this document refers to samples in SEZAINST library as simply in SEZAINST. Your installation might choose a data set name of SYS1.SEZAINST, CS390.SEZAINST or other high-level qualifiers for the data set name.

Who should read this document

Use this document if you are planning to define resources in a VTAM network.

How this document is organized

This document contains the following topics:

- Chapter 1, “Adjacent control point major node,” on page 1 describes sample adjacent control point major node definitions.
- Chapter 2, “Application program major node,” on page 5 contains sample application definitions used by hosts in the VTAM network.
- Chapter 3, “Channel-attachment major node,” on page 15 describes sample channel-attachment major node definitions.
- Chapter 4, “Cross-domain resource major node,” on page 23 describes sample cross-domain resource major node definitions.
- Chapter 5, “Cross-domain resource manager major node,” on page 29 describes sample cross-domain resource manager major node definitions.
- Chapter 6, “External communication adapter (XCA) major node,” on page 43 describes sample external communication adapter major node definitions.
- Chapter 7, “Local non-SNA major node,” on page 59 describes sample local non-SNA major node definitions.
- Chapter 8, “Local SNA major node,” on page 61 describes sample local SNA major node definitions.
- Chapter 9, “LU group major node,” on page 71 describes a sample LU group major node definition.
- Chapter 10, “Model major node,” on page 73 contains samples of model major node definitions, which you can use to dynamically define switched resources.
- Chapter 11, “Switched major node,” on page 79 contains sample switched major node definitions for various types of switched connections.
- Chapter 12, “Transport resource list major node,” on page 95 contains sample transport resource list major node definitions.

- Chapter 13, “Path definition statements,” on page 99 describes sample path definitions.
- Chapter 14, “VTAM start option lists,” on page 105 contains sample VTAM start option lists for defining VTAM nodes.
- Chapter 15, “Configuration lists,” on page 123 contains sample configuration lists.
- Chapter 16, “Table definitions,” on page 125 contains sample definitions (or reference sample definitions) for VTAM's user-defined tables.
- Appendix A, “Enterprise Extender examples ,” on page 143 includes sample Enterprise Extender configurations.
- Appendix B, “Architectural specifications,” on page 159 lists documents that provide architectural specifications for the SNA Protocol.
- Appendix C, “Accessibility,” on page 161 lists features that help a user who has a physical disability.
- “Notices” on page 163 contains notices and trademarks used in this document.
- “Bibliography” on page 167 contains descriptions of the documents in the z/OS Communications Server library.

How to use this document

This document is an aid to be used with the following VTAM documents:

- z/OS Communications Server: SNA Network Implementation Guide
- z/OS Communications Server: SNA Resource Definition Reference
- z/OS Communications Server: SNA Operation

In each topic, you will find sample resource definitions for commonly used network configurations and networking functions. After determining what resources need to be defined to implement your own VTAM network configuration, with the help of the z/OS Communications Server: SNA Network Implementation Guide, you can then see z/OS Communications Server: SNA Resource Definition Samples to find samples of the resource definitions you need. Because these samples are for guidance only, you must then customize them to your specific networking environment.

You will notice that certain keywords are highlighted in the samples shown here. The highlighted keywords are those keywords that are referenced in the accompanying text.

This document does not explain in detail the syntax used in the sample definitions. For more information about the syntax, see the z/OS Communications Server: SNA Resource Definition Reference.

For installation and coding instructions, and for more detailed descriptions of the functions covered in these samples, see the z/OS Communications Server: SNA Network Implementation Guide. This guide also contains many samples and examples in addition to those presented in this document.

For an overview of VTAM's support for APPN and the new functions in z/OS Communications Server, see z/OS Communications Server: New Function Summary.

How to contact IBM service

For immediate assistance, visit this website: https://www.ibm.com/mysupport

Most problems can be resolved at this website, where you can submit questions and problem reports electronically, and access a variety of diagnosis information.

For telephone assistance in problem diagnosis and resolution (in the United States or Puerto Rico), call the IBM Software Support Center anytime (1-800-IBM®-SERV). You will receive a return call within 8 business hours (Monday – Friday, 8:00 a.m. – 5:00 p.m., local customer time).

Outside the United States or Puerto Rico, contact your local IBM representative or your authorized IBM supplier.

If you would like to provide feedback on this publication, see “Communicating your comments to IBM” on page 175.

Conventions and terminology that are used in this information

Commands in this information that can be used in both TSO and z/OS UNIX environments use the following conventions:

- When describing how to use the command in a TSO environment, the command is presented in uppercase (for example, NETSTAT).
- When describing how to use the command in a z/OS UNIX environment, the command is presented in bold lowercase (for example, **netstat**).
- When referring to the command in a general way in text, the command is presented with an initial capital letter (for example, Netstat).

All the exit routines described in this information are *installation-wide exit routines*. The installation-wide exit routines also called installation-wide exits, exit routines, and exits throughout this information.

The TPF logon manager, although included with VTAM, is an application program; therefore, the logon manager is documented separately from VTAM.

Samples used in this information might not be updated for each release. Evaluate a sample carefully before applying it to your system.

z/OS no longer supports mounting HFS data sets (The POSIX style file system). Instead, a z/OS File System (ZFS) can be implemented. The term hierarchical file system, abbreviated as HFS, is defined as a data structure that has a hierarchical nature with directories and files. References to hierarchical file systems or HFS might still be in use in z/OS Communications Server publications.

Note: In this information, you might see the following Shared Memory Communications over Remote Direct Memory Access (SMC-R) terminology:

- RoCE Express®, which is a generic term representing IBM 10 GbE RoCE Express, IBM 10 GbE RoCE Express2, and IBM 25 GbE RoCE Express2 feature capabilities. When this term is used in this information, the processing being described applies to all of these features. If processing is applicable to only one feature, the full terminology, for instance, IBM 10 GbE RoCE Express will be used.
- RoCE Express2, which is a generic term representing an IBM RoCE Express2® feature that might operate in either 10 GbE or 25 GbE link speed. When this term is used in this information, the processing being described applies to either link speed. If processing is applicable to only one link speed, the full terminology, for instance, IBM 25 GbE RoCE Express2 will be used.
- RDMA network interface card (RNIC), which is used to refer to the IBM 10 GbE RoCE Express, IBM® 10 GbE RoCE Express2, or IBM 25 GbE RoCE Express2 feature.
- Shared RoCE environment, which means that the "RoCE Express" feature can be used concurrently, or shared, by multiple operating system instances. The feature is considered to operate in a shared RoCE environment even if you use it with a single operating system instance.

Clarification of notes

Information traditionally qualified as Notes is further qualified as follows:

Attention
Indicate the possibility of damage

Guideline
Customary way to perform a procedure

Note
Supplemental detail

Rule
Something you must do; limitations on your actions

Restriction
Indicates certain conditions are not supported; limitations on a product or facility

Requirement
Dependencies, prerequisites

Result
Indicates the outcome

Tip
Offers shortcuts or alternative ways of performing an action; a hint

Prerequisite and related information

z/OS Communications Server function is described in the z/OS Communications Server library. Descriptions of those documents are listed in "Bibliography" on page 167, in the back of this document.

Required information

Before using this product, you should be familiar with TCP/IP, VTAM, MVS™, and UNIX System Services.

Softcopy information

Softcopy publications are available in the following collection.

Titles	Description
IBM Z Redbooks	The IBM Z®® subject areas range from e-business application development and enablement to hardware, networking, Linux®, solutions, security, parallel sysplex, and many others. For more information about the Redbooks® publications, see http://www.redbooks.ibm.com/ and http://www.ibm.com/systems/z/os/zos/zfavorites/.

Other documents

This information explains how z/OS references information in other documents.

When possible, this information uses cross-document links that go directly to the topic in reference using shortened versions of the document title. For complete titles and order numbers of the documents for all products that are part of z/OS, see z/OS Information Roadmap (SA23-2299). The Roadmap describes what level of documents are supplied with each release of z/OS Communications Server, and also describes each z/OS publication.

To find the complete z/OS library, visit the z/OS library in IBM Documentation (https://www.ibm.com/docs/en/zos).

Relevant RFCs are listed in an appendix of the IP documents. Architectural specifications for the SNA protocol are listed in an appendix of the SNA documents.

The following table lists documents that might be helpful to readers.

Title	Number
DNS and BIND, Fifth Edition, O'Reilly Media, 2006	ISBN 13: 978-0596100575
Routing in the Internet, Second Edition, Christian Huitema (Prentice Hall 1999)	ISBN 13: 978-0130226471
sendmail, Fourth Edition, Bryan Costales, Claus Assmann, George Jansen, and Gregory Shapiro, O'Reilly Media, 2007	ISBN 13: 978-0596510299
SNA Formats	GA27-3136
TCP/IP Illustrated, Volume 1: The Protocols, W. Richard Stevens, Addison-Wesley Professional, 1994	ISBN 13: 978-0201633467
TCP/IP Illustrated, Volume 2: The Implementation, Gary R. Wright and W. Richard Stevens, Addison-Wesley Professional, 1995	ISBN 13: 978-0201633542

Title	Number
TCP/IP Illustrated, Volume 3: TCP for Transactions, HTTP, NNTP, and the UNIX Domain Protocols, W. Richard Stevens, Addison-Wesley Professional, 1996	ISBN 13: 978-0201634952
TCP/IP Tutorial and Technical Overview	GG24-3376
Understanding LDAP	SG24-4986
z/OS Cryptographic Services System SSL Programming	*SC14-7495*
z/OS IBM Tivoli Directory Server Administration and Use for z/OS	*SC23-6788*
z/OS JES2 Initialization and Tuning Guide	*SA32-0991*
z/OS Problem Management	*SC23-6844*
z/OS MVS Diagnosis: Reference	*GA32-0904*
z/OS MVS Diagnosis: Tools and Service Aids	*GA32-0905*
z/OS MVS Using the Subsystem Interface	*SA38-0679*
z/OS Program Directory	*GI11-9848*
z/OS UNIX System Services Command Reference	*SA23-2280*
z/OS UNIX System Services Planning	*GA32-0884*
z/OS UNIX System Services Programming: Assembler Callable Services Reference	*SA23-2281*
z/OS UNIX System Services User's Guide	*SA23-2279*
z/OS XL C/C++ Runtime Library Reference	*SC14-7314*
Open Systems Adapter-Express Customer's Guide and Reference	*SA22-7935*

Redbooks publications

The following Redbooks publications might help you as you implement z/OS Communications Server.

Title	Number
IBM z/OS Communications Server TCP/IP Implementation, Volume 1: Base Functions, Connectivity, and Routing	SG24-8096
IBM z/OS Communications Server TCP/IP Implementation, Volume 2: Standard Applications	SG24-8097
IBM z/OS Communications Server TCP/IP Implementation, Volume 3: High Availability, Scalability, and Performance	SG24-8098
IBM z/OS Communications Server TCP/IP Implementation, Volume 4: Security and Policy-Based Networking	SG24-8099
IBM Communication Controller Migration Guide	SG24-6298
IP Network Design Guide	SG24-2580
Managing OS/390 TCP/IP with SNMP	SG24-5866
Migrating Subarea Networks to an IP Infrastructure Using Enterprise Extender	SG24-5957
SecureWay Communications Server for OS/390 V2R8 TCP/IP: Guide to Enhancements	SG24-5631
SNA and TCP/IP Integration	SG24-5291

Title	Number
TCP/IP in a Sysplex	SG24-5235
TCP/IP Tutorial and Technical Overview	GG24-3376
Threadsafe Considerations for CICS	SG24-6351

Where to find related information on the Internet

z/OS

This site provides information about z/OS Communications Server release availability, migration information, downloads, and links to information about z/OS technology

http://www.ibm.com/systems/z/os/zos/

z/OS Internet Library

Use this site to view and download z/OS Communications Server documentation

http://www.ibm.com/systems/z/os/zos/library/bkserv/

z/OS Communications Server product

The page contains z/OS Communications Server product introduction

https://www.ibm.com/products/zos-communications-server

IBM Communications Server product support

Use this site to submit and track problems and search the z/OS Communications Server knowledge base for Technotes, FAQs, white papers, and other z/OS Communications Server information

https://www.ibm.com/mysupport

IBM Communications Server performance information

This site contains links to the most recent Communications Server performance reports

http://www.ibm.com/support/docview.wss?uid=swg27005524

IBM Systems Center publications

Use this site to view and order Redbooks publications, Redpapers, and Technotes

http://www.redbooks.ibm.com/

z/OS Support Community

Search the z/OS Support Community Library for Techdocs (including Flashes, presentations, Technotes, FAQs, white papers, Customer Support Plans, and Skills Transfer information)

z/OS Support Community

Tivoli® NetView® for z/OS

Use this site to view and download product documentation about Tivoli NetView for z/OS

http://www.ibm.com/support/knowledgecenter/SSZJDU/welcome

RFCs

Search for and view Request for Comments documents in this section of the Internet Engineering Task Force website, with links to the RFC repository and the IETF Working Groups web page

http://www.ietf.org/rfc.html

Internet drafts

View Internet-Drafts, which are working documents of the Internet Engineering Task Force (IETF) and other groups, in this section of the Internet Engineering Task Force website

http://www.ietf.org/ID.html

Information about web addresses can also be found in information APAR II11334.

Note: Any pointers in this publication to websites are provided for convenience only and do not serve as an endorsement of these websites.

DNS websites

For more information about DNS, see the following USENET news groups and mailing addresses:

USENET news groups
comp.protocols.dns.bind

BIND mailing lists
https://lists.isc.org/mailman/listinfo

BIND Users

- Subscribe by sending mail to bind-users-request@isc.org.
- Submit questions or answers to this forum by sending mail to bind-users@isc.org.

BIND 9 Users (This list might not be maintained indefinitely.)

- Subscribe by sending mail to bind9-users-request@isc.org.
- Submit questions or answers to this forum by sending mail to bind9-users@isc.org.

The z/OS Basic Skills Information Center

The z/OS Basic Skills Information Center is a web-based information resource intended to help users learn the basic concepts of z/OS, the operating system that runs most of the IBM mainframe computers in use today. The Information Center is designed to introduce a new generation of Information Technology professionals to basic concepts and help them prepare for a career as a z/OS professional, such as a z/OS systems programmer.

Specifically, the z/OS Basic Skills Information Center is intended to achieve the following objectives:

- Provide basic education and information about z/OS without charge
- Shorten the time it takes for people to become productive on the mainframe
- Make it easier for new people to learn z/OS

To access the z/OS Basic Skills Information Center, open your web browser to the following website, which is available to all users (no login required): https://www.ibm.com/support/knowledgecenter/zosbasics/com.ibm.zos.zbasics/homepage.html?cp=zosbasics

Summary of changes

This document contains terminology, maintenance, and editorial changes, including changes to improve consistency and retrievability. Technical changes or additions to the text and illustrations are indicated by a vertical line to the left of the change.

Changes made in z/OS Communications Server Version 2 Release 5

This document contains information previously presented in z/OS Communications Server: SNA Resource Definition Samples, which supported z/OS Version 2 Release 4.

New information

Changed information

- Removal of CMIP from VTAM, see the following topics:
  - “Subarea node start option list” on page 106
  - “Network node start option list” on page 109

Removed information

- Removal of CMIP from VTAM:
  - Directory definition file for CMIP services (CMIPDDF)

Changes made in z/OS Communications Server Version 2 Release 4

This information contains no technical change for this release.

Changes made in z/OS Communications Server Version 2 Release 3

This information contains no technical change for this release.

Chapter 1. Adjacent control point major node

This topic 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.

Guideline: 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.

For more information about adjacent control point major nodes, see the z/OS Communications Server: SNA Network Implementation Guide or the z/OS Communications Server: SNA Resource Definition Reference.

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 illustrated in Figure 1 on page 1. Note that this graphic representation of the network is intended only to describe the overall topology of the network. The actual physical connections are not shown.

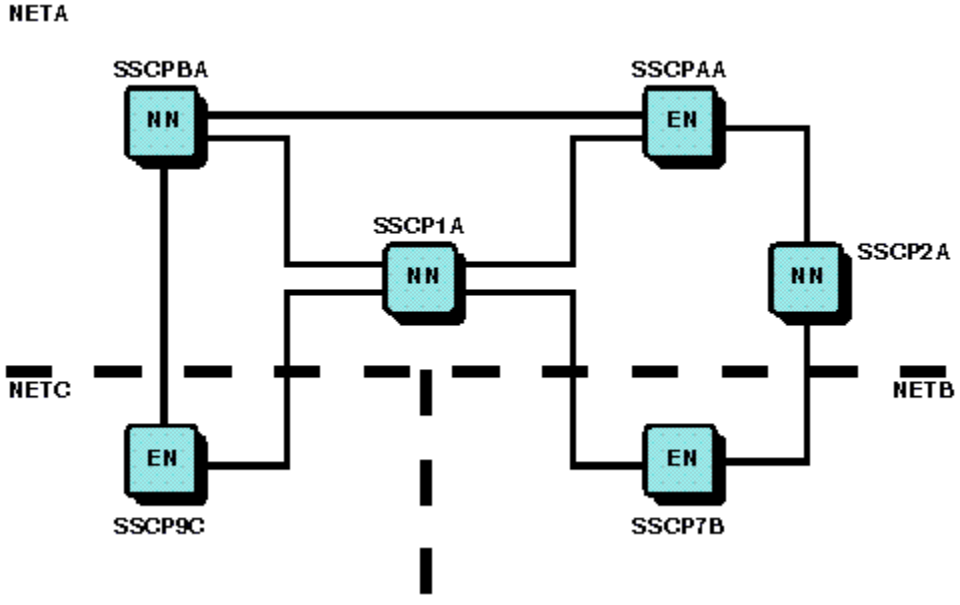

Figure 1. A small APPN network

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

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 node type (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
```

Adjacent control point major node for SSCP2A

In the adjacent control point major node that follows, 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
```

Adjacent control point major node for SSCPBA

In the adjacent control point major node that follows, 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
```

Adjacent control point major node for SSCPAA

In the adjacent control point major node that follows, note that, although SSCPBA has predefined SSCPAA as an adjacent control point (see “Adjacent control point major node for SSCPBA” on page 3), 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
```

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, when 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
```

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, when 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
```

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
```

Chapter 2. Application program major node

This topic 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.

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 that the logical unit does not support conversation requests containing access security subfields.
- CONV means that the logical unit supports conversation requests containing access security subfields.
- ALREADYV means that 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.
- PERSISTV means that the logical unit supports conversation requests containing access security subfields, and it also accepts persistent verification indications that it receives in conversation requests.
- 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.

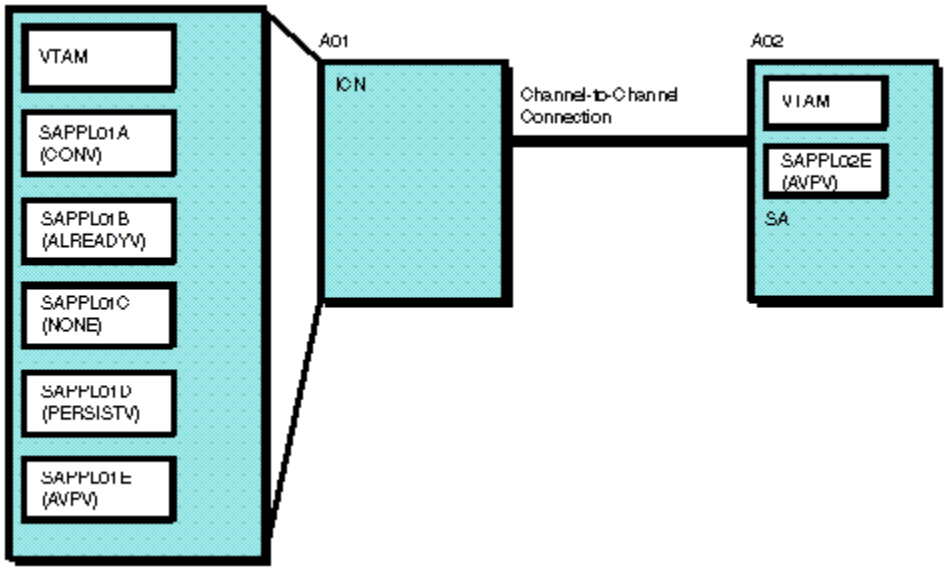

Figure 2. LU 6.2 persistent verification

For a more detailed description of LU 6.2 conversation-level verification, see the z/OS Communications Server: SNA Programmer's LU 6.2 Guide.

For more information about PERSISTV, AVPV, and the other SECACPT options, see the z/OS Communications Server: SNA 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
*********************************************************************
```

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 the VERIFYCP start option in the “Network node start option list” on page 109 for more information.

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 a LU-LU password defined. Any partner LUs that do not have a LU-LU password defined cannot establish LU 6.2 sessions with this application program.

The example that follows 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
*********************************************************************
```

Using the SECLVL operand

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 the sense code 080F0002 (session-level LU-LU verification protocol mismatch).

The following example illustrates the use of the SECLVL operand:

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

APPCAP07 APPL AUTH=(ACQ,PASS),APPC=YES,SYNCLVL=SYNCPT,ATNLOSS=ALL,     *
               OPERCNOS=ALLOW,VERIFY=REQUIRED,SECLVL=LEVEL2
             . . .
```

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.

Procedure

Guideline: Only LU 6.2 sessions are affected by limited resource definition. Non-LU 6.2 sessions are unaffected and cannot be limited. In addition, defining a network connection as limited does not affect VTAM CP LU 6.2 sessions.

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
   - 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.

Results

For example, in Figure 3 on page 9, 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” on page 9).

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” on page 63.)

If no conversations are detected for 120 seconds on B28CCNPU, the above definitions cause any LU 6.2 sessions in which S28APPLA is participating (except for LU 6.2 sessions that the VTAM CP is using), and which traverse B28CCNPU to be deactivated.

For more information about selective deactivation, see the z/OS Communications Server: SNA Network Implementation Guide.

For more information about the LIMRES and LIMQSINT operands, see the z/OS Communications Server: SNA Resource Definition Reference.

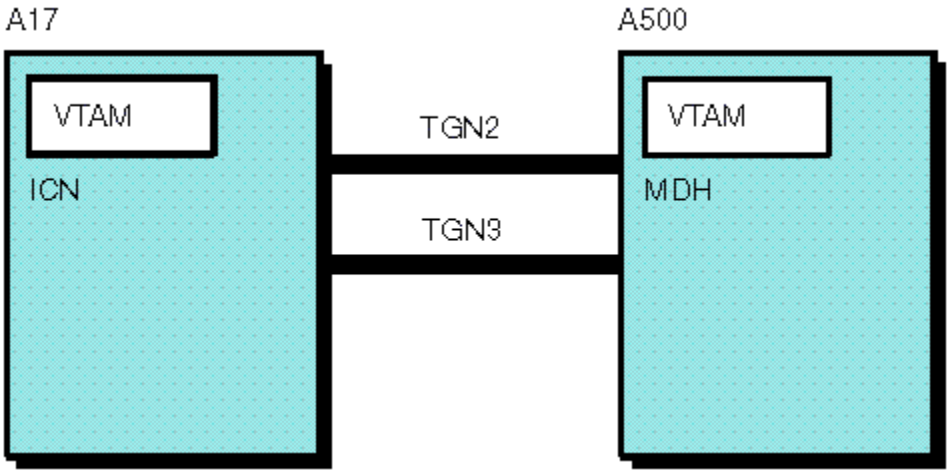

Figure 3. LU 6.2 selective deactivation

Defining LIMRES

For an example of a major node that defines a limited resource, see "Selective deactivation of idle LU 6.2 sessions" on page 63.

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 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  **
*********************************************************************
```

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.

Guideline: 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.

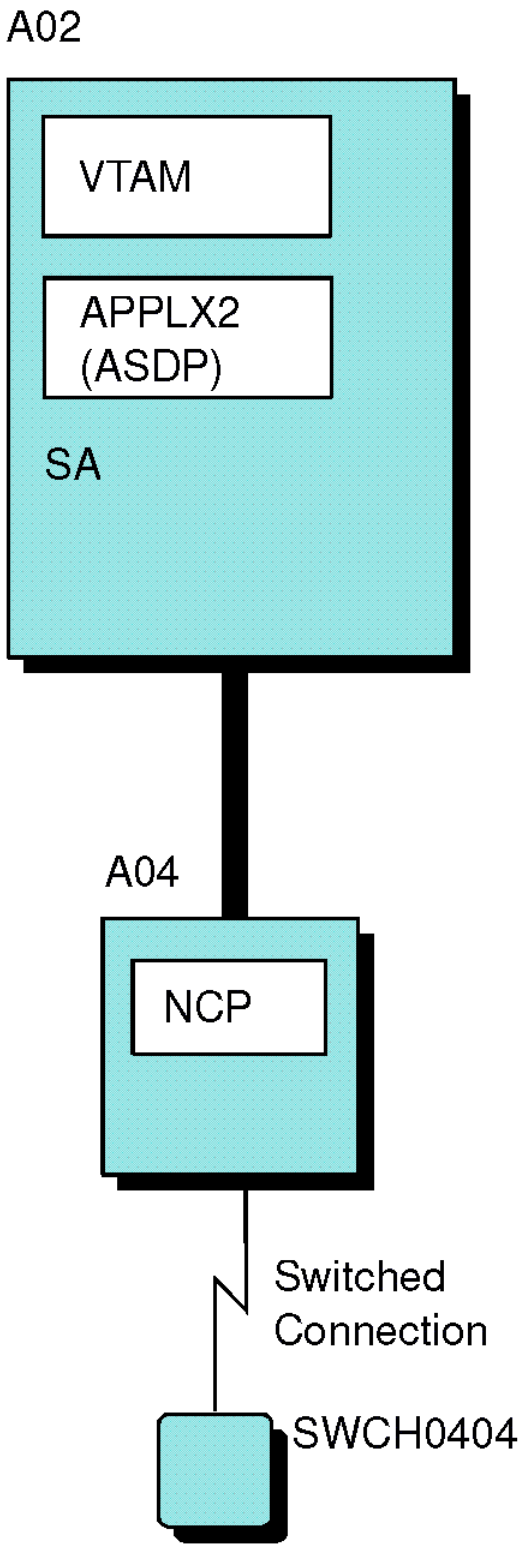

Figure 4. Application-supplied operands for switched connections

For more information about this function, see the z/OS Communications Server: SNA 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” on page 87.

For more information about the ASDP control block, see z/OS Communications Server: SNA Programming.

An application is authorized to supply dial-out information by 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
*********************************************************************
```

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 that follows, 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 specifies only 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
```

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.

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 about data compression, see the z/OS Communications Server: SNA Network Implementation Guide

Defining compression limits for application ECHO01

In the application program major node for ECHO01 that follows, 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  **
```

Defining compression limits for application ECHO02

In the application program major node for ECHO02 that follows, 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 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  **
```

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 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 should be 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 about how applications are registered, see the z/OS Communications Server: SNA Network Implementation Guide.

The sample application program major node that follows 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)
```

While VTAM is running, you can change the registration of VTAM applications in an APPN network by using the MODIFY RESOURCE command. For more information, see the z/OS Communications Server: SNA Operation.

Dynamic definition of VTAM application programs

In VTAM, you can code a dynamically defined application program, which can be used as the definition for one or more application programs. You code a dynamic application program definition by placing wildcard characters (* and ?) in the name of the APPL definition statement that defines characteristics for one or more application programs.

Dynamic application program definitions enable you to reduce the number of application program definitions in VTAMLST.

To code a dynamic application program definition, code an APPL definition statement to define application program characteristics that you expect to be used by one or more VTAM application programs. Use wildcard characters in the name of the APPL definition statement. You can use the following characters:

Asterisk (*)
Represents 0 or more unspecified characters

Question mark (?)
Represents a single unspecified character

An asterisk (*) can be used in the second to eighth characters of the application program name. A question mark (?) can be used anywhere in the application program name.

For example, in the sample application program major node CLONEALP, the name C? represents any two-character name that begins with C and ends with any one additional valid character. The name C* represents any name that begins with C and ends with zero to seven additional valid characters. The name C?C represents any three-character name that begins with C, ends with C, and has any one additional valid character as its second character.

```
CLONEALP    VBUILD TYPE=APPL
 .
 .
 .
?C       APPL AUTH=(PASS,ACQ),EAS=500,PARSESS=YES
C        APPL AUTH=(PASS,ACQ),EAS=500,PARSESS=YES
C?       APPL AUTH=(PASS,ACQ),EAS=500,PARSESS=YES
C*       APPL AUTH=(PASS,ACQ),EAS=500,PARSESS=YES
C?C      APPL AUTH=(PASS,ACQ),EAS=500,PARSESS=YES
C?C?     APPL AUTH=(PASS,ACQ),EAS=500,PARSESS=YES
C?C*     APPL AUTH=(PASS,ACQ),EAS=500,PARSESS=YES
C?C?C    APPL AUTH=(PASS,ACQ),EAS=500,PARSESS=YES
C?C?C?   APPL AUTH=(PASS,ACQ),EAS=500,PARSESS=YES
C?C?C*   APPL AUTH=(PASS,ACQ),EAS=500,PARSESS=YES
C?C?C?C  APPL AUTH=(PASS,ACQ),EAS=500,PARSESS=YES
C?C?C?C? APPL AUTH=(PASS,ACQ),EAS=500,PARSESS=YES
C?C?C?C* APPL AUTH=(PASS,ACQ),EAS=500,PARSESS=YES
C*C*C*C* APPL AUTH=(PASS,ACQ),EAS=500,PARSESS=YES
C*C      APPL AUTH=(PASS,ACQ),EAS=500,PARSESS=YES
C*C*C*   APPL AUTH=(PASS,ACQ),EAS=500,PARSESS=YES
C*C*C*CC APPL AUTH=(PASS,ACQ),EAS=500,PARSESS=YES
```

In the sample application program major node ASTQUEST, both ?* and ?******* match any application program major name 1 to 8 characters in length. However, because ?******* is the more specific of the two, that will be the one chosen.

```
ASTQUEST VBUILD TYPE=APPL
?*       APPL AUTH=(PASS,ACQ,PPO),EAS=500,PARSESS=YES
?**      APPL AUTH=(PASS,ACQ,SPO),EAS=500,PARSESS=YES
?***     APPL AUTH=(PASS,ACQ,PPO),EAS=500,PARSESS=YES
?****    APPL AUTH=(PASS,ACQ),EAS=500,PARSESS=YES
?*****   APPL AUTH=(PASS,ACQ),EAS=500,PARSESS=YES
?****** APPL AUTH=(PASS,ACQ),EAS=500,PARSESS=YES
?******* APPL AUTH=(PASS,ACQ),EAS=500,PARSESS=YES
```

In the sample application program major node MYAPPL, the name MAPPL* represents any name that begins with MAPPL and ends with zero to three additional valid characters. The name MAPPLQ* represents any name that begins with MAPPLQ and ends with zero to two additional valid characters. The name MAPPC* represents any name that begins with MAPPC and ends with zero to three additional valid characters.

```
MYAPPL   VBUILD TYPE=APPL
MAPPL*   APPL  AUTH=(PASS,ACQ),                                 *
              HAVAIL=YES,                                       *
              PARSESS=YES
MAPPLQ*  APPL  AUTH=(PASS,ACQ),                                 *
              SESSLIM=YES
MAPPC*   APPL  APPC=YES,                                        *
              ATNLOSS=ALL,                                      *
              AUTH=(PASS,ACQ),                                  *
              AUTOSES=0,                                        *
              DDRAINL=NALLOW,                                   *
              DMINWNL=5,                                        *
              DMINWNR=5,                                        *
              DRESPL=NALLOW,                                    *
              DSESLIM=10,                                       *
              HAVAIL=YES,                                       *
              LMDENT=19,                                        *
              OPERCNOS=ALLOW,                                   *
              SECACPT=NONE,                                     *
              SYNCLVL=CONFIRM,                                  *
              VERIFY=NONE
```

Tip: Use the DISPLAY MODELS command with the APPL operand to verify that the model definition that you intend to use for your application name is the one that VTAM will select.

