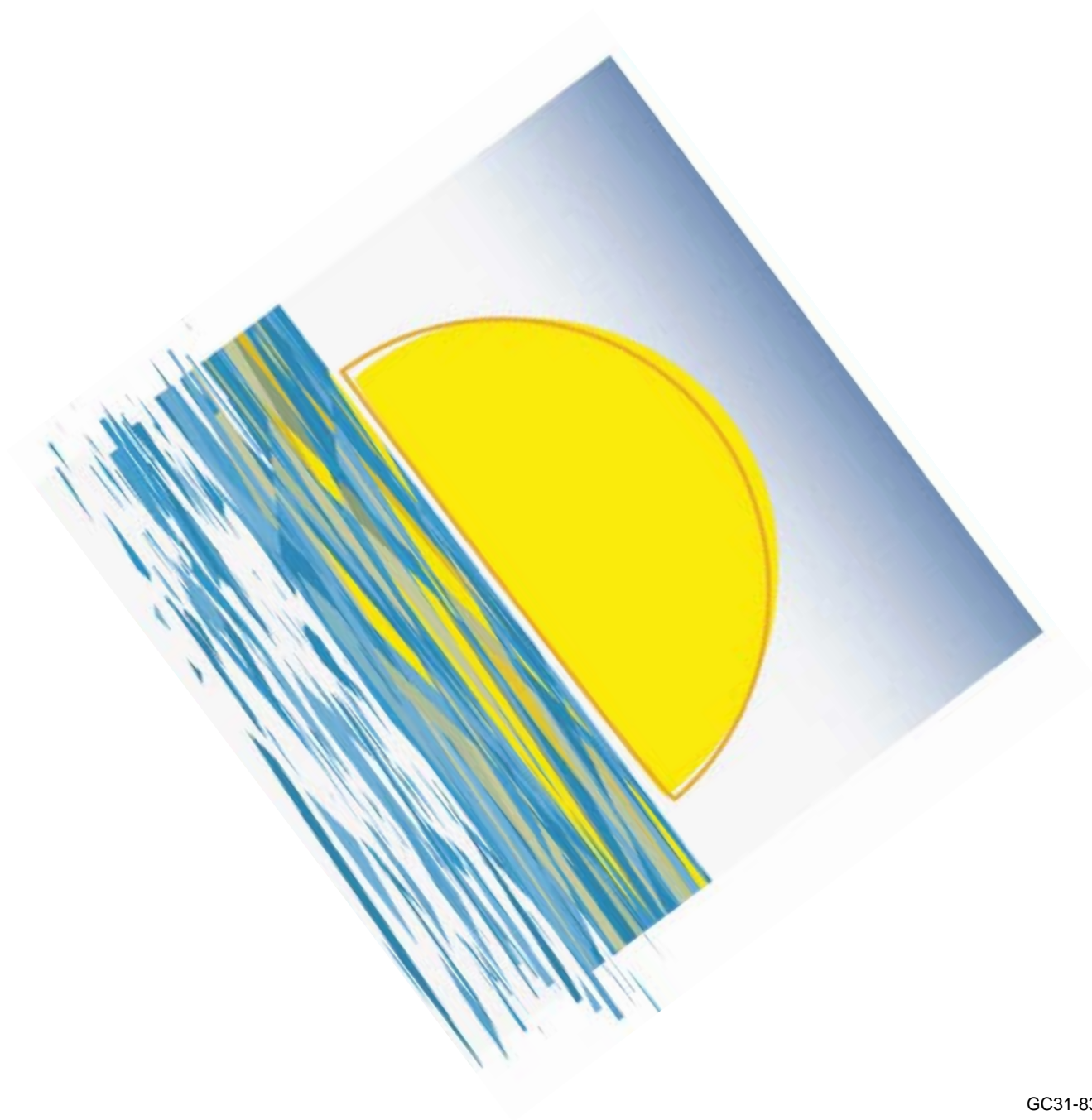


VTAM™



Installation and Migration Guide

Version 4 Release 4 for MVS/ESA



VTAM™



Installation and Migration Guide

Version 4 Release 4 for MVS/ESA

Note!

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

First Edition (March 1997)

This edition applies to the Advanced Communications Function for Virtual Telecommunications Access Method (ACF/VTAM), an IBM licensed program, VTAM Version 4 Release 4 for MVS/ESA (program number 5695-117) and to OS/390 (5645-001).

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VTAM	

About This Book

This book helps you follow these two major steps to upgrade VTAM* V4R3, V4R2, V4R1, or V3R4.2 to VTAM V4R4:

1. Plan to upgrade to VTAM V4R4
2. Upgrade user interfaces to VTAM V4R4

If you are migrating to APPN: VTAM includes support for Advanced Peer-to-Peer Networking* (APPN*), an extension to IBM's* Systems Network Architecture (SNA). This book does not explain how to upgrade an existing VTAM subarea node to an APPN node. Such an upgrade is optional; you can install VTAM V4R4 and operate it as a subarea node. IBM recommends that you install VTAM V4R4 and get it operating in a test environment at your current functional level before using any of the new optional functions or enhancements in VTAM V4R4. For information about upgrading a VTAM subarea node to an APPN node, refer to *Planning for Integrated Networks* and to Chapter 15, "Implementing a Combined APPN and Subarea Network" in the *VTAM Network Implementation Guide*.

If you are upgrading a VTAM V4R3, V4R2, or V4R1 APPN node to VTAM V4R4: Chapter 2, "Upgrading VTAM V4R3 to VTAM V4R4" on page 41, Chapter 3, "Upgrading VTAM V4R2 to VTAM V4R4" on page 63, and Chapter 4, "Upgrading VTAM V4R1 to VTAM V4R4" on page 107 in this book describe the migration impacts of upgrading a VTAM V4R3, V4R2, or V4R1 APPN node to VTAM V4R4.

Who Should Use This Book

Use this book if you are planning or implementing the upgrade of VTAM V4R3, V4R2, V4R1, or V3R4.2 to VTAM V4R4.

Before using this book, you should be familiar with the basic concepts of telecommunication, SNA, and VTAM.

You should also be familiar with the information in the *VTAM Release Guide* for VTAM V4R4. For each new function and enhancement the *VTAM Release Guide* for VTAM V4R4 contains:

- an overview
- a summary of benefits
- help in planning for implementation
- a list of new and changed user interfaces

introduced in VTAM V4R4, including information about what each function and enhancement enables you to do, planning to use each function and enhancement, and the new and changed user interfaces that enable you to use each new function and enhancement.

In addition, you should be familiar with the VTAM version and release you are upgrading.

How to Use This Book

Depending on which VTAM version and release you are upgrading, you need to read only certain chapters in this book. Table 1 helps you determine which chapters you need to read.

Table 1. How to Determine Which Chapters You Need to Read

If You Are Upgrading this Version and Release	Read the Following Chapters
VTAM V4R3	Chapter 1, “Installing VTAM V4R4” on page 3 Chapter 2, “Upgrading VTAM V4R3 to VTAM V4R4” on page 41 When you are ready to use the new optional functions or enhancements introduced in VTAM V4R4, you can find comprehensive overviews in the <i>VTAM Release Guide</i> for VTAM V4R4.
VTAM V4R2	Chapter 1, “Installing VTAM V4R4” on page 3 Chapter 3, “Upgrading VTAM V4R2 to VTAM V4R4” on page 63 When you are ready to use the new optional functions or enhancements introduced in VTAM V4R4, you can find comprehensive overviews in the <i>VTAM Release Guide</i> for VTAM V4R4 and in VTAM V4R3 in the <i>VTAM Release Guide</i> for VTAM V4R3.
VTAM V4R1	Chapter 1, “Installing VTAM V4R4” on page 3 Chapter 4, “Upgrading VTAM V4R1 to VTAM V4R4” on page 107 When you are ready to use the new optional functions or enhancements introduced in VTAM V4R4, you can find comprehensive overviews in the <i>VTAM Release Guide</i> for VTAM V4R4, in VTAM V4R3 in the <i>VTAM Release Guide</i> for VTAM V4R3, and in VTAM V4R2 in the <i>VTAM Release Guide</i> for VTAM V4R2.
V3R4.2	Chapter 1, “Installing VTAM V4R4” on page 3 Chapter 5, “Upgrading VTAM V3R4.2 to VTAM V4R4” on page 173 When you are ready to use the new optional functions or enhancements introduced in VTAM V4R4, you can find comprehensive overviews in the <i>VTAM Release Guide</i> for VTAM V4R4, in VTAM V4R3 in the <i>VTAM Release Guide</i> for VTAM V4R3, in VTAM V4R2 in the <i>VTAM Release Guide</i> for VTAM V4R2, and in VTAM V4R1 in the <i>VTAM Release Guide</i> for VTAM V4R1.

Note: If you are upgrading a version and release prior to VTAM V3R4.2, you might want to refer to the *VTAM Migration Guide* for VTAM V4R2 for MVS/ESA^{*}. That book, used in combination with this book, can help you understand the impacts of upgrading VTAM V3R4.1, VTAM V3R4, and V3R3 to VTAM V4R4.

How This Book Is Organized

This book contains the following parts and chapters:

Part 1, “Installing VTAM V4R4” helps you install VTAM V4R4. It contains one chapter, Chapter 1, “Installing VTAM V4R4.”

Part 2, “Upgrading to VTAM V4R4” helps you prepare to upgrade VTAM V4R3, VTAM V4R2, V4R1, and V3R4.2 to VTAM V4R4 and explains the changes you need to make to VTAM V4R3, V4R2, V4R1, and V3R4.2 user interfaces before implementing the new optional functions and enhancements in VTAM V4R4. It contains the following chapters:

- Chapter 2, “Upgrading VTAM V4R3 to VTAM V4R4”
- Chapter 3, “Upgrading VTAM V4R2 to VTAM V4R4”
- Chapter 4, “Upgrading VTAM V4R1 to VTAM V4R4”
- Chapter 5, “Upgrading VTAM V3R4.2 to VTAM V4R4.”

Part 3, “Bibliography and Index” contains the following sections:

“Bibliography,” which describes the books in the VTAM library and lists the titles and order numbers of other books related to this book or cited by name in this book.

“Index,” which helps you find information in this book.

What Is New in This Book

This book now describes how to install VTAM V4R4. Migration information describes how to upgrade VTAM V4R3, V4R2, V4R1, and V3R4.2 to VTAM V4R4. It also lists the new optional functions and enhancements introduced in VTAM V4R4.

The information on estimating storage for VTAM has been moved to the appendix of this book. It is no longer available on diskette.

This book also includes minor corrections and additions incorporated since the book was previously published.

Where to Find Information about VTAM

“Bibliography” on page 255 describes the books in the VTAM V4R4 library, arranged according to related tasks. The bibliography also lists the titles and order numbers of books related to this book or cited by name in this book.

You can read more about VTAM, OS/390, and IBM on these Web pages:

Home Page

VTAM MVS/ESA
OS/390
IBM Networking
IBM

Uniform Resource Locator (URL)

<http://www.networking.ibm.com/vta/vtaprod.html>
<http://www.s390.ibm.com/os390/>
<http://www.networking.ibm.com/>
<http://www.ibm.com/>

For definitions of the terms and abbreviations used in VTAM books, refer to the *VTAM Glossary*. You can also view or download the latest *IBM Networking Softcopy Glossary* at the following URL:

<http://www.networking.ibm.com/nsg/nsggls.htm>

About This Book

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Chapter 1. Installing VTAM V4R4

This chapter describes how to install VTAM V4R4 under the MVS/ESA operating system, which involves:

1. Calculating VTAM virtual storage requirements
2. Preparing your operating system
 - a. defining data sets for VTAM
 - b. defining VTAM to MVS
 - c. using automatic restart manager
3. Loading VTAM
4. Starting VTAM
5. Installing the VTAM dump analysis and the VIT analysis tools
6. Installing the VTAM command set library for the NetView command tree facility.

Calculating VTAM Virtual Storage Requirements

For information about estimating the virtual storage required to run VTAM V4R4 on the MVS/ESA operating system, see Appendix A, “Estimating Storage” on page 241.

Preparing Your Operating System

To prepare your MVS operating system to support VTAM, do the following:

- Define data sets for VTAM
- Define data sets for NCP
- Define VTAM to MVS.

The logon manager load modules are placed in the SYS1.LINKLIB data set. If you want the load modules to be placed in a separate data set, you need to modify the installation procedure. Refer to “Installing the Logon Manager” in the *VTAM Network Implementation Guide* for more information on adding this data set.

Defining Data Sets for VTAM

This section describes MVS data sets that you need to define or modify for VTAM. Table 2 on page 4 shows the MVS data sets that contain information for VTAM, and Table 3 on page 6 shows the MVS data sets that contain information for both VTAM and NCP. Following the tables is more information on the key MVS data sets used for VTAM and NCP.

Note: If you are upgrading a previous version and release to VTAM V4R4, see one of the following sections to determine which data sets are new to you. These sections also show you the approximate storage requirements for any new data sets and for any existing data sets whose requirements might have changed.

- If you are upgrading VTAM V4R3 to VTAM V4R4, see “Data Set Requirements” on page 47 in Chapter 2, “Upgrading VTAM V4R3 to VTAM V4R4.”
- If you are upgrading VTAM V4R2 to VTAM V4R4, see “Data Set Requirements” on page 71 in Chapter 3, “Upgrading VTAM V4R2 to VTAM V4R4.”

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- If you are upgrading VTAM V4R1 to VTAM V4R4, see “Data Set Requirements” on page 118 in Chapter 4, “Upgrading VTAM V4R1 to VTAM V4R4.”
- If you are upgrading VTAM V3R4.2 to VTAM V4R4, “Data Set Requirements” on page 185 in Chapter 5, “Upgrading VTAM V3R4.2 to VTAM V4R4.”

Table 2 (Page 1 of 3). MVS Data Sets Containing Information for VTAM

Name of Data Set	Contents	Comments
SYS1.DSDB1	Data files of APPN directory information	Required for APPN directory checkpointing function; must be allocated before VTAM initialization. This data set cannot be allowed to span multiple volumes. See “APPN Checkpointing Data Sets” on page 12 for a description.
SYS1.DSDB2	Data files of APPN directory information	Required for APPN directory checkpointing function; must be allocated before VTAM initialization. This data set cannot be allowed to span multiple volumes. See “APPN Checkpointing Data Sets” on page 12 for a description.
SYS1.DSDBCTRL	Current status of SYS1.DSDB1 and SYS1.DSDB2	Required for APPN directory checkpointing function; must be allocated before VTAM initialization. This data set cannot be allowed to span multiple volumes. See “APPN Checkpointing Data Sets” on page 12 for a description.
SYS1.DUMPxx	Records of SVC DUMP	Required for diagnosis.
SYS1.LINKLIB	VTAM initialization module, ISTINM01, which is used when VTAM is started	Required.
	Logon manager load modules	Required for logon manager.
SYS1.LOGREC	VTAM error records	Required.
SYS1.LPALIB	VTAM load modules and user-written exit routines to be loaded into the shared link pack area	Required.
SYS1.MACLIB	VTAM application program interface macros and APPC Application Suite application program interface headers	Required.
SYS1.MIGLIB	VTAM formatted dump routines for the Interactive Problem Control System (IPCS).	Required.
SYS1.NUCLEUS	VTAM resident SVCs and abnormal termination modules	Required.
SYS1.PARMLIB	VTAM-related information	Required. For OS/390 [*] : This may also be a data set in the logical parmlib concatenation.
SYS1.PROCLIB	JCL for started tasks	Required for logon manager.
SYS1.SAPPDAT2	APPC Application Suite messages	Required for APPC Application Suite.

Table 2 (Page 2 of 3). MVS Data Sets Containing Information for VTAM

Name of Data Set	Contents	Comments
SYS1.SAPPDAT4	APPC Application Suite ANAME database skeleton	Required for APPC Application Suite.
SYS1.SAPPMOD1	APPC Application Suite load modules	Required for APPC Application Suite.
SYS1.AAPPMOD2	APPC Application Suite API load modules	Required for APPC Application Suite.
SYS1.SAPPSAMP	APPC Application Suite installation and execution samples	Required for APPC Application Suite.
SYS1.SISTASGD	ASN.1 and GDMO syntax data sets	Included for reference by CMIP services application programmers.
SYS1.SISTASN1	Contains two categories of data set members: <ul style="list-style-type: none"> • ACYPRES: List of abstract syntax notation 1 (ASN.1) definition data sets. This is a member of a partitioned data set. • The members listed in ACYPRES. 	Required for CMIP services. See “SYS1.SISTASN1” on page 8 for a description.
SYS1.SISTCLIB	VTAM load modules to be loaded into common service area and extended common service area (CSA/ECSA) storage.	Required. Must be listed in an IEAAPFxx parmlib member. See “SYS1.SISTCLIB” on page 7 for a description.
SYS1.SISTCLI0	REXX EXECs	Required for VTAM dump analysis enhancements and VIT analysis.
SYS1.SISTCLS1	VTAM command lists for problem analysis: IPCS CLISTs.	Required. See “IPCS CLISTs for VTAM Dump Analysis” on page 15.
SYS1.SISTCMIP	Directory definition file. The member name of the directory definition file is ACYDDF.	Required for CMIP services. See “SYS1.SISTCMIP” on page 8 for a description.
SYS1.SISTDAT1	Online tools	Optional. Use this library only if you intend to use the online information tools shipped with VTAM. See “Installing the VTAM Command Set Library for the NetView Command Tree Facility” on page 35.
SYS1.SISTDAT2	Message skeleton file for translation	Required. Refer to Appendix F, “Message Translation Using the MVS Message Service” in the <i>VTAM Network Implementation Guide</i> .
SYS1.SISTDEBUG	Load modules	Required for VTAM dump analysis enhancements and VIT analysis.
SYS1.SISTGDMO	Compiled definitions for the ISO standard, Guidelines for the Definition of Managed Objects (GDMO). This is a partitioned data set consisting of one member, ACYGDMO.	Required for CMIP services.

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Table 2 (Page 3 of 3). MVS Data Sets Containing Information for VTAM

Name of Data Set	Contents	Comments
SYS1.SISTMAC1	VTAM macros used to build user tables and parameter lists to build installation exits	Required.
SYS1.SISTMSG0	Compiled messages	Required for VTAM dump analysis enhancements and VIT analysis.
SYS1.SISTPNL0	Help panels, keylists, and commands	Required for VTAM dump analysis enhancements and VIT analysis.
SYS1.SISTPNL1	Help panels, keylists, and commands	Required for VTAM dump analysis enhancements and VIT analysis.
SYS1.TRACE	GTF trace records for VTAM	Required to run VTAM external trace. Note: For information about using multiple SYS1.TRACE data sets, refer to the <i>OS/390 MVS Diagnosis: Tools and Service Aids</i> .
SYS1.TRSDDB	Network topology database	Required for APPN topology database checkpointing function; must be allocated before VTAM initialization. This data set cannot be allowed to span multiple volumes. See "APPN Checkpointing Data Sets" on page 12 for a description.
Dynamic I/O configuration data sets	Dynamically created definitions of devices with all associated LUs	Optional; includes USER1.AUTO.VTAMLST and a catalog entry checkpoint data set. Required for dynamic I/O configuration. See "Dynamic Configuration Data Sets for Channel-attached Devices" on page 14 for a description.

Table 3 shows the MVS data sets that contain VTAM information and NCP information if there is an NCP owned by that VTAM.

Table 3 (Page 1 of 2). MVS Data Sets Containing Information for Both VTAM and NCP

Name of Data Set	Contents	Comments
SYS1.ASAMPLIB	Sample of network operator command table and sample JCL for installation	Required for installation. Provided by IBM.
SYS1.SAMPLIB	Alterable copy of sample network operator command table, sample JCL for installation, and command lists for dynamic I/O	Required for installation. Provided by IBM.
SYS1.SSPLIB	NCP loader utility program	Required; added when NCP is installed. Refer to "SYS1.SSPLIB" on page 17 for information on SYS1.SSPLIB requirements.
	NCP dump utility program	Required; added when NCP is installed. Refer to "SYS1.SSPLIB" on page 17 for information on SYS1.SSPLIB requirements.
	NCP dump bootstrap program	Required; added when NCP is installed. Refer to "SYS1.SSPLIB" on page 17 for information on SYS1.SSPLIB requirements.

Table 3 (Page 2 of 2). MVS Data Sets Containing Information for Both VTAM and NCP

Name of Data Set	Contents	Comments
SYS1.VTAMLIB	<ul style="list-style-type: none"> Load modules for VTAM User-defined tables, default tables, and exit routines 	Only VTAM load modules are required. Created during system generation. Must be listed in an IEAAPFxx parmlib member. See "SYS1.VTAMLIB" on page 10 for a description.
SYS1.VTAMLST	VTAM definition statements and start options	Required; created by user before starting VTAM. You can modify this data set, but you need to be very careful about the relationship between VTAM and NCP definition statements. For example, changing a VTAMLST member without changing a corresponding NCP definition statement can cause serious errors that are difficult to diagnose. See "SYS1.VTAMLST" on page 8 for a description.
Configuration restart data sets	VTAM status of minor nodes for each major node	Required if a warm restart is to be used. Created by user before starting VTAM. See "Configuration Restart Data Sets" on page 13 for a description.
SYS1.NODELST	VTAM status of major nodes	Required if restart of all previously active major nodes is desired.
NCP load library	NCP load modules	Each NCP stored as a separate member of library. Created during NCP generation. Must be an APF-authorized library.
NCP dump data set	Dump records for NCP	Required if VTAM is requested to provide a dump of NCP. Created by user before starting VTAM.
SYS1.LDRIOTAB	Dump records for loader channel I/O trace	Required to hold loader channel I/O trace dumps. Created by user before starting VTAM.
CSP and MOSS dump data set	Dump records for CSP and MOSS	Required if VTAM is requested to provide a dump of CSP or MOSS and if the user wants to store the CSP or MOSS dump in a unique data set. Created by user before starting VTAM.

Data Sets Containing Information for VTAM

This section describes data sets that contain information for VTAM.

SYS1.SISTCLIB: SYS1.SISTCLIB contains the VTAM modules to be loaded into common service area and extended common service area (CSA/ECSA) storage. This data set is new for VTAM V4R4.

To prepare the SYS1.SISTCLIB data set, do the following:

1. Allocate it using a utility program, and catalog it before SMP/E installation. Refer to the installation JCL sample, ISTJEXAL, in the *VTAM Program Directory* for a sample job using the IEFBR14 utility program to allocate SYS1.SISTCLIB.
2. Add a DD card for SYS1.SISTCLIB in the VTAM NET procedure as follows:

```
//SISTCLIB DD DSN=SYS1.SISTCLIB,DISP=SHR
```
3. Define SYS1.SISTCLIB as an authorized library (a library listed in the currently used IEAAPFxx parmlib member).

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SYS1.SISTCMIP: SYS1.SISTCMIP contains the IBM-supplied CMIP directory definition file (with the DD name ISTCMIP), which you can edit to restrict access to CMIP services.

The LRECL and BLKSIZE for this file are both 80.

The file is loaded when CMIP services is started and can be reloaded using the MODIFY TABLE command. Start CMIP services using one of the following methods:

- Issue the MODIFY VTAMOPTS command with the OSIMGMT=YES operand
- Start VTAM with the OSIMGMT=YES start option.

If CMIP services is active, edit the directory definition file and then load it by issuing the MODIFY TABLE command:

```
MODIFY proc, TABLE, OPT=LOAD, TYPE=CMIPDDF
```

SYS1.SISTASN1: The LRECL and BLKSIZE for this data set are both 1024.

SYS1.VTAMLST: SYS1.VTAMLST is the VTAM definition library, which consists of files containing the definitions for network resources and start options. It is a required partitioned data set, and you need to allocate it on a direct-access volume before you file VTAM network definitions.

This data set can be allocated and cataloged at either of the following times:

- Any time before its initial use. Run the IEHPROGM utility program or the IEBUPDTE utility program.
- When the data set is first used. Code the appropriate job control language (JCL).

To prepare the SYS1.VTAMLST data set, do the following:

1. Allocate space to accommodate the filing of definitions for major nodes and anticipated sets of start options. The amount needed depends on the number of nodes and operands used and on the number of start options. For more information about start options, refer to "Start Options" in the *VTAM Network Implementation Guide*.
2. Specify the DD name for SYS1.VTAMLST as VTAMLST. You should specify the following DCB subparameters:

```
RECFM=FB,LRECL=80,BLKSIZE=any multiple of 80
```
3. Code LABEL=RETPD=0 on all DD statements for SYS1.VTAMLST. If you do not, an operator awareness message requiring a reply might be generated.
4. If you generate a NEWDEFN data set as part of NCP generation processing, ensure that it is loaded into SYS1.VTAMLST prior to activating the NCP. Failure to do so can cause serious problems. VTAM uses the NCP source, in addition to the NCP load module and RRT, when loading and activating communication controllers. SYS1.VTAMLST must contain either the source used as input to the NCP generation process, if a NEWDEFN data set was not created, or the NEWDEFN data set, if one was created. For more information about NEWDEFN, see the *NCP, SSP, and EP Generation and Loading Guide*.
5. If you are configuring VTAM as an APPN node (or plan to do so in the future), copy the IBM-supplied APPN class-of-service (COS) definitions and APPN

transmission group (TG) profiles from ASAMPLIB into SYS1.VTAMLST. Two sets of IBM-supplied COS definitions are available:

- COSAPPN

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

- ISTACST2

The definitions in ISTACST2 are made up of 8-row LINEROW entries for all classes of service except #BATCH, #BATCHSC, #INTER, and #INTERSC—which are made up of 12-row entries—and 8-row NODEROW entries for all classes of service. Twelve-row LINEROW entries better enable VTAM to select an optimal route for a session. This is most useful when multiple types of connections with different TG characteristics—for example, channel-to-channel, token-ring network, FDDI LAN, ATM—are used in the network.

Either COSAPPN or ISTACST2 is required if VTAM is configured as an APPN node. To use COSAPPN or ISTACST2, you must copy the appropriate set of definitions into SYS1.VTAMLST at VTAM installation, and then activate the member in which the definitions reside. You can copy both sets of definitions into SYS1.VTAMLST, but you can have only one set active at any time.

COSAPPN is automatically activated when VTAM is initialized. If you choose to use ISTACST2, you must use the VARY ACT command to activate it, or place the ISTACST2 member in the configuration list to automatically activate it at VTAM initialization. You can rename the IBM-supplied sets of definitions so that ISTACST2 is named COSAPPN and COSAPPN is either not used or is renamed to something else. This enables the set of definitions with 12-row LINEROW entries to be automatically activated at VTAM initialization.

Very Important: If you activate the set of definitions with 12-row LINEROW entries, you should have a set of definitions with 12-row LINEROW entries activated on each network node in the network for optimal routing in networks that include ATM native connections.

Not all HPR APPN products support COS definitions with 12-row LINEROW entries. This could affect your ability to optimally use native ATM connections among the nodes in your network. Consult technical representatives for the HPR APPN products in your network to determine if those products support COS definitions with 12-row LINEROW entries.

If you use COS definitions with 12-row LINEROW entries, routes selected for non-native ATM sessions could be different than those selected when you use COS definitions with 8-row LINEROW entries.

The IBM-supplied TG profiles are in IBMTGPS in ASAMPLIB. IBMTGPS is not required, but we strongly recommend that you include it. Unlike the COSAPPN member, the IBMTGPS member is not automatically activated. If you want to activate it, use the VARY ACT command, or place the IBMTGPS member in the configuration list to automatically activate it at VTAM initialization.

Note: Because CP-CP session paths may include subarea VRs, we also strongly recommend that you update your logon mode tables (including the IBM-supplied logon mode table, ISTINCLM) to include an appropriate COS= value on the CPSVCMG and CPSVRMGR mode table entries. Otherwise, a

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blank COS name will be used to determine the subarea VR and transmission priority that will be used for the VR portion of the CP-CP session path.

Note: You can modify SYS1.VTAMLST, but you need to be very careful about the relationship between VTAM and NCP definition statements. For example, changing a VTAMLST member without changing a corresponding NCP definition statement can cause serious errors that are difficult to diagnose.

SYS1.VTAMLIB: SYS1.VTAMLIB is the VTAM load module library, which consists of files containing the user tables, exit routines, and replaceable constants. It is a required partitioned data set.

To prepare the SYS1.VTAMLIB data set, do the following:

1. Allocate it using the IEHPROGM utility program, and catalog it before SMP/E installation.
2. Define it on a direct-access volume (which can be the system residence volume), and secondary space can be allocated. Space requirements are described in the *VTAM Program Directory*, which is shipped with the VTAM distribution tape.

SYS1.VTAMLIB is used to store the following user tables:

- Class-of-service (COS) table
 - Communication network management (CNM) routing table
- Note:** SYS1.LPALIB can no longer be used to store the CNM routing table.
- Interpret table containing logon descriptions and any installation-coded logon routines in this table
 - Logon mode table
 - Session awareness (SAW) data filter table
 - Unformatted system services (USS) table.

3. Code the DD name for SYS1.VTAMLIB as VTAMLIB. You should specify the following subparameters on the DCB parameter, with BLKSIZE specified as full-track blocking relative to the capacity of your direct access storage device (DASD):

RECFM=U,BLKSIZE=

4. Define SYS1.VTAMLIB as an authorized library (a library listed in the currently used IEAAPFxx).

Parmlib Member for Communication Storage Manager (CSM): The IVTPRM00 parmlib member sets parameters for CSM storage. IVTPRM00 is read during CSM initialization as a result of the first issuance of the IVTCSM REQUEST=CREATE_POOL macro. (VTAM issues this macro when started.) These definitions can also be changed without requiring a re-IPL by editing the IVTPRM00 member and issuing the MODIFY CSM command without specifying the parameters on the command.

The parameter member IVTPRM00 can be found in:

- A data set defined by the PARMLIB DD statement in the TSO start procedure
- For OS/390: a data set in the logical parmlib concatenation

- SYS1.PARMLIB

IVTPRM00 has the following format:

```
FIXED MAX(maxfixK|M)
```

```
ECSA MAX(maxecsaK|M)
```

```
[POOL(bufsize, bufsource, initbuf, minfree, expbuf)]
```

The first two lines in the CSM parmlib member define the maximum amount of storage to be dedicated to fixed and ECSA buffers in CSM. You can also specify one POOL definition for each CSM buffer pool of a particular *bufsize* and *bufsource* combination. If parameters are not provided for a given CSM buffer pool, the IBM-supplied default values are used unless a program has provided these values on a IVTCSM REQUEST=CREATE_POOL macro.

The following describes the variable fields in the CSM parmlib member.

maxfix

is a decimal integer specifying the maximum bytes of fixed storage to be dedicated for use by CSM. The range is from 1024K to 2048M. The default is 100M.

maxecsa

is a decimal integer specifying the maximum bytes of ECSA storage to be dedicated for use by CSM. The range is from 1024K to 2048M. The default is 10M.

K denotes size in kilobytes.

M denotes size in megabytes.

bufsize

specifies the size of the buffers in the pool to be created. Valid pool sizes are 4K, 16K, 32K, 60K and 180K. *bufsize* is required for each POOL definition.

bufsource

specifies the storage source from which buffers are allocated. The values for *bufsource* are:

ECSA

buffers are allocated from ECSA storage.

DSPACE

buffers are allocated from data space storage.

bufsource is required for each POOL definition.

expbuf

specifies the number of buffers by which the pool is expanded when the number of free buffers falls below the *minfree* value. The valid ranges for each CSM buffer pool size are as follows:

Bufsize	Range for Expbuf
4K	1-256
16K	1-256

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32K	1-128
60K	1-68
180K	1-22

expbuf is required for each POOL definition.

initbuf

specifies the initial number of buffers to be created in the pool when the first IVTCSM REQUEST=CREATE_POOL macro is issued by an application. If this value is specified as zero, only the base pool structure is created. In this case, the pool will be expanded on the first IVTCSM REQUEST=GET_BUFFER based on the specification for *expbuf*. The pool will not contract below the level specified by either *initbuf* or *expbuf*, whichever is higher.

The range for *initbuf* is 0 - 9999. If *initbuf* is omitted, the IBM-supplied default value is used unless overridden by an application's CREATE_POOL request.

minfree

specifies the minimum number of buffers to be free in the pool at any time. The storage pool will be expanded if the number of free buffers falls below this limit. The range for *minfree* is 0 - 9999. If *minfree* is omitted, the IBM-supplied default value is used unless overridden by an application's CREATE_POOL request.

Table 4 shows the IBM-supplied default values for *expbuf*, *initbuf*, and *minfree* for the CSM buffer pools.

Table 4. IBM-Supplied Default Values for CSM Buffer Pools

Bufsize	4K	16K	32K	60K	180K
INITBUF	64	32	16	16	2
MINFREE	8	4	2	2	1
EXPBUF	16	8	4	4	2

MVS system symbols can be used in IVTPRM00. For more information about this function, see "Using MVS System Symbols" in the *VTAM Network Implementation Guide*.

APPN Checkpointing Data Sets: The following data sets are used when VTAM is defined as a network node or interchange node and are required for the APPN checkpointing function. These data sets cannot be allowed to span multiple volumes.

- SYS1.DSDB1
- SYS1.DSDB2
- SYS1.DSDBCTRL
- SYS1.TRSDDB

SYS1.DSDB1 and SYS1.DSDB2 contain APPN directory information which is used to initialize the directory database when VTAM is restarted.

Directory database information is stored alternately between SYS1.DSDB1 and SYS1.DSDB2. The directory database information is written to one of the data sets whenever a MODIFY CHKPT TYPE=ALL or TYPE=DIR, HALT, or HALT QUICK command is issued.

Not all of the resources from the directory database are written to the data sets when there is a checkpoint. The resources that are written to the data sets are those that:

- Have been the target of a search
- Have a dynamic entry type that is not registered
- Have been updated within a period of time specified by the DIRTIME start option.

The resources that are registered to the database at start up through resource registration and definition are not included in the checkpointed information.

SYS1.DSDBCTRL contains the current status of SYS1.DSDB1 and SYS1.DSDB2. It is read by VTAM during initialization to determine whether SYS1.DSDB1 or SYS1.DSDB2 will be used to load the APPN directory database.

SYS1.TRSDDB is required for checkpointing the network topology database. The information in this data set is used to initialize the network topology database whenever VTAM is restarted. The network topology database is written to this file whenever a MODIFY CHKPT TYPE=TOPO or TYPE=ALL, HALT, or HALT QUICK command is issued.

The APPN checkpointing data sets should be allocated and cataloged prior to VTAM initialization. To prepare the APPN checkpointing data sets, do the following:

- Specify the DD name for SYS1.DSDB1 as DSDB1, for SYS1.DSDB2 as DSDB2, for SYS1.DSDBCTRL as DSDBCTRL, and SYS1.TRSDDB as TRSDDB.
- Specify the following DCB subparameters for SYS1.DSDB1, SYS1.DSDB2, and SYS1.TRSDDB:

RECFM=FB,LRECL=1000,BLKSIZE=any multiple of 1000,DSORG=PS

- Specify the following DCB subparameters for SYS1.DSDBCTRL:

RECFM=FB,LRECL=20,BLKSIZE=20,DSORG=PS

Notes:

1. For help in calculating the size of these datasets, see Appendix A, “Estimating Storage” on page 241.
2. We recommend that you not modify any of these data sets.
3. VTAM fails the initial load of the network topology database if another node's checkpointed data set is used or if the SSCPNAME operand is changed between the two IPLs. If the initial load fails, VTAM can acquire the information dynamically through TDUs.

Configuration Restart Data Sets: If you want to use VTAM's configuration restart facility, define configuration restart Virtual Storage Access Method (VSAM) data sets. For a description of the configuration restart support, refer to “Configuration Restart” in the *VTAM Network Implementation Guide*.

To set up data sets for the major nodes that you will be using with configuration restart, do the following:

1. Use a DD statement to define a configuration restart VSAM data set for each major node. The *ddname* must match the *ddname* on the CONFIGDS operand

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of either the PCCU definition statement for the associated NCP or the VBUILD definition statement for the associated major node. There are no VTAM restrictions on this data set name.

The following example defines a catalog entry to allocate space for a VSAM data set to contain the configuration restart data:

```
DEFINE
  CLUSTER(NAME(RESTART) -
    VOL(PUBLIC) -
    KEYS(18 0) -
    DATA(NAME(RESTART.DATA) -
    RECORDS(200 20) -
    RECORDSIZE(46 158)) -
  INDEX(NAME(RESTARTI.INDEX) -
    TRACKS(1))
```

2. Code the INDEX operand on the DEFINE command, or let it default. (See the sample DEFINE command in the above example.) The data set must be indexed.
3. Code KEYS (18 0). A key length of 18 bytes and an offset of 0 bytes are required.
4. Code RECORDSIZE (46 158). The average record size must be 46 bytes, and the maximum record size must be 158 bytes.
5. Make sure that the number of records in the file is equal to the number of minor nodes defined in the major node. When you choose the number of records for a switched major node, include each PATH definition statement. Therefore, the primary allocation should be the number of minor nodes in the major node, and the secondary allocation should be about 0.1 times the number of minor nodes.
6. When you change a major node definition in SYS1.VTAMLST, do not use the WARM start option when activating the new definition for the first time.

Dynamic Configuration Data Sets for Channel-attached Devices: You can dynamically configure channel-attached devices in your network. For a full description of this support, refer to “Dynamic Configuration of Channel-Attached Devices ” in the *VTAM Network Implementation Guide*.

To prepare your system to support dynamic configuration of channel-attached devices, complete the following steps during your installation:

1. Define USER1.AUTO.VTAMLST as a partitioned data set. You can customize the name of the data set by altering its name in the ISTDEFIN command list. A sample of ISTDEFIN is found in SYS1.SAMPLIB.
2. Concatenate the USER1.AUTO.VTAMLST data set to the SYS1.VTAMLST data set as defined on the VTAMLST DD statement in the VTAM start procedure. You also need to code the AUTO.VTAMLST data set as shared (DISP=SHR).

```
⋮
//VTAMLST DD DSN=SYS1.VTAMLST,DISP=SHR
          DD DSN=USER1.AUTO.VTAMLST,DISP=SHR
⋮
```

USER1.AUTO.VTAMLST is used by ISTDEFIN for storing automatically generated major nodes. Each member of USER1.AUTO.VTAMLST

representing a data host will then contain the definition for just one device. A local SNA major node will also include any of its associated LUs.

3. Set the data set control block (DCB) information for this data set with the same values as for the other VTAMLST data sets.
4. Define a catalog entry checkpoint data set (AUTOCKPT) for dynamic configuration support:

```
DEFINE
  CLUSTER(NAME('VSAM.AUTOCKPT') -
    VOL(PUBLIC) -
    KEYS(4 0) -
    DATA(NAME('VSAM.AUTOCKPT.DATA') -
    RECORDS(200 20) -
    RECORDSIZE(24 136)) -
  INDEX(NAME(VSAM.AUTOCKPT.INDEX) -
    TRACKS(1))
```

5. Add this data set using the AUTOCKPT DD statement in the VTAM start procedure:

```
:
//AUTOCKPT DD DSN=VSAM.AUTOCKPT,AMP=AMORG,DISP=OLD
:
```

IPCS CLISTS for VTAM Dump Analysis: Interactive Problem Control System (IPCS) is a component of MVS used for diagnosing software failures. The VTAM IPCS CLISTS are a set of tools you can use for automating VTAM dump analysis. The IPCS CLISTS reside in the SYS1.SISTCLS1 data set.

For information about using these CLISTS for analyzing VTAM dumps, see “Using IPCS with the GTF Trace Option ” in *VTAM Diagnosis*.

To prepare a data set for the IPCS CLISTS, place the IPCS CLISTS in a cataloged partitioned data set that both TSO and IPCS can access. The data set must be on the MVS system where the dump resides. If you have another CLIST library, you can also add these CLISTS, or you can have a separate library concatenated to existing CLIST libraries.

Note: For TSO to access the data set, it must be allocated to the SYSPROC TSO DD name. For information on allocating data sets to SYSPROC, see *TSO/E CLISTS*.

First Failure Support Technology (FFST): First Failure Support Technology* helps you diagnose software problems by capturing information about a potential problem when it occurs. FFST is a separate product that you must enable. Refer to the *First Failure Support Technology VM & MVS Operator's Guide* for more information.

NODELST Data Set: You can define a NODELST data set to maintain a list of major nodes that are active at one time. If you use the NODELST facility, you need to define VSAM data sets. For more information on how NODELST is used, refer to “Configuration Restart ” in the *VTAM Network Implementation Guide*.

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To define a NODELST data set:

1. Use the DEFINE command to define a catalog entry and allocate space for an indexed cluster:

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

2. Code the INDEX operand on the DEFINE command, or let it default. (See the sample DEFINE command in the above example.) The data set must be indexed.
3. Code KEYS (2 0). A key length of 2 bytes and an offset of 0 bytes are required.
4. Code RECORDSIZE (10 10). The average record and the maximum record must each have a length of 10 bytes.
5. Make sure that the number of records in the file is equal to the number of major node and dynamic reconfiguration data set (DRDS) file activations that occur from the time VTAM is started until it is halted. This includes major nodes that are reactivated. The primary allocation should be about 1.2 times the total number of major nodes and DRDS files in the network, and the secondary allocation should be about 0.2 times the total number.
6. You can use defaults for all other data characteristics.

Data Sets Containing Information for NCP

This section describes some of the data sets that contain information for NCP. You might need to define these data sets for your communication controller.

NCP Load Library: The NCP load library contains the NCP and the resource resolution table (RRT) load modules.

To load NCP, create an NCP load module data set to allocate space. Cataloging the data set is optional. To activate the NCP, the NCP load library must also be available so that the RRT can be accessed. Figure 1 on page 17 shows the correlation between the DD statement for the NCP load module data set and the NCP BUILD definition statement.

```

DD Statement for NCP Load Module Data Set in VTAM Start Procedure
.
.
.
//NCPLOAD DD DSN=SYS1.NCPLOAD,DISP=...
.
.
.
NCP Definition Statement
BUILD .          DD name, lowest level qualifier of
.              data set name, and value of LOADLIB
.              operand must match ( in this example,
LOADLIB=NCPLOAD, these three are NCPLOAD).
.
.
.

```

Figure 1. Correlation between DD Statement and NCP Definition Statement

NCP load module data sets must be in an authorized program facility (APF) library. Since VTAM must be loaded from an authorized library, the system verifies that all subsequent modules loaded by VTAM are contained in authorized libraries. If the NCP load library is not APF authorized, an ABEND306 may occur when VTAM attempts to load the NCP RRT during an NCP activation. An NCP load module data set can contain more than one NCP.

SYS1.SSPLIB: SYS1.SSPLIB contains the System Support Program (SSP) utilities used by NCP. SYS1.SSPLIB is a required partitioned data set and is added when NCP is installed. It must be in one of the following:

- SYS1.LINKLIB
- A concatenation of SYS1.LINKLIB (a library listed in the currently used LNKSTxx parmlib member)
- A STEPLIB in the start procedure. The STEPLIB must specify an authorized program facility (APF) library.

NCP Dump: The NCP dump data set receives the NCP dump output (one data set for each host VTAM). To dump NCP, you need to allocate space for this data set. You can also catalog this data set. The name of the NCP dump data set is defined when NCP is coded.

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

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

VTAM dump processing fails if the SSP modules that need to be loaded to process the dump are not accessible to VTAM. Refer to “SYS1.SSPLIB” for information on SYS1.SSPLIB requirements. (For a sample STEPLIB DD statement, refer to the example under “Starting VTAM” on page 20.)

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For more information about the NCP dump data set, refer to the *NCP, SSP, and EP Diagnosis Guide*.

Loader Channel I/O Trace: The loader channel I/O trace data set (LDRIOTAB) receives communication controller channel information if a load of an NCP fails. The information collected includes channel control words, channel status words, and the first 20 bytes of any data associated with a WRITE, WRITEIPL, or WRITEBRK channel command.

The DD statement defines the trace data set for the SSP load utility. The *ddname* must be LDRIOTAB, but there are no restrictions on the data set name. The data requires only one track of DASD storage and should have a blocksize and logical record length of 121. The data set must be allocated before it is defined in the VTAM start procedure.

Set the disposition of the data set as share, pass, and keep in the VTAM start procedure. (For a sample STEPLIB DD statement, refer to the example under “Starting VTAM” on page 20.)

Refer to the *NCP, SSP, and EP Diagnosis Guide* for more information about the loader channel I/O trace data set.

CSP and MOSS Dump (IBM 3720, 3725, and 3745 Only): The communication scanner processor (CSP) and maintenance and operator subsystem (MOSS) dump data sets, which apply only to the IBM 3720, 3725, and 3745 Communication Controllers, are used for traces of the CSP and MOSS. To dump the CSP and MOSS microcode for problem determination, create one data set for the dump of each component. These data sets can be cataloged. The names of these data sets are defined to VTAM in the start procedure. “Starting VTAM” on page 20 contains an example of a start procedure.