Chapter 3. Channel-attachment major node

This topic 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

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. The definition must include the following definition statements:

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

For more information about this type of connection, see the z/OS Communications Server: SNA Network Implementation Guide.

Single transmission group

Figure 5 on page 15 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 by using one channel-attachment major node for each host.

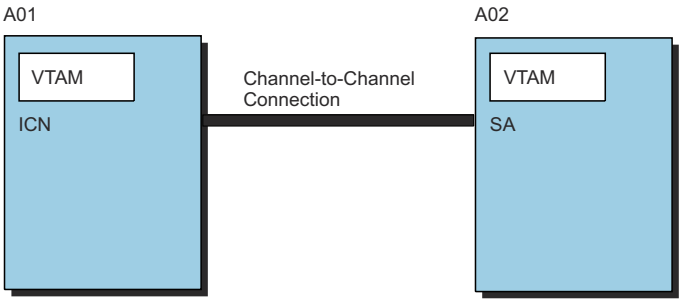

Figure 5. A VTAM-to-VTAM channel connection

The first channel-attachment major node that follows represents the view of the connection from host A01 in Figure 5 on page 15.

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 that follows represents the view of the connection from host A02 in Figure 5 on page 15.

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
```

Parallel transmission groups

A transmission group consist of 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 about parallel transmission groups, see the z/OS Communications Server: SNA Network Implementation Guide.

Figure 6 on page 17 shows parallel transmission groups TGN2 and TGN3 in a multiple-domain network.

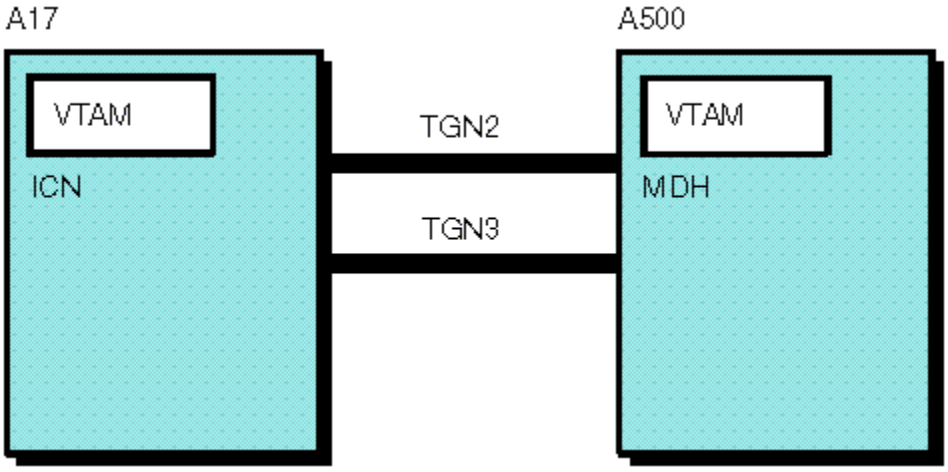

Figure 6. Parallel transmission groups in a multiple-domain network

The first channel-attachment major node that follows represents the view of the connection from host A17 in Figure 6 on page 17.

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 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 that follows represents the view of the connection from host A500 in Figure 6 on page 17.

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
```

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 illustrated in Figure 7 on page 18.

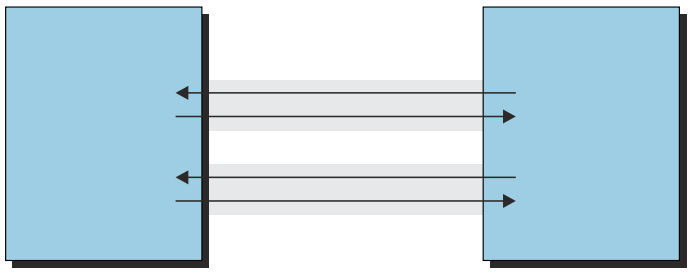

Figure 7. Two multipath channel connections

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 about APPN host-to-host channel connection, see Chapter 12, “Transport resource list major node,” on page 95 and “APPN host-to-host channel connection” on page 62.

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 that follow, 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.

Multipath channel connection for host A17N

The channel-attachment major node example that follows defines two multipath channel connections for host A17N, as illustrated in Figure 7 on page 18.

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.

```
*  =====> 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
```

Multipath channel connection for host A500N

The example that follows 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
```

Defining a multipath channel connection using MVS system symbols

You can use MVS system symbols in the names you specify for VTAM definition statements and in the values you specify on the operands on those definition statements in all major nodes and in all definitions for routing and dynamic reconfiguration. These symbols allow a single major node to be used by multiple VTAMs in a multisystem environment. You can also use them to reduce system definition in single system environments.

You can, for example, use MVS system symbols to code a multipath channel connection definition. Consider the following channel-attachment major node that uses MVS system symbols.

```
************************************************************
* Description: Multiple Path CTC definition deck for host 1A
*
************************************************************
MPC&SYSCLONE.    VBUILD &TYPE.=CA
MPCGP&SYSCLONE.GROUP LNCTL=MPC,&PU.
&TYPE.=&NUMBER4.,X
                           REPLYTO=25.5
MPCLN&USERSYM2.&USERSYM1.  LINE   WRITE=(BC:
&NUMBER0.),READ=(BC1)
MPC&PU.1A  &PU.
```

The MVS system symbols used in this major node have been predefined in the IEASYMM1 parmlib member, which assigned values to the standard MVS system symbol &SYSCLONE and the installation-defined MVS system symbols &USERSYM1, &USERSYM2, &NUMBER0, &NUMBER4, &TYPE, and &PU, as follows:

```
************
************  IEASYMM1 MEMBER
************
SYSDEF    SYSCLONE(1A)
          SYMDEF(&USERSYM1='A')
          SYMDEF(&USERSYM2='1')
          SYMDEF(&NUMBER0='0')
          SYMDEF(&NUMBER4='4')
          SYMDEF(&TYPE='TYPE')
          SYMDEF(&PU='PU')
************
************  LOADM1 MEMBER
************
```

When these MVS system symbols are resolved, the channel-attachment major node above becomes the following:

```
************************************************************
*
* Description: Multiple Path CTC definition deck for host 1A
*
```

```
*********************************************************
MPC1A    VBUILD TYPE=CA
MPCGP1A  GROUP  LNCTL=MPC,PUTYPE=4,                                X
                REPLYTO=25.5
MPCLN1A  LINE   WRITE=(BC0),READ=(BC1)
MPCPU1A  PU
```

Chapter 4. Cross-domain resource major node

This topic 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 dynamically defines CDRSCs if CDRDYN=YES is specified as a VTAM start option or 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), an adjacent SSCP table to search for the resource, or both. For sample adjacent SSCP tables, see "Adjacent SSCP table" on page 125. You do not have to define CDRSCs if you enable 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 also define model CDRSCs, representing a set of CDRSCs with similar characteristics and a common naming convention, from which clone CDRSCs are created as needed. Model CDRSCs can appear in the same major node as statically defined CDRSCs.

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 that follow, cross-domain resource major nodes can be used to implement SSCP lists for CDRSCs.

For more information about cross-domain resources, see the z/OS Communications Server: SNA Network Implementation Guide.

Model definition of VTAM cross-domain resources

In VTAM, you can code a model cross-domain resource (CDRSC), which can be used as the definition for one or more CDRSCs. Model CDRSC definitions enable you to reduce the number of CDRSC definitions in VTAMLST.

To code a model CDRSC definition, create a CDRSC definition statement that defines CDRSC characteristics that can be used by one or more VTAM CDRSCs. When naming the CDRSC definition statement, use wildcard characters. The following wildcard characters can be used:

Asterisk (*)
Represents zero or more unspecified characters. An asterisk can be used in the second to eighth characters of the CDRSC name.

Question Mark (?)
Represents a single unspecified character. A question mark can be used anywhere in the CDRSC name.

The following is an example of a CDRSC major node with model CDRSCs:

```
CDRSCSEG   VBUILD     TYPE=CDRSC
APPL*      CDRSC      CDRM=SSCP1A
           NETWORK    NETID=NETB
TERM1      CDRSC      CDRM=SSCP7B
APPLB*     CDRSC      CDRM=SSCP7B,DLOGMOD=BATCH,DELETE=YES
APPLB1*    CDRSC      CDRM=SSCP7B,DLOGMOD=INTERACT
           NETWORK    NETID=NETC
APPLC?     CDRSC      CDRM=SSCP9C,DLOGMOD=INTERACT
APPLC*     CDRSC      CDRM=SSCP9C,DLOGMOD=BATCH,DELETE=NO
```

In this example, there are five model CDRSC definitions and one conventional CDRSC definition.

- APPL* is a model CDRSC from which alias CDRSCs can be created.
- APPLB* is a model CDRSC from which real CDRSCs with a netid of NETB can be created. The clone CDRSCs will have a default logmode of BATCH.
- APPLB1* is a model CDRSC from which real CDRSCs with a netid of NETB can be created. The clone CDRSCs will have a default logmode of INTERACT.
- APPLC? is a model CDRSC from which real CDRSCs with a netid of NETC can be created. The clone CDRSCs will have a default logmode of INTERACT.
- APPLC* is a model CDRSC from which real CDRSCs with a netid of NETC can be created. The clone CDRSCs will have a default logmode of BATCH.

NETC.APPLC1 matches both the APPLC? and APPLC* model definitions for network NETC. Because APPLC? is the more specific definition, it is used for APPLC1.

Guideline: For this example, if the definition for APPLB* is active, but the definition for APPLB1* is not active, a session request for NETB.APPLB11 will create a clone CDRSC based on the APPLB* definition. That clone CDRSC will be used for all session requests for NETB.APPLB11 until the clone CDRSC is deleted, even if the APPLB1* definition, which is a better match, has been activated in the meantime.

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 LEN-attached hosts. By specifying the operand ALSLIST=(LENPU), VTAM is directed to use the adjacent link station LENPU to contact the independent logical units.

```
*  =====&gt; 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 LEN
*********************************
A5001    CDRSC ALSLIST=(LENPU)
E5001    CDRSC ALSLIST=(LENPU)
A5002    CDRSC ALSLIST=(LENPU)
E5002    CDRSC ALSLIST=(LENPU)
A1701    CDRSC ALSLIST=(LENPU)
E1701    CDRSC ALSLIST=(LENPU)
A1702    CDRSC ALSLIST=(LENPU)
E1702    CDRSC ALSLIST=(LENPU)
AB101    CDRSC ALSLIST=(LENPU)
EB101    CDRSC ALSLIST=(LENPU)
AB102    CDRSC ALSLIST=(LENPU)
EB102    CDRSC ALSLIST=(LENPU)
AC101    CDRSC ALSLIST=(LENPU)
EC101    CDRSC ALSLIST=(LENPU)
AC102    CDRSC ALSLIST=(LENPU)
EC102    CDRSC ALSLIST=(LENPU)
         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
*  =====&gt; END OF DATA SET A02CDRSC
```

Limiting sessions for independent LUs

In the sample CDRSC major node that follows, the CDRSC definition statement for cross-domain resource ECHO02 specifies MAXSESS=10, which indicates that 10 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.

```
*  =====> 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
```

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 that follows, 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” on page 129.

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 about this command, see the z/OS Communications Server: SNA Operation.

For more information about adjacent SSCP lists for CDRSCs, see the z/OS Communications Server: SNA Network Implementation Guide.

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 value is OFF). See “IBM-supplied default start option list” on page 105 for more information about 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 on 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 limited. 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 that follows, all the cross-domain resources except R50A721 default to an SRTIMER value of 600 seconds, as a result of the SRTIMER specification on the GROUP definition statement.

The SRCOUNT operand specifies for the resource the number of subsequent search requests to be limited 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 “IBM-supplied default start option list” on page 105 for more information about the SRCOUNT start option. In the CDRSC major node that follows, all the cross-domain resources except ECHO50A have a default SRCOUNT value of 15 as a result of the SRCOUNT value specified on the GROUP definition statement.

Search reduction for a resource is stopped when either of these two thresholds is reached. For more information about specifying search reduction values, see the z/OS Communications Server: SNA Resource Definition Reference.

```
*  =====&gt; BEGINNING OF DATA SET A02CDRSC
*********************************************************************
*                                                                   *
*   A02CDRSC - VTAM CROSS-DOMAIN RESOURCE MAJOR NODE - SUBAREA A02  *
*                                                                   *
*********************************************************************

          VBUILD TYPE=CDRSC,CONFGDS=CDRSCKPT
 NETA     NETWORK NETID=NETA
 CDRGRP1  GROUP CDRM=A500N,SRTIMER=600,SRCOUNT=15
 NEGAP50  CDRSC
 ECHO50A  CDRSC SRCOUNT=1500  * Override default
 A50A721  CDRSC SRTIMER=0     * Override default
 W3324802 CDRSC
*  =====&gt; END OF DATA SET A02CDRSC
```

Chapter 5. Cross-domain resource manager major node

This topic 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 CDRM in a cross-domain resource manager major node. You need to define a CDRM 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.

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.

In order 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. 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 8 on page 31. In the sample CDRM major node named A01CDRM in “Dynamically defining cross-domain resources” on page 29 that follows, 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.

Dynamically defining 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.

Procedure

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

Results

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.

In the network depicted in Figure 8 on page 31, coding CDRDYN=YES allows A01N to dynamically define CDRSCs of cross-domain or cross-network resources. It is meaningful only 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, because A02 has CDRSC=OPT coded, A01 can dynamically define CDRSCs for sessions with LUs through A02.

Example

```
*  =====> 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 (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
```

Connecting multiple networks using SNA network interconnection

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 use SNA network interconnection, you must identify your different networks and define the following resources that enable network-to-network communication:

- 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 the z/OS Communications Server: SNA Network Implementation Guide.

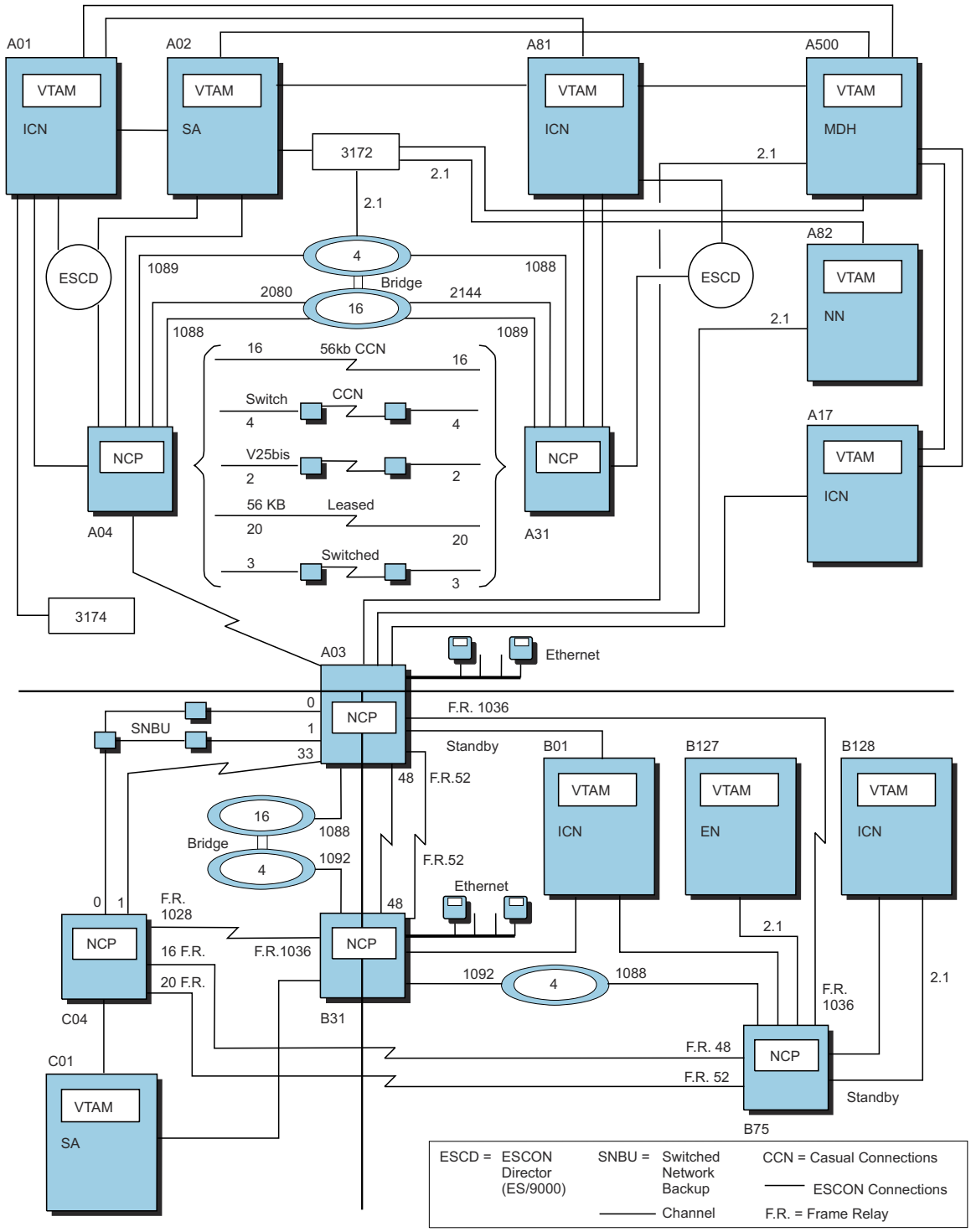

Figure 8. VTAM hosts in a multiple-network environment

The sample CDRM major node definitions that follow and the CDRM major node for A01N in “Dynamically defining cross-domain resources” on page 29, 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 8 on page 31. You will find the PATH definitions for these same nodes in Chapter 13, “Path definition statements,” on page 99.

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.

```
*  =====> 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
```

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.

```
*  =====> 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
```

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.

```
*  =====> 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
```

CDRM major node for host A500

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

```
*  =====> 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
```

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.

```
*  =====> 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
```

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.

```
*  =====> 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
```

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, 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 exist only in the following ways:

- 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 the z/OS Communications Server: SNA Network Implementation Guide.

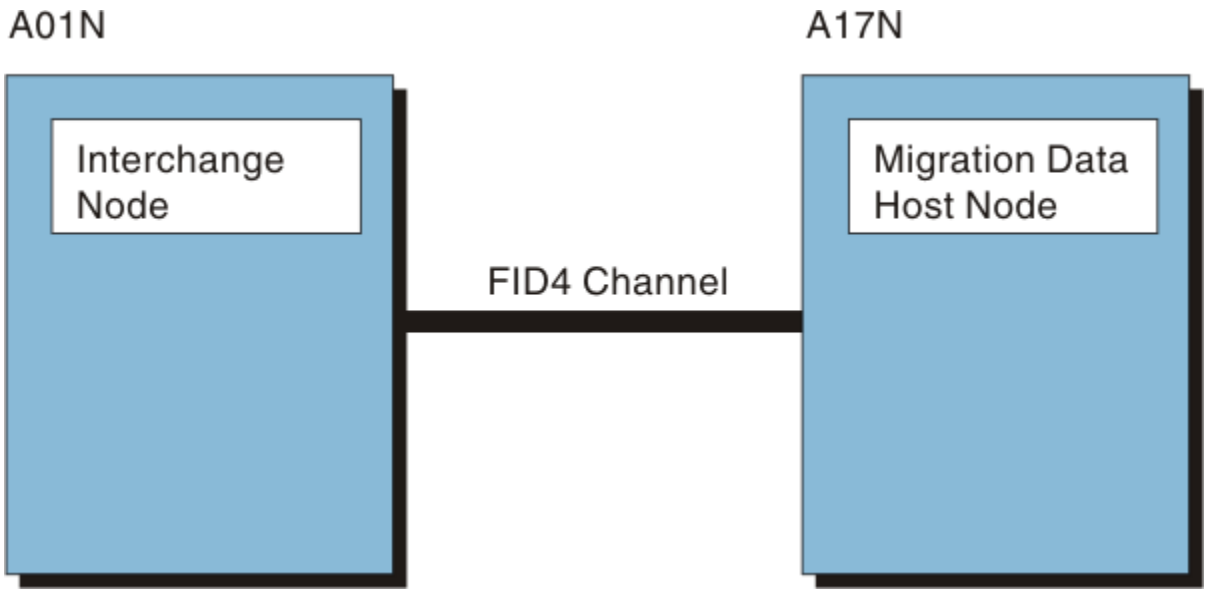

Figure 9. Virtual-route-based transmission group between interchange node and migration data host

The following example shows virtual-route-based transmission group definitions for Figure 9 on page 40.

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
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
*
```

Chapter 6. External communication adapter (XCA) major node

This topic describes sample external communication adapter major node definitions.

Local area networks can connect to VTAM through an external communication adapter (XCA), such as an IBM 3172 Nways Interconnect Controller or an IBM S/390® Open Systems Adapter. VTAM and an XCA support 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

ATM networks operating in LAN emulation mode appear to VTAM to be CSMA/CD 802.3 LANs or token-ring networks and are defined to VTAM as such. ATM networks operating in native mode are defined differently.

An external communication adapter major node is defined for each LAN connected to the XCA. The major node is defined with a VBUILD TYPE=XCA definition statement. For each LAN connected through an XCA, code 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: attach VTAM to peripheral nodes connected to LAN
- Subarea: attach VTAM to subarea nodes connected to LAN
- APPN: APPN-to-APPN over an IBM 3172 Nways Interconnect Controller

Peripheral XCA connection

An XCA, such as an IBM 3172 Nways 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 10 on page 45, 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 an IBM 3172 Nways Interconnect Controller, code the following:

- One external communication adapter major node to represent the physical unit in the XCA. 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 the NetView program is running.
- One switched major node for the physical unit in the XCA.
- One external communication adapter major node for each LAN connected to the XCA.
- Major nodes for any peripheral devices connected to the LAN.

To define a peripheral external communication adapter node attached to a LAN through an XCA, 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.

Subarea XCA connection

A VTAM attached through an XCA, such as an IBM 3172 Nways 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 10 on page 45, in which A02 and A500 can communicate with each other over the XCA. 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 IBM 3172 Nways 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 IBM 3172 Nways 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 IBM 3172 Nways 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 about implementing LAN support on the 3172 for single-domain and multiple-domain networks, see the z/OS Communications Server: SNA Network Implementation Guide.

Token-ring example showing peripheral and subarea connection

The following example shows both peripheral and subarea connections across the XCA. In this example, a token ring is attached to a VTAM network through an IBM 3172 Nways Interconnect Controller.

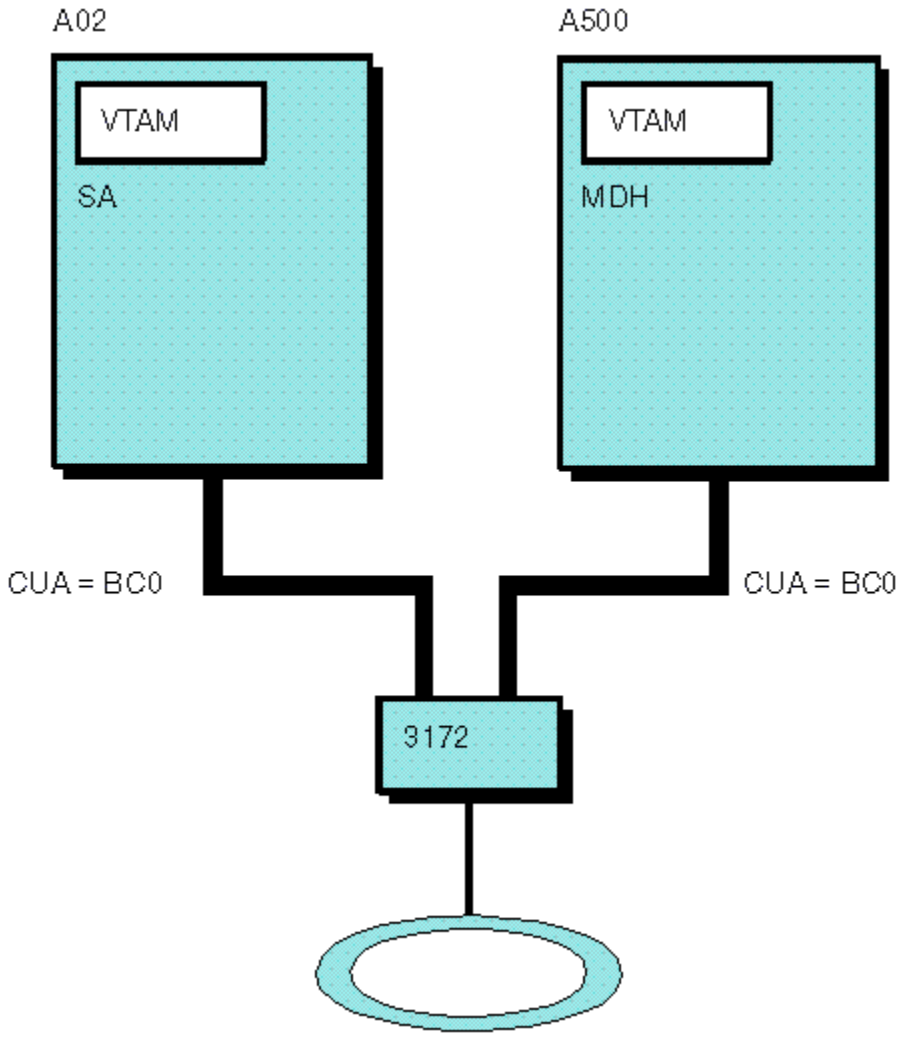

Figure 10. LAN support through an IBM 3172

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 IBM 3172 Nways Interconnect Controller is attached. In the sample XCA major node that follows, 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 Nways Interconnect Controller to have minimal network management, and allows generic alerts to flow from the IBM 3172 Nways 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 an SSCP-PU session between the IBM 3172 and NetView. See “Attaching a peripheral node over an IBM 3172 Interconnect Controller” on page 79 for the definition of that switched major node.

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.

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 “Attaching a peripheral node over an IBM 3172 Interconnect Controller” on page 79.

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 Nways 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
```

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.

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 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
```

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, SSCP1A and SSCP2A, through a token-bus local area network (MEDIUM=BUS). Because 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 SSCP1A, 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 SSCP2A)
*
*********************************************************************
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,        *
                 SAPADDR=4
*
LN1A7BS  LINE    USER=SNA
P1A7BS   PU      MACADDR=007B11111111,PUTYPE=5,SUBAREA=7,TGN=1,        *
                 SAPADDR=4
*
LN1A9CS  LINE    USER=SNA
P1A9CS   PU      MACADDR=009C11111111,PUTYPE=5,SUBAREA=9,TGN=1,        *
                 SAPADDR=4
*
LN1AAAS  LINE    USER=SNA
P1AAAS   PU      MACADDR=00AA11111111,PUTYPE=5,SUBAREA=10,TGN=1,       *
                 SAPADDR=4
*
LN1ABAS  LINE    USER=SNA
P1ABAS   PU      MACADDR=00BA11111111,PUTYPE=5,SUBAREA=11,TGN=1,       *
                 SAPADDR=4
*
LN1ACAS  LINE    USER=SNA
P1ACAS   PU      MACADDR=00CA11111111,PUTYPE=5,SUBAREA=12,TGN=1,       *
                 SAPADDR=4
*
*LN1ADAS  LINE    USER=SNA
*P1ADAS   PU      MACADDR=00DA11111111,PUTYPE=5,SUBAREA=13,TGN=1,      *
*                 SAPADDR=4
*
*LN1AEAS  LINE    USER=SNA
*P1AEAS   PU      MACADDR=00EA11111111,PUTYPE=5,SUBAREA=14,TGN=1,      *
*                 SAPADDR=4
*
```

```
*********************************************************************
*  NAME:     XCA2AS  (XCA MAJOR NODE FOR HOST SSCP2A, 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 SSCP1A)
*********************************************************************
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,        *
                 SAPADDR=4
*
LN2A7BS  LINE    USER=SNA
P2A7BS   PU      MACADDR=007B11111111,PUTYPE=5,SUBAREA=7,TGN=1,        *
                 SAPADDR=4
*
LN2A9CS  LINE    USER=SNA
P2A9CS   PU      MACADDR=009C11111111,PUTYPE=5,SUBAREA=9,TGN=1,        *
                 SAPADDR=4
*
LN2AAAS  LINE    USER=SNA
P2AAAS   PU      MACADDR=00AA11111111,PUTYPE=5,SUBAREA=10,TGN=1,       *
                 SAPADDR=4
*
LN2ABAS  LINE    USER=SNA
P2ABAS   PU      MACADDR=00BA11111111,PUTYPE=5,SUBAREA=11,TGN=1,       *
                 SAPADDR=4
*
LN2ACAS  LINE    USER=SNA
P2ACAS   PU      MACADDR=00CA11111111,PUTYPE=5,SUBAREA=12,TGN=1,       *
                 SAPADDR=4
*
```

External communication adapter connection to FDDI LAN

The following is a sample external communication adapter major node defining a connection from VTAM to an 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.