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

Defining VTAM to MVS

To define VTAM to MVS, do the following:

- Change the message routing codes by coding a system user exit routine (if there is multiple console support).

Message routing codes determine the console at which messages will appear. If the routing codes provided for VTAM messages do not meet your needs, you can change the routing codes used on the messages by coding a system user exit routine (if there is multiple console support). The exit routine receives control before messages are routed so it can examine the messages' routing codes (and descriptor codes) and change them. The system uses the modified routing codes to route these messages. To change routing codes, do the following:

1. Prepare the write-to-operator/write-to-operator-with-response (WTO/WTOR) exit routine, and add it to the control program. The WTO/WTOR exit

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

2. Refer to “Message Routing Codes” in *VTAM Messages* for the message routing codes, and decide on the new routing codes that you want to assign to each message.

- Define channel-attached devices.

If you are adding channel-attached devices, you can define these devices using the Hardware Configuration Definition* (HCD) to dynamically add the devices. Refer to “Dynamic Configuration of Channel-Attached Devices” in the *VTAM Network Implementation Guide* for general information about dynamically adding channel-attached devices, and see “Dynamic Configuration Data Sets for Channel-attached Devices” on page 14 of this book for installation information.

- Determine the ECSA value.

Be sure that the ECSA value, defined by the second value on the CSA parameter in member IEASYSxx, is at least 4 megabytes for VTAM's use plus anything else needed by the system. It is recommended you first review Appendix A, “Estimating Storage” on page 241 to accurately determine the VTAM ECSA value.

Using Automatic Restart Manager

Automatic restart manager is an MVS function that can automatically restart VTAM after an abnormal end (abend). To use automatic restart manager, you must have, at a minimum, MVS/ESA V5R2.

During initialization, VTAM automatically registers with the automatic restart manager, using the following options:

- REQUEST=REGISTER
- ELEMENT=NET@*cp_name*
- ELEMTYPE=SYSVTAM
- TERMTYPE=ELEMTERM.

Note: The *cp_name* is the same name as that used on the SSCPNAME start option.

For more information on automatic restart manager, see *OS/390 MVS Setting Up a Sysplex*.

Loading VTAM

To load VTAM, you must unload the contents of the VTAM tape. The *VTAM Program Directory* that is shipped with VTAM describes the procedure for installing VTAM from the distribution tape, including suggested coding statements. The *VTAM Program Directory* also describes the contents of the tape and space allocations required on system data sets. The tape contains:

- VTAM load modules
- VTAM macros (including those for TSO/VTAM) needed to make VTAM part of MVS
- Logon manager load modules

Starting VTAM

- Sample command lists for use with dynamic I/O
- Command database
- VTAM dump analysis enhancements and VIT analysis
- APPC Application Suite load modules
- APPC Application Suite samples
- APPC Application Suite programming interfaces for ANAME and AFTP.

Use the System Modification Program/Extended (SMP/E) to install VTAM. For information on SMP/E, see the *OS/390 SMP/E User's Guide*.

Starting VTAM

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

The start procedure is called NET. The name NET is not required but is strongly recommended for consistency in entering the VTAM operator commands and to reduce the operator's chances of making a syntax error. The procedure name you specify must be the first operand on the START, MODIFY, DISPLAY, HALT, and VARY operator commands.

Following is an example of job control statements for a typical start procedure.

```
//NET      PROC
//VTAM     EXEC PGM=ISTINM01,TIME=1440,REGION=4096K,
//STEPLIB DD DSN=SYS1.SSPLIB,DISP=SHR
//FFSTLIB DD DSN=SYS1.VTAMLIB,DISP=SHR
//VTAMLST DD DSN=SYS1.VTAMLST,DISP=SHR
//         DD DSN=USER1.AUTO.VTAMLST,DISP=SHR
//SISTCLIB DD DSN=SYS1.SISTCLIB,DISP=SHR
//AUTOCKPT DD DSN=VSAM.AUTOCKPT,AMP=AMORG,DISP=OLD
//VTAMLIB DD DSN=SYS1.VTAMLIB,DISP=SHR
//NCPDUMP DD DSN=SYS1.NCPDUMP,DISP=SHR
//* DATA SETS FOR APPN DATABASE CHECKPOINTING
//DSDB1   DD DSN=SYS1.DSDB1,DISP=SHR
//DSDB2   DD DSN=SYS1.DSDB2,DISP=SHR
//DSDBCTRL DD DSN=SYS1.DSDBCTRL,DISP=SHR
//TRSDB   DD DSN=SYS1.TRSDB,DISP=SHR
//* DATA SETS 3720, 3725, AND 3745 DUMPS
//LDRIOTAB DD DSN=SYS1.LDRIOTAB,DISP=(SHR,PASS,KEEP)
//CSPDUMP DD DSN=SYS1.CDUMP,DISP=SHR
//MOSSDUMP DD DSN=SYS1.MDUMP,DISP=SHR
//SYSABEND DD SYSOUT=A
//NCPLOAD DD DSN=SYS1.NCPLOAD,DISP=SHR
//* NODELST DATA SET
//NODLST1 DD DSN=VSAM.NODLST1,AMP=AMORG,DISP=OLD
//* ALTERNATE NODELST DATA SET
//NODLST2 DD DSN=VSAM.NODLST2,AMP=AMORG,DISP=OLD
//* RESTART DATA SET
//RESTART DD DSN=SYS1.RESTART,AMP=AMORG,DISP=OLD
//* CMIP services Data Sets
//ISTCMIP DD DSN=SYS1.SISTCMIP,DISP=SHR
//ACYGDMO DD DSN=SYS1.SISTGDMO(ACYGDMO),DISP=SHR
//ISTASN1 DD DSN=SYS1.SISTASN1,DISP=SHR
```

Note: On the EXEC statement, ISTINM01 is the main VTAM initialization module name. Code PGM=ISTINM01.

The previous example is based on the following assumptions:

- The node is APPN-capable.
- A communication controller is in the network.
- The generated NCP and RRT modules for the communication controller reside in data set SYS1.NCPLOAD (NCPLOAD DD statement). The NCP source is in SYS1.VTAMLST.
- The SSP modules needed to load and dump the communication controllers are in SYS1.SSPLIB (STEPLIB DD statement).
- A dump data set is needed for the communication controller (NCPDUMP DD statement).
- The dynamic configuration of channel-attached devices facility (dynamic I/O) is being used (VTAMLST DD and AUTOCKPT DD statements).
- A dump data set is needed for the communication scanner processor (CSP) (CSPDUMP DD statement). For 3380 DASD, this data set should be allocated with at least 7 cylinders using a block size of 512.
- A dump data set is needed for the maintenance and operator subsystem (MOSS) (MOSSDUMP DD statement). For 3380 DASD, this data set should be allocated with at least 10 cylinders using a block size of 512.
- Two NODELST data sets have been defined and can be used by VTAM (NODEDS1 DD and NODEDS2 DD statement).
- The following CMIP services data sets are required to enable CMIP services and the VTAM topology agent:
 - SYS1.SISTCMIP
 - SYS1.SISTGDMO(ACYGDMO)
 - SYS1.SISTASN1

The directory definition file in the SYS1.SISTCMIP data set can be updated while VTAM is running, but CMIP services is aware of these changes only when:

- The MODIFY TABLE command is issued
- CMIP services is restarted by one of the following methods:
 - If CMIP services is active, stop CMIP services by issuing the MODIFY VTAMOPTS command with the OSIMGMT=NO start option and then restart CMIP services by issuing the MODIFY VTAMOPTS command with the OSIMGMT=YES start option
 - Restart VTAM with the OSIMGMT=YES start option.

It is recommended that you keep backup copies of both the original directory definition file (or the last directory definition file that loaded without error) and the edited version of the file. When you load the edited file, VTAM writes over the existing version of the directory definition file. There is no way to display the contents of the file being used by CMIP services, because the file is read into an internal data structure.

If the edited file has a syntax error, VTAM does not use it. Message IST1444I is issued to indicate what is wrong with the file. VTAM continues to use the last correct file that it read.

Installing VTAM Dump Analysis and VIT Analysis Tools

With your backup copies, you can correct the syntax error in the edited file by comparing it to the previous file that loaded without error.

Note: The member name, ACYDDF, must not be changed.

- Space has been allocated for all data sets, and they have been cataloged.

Installing the VTAM Dump Analysis and the VIT Analysis Tools

The following steps should be completed to install the VTAM dump analysis enhancements and the VIT analysis tool:

1. Concatenate the target data sets into the DDNAME statements.
2. Install the dump tables and trace tables.
3. Compile the help panels, keylists, and commands for both dump and trace.
4. Verify that the dump formatter panels have been set up correctly.
5. Verify that the trace formatter panels have been set up correctly.

If problems are encountered, see “VTAM Internal Trace (VIT) Analysis Tool Problems ” and “VTAM Dump Analysis Tool Problems ” in *VTAM Diagnosis* for further information.

Concatenating the Target Data Sets Used in the Installation

The following target data sets contain the necessary data to set up the VTAM dump analysis and the VIT analysis tool. You need to concatenate the target data sets into the DDNAME statements shown.

Table 5. Data sets necessary to install the VTAM dump and VIT analysis tools

Target Data Set	Action	DDNAME	Comment
SYS1.SISTCLI0	Concatenate	SYSPROC	Contains REXX EXECs
SYS1.SISTCLS1	Concatenate	SYSPROC	Contains CLISTS
SYS1.SISTDEBUG	Concatenate	STEPLIB	Contains load modules
SYS1.SISTPNL0	Concatenate	ISPPLIB	Contains compiled panels
SYS1.SISTMSG0	Concatenate	ISPMLIB	Contains compiled ISPF messages
User-defined data set	Concatenate	ISPTLIB	This data set can be a new or existing one and needs to be the same data set used for ISPTABL.
User-defined data set (same as used for ISPTLIB)	Replace	ISPTABL	Because ISPTABL can only point to one data set, this data set needs to replace any previous data set (or DDNAME for ISPTLIB).

Notes:

1. The SYS1.SISTPNL0 data set should be allocated with enough space to include the panels from SYS1.SISTPNL1.
2. New tables are placed in the first data set under DDNAME ISPTABL.

Use a LOGON PROC to concatenate the data sets. If you create a new LOGON PROC, you need to log off and back on for the PROC to take effect.

The following figure shows an example of a LOGON PROC. The data sets necessary for the VTAM dump analysis and the VIT analysis tool are shown in bold print.

```
//VTAMPROC EXEC PGM=IKJEFT01,TIME=1440,REGION=2048K,
// PARM='SPFTPO'
//STEPLIB DD DSN=USER.LINKLIB,DISP=SHR
// DD DSN=SYS1.ISRLOAD,DISP=SHR
// DD DSN=SYS1.ISPLOAD,DISP=SHR
// DD DSN=SYS1.LINKLIB,DISP=SHR
// DD DSN=SYS1.SISTDBUG,DISP=SHR
//SYSABEND DD SYSOUT=A
//SYSUADS DD DSN=SYS1.UADS,DISP=SHR
//SYSHELP DD DSN=SYS1.HELP,DISP=SHR
//SYSPROC DD DSN=USER.CLIST,DISP=SHR
// DD DSN=SYS1.ISRCLIB,DISP=SHR
// DD DSN=SYS1.CLIST,DISP=SHR
// DD DSN=SYS1.SISTCLI0,DISP=SHR
// DD DSN=SYS1.SISTCLS1,DISP=SHR
// DD DSN=SYS1.ISPEXEC,DISP=SHR
//ISPLLIB DD DSN=SYS1.SGIMLMD0,DISP=SHR
//HACPCKPT DD DSN=SYS1.HASPCKPT,DISP=SHR
//ISPPLIB DD DSN=USER.PANELS,DISP=SHR
// DD DSN=ISF.V1R1M0.ISFPLIB,DISP=SHR
// DD DSN=SYS1.ISRPLIB,DISP=SHR
// DD DSN=SYS1.ISPPLIB,DISP=SHR
// DD DSN=SYS1.SBLSPNL0,DISP=SHR
// DD DSN=SYS1.SISTPNL0,DISP=SHR
//ISPMLIB DD DSN=USER.MESSAGES,DISP=SHR
// DD DSN=SYS1.ISRMLIB,DISP=SHR
// DD DSN=SYS1.ISPMLIB,DISP=SHR
// DD DSN=SYS1.SBLSMSG0,DISP=SHR
// DD DSN=SYS1.SISTMSG0,DISP=SHR
//ISPSLIB DD DSN=SYS1.ISRSLIB,DISP=SHR
// DD DSN=SYS1.ISPSLIB,DISP=SHR
//ISPTLIB DD DSN=USER.TABLES,DISP=SHR
// DD DSN=ISF.V1R1M0.ISFTLIB,DISP=SHR
// DD DSN=SYS1.ISRTLIB,DISP=SHR
// DD DSN=SYS1.ISPTLIB,DISP=SHR
// DD DSN=SYS1.SMPE.TABLES,DISP=SHR
//ISPTABL DD DSN=USER.TABLES,DISP=SHR
//ISPEXEC DD DSN=SYS1.ISPEXEC,DISP=SHR
//SMPTABL DD DSN=SYS1.SMPE.TABLES,DISP=SHR
//ISPCTL1 DD DISP=NEW,UNIT=VIO,SPACE=(CYL,(1,1)),
// DCB=(LRECL=80,BLKSIZE=800,RECFM=FB)
//ISPCTL2 DD DISP=NEW,UNIT=VIO,SPACE=(CYL,(1,1)),
// DCB=(LRECL=80,BLKSIZE=800,RECFM=FB)
//ISPLST1 DD DISP=NEW,UNIT=VIO,SPACE=(CYL,(1,1)),
// DCB=(LRECL=121,BLKSIZE=1210,RECFM=FBA)
//ISPLST2 DD DISP=NEW,UNIT=VIO,SPACE=(CYL,(1,1)),
// DCB=(LRECL=121,BLKSIZE=1210,RECFM=FBA)
```

Figure 2 (Part 1 of 2). Example of a LOGON PROC

Installing VTAM Dump Analysis and VIT Analysis Tools

```
//SYSPRINT DD TERM=TS
//SYSIN DD TERM=TS
//DD1 DD DYNAM
//DD2 DD DYNAM
//DD3 DD DYNAM
//DD4 DD DYNAM
//DD5 DD DYNAM
//DD6 DD DYNAM
//DD7 DD DYNAM
//DD8 DD DYNAM
//DD9 DD DYNAM
//DD10 DD DYNAM
//DD11 DD DYNAM
//DD12 DD DYNAM
//DD13 DD DYNAM
//DD14 DD DYNAM
//DD15 DD DYNAM
//DD16 DD DYNAM
//DD17 DD DYNAM
//DD18 DD DYNAM
//DD19 DD DYNAM
//DD20 DD DYNAM
//DD21 DD DYNAM
//DD22 DD DYNAM
//DD23 DD DYNAM
//DD24 DD DYNAM
//DD25 DD DYNAM
```

Figure 2 (Part 2 of 2). Example of a LOGON PROC

Notes:

1. Do not include the source data contained in SISTPNL1 in any ISP library, or problems will occur in using ISTDE01 or ISTTE01.
2. ISPTABL must point to either ISPTLIB or the USER.TABLES data set, and is needed only for compiling the help panels, keylists, and commands.

Installing the ISPF Tables

After the installation data sets have been concatenated, you can install the ISPF tables. To do this, select option 7 from the ISPF/PDF PRIMARY OPTION MENU, and then option 1 from the Dialog Test menu to go to the ISPF INVOKE DIALOG FUNCTION/SELECTION PANEL shown in Figure 3 on page 25.

```

----- INVOKE DIALOG FUNCTION/SELECTION PANEL -----

INVOKE SELECTION PANEL:
  PANEL ===>                                OPT ===>

INVOKE COMMAND:
  CMD   ===> ISTDTABL

  LANG  ===>                                (APL or blank)
  MODE  ===>                                (LINE, FSCR, or blank)

INVOKE PROGRAM:
  PGM   ===>                                PARM ===>
  MODE  ===>                                (LINE, FSCR, or blank)

NEWAPPL      ===> NO                        ID   ===>
NEWPOOL      ===> NO                        PASSLIB ===> NO
COMMAND ===>

F1=HELP      F2=SPLIT  F3=END    F4=RETURN  F5=RFIN D  F6=RCHANGE
F7=UP        F8=DOWN   F9=SWAP   F10=LEFT  F11=RIGHT F12=CURSOR
  
```

Figure 3. ISPF Panel Used to Run the Table EXECs

To run all the table EXECs for the formatted dump, enter the EXEC name, `ISTDTABL`, in the `INVOKE COMMAND: CMD ===>` field and press Enter.

The individual table EXECs for the formatted dump are:

- `ISTDT020`
- `ISTDT025`
- `ISTDT033`
- `ISTDT037`
- `ISTDT053`

To run all the table EXECs for the formatted trace, enter the EXEC name, `ISTTTABL`, in the `INVOKE COMMAND: CMD ===>` field and press Enter.

The individual table EXECs for the formatted trace are:

- `ISTTT007`
- `ISTTT012`
- `ISTTT017`
- `ISTTT024`

Each table EXEC should complete with a return code of 0. `RC=0` will appear in the upper right corner of the screen.

The output of the table EXECs is placed in the data set pointed to by the `DDNAME ISPTABL` statement, the user-defined `ISPTLIB` data set.

Invoking the ISPF Dialog Tag Language Utility

To complete the panel setup, you must compile all of the help panels, keylists and commands for both dump and trace. The ISPF Dialog Tag Language Utility, `ISPDTLC`, is used for the compile. `ISPDTLC` is a REXX EXEC provided by ISPF that generates panels, help panels, messages, keylists and commands from Dialog Tag Language source files. For more information about the Dialog Tag Language Utility, see the *OS/390 ISPF Dialog Tag Language Guide and Reference*. You can

Installing VTAM Dump Analysis and VIT Analysis Tools

enter ISPD TLC from the ISPF Command ==> line or from the TSO COMMAND PROCESSOR panel, shown in Figure 4 on page 26.

Note: This cannot be done from the TSO READY message.

```
----- TSO COMMAND PROCESSOR -----
ISPF COMMAND ==>

ENTER TSO COMMAND, CLIST, OR REXX EXEC BELOW:

==> ISPD TLC

F1=HELP   F2=SPLIT  F3=END    F4=RETURN  F5=RFIND   F6=RCHANGE
F7=UP     F8=DOWN   F9=SWAP   F10=LEFT   F11=RIGHT  F12=CURSOR
```

Figure 4. ISPF Panel Used to Invoke the Dialog Tag Language Utility

After ISPD TLC has been invoked, the ISPF Dialog Tag Language Conversion Utility panel is displayed.

Compiling the Help Panels, Keylists, and Commands

This section describes how to compile the help panels, keylists, and commands using the ISPF Dialog Tag Language Conversion Utility, shown in Figure 5.

```
ISPF Dialog Tag Language Conversion Utility

Enter requested information:
Member name . . . . . ISTDHELP
DTL source data set - 1 . 'SYS1.SISTPNL1'
DTL source data set - 2 . _____
DTL source data set - 3 . _____
DTL source data set - 4 . _____
Output Panel data set . . 'SYS1.SISTPNL0'
Output Message data set . 'SYS1.SISTMSG0'
Output Log data set . . . _____
  (If log data set name is blank, messages go to ISPF log)
Keylist Application Id . . ISTD Up to four characters
Replace old members . . . YES No or Yes
ISPD TLC messages to disk . YES No or Yes
Allow DBCS . . . . . NO No or Yes
Specify KANA . . . . . _____ No or Yes or blank
Suppress messages (ISPF) . NO No or Yes
National Language . . . . ENGLISH

Command ==> _____
```

Figure 5. Compiling the Help Panels, Keylists, and Commands for Formatted Dump

To compile the help panels, keylist, and commands, enter the following on the “ISPF Dialog Tag Language Conversion Utility” panel:

- The source data set. ISTDHELP contains a compiled list of all the help panels, keylists, and commands for the formatted dump. ISTTHELP contains a compiled list of all the help panels, keylists, and commands for the formatted trace.
- The output data set for the panels.
- The output data set for the messages.
- The four-character prefix of the dump or trace application to be used as the keylist application ID.
 - For formatted dump, enter ISTD.
 - For formatted trace, enter ISTT.
- Whether old members are replaced with the new compiled output. Enter YES.
- Whether you want the ISPD TLC compiler messages displayed on the screen or written to a file.

If you indicate that you want the messages written to a data set, you can specify a data set name in the OUTPUT LOG data set field. Otherwise, the output is written to the ISPF log. If you choose to have the messages written to a data set other than the ISPF log, you need to allocate the output data set before running the compile.

Allocate the output data set with the same attributes as the ISPF log. Unless you specify different data sets for the dump and trace compiles, the messages from the second compile will overwrite the messages from the first compile. Writing the messages to the ISPF log will not cause any messages to be overwritten. It is recommended that you have the messages written to a file.

- Whether you want ISPF messages suppressed. It is recommended that you not suppress messages.
- Your national language.

Examples of the completed ISPF V3R2 panels follow.

To compile the help panels, keylists, and commands for formatted dump, enter the information as provided on the screen shown in Figure 5 on page 26.

Note: The output data set for the keylists and commands is determined by what was specified for ISPTABL and not by what is specified for the output panel data set.

To compile the help panels, keylists, and commands for formatted trace, enter the information as provided on the screen shown in Figure 6 on page 28. Be sure to change the member name for the source file, the output message data set if you specified your own, and the keylist application ID.

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```
ISPF Dialog Tag Language Conversion Utility

Enter requested information:
Member name . . . . . ISTTHELP
DTL source data set - 1 . 'SYS1.SISTPNL1'
DTL source data set - 2 . _____
DTL source data set - 3 . _____
DTL source data set - 4 . _____
Output Panel data set . . 'SYS1.SISTPNL0'
Output Message data set . 'SYS1.SISTMSG0'
Output Log data set . . . _____
      (If log data set name is blank, messages go to ISPF log)
Keylist Application Id . . ISTT Up to four characters
Replace old members . . . YES No or Yes
ISPD TLC messages to disk . YES No or Yes
Allow DBCS . . . . . NO No or Yes
Specify KANA . . . . . _____ No or Yes or blank
Suppress messages (ISPF) . NO No or Yes
National Language . . . . ENGLISH

Command ==> _____
```

Figure 6. Compiling the Help Panels, Keylists, and Commands for Formatted Trace

After compiling the help panels, keylists, and commands, the VTAM dump analysis enhancements and VIT analysis tool are ready for use. No additional steps are necessary. An example of compiling panel ISTDH0A is shown in Figure 7 on page 29, including the results of the compile ('1 warning(s) and 0 error(s) found').

Note: Each of the help panels provided generates at least one warning message, ISPC850W. This message is normal when compiling panel ISTDH0A. Other warning messages, including ISPC568W and ISPC865W, should also be ignored. Error messages should not be ignored.

After the help panels, keylists, commands, and tables have been generated and/or moved to the correct libraries, the process can now be tested.

Verifying the Dump Formatter Panels

To verify that the Dump Formatter panels are set up correctly, return to the ISPF 7.1 function "INVOKE DIALOG FUNCTION/SELECTION PANEL" and enter the REXX EXEC as shown in Figure 8 on page 29.

```

ISPD TLC ISPF Dialog Tag Language Conversion Utility
Converting source file "RDWJA62.ISTD.GML(ISTDH0A)"...
ISPC850W: Warning. Line 33 of file "RDWJA62.TEMPD.PANELS(ISTDH0A)".
"KEYLIST=ISTDK006" on the "HELP" tag is an ISPF extension to the tag
language and will not be portable to the OS/2 Dialog Manager. The conversion
utility will process the attribute "KEYLIST=ISTDK006".
1 warning(s) and 0 error(s) found.
***
    
```

Figure 7. Messages Resulting from Compilation

```

----- INVOKE DIALOG FUNCTION/SELECTION PANEL -----

INVOKE SELECTION PANEL:
  PANEL ===>                                OPT  ===>

INVOKE COMMAND:
  CMD   ===> ISTDE01

  LANG  ===>                                (APL or blank)
  MODE  ===>                                (LINE, FSCR, or blank)

INVOKE PROGRAM:
  PGM   ===>                                PARM  ===>
  MODE  ===>                                (LINE, FSCR, or blank)

NEWAPPL  ===> YES                            ID   ===> ISTD
NEWPOOL  ===> NO                               PASSLIB ===> NO
COMMAND ===>
  F1=HELP  F2=SPLIT  F3=END    F4=RETURN  F5=RFIND  F6=RCHANGE
  F7=UP    F8=DOWN   F9=SWAP   F10=LEFT  F11=RIGHT F12=CURSOR
    
```

Figure 8. Verifying the Dump Formatter Panels

The first ISPF panel you should see is shown in Figure 9 on page 30.

Installing VTAM Dump Analysis and VIT Analysis Tools

```
VTAMMAP Analysis Menu

Select one of the following. Then press Enter.

— 1. APPC . . - APPLCONV, PARTNRLU, APPLMODE, APPMODAL
   2. APPN . . - APPNBASE, FNDADJCP, FNDANDCB, FND COS, FNDDECB, etc
   3. General. - HOST, VTAM, VT BASIC, VTFNDMOD, VTMODS, VITAL, etc
   4. Queues . - PABSCAN, VTCVTPAB, VTREADYQ
   5. Resource - RDTCHECK, RDTFULL, RDTHIER, RDTSUM, VTNODE
   6. Session. - FINDDSIB, FINDSIB, SES, SIBCHECK
   7. Search . - SRTFIND
   8. Storage. - SPANC, STORAGE, VTBUF, VTRPH
   9. Waits. . - VTWRE
  10. ERs/VRs. - ROUTES, VTRVBLK
  11. CLISTs. .- ISTVABND, ISTVDUMP, ISTVMAP, ISTVSAVE, ISTVSLIP

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Command ==>
F1=Help   F2=Split  F3=Exit   F9=Swap   F12=Cancel
```

Figure 9. Main Menu for Selecting Dump Options

Press the PF1 key to verify that the appropriate help panel is displayed.

Verifying the Trace Formatter Panels

To verify that the Trace Formatter panels are set up correctly, return to the ISPF 7.1 function "INVOKE DIALOG FUNCTION/SELECTION PANEL" and enter the REXX EXEC as shown in Figure 10.

```
----- INVOKE DIALOG FUNCTION/SELECTION          FUNCTION RC =  0

INVOKE SELECTION PANEL:
  PANEL ==>                                OPT ==>

INVOKE COMMAND:
  CMD   ==> ISTTE01

  LANG ==>                                (APL or blank)
  MODE ==>                                (LINE, FSCR, or blank)

INVOKE PROGRAM:
  PGM   ==>                                PARM ==>
  MODE ==>                                (LINE, FSCR, or blank)

NEWAPPL ==> YES                            ID   ==> ISTI
NEWPOOL ==> NO                             PASSLIB ==> NO
COMMAND ==>

F1=HELP   F2=SPLIT  F3=END    F4=RETURN  F5=RFIN D  F6=RCHANGE
F7=UP     F8=DOWN   F9=SWAP   F10=LEFT  F11=RIGHT F12=CURSOR
```

Figure 10. Verifying the Trace Formatter Panels

The first ISPF panel you should see is shown in Figure 11 on page 31.

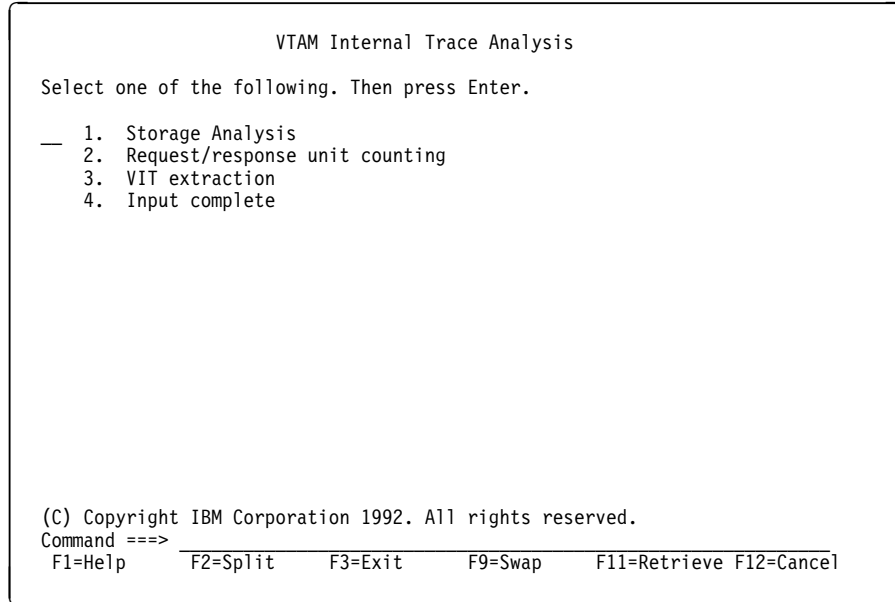


Figure 11. Main Menu for Selecting Trace Parameters

Press the PF1 key to verify that the appropriate help panel is displayed.

Note: It is recommended that you position the command line at the bottom of the screen using ISPF PARMS option DISPLAY and changing the 'COMMAND LINE PLACEMENT ==> ASIS' to BOTTOM to improve readability.

Customizing the IPCS Interface

If you want a customized interface to be active to select the VTAM dump analysis commands, customize the IPCS panel BLSPPRIM by adding the highlighted lines in Figure 12 on page 32 to create and activate option 7 on the IPCS Primary Option Menu as shown in Figure 13 on page 33. This modification allows you to access VTAMMAP directly for dump processing. When this option is selected, control is passed to the the ISTDE01 EXEC. This EXEC controls the IPCS panels for the dump formatter.

Installing VTAM Dump Analysis and VIT Analysis Tools

```

)ATTR
/* ===== */
/* 5685-001 This panel is "Restricted materials of IBM" */
/* (C) Copyright IBM Corporation 1988 */
/* Licensed materials - property of IBM */
/* Refer to copyright instructions, form number G120-2083 */
/* ===== */
¢ TYPE(INPUT) INTENS(HIGH) CAPS(OFF) JUST(LEFT) PAD(NULLS)
@ TYPE(TEXT) COLOR(GREEN) INTENS(LOW)
)BODY
%----- IPCS PRIMARY OPTION MENU -----
%OPTION ==>¢ZCMD

@*****
% 0 +DEFAULTS - Specify default dump and options @* USERID - &ZUSER
% 1 +BROWSE - Browse dump data set @* DATE - &ZDATE
% 2 +ANALYSIS - Analyze dump contents @* JULIAN - &ZJDATE
% 3 +SUBMIT - Submit problem analysis job to batch @* TIME - &ZTIME
% 4 +COMMAND - Enter IPCS subcommand or CLIST @* PREFIX - &ZPREFIX
% 5 +UTILITY - Perform utility functions @* TERMINAL- &ZTERM
% 6 +DUMPS - Manage dump inventory @* PF KEYS - &ZKEYS
% 7 +VTAM - VTAM dump analysis commands @*****
% T +TUTORIAL - Learn how to use the IPCS dialog
% X +EXIT - Terminate using log and list defaults

+Enter%END+command to terminate IPCS dialog
)INIT
&ZPRIM = YES /* Always a primary option menu */
&ZHTOP = BLSPhelp /* Tutorial table of contents */
.CURSOR = ZCMD
.HELP = BLSPhelp
&ZHINDEX = &Z /* No tutorial index is supplied */
)PROC
&PASSLIB = &Z
IF (&ZBCS = YES, NO)
&PASSLIB = PASSLIB
&ZSEL = TRANS( TRUNC (&ZCMD, '.')
0, 'PGM(BLSGSCMD) PARM(%BLSCSETD)'
1, 'PGM(BLSLDISP) NEWAPPL(BLSL) &PASSLIB'
2, 'PANEL(BLSPSCRN)'
3, 'PANEL(BLSPBKGD)'
4, 'PANEL(BLSPDSLE)'
5, 'PANEL(BLSPUTIL)' /* @00A*/
6, 'PGM(BLSGDUIN)'
7, 'PGM(BLSGSCMD) PARM(%ISTDE01) NEWAPPL(ISTD) &PASSLIB'
t, 'PGM(ISPTUTOR) PARM(BLSPTUTR)'
T, 'PGM(ISPTUTOR) PARM(BLSPTUTR)'
' , ' , '
x, 'EXIT'
X, 'EXIT'
*, '?' )
)END

```

Figure 12. Sample IPCS Panel BLSPPRIM Customization

```
-----IPCS PRIMARY OPTION MENU-----
OPTION ===> _

0  DEFAULTS   - Specify default dump and options
1  BROWSE    - Browse dump data set
2  ANALYSIS  - Analyze dump contents
3  SUBMIT    - Submit problem analysis job to batch
4  COMMAND   - Enter IPCS subcommand or CLIST
5  UTILITY   - Perform utility functions
6  DUMPS     - Manage dump inventory
7  VTAM      - VTAM dump analysis commands
T  TUTORIAL  - Learn how to use the IPCS dialog
X  EXIT      - Terminate using log and list defaults

Enter END command to terminate IPCS dialog
```

Figure 13. Addition of Option 7 on the IPCS Primary Option Menu

Customizing the ISPF Interface

If you want a customized interface to be active to select the VTAM trace analysis commands, customize the ISPF panel ISR@PRIM by adding the highlighted lines shown in Figure 14 on page 34 to create and activate option V on the ISPF/PDF Primary Option Menu as shown in Figure 15 on page 35. When this option is selected, control is passed to the ISTTE01 EXEC. This EXEC controls the ISPF panels for the trace formatter.

Installing VTAM Dump Analysis and VIT Analysis Tools

```

)ATTR
+ TYPE(TEXT) COLOR(GREEN) INTENS(LOW)
)BODY
%----- SAMPLE ISPF/PDF PRIMARY OPTION MENU -----+
%OPTION ==>_ZCMD
%
%
%                                +USERID - &ZUSER
% 0 +ISPF PARMS - Specify terminal and user parameters +TIME - &ZTIME
% 1 +BROWSE - Display source data or output listings +TERMINAL - &ZTERM
% 2 +EDIT - Create or change source data +PF KEYS - &ZKEYS
% 3 +UTILITIES - Perform utility functions
% 4 +FOREGROUND - Invoke language processors in foreground
% 5 +BATCH - Submit job for language processing
% 6 +COMMAND - Enter TSO command or CLIST
% 7 +DIALOG TEST - Perform dialog testing
% 8 +LM UTILITIES- Perform library administrator utility functions
% 9 +IBM PRODUCTS- Same as option S (SER PRODUCTS)
% 10 +SCLM - Software Configuration and Library Manager
% C +CHANGES - Display summary of changes for this release
% V +VTAM - VTAM trace analysis commands
% T +TUTORIAL - Display information about ISPF/PDF
% S +SER PRODUCTS- Southeast Region product options
% I +SER IC TOOLS- Southeast Region Info-Center and Toolkits
% P +RPM - Regional Problem Management
% X +EXIT - Terminate ISPF using log and list defaults
%
+Enter%END+command to terminate ISPF.
%
)INIT
.HELP = ISR0003
&ZPRIM = YES /* ALWAYS A PRIMARY OPTION MENU */
&ZHTOP = ISR0003 /* TUTORIAL TABLE OF CONTENTS */
&ZHINDEX = ISR91000 /* TUTORIAL INDEX - 1ST PAGE */
&ZSCLMPRJ = &Z
VPUT (ZHTOP,ZHINDEX,ZSCLMPRJ) PROFILE
)PROC
&ZQ = &Z
IF (&ZCMD ^= ' ')
&ZQ = TRUNC(&ZCMD, '.')
IF (&ZQ = ' ')
.MSG = ISRU000
&ZSEL = TRANS( &ZQ
0, 'PANEL(ISPOPTA)'
1, 'PGM(ISRBRO) PARM(ISRBRO01)'
2, 'PGM(ISREDIT) PARM(P,ISREDM01)'
3, 'PANEL(ISRUTIL)'
4, 'PANEL(ISRFPA)'
5, 'PGM(ISRJB1) PARM(ISRJPA) NOCHECK'
6, 'PGM(ISRPTC)'
7, 'PGM(ISPYXDR) PARM(ISR) NOCHECK'
8, 'PANEL(ISRLPRIM)'
9, 'PANEL(SERPP000)' /* CHANGED HERE? FROM ISRDIIS */
10, 'PGM(ISRSCLM) NOCHECK'
C, 'PGM(ISPTUTOR) PARM(ISR000005)'
V, 'CMD(%ISTTE01) NEWAPPL(ISTT) &PASSLIB'
T, 'PGM(ISPTUTOR) PARM(ISR000000)'
S, 'PANEL(SERPP000)'
I, 'PANEL(SERIC000)'
P, 'CMD(%SRRPM)'
,
,
,
X, 'EXIT'
*, '?' )
&ZTRAIL = .TRAIL
)END

```

Figure 14. Sample ISPF Panel ISR@PRIM Customization

Installing the VTAM Command Set Library for NetView Command Tree Facility

```
----- ISPF/PDF PRIMARY OPTION MENU -----
OPTION ==>
      0 ISPF PARMS - Specify terminal and user parameters  USERID - USERID
      1 BROWSE    - Display source data or output listings  TIME    - 9:29
      2 EDIT     - Create or change source data           TERMINAL - 3278
      3 UTILITIES - Perform utility functions             PF KEYS - 12
      4 FOREGROUND - Invoke language processors in foreground
      5 BATCH    - Submit job for language processing
      6 COMMAND  - Enter TSO command or CLIST
      7 DIALOG TEST - Perform dialog testing
      8 LM UTILITIES- Perform library administrator utility functions
      9 IBM PRODUCTS- Same as option S (SER PRODUCTS)
     10 SCLM    - Software Configuration and Library Manager
      C CHANGES - Display summary of changes for this release
      V VTAM    - VTAM trace analysis commands
      T TUTORIAL - Display information about ISPF/PDF
      S SER PRODUCTS- Southeast Region product options
      I SER IC TOOLS- Southeast Region Info-Center and Toolkits
      P RPM     - Regional Problem Management
      X EXIT    - Terminate ISPF using log and list defaults

Enter END command to terminate ISPF.
```

Figure 15. Addition of Option V on the ISPF/PDF Primary Option Menu

Installing the VTAM Command Set Library for the NetView Command Tree Facility

To install the VTAM command set library for the NetView command tree facility on a workstation, follow these steps:

1. Download the VTAM command set library files to your workstation.

Use the OS/2^{*} RECEIVE command to download the files from the SYS1.SISTDAT1 data set. Enter the following commands on an OS/2 command line (where id is the emulator session from which you are downloading):

```
RECEIVE ISTC440M.RAM id:'SYS1.SISTDAT1(ISTC440M)'  
RECEIVE ISTLDRM2.EXE id:'SYS1.SISTDAT1(ISTLDRM2)'
```

OS/2 downloads the ISTLDRM2 unpacking utility and the packed version of the VTAM command set library and stores them on your workstation. For more information on the RECEIVE command, enter HELP "RECEIVE" on the OS/2 command line.

Note: You must be in TSO mode to download these files.

For example, if you are downloading from your A emulator session, and you want to store the VTAM command set library for the command tree facility on your D: drive in directory IBMFKB\RUNTIME\ISTC440M, enter:

```
RECEIVE D:\IBMFKB\RUNTIME\ISTC440M\ISTC440M.RAM A:'SYS1.SISTDAT1(ISTC440M)'
```

IBMFKB is the directory that contains the command tree facility program files. It is suggested (but not required) that you install each command set library in a separate subdirectory of IBMFKB\RUNTIME. For example, you could store the VTAM V4R4 command set library in IBMFKB\RUNTIME\ISTC440M, and a user-written command set library in IBMFKB\RUNTIME\MYCMDS.

2. Unpack the VTAM command set library files.

Installing the VTAM Command Set Library for NetView Command Tree Facility

After the packed command set library is on your workstation, you need to unpack the files before you can build VTAM commands. To unpack the files, go to an OS/2 command line and be sure the prompt is set for the directory to which you downloaded the command set library (for example, D:\IBMFKB\RUNTIME\ISTC440M). Now enter:

```
ISTLDRM2 ISTC440M.RAM /D
```

This unpacks the files and stores them in the current directory. The ISTLDRM2 utility does not erase the packed command set library file. For backup purposes, it is recommended that you keep a copy of ISTC440M.RAM on the workstation or SYS1.SISTDAT1(ISTC440M) on the host.

For more information on the command tree facility, including how to create user profiles to start the program with the VTAM command set, see *Using IBM Command Tree/2*.

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Chapter 2. Upgrading VTAM V4R3 to VTAM V4R4

This chapter helps you upgrade VTAM V4R3 to VTAM V4R4.

If you are migrating to APPN: VTAM includes support for Advanced Peer-to-Peer Networking (APPN), an extension to IBM's Systems Network Architecture (SNA). This book does not explain how to upgrade an existing VTAM subarea node to an APPN node. Such an upgrade is optional; you can install VTAM V4R4 and operate it as a subarea node. IBM recommends that you install VTAM V4R4 and get it operating in a test environment at your current functional level before using any of the new optional functions or enhancements in VTAM V4R4. For information about upgrading a VTAM subarea node to an APPN node, refer to *Planning for Integrated Networks* and to Chapter 15, "Implementing a Combined APPN and Subarea Network" in the *VTAM Network Implementation Guide*.

If you are upgrading a VTAM V4R3 APPN node to VTAM V4R4: This chapter describes the migration impacts of upgrading a VTAM V4R3 APPN node to VTAM V4R4.

Planning to Upgrade VTAM V4R3 to VTAM V4R4

This section helps you prepare to upgrade VTAM V4R3 to VTAM V4R4. It describes the:

- Upward and downward compatibility of VTAM V4R4
- New functions and enhancements performed without changes to user interfaces
- Storage required to install and operate VTAM V4R4
- Software and hardware requirements for VTAM V4R4
- Target and distribution libraries required to install VTAM V4R4.

Upward Compatibility

Upward compatibility is the ability of VTAM V4R3 functions and user interfaces to work in VTAM V4R4. All VTAM V4R3 functions are included in VTAM V4R4. The functions provided by AnyNet, which is a separately orderable feature in VTAM V4R3, is now shipped with VTAM V4R4.

In general, you do not have to make any changes to your VTAM V4R3 user interfaces to continue to use V4R3 functions in VTAM V4R4. Following are conditions under which you might have to make changes and the user interfaces that you might have to change:

- If you are not using encryption
- If you have a subarea session across a pre-V4R4 multipath channel (MPC) connection (APPC Host-to-Host Connection - AHHC)
- If you are using the XNETALS option
- If you have a network node in a generic resource configuration
- If you have automated operation procedures
- If you have coded a user-defined major node ISTTRL
- If you have modified IBM-supplied default user-definable tables and user-modifiable modules.

If you are not using encryption

The default value for the ENCRYPTN start option is now ENCRYPTN=YES. This default will produce similar results if ENCRYPTN=YES was specified in a previous release. VTAM V4R4 checks each time a session is requested to see if encryption is available. In pre-VTAM V4R4, this check was made only once during VTAM initialization. If encryption is not available, a message is issued to notify the operator. You should code ENCRYPTN=NO if you do not intend to utilize the encryption function. This will reduce the path length during session initialization and reduce the messages issued to the operators console and log.

If you have a subarea session across a pre-V4R4 multipath channel (MPC) connection

High performance data transfer (HPDT) services are available over connections to other nodes that implement HPDT MPC. Non-HPDT MPC is used by VTAM to enable connections only between a VTAM APPN host node and an adjacent VTAM APPN host node. These connections are called APPN host-to-host channel (AHHC) connections. AHHC connections can be considered synonymous with non-HPDT MPC connections. When VTAM and the adjacent node support HPDT MPC, the connection automatically uses HPDT MPC, unless VTAM includes MPCLEVEL=NOHPDT on its TRLE definition statement. When the adjacent node is another VTAM node that supports HPDT MPC, if MPCLEVEL=NOHPDT is coded on the TRLE definition statement of at least one of the VTAM nodes, the connection uses non-HPDT MPC.

You must code MPCLEVEL=NOHPDT under the following situations, or connection or session requests over the connection will fail:

- When both nodes are VTAM V4R4 nodes and one of the VTAM nodes does not support HPDT MPC (HPR=ANR or HPR=NONE is specified in its start list).
- When a VTAM node is an interchange node and the partner node is a network node and sessions are attempted from an adjacent subarea node across the interchange node to the adjacent network node.
- When non-IBM hardware extenders are used, unless your hardware extender vendor has added MPC support for VTAM V4R4.

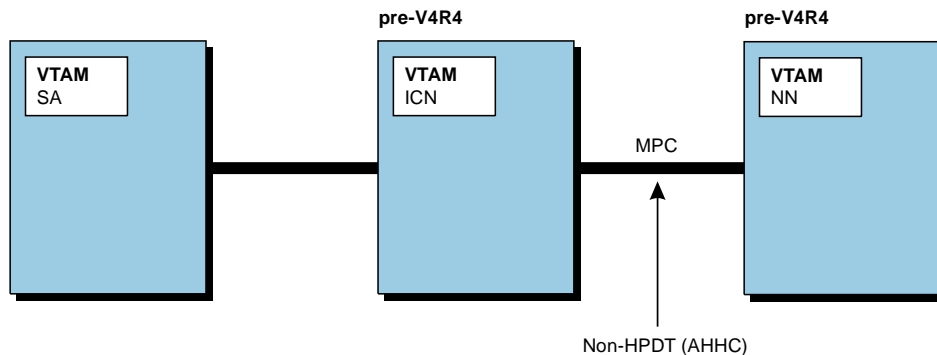


Figure 16. SA session across a pre-V4R4 MPC connection (AHHC).

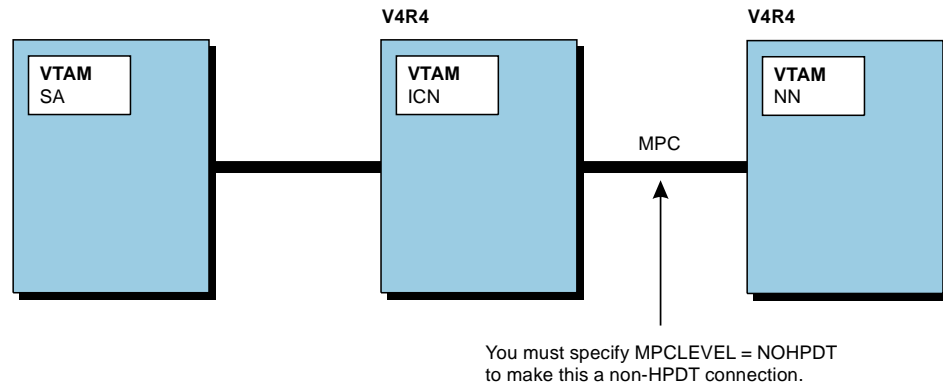


Figure 17. SA session across a V4R4 MPC connection requires MPCLEVEL=NOHPDT.

If you are using the XNETALS option

If you code a value of XNETALS=NO as a start option, in VTAM V4R4 this value can be overridden on the definition statement for a specific connection. XNETALS is now the name of the definition statement. NETID=(,NOXNETALS) has been deleted. If it is coded, it will default to XNETALS=NO for that PU.

Verification of the NETID is performed when XNETALS=NO is in effect, even when the NETID is not specified on the PU. If CONNTYPE=APPN and XNETALS is not coded, XNETALS will default to YES as long as XNETALS=NO start option is not coded.

The default start option value of XNETALS=NO is no longer dependent on the extended border node start option.

If you have a network node in a generic resource configuration

If you use a network node in a generic resource configuration you might have to change your CDSERVER start option. See the *VTAM Release Guide* for further information.

If you have automated operation procedures

If you use automated operating procedures in VTAM V4R3, you might need to change your operating procedures in VTAM V4R4. Refer to “Changes to Command Output” on page 53 and “Changes to VTAM Network Operator Messages” on page 57 for more information.

Note: If you do not use automated operation procedures, you still might have to make changes to your manual operating procedures.

If you have coded a user-defined major node ISTTRL

If you have coded a user-defined major node ISTTRL, you must rename it. You should avoid using the prefix IST for user-defined major node names. See the *VTAM Resource Definition Reference* for more information.

If you have modified IBM-supplied default user-definable tables and user-modifiable modules

If you use modified IBM-supplied default user-definable tables and user-modifiable modules you might need to change your modified tables or modified modules (renamed or copied). Refer to “Changes to IBM-Supplied Default User-Definable Tables and User-Modifiable Modules” on page 52 and “Changes to VTAM Network Operator Messages” on page 57 for further information.

New Functions and Enhancements Performed without Changes to User Interfaces

Although they do not necessarily require that you change any user interfaces, the following new functions and enhancements in VTAM V4R4 might cause you to see slightly different results in VTAM V4R4 than in VTAM V4R3. For comprehensive overviews of these new functions and enhancements, refer to the *VTAM Release Guide* for VTAM V4R4.

- Applying VTAM maintenance without re-IPLing MVS
- Central directory server enhancement for generic resources
- Choice of communication network management (CNM) routing tables
- Dynamic definition of VTAM-to-VTAM connections
- BUFF entry for 8K external buffer.

In addition, you will see new and changed messages appearing in response to certain VTAM network operator commands. For information about these new and changed messages, see “Changes to Command Output” on page 53 and “Changes to VTAM Network Operator Messages” on page 57.

Applying VTAM maintenance without re-IPLing MVS

In pre-V4R4 releases, some VTAM modules resided in the MVS data set SYS1.LPALIB (LPALIB). Additional VTAM modules resided in the MVS data set SYS1.NUCLEUS (NUCLEUS). To apply maintenance to any of the modules in LPALIB or NUCLEUS, you had to re-initialize MVS.

In VTAM V4R4, most of the modules that reside in LPALIB and NUCLEUS in pre-V4R4 releases now reside in a new MVS data set called SYS1.SISTCLIB (SISTCLIB). During VTAM initialization, MVS now loads these modules into common service area (CSA) and extended common service area (ECSA) storage. Maintenance may be applied to these modules without requiring an MVS IPL. However, you must still restart VTAM after applying maintenance.

Note: Some modules associated with TSO/VTAM and VTAM Common Management Information Protocol (CMIP) services remain in LPALIB and continue to be loaded by MVS into PLPA/EPLPA storage. Some new modules introduced in VTAM V4R4—those associated with Common Storage Manager (CSM)—reside in LPALIB and are loaded by MVS into PLPA/EPLPA storage. You must re-IPL MVS and restart VTAM to apply maintenance to the modules that still reside in LPALIB. When it is necessary to re-IPL MVS and restart VTAM to apply maintenance, the HOLDDATA instructions (HOLD data) that accompany PTFs instruct you to do so.

Central directory server enhancement for generic resources

All network nodes in a generic resource configuration no longer are forced to act as a central directory server (CDS). If CDSERVER=NO or no CDSERVER option is defined in your start list, the network node will not start as a CDS.

Choice of communication network management (CNM) routing tables

Prior to VTAM V4R4, if you coded a supplemental communication network management (CNM) routing table, it had to be named ISTMGC00. Whenever VTAM received an unsolicited request unit, VTAM used the ISTMGC00 table (if it existed) to route the request. If ISTMGC00 did not exist, the IBM-supplied default table, ISTMGC01, was used. No message was provided if ISTMGC00 was not found.

In VTAM V4R4, if you do not choose to code a new CNM routing table, VTAM continues to work as described above. If you want to code a CNM routing table, it is recommended that you do not name it ISTMGC00 to ensure a message will be produced if it is not found.

Dynamic definition of VTAM-to-VTAM connections

In pre-V4R4 releases, to communicate with other VTAMs, you had to define PU and TRLE operands for APPN host-to-host channel connections.

In VTAM V4R4, you no longer need to define channel-to-channel connections if you use the services provided by the cross-system coupling facility (XCF) of MVS within a sysplex. The definitions needed for VTAM-to-VTAM communication are created dynamically.

Definitions for VTAMs in the sysplex and the paths to them can co-exist with XCF, but the first connection activated will set up the CP-CP session. To ensure that XCF sets up the CP-CP sessions, it is recommended that the definitions be removed or, at least, take them out of the configuration list.

BUFF entry for 8K external buffer

BFRNUM is a new START or MODIFY command option used with TRACE,TYPE=VTAM,MODE=EXT. It specifies the number of 8K external trace buffers the VTAM internal trace is to allocate and use for generalized trace facility (GTF) processing. Integers 0 or 2–50 can be specified. If you omit this option, the default is 2. Two times the number of processors in the central processing unit (CPU) should ensure that enough buffers are available. If you use external VIT tracing often, BFRNUM can be increased. If you do not use external VIT tracing, you can specify BFRNUM=0 to receive the pre-VTAM V4R4 method of writing up to 256 bytes in one GTF record.

Downward Compatibility

Downward compatibility is the ability of VTAM V4R4 to communicate with and work with prior versions and releases of VTAM and other products in your network. If you have pre-V4R4 versions and releases of VTAM and other products in your network with which VTAM V4R4 will communicate, you might need to apply program temporary fixes (PTFs) to those versions, releases, and products to ensure that they are compatible. Refer to the *VTAM Program Directory* for VTAM V4R4 and the preventive service planning (PSP) bucket for a complete list of the IBM products to which you might need to apply PTFs, the conditions under which

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you might need to apply the PTFs, and the PTF numbers. You can access the PSP bucket through the following sources:

- Information Access
- SoftwareXcel Extended
- IBMLink* (ServiceLink).

If you do not have access to these sources, contact the IBM Support Center at 1-800-237-5511 (U.S. and Canada) to determine which PTFs you need to apply.

Storage Requirements

In general, the storage required to install and operate VTAM V4R4 has increased, regardless of whether you use the new optional functions or enhancements introduced in VTAM V4R4. Particularly, the storage needed for CSA/ECSA has increased due to the VTAM V4R4 maintenance enhancements. You will need to define a sufficient amount of CSA/ECSA storage on the CSA parameter in the IEASYSxx parmlib member.

See Appendix A, “Estimating Storage” on page 241 to determine the approximate storage required to install and operate VTAM V4R4 in your system.

Software Requirements

VTAM V4R4 requires, at a minimum, MVS/ESA SP* V4R3. VTAM V4R4 also operates with the later versions, releases, and modifications of this operating system unless otherwise stated. Prior versions, releases, and modifications are not supported.

Some VTAM V4R4 functions require a later version or release of MVS/ESA. In addition, some VTAM V4R4 functions require other software products. The list of the new optional VTAM V4R4 functions and enhancements in “Implementing New Optional Functions and Enhancements” on page 60 might require a later version or release of MVS/ESA. These enhancements also might require other software products. For a complete description of the requirements for VTAM V4R4 functions and enhancements, see the *VTAM Release Guide*.

Software Recommendations

VTAM V4R4 works with other products, such as Tivoli Management Environment (TME) 10 NetView* for OS/390 and NCP, to provide network management functions and to provide certain communication functions, such as remote, channel-to-channel, local area network (LAN), X.25, and frame-relay communication. For the specific versions and releases of NCP and NetView that VTAM V4R4 works with, refer to the *VTAM Program Directory*.

First Failure Support Technology (FFST) is a key element in the VTAM problem diagnosis strategy and should be enabled to provide first failure data capture. If you should encounter a VTAM problem and FFST is not available, problem diagnosis time can be dramatically lengthened. See the *First Failure Support Technology VM & MVS Operator's Guide* for more information.

The VTAM dump analysis enhancements and VIT analysis tool should be enabled to provide diagnosis help. See “Installing the VTAM Dump Analysis and the VIT Analysis Tools” on page 22 for more information.

Hardware Requirements

VTAM V4R4 runs in the same processors in which MVS/ESA SP V4R3 and later MVS/ESA versions and releases run. Some VTAM V4R4 functions require certain models of processors. In addition, some VTAM V4R4 functions require other hardware products. The list of the new optional VTAM V4R4 functions and enhancements in “Implementing New Optional Functions and Enhancements” on page 60 might require a certain processor model or other hardware products. For a complete description of the requirements for VTAM V4R4 functions and enhancements, see the *VTAM Release Guide*.

Data Set Requirements

New target and distribution libraries (data sets) are required to install VTAM V4R4. Storage requirements for some remaining libraries (those that are required to install VTAM V4R3 and are still required to install VTAM V4R4) have changed.

This section shows the storage requirements for the new and changed target and distribution libraries.

New Data Sets

Table 6 shows the new target and distribution libraries in VTAM V4R4 for which you must allocate storage.

Table 6. New Data Sets in VTAM V4R4

Target Library	Distribution Library	Contents
SYS1.MIGLIB Note: SYS1.MIGLIB is an IPCS data set that might already exist on your system. If you have already allocated SYS1.MIGLIB for the IPCS product, you must ensure there is enough space for VTAM modules.	SYS1.AOS26 Note: SYS1.AOS26 is not a new data set, but is changed because of VTAM's use of the SYS1.MIGLIB data set.	VTAM formatted dump routines for the Interactive Problem Control System (IPCS).
SYS1.SISTCLIB	SYS1.AOS26 Note: SYS1.AOS26 is not a new data set, but is changed because of the new SYS1.SISTCLIB data set and changes to the existing SYS1.LPALIB and SYS1.NUCLEUS data sets.	VTAM modules to be loaded into common service area and extended common service area (CSA/ECSA) storage.
SYS1.SISTDAT3 SYS1.SISTMAC2 SYS1.SISTLMD1	SYS1.AISTDAT3 SYS1.AISTMAC2	These data sets are used by the AnyNet/MVS function which is now included in VTAM V4R4. If you have not previously installed the AnyNet/MVS Feature, these data sets will be new.

Table 7 on page 48 shows the approximate storage requirements for these libraries to help you plan for installing VTAM V4R4. For precise requirements, refer to the *VTAM Program Directory* for VTAM V4R4.

Table 7. Storage Requirements for New Data Sets in VTAM V4R4

Library or Data Set Name	DSORG	RECFM	LRECL	Block Size	Number of Blocks	Number of Directory Blocks
SYS1.AISTDAT3	PO	FB	80	3200	49	1
SYS1.AISTMAC2	PO	FB	80	8800	31	3
SYS1.MIGLIB	PO	U	0	6144	119	1
SYS1.SISTCLIB	PO	U	0	6144	434	69
SYS1.SISTDAT3	PO	FB	80	3200	48	1
SYS1.SISTLMD1	PO	U	0	6144	50	1
SYS1.SISTMAC2	PO	FB	80	8800	31	3

Changed Data Sets

Table 8 shows the approximate storage requirements for target and distribution libraries that have changed in size or number of blocks since VTAM V4R3. The values in this table are approximate and are presented in this book to help you plan for installing VTAM V4R4. For precise requirements, refer to the *VTAM Program Directory* for VTAM V4R4.

Table 8 (Page 1 of 2). Storage Requirements for Changed Data Sets in VTAM V4R4

Library or Data Set Name	DSORG	RECFM	LRECL	Block Size	Number of Blocks	Number of Directory Blocks
SYS1.AAPPDAT2	PO	VB	259	6475	19 ↓	1
SYS1.AAPPDAT4	PO	VB	213	213	10	1
SYS1.AAPPMOD1	PO	U	0	6144	345	19
SYS1.AAPPMOD2	PO	U	0	6144	266 ↑	13
SYS1.AAPPSAMP	PO	FB	80	8800	30 ↑	2
SYS1.AGENLIB	PO	FB	80	8800	1 ↓	1
SYS1.AISTASGD	PO	VB	512	8192	316 ↓	4
SYS1.AISTASN1	PO	FB	1024	8192	48 ↑	3
SYS1.AISTCLI0	PO	FB	80	8800	369 ↑	1
SYS1.AISTCLS1	PO	FB	80	8800	38	1
SYS1.AISTCMIP	PO	FB	80	8880	1	1
SYS1.AISTDAT1	PO	VB	6156	6160	217 ↑	1
SYS1.AISTDAT2	PO	VB	259	6475	26 ↑	1
SYS1.AISTGDMO	PO	FB	500	8000	706 ↑	1
SYS1.AISTMAC1	PO	FB	80	8800	74 ↑	2

Note: An upward-pointing arrow (↑) next to the value indicates that the number of blocks or directory blocks has increased. A downward-pointing arrow (↓) indicates that the number has decreased.

Table 8 (Page 2 of 2). Storage Requirements for Changed Data Sets in VTAM V4R4

Library or Data Set Name	DSORG	RECFM	LRECL	Block Size	Number of Blocks	Number of Directory Blocks
SYS1.AISTMSG0	PO	FB	80	8800	5	1
SYS1.AISTPNL0	PO	FB	80	8800	39 ↓	8 ↓
SYS1.AISTPNL1	PO	FB	80	8800	173 ↑	19 ↑
SYS1.AMACLIB	PO	FB	80	8800	513 ↑	6 ↑
SYS1.AOSB3	PO	U	0	6144	2 ↓	1
SYS1.AOST3	PO	U	0	6144	84 ↑	12
SYS1.AOST4	PO	U	0	6144	8	1
SYS1.AOS24	PO	U	0	6144	49 ↑	5
SYS1.AOS26	PO	U	0	6144	5745 ↑	681 ↑
SYS1.ASAMPLIB	PO	FB	80	8800	379 ↑	4 ↑
SYS1.ATSOMAC	PO	FB	80	8800	19	1
SYS1.LINKLIB	PO	U	0	6144	138 ↑	6 ↑
SYS1.LPALIB	PO	U	0	6144	130 ↓	23 ↓
SYS1.MACLIB	PO	FB	80	8800	534 ↑	7
SYS1.NUCLEUS	PO	U	0	6144	2703 ↑	1
SYS1.SAMPLIB	PO	FB	80	8800	379 ↑	4 ↑
SYS1.SAPPDAT2	PO	VB	259	6475	19	1
SYS1.SAPPDAT4	PO	VB	213	213	10	1
SYS1.SAPPMOD1	PO	U	0	6144	902 ↓	2
SYS1.SAPPSAMP	PO	FB	80	8800	21 ↓	2
SYS1.SISTASGD	PO	VB	512	8192	316 ↓	4
SYS1.SISTASN1	PO	FB	1024	8192	48 ↑	3 ↑
SYS1.SISTCLI0	PO	FB	80	8800	263 ↑	1
SYS1.SISTCLS1	PO	FB	80	8800	28	1
SYS1.SISTCMIP	PO	FB	80	8880	1	1
SYS1.SISTDAT1	PO	VB	6156	6160	163 ↑	1
SYS1.SISTDAT2	PO	VB	259	6475	26 ↑	1
SYS1.SISTDEBUG	PO	U	0	6144	120 ↑	1
SYS1.SISTGDMO	PO	FB	500	8000	706 ↑	1
SYS1.SISTMAC1	PO	FB	80	8800	76 ↑	2
SYS1.SISTMSG0	PO	FB	80	8800	5 ↓	1
SYS1.SISTPNL0	PO	FB	80	8800	41 ↑	8 ↑
SYS1.SISTPNL1	PO	FB	80	8800	173 ↑	19 ↑
SYS1.VTAMLIB	PO	U	0	6144	2078 ↑	59 ↑

Note: An upward-pointing arrow (↑) next to the value indicates that the number of blocks or directory blocks has increased. A downward-pointing arrow (↓) indicates that the number has decreased.

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If SYS1.SISTPNL0 is used as the target data set when compiling the panels in SYS1.SISTPNL1, the basic allocation for SYS1.SISTPNL0 must be increased to 154 blocks of space and 60 directory blocks.

Upgrading VTAM V4R3 User Interfaces to VTAM V4R4

This section explains the changes you need to make to existing VTAM V4R3 user interfaces (system definitions, application programs, exit routines, tables, modules, and operating procedures) to ensure that they continue to work and produce the same functions in VTAM V4R4.

Changes to Start Options

Table 9 shows start options that have changed since VTAM V4R3 that might affect migrating to VTAM V4R4. These are options whose default values have changed or whose operand values in VTAM V4R3 now have different meanings, different valid ranges, or yield different results in VTAM V4R4.

In addition to the start options shown in Table 9, other start options have changed or have been added in association with the new optional functions and enhancements in VTAM V4R4, that do not affect migration to VTAM V4R4. For a complete description of the additional changed and new start options for optional functions and enhancements listed in “Implementing New Optional Functions and Enhancements” on page 60, see the *VTAM Release Guide*.

For complete information about all changed and new start options, refer to Chapter 4, “Start Options” in the *VTAM Resource Definition Reference*.

Table 9. Start Option Changes that Might Affect Migrating to VTAM V4R4

Start Option	Operand	Description
ENCRYPTN		The default value of YES has been added. This default will produce similar results if ENCRYPTN=YES was specified in a previous release. You should specify ENCRYPTN=NO if you do not intend to use encryption.
HPR		For a network node with HOSTSA coded, the default value was HPR=ANR. For all situations, the default is now HPR=RTP.
HPRPST		The default time limit values for low, medium, and high transmission priority connections have been changed from 60 seconds to 8 minutes, 4 minutes, and 1 minute. A network transmission priority with a default value of 1 minute has also been added to the HPRPST start option.
MSGLEVEL or MSGLVL		If you do not change the value of your MSGLEVEL start option in VTAM V4R4, you will not see any migration impact. However, if you change the value of your start option you will see differences in messages received. This could affect automated operations. See Appendix D, “Messages Affected by the MSGLVL Option” on page D-1 in the <i>VTAM Messages</i> for further information.
XNETALS		The default value of NO for the XNETALS start option is no longer dependent on the extended border node start option value.

Changes to Buffer Pools

In VTAM V4R4, a new buffer pool, TIBUF, has been added to support high performance data transfer (HPDT). A large number of pages are taken up within the pool when VTAM is started. If you are not in an environment which will take advantage of HPDT, you should code TIBUF=0 as a start option or on your START command.

Two new buffer pools, CRA4 and CRA8, have been added for scheduling and error recovery. These new pools cannot be defined or changed; they are available for VTAM private use only. VTAM regulates the size and expansion of these pools. The DISPLAY BFRUSE command provides the same information about the CRA4 and CRA8 as it does about other buffer pools.

Table 10 shows IBM-supplied buffer pools whose default values or maximum values have changed since VTAM V4R3.

Table 10. Buffer Pool Value Changes that Might Affect Migrating to VTAM V4R4

Buffer Pool Name	Value	Description
IOBUF		The minimum value that can now be specified is 256.

Changes to Definition Statements

Table 11 shows definition statements that have changed since VTAM V4R3 that might affect migrating to VTAM V4R4. These are statements whose default values have changed or whose operand values in VTAM V4R3 now have different meanings, different valid ranges, or yield different results in VTAM V4R4.

In addition to the definition statements shown in Table 11, other definition statements have changed, and new definition statements have been added in association with the new optional functions and enhancements in VTAM V4R4. The additional changed and new definition statements do not require changes to your system definitions unless you use the new optional functions or enhancements. For a complete description of the additional changed and new definition statements for the optional functions and enhancements listed in "Implementing New Optional Functions and Enhancements" on page 60, see the *VTAM Release Guide*.

For complete information about all changed and new definition statements, refer to Chapter 2, "Major Nodes" in the *VTAM Resource Definition Reference*.

Table 11 (Page 1 of 2). Definition Statement Changes that Might Affect Migrating to VTAM V4R4

Major Node	Definition Statement	Operand	Description
Channel attachment	GROUP LINE PU	DELAY	For LNCTL=CTCA, default is now 0. Changed from 0.100 seconds.

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Table 11 (Page 2 of 2). Definition Statement Changes that Might Affect Migrating to VTAM V4R4

Major Node	Definition Statement	Operand	Description
Local SNA Model NCP Switched TCP XCA	PU	NETID	The NETID=(,NOXNETALS) option has been deleted. If it is coded, it will default to XNETALS=NO for that PU. Verification of the NETID is performed when XNETALS=NO is in effect, even when the NETID is not specified on the PU.
		XNETALS	If CONNTYPE=APPN and XNETALS is not coded, XNETALS will default to YES as long as XNETALS=NO start option is not coded. If CONNTYPE=LEN and XNETALS is not coded, XNETALS will default to NO. The value of the definition statement will override the value of the start option.
NCP	DELAY		For LNCTL=NCP, default is now 0. Changed from 0.100 seconds.
Switched	VBUILD	MAXGRP MAXDLUR MAXNO	The size of the switched major node tables is now dynamically determined. The need for these operands has been eliminated. If they are coded, they will be ignored.
	PU	MAXPATH	
Switched	DIALNO	PATH	Default is now 242. Changed from 32.
TRL	TRLE	MAXBFRU	Default is now 5. Changed from 1.
XCA and NCP		CAPACITY	Default is now 4M for connections to virtual nodes (VNNAME and VNGROUP are coded). Changed from 8K.
XCA	PORT	DELAY	Default is now 0. Changed from 50 milliseconds.

Changes to IBM-Supplied Default User-Definable Tables and User-Modifiable Modules

If you have modified any IBM-supplied default user-definable tables or user-modifiable modules in VTAM V4R3 that you have not renamed, those tables and modules will be deleted and replaced when you install VTAM V4R4. To keep your modified IBM-supplied VTAM V4R3 tables or modules:

1. Make copies of them before you install VTAM V4R4.
2. Merge your modifications back into the appropriate tables and modules after you install VTAM V4R4.
3. Reassemble the tables and modules into which you have merged your modifications.

If you have modified and renamed any IBM-supplied default user-definable tables or user-modifiable modules in VTAM V4R3:

1. Compare your modified tables and modules to those shipped with VTAM V4R4 after you install VTAM V4R4.
2. Merge any differences into your modified tables and modules.
3. Reassemble your modified tables and modules.

Changes to IBM-Supplied Default User-Definable Tables

The following IBM-supplied default user-definable tables have changed since VTAM V4R3:

- The CNM routing table can no longer be stored in SYS1.LPALIB. It can only reside in SYS1.VTAMLIB.

Changes to USS Table Macros

Table 12 shows USS table macros that have changed since VTAM V4R3 that might affect migrating to VTAM V4R4. These are macros whose operand values in VTAM V4R3 now have different meanings, different valid ranges, or yield different results in VTAM V4R4.

In addition to the macros shown in Table 12, other macros have changed, and new macros have been added in association with the new optional functions and enhancements in VTAM V4R4. The additional changed and new macros do not affect migration to VTAM V4R4. For a complete description of the additional changed and new macros for optional functions and enhancements listed in “Implementing New Optional Functions and Enhancements” on page 60, see the *VTAM Release Guide*.

For complete information about all changed and new macros refer to “Unformatted System Services (USS) Tables” in the *VTAM Resource Definition Reference*.

Table 12. USS Table Macro Changes that Might Affect Migrating to VTAM V4R4

Macro	Operand	Description
USSMSG	MSGLVL	If you do not change the value of MSGLVL in VTAM V4R4, you will not see any migration impact. However, if you change the value of MSGLVL you will see differences in messages received. This could affect automated operations. See Appendix D, “Messages Affected by the MSGLVL Option” on page D-1 in the <i>VTAM Messages</i> for further information.

Changes to Command Output

This section shows some changes in command output since VTAM V4R3 that might affect automated operation procedures.

DISPLAY ID

Changes have occurred in the output you receive when you issue the DISPLAY ID for a Cross-domain resource manager (CDRM).

In VTAM V4R3, when you issue a DISPLAY ID command for a cross-domain resource manager, you receive output similar to the following:

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```
IST097I DISPLAY ACCEPTED
IST075I NAME = NETA.SSCP1A, TYPE = CDRM
IST1046I CP NETA.SSCP1A ALSO EXISTS
IST486I STATUS= ACTIV, DESIRED STATE= ACTIV
IST815I AUTOMATIC RECOVERY IS SUPPORTED
IST231I CDRM MAJOR NODE = VTAMSEG
IST654I I/O TRACE = OFF, BUFFER TRACE = OFF
IST1500I STATE TRACE = OFF
IST476I CDRM TYPE = HOST GATEWAY CAPABLE
IST637I SUBAREA = 1 ELEMENT = 1
IST388I DYNAMIC CDRSC DEFINITION SUPPORT = YES
IST171I ACTIVE SESSIONS = 0000000002, SESSION REQUESTS = 0000000000
IST924I -----
IST075I NAME = NETA.SSCP1A, TYPE = HOST CP
IST1046I SSCP NETA.SSCP1A ALSO EXISTS
IST486I STATUS= ACTIV, DESIRED STATE= ACTIV
IST1447I REGISTRATION TYPE = NO
IST977I MDLTAB=***NA*** ASLTAB=***NA***
IST861I MODETAB=***NA*** USSTAB=***NA*** LOGTAB=***NA***
IST934I DLOGMOD=***NA*** USS LANGTAB=***NA***
IST597I CAPABILITY-PLU ENABLED ,SLU ENABLED ,SESSION LIMIT NONE
IST231I APPL MAJOR NODE = VTAMSEG
IST654I I/O TRACE = OFF, BUFFER TRACE = OFF
IST1500I STATE TRACE = OFF
IST271I JOBNAME = VTAM, STEPNAME = VTAM, DSPNAME = IST5DA1C
IST228I ENCRYPTION = NONE
IST1050I MAXIMUM COMPRESSION LEVEL - INPUT = 0, OUTPUT = 0
IST171I ACTIVE SESSIONS = 0000000000, SESSION REQUESTS = 0000000000
IST314I END
```