```
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,       *
                 SUBAREA=02,TGN=1,SAPADDR=4
*
L5FC12   LINE    USER=VCNS,ISTATUS=INACTIVE
```

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 11 on page 50 shows a multiple-domain XCA configuration with a CSMA/CD 802.3 local area network and two 3172 interconnect controllers.

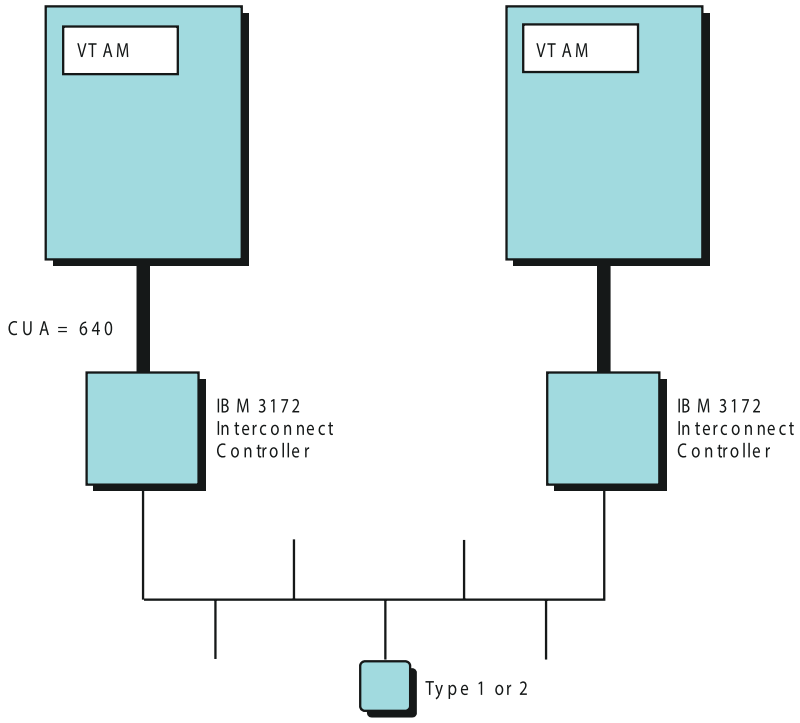

Figure 11. XCA multiple-domain configuration with CSMA/CD 802.3

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.

```
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,       *
               SUBAREA=02,TGN=255,SAPADDR=4
L1CV11   LINE    USER=VCNS,ISTATUS=INACTIVE
```

For more information about attaching a CSMA/CD 802.3 local area network through an IBM 3172 Nways Interconnect Controller, see the z/OS Communications Server: SNA Network Implementation Guide.

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 IBM 3172 Nways 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 follow. See "CP-CP sessions through 3172-attached token-bus LAN" on page 80 for the corresponding switched major nodes for the token-bus LAN.

XCA major node for token-bus LAN for network node SSCP1A

```
*********************************************************************
*  NAME:     XCA1A  (XCA MAJOR NODE FOR HOST SSCP1A, 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 SSCP2A)
*              3) ACT SW_MAJOR_NODE, SCOPE=ONLY
*                 (EG. ACT SWXCA1A DEFINED FOR HOST SSCP1A)
*              4) ACT CORRESPONDING_SW_PU TO DESTINATION HOST
*                 (EG. ACT SW1A2A FOR CONNECTION TO HOST SSCP2A)
*              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
```

XCA major node for token-bus LAN for network node SSCP2A

```
*********************************************************************
*  NAME:     XCA2A  (XCA MAJOR NODE FOR HOST SSCP2A, 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 SSCP1A)
*              3) ACT SW_MAJOR_NODE, SCOPE=ONLY
*                 (EG. ACT SWXCA2A DEFINED FOR HOST SSCP2A)
*              4) ACT CORRESPONDING_SW_PU TO DESTINATION HOST
*                 (EG. ACT SW2A1A FOR CONNECTION TO HOST SSCP1A)
*              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
```

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 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 IBM 3172 Nways Interconnect Controller can be used to connect a VTAM network node or end node to a connection network, as shown in Figure 12 on page 52.

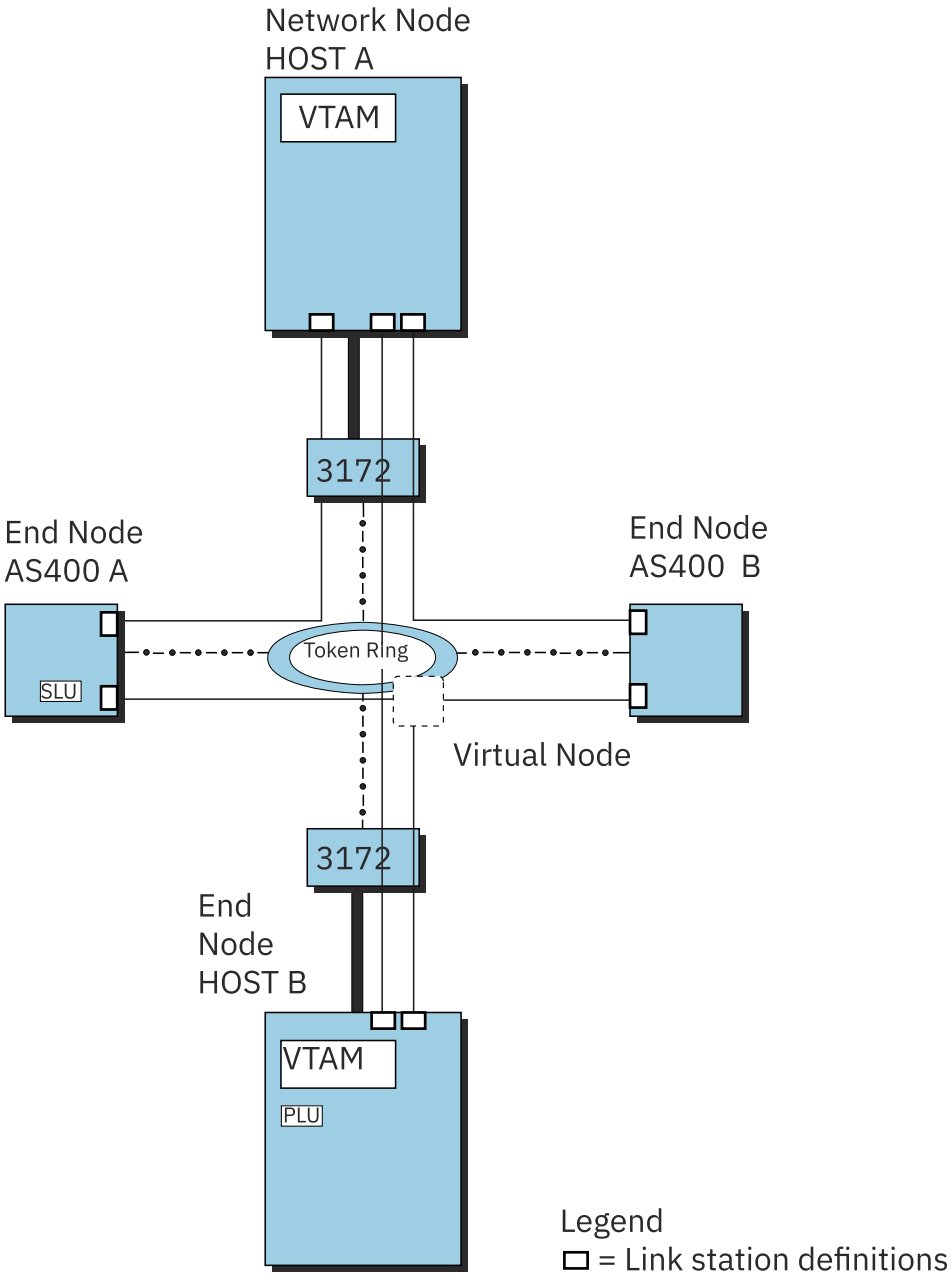

Figure 12. VTAM attachment to a connection network through a 3172

An XCA major node is used to define this connection. The two XCA major nodes that follow 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.

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. Because it was not coded in this case, the default TG profile definition is used. VTAM, therefore, uses the token ring profile provided by IBM, because MEDIUM=RING. See z/OS Communications Server: SNA 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. Because 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.

For more information about defining connections to connection networks through the IBM 3172 Nways Interconnect Controller, see the z/OS Communications Server: SNA Network Implementation Guide.

```
*  =====&gt; BEGINNING OF DATA SET XB1RBC6A
*********************************************************************
*   XB1RBC6  - VTAM 3172 XCA Major Node                             *
*********************************************************************
XTRBC6   VBUILD  TYPE=XCA         ** EXTERNAL COMMUNICATION ADAPTER **
PORTR6   PORT    MEDIUM=RING,     ** LAN TYPE                      ** *
                 ADAPNO=0,        ** 3172 RELATIVE ADAPTER NUMBER  ** *
                 SAPADDR=8,       ** SERVICE ACCESS POINT ADDRESS  ** *
                 CUADDR=BC6,      ** CHANNEL UNIT ADDRESS          ** *
                 TIMER=90,        ** CHANNEL ACTIVATE RESP TIME    ** *
                 CAPACITY=8K,     ** TG LINK CAPACITY (BITS PER SEC)** *
                 COSTBYTE=0,      ** TG COST PER BYTE TRANSMITTED  ** *
                 COSTTIME=0,      ** TG COST PER UNIT OF TIME      ** *
                 PDELAY=TERRESTR, ** TG MAXIMUM PROPAGATION DELAY  ** *
                 SECURITY=UNSECURE, ** TG SECURITY LEVEL           ** *
                 VNNAME=CN3172,   ** CPNAME OF CONNECTION NETWORK  ** *
                 VNGROUP=GP1RC0   ** NAME OF GROUP FOR CONN. NETWORK**
**
GP1RC0   GROUP   DIAL=YES,                                          *
                 ISTATUS=INACTIVE,                                  *
                 ANSWER=ON,                                         *
                 CALL=INOUT,                                        *
                 DYNPU=YES,                                         *
                 DYNPUPFX=U3
L1RC01   LINE
P1RC01   PU
L1RC02   LINE
P1RC02   PU
L1RC03   LINE
P1RC03   PU
L1RC04   LINE
P1RC04   PU
L1RC05   LINE
P1RC05   PU
*********************************************************************
*  =====&gt; END OF DATA SET XB1RBC6A
```

```
*  =====&gt; BEGINNING OF DATA SET X01RBC4B
*********************************************************************
*   X01RBC4  - VTAM 3172 XCA Major Node                             *
*********************************************************************
XTRBC4   VBUILD  TYPE=XCA         ** EXTERNAL COMMUNICATION ADAPTER **
PORTR4   PORT    MEDIUM=RING,     ** LAN TYPE                      ** *
                 ADAPNO=0,        ** 3172 RELATIVE ADAPTER NUMBER  ** *
                 SAPADDR=4,       ** SERVICE ACCESS POINT ADDRESS  ** *
                 CUADDR=BC4,      ** CHANNEL UNIT ADDRESS          ** *
                 TIMER=90,        ** CHANNEL ACTIVATE RESP TIME    ** *
                 VNNAME=CN3172,   ** CPNAME OF CONNECTION NETWORK  ** *
                 VNGROUP=GP1RC0   ** NAME OF GROUP FOR CONN. NETWORK**
**
GP1RC0   GROUP   DIAL=YES,                                          *
                 ISTATUS=INACTIVE,                                  *
                 ANSWER=ON,                                         *
                 CALL=INOUT,                                        *
                 DYNPU=YES,                                         *
                 DYNPUPFX=U4,                                       *
```

```
                  AUTOGEN=(6,L,P)
L1RC01   LINE
P1RC01   PU
L1RC02   LINE
P1RC02   PU
L1RC03   LINE
P1RC03   PU
L1RC04   LINE
P1RC04   PU
L1RC05   LINE
P1RC05   PU
*  =====&gt; END OF DATA SET X01RBC4B
```

XCA major node definitions for ATM support

The sample XCA major nodes for the DIAL SVC ATM follow. See "Using XCA over an IBM S/390 OSA between APPN nodes" on page 90 for the corresponding switched major nodes for the DIAL SVC ATM. Figure 13 on page 54 shows a basic ATM configuration enabling HPR APPN communication in native mode.

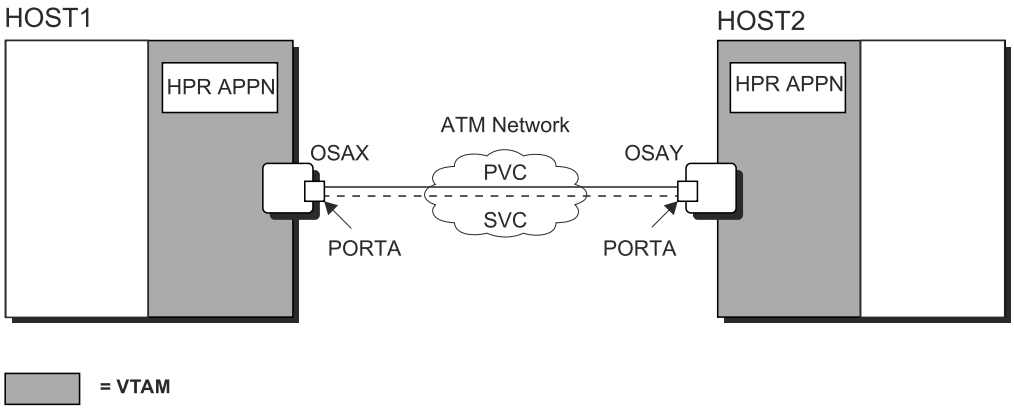

Figure 13. Basic ATM configuration

XCA major node for OSA port for DIAL SVCS for ICN SSCP1A

```
XCAOSA1A VBUILD  TYPE=XCA
PORTOSA1 PORT    MEDIUM=ATM,PORTNAME=OSAXA
*
GP121    GROUP   DIAL=YES,ISTATUS=INACTIVE,CALL=INOUT,                X
               DYNPU=YES
L1N12L1  LINE
P1N12L1  PU
L1N12L2  LINE
P1N12L2  PU
L1N12L3  LINE
P1N12L3  PU
L1N12L4  LINE
P1N12L4  PU
L1N12L5  LINE
P1N12L5  PU
L1N12L6  LINE
P1N12L6  PU
*
GP1A1    GROUP   DIAL=YES,ANSWER=ON,ISTATUS=INACTIVE,CALL=INOUT,       X
               DYNPU=YES
L1N1AL1  LINE
P1N1AL1  PU
L1N1AL2  LINE
P1N1AL2  PU
*
GP171    GROUP   DIAL=YES,ISTATUS=INACTIVE,CALL=INOUT,                X
               DYNPU=YES
L1N17L1  LINE
P1N17L1  PU
L1N17L2  LINE
P1N17L2  PU
*
```

XCA major node for OSA port for DIAL SVCS for ICN SSCP2A

```
XCAOSA2A VBUILD  TYPE=XCA
PORTOSA1 PORT    MEDIUM=ATM,PORTNAME=OSAYA
*
GP211    GROUP   DIAL=YES,ISTATUS=INACTIVE,CALL=INOUT,                X
               DYNPU=YES
L1N21L1  LINE
P1N21L1  PU
L1N21L2  LINE
P1N21L2  PU
L1N21L3  LINE
P1N21L3  PU
L1N21L4  LINE
P1N21L4  PU
L1N21L5  LINE
P1N21L5  PU
L1N21L6  LINE
P1N21L6  PU
*
GP2A1    GROUP   DIAL=YES,ANSWER=ON,ISTATUS=INACTIVE,CALL=INOUT,       X
               DYNPU=YES
L1N2AL1  LINE
P1N2AL1  PU
L1N2AL2  LINE
P1N2AL2  PU
*
GP271    GROUP   DIAL=YES,ISTATUS=INACTIVE,CALL=INOUT,                X
               DYNPU=YES
L1N27L1  LINE
P1N27L1  PU
L1N27L2  LINE
P1N27L2  PU
*
```

Connecting to a connection network ATM

In the following example, DELAY is still equal to *t*, but before *t* expires and after four messages arrive at the NCP, an outbound message (M') is sent form VTAM to NCP. In this case, four messages are sent to the host with no attention interrupts generated. This is the ideal case, in terms of saving instructions executed in the host.

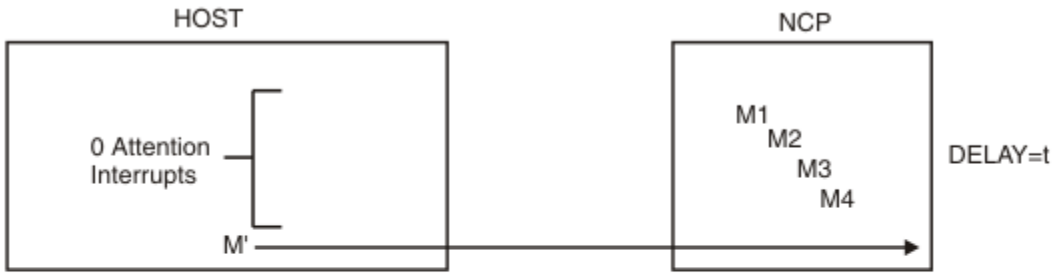

Figure 14. ATM configuration with a connection network

The sample XCA major nodes for the Connection Network follow. See "Using XCA over an IBM S/390 OSA for connection network" on page 91 for the corresponding switched major nodes for the Connection Network.

XCA major node for connection network for EN SSCP1A

```
*
XCAOSA1A VBUILD  TYPE=XCA
PORTOSA1 PORT    MEDIUM=ATM,PORTNAME=OSAXA
*
GP121    GROUP   DIAL=YES,ISTATUS=INACTIVE,CALL=INOUT,                X
               DYNPU=YES
L1N12L1  LINE
P1N12L1  PU
L1N12L2  LINE
P1N12L2  PU
L1N12L3  LINE
P1N12L3  PU
L1N12L4  LINE
P1N12L4  PU
L1N12L5  LINE
P1N12L5  PU
L1N12L6  LINE
P1N12L6  PU
*
GP1A1    GROUP   DIAL=YES,ANSWER=ON,ISTATUS=INACTIVE,CALL=INOUT,      X
               DYNPU=YES
L1N1AL1  LINE
P1N1AL1  PU
L1N1AL2  LINE
P1N1AL2  PU
*
GP171    GROUP   DIAL=YES,ISTATUS=INACTIVE,CALL=INOUT,                X
               DYNPU=YES
L1N17L1  LINE
P1N17L1  PU
L1N17L2  LINE
P1N17L2  PU
*
* Connection Network
*
GP121C   GROUP DIAL=YES,ISTATUS=INACTIVE,ANSWER=ON,CALL=INOUT,        X
               DLCADDR=(1,C,ATMSVC,NETA.SSCPVN,EXCLUSIVE),           X
               DLCADDR=(7,BCD,03,00,00004000,00004000,00005360,00),  X
               DLCADDR=(8,X,00,03),                                  X
               DYNPU=YES,                                            X
               COSTTIME=0,COSTBYTE=0,SECURITY=UNSECURE,              X
               PDELAY=NEGLIGIB,CAPACITY=32M
*
L1N12L1C LINE
P1N12L1C PU
P1N12L2C LINE
P1N12L2C PU
P1N12L3C LINE
P1N12L3C PU
```

XCA major node for connection network ATM for EN SSCP2A

```
XCAOSA2A VBUILD  TYPE=XCA
PORTOSA1 PORT    MEDIUM=ATM,PORTNAME=OSAYA
*
GP211    GROUP   DIAL=YES,ISTATUS=INACTIVE,CALL=INOUT,                X
               DYNPU=YES
L1N21L1  LINE
P1N21L1  PU
L1N21L2  LINE
P1N21L2  PU
L1N21L3  LINE
P1N21L3  PU
L1N21L4  LINE
P1N21L4  PU
L1N21L5  LINE
P1N21L5  PU
L1N21L6  LINE
P1N21L6  PU
*
GP2A1    GROUP   DIAL=YES,ANSWER=ON,ISTATUS=INACTIVE,CALL=INOUT,      X
               DYNPU=YES
L1N2AL1  LINE
P1N2AL1  PU
L1N2AL2  LINE
P1N2AL2  PU
```

```
*
GP271    GROUP   DIAL=YES,ISTATUS=INACTIVE,CALL=INOUT,                X
               DYNPU=YES
L1N27L1  LINE
P1N27L1  PU
L1N27L2  LINE
P1N27L2  PU
*
* Connection Network
*
GP211C   GROUP DIAL=YES,ISTATUS=INACTIVE,ANSWER=ON,CALL=INOUT,        X
               DLCADDR=(1,C,ATMSVC,NETA.SSCPVN,EXCLUSIVE),           X
               DLCADDR=(7,BCD,03,00,00004000,00004000,00005360,00),  X
               DLCADDR=(8,X,00,03),                                  X
               DYNPU=YES,                                            X
               COSTTIME=0,COSTBYTE=0,SECURITY=UNSECURE,              X
               PDELAY=NEGLIGIB,CAPACITY=32M
*
L1N21L1C LINE
P1N21L1C PU
L1N21L2C LINE
P1N21L2C PU
L1N21L3C LINE
P1N21L4C PU
```

XCA major node for connection network ATM for NN SSCPAA

```
XCAOSAAA VBUILD  TYPE=XCA
PORTOSA5 PORT    MEDIUM=ATM,PORTNAME=OSAZA
*
GPA15    GROUP   DIAL=YES,ISTATUS=INACTIVE,CALL=INOUT,                X
               DYNPU=YES
L5NA1L1  LINE
P5NA1L1  PU
L5NA1L2  LINE
P5NA1L2  PU
L5NA1L3  LINE
P5NA1L3  PU
L5NA1L4  LINE
P5NA1L4  PU
L5NA1L5  LINE
P5NA1L5  PU
L5NA1L6  LINE
P5NA1L6  PU
*
GPA25    GROUP   DIAL=YES,ANSWER=ON,ISTATUS=INACTIVE,CALL=INOUT,       X
               DYNPU=YES
L5NA2L1  LINE
P5NA2L1  PU
L5NA2L2  LINE
P5NA2L2  PU
*
GPA75    GROUP   DIAL=YES,ISTATUS=INACTIVE,CALL=INOUT,                X
               DYNPU=YES
L5NA7L1  LINE
P5NA7L1  PU
L5NA7L2  LINE
P5NA7L2  PU
*
* Connection Network
*
GP211C   GROUP DIAL=YES,ISTATUS=INACTIVE,ANSWER=ON,CALL=INOUT,        X
               DLCADDR=(1,C,ATMSVC,NETA.SSCPVN,EXCLUSIVE),           X
               DLCADDR=(7,BCD,03,00,00004000,00004000,00005360,00),  X
               DLCADDR=(8,X,00,03),                                  X
               DYNPU=YES,                                            X
               COSTTIME=0,COSTBYTE=0,SECURITY=UNSECURE,              X
               PDELAY=NEGLIGIB,CAPACITY=32M
*
L1N21L1C LINE
P1N21L1C PU
L1N21L2C LINE
P1N21L2C PU
L1N21L3C LINE
P1N21L4C PU
```

Connecting to APPN nodes using Enterprise Extender (EE)

Enterprise Extender connectivity requires a combination of definitions, including XCA and switched major nodes. The connectivity also depends on various VTAM start options and TCPIP definition statements. Other major node definitions (like MODELs and TRLs) are also useful in some cases. A complete set of Enterprise Extender samples is provided in Appendix A, “Enterprise Extender examples ,” on page 143.

Automatic generation of lines and physical units

To enable VTAM to automatically generate lines and physical units on an external communication adapter major node, code the AUTOGEN operand on the GROUP definition statement of the external communication adapter major nodes where DIAL=YES has been specified. Thus, the lines and PUs do not need to be explicitly coded. For information about the naming conventions used for the lines and physical units, see the z/OS Communications Server: SNA Resource Definition Reference.

The following definitions were extracted from the sample “XCA major node for host A500 (token-ring LAN)” on page 47. 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 A* 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 about the AUTOGEN operand, see the z/OS Communications Server: SNA Resource Definition Reference.

Chapter 7. Local non-SNA major node

This topic 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 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.

Guideline: 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 z/OS Communications Server: SNA Network Implementation Guide.

Sample local non-SNA major node definition

Following is an example of 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, to a central directory server, or both.

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 should be 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 that follows illustrates how the REGISTER operand can be used.

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

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

While VTAM is running, you can change the registration of local non-SNA resources in an APPN network by using the MODIFY RESOURCE command. For more information, see the z/OS Communications Server: SNA Operation.

Chapter 8. Local SNA major node

This topic describes sample local SNA major node definitions.

A local SNA major node defines a set of channel-attached (local) SNA cluster controllers.

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.

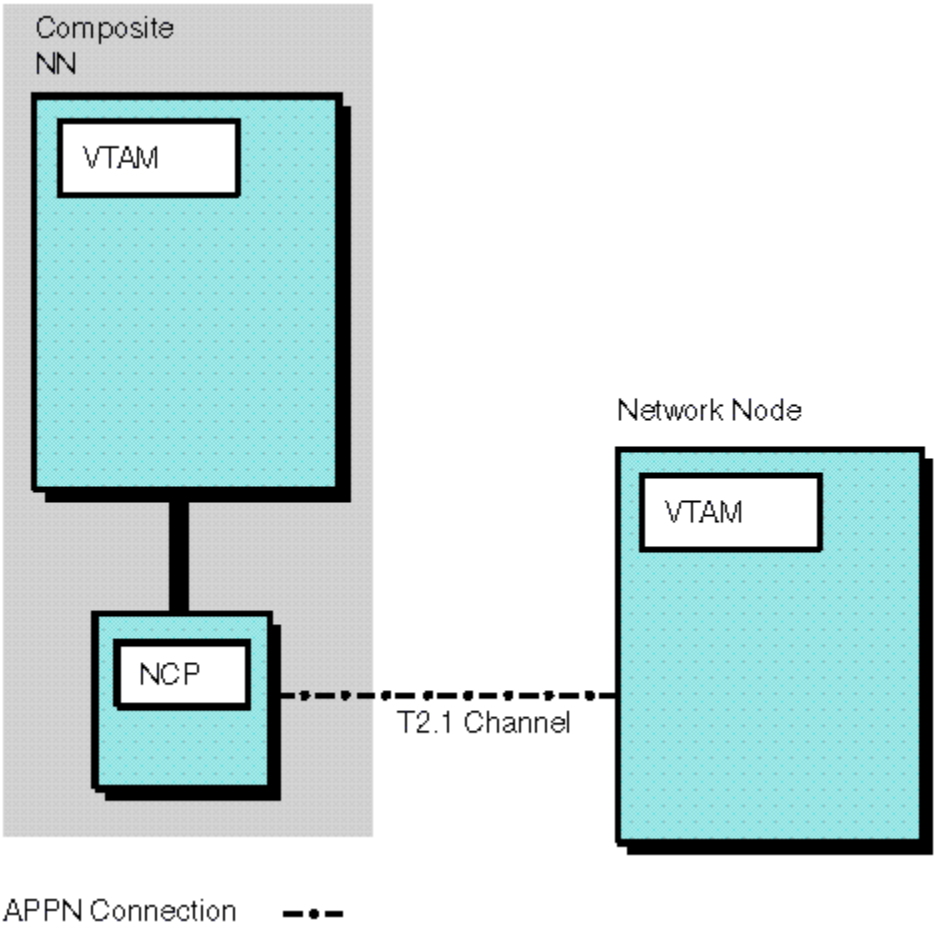

Figure 15. Type 2.1 channel connection between a composite network node and a network node

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 example that follows is from the local SNA major node for this connection.

```
*********************************************************************
* 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,          *
                VPACING=0,SSCPFM=USSSCS,MAXBFRU=15,                    *
                CONNTYPE=APPN,CPCP=YES
```

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

```
*  =====&gt; 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          **
*  =====&gt; END OF DATA SET LCL011
```

APPN host-to-host channel connection

APPN host-to-host channel connections enable two VTAM nodes to communicate by using APPN protocols over MPC connections, as illustrated in Figure 23 on page 96.

To define an APPN host-to-host connection, you must define the following at each of the two VTAM nodes:

- A transport resource list (TRL) major node. For more information, see Chapter 12, “Transport resource list major node,” on page 95.
- The channel connection to the adjacent VTAM as an APPN PU by using the TRLE operand in a PU definition statement of 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 local SNA major nodes example that follows show transport resource list element (TRLE) definitions for the two hosts in Figure 23 on page 96. 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,                                       *
                XID=YES,                                                *
                CONNTYPE=APPN,                                          *
                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,                                              *
                ISTATUS=INACTIVE,                                       *
                XID=YES,                                                *
                CONNTYPE=APPN,                                          *
                CPCP=YES
```

Selective deactivation of idle LU 6.2 sessions

In the example that follows, which is used in the configuration depicted in Figure 3 on page 9, Type 2.1 node B28CCNPU is defined as a limited resource (LIMRES=YES). That means that any LU 6.2 sessions that traverse B28CCNPU (except for LU 6.2 sessions that the VTAM CP is using) 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” on page 9.

```
*********************************************************************
* 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
*********************************************************************
```

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 that contains the logical units powers on, rather than during major node activation. See Figure 16 on page 64.

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.

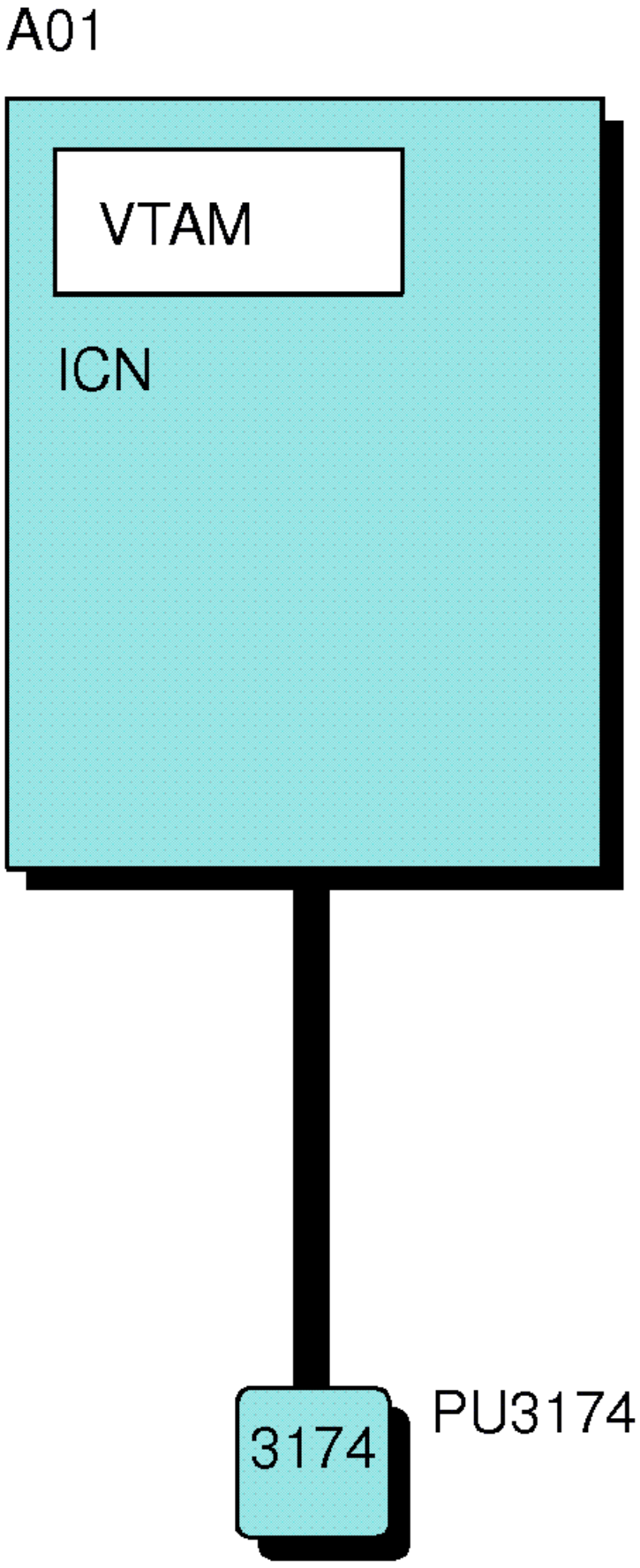

Figure 16. Dynamic definition of dependent LUs

For more information about this function, including the process VTAM follows to dynamically define dependent logical units, see the z/OS Communications Server: SNA 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 9, “LU group major node,” on page 71.

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.

```
*  =====&gt; 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                 **
*  =====&gt; END OF DATA SET A01LSNA
```

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 about how the NATIVE operand is used in local SNA major nodes, see the z/OS Communications Server: SNA Resource Definition Reference.

The example local SNA major node that follows 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,          *
                VPACING=0,SSCPFM=USSSCS,MAXBFRU=15,NATIVE=NO,          *
                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 about the BN start option, see “Start option list with border node support” on page 117.

Authorized transmission priority for LEN connections

In the LSNA3A2 local SNA major node that follows, AUTHLEN=YES specifies that a session between two independent LUs through a subarea network uses the same transmission priority for both type 2.1 LEN connections (entry and exit). AUTHLEN can be specified only 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,           *
                VPACING=0,SSCPFM=USSSCS,MAXBFRU=15,                    *
                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
```

High-Performance Routing

High-Performance Routing (HPR) allows you to migrate NCP connections to APPN connections without incurring the associated increase in storage and cycles. HPR uses a rapid transport protocol (RTP) connection to transport session traffic between session endpoints. HPR routes can also traverse an existing subarea network, as HPR support provides for the mapping of HPR routes over VR-based TGs between intermediate nodes.

HPR support is available only over APPN host-to-host channel (AHHC) connections and other type 2.1 channel connections. HPR support for APPN host-to-host connections is not available for composite network nodes.

High-Performance Routing over AHHC connections

You can implement High-Performance Routing over an APPN host-to-host channel (AHHC) connection, as depicted in Figure 23 on page 96.

For example, to implement an HPR route between network nodes SSCP1A and SSCP2A, specify HPR=YES on the PU definition statement in the local SNA major nodes on both sides of the connection, and specify HPR=RTP in the VTAM start option lists in both nodes. HPR=YES is the default value when the start option is HPR=RTP. On SSCP1A the local SNA major node is defined as follows:

```
*********************************************************************
*
*  Name:     LSAHHC1A SAMPLE_A
*
*  Description: LOCAL SNA MAJOR NODE FOR APPN HHC (SSCP1A)
*
*********************************************************************
LSAHHC1A VBUILD TYPE=LOCAL
PU1A2A2  PU     TRLE=ML1A2A2,ISTATUS=INACTIVE,XID=YES,VPACING=0,       *
                SSCPFM=USSSCS,CONNTYPE=APPN,CPCP=YES,HPR=YES
```

On the SSCP2A side of the connection the local SNA major node is defined as follows:

```
*********************************************************************
*
*  Name:     LSAHHC2A SAMPLE_A
*
*  Description:  LOCAL SNA MAJOR NODE FOR APPN HHC (SSCP2A)
*
*********************************************************************
LSAHHC2A VBUILD TYPE=LOCAL
PU2A1A2  PU     TRLE=ML2A1A2,ISTATUS=INACTIVE,XID=YES,VPACING=0,       *
                SSCPFM=USSSCS,CONNTYPE=APPN,CPCP=YES,HPR=YES
```

In addition, you must define transport resource list major nodes on both sides of the connection.

For more information about the start option requirements, see “Network node start option list” on page 109.

High-Performance Routing over channel connections

You can implement High-Performance Routing over a configuration consisting of a channel-attached NCP and local SNA connections, as depicted in Figure 17 on page 67.

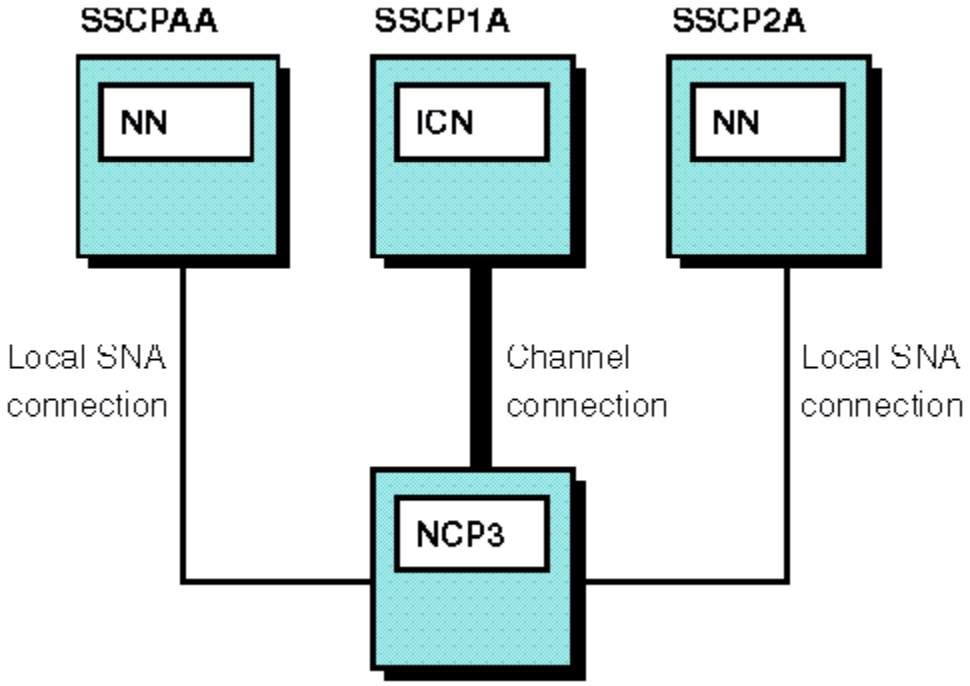

Figure 17. High-Performance Routing over channel connections

In this configuration, SSCPAA and SSCP2A are endpoints of an HPR route and SSCP1A provides intermediate node ANR routing. This configuration implements High-Performance Routing by default because HPR=YES is the default value for PUs defined as 2.1 nodes when the connections are not to or from VTAM in a composite network node.

Following is an illustration of the local SNA major nodes. Note that YES is the HPR default value.

```
*--------------------------------------------------------------------*
*               LOCAL SNA MAJOR NODE LSNA3AA                         *
*                                                                    *
* 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,          *
               VPACING=0,SSCPFM=USSSCS,MAXBFRU=15,                    *
               CONNTYPE=APPN,CPCP=YES,HPR=YES
APPL2    LU    LOCADDR=00,MODETAB=ISTINCLM,DLOGMOD=INTERACT
NETAPPL2 LU    LOCADDR=00,MODETAB=ISTINCLM,DLOGMOD=INTERACT
L3A4956A LU    LOCADDR=00,MODETAB=ISTINCLM,DLOGMOD=D4A32781
L3A3767A LU    LOCADDR=00,MODETAB=ISTINCLM,DLOGMOD=D4A32782
ECHOB12  LU    LOCADDR=00,MODETAB=ISTINCLM,DLOGMOD=INTERACT
ECHOC12  LU    LOCADDR=00,MODETAB=ISTINCLM,DLOGMOD=INTERACT
```

```
*--------------------------------------------------------------------*
* THE FOLLOWING IS A DEFINITION FOR CHANNEL ATTACHED PU 2.1          *
* THE CONNECTION IS BETWEEN SUBAREAS 3 (NCP3AXX) AND 2 (SSCP2A)      *
*--------------------------------------------------------------------*
LSNA3A2  VBUILD TYPE=LOCAL
LSNA3APU PU    PUTYPE=2,CUADDR=051,ISTATUS=INACTIVE,XID=YES,          *
               VPACING=0,SSCPFM=USSSCS,MAXBFRU=15,                    *
               CONNTYPE=APPN,CPCP=YES,HPR=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
```

See "Network node start option list" on page 109 and "Interchange node start option list" on page 113 for information about how to code VTAM start options for High-Performance Routing.

High-Performance Routing over CDLC and leased SDLC connections

You can implement High-Performance Routing over CDLC and leased SDLC connections, as depicted in Figure 18 on page 68.

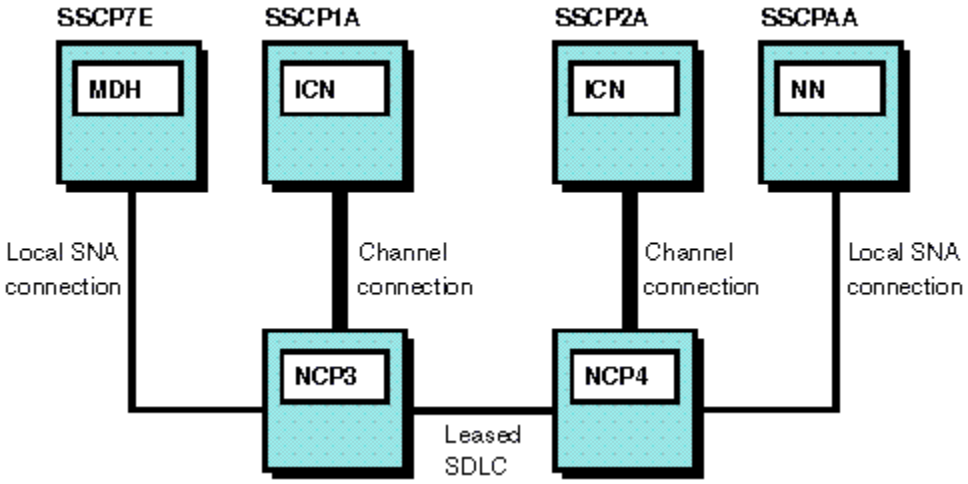

Figure 18. High-Performance Routing over channel and leased SDLC connections

In the following local SNA major nodes, HPR=YES is coded on the PU definition statements for LSNA3AP7 and LSNA4APA. This operand specifies that those PUs provide HPR support.

```
*------------------------------------------------------------------------*
* THE FOLLOWING IS A DEFINITION FOR CHANNEL ATTACHED PU 2.1              *
* THE CONNECTION IS BETWEEN SUBAREAS 3 (NCP3AXX) AND 7 (SSCP7B)         *
*------------------------------------------------------------------------*
LSNA3A7  VBUILD TYPE=LOCAL
LSNA3AP7 PU    PUTYPE=2,CUADDR=052,ISTATUS=INACTIVE,XID=YES,             *
               VPACING=0,SSCPFM=USSSCS,MAXBFRU=15,                       *
               CONNTYPE=APPN,CPCP=YES,HPR=YES
APPL2    LU    LOCADDR=00,MODETAB=ISTINCLM,DLOGMOD=INTERACT
NETAPPL2 LU    LOCADDR=00,MODETAB=ISTINCLM,DLOGMOD=INTERACT
L3A4956A LU    LOCADDR=00,MODETAB=ISTINCLM,DLOGMOD=D4A32781
L3A3767A LU    LOCADDR=00,MODETAB=ISTINCLM,DLOGMOD=D4A32782
ECHOC12  LU    LOCADDR=00,MODETAB=ISTINCLM,DLOGMOD=INTERACT
```

```
*------------------------------------------------------------------------*
* THE FOLLOWING IS A DEFINITION FOR CHANNEL ATTACHED PU 2.1              *
* THE CONNECTION IS BETWEEN SUBAREAS 4 (NCP4AXX) AND A (SSCPAA)         *
*------------------------------------------------------------------------*
LSNA4AA  VBUILD TYPE=LOCAL
LSNA4APA PU    PUTYPE=2,CUADDR=054,ISTATUS=INACTIVE,XID=YES,             *
               VPACING=0,SSCPFM=USSSCS,MAXBFRU=15,                       *
               CONNTYPE=APPN,CPCP=YES,HPR=YES
APPL2    LU    LOCADDR=00,MODETAB=ISTINCLM,DLOGMOD=INTERACT
NETAPPL2 LU    LOCADDR=00,MODETAB=ISTINCLM,DLOGMOD=INTERACT
L3A4956A LU    LOCADDR=00,MODETAB=ISTINCLM,DLOGMOD=D4A32781
L3A3767A LU    LOCADDR=00,MODETAB=ISTINCLM,DLOGMOD=D4A32782
ECHOB12  LU    LOCADDR=00,MODETAB=ISTINCLM,DLOGMOD=INTERACT
ECHOC12  LU    LOCADDR=00,MODETAB=ISTINCLM,DLOGMOD=INTERACT
```

For the corresponding requirements for the VTAM start options list, see “Network node start option list” on page 109, “Interchange node start option list” on page 113, and “Migration data host start option list” on page 116.

Chapter 9. LU group major node

This topic 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. See Figure 16 on page 64.

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.

For more information about this function, including the process VTAM follows to dynamically define dependent logical units, see the z/OS Communications Server: SNA 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.

Guideline: You cannot take advantage of the sift-down effect in the LU group major node.

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 the example in Defining subnetwork boundaries in “Dynamic definition of dependent LUs” on page 63.

Chapter 10. Model major node

This topic contains samples of model major node definitions, which you can use to dynamically define switched resources.

Dynamically defining switched resources

You can define switched peripheral nodes using either of the following:

- Dynamic PU definition (DYNPU operand)
- Dynamic switched definition facility.

This topic illustrates how you can use 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:

A type 1, 2, or 2.1 device dials in to VTAM.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.

The exit routine passes this information to VTAM.VTAM uses the information and the appropriate model definitions to build the new devices in a dynamic switched major node (ISTDSWMN).

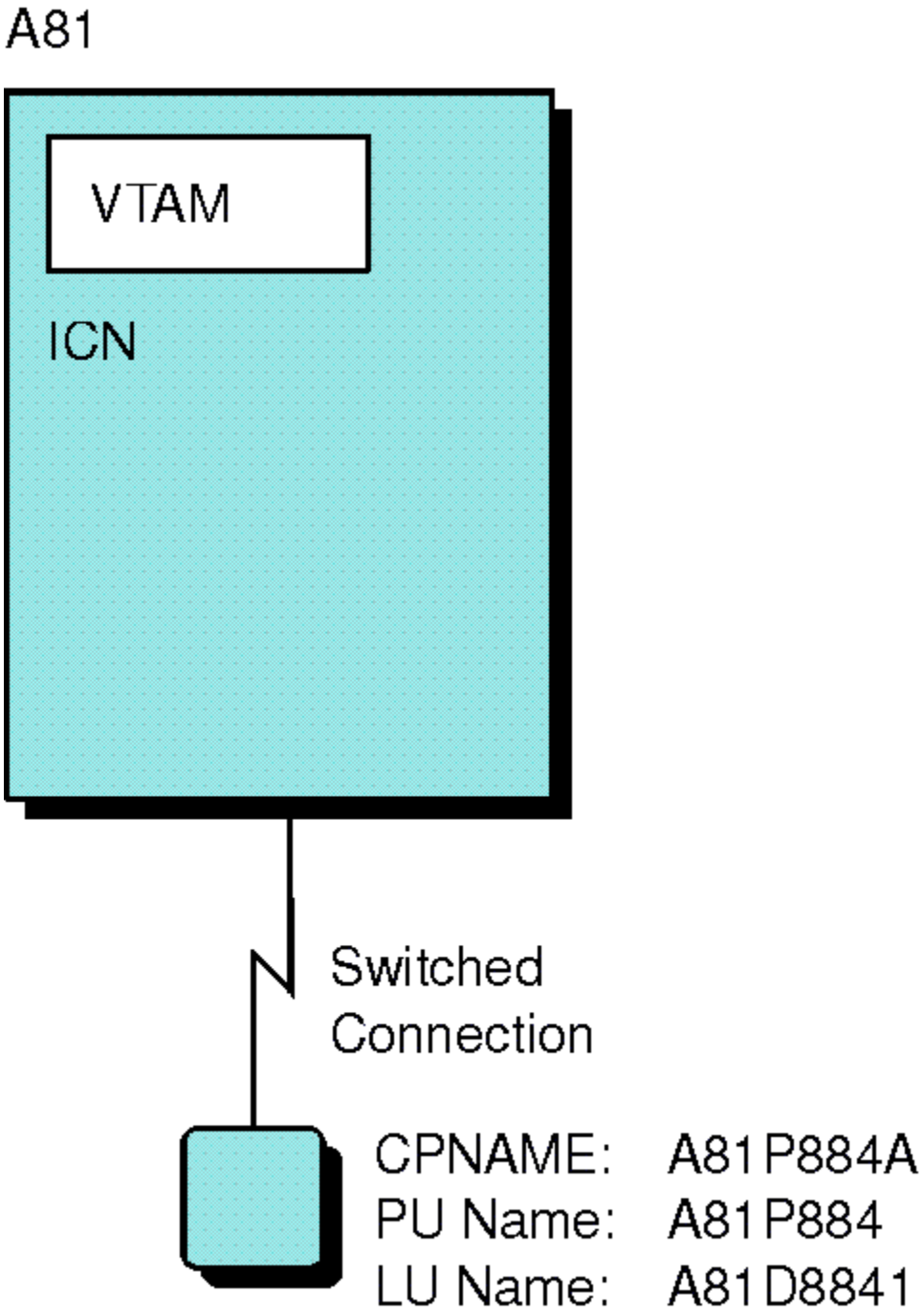

Figure 19. Dynamic definition of a switched connection

For more information about this function, see the z/OS Communications Server: SNA Network Implementation Guide.

For a sample configuration services XID exit routine, see z/OS Communications Server: SNA Customization.

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.

Guideline: In a model major node, the LU definition statements do not have to follow PU definition statements.

The model major node shown immediately that follows is used to dynamically define the switched connection depicted in Figure 19 on page 74.

```
*********************************************************************
*  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             **
```

The sample model major node that follows corresponds to the sample configuration services XID exit routine (named ISTEXCCS) provided in SYS1.SAMPLIB. 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 the z/OS Communications Server: SNA Network Implementation Guide

Defining models for dynamic network connections

In addition to the previous definitions, you can use a model major node to define models for local SNA or switched PU representations of dynamic connections to other nodes in the network. For example, you can define model PUs that represent the following types of connections:

- PUs created to represent XCF connections between two nodes in a sysplex
- PUs created to represent connections to other APPN nodes across a connection network (virtual routing node)
- PUs created to represent HPR connections to other APPN nodes
- PUs created to represent Enterprise Extender connections to other Enterprise Extender nodes

Restriction: Only one instance of each type of these four models can be in effect (active) at any given time.

The following example expands the A81MODEL model definition, to include the additional types of possible definitions:

```
MODELVN  VBUILD TYPE=MODEL
*********************************************************************
* SAMPLE OF THE FIVE DIFFERENT DEFINITIONS THAT ARE ALLOWED
* BY VTAM FOR DYNAMIC PUS.
* 1. MODELPU - DEFAULT MODEL FOR DYNAMIC PUS. THIS WILL BE USED IF
*              NONE OF THE DEFINITIONS BELOW APPLY.  A CONFIGURATION
*              SERVICES EXIT MUST BE ACTIVE TO USE THIS MODEL.
* 2  DYNXCF  - MODEL FOR XCF DYNAMIC PUS
* 3. DYNCN   - MODEL FOR CONNECTION NETWORK DYNAMIC PUS
* 4. DYNRTP  - MODEL FOR HPR DYNAMIC PUS
* 5. DYNEE   - MODEL FOR ENTERPRISE EXTENDER DYNAMIC PUS
*
*********************************************************************
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              **
XCFP*    PU   DYNTYPE=XCF,TRLE=XCFT*
DYNCN    PU   DYNTYPE=VN,DISCNT=NO
DYNRTP   PU   DYNTYPE=RTP,DISCNT=NO,CPCP=YES
DYNEE    PU   DYNTYPE=EE,DWINOP=YES,REDDELAY=30,REDIAL=3,DISCNT=NO,       X
               TGN=(11,8,15,ANY)
```

Defining a PU and an LU for the configuration services XID exit routine

With the configuration services XID exit routine, you can 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, the following occurs:

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.

Following is a sample CPNDEF definition file for the connection shown in Figure 19 on page 74, 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 z/OS Communications Server: SNA Customization.

Authorized transmission priority for LEN connections

In the sample model major node in Defining a model major node for XCF in "Defining a model major node" on page 74, 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 can be specified only where node type 2.1 is specified and where the connection is attempted as an APPN connection.

Limiting sessions for switched resources

In the sample model major node in "Defining a model major node" on page 74, MAXSESS=2 specifies that the maximum number of concurrent LU-LU sessions in which an independent LU on MODELPU can participate is two.

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 "Defining a model major node" on page 74, NATIVE=NO on the PU definition statement for MODELPU indicates that MODELPU represents a connection to a non-native node. The NATIVE operand is required on only one side of a network or subnetwork boundary.

Chapter 11. Switched major node

This topic contains sample switched major node definitions for various types of switched connections.

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.

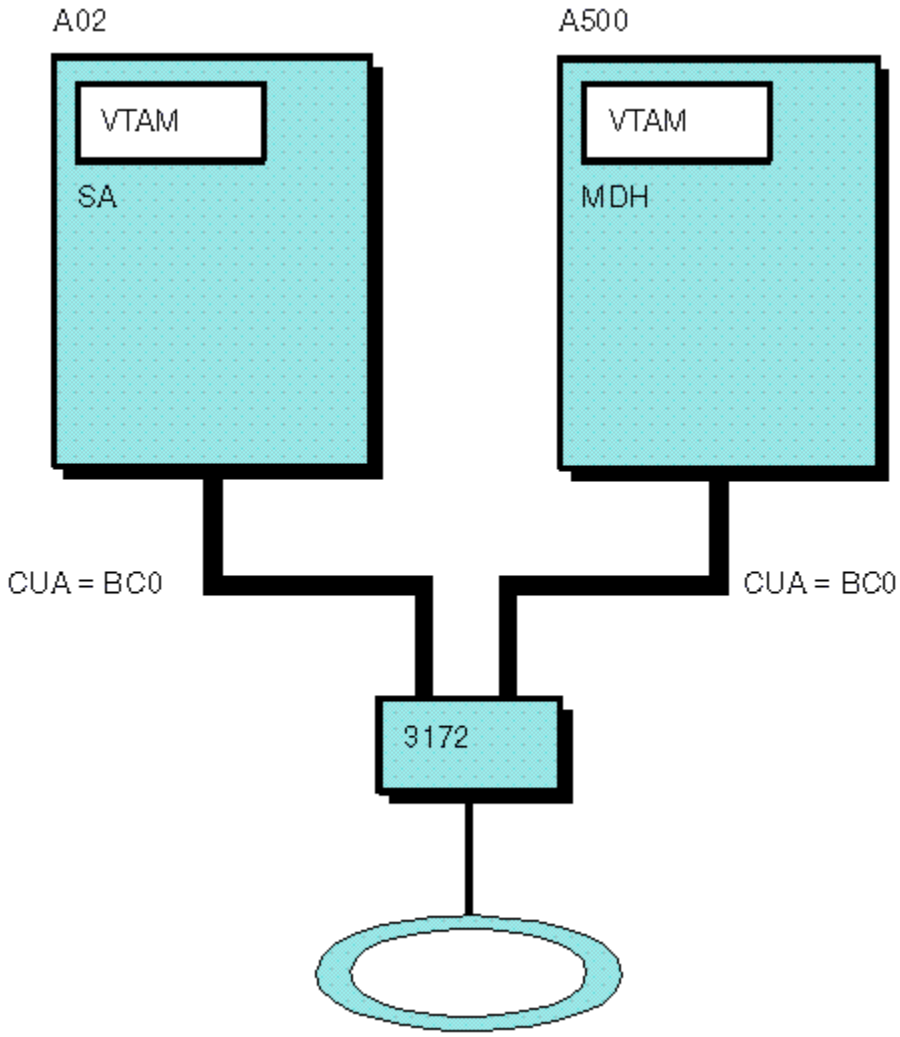

Figure 20. LAN support through an IBM 3172

The switched major node that follows, together with the external communication adapter major node in “XCA major node for host A02 (token-ring LAN)” on page 46, 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.

```
*  =====&gt; 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
*  =====&gt; END OF DATA SET SWPS2
```

To permit the establishment of an 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)” on page 45.

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” on page 51 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 follow.

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 for network node SSCP1A” on page 51).

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
*
```

Authorized transmission priority for LEN connections

In the A81SMNCP switched major node that follows, 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 can be specified only where type 2.1 is specified and the connection is to be attempted as an APPN connection. AUTHLEN=YES is the default value.

```
*  =====> 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
```

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.

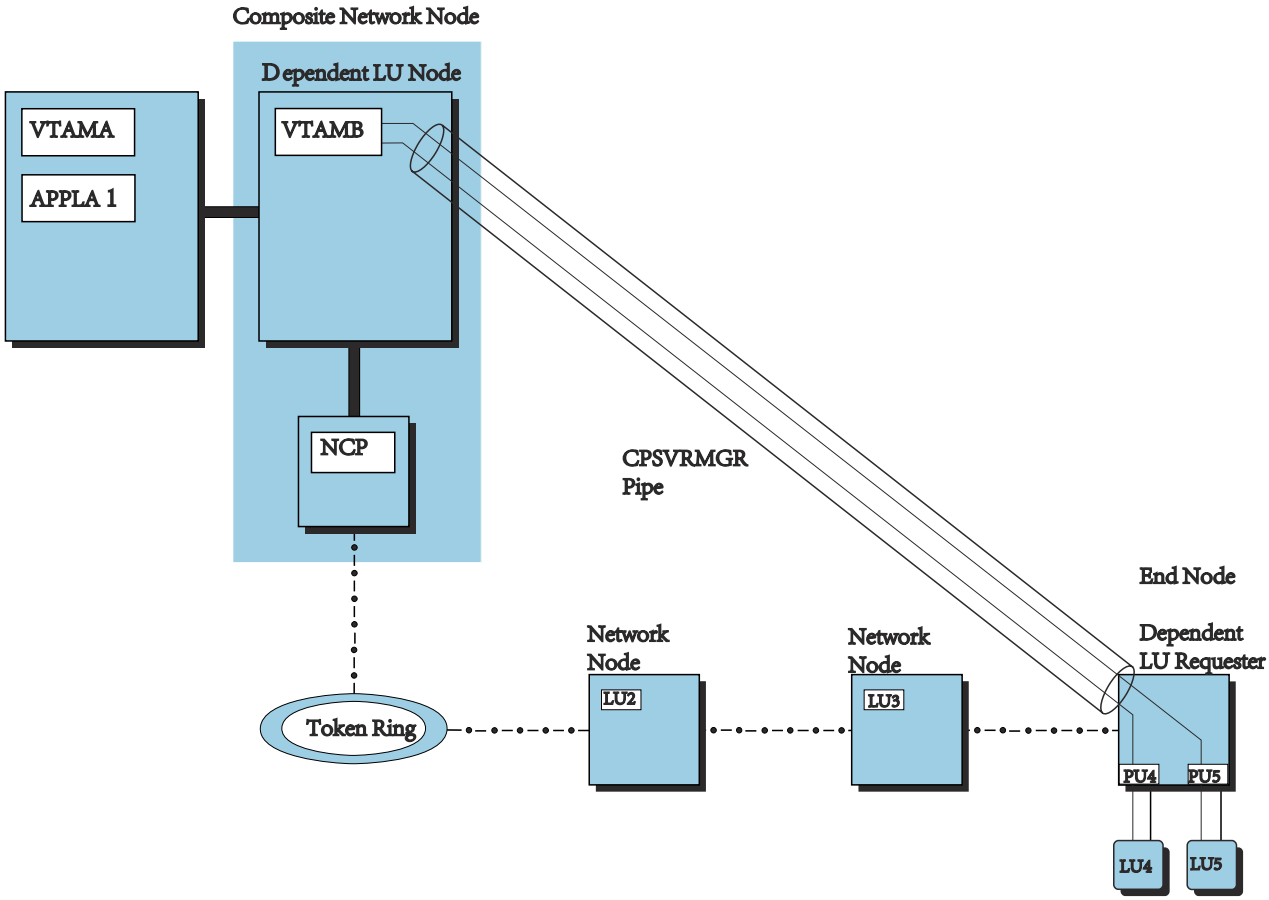

Figure 21. VTAM functioning as a dependent LU server

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.

Figure 21 on page 82 shows an example of a nonadjacent DLUS-DLUR configuration.

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 about this facility, see the z/OS Communications Server: SNA Network Implementation Guide. Alternatively, you can code a switched major node for the DLUR-supported PU. For instance, 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.

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 can 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 needs to be performed on the physical unit after activation.

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.

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 a configuration where the VTAM DLUS host and the Communications Manager/2 DLUR node are adjacent, the FQ_ADJACENT_CP_NAME defined on the DEFINE_LOGICAL_LINK statement in the Communications Manager/2 definitions should be the CPNAME of the VTAM that is configured as the DLUS host.

For more information about VTAM's DLUS function, see the z/OS Communications Server: SNA Network Implementation Guide.

Frame relay

For frame relay, the following excerpt from a switched major node illustrates the use of expanded dial information about 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
```

Application-supplied operands for switched connections

A physical unit is authorized to accept application-supplied dial-out information by using the ASDP operand on the PU definition statement of the switched major node.

In the sample switched major node that follows, 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 Figure 4 on page 10.