When you issue the same command in VTAM V4R4, you receive output similar to the following, which includes a new SSCPID field in message IST637I.

Note: If you have applied the program temporary fix (PTF) associated with APAR OW16372, you are already getting the SSCPID field in message IST637I.

```

IST097I DISPLAY ACCEPTED
IST075I NAME = NETA.SSCP1A, TYPE = CDRM
IST1046I CP NETA.SSCP1A ALSO EXISTS
IST486I STATUS= ACTIV, DESIRED STATE= ACTIV
IST815I AUTOMATIC RECOVERY IS SUPPORTED
IST231I CDRM MAJOR NODE = VTAMSEG
IST654I I/O TRACE = OFF, BUFFER TRACE = OFF
IST1500I STATE TRACE = OFF
IST476I CDRM TYPE = HOST GATEWAY CAPABLE
IST637I SUBAREA = 1 ELEMENT = 1 SSCPID = 1
IST388I DYNAMIC CDRSC DEFINITION SUPPORT = YES
IST171I ACTIVE SESSIONS = 0000000002, SESSION REQUESTS = 0000000000
IST924I -----
IST075I NAME = NETA.SSCP1A, TYPE = HOST CP
IST1046I SSCP NETA.SSCP1A ALSO EXISTS
IST486I STATUS= ACTIV, DESIRED STATE= ACTIV
IST1447I REGISTRATION TYPE = NO
IST977I MDLTAB=***NA*** ASLTAB=***NA***
IST861I MODETAB=***NA*** USSTAB=***NA*** LOGTAB=***NA***
IST934I DLOGMOD=***NA*** USS LANGTAB=***NA***
IST597I CAPABILITY-PLU ENABLED ,SLU ENABLED ,SESSION LIMIT NONE
IST231I APPL MAJOR NODE = VTAMSEG
IST654I I/O TRACE = OFF, BUFFER TRACE = OFF
IST1500I STATE TRACE = OFF
IST271I JOBNAME = VTAM, STEPNAME = VTAM, DSPNAME = IST5DA1C
IST228I ENCRYPTION = NONE
IST1050I MAXIMUM COMPRESSION LEVEL - INPUT = 0, OUTPUT = 0
IST171I ACTIVE SESSIONS = 0000000000, SESSION REQUESTS = 0000000000
IST314I END

```

DISPLAY TOPO

Changes have occurred in the output you receive when you issue the DISPLAY TOPO command for transmission groups or when you specify LIST=ALL.

In VTAM V4R3, if you issue the DISPLAY TOPO command for transmission groups you receive output similar to the following:

```

IST097I DISPLAY ACCEPTED
IST350I DISPLAY TYPE = TOPOLOGY
IST1299I TRANSMISSION GROUPS ORIGINATING AT CP NETA.SSCP1A
IST1357I
IST1300I DESTINATION CP      TGN      STATUS  TGTYPE  CPCP      VALUE WEIGHT
IST1301I NETA.SSCP2A        21      OPER    INTERM  YES      *NA*
IST1163I                    RSN                      HPR
IST1164I                    26                      YES
IST1302I                    CAPACITY PDELAY  COSTTIME  COSTBYTE
IST1303I                    32M      TERRESTR 0          0
IST1304I                    SECURITY UPARM1  UPARM2    UPARM3
IST1305I                    UNSECURE 128     128      128
IST314I END

```

In VTAM V4R4, if you issue the DISPLAY TOPO command for transmissions groups you will receive output similar to the following, which includes new and changed messages:

- IST1579I is used as an output separator
- IST1163I and IST1164I now display the number of days remaining until the TG is removed from the topology database.

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```

IST097I DISPLAY ACCEPTED
IST350I DISPLAY TYPE = TOPOLOGY
IST1299I TRANSMISSION GROUPS ORIGINATING AT CP NETA.SSCP1A
IST1357I
IST1300I DESTINATION CP      TGN      STATUS  TGTYPE  CPCP  VALUE WEIGHT
IST1301I NETA.SSCP2A        21      OPER   INTERM  YES  *NA*
IST1579I -----
IST1163I                      RSN                      HPR      TIME LEFT
IST1164I                      26                      YES      12
IST1579I -----
IST1302I                      CAPACITY PDELAY  COSTTIME  COSTBYTE
IST1303I                      32M      TERRESTR 0      0
IST1579I -----
IST1304I                      SECURITY UPARM1  UPARM2    UPARM3
IST1305I                      UNSECURE 128    128      128
IST314I END

```

In VTAM V4R3, if you specify LIST=ALL with the DISPLAY TOPO command you receive output similar to the following:

```

IST097I DISPLAY ACCEPTED
IST350I DISPLAY TYPE = TOPOLOGY
IST1295I CP NAME              NODETYPE ROUTERES CONGESTION CP-CP WEIGHT
IST1296I NETA.SSCP2A         NN        1      NONE      YES  *NA*
IST1297I                      ICN/MDH  CDSERVR  RSN      HPR
IST1298I                      NO       NO       8        RTP
IST1223I                      BN        NATIVE
IST1224I                      NO       YES
IST1299I TRANSMISSION GROUPS ORIGINATING AT CP NETA.SSCP2A
IST1357I
IST1300I DESTINATION CP      TGN      STATUS  TGTYPE  CPCP  VALUE WEIGHT
IST1301I NETA.SSCP1A        255     OPER   INTERM VRTG YES  *NA*
IST314I END

```

In VTAM V4R4, if you specify LIST=ALL when you issue the DISPLAY TOPO command, you will receive output similar to the following, which includes new and changed messages:

- IST1579I used as an output separator.
- IST1223I and IST1224I now displays the number of days remaining until the TG is removed from the topology database.

```

IST097I DISPLAY ACCEPTED
IST350I DISPLAY TYPE = TOPOLOGY
IST1295I CP NAME              NODETYPE ROUTERES CONGESTION CP-CP WEIGHT
IST1296I NETA.SSCP2A         NN        1      NONE      YES  *NA*
IST1579I -----
IST1297I                      ICN/MDH  CDSERVR  RSN      HPR
IST1298I                      NO       NO       8        RTP
IST1579I -----
IST1223I                      BN        NATIVE  TIME LEFT
IST1224I                      NO       YES    12
IST1299I TRANSMISSION GROUPS ORIGINATING AT CP NETA.SSCP2A
IST1357I
IST1300I DESTINATION CP      TGN      STATUS  TGTYPE  CPCP  VALUE WEIGHT
IST1301I NETA.SSCP1A        255     OPER   INTERM VRTG YES  *NA*
IST314I END

```

DISPLAY TRACES, MODIFY TRACE, START TRACE

Changes have occurred in the output you receive when you specify TYPE=VTAM when issuing the DISPLAY TRACES, MODIFY TRACE, or START TRACE command.

In VTAM V4R3, when you specify TYPE=VTAM when issuing the DISPLAY TRACES, MODIFY TRACE, or START TRACE command you receive output containing message IST199I similar to the following:

```
IST199I OPTIONS = API APPC CFS CIO CMIP ESC HPR LCS LOCK MSG NRM PIU
IST199I OPTIONS = PSS SMS SSCP TCP VCNS
```

In VTAM V4R4, when you specify TYPE=VTAM when issuing the DISPLAY TRACES, MODIFY TRACE, or START TRACE command you receive output containing message IST199I which includes new trace options CSM, XBUF, and XCF, similar to the following:

```
IST199I OPTIONS = API APPC CFS CIO CMIP CSM ESC HPR LCS LOCK MSG NRM
IST199I OPTIONS = PIU PSS SMS SSCP TCP VCNS XBUF XCF
```

Changes to VTAM Network Operator Messages

This section shows the VTAM network operator messages that have changed or have been deleted since VTAM V4R3.

Changed Messages

The following list shows the message numbers and text of messages that have changed since VTAM V4R3. Appendix A, "Message Additions, Deletions, and Changes" in *VTAM Messages* identifies the types of changes that have occurred to messages since VTAM V4R3, including new and changed variable values, enhancements to message explanations, and changes to variable lengths.

In the following list, a percent sign (%) within the message text represents a character that is reserved for variable information. The maximum length of the variable is indicated by the number of percent signs. When some messages are displayed on your console, if the variable information is shorter than the variable field, the extra blanks are suppressed, causing the message text to shift to the left.

Do not assume from the following list that the text or tokens start in certain columns. The specified USS table determines how your system handles blank suppression. For more information about blank suppression, refer to the discussion of the "OPT" operand on the USSMSG macro in the *VTAM Resource Definition Reference*.

```
V4R3: IST054I %%%%%%%%% IN %%%%%%%%% IS EMPTY - START PROCESSING CONTINUES
V4R4: IST054I %%%%%%%%% IN %%%%%%%%% %%%%%%%%% - START PROCESSING CONTINUES
```

```
V4R3: IST084I NETWORK NODES:
V4R4: IST084I NETWORK RESOURCES:
```

```
V4R3: IST087I TYPE = %%%%%%%%%%, CONTROL = %%%
V4R4: IST087I TYPE = %%%%%%%%%%, CONTROL = %%%, HPDT = %%%
```

```
V4R3: IST320I CONFIGURATION %%%%%%%%% DEFINITION FAILED - %%%%%%%%%
V4R4: IST320I DEFINITION %%%%%%%%% NOT SUCCESSFUL - %%%%%%%%%
```

```
V4R3: IST442I ATTN = %%%%%%%%% RDATN = %%%%%%%%% IPIU = %%%%%%%%%
V4R4: IST442I ATTN = %%%%%%%%% RDATN = %%%%%%%%% IPDU = %%%%%%%%%
```

```
V4R3: IST443I OPIU = %%%%%%%%% RDBUF = %%%%%%%%% SLODN = %%%%%%%%%
V4R4: IST443I OPDU = %%%%%%%%% RDBUF = %%%%%%%%% SLODN = %%%%%%%%%
```

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```

V4R3: IST453I %%%%%%%%%% PARAMETER VALUE INVALID
V4R4: IST453I %%%%%%%%%% PARAMETER VALUE %%%%%%%%%% NOT VALID

V4R3: IST530I %%%%%%%%%% PENDING %%%%%%%%%%
V4R4: IST530I %%%%%%%%%% PENDING FROM %%%%%%%%%% TO %%%%%%%%%% FOR %%%%%%%%%%

V4R3: IST605I ERROR FOR ID = %%%%%%%%%% - %%%%%%%%%% : %%%%%%%%%%, DATA INVALID FOR THIS NODE
V4R4: IST605I ERROR FOR ID = %%%%%%%%%% - %%%%%%%%%% : %%%%%%%%%%

V4R3: IST621I %%%%%%%%%% FOR NETWORK NODE %%%%%%%%%%
V4R4: IST621I %%%%%%%%%% FOR NETWORK RESOURCE %%%%%%%%%%

V4R3: IST637I SUBAREA=%%%%%%%%%% ELEMENT=%%%%%%%%%%
V4R4: IST637I SUBAREA = %%%%%%%%%% ELEMENT = %%%%%%%%%% SSCPID = %%%%%%%%%%

V4R3: IST658I %%%%%%%%%% COMMAND FAILED - %%%%%%%%%% NOT FOUND
V4R4: IST658I %%%%%%%%%% COMMAND FAILED - %%%%%%%%%%NOT FOUND

V4R3: IST940I %%%%%%%%%%
V4R4: IST940I %%%%%%%%%%

V4R3: IST998E VTAM MESSAGE %%%%%%%%%% ISSUED BUT DOES NOT EXIST
V4R4: IST998E VTAM MESSAGE %%%%%%%%%% ISSUED BUT DOES NOTEXIST

V4R3: IST1009I SID = %%%%%%%%%%
V4R4: IST1009I SID = %%%%%%%%%%, HPDT = %%%%%%%%%%

V4R3: IST1070I %%%%%%%%%% FOR %%%%%%%%%% IS NOT VALID-STARTCONTINUES
V4R4: IST1070I %%%%%%%%%% FOR %%%%%%%%%% IS NOT VALID-START CONTINUES

V4R3: IST1163I RSN          HPR
V4R4: IST1163I RSN          HPR TIME LEFT

V4R3: IST1164I %%%%%%%%%% %%%%%%%%%%
V4R4: IST1164I %%%%%%%%%% %%%%%%%%%%

V4R3: IST1223I BN          NATIVE
V4R4: IST1223I BN          NATIVE TIME LEFT

V4R3: IST1224I %%%%%%%%%% %%%%%%%%%%
V4R4: IST1224I %%%%%%%%%% %%%%%%%%%%

V4R3: IST1231I IPIU        = %%%%%%%%%% OPIU        = %%%%%%%%%%
V4R4: IST1231I IPDU        = %%%%%%%%%% OPDU         = %%%%%%%%%%

V4R3: IST1236I BYTECNTO = %%%%%%%%%% BYTECNT = %%%%%%%%%%
V4R4: IST1236I BYTECNTO = %%%%%%%%%% BYTECNT = %%%%%%%%%%

V4R3: IST1278I %%%%%%%%%% %%%%%%%%%%
V4R4: IST1278I %%%%%%%%%% FROM %%%%%%%%%% TO %%%%%%%%%% FOR%%%%%%%%%%

V4R3: IST1479I RTP CONNECTION STATE = %%%%%%%%%%
V4R4: IST1479I RTP CONNECTION STATE = %%%%%%%%%% - MNPS = %%%%%%%%%%

V4R3: IST1480I RTP END TO END ROUTE
V4R4: IST1480I RTP END TO END ROUTE - PHYSICAL PATH

V4R3: IST1482I HPR = %%%%%%%%%% - OVERRIDE = %%%%%%%%%% - CONNECTION = %%%%%%%%%%
V4R4: IST1482I HPR = %%%%%%%%%% - OVERRIDE = %%%%%%%%%% - CONNECTION= %%%%%%%%%%

V4R3: IST1486I RTP NAME    STATE          DESTINATION CP
V4R4: IST1486I RTP NAME    STATE          DESTINATION CP    MNPS  TYPE

V4R3: IST1487I %%%%%%%%%% %%%%%%%%%% %%%%%%%%%%
V4R4: IST1487I %%%%%%%%%% %%%%%%%%%% %%%%%%%%%% %%%%%%%%%% %%%%%%%%%%

```


Deleted Messages

Table 13 shows the message IDs of messages that have been deleted since VTAM V4R3 and, if the messages have been replaced, the IDs of the messages that have replaced them.

Table 13. Deleted Messages in VTAM V4R4

Deleted Message	Replaced By
IST468I	None
IST469I	None
IST470I	None
IST471I	None

Changes to VTAM Application Programming Interface

The following changes have occurred to the VTAM application programming interface (API) since VTAM V4R3 that might affect migrating to VTAM V4R4:

- The component identification vector has been updated.

In addition to these changes, other macros, vectors, and DSECTs have changed, and new macros, vectors, and DSECTs have been added in association with the new optional functions and enhancements in VTAM V4R4. The additional changed and new macros, vectors, and DSECTs do not require changes to your application programs unless you use the new optional functions or enhancements. For a complete description of the additional changed and new macros, vectors, and DSECTs for the optional functions and enhancements listed in “Implementing New Optional Functions and Enhancements” on page 60, see the *VTAM Release Guide*.

For complete information about all changed and new macros, vectors, and DSECTs, refer to *VTAM Programming*, the *VTAM Guide to Programming for LU 6.2* and the *VTAM Programming Reference for LU 6.2*.

Changes to Installation-Wide Exit Routines

Changes have been made to existing exit routines that would not affect migration to VTAM V4R4, and new installation-wide exit routines have been added in association with the new optional functions and enhancements in VTAM V4R4. For a complete description of the additional changed and new installation-wide exit routines for the optional functions and enhancements listed in “Implementing New Optional Functions and Enhancements” on page 60, see the *VTAM Release Guide*.

For complete information about all changed and new installation-wide exit routines, refer to *VTAM Customization*.

If you are installing VTAM V4R4 from the ServerPac installation method for OS/390, you must reinstall any installation-wide exit routines residing in SYS1.LPALIB.

If you are using OS/390, you should consider using the LPALIB concatenation facilities of OS/390, instead of placing your exit routines in SYS1.LPALIB.

Changes to Control Blocks

If you use any of the control blocks documented in *VTAM Data Areas for MVS/ESA Volume 1*, refer to that book to determine if changes have been made to those control blocks.

Implementing New Optional Functions and Enhancements

The following new optional functions and enhancements are introduced in VTAM V4R4. For comprehensive overviews of these new functions and enhancements, refer to the *VTAM Release Guide* for VTAM V4R4.

Advanced Peer-to-Peer Networking (APPN) Enhancements: The following functions enhance VTAM's support of advanced peer-to-peer networking.

- Asynchronous transfer mode support
- Enhanced topology database garbage collection
- Locate congestion control
- QUIESCE function for MODIFY TOPO command

High Performance Routing (HPR) Enhancements: The following functions enhance the the High Performance Routing capabilities.

- High performance routing (HPR)

LU 6.2 Application Program Interface (API) Enhancements: The following functions enhance the VTAM LU 6.2 application program interface.

- APPCCMD macroinstruction enhancements
- APPC enhancements for the Distributed Computing Environment
- Buffer tracing enhancements for LU 6.2 conversations
- Conversations between programs located on the same LU
- Deleting unusable entries from the LU-mode table
- Extended security sense codes
- High performance data transfer for APPC
- Password substitution
- STOKEN for workload balancing
- Session instance identifier enhancements

Network Dynamics: The following functions enhance dynamic access to a network. These functions can eliminate or reduce the predefinition required for resources in your network. In addition, these functions provide increased end user availability and automatic backup.

- Dynamic definition of VTAM-to-VTAM connections
- Multiple dynamic switched major nodes

Operator Interface Enhancements: The following functions enhance VTAM's operator interface.

- DISPLAY SRCHINFO command
- DISPLAY VTAMSTOR command

- Displaying active resources with sessions
- Limiting output from the DISPLAY STORUSE command
- MODIFY EXIT command enhancement

Performance Enhancements: The following functions provide enhancements to VTAM performance.

- Asynchronous transfer mode support
- Enhanced adaptive pacing support
- High performance data transfer for APPC
- New component recovery area (CRA) buffer pools
- High performance data transfer MPC
- Verifying external communication adapter connection reliability
- Verifying communication or cluster controller channel connections

Problem Diagnosis: The following functions are enhancements to VTAM's problem determination and isolation capabilities.

- Buffer tracing enhancements for LU 6.2 conversations
- DISPLAY SRCHINFO command
- DISPLAY VTAMSTOR command
- Elimination of duplicate VTAM dumps
- IST605I message group enhancement
- Tracing resource states with start list
- Unformatted system services (USS) message text enhancements
- XID message group enhancement

Security Enhancements: The following features enhance VTAM's security functions.

- Enhanced cryptographic authentication
- Message authentication support and cryptographic enhancements

Sysplex Functions: The following functions enhance VTAM's support of sysplex environments.

- Central directory server enhancement for generic resources
- Dynamic definition of VTAM-to-VTAM connections
- Generic resources enhancements
- Multinode persistent sessions
- TSO generic resources

System and Configuration Management: The following functions enhance your ability to set up, manage, and control the resources in your network.

- Applying VTAM maintenance without re-IPLing MVS
- Asynchronous transfer mode support

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- Choice of communication network management (CNM) routing tables
- Delayed disconnection when no LU-LU session is established
- Dynamic reconfiguration of switched resources
- Filtering initiation failures from Session Awareness (SAW) data
- Interpret table enhancement
- High performance data transfer MPC
- Reset LU enhancement
- Search retry after dial-out failure
- Support for OS/390 concatenation
- OS/390 TCP/IP OpenEdition^{*} DLC support

Usability Enhancements The following functions enhance VTAM's usability.

- DISPLAY SRCHINFO command
- DISPLAY VTAMSTOR command
- Dynamic reconfiguration of switched resources
- Mini VIT and FFST changes
- XID message group enhancement
- XNETALS start option enhancements

Chapter 3. Upgrading VTAM V4R2 to VTAM V4R4

This chapter helps you upgrade VTAM V4R2 to VTAM V4R4.

If you are migrating to APPN: VTAM includes support for Advanced Peer-to-Peer Networking (APPN), an extension to IBM's Systems Network Architecture (SNA). This book does not explain how to upgrade an existing VTAM subarea node to an APPN node. Such an upgrade is optional; you can install VTAM V4R4 and operate it as a subarea node. IBM recommends that you install VTAM V4R4 and get it operating in a test environment at your current functional level before using any of the new optional functions or enhancements in VTAM V4R4. For information about upgrading a VTAM subarea node to an APPN node, refer to *Planning for Integrated Networks* and to Chapter 15, "Implementing a Combined APPN and Subarea Network" in the *VTAM Network Implementation Guide*.

If you are upgrading a VTAM V4R2 APPN node to VTAM V4R4: This chapter describes the migration impacts of upgrading a VTAM V4R2 APPN node to VTAM V4R4.

Planning to Upgrade VTAM V4R2 to VTAM V4R4

This section helps you prepare to upgrade VTAM V4R2 to VTAM V4R4. It describes the:

- Upward and downward compatibility of VTAM V4R4
- New functions and enhancements performed without changes to user interfaces
- Storage required to install and operate VTAM V4R4
- Software and hardware requirements for VTAM V4R4
- Target and distribution libraries required to install VTAM V4R4.

Upward Compatibility

Upward compatibility is the ability of VTAM V4R2 functions and user interfaces to work in VTAM V4R4. All VTAM V4R2 functions are included in VTAM V4R4. The functions provided by the APPC Application Suite and AnyNet, which are separately orderable features in VTAM V4R2, are now shipped with VTAM V4R4. The AnyNet/2 SNA over TCP/IP, AnyNet/2 Sockets over SNA, and AnyNet/2 Sockets over SNA Gateway functions provided by the VTAM AnyNet Feature for V4R2 are no longer part of the VTAM AnyNet function.

In general, you do not have to make any changes to your VTAM V4R2 user interfaces to continue to use V4R2 functions in VTAM V4R4. Following are conditions under which you might have to make changes and the user interfaces that you might have to change:

- If you are not using encryption
- If you have a subarea session across a pre-V4R4 multipath channel (MPC) connection (APPC Host-to-Host Connection - AHHC)
- If you are using the XNETALS option
- If you have a network node in a generic resource configuration
- If you have coded a user-defined major node ISTTRL
- If you use multiple central directory servers (CDSs)
- If you use a message-flooding prevention table

- If you accept the default value for the CDRDYN operand or coded CDRDYN=NO
- If you have automated operation procedures
- If you have modified IBM-supplied default user-definable tables and user-modifiable modules.

If you are not using encryption

The default value for the ENCRYPTN start option is now ENCRYPTN=YES. This default will produce similar results if ENCRYPTN=YES was specified in a previous release. VTAM V4R4 checks each time a session is requested to see if encryption is available. In pre-VTAM V4R4, this check was made only once during VTAM initialization. If encryption is not available, a message is issued to notify the operator. You should code ENCRYPTN=NO if you do not intend to utilize the ENCRYPTION function. This will reduce the path length during session initialization and reduce the messages issued to the operators console and log.

If you have a subarea session across a pre-V4R4 multipath channel (MPC) connection

High performance data transfer (HPDT) services are available over connections to other nodes that implement HPDT MPC. Non-HPDT MPC is used by VTAM to enable connections only between a VTAM APPN host node and an adjacent VTAM APPN host node. These connections are called APPN host-to-host channel (AHHC) connections. AHHC connections can be considered synonymous with non-HPDT MPC connections. When VTAM and the adjacent node support HPDT MPC, the connection automatically uses HPDT MPC, unless VTAM includes MPCLEVEL=NOHPDT on its TRLE definition statement. When the adjacent node is another VTAM node that supports HPDT MPC, if MPCLEVEL=NOHPDT is coded on the TRLE definition statement of at least one of the VTAM nodes, the connection uses non-HPDT MPC.

You must code MPCLEVEL=NOHPDT under the following situations, or connection or session requests over the connection will fail:

- When both nodes are VTAM V4R4 nodes and one of the VTAM nodes does not support HPDT MPC (HPR=ANR or HPR=NONE is specified in its start list).
- When a VTAM node is an interchange node and the partner node is a network node and sessions are attempted from an adjacent subarea node across the interchange node to the adjacent network node.
- When non-IBM hardware extenders are used, unless your hardware extender vendor has added MPC support for VTAM V4R4.

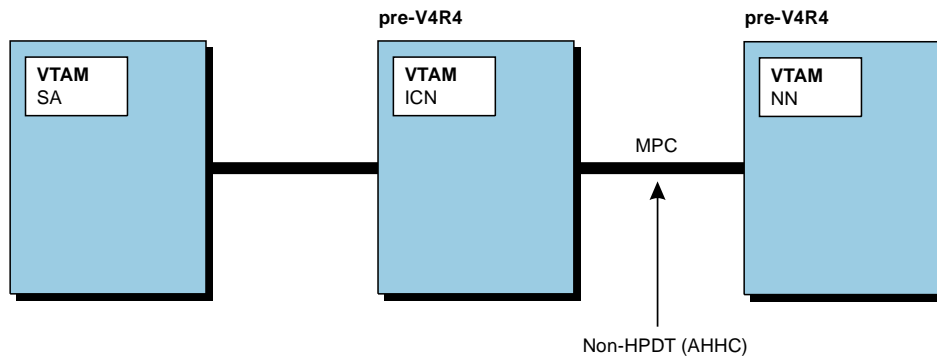


Figure 18. SA session across a pre-V4R4 MPC connection (AHHC).

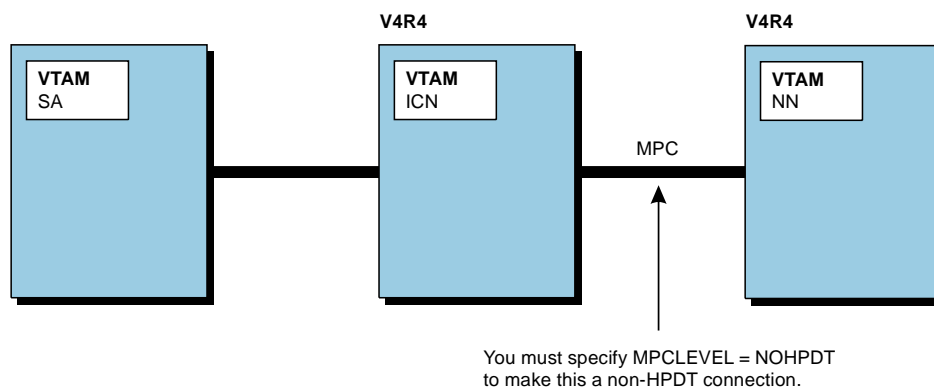


Figure 19. SA session across a V4R4 MPC connection requires MPCLEVEL=NOHPDT.

If you are using the XNETALS option

If you code a value of XNETALS=NO as a start option, in VTAM V4R4 this value can be overridden on the definition statement for a specific connection. XNETALS is now the name of the definition statement. NETID=(,NOXNETALS) has been deleted. If it is coded, it will default to XNETALS=NO for that PU.

Verification of the NETID is performed when XNETALS=NO is in effect, even when the NETID is not specified on the PU. If CONNTYPE=APPN and XNETALS is not coded, XNETALS will default to YES as long as XNETALS=NO start option is not coded.

The default start option value of XNETALS=NO is no longer dependent on the extended border node start option.

If you have a network node in a generic resource configuration

If you use a network node in a generic resource configuration you might have to change your CDSERVER start option. See the *VTAM Release Guide* for more information.

If you have coded a user-defined major node ISTTRL

If you have coded a user-defined major node ISTTRL, you must rename it. You should avoid using the prefix IST for user-defined major node names. See the *VTAM Resource Definition Reference* for more information.

If you use multiple central directory servers (CDSs)

If you use multiple central directory servers (CDSs), a network node server distributes all Locate and resource registration requests to central directory servers throughout the network. VTAM V4R4 includes a new start option, CDSREFER. If you do not specify this start option, it defaults to 1, which causes a network node server to direct all Locates and resource registration requests to the nearest central directory server in the network.

If you do not want to use this enhancement, you can specify CDSREFER=0 and have the network node server distribute all Locate and resource registration requests to central directory servers throughout the network.

If you use a message-flooding prevention table

In VTAM V4R4, the variable fields of some VTAM messages have changed from long individual fields to multiple shorter fields.

If you use a message-flooding prevention table and have defined certain messages as candidates for message suppression, you might need to modify your table to use the shorter variable text fields. See “User-Defined Message Flooding Prevention Table Enhancements” on page 100, for a list of the changed messages.

If you accept the default value for the CDRDYN operand or coded CDRDYN=NO

If you are accepting the default value for the CDRDYN operand in VTAM V4R2 or if you have coded CDRDYN=NO, be aware that when you upgrade to VTAM V4R4, the host cross-domain resource manager is now authorized to dynamically define CDRSC representations. If you do not want the host cross-domain resource manager to have this authorization in VTAM V4R4, code CDRDYN=NO on the new CDRDYN start option. See Table 19 on page 78 for more information.

If you have automated operation procedures

If you use automated operating procedures in VTAM V4R2, you might need to change your operating procedures in VTAM V4R4. Refer to “Changes to Commands” on page 81, “Changes to Command Output” on page 88, and “Changes to VTAM Network Operator Messages” on page 96 for more information.

Note: If you do not use automated operation procedures, you still might have to make changes to your manual operating procedures.

If you have modified IBM-supplied default user-definable tables and user-modifiable modules

If you use modified IBM-supplied default user-definable tables and user-modifiable modules you might need to change your modified tables or modified modules (renamed or copied). Refer to “Changes to IBM-Supplied Default User-Definable Tables and User-Modifiable Modules” on page 79 and “Changes to VTAM Network Operator Messages” on page 96 for more information.

New Functions and Enhancements Performed without Changes to User Interfaces

Although they do not necessarily require that you change any user interfaces, the following new functions and enhancements in VTAM V4R4 might cause you to see slightly different results in VTAM V4R4 than in VTAM V4R2. You can find comprehensive overviews of these functions and enhancements in the appropriate *VTAM Release Guides*.

- Applying VTAM maintenance without re-IPLing MVS
- Central directory server enhancement for generic resources
- Choice of communication network management (CNM) routing tables
- Dynamic definition of VTAM-to-VTAM connections
- BUFF entry for 8K external buffer
- High performance routing (HPR) for APPN users
- Host-to-host channel dynamics for APPN users
- Logon mode table association enhancements for APPN users
- Central directory server (CDS) selection enhancements for APPN users
- Verifying SNA channel-to-channel reliability
- Name mismatch detection for LU 6.2 sessions

- Automatic restart manager (ARM) support
- Start processing enhancement.

In addition, you will see new and changed messages appearing in response to certain VTAM network operator commands. For information about these new and changed messages, see “Changes to Command Output” on page 88 and “Changes to VTAM Network Operator Messages” on page 96.

Applying VTAM maintenance without re-IPLing MVS

In pre-V4R4 releases, some VTAM modules resided in the MVS data set SYS1.LPALIB (LPALIB). Additional VTAM modules resided in the MVS data set SYS1.NUCLEUS (NUCLEUS). To apply maintenance to any of the modules in LPALIB or NUCLEUS, you had to re-initialize MVS.

In VTAM V4R4, most of the modules that reside in LPALIB and NUCLEUS in pre-V4R4 releases now reside in a new MVS data set called SYS1.SISTCLIB (SISTCLIB). During VTAM initialization, MVS now loads these modules into common service area (CSA) and extended common service area (ECSA) storage. Maintenance may be applied to these modules without requiring an MVS IPL. However, you must still restart VTAM after applying maintenance.

Note: Some modules associated with TSO/VTAM and VTAM Common Management Information Protocol (CMIP) services remain in LPALIB and continue to be loaded by MVS into PLPA/EPLPA storage. Some new modules introduced in VTAM V4R4—those associated with Common Storage Manager (CSM)—reside in LPALIB and are loaded by MVS into PLPA/EPLPA storage. You must re-IPL MVS and restart VTAM to apply maintenance to the modules that still reside in LPALIB. When it is necessary to re-IPL MVS and restart VTAM to apply maintenance, the HOLDDATA instructions (HOLD data) that accompany PTFs instruct you to do so.

Central directory server enhancement for generic resources

All network nodes in a generic resource configuration no longer are forced to act as a central directory server (CDS). If CDSERVER=NO or no CDSERVER option is defined in your start list, the network node will not start as a CDS.

Choice of communication network management (CNM) routing tables

Prior to VTAM V4R4, if you coded a supplemental communication network management (CNM) routing table, it had to be named ISTMGC00. Whenever VTAM received an unsolicited request unit, VTAM used the ISTMGC00 table (if it existed) to route the request. If ISTMGC00 did not exist, the IBM-supplied default table, ISTMGC01, was used. No message was provided if ISTMGC00 was not found.

In VTAM V4R4, if you do not choose to code a new CNM routing table, VTAM continues to work as described above. If you want to code a CNM routing table, it is recommended that you do not name it ISTMGC00 to ensure a message will be produced if it is not found.

Dynamic definition of VTAM-to-VTAM connections

In pre-V4R4 releases, to communicate with other VTAMs, you had to define PU and TRLE operands for APPN host-to-host channel connections.

In VTAM V4R4, you no longer need to define channel-to-channel connections if you use the services provided by the cross-system coupling facility (XCF) of MVS within a sysplex. The definitions needed for VTAM-to-VTAM communication are created dynamically.

Definitions for VTAMs in the sysplex and the paths to them can co-exist with XCF, but the first connection activated will set up the CP-CP session. To ensure that XCF sets up the CP-CP sessions, it is recommended that the definitions be removed or, at least, take them out of the configuration list.

In addition, you will see new and changed messages appearing in response to certain VTAM network operator commands. For information about these new and changed messages, see “Changes to Command Output” on page 53 and “Changes to VTAM Network Operator Messages” on page 57.

BUFF entry for 8K external buffer

BFRNUM is a new START or MODIFY command option used with TRACE,TYPE=VTAM,MODE=EXT. It specifies the number of 8K external trace buffers the VTAM internal trace is to allocate and use for generalized trace facility (GTF) processing. Integers 0 or 2–50 can be specified. If you omit this option, the default is 2. Two times the number of processors in the central processing unit (CPU) should ensure that enough buffers are available. If you use external VIT tracing often, BFRNUM can be increased. If you do not use external VIT tracing, you can specify BFRNUM=0 to receive the pre-VTAM V4R4 method of writing up to 256 bytes in one GTF record.

High Performance Routing (HPR) for APPN Users

In VTAM V4R4, you automatically have a level of high performance routing support, depending on the characteristics of your VTAM node.

As a result of high performance routing, you will notice improved flow of data through the network and will receive new HPR-related messages and codes. For complete information about HPR support, refer to “High Performance Routing (HPR)” in the *VTAM Network Implementation Guide*.

Host-to-Host Channel Dynamics for APPN Users

In VTAM V4R2, during activation of a multipath channel (MPC) group, all READ and WRITE subchannel paths in the group must be successfully allocated to VTAM or activation of the entire group fails. In addition, if a channel path fails in an active MPC group, that path is lost to the group. Unless you choose to continue operation without the failed path, you must deactivate and reactivate the entire MPC group to recover the failed path, interrupting sessions using the MPC group.

In VTAM V4R4, if at least one READ and one WRITE path is allocated successfully, an APPN host-to-host channel connection is activated. Additional paths (defined but not ONLINE) in an MPC group can be dynamically added later to the active group using the MVS VARY ONLINE command.

Logon Mode Table Association Enhancements for APPN Users

In VTAM V4R2, the logon mode table from which the APPN class of service (COS) is selected is the one associated with the originating LU (OLU). If a table is not associated with the OLU, the IBM-supplied default logon mode table is used.

In VTAM V4R4, the logon mode table from which the APPN class of service is selected is the one associated with the secondary LU (SLU). If a table is not associated with the SLU, the IBM-supplied default logon mode table is used.

Verifying SNA Channel-to-Channel Reliability

In VTAM V4R2, a channel failure on an SNA channel-to-channel connection is not detected until I/O traffic is sent across the channel. If you maintain an SNA channel-to-channel connection as a backup between two host processors, the channel might sit idle and a failure might go undetected until I/O traffic is sent across it.

In VTAM V4R4, a small amount of I/O traffic is automatically sent across the channel at 1-minute intervals to verify the availability of the channel. If a failure is detected, VTAM responds the same way it does to any channel failure detected on an SNA channel-to-channel connection when I/O traffic is sent. VTAM's response is dependent on the values coded on the MIHTMOUT start option, and on the REPLYTO operand on the GROUP definition statement and the MIH operand on the LINE definition statement in the channel-attachment (CTCA) major node.

Name Mismatch Detection for LU 6.2 Sessions

In large, complex networks using alias name facilities to manage duplicate resource names, errors can be caused by the way name translations occur. In VTAM V4R2, these errors can sometimes go undetected by VTAM, resulting in inappropriate session establishment. VTAM V4R4 includes enhancements that result in such errors being more likely to be detected.

For example, because of name translation errors, two session initiation requests intended for the same destination can result in attempted sessions with two different targets. In VTAM V4R2, both of these sessions are established, when only one session should be established. In VTAM V4R4, only the first session request is honored. The second session fails.

If you experience session establishment failures in VTAM V4R4, while you do not experience them under the same conditions in VTAM V4R2, you need to examine alias name facilities throughout the network to determine the cause of the failures. VTAM V4R4 provides new messages and codes and a new vector to assist you in this problem determination.

Automatic Restart Manager (ARM) Support

If VTAM V4R4 is operating with MVS/ESA V5R2 and MVS/ESA is defined to provide automatic restart support for VTAM, VTAM V4R4 is automatically restarted following an abnormal termination.

Start Processing Enhancement

In VTAM V4R2, during startup, VTAM performs open and close processing on the VTAMLST data set each time it activates a major node.

In VTAM V4R4, VTAM no longer performs open and close processing on the VTAMLST data set each time it activates a major node. This results in less time for VTAM startup to complete.

Downward Compatibility

Downward compatibility is the ability of VTAM V4R4 to communicate with and work with prior versions and releases of VTAM and other products in your network. If you have pre-VTAM V4R4 versions and releases of VTAM and other products in your network with which VTAM V4R4 will communicate, you might need to apply program temporary fixes (PTFs) to those versions, releases, and products to ensure that they are compatible. Refer to the *VTAM Program Directory* for VTAM V4R4 and the preventive service planning (PSP) bucket for a complete list of the IBM products to which you might need to apply PTFs, the conditions under which you might need to apply the PTFs, and the PTF numbers. You can access the PSP bucket through the following sources:

- Information Access
- SoftwareXcel Extended
- IBMLink (ServiceLink).