```
*  =====> 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
```

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, code the DELAY keyword and a time value (in seconds) in the range 1-65535 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. For more information, see “Subarea node start option list” on page 106.

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 SWPUAIO4 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,                          C
               MAXPATH=1,MAXDATA=256,                                  C
               PUTYPE=2,MAXOUT=1,PASSLIM=1,                            C
               ISTATUS=INACTIVE,IRETRY=NO,DISCNT=(DELAY,F),            C
               SSCPFM=USSSCS
PATHAIO1 PATH  DIALNO=PATH21A-890-3333,PID=1,GID=1,GRPNM=GP3AAIO1
SL1DAIO1 LU    LOCADDR=1,PACING=(1,1),VPACING=2,                       C
               MODETAB=MODETAB2
SL1DAIO2 LU    LOCADDR=2,                                              C
               PACING=(1,1),VPACING=2,ISTATUS=ACTIVE
SL1DAIO3 LU    LOCADDR=3,                                              C
               PACING=(1,1),VPACING=2,ISTATUS=ACTIVE
*
SWPUAIO4 PU    ADDR=04,IDBLK=004,IDNUM=00004,                          C
               MAXPATH=1,MAXDATA=256,                                  C
               PUTYPE=1,MAXOUT=1,PASSLIM=1,                            C
               ISTATUS=INACTIVE,IRETRY=NO,DISCNT=(DELAY,NF,122),       C
               SSCPFM=USSSCS
PATHAIO4 PATH  DIALNO=PATH21F-890-3333,PID=6,GID=1,GRPNM=GP3AAIO1
SL4DAIO1 LU    LOCADDR=7,PACING=(1,1),VPACING=2,                       C
               MODETAB=MODETAB2
SL4DAIO2 LU    LOCADDR=8,                                              C
               PACING=(1,1),VPACING=2,ISTATUS=ACTIVE
*
*      AUTOMATIC DIAL OUT GROUP - GP3AADO1
*
SWPUADO1 PU    ADDR=05,IDBLK=005,IDNUM=00005,                          C
               MAXPATH=1,MAXDATA=256,                                  C
               PUTYPE=2,MAXOUT=1,PASSLIM=1,                            C
               ISTATUS=INACTIVE,IRETRY=NO,DISCNT=(DELAY,F),            C
               SSCPFM=USSSCS
PATHADO1 PATH  DIALNO=PATH21A-890-3333,PID=1,GID=1,GRPNM=GP3AADO1,     C
               REDIAL=0
SL1DADO1 LU    LOCADDR=1,PACING=(1,1),VPACING=2,                       C
               MODETAB=MODETAB2
SL1DADO2 LU    LOCADDR=2,                                              C
               PACING=(1,1),VPACING=2,ISTATUS=ACTIVE
*
 .
 .
 .
```

Limiting sessions for switched resources

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 that follows, NATIVE=NO on the PU definition statement for SW1A2A indicates that SW1A2A represents a connection to the non-native node SSCP2A. In the second sample switched major node that follows, NATIVE=NO on the PU definition statement for SW2A1A indicates that SW2A1A represents a connection to the non-native 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
 .
 .
 .
*
```

High-Performance Routing

High-Performance Routing (HPR) allows the user to migrate NCP connections to APPN connections without incurring the associated increase in storage and cycles. HPR uses a rapid transport protocol (RTP) connection to transport session traffic between session endpoints. HPR routes can also traverse an existing subarea network, as HPR support provides for the mapping of HPR routes over VR-based TGs between intermediate nodes.

HPR support is available only over APPN host-to-host channel connections and other type 2.1 channel connections. To use HPR over NCP, you must have at least NCP V7R3.

To support High-Performance Routing in the configuration shown in Figure 22 on page 90, modifications must be made to the switched major nodes defined in VTAM interchange nodes SSCP1A and SSCP2A.

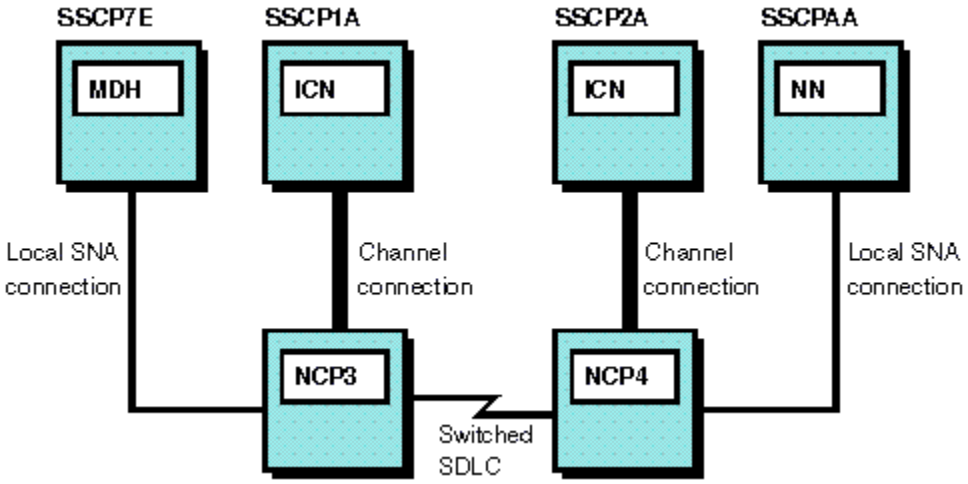

Figure 22. High-Performance Routing using switched SDLC connections

In the following excerpt from switched major node SWND3AB8, defined on SSCP1A, HPR=YES indicates that SWPUAIOA provides HPR support. LLERP=NOTPREF specifies that link-level error recovery procedures are required by this PU only if the adjacent link station requires it.

```
*--------------------------------------------------------------------
*
*  NCP SWITCHED SDLC CONNECTION TO SSCP2A
*
*--------------------------------------------------------------------
SWPUAIOA PU    ADDR=16,IDBLK=016,IDNUM=00016,CPNAME=SSCP2A,            X
               PUTYPE=2,SIMTYPE=1,                                     X
               MAXPATH=1,MAXDATA=256,MAXOUT=1,PASSLIM=1,               X
               ISTATUS=INACTIVE,IRETRY=NO,DISCNT=YES,SSCPFM=USSSCS,    X
               ANS=CONTINUE,NETID=NETA,                                X
               CONNTYPE=APPN,CPCP=YES,HPR=YES,LLERP=NOTPREF
PATHAIOA PATH  DIALNO=PATH21E-890-3333,PID=5,GID=1,GRPNM=GP3AAIO2
SLAIAIO1 LU    LOCADDR=0,RESSCB=2,                                     X
               PACING=(1,1),VPACING=2,ISTATUS=ACTIVE
```

In the following excerpt from switched major node SWND4AB8, defined on SSCP2A, HPR=YES indicates that SWPU4A08 provides HPR support. LLERP=NOTPREF specifies that link-level error recovery procedures are required by this PU only if the adjacent link station requires it.

```
*--------------------------------------------------------------------
*
*  NCP SWITCHED SDLC CONNECTION TO SSCP1A
*
*--------------------------------------------------------------------
SWPU4A08 PU    ADDR=08,IDBLK=008,IDNUM=00008,CPNAME=SSCP1A,            X
               PUTYPE=2,SIMTYPE=1,                                     X
               MAXPATH=1,MAXDATA=256,MAXOUT=1,PASSLIM=1,               X
               ISTATUS=INACTIVE,IRETRY=NO,DISCNT=YES,SSCPFM=USSSCS,    X
               ANS=CONTINUE,NETID=NETA,                                X
               CONNTYPE=APPN,CPCP=YES,HPR=YES,LLERP=NOTPREF
PATH4A08 PATH  DIALNO=PATH21A-890-4008,PID=5,GID=1,GRPNM=GP4AAIO2
SL4A08I1 LU    LOCADDR=0,RESSCB=2,                                     X
               PACING=(1,1),VPACING=2,ISTATUS=ACTIVE
*
```

Using XCA over an IBM S/390 OSA between APPN nodes

VTAM accesses the ATM network through a port on the IBM S/390 Open Systems Adapter. Associated with the port are links used for permanent virtual channels (PVCs) and switched virtual channels (SVC). These PVCs and SVCs carry data across the ATM network. See Figure 13 on page 54.

Switched virtual channels represent temporary connections. They appear to VTAM as switched lines. The TGs that are assigned to them are defined in the XCA Major Node in a GROUP definition statement that specifies DIAL=YES. The SVC connections are established through a dial operation, using a PU from the switched major node, and are available for as long as the connection is desired.

Switched major node definition for SVC ATM support–HOST1A

```
SWXCA1A  VBUILD TYPE=SWNET,MAXNO=256,MAXGRP=256
*
SW12P111 PU    IDBLK=002,IDNUM=00002,MAXPATH=5,MAXDATA=256,ADDR=02,    X
               CPNAME=SSCP2A,CPCP=YES,HPR=YES,CONNTYPE=APPN,           X
               PUTYPE=2,DISCNT=(NO),TGP=SWTNET
PTH2P111 PATH  DLCADDR=(1,C,ATMSVC,EXCLUSIVE),                         X
               DLCADDR=(7,BCD,00,00,00000079,00000047,00012287,00,     X
               00000047,00000031,00016383,00),                         X
               DLCADDR=(21,X,0002,211111111111111111111111111111,     X
               11111110),                                              X
               DLCADDR=(8,X,03,03,03),                                 X
               DLCADDR=(9,X,FFFF),                                     X
               DLCADDR=(51,X,00,10,00,00,01,01),                       X
               DLCADDR=(61,BCD,00,05,00032767,00032767),               X
               GRPNM=GP121
SL12P111 LU    LOCADDR=1,ISTATUS=INACTIVE
*
```

Switched major node definition for SVC ATM support–HOST2A

```
SWXCA2A  VBUILD TYPE=SWNET,MAXNO=256,MAXGRP=256
*
SW21P111 PU    IDBLK=001,IDNUM=00001,MAXPATH=5,MAXDATA=256,ADDR=01,    X
               CPNAME=SSCP1A,CPCP=YES,HPR=YES,CONNTYPE=APPN,           X
               PUTYPE=2,DISCNT=(NO)
PTH1P111 PATH  DLCADDR=(1,C,ATMSVC,EXCLUSIVE),                         X
               DLCADDR=(7,BCD,00,00,00000079,00000047,00012287,00,     X
               00000047,00000031,00016383,00),                         X
               DLCADDR=(21,X,0002,111111111111111111111111111111,     X
               11111100),                                              X
               DLCADDR=(8,X,03,03,03),                                 X
               DLCADDR=(9,X,FFFF),                                     X
               DLCADDR=(51,X,00,10,00,00,01,01),                       X
               DLCADDR=(61,BCD,00,05,00032767,00032767),               X
               GRPNM=GP211
SL21P111 LU    LOCADDR=1,ISTATUS=INACTIVE
*
```

Using XCA over an IBM S/390 OSA for connection network

In a large configuration with many nodes connected by many SVCs, the definition of TGs can become overwhelming.

APPN's connection network function reduces this extensive TG definition for connections among multiple nodes across an ATM network. A connection network is a representation of a shared access transport facility, such as an ATM network, that handles the routing of data among the nodes communicating across the shared access transport facility. It does this by enabling the shared access transport facility to be defined as a virtual node. As a result, end nodes need to define TGs only to the virtual node and to the network node server (see Figure 14 on page 55).

Connections through connection networks occur over SVCs, which appear to VTAM as switched lines. Thus, TGs to connection networks are defined in the XCA Major Node in a GROUP definition statement that specifies DIAL=YES.

Because SVCs are associated with a port on the IBM S/390 Open Systems Adapter, TGs to connection networks are defined in the XCA major node that defines the port with which the SVCs are associated (see “Connecting to a connection network ATM” on page 55).

In the examples that follow, SSCP1A and SSCP2A can call SSCPAA to set up the CP-CP sessions, or SSCPAA can call both SSCP1A and SSCP2A to set up the CP-CP sessions (CP-CP sessions are between SSCP1A-SSCPAA and SSCP2A-SSCPAA), and also the connection network node, VNODE1.

Switched major node definitions for CN - ATM - HOST1A

```
SWXCA1A  VBUILD TYPE=SWNET,MAXNO=256,MAXGRP=256
*
SW1AP215 PU    MAXPATH=5,MAXDATA=256,ADDR=0A,                          X
               CPNAME=SSCPAA,CPCP=YES,HPR=YES,CONNTYPE=APPN,           X
               PUTYPE=2,DISCNT=(NO)
PTHAP215 PATH  DLCADDR=(1,C,ATMSVC,EXCLUSIVE),                         X
               DLCADDR=(7,BCD,00,00,00000079,00000047,00012287,00,     X
               00000047,00000031,00016383,00),                         X
               DLCADDR=(21,X,0002,511111111111111111111111111111,     X
               11111100),                                              X
               GRPNM=GP1A1
SL1AP215 LU    LOCADDR=1,ISTATUS=INACTIVE
*
GP1A2AC  GROUP DIAL=YES,ISTATUS=INACTIVE,ANSWER=ON,CALL=INOUT,         X
               DLCADDR=(1,C,ATMSVC,NETA.VNODE1,EXCLUSIVE),             X
               DLCADDR=(7,BCD,03,00,00004000,00004000,00005360,00), X
               DLCADDR=(8,X,00,03),                                    X
               DYNPU=YES
*
LN1A2AC1 LINE
P1A2AC1  PU
```

Switched major node definitions for CN - ATM - HOST2A

```
SWXCA2A  VBUILD TYPE=SWNET,MAXNO=256,MAXGRP=256
*
SW2AP215 PU    MAXPATH=5,MAXDATA=256,ADDR=0A,                          X
               CPNAME=SSCPAA,CPCP=YES,HPR=YES,CONNTYPE=APPN,           X
               PUTYPE=2,DISCNT=(NO)
PTHAP215 PATH  DLCADDR=(1,C,ATMSVC,EXCLUSIVE),                         X
               DLCADDR=(7,BCD,00,00,00000079,00000047,00012287,00,     X
               00000047,00000031,00016383,00),                         X
               DLCADDR=(21,X,0002,511111111111111111111111111111,     X
               11111100),                                              X
               GRPNM=GP2A1
SL2AP215 LU    LOCADDR=1,ISTATUS=INACTIVE
*
GP1A2AC  GROUP DIAL=YES,ISTATUS=INACTIVE,ANSWER=ON,CALL=INOUT,         X
               DLCADDR=(1,C,ATMSVC,NETA.VNODE1,EXCLUSIVE),             X
               DLCADDR=(7,BCD,03,00,00004000,00004000,00005360,00), X
               DLCADDR=(8,X,00,03),                                    X
               DYNPU=YES
*
LN1A2AC1 LINE
P1A2AC1  PU
```

Switched major node definitions for CN - ATM - HOSTAA

```
SWXCAAA  VBUILD TYPE=SWNET,MAXNO=256,MAXGRP=256
*
*
SWA1P151 PU    MAXPATH=5,MAXDATA=256,ADDR=01,                          X
               CPNAME=SSCP1A,CPCP=YES,HPR=YES,CONNTYPE=APPN,           X
               PUTYPE=2,DISCNT=(NO)
PTH1P151 PATH  DLCADDR=(1,C,ATMSVC,EXCLUSIVE),                         X
               DLCADDR=(7,BCD,00,00,00000079,00000047,00012287,00,     X
               00000047,00000031,00016383,00),                         X
               DLCADDR=(21,X,0002,111111111111111111111111111111,     X
               11111100),                                              X
               DLCADDR=(8,X,03,03,03),                                 X
               DLCADDR=(9,X,FFFF),                                     X
               DLCADDR=(51,X,00,10,00,00,01,01),                       X
               DLCADDR=(61,BCD,00,05,00032767,00032767),               X
               GRPNM=GPA15
SLA1P151 LU    LOCADDR=1,ISTATUS=INACTIVE
*
SWA1P152 PU    MAXPATH=5,MAXDATA=256,ADDR=01,                          X
               CPNAME=SSCP1A,CPCP=YES,HPR=YES,CONNTYPE=APPN,           X
               PUTYPE=2,DISCNT=(NO)
PTH1P152 PATH  DLCADDR=(1,C,ATMSVC,EXCLUSIVE),                         X
               DLCADDR=(7,BCD,00,00,00000079,00000047,00012287,00,     X
               00000047,00000031,00016383,00),                         X
               DLCADDR=(8,X,03,03,03),                                 X
```

```
               DLCADDR=(9,X,FFFF),                                      X
               DLCADDR=(51,X,00,10,00,00,01,01),                        X
               DLCADDR=(7,BCD,03,00,00004000,00004000,00005360,00),     X
               DLCADDR=(21,X,0002,211111111111111111111111111111,      X
               11111100),                                               X
               GRPNM=GPA15
SLA1L152 LU    LOCADDR=1,ISTATUS=INACTIVE
*
GP1A2AC  GROUP DIAL=YES,ISTATUS=INACTIVE,ANSWER=ON,CALL=INOUT,          X
               DLCADDR=(1,C,ATMSVC,NETA.VNODE1,EXCLUSIVE),              X
               DLCADDR=(7,BCD,03,00,00004000,00004000,00005360,00),     X
               DLCADDR=(8,X,00,03),                                     X
               DYNPU=YES
*
LN1A2AC1 LINE
P1A2AC1  PU
```

Chapter 12. Transport resource list major node

This topic 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. The transport resource list element (TRLE) is not a resource, but describes the connectivity characteristics of the multipath channel line that is used for the connection.

For a connection between VTAM and an adjacent APPN node, the TRLE operand on the PU definition statement in the local SNA major node that defines the adjacent APPN node identifies the TRLE definition statement VTAM uses to route data over the connection.

For a connection between VTAM and a port on an IBM S/390 Open Systems Adapter through which native access to an ATM network is achieved, the PORT definition statement in the XCA major node that defines the port identifies the TRLE definition statement VTAM uses to route data over the connection. The determination of which TRLE definition statement is used is made by matching the port name specified on the PORTNAME operand on the PORT definition statement to the port name specified on the PORTNAME operand on a TRLE definition statement in the TRL major node.

See the z/OS Communications Server: SNA Network Implementation Guide for more information about MPC connections.

Guideline: To use this function, you must have at least one multipath channel defined between the two nodes. This multipath channel might be an ESCON channel, an IBM 3088 or a virtual channel-to-channel connection.

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 definition statement for each multipath channel (MPC) connection, such as an APPN host-to-host connection, or a connection to an IBM S/390 Open Systems Adapter.

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" on page 62 for a sample local SNA major node used for APPN host-to-host channel connection.

For additional information about APPN host-to-host channel connections, see the z/OS Communications Server: SNA Network Implementation Guide.

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 23 on page 96. Each TRL major node describes the transport characteristics of the multipath channel that is being used by the APPN host-to-host connection.

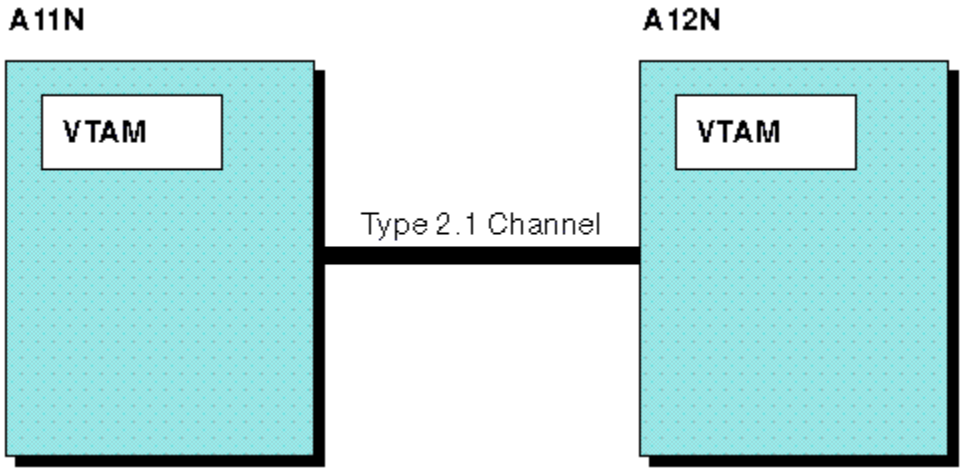

Figure 23. APPN host-to-host channel connection

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, but 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.

Although a pair of subchannel addresses is defined in this example, 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
```

Sample TRLE for VTAM's connection to the IBM S/390 Open Systems Adapter

The following example shows transport resource list (TRL) major node definitions for the two hosts shown in Figure 24 on page 97. Each TRL major node describes the transport characteristics of the multipath channel that is being used by the APPN host-to-host connection.

PORTNAME on the TRLE statement must match PORTNAME on the XCA Major Node.

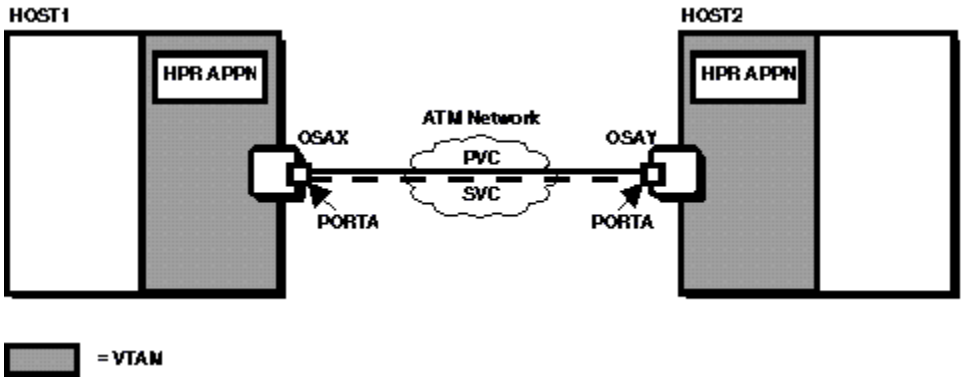

Figure 24. Basic ATM configuration

```
*********************************************************************
* TRL Major Node for SSCP1A - ATM                                   *
*********************************************************************
***********************************************
* TRANSPORT RESOURCE LIST MAJOR NODE FOR      *
* LINE AND PU STATEMENTS AND A TG             *
* CODED SO THAT IT FLOWS OVER TWO SEPARATE    *
* CHANNELS (CHPID'S).                         *
***********************************************
TRL1A    VBUILD TYPE=TRL
OSA1     TRLE  LNCTL=MPC,READ=(0514),WRITE=(0515),PORTNAME=OSAXA
OSA2     TRLE  LNCTL=MPC,READ=(0516),WRITE=(0517),PORTNAME=OSAXB
*
TRLE1A   TRLE  LNCTL=MPC,READ=(0408),WRITE=(0508)
*
TRLE1B   TRLE  LNCTL=MPC,READ=(02F0),WRITE=(03F0)
*
TRLE1C   TRLE  LNCTL=MPC,READ=(0408,02F0),WRITE=(0508,03F0)
*
TRLE1D   TRLE  LNCTL=MPC,READ=(0404),WRITE=(0504)
```

```
*********************************************************************
* TRL Major Node for SSCP2A - ATM                                   *
*********************************************************************
* 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).                         *
***********************************************


TRL2A    VBUILD TYPE=TRL
OSA1     TRLE  LNCTL=MPC,READ=(051C),WRITE=(051D),PORTNAME=OSAYA
OSA2     TRLE  LNCTL=MPC,READ=(051E),WRITE=(051F),PORTNAME=OSAYB
*
TRLE1A   TRLE  LNCTL=MPC,READ=(0408),WRITE=(0508)
```

```
*
TRLE1B   TRLE  LNCTL=MPC,READ=(02F0),WRITE=(03F0)
*
TRLE1C   TRLE  LNCTL=MPC,READ=(0408,02F0),WRITE=(0508,03F0)
*
TRLE1D   TRLE  LNCTL=MPC,READ=(0404),WRITE=(0504)
```

Chapter 13. Path definition statements

This topic 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 defined only 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 can code one PATH definition statement for each destination subarea, or you can 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 VR.

In addition, the VRPWS00-VRPWS72 operands specify the pacing window size for combinations of VRs and transmission priorities.

You do not need to define PATH definitions for APPN connections.

For more information about paths, see the z/OS Communications Server: SNA Network Implementation Guide.

The remainder of this topic shows path definitions for each of the subarea-capable nodes in the network depicted in Figure 8 on page 31.

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
```

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
```

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
```

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
```

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
```

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
```

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
```

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
```

Chapter 14. VTAM start option lists

This topic contains sample VTAM start option lists for defining VTAM nodes.

For more information about the different types of VTAM nodes, see the z/OS Communications Server: SNA Network Implementation Guide.

For more information about start options and configuration lists, see the z/OS Communications Server: SNA Network Implementation Guide and the z/OS Communications Server: SNA Resource Definition Reference.

IBM-supplied default start option list

ATCSTR00 is the default start option list supplied by IBM. It initializes VTAM as a subarea node. For this list to take effect when you start VTAM, you must copy it out of the GENDECK data set in SYS1.ASAMPLIB and put that copy in the SYS1.VTAMLIB, the VTAM definition library.

Guideline: The values specified in ATCSTR00 are not necessarily the default values for the start options listed there. 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 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 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.

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.

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 be limited 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” on page 26.

The SSCPDYN start option specifies whether VTAM dynamically adds entries to the adjacent SSCP table. SSCPDYN=YES (the default value) 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 value) 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.

The VFYRED start option specifies whether the node should attempt to perform resource verification reduction. VFYRED=YES indicates that LU 6.2 session initiation requests do not need to be delivered to the target LU. Using the VFYRED start option allows you to significantly reduce directed verification searches. For more information about the VFYRED start option, see the z/OS Communications Server: SNA Network Implementation Guide and the z/OS Communications Server: SNA Resource Definition Reference.

The SIZE option for the VTAM internal trace specifies the number of pages in the internal trace table. The default SIZE option value has been increased to 100 pages, starting with VTAM V4R3.

```
*  =====> 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
         VFYRED=YES,                 ** LU 6.2 VERIFICATION REDUCTION**X
         XNETALS=YES,                ** NON NATIVE NET CONNECTIVITY  **X
         TRACE,TYPE=VTAM,MODE=INT,OPT=NONE,SIZE=100,                   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
```

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 the z/OS Communications Server: SNA Network Implementation Guide.

The example that follows illustrates 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 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 value) 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 value) specifies that such requests are not retried periodically.

The CINDXSIZ start option specifies the maximum size of the CID and CONVID index tables. The new default value is 8176 bytes.

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.

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. The valid range of values for DISCNTIM is 1-65535. You can change the value of DISCNTIM with the MODIFY VTAMOPTS command while VTAM is running.

The DSPLYDEF start option limits the number of messages displayed when many types of DISPLAY commands are issued without the MAX or NUM operands. Therefore, DSPLYDEF=100 specifies 100 as the number of messages displayed in these cases. For more information about the DSPLYDEF start option, see the z/OS Communications Server: SNA Resource Definition Reference.

The DSPLYMAX start option sets the maximum value that can be specified for the DSPLYDEF start option and for the MAX or NUM operands on the commands to which the DSPLYDEF start option applies. DSPLYMAX=65535 (the default value) therefore sets 65535 as the maximum value that can be specified for the DSPLYDEF start option. The range of valid values is 1-65535. For more information about the DSPLYMAX start option, see the z/OS Communications Server: SNA Resource Definition Reference.

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 DYNDLGMD start option specifies the name of a logon mode table entry used by default when the session SLU is a dynamic cross-domain resource and a logon mode table entry is not otherwise provided. In the start option list that follows, DYNDEFLT is specified as the name of this entry. You can change the DYNDLGMD value with the MODIFY VTAMOPTS command while VTAM is running. You can also override the DYNDLGMD value for a specific dynamic cross-domain resource with the MODIFY DEFAULTS or MODIFY RESOURCE command.

The DYNMODTB start option specifies the name of a logon mode table used to correlate each logon mode name with a set of session parameters for a dynamic cross-domain resource session SLU. In the start

option list that follows, SMPDYNLM is specified as the name of this table. You can change the DYNMODTB value with the MODIFY VTAMOPTS command or the MODIFY TABLE,OPTION=LOAD,TYPE=MODETAB command while VTAM is running. You can also override this value for a specific dynamic cross-domain resource with the MODIFY TABLE,OPTION=ASSOCIATE,TYPE=MODETAB command. See "Default logon mode table for dynamic CDRSCs" on page 140 for a sample default logon mode table for dynamic cross-domain resources.

The ENHADDR start option specifies whether VTAM can assign element addresses greater than 65535 (high-order addresses) to resources establishing sessions within this subarea. ENHADDR=NO (the default value) 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 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 LIMINTCP start option specifies the number of seconds to retain free SNASVCMG sessions on limited resources for the control point. The CP SNASVCMG session is used for some network management flows. This option affect only network connections defined as limited resources. Network connections are defined as limited resources by specifying LIMRES=YES on the applicable GROUP, LINE, or PU definition statements.

The NSRTSIZE start option allows you to specify the SRT directory size for specific network identifiers. The size specified overrides the value specified on the OSRTSIZE start option.

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).

The VFYRED start option specifies whether the node should attempt to perform resource verification reduction. VFYRED=YES indicates that LU 6.2 session initiation requests do not need to be delivered to the target LU. Using the VFYRED start option allows you to significantly reduce directed verification searches. For more information about the VFYRED start option, see the z/OS Communications Server: SNA Network Implementation Guide and the z/OS Communications Server: SNA Resource Definition Reference.

```
*  =====> BEGINNING OF DATA SET ATCSTR02
*********************************************************************
*   ATCSTR02 - VTAM START LIST FOR A SUBAREA NODE - SUBAREA A02      *
*********************************************************************
         AUTHLEN=YES,            ** WILL FORWARD TRANS PRIORITY      ** X
         AUTORTRY=AUTOCAP,       ** AUTOLOGON RETRY ACTIVATION VALUE ** 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
         DISCNTIM=15,            ** SSCP-PU DEACTIVATION DELAY       ** X
         DSPLYDEF=100,           ** DEFAULT VALUE FOR MAX AND NUM    ** X
         DSPLYMAX=65535,         ** MAXIMUM DSPLYDEF VALUE           ** X
         DSPLYWLD=FULLWILD,      ** WILDCARDS PERMITTED              ** X
         DYNDLGMD=DYNDEFLT,      ** DEFAULT LOGMODE FOR DYNAMIC CDRSC** X
         DYNMODTB=SMPDYNLM,      ** DEFAULT LOGMODE TABLE FOR DYNAMIC** 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
         ISTCOSDF=INDLU,         ** ISTCOSDF RESOURCE TYPES          ** X
         LIMINTCP=29,            ** CP SNASVCMG LIMITED RESOURCE     ** X
         NETID=NETA,             ** HOST NETWORK IDENTIFIER          ** X
```

```
         NSRTSIZE=              ** SPECIFIC NET SRT SIZES          ** X
             (NETD,10,                                              X
              NETE,11,                                              X
              NETE,11,                                              X
              NETF,12,                                              X
              NETG,91,                                              X
              NETH,97,                                              X
              NETI,100,                                             X
              NETJ,110,                                             X
              NETL,2097148),                                        X

         OSRTSIZE=43,           ** SRT SIZE FOR NON-NATIVE NETWORKS ** 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
         VFYRED=YES,            ** LU 6.2 VERIFICATION REDUCTION    ** X

*  =====> END OF DATA SET ATCSTR02
```

Network node start option list

A VTAM network node is an APPN node that supports its own 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 the z/OS Communications Server: SNA Network Implementation Guide.

The example that follows illustrates 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 value) 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 value) specifies that such requests are not retried periodically.

The CINDXSIZ start option specifies the maximum size of the CID and CONVID index tables. The new 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. 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 start option CDSREFER=3 specifies that this network node refers only to the three closest (minimal weight route) central directory servers in the network. For more information about the CDSREFER start option, see the z/OS Communications Server: SNA Resource Definition Reference.

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 value) 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.

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 can remain in the database. The default value is eight 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 65535 (high-order addresses) to resources establishing sessions within this subarea. ENHADDR=NO (the default value) indicates that VTAM cannot assign such element addresses.

The HPR start option specifies the level of HPR support provided by VTAM. HPR=RTP indicates that this VTAM network node provides RTP-level HPR support, meaning that it can be the endpoint of an HPR route. RTP is the default HPR value for VTAM network nodes that do not specify HOSTSA.

The HPRPST start option allows you to specify the maximum amount of time that VTAM will continue trying to path-switch before terminating the RTP logical connection. The HPRPST start option value is valid only if the HPR=RTP start option has been coded. In the sample that follows, HPRPST=(30M,1M,20S) sets a limit of 30 minutes for path switch attempts of RTP connections by using low transmission priority classes of service, 1 minute for medium, and 20 seconds for high. The default is 60 seconds for all three priorities.

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 LIMINTCP start option specifies the number of seconds to retain free SNASVCMG sessions on limited resources for the control point. CP SNASVCMG sessions are used for some network management flows. This option affect only network connections defined as limited resources. Network connections are defined as limited resources by specifying LIMRES=YES on the applicable GROUP, LINE, or PU definition statements.

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.

The STRGR start option allows you to rename the generic resources structure. STRGR is a valid start option only on an APPN node (running at least MVS V5R1) that is part of a sysplex environment. An MVS coupling facility is also required. STRGR=ISTGENERIC specifies the IBM-supplied generic resources structure. ISTGENERIC is the default value. Typically, ISTGENERIC is used for the generic resources structure used to run a production environment in a sysplex. For a test environment in the same sysplex, you should define your own name. This name must conform to the restrictions specified in z/OS Communications Server: SNA Resource Definition Reference. For an example, see “End node start option list” on page 112.

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 CP's identity is to take place during session activation.

The VFYRED start option specifies whether the node should attempt to perform resource verification reduction. VFYRED=YES indicates that LU 6.2 session initiation requests do not need to be delivered to the target LU. Using the VFYRED start option might allow you to significantly reduce directed verification searches. For more information about the VFYRED start option, see the z/OS Communications Server: SNA Network Implementation Guide and the z/OS Communications Server: SNA Resource Definition Reference.

The VFYREDTI start option specifies the amount of time resource verification reduction is to be performed before the resource's location is verified. VFYREDTI=8H specifies 8 hours as the amount of time resource verification reduction is to be performed. For more information about the VFYREDTI start option, see the z/OS Communications Server: SNA Network Implementation Guide and the z/OS Communications Server: SNA Resource Definition Reference.

The TRACE,TYPE=VTAM,OPT=ALL start option indicates that all VTAM internal trace options should be started. The HPR VIT option generates entries that help you isolate problems related to High-Performance Routing. You can explicitly enable the HPR trace option by specifying OPT=HPR. Specifying OPT=ALL automatically enables the HPR trace option, along with all other VTAM internal trace options.

```
*  =====&gt; BEGINNING OF DATA SET ATCSTREA
*********************************************************************
*  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
CDSREFER=3,               REFER TO 3 NEAREST CENTRAL DIRECTORY SERVERS 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
HPR=RTP,                  RTP-LEVEL HPR SUPPORT                        X
HPRPST=(30M,1M,20S),      HPR PATH SWITCH TIMER VALUES                 X
INITDB=ALL,               LOAD APPN DATABASES AT VTAM START            X
LIMINTCP=29,              CP SNASVCMG LIMITED RESOURCE INTERVAL        X
SSEARCH=YES,              SEARCH IN SUBAREA NETWORK                    X
STRGR=ISTGENERIC,         GENERIC RESOURCE STRUCTURE NAME              X
VERIFYCP=NONE,            VERIFY CP (DEFAULT)                          X
VFYRED=YES,               LU 6.2 VERIFICATION REDUCTION                X
VFYREDTI=8H,              VERIFICATION REDUCTION TIMER VALUE           X
TRACE,                                                                 X
  TYPE=VTAM,                                                           X
  OPT=ALL,                ALL INTERNAL TRACE TYPES STARTED             X
  SIZE=200,               START VIT                                    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
*  =====&gt; END OF DATA SET ATCSTREA
```

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 25 on page 112.

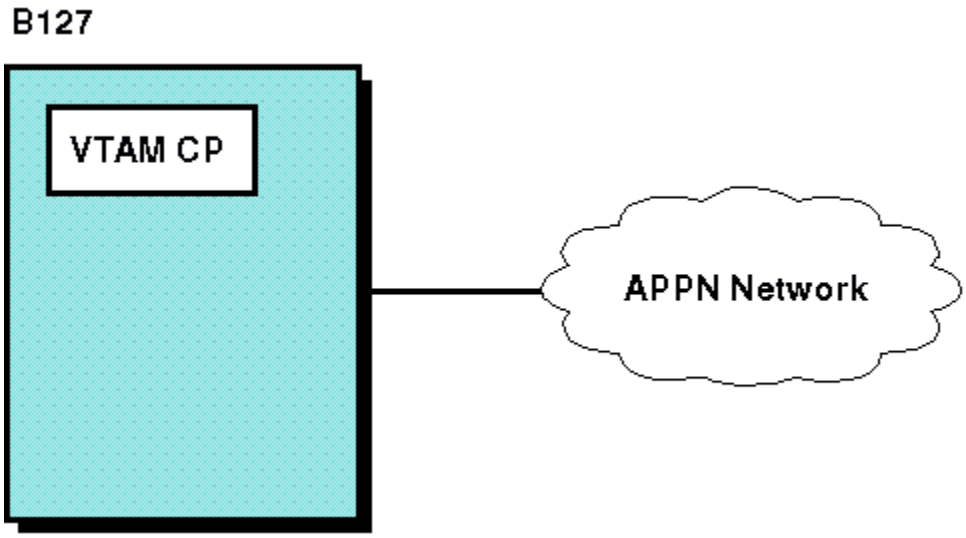

Figure 25. VTAM end node B127 in an APPN network

The example that follows illustrates 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 new 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 value) specifies that the connection is attempted as an APPN connection.

The HPR start option specifies the level of HPR support provided by VTAM. HPR=RTP indicates that this VTAM end node provides RTP-level HPR support, meaning that it can be the endpoint of an HPR route. RTP is the default HPR value for VTAM end nodes.

The STRGR start option allows you to rename the generic resources structure. STRGR is a valid start option only on an APPN node running at least MVS V5R1. A sysplex environment and an MVS coupling facility are also required. If this system is part of a sysplex, and this system is being used for test purposes, STRGR=ISTGENERIC_TEST would specify ISTGENERIC_TEST as the name of the generic resource structure used by this system. The name you choose must conform to the restrictions specified in z/OS Communications Server: SNA Resource Definition Reference.

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 VFYRED start option specifies whether the node should attempt to perform resource verification reduction. VFYRED=YES indicates that LU 6.2 session initiation requests do not need to be delivered to the target LU. Using the VFYRED start option allows you to significantly reduce directed verification searches. For more information about the VFYRED start option, see the z/OS Communications Server: SNA Network Implementation Guide and the z/OS Communications Server: SNA Resource Definition Reference.

```
*  =====> BEGINNING OF DATA SET ATCSTR27
*********************************************************************
*   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
         HPR=RTP,                ** RTP-LEVEL HPR SUPPORT             **X
         NETID=NETB,             ** HOST NETWORK IDENTIFIER           **X
         NODETYPE=EN,            ** END NODE                          **X
         SSCPID=1027,            ** UNIQUE SSCP IDENTIFIER            **X
         STRGR=ISTGENERIC_TEST, ** GENERIC RESOURCES STRUCTURE       **X
         VERIFYCP=NONE,          ** PARTNER LU VERIFICATION           **X
         VFYRED=YES,             ** LU 6.2 VERIFICATION REDUCTION     **X
         SSCPNAME=B127N          ** GATEWAY SSCP NAME                 **
*  =====> END OF DATA SET ATCSTR27
```

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 z/OS Communications Server: SNA Network Implementation Guide.

Following is the start list for A01. The combination of NODETYPE=NN and HOSTSA=01, as shown, 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 new default value is 8176 bytes.

DYNLU=YES enables dynamic definition of independent LUs by 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 value) 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 value) 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 start option CDSREFER=3 specifies that this network node refers only to the three closest (minimal weight route) central directory servers in the network. For more information about the CDSREFER start option, see the z/OS Communications Server: SNA Resource Definition Reference.

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.

The HPR start option specifies the level of HPR support provided by VTAM. HPR=ANR indicates that this VTAM network node provides ANR-level HPR support, meaning that it can be an intermediate node on an HPR route, but it cannot be the endpoint of an HPR route. ANR is the default HPR value for VTAM network nodes that also specify HOSTSA.

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.

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 can 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).

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 VFYRED start option specifies whether the node should attempt to perform resource verification reduction. VFYRED=YES indicates that LU 6.2 session initiation requests do not need to be delivered to the target LU. Using the VFYRED start option might allow you to significantly reduce directed verification

searches. For more information about the VFYRED start option, see the z/OS Communications Server: SNA Network Implementation Guide and the z/OS Communications Server: SNA Resource Definition Reference.

The VFYREDTI start option specifies the amount of time resource verification reduction is to be performed before the resource's location is verified. VFYREDTI=8H specifies that resource verification reduction is to be performed for 8 hours. For more information about the VFYREDTI start option, see the z/OS Communications Server: SNA Network Implementation Guide and the z/OS Communications Server: SNA Resource Definition Reference.

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.

```
*  =====> BEGINNING OF DATA SET ATCSTR01
*********************************************************************
*   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
         CDSREFER=3,            ** CENTRAL DIRECTORY SERVER SELECTION**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
         HPR=ANR,               ** ANR-LEVEL HPR SUPPORT             **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
         VFYRED=YES,            ** LU 6.2 VERIFICATION REDUCTION     **X
         VFYREDTI=8H,           ** VERIFICATION REDUCTION TIMER      **X
         VRTG=YES,              ** VR-BASED TG SUPPORTED             **X
         VRTGCPCP=YES,          ** CP-CP SESSIONS OVER VRTG LINKS    **X
         VERIFYCP=NONE          ** VERIFY CP (DEFAULT)               **
*  =====> END OF DATA SET ATCSTR01
```

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 activating an NCP from that VTAM. If the composite network node has APPN connections through its NCP, the NCP needs to be at V6R2 or greater. In addition, for border node or connection network connections, the NCP needs to be at V7R1 or greater.

For an example of a start option list that is used by a composite network node, see “Interchange node start option list” on page 113.

For more information about composite network nodes, see the z/OS Communications Server: SNA Network Implementation Guide.

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 z/OS Communications Server: SNA Network Implementation Guide.

The example that follows illustrates the start list for A01. The combination of NODETYPE=EN and the HOSTSA start option, as shown, 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 new default value is 8176 bytes.

DYNLU=YES enables dynamic definition of independent LUs by using CDRSC definitions.

The HPR start option specifies the level of HPR support provided by VTAM. HPR=RTP indicates that this migration data host provides RTP-level HPR support, meaning that it can be the endpoint of an HPR route. RTP is the default HPR value for migration data hosts.

GWSSCP=NO should always be coded for migration data hosts. If it is not, the node will come up successfully, but an error message will be issued.

MSGLEVEL=V4R2 specifies that VTAM issues the V4R2 version of messages listed in z/OS Communications Server: SNA Messages.

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 can specify that the subarea network is to be searched first (SORDER=SUBAREA).

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 VFYRED start option specifies whether the node should attempt to perform resource verification reduction. VFYRED=YES indicates that LU 6.2 session initiation requests do not need to be delivered to the target LU. Using the VFYRED start option might allow you to significantly reduce directed verification searches. For more information about the VFYRED start option, see the z/OS Communications Server: SNA Network Implementation Guide and the z/OS Communications Server: SNA Resource Definition Reference.

VRTG=YES indicates that a VR-based transmission group connection is to be activated whenever SSCP-SSCP sessions are established for this node. Because 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. A new internal trace option, OPTION=CFS, has been added for the generic resources function.

```
*  =====> BEGINNING OF DATA SET ATCSTRV1
*********************************************************************
*   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
HPR=RTP,                  HPR CAPABILITY                             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
VFYRED=YES,               LU 6.2 VERIFICATION REDUCTION              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
```

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.

Requirement: NCP V7R1 or later is required for border node function through an NCP.

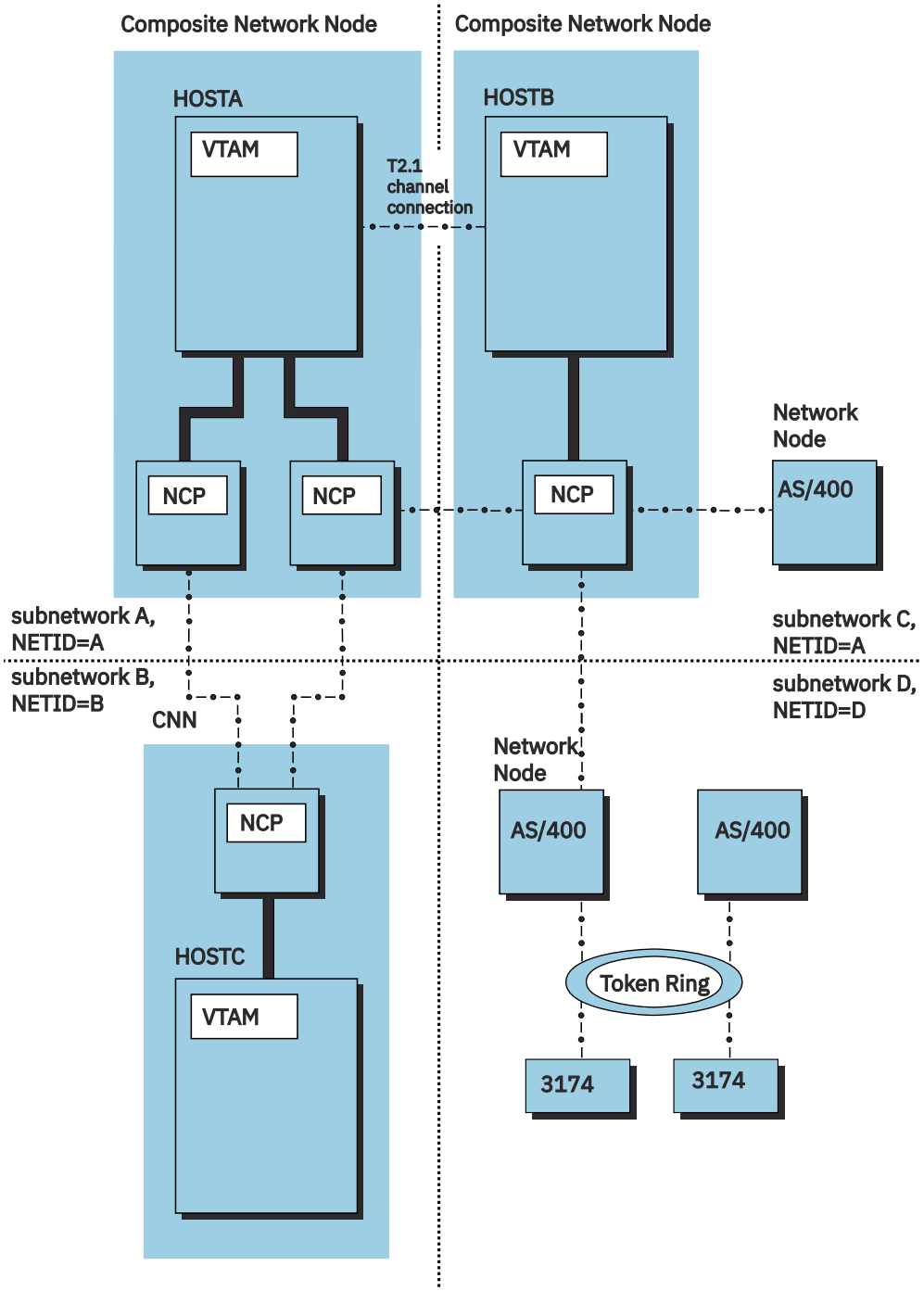

Figure 26. APPN subnetworks through APPN multiple network connectivity support

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 non-native partner node. See the z/OS Communications Server: SNA Network Implementation Guide for more information about border nodes.

In Figure 26 on page 118, the subnetwork boundary between HOSTA and HOSTB is an extended boundary, if both VTAMs were started with BN=YES. The boundary between HOSTB and the AS/400

in subnetwork D is a peripheral boundary because the AS/400 does not have extended border node capabilities.

Following 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 network identifier to be included dynamically, in addition to any cross-subnetwork routing targets through which this node has learned the destination resource's network identifier. 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 value) 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 about these lists, see “Adjacent cluster routing list” on page 130.

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” on page 65.

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 about VTAM central directory servers, see the z/OS Communications Server: SNA Network Implementation Guide.

In the sample start option list that follows, 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
```

Using MVS system symbols to define start option lists

By using MVS system symbols in VTAMLST, you can code a single start option list that can be used to start VTAM on multiple systems. You also can use MVS system symbols to reduce system definition in single system environments.

Guideline: To use MVS system symbols in VTAM, you must have at least MVS V5R2.

For instance, to define a single start option list for use on any of your VTAM interchange nodes, you could use the following start option list that uses MVS system symbols.

```
*********************************************************
*
* Description: Start definition deck for host 1A
*
*********************************************************
*
SSCPID=0&NUMBER1.,         Host ID                                  X
SSCPNAME=SSCP&SYSCLONE.,   Host name                                X
CONFIG=&SYSCLONE.,         Start config                             X
&NET.&ID=&NET.&USERSYM1;, In NETA                                   X
NODETYPE=NN,               ICN node                                 X
HOSTSA=0&NUMBER1.,          Subarea host number                     X
MAXSUBA=&NUMBER2.&NUMBER5.&NUMBER5., Max Subarea Number             X
HOSTPU=PUT5&SYSCLONE.,     HOST PU                                  X
CPCP=YES,                  CP-CP session                            X
DYNADJCP=YES,              Dynamic adjacent CP (default)            X
ROUTERES=1,                Route address                            X
DYNLU=YES,                 Dynamic LU                               X
VERIFYCP=NONE,             Verify CP (default)                      X
CDSERVR=NO,                DIRECTORY SERVER                         X
TRACE,                                                              X
  TYPE=VTAM,                                                        X
  OPT=ALL,                                                          X
  SIZE=200,                Start VIT                                X
CRPLBUF=(&NUMBER2.&NUMBER0.&NUMBER0.), CRPL                         X
LFBUF=(100,,10,,10,33),    Fixed large buffer pool                  X
LPBUF=(6&NUMBER4.,,&NUMBER4.,,&NUMBER4.,22),                        X
SFBUF=(60),                Fixed small buffer pool                  X
SPBUF=(32)                 Pagable small buffer pool
```

You assign values to MVS system symbols by including definitions for them in the IEASYMM1 parmlib member, as in the sample that follows:

```
************
************  IEASYMM1 MEMBER
************
SYSDEF    SYSCLONE(1A)
          SYMDEF(&USERSYM1='A')
          SYMDEF(&USERSYM2='1')
          SYMDEF(&USERSYM3='GUY')
          SYMDEF(&USERSYM4='A1A*')
          SYMDEF(&USERSYM5='APPL1A')
          SYMDEF(&USERSYM6='P')
          SYMDEF(&USERSYM7='SSCPNAME')
```

```
          SYMDEF(&NET='NET')
          SYMDEF(&NAME='NAME')
          SYMDEF(&ID='ID')
          SYMDEF(&SSCP='SSCP')
          SYMDEF(&NUMBER0='0')
          SYMDEF(&NUMBER1='1')
          SYMDEF(&NUMBER01='01')
          SYMDEF(&NUMBER2='2')
          SYMDEF(&NUMBER4='4')
          SYMDEF(&NUMBER5='5')
          SYMDEF(&NUMBER10='10')
          SYMDEF(&N60000='60000')
          SYMDEF(&LIST='LIST')
          SYMDEF(&LIST1A='1A')
          SYMDEF(&APPL1A='APPL1A')
          SYMDEF(&PATH1A='PATH1A')
          SYMDEF(&CDRSC1A='CDRSC1A')
          SYMDEF(&CDRM1A='CDRM1A')
          SYMDEF(&HOST1A='1A')
          SYMDEF(&HOST2A='2A')
          SYMDEF(&NETA='2A')
          SYMDEF(&SSCPNAME='SSCP1A')
          SYMDEF(&CONFIG='GM')
          SYMDEF(&APPLNAME='POAPPL1A')
          SYMDEF(&APPL='APPL')
          SYMDEF(&USERXX='XX')
          SYMDEF(&USERYY='YY')
          SYMDEF(&UNET='A')
          SYMDEF(&QUESTION='?')
          SYMDEF(&ASTER='*')
          SYMDEF(&AMPER='&')
          SYMDEF(&LINE='LINE')
          SYMDEF(&TYPE='TYPE')
          SYMDEF(&CTC='CTC')
          SYMDEF(&PU='PU')
          SYMDEF(&LU='LU')
************
************  LOADM1 MEMBER
```

When these MVS system symbols are resolved, the start list above becomes the following list:

```
************************************************************
*
* Description: Start definition deck for host 1A
*
************************************************************
*
SSCPID=01,                Host ID                                X
SSCPNAME=SSCP1A,          Host name                              X
CONFIG=1A,                Start config                           X
NETID=NETA,               In NETA                                X
NODETYPE=NN,              ICN node                               X
HOSTSA=01,                Subarea host number                    X
MAXSUBA=255,              Max Subarea Number                     X
HOSTPU=PUT51A,            HOST PU                                X
CPCP=YES,                 CP-CP session                          X
DYNADJCP=YES,             Dynamic adjacent CP (default)          X
ROUTERES=1,               Route address                          X
DYNLU=YES,                Dynamic LU                             X
VERIFYCP=NONE,            Verify CP (default)                    X
CDSERVR=NO,               DIRECTORY SERVER                       X
TRACE,                                                           X
  TYPE=VTAM,                                                     X
  OPT=ALL,                                                       X
  SIZE=200,               Start VIT                              X
CRPLBUF=(200),            CRPL                                   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)                Pagable small buffer pool
```

Chapter 15. Configuration lists

This topic 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 about implementing configuration lists, see the z/OS Communications Server: SNA Network Implementation Guide.

The rest of this topic shows sample configuration lists for various types of VTAM nodes.

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
```

Configuration list for a subarea node

```
*  ====w=> 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
```

Configuration list for a network node

Guideline: 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. Because 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
```

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
```

Configuration list for an end node

Guideline: 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. Because 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
```

Configuration list using MVS system symbols

By using MVS system symbols in VTAMLST, you can code a single configuration list that can be used to start VTAM on multiple systems.

The following configuration list is coded using MVS system symbols.

```
*********************************************************
*
* Description: Configuration definition deck for host 1A
*
*********************************************************
CDRSC&SYSCLONE.,                                          X
PATH&SYSCLONE.,                                           X
APPL&USERSYM2.&USERSYM1.,                              X
CDRM&SYSCLONE.
```

You assign values to MVS system symbols by including definitions for them in the IEASYMM1 parmlib member, as in the sample that follows:

```
************
************  IEASYMM1 MEMBER
************
SYSDEF    SYSCLONE(1A)
          SYMDEF(&USERSYM1='A')
          SYMDEF(&USERSYM2='1')
************
************  LOADM1 MEMBER
************
```

When these MVS system symbols are resolved, the configuration list above becomes the following list:

```
*********************************************************
*
* Description: Configuration definition deck for host 1A
*
*********************************************************
CDRSC1A,                                                  X
PATH1A,                                                   X
APPL1A,                                                   X
CDRM1A
```

Chapter 16. Table definitions

This topic contains sample definitions (or references sample definitions) for VTAM's user-defined tables.

Adjacent SSCP table

The adjacent SSCP table is used only 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 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 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 z/OS Communications Server: SNA Network Implementation Guide and the z/OS Communications Server: SNA Resource Definition Reference.

The adjacent SSCP tables for the subarea-capable nodes in the network depicted by Figure 8 on page 31 follow.

SORDER= operand on ADJSSCP tables

This new function enhancement makes it easier for you to control the search order used by VTAM (SORDER) by allowing you to specify a different SORDER= value on each ADJSSCP table.

For more information about the SORDER= operand, see z/OS Communications Server: SNA Operation.

```
* ------------------------------------------------------------------
ADJSSCP  VBUILD  TYPE=ADJSSCP              * Define ADJSSCP Tables
DEFAULT  NETWORK                           * Default ADJSSCP Table
SSCP1A   ADJCDRM                           * SORDER=STARTOPT  (Default)
SSCP2A   ADJCDRM
* ------------------------------------------------------------------
SSCP1A   CDRM    SORDER=APPNFRST           * SSCP1A ADJSSCP Table
SSCP1A   ADJCDRM                           * SORDER=APPNFRST (Override)
SSCP2A   ADJCDRM
* ------------------------------------------------------------------
SSCP2A   CDRM                              * SSCP2A ADJSSCP Table
SSCP2A   ADJCDRM                           * SORDER=STARTOPT   (Sifted)
SSCP1A   ADJCDRM
* ------------------------------------------------------------------
NETA     NETWORK NETID=NETA,SORDER=APPNFRST * NETA ADJSSCP Table
SSCP1A   ADJCDRM                           * SORDER=APPNFRST
SSCP2A   ADJCDRM
* ------------------------------------------------------------------
SSCP1A   CDRM    SORDER=APPN               * NETA/SSCP1A ADJSSCP Table
SSCP1A   ADJCDRM                           * SORDER=APPN     (Override)
SSCP2A   ADJCDRM
* ------------------------------------------------------------------
SSCP2A   CDRM    SORDER=STARTOPT           * NETA/SSCP2A ADJSSCP Table
SSCP2A   ADJCDRM                           * SORDER=STARTOPT (Override)
SSCP1A   ADJCDRM
* ------------------------------------------------------------------
NETB     NETWORK NETID=NETB,SORDER=SUBAREA  * NETB ADJSSCP Table
SSCP7B   ADJCDRM                           * SORDER=SUBAREA
SSCP9C   ADJCDRM
* ------------------------------------------------------------------
SSCP7B   CDRM                              * NETB/SSCP7B ADJSSCP Table
```

```
SSCP7B   ADJCDRM                           * SORDER=SUBAREA    (Sifted)
SSCP9C   ADJCDRM
* ------------------------------------------------------------------------
NETC     NETWORK NETID=NETC,SORDER=SUBAREA  * NETC ADJSSCP Table
SSCP9C   ADJCDRM                           * SORDER=SUBAREA
SSCP7B   ADJCDRM
* ------------------------------------------------------------------------
SSCP9C   CDRM    SORDER=ADJSSCP            * NETC/SSCP9C ADJSSCP Table
SSCP9C   ADJCDRM                           * SORDER=ADJSSCP  (Override)
ISTAPNCP ADJCDRM                           * ISTAPNCP Explicitly Coded
SSCP7B   ADJCDRM                           *
* ------------------------------------------------------------------------
```

Adjacent SSCP table for host C01

The first two ADJCDRM statements in the example that follows 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 composed 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
```

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
```

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
```

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
```

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
```

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
```

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
```

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
```

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 can be specified for a specific cross-domain resource.

The sample adjacent SSCP table that follows defines four adjacent SSCP lists: LIST1, LIST2, LIST3, and LIST4. LIST1 and LIST3 are identical. See “Adjacent SSCP lists for CDRSCs” on page 26 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 about implementation of adjacent SSCP lists, see the z/OS Communications Server: SNA 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
```

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 that follows, 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 non-network 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” on page 117 for examples about how to code border node start options.

```
A50ADJC1 VBUILD TYPE=ADJCLUST
*
         NETWORK                          * Default routing list
A81N     NEXTCP CPNAME=NETA.A81N
B01N     NEXTCP CPNAME=NETB.B01N,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 z/OS Communications Server: SNA Network Implementation Guide.

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 (a nonnative COS name) should be mapped to the local network COS name (the native COS name). The border node COS mapping definitions enable each subnetwork to maintain its own COS names.

A sample BNCOSMAP is found in the z/OS Communications Server: SNA Resource Definition Reference. Another sample is included following. 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 about BNCOSMAP, see the z/OS Communications Server: SNA Resource Definition Reference.

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 based on characteristics such as security, 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 about COS tables for interconnected networks, see the z/OS Communications Server: SNA Network Implementation Guide.

A sample subarea COS table for routes contained entirely within a single network follows. 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 about subarea class-of-service tables generally, see the z/OS Communications Server: SNA Network Implementation Guide and the z/OS Communications Server: SNA 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
```

APPN class-of-service table

IBM provides three sets of class-of-service definitions: COSAPPN, ISTACST2, and ISTACST3. Each set contains the same seven default class-of-service APPN definitions. However, there are differences in the way the seven classes of service are defined in each set.

The definitions in COSAPPN are made up of 8-row LINEROW and NODEROW entries for all classes of service and are appropriate for most sessions.

The definitions in ISTACST2 are made up of 12-row LINEROW entries for all classes of service except CPSVCMG and SNASVCMG. These 12-row LINEROW entries better enable z/OS Communication Server to select an optimal route for a session. This is most useful when multiple types of connections with different TG characteristics, such as channel-to-channel, token-ring network, FDDI LAN, and ATM are used in the network.

The definitions in ISTACST3 are made up of 12-row LINEROW entries and 8-row NODEROW entries for all seven Classes of Service. These definitions are designed to enable z/OS Communications Server to select an optimal route for a session when connections that are used in the network include those with high-speed link characteristics such as FICON®, Gigabit Ethernet, and HiperSockets.

COSAPPN, ISTACST2, and ISTACST3 are shipped in SYS1.ASAMPLIB. To use these definition sets, copy the set of definitions into the SYS1.VTAMLST library during VTAM installation. Multiple sets can be copied into SYS1.VTAMLST, but only one set can be active at any one time. 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 that is assigned to the class of service. The transmission priority NETWORK, which is used for APPN network services traffic, is valid only for the CPSVCMG and SNASVCMG classes of service. Use the NUMBER operand to specify which set of default values is to be used for the APPN class-of-service table.

The LINEROW definition statement contains the operands that specify line characteristics. The NODEROW definition statement contains the operands that specify node characteristics.

The three IBM-supplied APPN class-of-service tables are shown in IBM-supplied tables information in the z/OS Communications Server: SNA Resource Definition Reference.

For more information about APPN classes-of-service definitions, see the z/OS Communications Server: SNA Resource Definition Reference and topics What are the IBM-supplied default Classes of Service? and "How does z/OS Communication Server use the Class of Service to choose a route?" in the z/OS Communications Server: SNA Network Implementation Guide.

APPN-to-subarea COS mapping table

The APPN-to-subarea COS mapping table (APPNTOSA) allows you to map a particular APPN COS to a subarea COS when transitioning from an APPN network to a subarea network. By coding an APPNTOSA table, you avoid having to change your logon mode table. To use this table you must specify the NODETYPE start option in your start option list. This table is used when in an ICN host, or in the SLU host when the APPNCOS operand is not coded in the logon mode table entry.

DEFAULT=YES indicates that this entry is the default APPN COS for this table. See the sample table that follows:

```
*********************************************************************
*                                                                   *
*   TABLE1 - APPN-to-Subarea COS Mapping Table                      *
*                                                                   *
*********************************************************************
TABLE1   VBUILD    TYPE=APPNTOSA
#connect MAPSTO    COS=cosappl1
#batch   MAPSTO    COS=cosappl2
#batchsc MAPSTO    COS=cosappl3
#inter   MAPSTO    COS=cosappl4
snasvcmg MAPSTO    COS=cosappl5,default=yes
#intersc MAPSTO    COS=cosappl6
```

Subarea-to-APPN COS mapping table

The subarea-to-APPN COS mapping table (SATOAPPN) allows you to map a particular subarea COS to an APPN COS when transitioning from a subarea network to an APPN network. By coding a SATOAPPN table, you avoid having to change your logon mode table. To use this table you must specify the NODETYPE start option in your start option list. This table is used in an ICN host or in the SLU host when the APPNCOS operand is not coded in the logon mode table entry.

DEFAULT=YES indicates that this entry is the default APPN COS for this table. See the sample SATOAPPN table that follows:

```
*********************************************************************
*                                                                   *
*   Sample  SATOAPPN COS Mapping Table                              *
*                                                                   *
*********************************************************************
TABLE2   VBUILD    TYPE=SATOAPPN
cosappl1 MAPSTO    COS=#connect
cosappl2 MAPSTO    COS=#batch
cosappl3 MAPSTO    COS=#batchsc
cosappl4 MAPSTO    COS=#inter
cosappl5 MAPSTO    COS=snasvcmg,default=yes
cosappl6 MAPSTO    COS=#intersc
```

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 because acting as a server involves 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.

Four sample network node server lists are provided. 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 value) specifies that CP-CP sessions can be established only 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 about implementing network node server lists is found in the z/OS Communications Server: SNA Network Implementation Guide and the z/OS Communications Server: SNA 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
```

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 by using the FLDTAB, FLDENT, and FLDEND macroinstructions.

The LIST keyword of the FLDENT macroinstruction can be used for the first message in a message group. It serves to identify up to 5 other messages, also present as FLDENT entries in the table, that should be linked with the first message in determining whether the message group should be suppressed.

The IBM-supplied default message-flooding prevention table is named ISTMSFLD. The sample definition for ISTMSFLD is found in the z/OS Communications Server: SNA Resource Definition Reference.

For information about how to customize the message-flooding prevention table, see the z/OS Communications Server: SNA 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 “Subarea node start option list” on page 106 for more information.

For information about how to use the VTAM MODIFY command to change which message-flooding prevention table is used by VTAM, see the z/OS Communications Server: SNA Operation.

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)
- 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 about transmission group profiles, see the z/OS Communications Server: SNA Resource Definition Reference.

The IBM-supplied APPN TG Profile Definitions are found in IBMTGPS. The sample definition for IBMTGPS is found in the z/OS Communications Server: SNA Resource Definition Reference.

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 that follows, 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
```

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 that follows, 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 that follows 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 about associated LU tables, see the z/OS Communications Server: SNA Resource Definition Reference.

Session awareness data filter

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 following. The KEEPMEM macroinstruction defines the beginning of the data filter and is used to name the filter. The KCLASS macroinstruction that follows 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 that follows 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 about implementing your own SAW data filter, see the z/OS Communications Server: SNA Resource Definition Reference.

```
ISTMGC10 KEEPMEM START
DOSAW    KCLASS SAW=YES
         MAPSESS KCLASS=DOSAW,PRI=*,SEC=*
         KEEPMEM STOP
         END
```

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 about implementing a logon mode table, see the z/OS Communications Server: SNA Resource Definition Reference. The default logon mode table is found in the z/OS Communications Server: SNA Resource Definition Reference.

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 about implementing your own session-level USS table, see the z/OS Communications Server: SNA Resource Definition Reference.

The default session-level USS table can be found in the z/OS Communications Server: SNA Resource Definition Reference.

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 about implementing your own operation-level USS table, see the z/OS Communications Server: SNA Resource Definition Reference.

A listing of the default operation-level USS table can be found in the z/OS Communications Server: SNA Resource Definition Reference.

Generic resource preference table

A *generic resource* is a name that represents a group of active application programs. A *generic resource preference table* is a list of generic resource names and their associated generic resource preferences. The generic resource preferences specify how generic resource resolution is performed for the associated generic name. For example, you might want applications that initiate sessions to a generic resource to prefer generic resource instances on the same host as the application. You might also want to use session load balancing instead of work load balancing. VTAM is initialized with default generic resource preferences. You can also define default generic resource preferences in the generic resource preference table by creating a nameless entry in the table.

To create a generic resource preference table, create a VTAMLST member that contains a VBUILD TYPE=GRPREFS definition statement and one or more GRPREF definition statements.

The first GRPREF statement without a name defines the default generic resource preferences. The name of GRPREF statements that are named should correspond to the generic resource name that the preferences describe.

The following is an example of a generic resource preference table that includes a nameless generic resource preference and named generic resource preferences for three different generic resource names.

```
*************************************************************
*
* NAME: GRPREF1A GENERIC RESOURCE PREFERENCES TABLE
*                FOR HOST 1A
*
*************************************************************
GRPREF1A VBUILD  TYPE=GRPREFS
*        nameless entry to set defaults for generic resources
*        other than CICSGR, TSOGR, APPLGR
         GRPREF  GREXIT=NO,WLM=YES,LOCAPPL=NO,LOCLU=NO,               X
                 PASSOLU=YES
*        GR preferences for GENERIC RESOURCE CICSGR
CICSGR   GRPREF  GREXIT=NO,WLM=YES,LOCLU=YES,                        X
                 PASSOLU=NO
*        GR preferences for GENERIC RESOURCE TSOGR
TSOGR    GRPREF  GREXIT=NO,WLM=YES,LOCAPPL=YES,LOCLU=YES,            X
                 PASSOLU=YES
*        GR preferences for GENERIC RESOURCE APPLGR
APPLGR   GRPREF  GREXIT=YES,WLM=YES,LOCAPPL=YES,LOCLU=YES,           X
                 PASSOLU=NO
*
```

You can find more information about implementing a generic resource preference table in the information about initiating sessions using the generic resource name in the z/OS Communications Server: SNA Network Implementation Guide and in the information about generic resources preference tables in the z/OS Communications Server: SNA Resource Definition Reference.

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. 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 that follows, 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 about interpret tables, see the z/OS Communications Server: SNA 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
```

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 is found in z/OS Communications Server: SNA Customization.

For detailed information about how to implement a user-written CNM routing table, see z/OS Communications Server: SNA Customization.

Default logon mode table for dynamic CDRSCs

You can define a default logon mode table for dynamic cross-domain resources. This table is used to correlate a logon mode name with a set of session parameters for a dynamic cross-domain resource session SLU.

You specify the name of this table using the DYNMODTB start option. You can change the DYNMODTB value while VTAM is running by using the MODIFY VTAMOPTS command or the MODIFY TABLE,OPTION=LOAD command.

The example that follows illustrates such a table, SMPDYNLM, that assigns a different set of session parameters to each of three logon mode names: DYNBATCH, DYNINTER, and DYNDEFLT.

```
* /* START OF SPECIFICATIONS ****
*
*01*  MODULE-NAME = SMPDYNLM
*
*01*  DESCRIPTIVE-NAME = DEFAULT LOGON MODE TABLE for Dynamic CDRSCs
*
*     To use this table for all dynamic CDRSCs use the following
*     START option settings:
```

```
*
*       DYNMODTB=SMPDYNLM
*            and
*       DYNDLGMD=DYNBATCH or DYNINTER or DYNDEFLT
*
**** END OF SPECIFICATIONS ***/
         EJECT
SMPDYNLM MODETAB
         EJECT
*********************************************************************
*                                                                   *
*        LOGMODE TABLE FOR BATCH SESSIONS ON RESOURCES CAPABLE      *
*        OF ACTING AS LU 6.2 DEVICES                                *
*                                                                   *
*********************************************************************
DYNBATCH MODEENT LOGMODE=DYNBATCH,FMPROF=X'13',TSPROF=X'07',        *
               ENCR=B'0000',SSNDPAC=3,RUSIZES=X'F7F7',              *
               SRCVPAC=3,PSNDPAC=3,APPNCOS=#BATCH
*********************************************************************
*                                                                   *
*        LOGMODE TABLE FOR INTERACTIVE SESSIONS ON RESOURCES        *
*        CAPABLE OF ACTING AS LU 6.2 DEVICES                        *
*                                                                   *
*********************************************************************
DYNINTER MODEENT LOGMODE=DYNINTER,FMPROF=X'13',TSPROF=X'07',        *
               ENCR=B'0000',SSNDPAC=7,RUSIZES=X'F7F7',              *
               SRCVPAC=7,PSNDPAC=7,APPNCOS=#INTER
*********************************************************************
*                                                                   *
*        LOGMODE TABLE ENTRY THAT SUPPLIES A DEFAULT COS            *
*        AND USES LU 6.2 DEVICE CHARACTERISTICS                     *
*                                                                   *
*********************************************************************
DYNDEFLT MODEENT LOGMODE=DYNDEFLT,FMPROF=X'13',                      *
               TSPROF=X'07',PRIPROT=X'B0',SECPROT=X'B0',            *
               COMPROT=X'D0B1',PSERVIC=X'060200000000000000000300',  *
               RUSIZES=X'8989',ENCR=B'0000',TYPE=0,                 *
               APPNCOS=#CONNECT
         MODEEND ,                    END OF DEFAULT TABLE ENTRIES
         END                        , END OF SMPDYNLM
```

Appendix A. Enterprise Extender examples

This appendix includes sample Enterprise Extender configurations, because Enterprise Extender requires both SNA and TCP/IP definitions. Samples include:

- A predefined Enterprise Extender connection between two nodes
- A local virtual routing node (LVRN) Enterprise Extender model
- A global virtual routing node (GVRN) Enterprise Extender model

In each sample, the underlying DLC is IPv4 QDIO. The LVRN example is built upon the predefined EE connection example, just as the GVRN example is built upon the LVRN example.

A set of VTAM definition statements, including start options, is provided in each sample, as well as the corresponding TCP/IP profile statements necessary in that particular example.

Pre-defined Enterprise Extender connection example

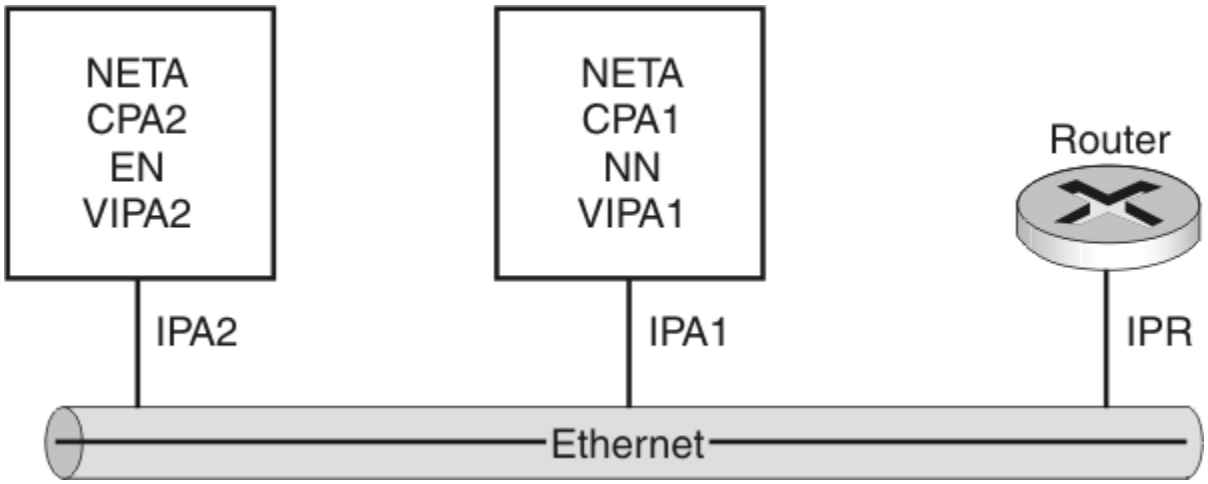

Figure 27. Configuration of a pre-defined EE connection over QDIO (IPv4)

VTAM definitions

Start options

CPA1

```
CONFIG=A1,                                                      *
HPR=RTP,                                                        *
NETID=NETA,                                                     *
NODETYPE=NN,                                                    *
SSCPID=1,                                                       *
SSCPNAME=CPA1,                                                  *
TCPNAME=TCPCS
```

CPA2

```
CONFIG=A2,                                                      *
HPR=RTP,                                                        *
NETID=NETA,                                                     *
NODETYPE=EN,                                                    *
SSCPID=2,                                                       *
SSCPNAME=CPA2,                                                  *
TCPNAME=TCPCS
```

TRL Major Node for QDIO

CPA1

```
TRLA1    VBUILD TYPE=TRL
*
QDIO     TRLE  LNCTL=MPC,                                          *
               MPCLEVEL=QDIO,                                      *
               READ=(0E28),                                        *
               WRITE=(0E29),                                       *
               DATAPATH=(0E2A,0E2B),                               *
               PORTNAME=QDIOA1
```

CPA2

```
TRLA2    VBUILD TYPE=TRL
*
QDIO     TRLE  LNCTL=MPC,                                          *
               MPCLEVEL=QDIO,                                      *
               READ=(0E2C),                                        *
               WRITE=(0E2D),                                       *
               DATAPATH=(0E2E,0E2F),                               *
               PORTNAME=QDIOA2
```

XCA Major Node for EE

CPA1

```
XCAEEA1  VBUILD TYPE=XCA
PORTEE   PORT  MEDIUM=HPRIP
* Pre-Defined EE
GRPEE1   GROUP ANSWER=ON,                                          *
               AUTOGEN=(3,LNEE1,PUEE1),                            *
               CALL=INOUT,                                         *
               DIAL=YES,                                           *
               DYNPU=YES,                                          *
               DYNPUPFX=E1,                                        *
               ISTATUS=ACTIVE
```

CPA2

```
XCAEEA2  VBUILD TYPE=XCA
PORTEE   PORT  MEDIUM=HPRIP
* Pre-Defined EE
GRPEE1   GROUP ANSWER=ON,                                          *
               AUTOGEN=(1,LNEE1,PUEE1),                            *
               CALL=INOUT,                                         *
               DIAL=YES,                                           *
               DYNPU=NO,                                           *
               ISTATUS=ACTIVE
```

Model Major Node for EE dynamically defined dial-in connections (non-connection network)

CPA1

```
MMNEEA1  VBUILD TYPE=MODEL
EEMODEL  PU    CPCP=YES,                                           *
               DISCNT=NO,                                          *
               DYNTYPE=EE
```

Switched Major Node for EE dial-out (or dial-in) connections

CPA2

```
SMNEEA2  VBUILD TYPE=SWNET
*
PUEEA1   PU    ADDR=01,                                            *
               CPCP=YES,                                           *
               CPNAME=CPA1,                                        *
```

```
               DWACT=YES,                                              *
               MAXDATA=256,                                            *
               PUTYPE=2
PATHEEA1 PATH  GRPNM=GRPEE1,                                           *
               IPADDR=10.11.1.1
```

TCPIP definitions

TCPIP profile with VIPA, IUTSAMEH, QDIO, Static Routes

CPA1

```
; ********************************************************************
; TCP/IP profile for CPA1
; ********************************************************************
;
; ********************************************************************
; IPv4 device definitions
; ********************************************************************
;
DEVICE VIPA14   VIRTUAL  0          ; Static VIPA
LINK   LVIPA14  VIRTUAL  0   VIPA14
HOME   10.11.1.1             LVIPA14
;
DEVICE IUTSAMEH MPCPTP              ; SameHost
LINK   LSAMEH   MPCPTP       IUTSAMEH
HOME   10.12.1.1             LSAMEH
;
DEVICE QDIOA1   MPCIPA              ; QDIO
LINK   LQDIOA1  IPAQENET     QDIOA1
HOME   10.41.1.1             LQDIOA1
;
; ********************************************************************
; Static routes
; ********************************************************************
;
BEGINROUTES
  ROUTE 10.41.0.0/16
        =
        LQDIOA1
        MTU 1492                    ; Ethernet
  ROUTE DEFAULT
        10.41.3.1
        LQDIOA1
        MTU 1492                    ; Router
ENDROUTES
;
; ********************************************************************
; Start selected devices
; ********************************************************************
;
START IUTSAMEH
START QDIOA1
```

CPA2

```
; ********************************************************************
; TCP/IP profile for SSCPA2
; ********************************************************************
;
; ********************************************************************
; IPv4 device definitions
; ********************************************************************
;
DEVICE VIPA14   VIRTUAL  0          ; Static VIPA
LINK   LVIPA14  VIRTUAL  0   VIPA14
HOME   10.11.1.2             LVIPA14
;
DEVICE IUTSAMEH MPCPTP              ; SameHost
LINK   LSAMEH   MPCPTP       IUTSAMEH
HOME   10.21.1.2             LSAMEH
;
DEVICE QDIOA2   MPCIPA              ; QDIO
LINK   LQDIOA2  IPAQENET     QDIOA2
HOME   10.41.1.2             LQDIOA2
;
```

```
; ********************************************************************
; Static routes
; ********************************************************************
;
BEGINROUTES
  ROUTE 10.41.0.0/16
        =
        LQDIOA2
        MTU 1492                    ; Ethernet
  ROUTE DEFAULT
        10.41.3.1
        LQDIOA2
        MTU 1492                    ; Router
ENDROUTES
;
; ********************************************************************
; Start selected devices
; ********************************************************************
;
START IUTSAMEH
START QDIOA2
```

Local Virtual Routing Node (LVRN) Enterprise Extender Network example

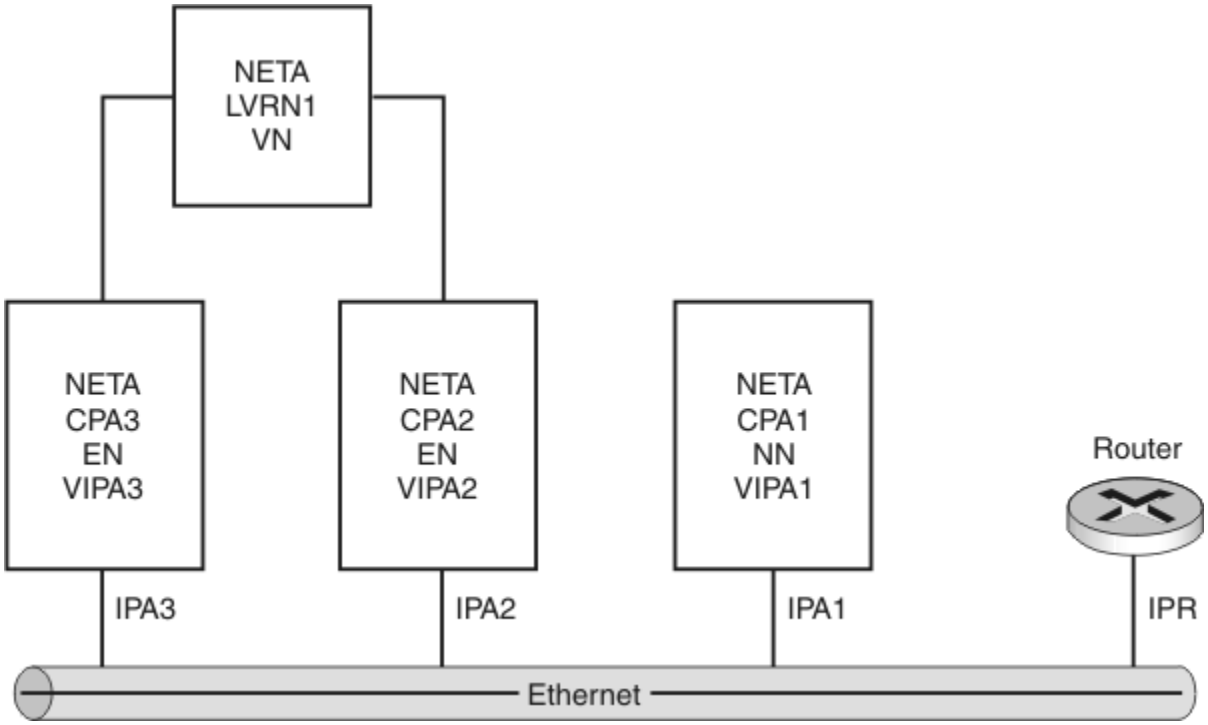

Figure 28. Configuration of a local virtual routing node EE network over QDIO (IPv4)

VTAM definitions

Start options

CPA1

```
CONFIG=A1,                                                          *
HPR=RTP,                                                            *
NETID=NETA,                                                         *
NODETYPE=NN,                                                        *
SSCPID=1,                                                           *
SSCPNAME=CPA1,                                                      *
TCPNAME=TCPCS
```

CPA2

```
CONFIG=A2,                                                          *
HPR=RTP,                                                            *
NETID=NETA,                                                         *
NODETYPE=EN,                                                        *
SSCPID=2,                                                           *
SSCPNAME=CPA2,                                                      *
TCPNAME=TCPCS
```

CPA3

```
CONFIG=A3,                                                          *
HPR=RTP,                                                            *
NETID=NETA,                                                         *
NODETYPE=EN,                                                        *
SSCPID=3,                                                           *
SSCPNAME=CPA3,                                                      *
TCPNAME=TCPCS
```

TRL Major Node for QDIO

CPA1

```
TRLA1    VBUILD TYPE=TRL
*
QDIO     TRLE  LNCTL=MPC,                                           *
               MPCLEVEL=QDIO,                                       *
               READ=(0E28),                                         *
               WRITE=(0E29),                                        *
               DATAPATH=(0E2A,0E2B),                                *
               PORTNAME=QDIOA1
```

CPA2

```
TRLA2    VBUILD TYPE=TRL
*
QDIO     TRLE  LNCTL=MPC,                                           *
               MPCLEVEL=QDIO,                                       *
               READ=(0E2C),                                         *
               WRITE=(0E2D),                                        *
               DATAPATH=(0E2E,0E2F),                                *
               PORTNAME=QDIOA2
```

CPA3

```
TRLA3    VBUILD TYPE=TRL
*
QDIO     TRLE  LNCTL=MPC,                                           *
               MPCLEVEL=QDIO,                                       *
               READ=(0E30),                                         *
               WRITE=(0E31),                                        *
               DATAPATH=(0E32,0E33),                                *
               PORTNAME=QDIOA3
```

XCA Major Node for EE

CPA1

```
XCAEEA1  VBUILD TYPE=XCA
PORTEE   PORT  MEDIUM=HPRIP
* Pre-Defined EE
GRPEE1   GROUP ANSWER=ON,                                           *
               AUTOGEN=(2,LNEE1,PUEE1),                             *
               CALL=INOUT,                                          *
               DIAL=YES,                                            *
               DYNPU=YES,                                           *
               DYNPUPFX=E1,                                         *
               ISTATUS=ACTIVE
```

CPA2

```
XCAEEA2  VBUILD TYPE=XCA
PORTEE   PORT  MEDIUM=HPRIP
* Pre-Defined EE
GRPEE1   GROUP ANSWER=ON,                                          *
               AUTOGEN=(1,LNEE1,PUEE1),                            *
               CALL=INOUT,                                         *
               DIAL=YES,                                           *
               DYNPU=NO,                                           *
               ISTATUS=ACTIVE
* Local VRN
GRPLVRN1 GROUP ANSWER=ON,                                          *
               AUTOGEN=(1,LNLV1,PULV1),                            *
               CALL=INOUT,                                         *
               DIAL=YES,                                           *
               DYNPU=YES,                                          *
               DYNVNPFX=L1,                                        *
               ISTATUS=ACTIVE,                                     *
               VNNAME=NETA.LVRN1,                                  *
               VNTYPE=LOCAL
```

CPA3

```
XCAEEA3  VBUILD TYPE=XCA
PORTEE   PORT  MEDIUM=HPRIP
* Pre-Defined EE
GRPEE1   GROUP ANSWER=ON,                                          *
               AUTOGEN=(1,LNEE1,PUEE1),                            *
               CALL=INOUT,                                         *
               DIAL=YES,                                           *
               DYNPU=NO,                                           *
               ISTATUS=ACTIVE
* Local VRN
GRPLVRN1 GROUP ANSWER=ON,                                          *
               AUTOGEN=(1,LNLV1,PULV1),                            *
               CALL=INOUT,                                         *
               DIAL=YES,                                           *
               DYNPU=YES,                                          *
               DYNVNPFX=L1,                                        *
               ISTATUS=ACTIVE,                                     *
               VNNAME=NETA.LVRN1,                                  *
               VNTYPE=LOCAL
```

Model Major Node for EE dynamically defined dial-in connections (non-connection network)

CPA1

```
MMNEEA1  VBUILD TYPE=MODEL
EEMODEL  PU    CPCP=YES,                                           *
               DISCNT=NO,                                          *
               DYNTYPE=EE
```

Switched Major Node for EE dial-out (or dial-in) connections

CPA2

```
SMNEEA2  VBUILD TYPE=SWNET
*
PUEEA1   PU    ADDR=01,                                            *
               CPCP=YES,                                           *
               CPNAME=CPA1,                                        *
               DWACT=YES,                                          *
               MAXDATA=256,                                        *
               PUTYPE=2
PATHEEA1 PATH  GRPNM=GRPEE1,                                       *
               IPADDR=10.11.1.1
```

CPA3

```
SMNEEA3  VBUILD TYPE=SWNET
*
PUEEA1   PU    ADDR=01,                                            *
               CPCP=YES,                                           *
```

```
               CPNAME=CPA1,                                          *
               DWACT=YES,                                            *
               MAXDATA=256,                                          *
               PUTYPE=2
PATHEEA1 PATH  GRPNM=GRPEE1,                                         *
               IPADDR=10.11.1.1
```

TCPIP definitions

TCPIP profile with VIPA, IUTSAMEH, QDIO, Static Routes

CPA1

```
; ********************************************************************
; TCP/IP profile for CPA1
; ********************************************************************
;
; ********************************************************************
; IPv4 device definitions
; ********************************************************************
;
DEVICE VIPA14   VIRTUAL  0          ; Static VIPA
LINK   LVIPA14  VIRTUAL  0   VIPA14
HOME   10.11.1.1             LVIPA14
;
DEVICE IUTSAMEH MPCPTP              ; SameHost
LINK   LSAMEH   MPCPTP       IUTSAMEH
HOME   10.12.1.1             LSAMEH
;
DEVICE QDIOA1   MPCIPA              ; QDIO
LINK   LQDIOA1  IPAQENET     QDIOA1
HOME   10.41.1.1             LQDIOA1
;
; ********************************************************************
; Static routes
; ********************************************************************
;
BEGINROUTES
  ROUTE 10.41.0.0/16
        =
        LQDIOA1
        MTU 1492                    ; Ethernet
  ROUTE DEFAULT
        10.41.3.1
        LQDIOA1
        MTU 1492                    ; Router
ENDROUTES
;
; ********************************************************************
; Start selected devices
; ********************************************************************
;
START IUTSAMEH
START QDIOA1
```

CPA2

```
; ********************************************************************
; TCP/IP profile for SSCPA2
; ********************************************************************
;
; ********************************************************************
; IPv4 device definitions
; ********************************************************************
;
DEVICE VIPA14   VIRTUAL  0          ; Static VIPA
LINK   LVIPA14  VIRTUAL  0   VIPA14
HOME   10.11.1.2             LVIPA14
;
DEVICE IUTSAMEH MPCPTP              ; SameHost
LINK   LSAMEH   MPCPTP       IUTSAMEH
HOME   10.21.1.2             LSAMEH
;
DEVICE QDIOA2   MPCIPA              ; QDIO
LINK   LQDIOA2  IPAQENET     QDIOA2
HOME   10.41.1.2             LQDIOA2
```

```
;
; ********************************************************************
; Static routes
; ********************************************************************
;
BEGINROUTES
  ROUTE 10.41.0.0/16
        =
        LQDIOA2
        MTU 1492                    ; Ethernet
  ROUTE DEFAULT
        10.41.3.1
        LQDIOA2
        MTU 1492                    ; Router
ENDROUTES
;
; ********************************************************************
; Start selected devices
; ********************************************************************
;
START IUTSAMEH
START QDIOA2
```

CPA3

```
; ********************************************************************
; TCP/IP profile for SSCPA3
; ********************************************************************
;
; ********************************************************************
; IPv4 device definitions
; ********************************************************************
;
DEVICE VIPA14   VIRTUAL  0          ; Static VIPA
LINK   LVIPA14  VIRTUAL  0   VIPA14
HOME   10.11.1.3             LVIPA14
;
DEVICE IUTSAMEH MPCPTP              ; SameHost
LINK   LSAMEH   MPCPTP       IUTSAMEH
HOME   10.21.1.3             LSAMEH
;
DEVICE QDIOA3   MPCIPA              ; QDIO
LINK   LQDIOA3  IPAQENET     QDIOA3
HOME   10.41.1.3             LQDIOA3
;
; ********************************************************************
; Static routes
; ********************************************************************
;
BEGINROUTES
  ROUTE 10.41.0.0/16
        =
        LQDIOA3
        MTU 1492                    ; Ethernet
  ROUTE DEFAULT
        10.41.3.1
        LQDIOA3
        MTU 1492                    ; Router
ENDROUTES
;
; ********************************************************************
; Start selected devices
; ********************************************************************
;
START IUTSAMEH
START QDIOA3
```

Global Virtual Routing Node (GVRN) Enterprise Extender Network example

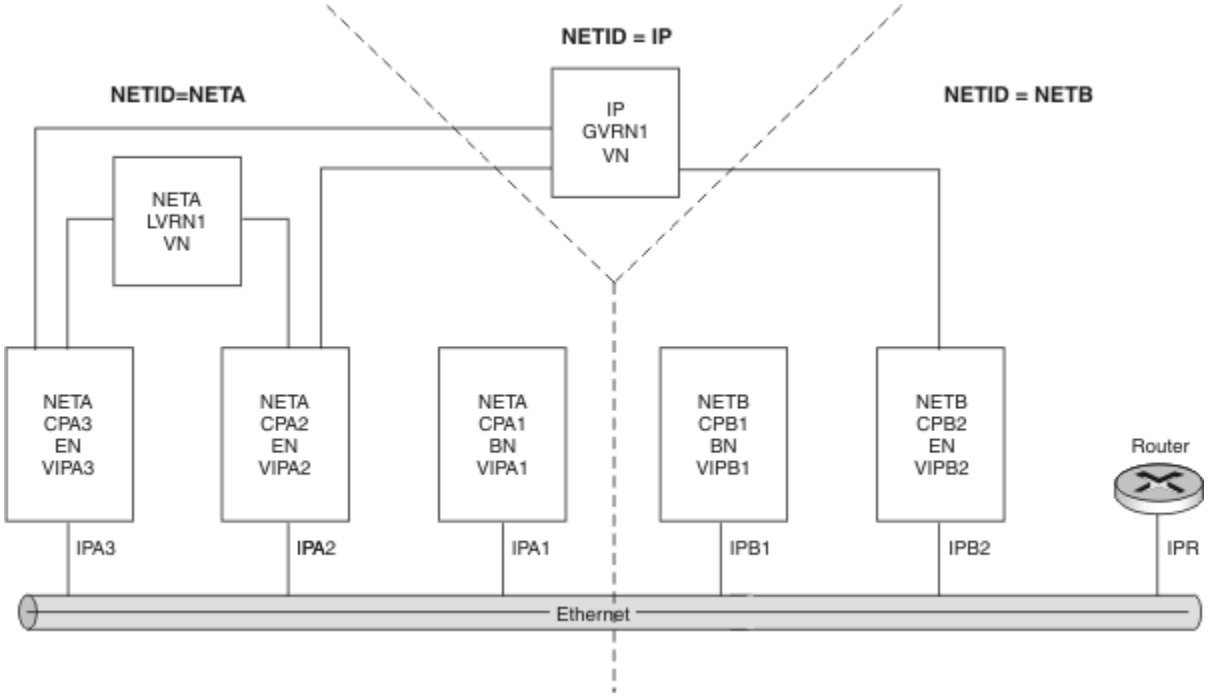

Figure 29. Configuration of a global virtual routing node EE network over QDIO (IPv4)

VTAM definitions

Start options

CPA1

```
BN=YES,                                                    *
CONFIG=A1,                                                 *
HPR=RTP,                                                   *
NETID=NETA,                                                *
NODETYPE=NN,                                               *
SSCPID=1,                                                  *
SSCPNAME=CPA1,                                             *
TCPNAME=TCPCS
```

CPA2

```
CONFIG=A2,                                                 *
HPR=RTP,                                                   *
NETID=NETA,                                                *
NODETYPE=EN,                                               *
SSCPID=2,                                                  *
SSCPNAME=CPA2,                                             *
TCPNAME=TCPCS
```

CPA3

```
CONFIG=A3,                                                 *
HPR=RTP,                                                   *
NETID=NETA,                                                *
NODETYPE=EN,                                               *
SSCPID=3,                                                  *
SSCPNAME=CPA3,                                             *
TCPNAME=TCPCS
```

CPB1

```
BN=YES,                                                          *
CONFIG=B1,                                                       *
HPR=RTP,                                                         *
NETID=NETB,                                                      *
NODETYPE=NN,                                                     *
SSCPID=1,                                                        *
SSCPNAME=CPB1,                                                   *
TCPNAME=TCPCS
```

CPB2

```
CONFIG=B2,                                                       *
HPR=RTP,                                                         *
NETID=NETB,                                                      *
NODETYPE=EN,                                                     *
SSCPID=2,                                                        *
SSCPNAME=CPB2,                                                   *
TCPNAME=TCPCS
```

TRL Major Node for QDIO

CPA1

```
TRLA1    VBUILD TYPE=TRL
*
QDIO     TRLE  LNCTL=MPC,                                        *
               MPCLEVEL=QDIO,                                    *
               READ=(0E28),                                      *
               WRITE=(0E29),                                     *
               DATAPATH=(0E2A,0E2B),                             *
               PORTNAME=QDIOA1
```

CPA2

```
TRLA2    VBUILD TYPE=TRL
*
QDIO     TRLE  LNCTL=MPC,                                        *
               MPCLEVEL=QDIO,                                    *
               READ=(0E2C),                                      *
               WRITE=(0E2D),                                     *
               DATAPATH=(0E2E,0E2F),                             *
               PORTNAME=QDIOA2
```

CPA3

```
TRLA3    VBUILD TYPE=TRL
*
QDIO     TRLE  LNCTL=MPC,                                        *
               MPCLEVEL=QDIO,                                    *
               READ=(0E30),                                      *
               WRITE=(0E31),                                     *
               DATAPATH=(0E32,0E33),                             *
               PORTNAME=QDIOA3
```

CPB1

```
TRLB1    VBUILD TYPE=TRL
*
QDIO     TRLE  LNCTL=MPC,                                        *
               MPCLEVEL=QDIO,                                    *
               READ=(0E34),                                      *
               WRITE=(0E35),                                     *
               DATAPATH=(0E36,0E37),                             *
               PORTNAME=QDIOB1
```

CPB2

```
TRLB2    VBUILD TYPE=TRL
*
QDIO     TRLE  LNCTL=MPC,                                        *
               MPCLEVEL=QDIO,                                    *
               READ=(0E38),                                      *
               WRITE=(0E39),                                     *
```

```
               DATAPATH=(0E3A,0E3B),                                   *
               PORTNAME=QDIOB2
```

XCA Major Node for EE

CPA1

```
XCAEEA1  VBUILD TYPE=XCA
PORTEE   PORT  MEDIUM=HPRIP
* Pre-Defined EE
GRPEE1   GROUP ANSWER=ON,                                              *
               AUTOGEN=(3,LNEE1,PUEE1),                                *
               CALL=INOUT,                                             *
               DIAL=YES,                                               *
               DYNPU=YES,                                              *
               DYNPUPFX=E1,                                            *
               ISTATUS=ACTIVE
```

CPA2

```
XCAEEA2  VBUILD TYPE=XCA
PORTEE   PORT  MEDIUM=HPRIP
* Pre-Defined EE
GRPEE1   GROUP ANSWER=ON,                                              *
               AUTOGEN=(1,LNEE1,PUEE1),                                *
               CALL=INOUT,                                             *
               DIAL=YES,                                               *
               DYNPU=NO,                                               *
               ISTATUS=ACTIVE
* Local VRN
GRPLVRN1 GROUP ANSWER=ON,                                              *
               AUTOGEN=(1,LNLV1,PULV1),                                *
               CALL=INOUT,                                             *
               DIAL=YES,                                               *
               DYNPU=YES,                                              *
               DYNVNPFX=L1,                                            *
               ISTATUS=ACTIVE,                                         *
               VNNAME=NETA.LVRN1,                                      *
               VNTYPE=LOCAL
* Global VRN
GRPGVRN1 GROUP ANSWER=ON,                                              *
               AUTOGEN=(1,LNGV1,PUGV1),                                *
               CALL=INOUT,                                             *
               DIAL=YES,                                               *
               DYNPU=YES,                                              *
               DYNVNPFX=G1,                                            *
               ISTATUS=ACTIVE,                                         *
               VNNAME=IP.GVRN1,                                        *
               VNTYPE=GLOBAL
```

CPA3

```
XCAEEA3  VBUILD TYPE=XCA
PORTEE   PORT  MEDIUM=HPRIP
* Pre-Defined EE
GRPEE1   GROUP ANSWER=ON,                                              *
               AUTOGEN=(1,LNEE1,PUEE1),                                *
               CALL=INOUT,                                             *
               DIAL=YES,                                               *
               DYNPU=NO,                                               *
               ISTATUS=ACTIVE
* Local VRN
GRPLVRN1 GROUP ANSWER=ON,                                              *
               AUTOGEN=(1,LNLV1,PULV1),                                *
               CALL=INOUT,                                             *
               DIAL=YES,                                               *
               DYNPU=YES,                                              *
               DYNVNPFX=L1,                                            *
               ISTATUS=ACTIVE,                                         *
               VNNAME=NETA.LVRN1,                                      *
               VNTYPE=LOCAL
* Global VRN
GRPGVRN1 GROUP ANSWER=ON,                                              *
               AUTOGEN=(1,LNGV1,PUGV1),                                *
               CALL=INOUT,                                             *
               DIAL=YES,                                               *
               DYNPU=YES,                                              *
```

```
               DYNVNPFX=G1,                                          *
               ISTATUS=ACTIVE,                                       *
               VNNAME=IP.GVRN1,                                      *
               VNTYPE=GLOBAL
```

CPB1

```
XCAEEB1  VBUILD TYPE=XCA
PORTEE   PORT  MEDIUM=HPRIP
* Pre-Defined EE
GRPEE1   GROUP ANSWER=ON,                                            *
               AUTOGEN=(2,LNEE1,PUEE1),                              *
               CALL=INOUT,                                           *
               DIAL=YES,                                             *
               DYNPU=YES,                                            *
               DYNPUPFX=E1,                                          *
               ISTATUS=ACTIVE
```

CPB2

```
XCAEEB2  VBUILD TYPE=XCA
PORTEE   PORT  MEDIUM=HPRIP
* Pre-Defined EE
GRPEE1   GROUP ANSWER=ON,                                            *
               AUTOGEN=(1,LNEE1,PUEE1),                              *
               CALL=INOUT,                                           *
               DIAL=YES,                                             *
               DYNPU=NO,                                             *
               ISTATUS=ACTIVE
* Global VRN
GRPGVRN1 GROUP ANSWER=ON,                                            *
               AUTOGEN=(2,LNGV1,PUGV1),                              *
               CALL=INOUT,                                           *
               DIAL=YES,                                             *
               DYNPU=YES,                                            *
               DYNVNPFX=G1,                                          *
               ISTATUS=ACTIVE,                                       *
               VNNAME=IP.GVRN1,                                      *
               VNTYPE=GLOBAL
```

Model Major Node for EE dynamically defined dial-in connections (non-connection network)

CPA1

```
MMNEEA1  VBUILD TYPE=MODEL
EEMODEL  PU    CPCP=YES,                                             *
               DISCNT=NO,                                            *
               DYNTYPE=EE
```

CPB1

```
MMNEEB1  VBUILD TYPE=MODEL
EEMODEL  PU    CPCP=YES,                                             *
               DISCNT=NO,                                            *
               DYNTYPE=EE
```

Switched Major Node for EE dial-out (or dial-in) connections

CPA2

```
SMNEEA2  VBUILD TYPE=SWNET
*
PUEEA1   PU    ADDR=01,                                              *
               CPCP=YES,                                             *
               CPNAME=CPA1,                                          *
               DWACT=YES,                                            *
               MAXDATA=256,                                          *
               PUTYPE=2
PATHEEA1 PATH  GRPNM=GRPEE1,                                         *
               IPADDR=10.11.1.1
```

CPA3

```
SMNEEA3  VBUILD TYPE=SWNET
*
PUEEA1   PU    ADDR=01,                                          *
               CPCP=YES,                                         *
               CPNAME=CPA1,                                      *
               DWACT=YES,                                        *
               MAXDATA=256,                                      *
               PUTYPE=2
PATHEEA1 PATH  GRPNM=GRPEE1,                                     *
               IPADDR=10.11.1.1
```

CPB1

```
SMNEEB1  VBUILD TYPE=SWNET
*
PUEEA1   PU    ADDR=01,                                          *
               CPCP=YES,                                         *
               CPNAME=CPA1,                                      *
               DWACT=YES,                                        *
               MAXDATA=256,                                      *
               PUTYPE=2
PATHEEA1 PATH  GRPNM=GRPEE1,                                     *
               IPADDR=10.11.1.1
```

CPB2

```
SMNEEB2  VBUILD TYPE=SWNET
*
PUEEB1   PU    ADDR=01,                                          *
               CPCP=YES,                                         *
               CPNAME=CPB1,                                      *
               DWACT=YES,                                        *
               MAXDATA=256,                                      *
               PUTYPE=2
PATHEEB1 PATH  GRPNM=GRPEE1,                                     *
               IPADDR=10.11.2.1
```

TCPIP definitions

TCPIP profile with VIPA, IUTSAMEH, QDIO, Static Routes

CPA1

```
; ********************************************************************
; TCP/IP profile for CPA1
; ********************************************************************
;
; ********************************************************************
; IPv4 device definitions
; ********************************************************************
;
DEVICE VIPA14   VIRTUAL  0          ; Static VIPA
LINK   LVIPA14  VIRTUAL  0   VIPA14
HOME   10.11.1.1             LVIPA14
;
DEVICE IUTSAMEH MPCPTP              ; SameHost
LINK   LSAMEH   MPCPTP       IUTSAMEH
HOME   10.12.1.1             LSAMEH
;
DEVICE QDIOA1   MPCIPA              ; QDIO
LINK   LQDIOA1  IPAQENET     QDIOA1
HOME   10.41.1.1             LQDIOA1
;
; ********************************************************************
; Static routes
; ********************************************************************
;
BEGINROUTES
  ROUTE 10.41.0.0/16
        =
        LQDIOA1
        MTU 1492                    ; Ethernet
```

```
  ROUTE DEFAULT
        10.41.3.1
        LQDIOA1
        MTU 1492                    ; Router
ENDROUTES
;
; ********************************************************************
; Start selected devices
; ********************************************************************
;
START IUTSAMEH
START QDIOA1
```

CPA2

```
; ********************************************************************
; TCP/IP profile for SSCPA2
; ********************************************************************
;
; ********************************************************************
; IPv4 device definitions
; ********************************************************************
;
DEVICE VIPA14   VIRTUAL  0          ; Static VIPA
LINK   LVIPA14  VIRTUAL  0   VIPA14
HOME   10.11.1.2             LVIPA14
;
DEVICE IUTSAMEH MPCPTP              ; SameHost
LINK   LSAMEH   MPCPTP       IUTSAMEH
HOME   10.21.1.2             LSAMEH
;
DEVICE QDIOA2   MPCIPA              ; QDIO
LINK   LQDIOA2  IPAQENET     QDIOA2
HOME   10.41.1.2             LQDIOA2
;
; ********************************************************************
; Static routes
; ********************************************************************
;
BEGINROUTES
  ROUTE 10.41.0.0/16
        =
        LQDIOA2
        MTU 1492                    ; Ethernet
  ROUTE DEFAULT
        10.41.3.1
        LQDIOA2
        MTU 1492                    ; Router
ENDROUTES
;
; ********************************************************************
; Start selected devices
; ********************************************************************
;
START IUTSAMEH
START QDIOA2
```

CPA3

```
; ********************************************************************
; TCP/IP profile for SSCPA3
; ********************************************************************
;
; ********************************************************************
; IPv4 device definitions
; ********************************************************************
;
DEVICE VIPA14   VIRTUAL  0          ; Static VIPA
LINK   LVIPA14  VIRTUAL  0   VIPA14
HOME   10.11.1.3             LVIPA14
;
DEVICE IUTSAMEH MPCPTP              ; SameHost
LINK   LSAMEH   MPCPTP       IUTSAMEH
HOME   10.21.1.3             LSAMEH
;
DEVICE QDIOA3   MPCIPA              ; QDIO
LINK   LQDIOA3  IPAQENET     QDIOA3
HOME   10.41.1.3             LQDIOA3
;
```

```
; ********************************************************************
; Static routes
; ********************************************************************
;
BEGINROUTES
  ROUTE 10.41.0.0/16
        =
        LQDIOA3
        MTU 1492                    ; Ethernet
  ROUTE DEFAULT
        10.41.3.1
        LQDIOA3
        MTU 1492                    ; Router
ENDROUTES
;
; ********************************************************************
; Start selected devices
; ********************************************************************
;
START IUTSAMEH
START QDIOA3
```

CPB1

```
; ********************************************************************
; TCP/IP profile for CPB1
; ********************************************************************
;
; ********************************************************************
; IPv4 device definitions
; ********************************************************************
;
DEVICE VIPA14   VIRTUAL  0          ; Static VIPA
LINK   LVIPA14  VIRTUAL  0   VIPA14
HOME   10.11.2.1             LVIPA14
;
DEVICE IUTSAMEH MPCPTP              ; SameHost
LINK   LSAMEH   MPCPTP       IUTSAMEH
HOME   10.21.2.1             LSAMEH
;
DEVICE QDIOB1   MPCIPA              ; QDIO
LINK   LQDIOB1  IPAQENET     QDIOB1
HOME   10.41.2.1             LQDIOB1
;
; ********************************************************************
; Static routes
; ********************************************************************
;
BEGINROUTES
  ROUTE 10.41.0.0/16
        =
        LQDIOB1
        MTU 1492                    ; Ethernet
  ROUTE DEFAULT
        10.41.3.1
        LQDIOB1
        MTU 1492                    ; Router
ENDROUTES
;
; ********************************************************************
; Start selected devices
; ********************************************************************
;
START IUTSAMEH
START QDIOB1
```

CPB2

```
; ********************************************************************
; TCP/IP profile for SSCPB2
; ********************************************************************
;
; ********************************************************************
; IPv4 device definitions
; ********************************************************************
;
DEVICE VIPA14   VIRTUAL  0          ; Static VIPA
LINK   LVIPA14  VIRTUAL  0   VIPA14
HOME   10.11.2.2             LVIPA14
```

```
;
DEVICE IUTSAMEH MPCPTP              ; SameHost
LINK   LSAMEH   MPCPTP       IUTSAMEH
HOME   10.21.2.2             LSAMEH
;
DEVICE QDIOB2   MPCIPA              ; QDIO
LINK   LQDIOB2  IPAQENET     QDIOB2
HOME   10.41.2.2             LQDIOB2
;
; ************************************************************************
; Static routes
; ************************************************************************
;
BEGINROUTES
  ROUTE 10.41.0.0/16
        =
        LQDIOB2
        MTU 1492                    ; Ethernet
  ROUTE DEFAULT
        10.41.3.1
        LQDIOB2
        MTU 1492                    ; Router
ENDROUTES
;
; ************************************************************************
; Start selected devices
; ************************************************************************
;
START IUTSAMEH
START QDIOB2
```

Appendix B. Architectural specifications

This appendix lists documents that provide architectural specifications for the SNA Protocol.

The APPN Implementers' Workshop (AIW) architecture documentation includes the following architectural specifications for SNA APPN and HPR:

- APPN Architecture Reference (SG30-3422-04)
- APPN Branch Extender Architecture Reference Version 1.1
- APPN Dependent LU Requester Architecture Reference Version 1.5
- APPN Extended Border Node Architecture Reference Version 1.0
- APPN High Performance Routing Architecture Reference Version 4.0
- SNA Formats (GA27-3136-20)
- SNA Technical Overview (GC30-3073-04)

The following RFC also contains SNA architectural specifications:

- RFC 2353 *APPN/HPR in IP Networks APPN Implementers' Workshop Closed Pages Document*

RFCs are available at http://www.rfc-editor.org/rfc.html.

Appendix C. Accessibility

Publications for this product are offered in Adobe Portable Document Format (PDF) and should be compliant with accessibility standards. If you experience difficulties when using PDF files, you can view the information through the z/OS Internet Library website http://www.ibm.com/systems/z/os/zos/library/bkserv/ or IBM Documentation https://www.ibm.com/docs/en. If you continue to experience problems, send a message to Contact z/OS web page(www.ibm.com/systems/z/os/zos/webqs.html) or write to:

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Poughkeepsie, NY 12601-5400
USA

Accessibility features help a user who has a physical disability, such as restricted mobility or limited vision, to use software products successfully. The major accessibility features in z/OS enable users to:

- Use assistive technologies such as screen readers and screen magnifier software
- Operate specific or equivalent features using only the keyboard
- Customize display attributes such as color, contrast, and font size

Using assistive technologies

Assistive technology products, such as screen readers, function with the user interfaces found in z/OS. Consult the assistive technology documentation for specific information when using such products to access z/OS interfaces.

Keyboard navigation of the user interface

Users can access z/OS user interfaces using TSO/E or ISPF. See z/OS TSO/E Primer, z/OS TSO/E User's Guide, and z/OS ISPF User's Guide Vol I for information about accessing TSO/E and ISPF interfaces. These guides describe how to use TSO/E and ISPF, including the use of keyboard shortcuts or function keys (PF keys). Each guide includes the default settings for the PF keys and explains how to modify their functions.

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Various z/OS elements, such as DFSMS, JES2, JES3, and MVS, contain code that supports specific hardware servers or devices. In some cases, this device-related element support remains in the product even after the hardware devices pass their announced End of Service date. z/OS may continue to service element code; however, it will not provide service related to unsupported hardware devices. Software problems related to these devices will not be accepted for service, and current service activity will cease if a problem is determined to be associated with out-of-support devices. In such cases, fixes will not be issued.

Minimum supported hardware

The minimum supported hardware for z/OS releases identified in z/OS announcements can subsequently change when service for particular servers or devices is withdrawn. Likewise, the levels of other software products supported on a particular release of z/OS are subject to the service support lifecycle of those products. Therefore, z/OS and its product publications (for example, panels, samples, messages, and product documentation) can include references to hardware and software that is no longer supported.

- For information about software support lifecycle, see: IBM Lifecycle Support for z/OS (www.ibm.com/software/support/systemsz/lifecycle)
- For information about currently-supported IBM hardware, contact your IBM representative.

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Trademarks

Bibliography

This bibliography contains descriptions of the documents in the z/OS Communications Server library.

z/OS Communications Server documentation is available online at the z/OS Internet Library web page at http://www.ibm.com/systems/z/os/zos/library/bkserv/.

z/OS Communications Server library updates

Updates to documents are also available on RETAIN and in information APARs (info APARs). Go to https://www.ibm.com/mysupport to view information APARs.

- z/OS Communications Server V2R1 New Function APAR Summary
- z/OS Communications Server V2R2 New Function APAR Summary
- z/OS Communications Server V2R3 New Function APAR Summary
- z/OS Communications Server V2R4 New Function APAR Summary

z/OS Communications Server information

z/OS Communications Server product information is grouped by task in the following tables.

Planning

Title	Number	Description
z/OS Communications Server: New Function Summary	GC27-3664	This document is intended to help you plan for new IP or SNA functions, whether you are migrating from a previous version or installing z/OS for the first time. It summarizes what is new in the release and identifies the suggested and required modifications needed to use the enhanced functions.
z/OS Communications Server: IPv6 Network and Application Design Guide	SC27-3663	This document is a high-level introduction to IPv6. It describes concepts of z/OS Communications Server's support of IPv6, coexistence with IPv4, and migration issues.

Resource definition, configuration, and tuning

Title	Number	Description
z/OS Communications Server: IP Configuration Guide	SC27-3650	This document describes the major concepts involved in understanding and configuring an IP network. Familiarity with the z/OS operating system, IP protocols, z/OS UNIX System Services, and IBM Time Sharing Option (TSO) is recommended. Use this document with the z/OS Communications Server: IP Configuration Reference.

Title	Number	Description
z/OS Communications Server: IP Configuration Reference	SC27-3651	This document presents information for people who want to administer and maintain IP. Use this document with the z/OS Communications Server: IP Configuration Guide. The information in this document includes: • TCP/IP configuration data sets • Configuration statements • Translation tables • Protocol number and port assignments
z/OS Communications Server: SNA Network Implementation Guide	SC27-3672	This document presents the major concepts involved in implementing an SNA network. Use this document with the z/OS Communications Server: SNA Resource Definition Reference.
z/OS Communications Server: SNA Resource Definition Reference	SC27-3675	This document describes each SNA definition statement, start option, and macroinstruction for user tables. It also describes NCP definition statements that affect SNA. Use this document with the z/OS Communications Server: SNA Network Implementation Guide.
z/OS Communications Server: SNA Resource Definition Samples	SC27-3676	This document contains sample definitions to help you implement SNA functions in your networks, and includes sample major node definitions.
z/OS Communications Server: IP Network Print Facility	SC27-3658	This document is for systems programmers and network administrators who need to prepare their network to route SNA, JES2, or JES3 printer output to remote printers using TCP/IP Services.

Operation

Title	Number	Description
z/OS Communications Server: IP User's Guide and Commands	SC27-3662	This document describes how to use TCP/IP applications. It contains requests with which a user can log on to a remote host using Telnet, transfer data sets using FTP, send electronic mail, print on remote printers, and authenticate network users.
z/OS Communications Server: IP System Administrator's Commands	SC27-3661	This document describes the functions and commands helpful in configuring or monitoring your system. It contains system administrator's commands, such as TSO NETSTAT, PING, TRACERTE and their UNIX counterparts. It also includes TSO and MVS commands commonly used during the IP configuration process.
z/OS Communications Server: SNA Operation	SC27-3673	This document serves as a reference for programmers and operators requiring detailed information about specific operator commands.
z/OS Communications Server: Quick Reference	SC27-3665	This document contains essential information about SNA and IP commands.

Customization

Title	Number	Description
z/OS Communications Server: SNA Customization	SC27-3666	This document enables you to customize SNA, and includes the following information: • Communication network management (CNM) routing table • Logon-interpret routine requirements • Logon manager installation-wide exit routine for the CLU search exit • TSO/SNA installation-wide exit routines • SNA installation-wide exit routines

Writing application programs

Title	Number	Description
z/OS Communications Server: IP Sockets Application Programming Interface Guide and Reference	SC27-3660	This document describes the syntax and semantics of program source code necessary to write your own application programming interface (API) into TCP/IP. You can use this interface as the communication base for writing your own client or server application. You can also use this document to adapt your existing applications to communicate with each other using sockets over TCP/IP.
z/OS Communications Server: IP CICS Sockets Guide	SC27-3649	This document is for programmers who want to set up, write application programs for, and diagnose problems with the socket interface for CICS® using z/OS TCP/IP.
z/OS Communications Server: IP IMS Sockets Guide	SC27-3653	This document is for programmers who want application programs that use the IMS TCP/IP application development services provided by the TCP/IP Services of IBM.
z/OS Communications Server: IP Programmer's Guide and Reference	SC27-3659	This document describes the syntax and semantics of a set of high-level application functions that you can use to program your own applications in a TCP/IP environment. These functions provide support for application facilities, such as user authentication, distributed databases, distributed processing, network management, and device sharing. Familiarity with the z/OS operating system, TCP/IP protocols, and IBM Time Sharing Option (TSO) is recommended.
z/OS Communications Server: SNA Programming	SC27-3674	This document describes how to use SNA 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.
z/OS Communications Server: SNA Programmer's LU 6.2 Guide	SC27-3669	This document describes how to use the SNA LU 6.2 application programming interface for host application programs. This document 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 document.)
z/OS Communications Server: SNA Programmer's LU 6.2 Reference	SC27-3670	This document provides reference material for the SNA LU 6.2 programming interface for host application programs.

Title	Number	Description
z/OS Communications Server: CSM Guide	SC27-3647	This document describes how applications use the communications storage manager.

Diagnosis

Title	Number	Description
z/OS Communications Server: IP Diagnosis Guide	GC27-3652	This document explains how to diagnose TCP/IP problems and how to determine whether a specific problem is in the TCP/IP product code. It explains how to gather information for and describe problems to the IBM Software Support Center.
z/OS Communications Server: ACF/TAP Trace Analysis Handbook	GC27-3645	This document explains how to gather the trace data that is collected and stored in the host processor. It also explains how to use the Advanced Communications Function/Trace Analysis Program (ACF/TAP) service aid to produce reports for analyzing the trace data information.
z/OS Communications Server: SNA Diagnosis Vol 1, Techniques and Procedures and z/OS Communications Server: SNA Diagnosis Vol 2, FFST Dumps and the VIT	GC27-3667 GC27-3668	These documents help you identify an SNA 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.
z/OS Communications Server: SNA Data Areas Volume 1 and z/OS Communications Server: SNA Data Areas Volume 2	GC31-6852 GC31-6853	These documents describe SNA data areas and can be used to read an SNA dump. They are intended for IBM programming service representatives and customer personnel who are diagnosing problems with SNA.

Messages and codes

Title	Number	Description
z/OS Communications Server: SNA Messages	SC27-3671	This document describes the ELM, IKT, IST, IUT, IVT, and USS messages. Other information in this document includes: • Command and RU types in SNA messages • Node and ID types in SNA messages • Supplemental message-related information
z/OS Communications Server: IP Messages Volume 1 (EZA)	SC27-3654	This volume contains TCP/IP messages beginning with EZA.
z/OS Communications Server: IP Messages Volume 2 (EZB, EZD)	SC27-3655	This volume contains TCP/IP messages beginning with EZB or EZD.
z/OS Communications Server: IP Messages Volume 3 (EZY)	SC27-3656	This volume contains TCP/IP messages beginning with EZY.
z/OS Communications Server: IP Messages Volume 4 (EZZ, SNM)	SC27-3657	This volume contains TCP/IP messages beginning with EZZ and SNM.
z/OS Communications Server: IP and SNA Codes	SC27-3648	This document describes codes and other information that appear in z/OS Communications Server messages.

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Important: If your comment regards a technical question or problem, see instead "If you have a technical problem" on page 175.

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Feedback on the z/OS product documentation and content
If your comment is about the information that is provided in the z/OS product documentation library, send a detailed email to mhvrcfs@us.ibm.com. We welcome any feedback that you have, including comments on the clarity, accuracy, or completeness of the information.

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SC27-3676-50