If you do not have access to these sources, contact the IBM Support Center at 1-800-237-5511 (U.S. and Canada) to determine which PTFs you need to apply.

Storage Requirements

In general, the storage required to install and operate VTAM V4R4 has increased, regardless of whether you use the new optional functions or enhancements introduced in VTAM V4R4. Particularly, the storage needed for CSA/ECSA has increased due to the VTAM V4R4 maintenance enhancements. You will need to define a sufficient amount of CSA/ECSA storage on the CSA parameter in the IEASYSxx parmlib member.

See Appendix A, “Estimating Storage” to determine the approximate storage required to install and operate VTAM V4R4 in your system.

Software Requirements

VTAM V4R4 requires, at a minimum, MVS/ESA SP V4R3. VTAM V4R4 also operates with the later versions, releases, and modifications of this operating system unless otherwise stated. Prior versions, releases, and modifications are not supported.

Some functions listed in “Implementing New Optional Functions and Enhancements” on page 102 require a later version or release of MVS/ESA. In addition, some functions require other software products. You can find comprehensive overviews of these functions and enhancements in the appropriate *VTAM Release Guides*.

Software Recommendations

VTAM V4R4 works with other products, such as TME 10 NetView for OS/390 and NCP, to provide network management functions and to provide certain communication functions, such as remote, channel-to-channel, local area network (LAN), X.25, and frame-relay communication. For the specific versions and releases of NCP and NetView that VTAM V4R4 works with, refer to the *VTAM Program Directory*.

First Failure Support Technology (FFST) is a key element in the VTAM problem diagnosis strategy. If you should encounter a VTAM problem and FFST is not available, problem diagnosis time can be dramatically lengthened. See the *First Failure Support Technology VM & MVS Operator's Guide* for more information.

The VTAM dump analysis enhancements and VIT analysis tool should be enabled to provide diagnosis help. See “Installing the VTAM Dump Analysis and the VIT Analysis Tools” on page 22 for more information.

Hardware Requirements

VTAM V4R4 runs in the same processors in which MVS/ESA SP V4R3 and later MVS/ESA versions and releases run. Some VTAM V4R4 functions listed in “Implementing New Optional Functions and Enhancements” on page 102 require certain models of processors. In addition, some VTAM V4R4 functions require other hardware products. You can find comprehensive overviews of these functions and enhancements in the appropriate *VTAM Release Guides*.

Data Set Requirements

New target and distribution libraries (data sets) are required to install VTAM V4R4. Storage requirements for some remaining libraries (those that are required to install VTAM V4R2 and are still required to install VTAM V4R4) have changed.

This section shows the storage requirements for the new and changed target and distribution libraries.

New Data Sets

Table 14 shows the new target and distribution libraries in VTAM V4R4 for which you must allocate storage.

Table 14 (Page 1 of 3). New Data Sets in VTAM V4R4

Target Library or Data Set Name	Distribution Library or Data Set Name	Contents
SYS1.MIGLIB Note: SYS1.MIGLIB is an IPCS data set that might already exist on your system. If you have already allocated SYS1.MIGLIB for the IPCS product, you must ensure there is enough space for VTAM modules.	SYS1.AOS26 Note: SYS1.AOS26 is not a new data set, but is changed because of VTAM's use of the SYS1.MIGLIB data set.	VTAM formatted dump routines for the Interactive Problem Control System (IPCS).

Table 14 (Page 2 of 3). New Data Sets in VTAM V4R4

Target Library or Data Set Name	Distribution Library or Data Set Name	Contents
SYS1.SISTCLIB	SYS1.AOS26 Note: SYS1.AOS26 is not a new data set, but is changed because of the new SYS1.SISTCLIB data set and changes to the existing SYS1.LPALIB and SYS1.NUCLEUS data sets.	VTAM modules to be loaded into common service area and extended common service area (CSA/ECSA) storage.
SYS1.SISTDAT3 SYS1.SISTMAC2 SYS1.SISTLMD1	SYS1.AISTDAT3 SYS1.AISTMAC2	These data sets are used by the AnyNet/MVS function which is now included in VTAM V4R4. If you have not previously installed the AnyNet/MVS feature, these data sets will be new.
SYS1.SAPPDAT2	SYS1.AAPPDAT2	APPZUMEM message member for the APPC application suite
SYS1.SAPPDAT4	SYS1.AAPPDAT4	ANAME database skeleton, APPNAMDF, for the APPC application suite
SYS1.SAPPMOD1	SYS1.AAPPMOD1	Application load modules for the APPC application suite
None	SYS1.AAPPMOD2	ANAME and AFTP application program interface load modules for the APPC application suite
SYS1.SAPPSAMP	SYS1.AAPPSAMP	Installation and execution samples for the APPC application suite
SYS1.SISTASGD	SYS1.AISTASGD	ASN.1 and GDMO syntax data sets for VTAM common management information Protocol (CMIP) Services
SYS1.SISTASN1	SYS1.AISTASN1	Contains two categories of data set members: <ul style="list-style-type: none"> • Abstract syntax notation 1 (ASN.1) definition data sets for VTAM CMIP services • ACYPRES: List of abstract syntax notation 1 (ASN.1) definition data sets for VTAM CMIP services.

Table 14 (Page 3 of 3). New Data Sets in VTAM V4R4

Target Library or Data Set Name	Distribution Library or Data Set Name	Contents
SYS1.SISTCMIP	SYS1.AISTCMIP	Directory definition file for VTAM CMIP services. The member name of the directory definition file is ACYDDF.
SYS1.SISTGDMO	SYS1.AISTGDMO	Compiled definitions for the ISO standard, <i>Guidelines for the Definition of Managed Objects (GDMO)</i> , for VTAM CMIP services. This is a partitioned data set consisting of one member, ACYGDMO.

Table 15 shows the approximate storage requirements for these libraries to help you plan for installing VTAM V4R4. For precise requirements, refer to the *VTAM Program Directory* for VTAM V4R4.

Table 15 (Page 1 of 2). Storage Requirements for New Data Sets in VTAM V4R4

Library or Data Set Name	DSORG	RECFM	LRECL	Block Size	Number of Blocks	Number of Directory Blocks
SYS1.AAPPDAT2	PO	VB	259	6475	19	1
SYS1.AAPPDAT4	PO	VB	213	213	10	1
SYS1.AAPPMOD1	PO	U	0	6144	345	19
SYS1.AAPPMOD2	PO	U	0	6144	266	13
SYS1.AAPPSAMP	PO	FB	80	8800	21	2
SYS1.AISTASGD	PO	VB	512	8192	316	4
SYS1.AISTASN1	PO	FB	1024	8192	48	3
SYS1.AISTCMIP	PO	FB	80	8800	1	1
SYS1.AISTDAT3	PO	FB	80	3200	49	1
SYS1.AISTGDMO	PO	FB	500	8000	706	1
SYS1.AISTMAC2	PO	FB	80	8800	31	3
SYS1.MIGLIB	PO	U	0	6144	119	1
SYS1.SAPPDAT2	PO	VB	259	6475	19	1
SYS1.SAPPDAT4	PO	VB	213	213	10	1
SYS1.SAPPMOD1	PO	U	0	6144	902	2
SYS1.SAPPSAMP	PO	FB	80	8800	21	2
SYS1.SISTASGD	PO	VB	512	8192	316	4
SYS1.SISTASN1	PO	FB	1024	8192	48	3
SYS1.SISTCLIB	PO	U	0	6144	434	69
SYS1.SISTDAT3	PO	FB	80	3200	48	1
SYS1.SISTLMD1	PO	U	0	6144	50	1

Table 15 (Page 2 of 2). Storage Requirements for New Data Sets in VTAM V4R4

Library or Data Set Name	DSORG	RECFM	LRECL	Block Size	Number of Blocks	Number of Directory Blocks
SYS1.SISTMAC2	PO	FB	80	8800	31	3
SYS1.SISTCMIP	PO	FB	80	8800	1	1
SYS1.SISTGDMO	PO	FB	500	8000	706	1

Changed Data Sets

Table 16 shows the approximate storage requirements for target and distribution libraries that have changed in size or number of blocks since VTAM V4R2. The values in this table are approximate and are presented in this book to help you plan for installing VTAM V4R4. For precise requirements, refer to the *VTAM Program Directory* for VTAM V4R4.

Table 16 (Page 1 of 2). Storage Requirements for Changed Data Sets in VTAM V4R4

Library or Data Set Name	DSORG	RECFM	LRECL	Block Size	Number of Blocks	Number of Directory Blocks
SYS1.AGENLIB	PO	FB	80	8800	1 ↓	1
SYS1.AISTCLI0	PO	FB	80	8800	262 ↑	1
SYS1.AISTCLS1	PO	FB	80	8800	28	1
SYS1.AISTDAT1	PO	VB	6156	6160	217 ↑	1
SYS1.AISTDAT2	PO	VB	259	6475	26 ↑	1
SYS1.AISTMAC1	PO	FB	80	8800	74 ↑	2
SYS1.AISTMSG0	PO	FB	80	8800	5	1
SYS1.AISTPNL0	PO	FB	80	8800	39 ↑	8 ↑
SYS1.AISTPNL1	PO	FB	80	8800	173 ↑	19 ↑
SYS1.AMACLIB	PO	FB	80	8800	513 ↑	6 ↑
SYS1.AOSB3	PO	U	0	6144	2 ↑	1
SYS1.AOST3	PO	U	0	6144	84	12
SYS1.AOST4	PO	U	0	6144	8	1
SYS1.AOS24	PO	U	0	6144	49 ↑	5
SYS1.AOS26	PO	U	0	6144	5745 ↑	681 ↑
SYS1.ASAMPLIB	PO	FB	80	8800	379 ↑	4 ↑
SYS1.ATSOMAC	PO	FB	80	8800	19 ↑	1
SYS1.LINKLIB	PO	U	0	6144	138 ↑	6 ↑
SYS1.LPALIB	PO	U	0	6144	130 ↓	23 ↓
SYS1.MACLIB	PO	FB	80	8800	534 ↑	7
SYS1.NUCLEUS	PO	U	0	6144	2703 ↑	1
SYS1.SAMPLIB	PO	FB	80	8800	379 ↑	4 ↑

Note: An upward-pointing arrow (↑) next to the value indicates that the number of blocks or directory blocks has increased. A downward-pointing arrow (↓) indicates that the number has decreased.

Table 16 (Page 2 of 2). Storage Requirements for Changed Data Sets in VTAM V4R4

Library or Data Set Name	DSORG	RECFM	LRECL	Block Size	Number of Blocks	Number of Directory Blocks
SYS1.SISTCLI0	PO	FB	80	8800	263 ↑	1
SYS1.SISTCLS1	PO	FB	80	8800	28 ↓	1
SYS1.SISTDAT1	PO	VB	6156	6160	163 ↑	1
SYS1.SISTDAT2	PO	VB	259	6475	26 ↑	1
SYS1.SISTDEBUG	PO	U	0	6144	120 ↑	1
SYS1.SISTMAC1	PO	FB	80	8800	76 ↑	2
SYS1.SISTMSG0	PO	FB	80	8800	5	1
SYS1.SISTPNL0	PO	FB	80	8800	41 ↑	8 ↑
SYS1.SISTPNL1	PO	FB	80	8800	173 ↑	19 ↑
SYS1.VTAMLIB	PO	U	0	6144	2078 ↑	59 ↑

Note: An upward-pointing arrow (↑) next to the value indicates that the number of blocks or directory blocks has increased. A downward-pointing arrow (↓) indicates that the number has decreased.

If SYS1.SISTPNL0 is used as the target data set when compiling the panels in SYS1.SISTPNL1, the basic allocation for SYS1.SISTPNL0 must be increased to 154 blocks of space and 60 directory blocks.

Upgrading VTAM V4R2 User Interfaces to VTAM V4R4

This section explains the changes you need to make to existing VTAM V4R2 user interfaces (system definitions, application programs, exit routines, tables, modules, and operating procedures) to ensure that those user interfaces continue to work and produce the same functions in VTAM V4R4.

Changes to Start Options

Table 17 on page 76 shows start options that have changed since VTAM V4R2 that might affect migrating to VTAM V4R4. These are options whose default values have changed or whose operand values in VTAM V4R2 now have different meanings, different valid ranges, or yield different results in VTAM V4R4.

In addition to the start options shown in Table 17 on page 76, other options have changed, and new options have been added in association with the new optional functions and enhancements listed in “Implementing New Optional Functions and Enhancements” on page 102. The additional changed and new start options do not affect migration to VTAM V4R4. For information about these additional changed and new start options see the appropriate *VTAM Release Guides*.

For complete information about all changed and new start options, refer to Chapter 4, “Start Options” in the *VTAM Resource Definition Reference*.

Upgrading VTAM V4R2 to VTAM V4R4

Table 17. Start Option Changes that Might Affect Migrating to VTAM V4R4

Start Option	Operand	Description
CDRDYN		<p>CDRDYN is a new start option whose value overrides the value specified on the CDRDYN operand on the CDRM definition statement in the cross-domain resource manager major node for a host cross-domain resource manager. The default value for the new CDRDYN start option is YES.</p> <p>The default value for the CDRDYN operand is NO, meaning that the host cross-domain resource manager is not authorized to dynamically define CDRSC representations of cross-domain or cross-network subarea or APPN resources.</p> <p>If you are accepting the default value for the CDRDYN operand in VTAM V4R2 or if you have coded CDRDYN=NO, be aware that when you upgrade to VTAM V4R4, the host cross-domain resource manager is now authorized to dynamically define CDRSC representations. If you do not want the host cross-domain resource manager to have this authorization in VTAM V4R4, code CDRDYN=NO on the new CDRDYN start option.</p> <p>Note: The CDRDYN start option was introduced in VTAM V4R2 through the program temporary fix (PTF) associated with APAR OW04212. If you have applied this PTF, you are already aware of this start option. In VTAM V4R2, with the PTF applied, if you do not code the CDRDYN start option, whether the host cross-domain resource manager is authorized to dynamically define cross-domain CDRSC representations is determined by the type of node you are defining. For end nodes and network nodes, the CDRDYN start option, in effect, defaults to YES. For subarea nodes, interchange nodes, and migration data host nodes, the CDRDYN start option defaults to NO prior to CDRM major node activation. After CDRM major node activation, the value specified on the CDRDYN operand is used. If you do code the CDRDYN start option, the value specified on the start option is used for all types of nodes.</p>
ENCRYPTN		<p>The default value of YES has been added. This default will produce similar results if ENCRYPTN=YES was specified in a previous release. You should specify ENCRYPTN=NO if you do not intend to use encryption.</p>
HPR		<p>For a network node with HOSTSA coded, the default value was HPR=ANR. For all situations, the default is now HPR=RTP.</p>
HPRPST		<p>The default time limit values for low, medium, and high transmission priority connections have been changed from 60 seconds to 8 minutes, 4 minutes, and 1 minute. A network transmission priority with a default value of 1 minute has also been added to the HPRPST start option.</p>
MSGLEVEL or MSGLVL		<p>If you do not change the value of your MSGLEVEL start option in VTAM V4R4, you will not see any migration impact. However, if you change the value of your start option you will see differences in messages received. This could affect automated operations. See Appendix D, "Messages Affected by the MSGLVL Option" on page D-1 in the <i>VTAM Messages</i> for further information.</p>
TRACE	SIZE	<p>The default value is now 100. The minimum value is now also 100. Although specifying a value less than 100 will not cause an error, the internal trace table size will be set to 100.</p>
XNETALS		<p>The default value of NO for the XNETALS start option is no longer dependent on the extended border node start option value.</p>

Changes to Buffer Pools

In VTAM V4R4, a new buffer pool, TIBUF, has been added to support high performance data transfer (HPDT). A large number of pages are taken up within the pool when VTAM is started. If you are not in an environment which will take advantage of HPDT, you should code TIBUF=0 as a start option or on your START command.

The length of the header for the IO buffer pool has increased. If you do not use the data encryption facility, the header is now 91 bytes. If you do use the data encryption facility, the header is now 98 bytes. As a result of this increase, you might not get as many buffers per page and might need to adjust your buffer size for maximum efficient storage use. For information on how to choose buffer pool specifications, refer to “Buffer Pools” in the *VTAM Network Implementation Guide*.

Table 18 shows IBM-supplied buffer pools whose default values or maximum values have changed since VTAM V4R2.

Table 18. Buffer Pool Value Changes that Might Affect Migrating to VTAM V4R4

Buffer Pool Name	Value	Description
BSBUF	baseno	The default value is now 17.
	bufsize	The default value is now 240.
	xpanpt	The default value is now 16.
CRPLBUF	bufsize	The default value is now 144.
IOBUF	xpanlim	The maximum value that can now be specified is 2,097,152. The minimum value that can now be specified is 256.

Changes to Definition Statements

Table 19 on page 78 shows definition statements that have changed since VTAM V4R2 that might affect migrating to VTAM V4R4. These are statements whose default values have changed or whose operand values in VTAM V4R2 now have different meanings, different valid ranges, or yield different results in VTAM V4R4.

In addition to the definition statements shown in Table 19 on page 78, other definition statements have changed, and new definition statements have been added in association with the new optional functions and enhancements listed in “Implementing New Optional Functions and Enhancements” on page 102. The additional changed and new definition statements do not require changes to your system definitions unless you use the new optional functions or enhancements. For information about these additional changed and new definition statements, see the appropriate *VTAM Release Guides*.

For complete information about all changed and new definition statements, refer to Chapter 2, “Major Nodes” in the *VTAM Resource Definition Reference*.

Upgrading VTAM V4R2 to VTAM V4R4

Table 19 (Page 1 of 2). Definition Statement Changes that Might Affect Migrating to VTAM V4R4

Major Node	Definition Statement	Operand	Description
Channel attachment	DELAY		For LNCTL=CTCA, default is now 0. Changed from 0.100 seconds.
Cross-domain resource manager	CDRM	CDRDYN	<p>For a host cross-domain resource manager, the value specified on the CDRDYN operand is now overridden by the value specified on a new CDRDYN start option. The default value for the new CDRDYN start option is YES.</p> <p>The default value for the CDRDYN operand is NO, meaning that the host cross-domain resource manager is not authorized to dynamically define CDRSC representations of cross-domain or cross-network subarea or APPN resources.</p> <p>If you are accepting the default value for the CDRDYN operand in VTAM V4R2 or if you have coded CDRDYN=NO, be aware that when you upgrade to VTAM V4R4, the host cross-domain resource manager is now authorized to dynamically define CDRSC representations. If you do not want the host cross-domain resource manager to have this authorization in VTAM V4R4, code CDRDYN=NO on the new CDRDYN start option.</p> <p>Note: The CDRDYN start option was introduced in VTAM V4R2 through the program temporary fix (PTF) associated with APAR OW04212. If you have applied this PTF, you are already aware of this start option. In VTAM V4R2, with the PTF applied, if you do not code the CDRDYN start option, whether the host cross-domain resource manager is authorized to dynamically define cross-domain CDRSC representations is determined by the type of node you are defining. For end nodes and network nodes, the CDRDYN start option, in effect, defaults to YES. For subarea nodes, interchange nodes, and migration data host nodes, the CDRDYN start option defaults to NO prior to CDRM major node activation. After CDRM major node activation, the value specified on the CDRDYN operand is used. If you do code the CDRDYN start option, the value specified on the start option is used for all types of nodes.</p>
Local SNA Model NCP Switched TCP XCA	PU	NETID	The NETID=(,NOXNETALS) option has been deleted. If it is coded, it will default to XNETALS=NO for that PU. Verification of the NETID is performed when XNETALS=NO is in effect, even when the NETID is not specified on the PU.
		XNETALS	If CONNTYPE=APPN and XNETALS is not coded, XNETALS will default to YES as long as XNETALS=NO start option is not coded. If CONNTYPE=LEN and XNETALS is not coded, XNETALS will default to NO. The value of the definition statement will override the value of the start option.
NCP	DELAY		For LNCTL=NCP, default is now 0. Changed from 0.100 seconds.

Table 19 (Page 2 of 2). Definition Statement Changes that Might Affect Migrating to VTAM V4R4

Major Node	Definition Statement	Operand	Description
Switched	VBUILD	MAXGRP MAXDLUR MAXNO	The size of the switched major node tables is now dynamically determined. The need for these operands has been eliminated. If they are coded, they will be ignored.
		PU	
Switched		DIALNO	Default is now 242. Changed from 32.
TRL	TRLE	MAXBFRU	Default is now 5. Changed from 1.
XCA and NCP	CAPACITY		Default is now 4M for connections to virtual nodes (VNNAME and VNGROUP are coded). Changed from 8K.
XCA	DELAY		Default is now 0. Changed from 50 milliseconds.

Changes to IBM-Supplied Default User-Definable Tables and User-Modifiable Modules

If you have modified any IBM-supplied default user-definable tables or user-modifiable modules in VTAM V4R2 that you have not renamed, those tables and modules will be deleted and replaced when you install VTAM V4R4. To keep your modified IBM-supplied VTAM V4R2 tables or modules:

1. Make copies of them before you install VTAM V4R4.
2. Merge your modifications back into the appropriate tables and modules after you install VTAM V4R4.
3. Reassemble the tables and modules into which you have merged your modifications.

If you have modified and renamed any IBM-supplied default user-definable tables or user-modifiable modules in VTAM V4R2:

1. Compare your modified tables and modules to those shipped with VTAM V4R4 after you install VTAM V4R4.
2. Merge any differences into your modified tables and modules.
3. Reassemble your modified tables and modules.

Changes to IBM-Supplied Default User-Definable Tables

The following IBM-supplied default user-definable tables have changed since VTAM V4R2:

- CNM routing table
- Logon mode table
- Operation-level USS table.

CNM Routing Table: The CNM routing table can no longer be stored in SYS1.LPALIB. It can only reside in SYS1.VTAMLIB.

Logon Mode Table: The value on the RUSIZES operand on the MODEENT macro in the SNASVCMG entry has changed from X'8585' to X'9797'.

The value on the RUSIZES operand on the MODEENT macro in the ISTCOSDF entry has changed from X'8585' to X'8989'.

For information about the logon mode table, refer to “Logon Mode Table” and Appendix A, “IBM-Supplied Tables” in the *VTAM Resource Definition Reference*.

Operation-Level USS Table: For information about changes to the operation-level USS table, refer to “Unformatted System Services (USS) Tables” and Appendix A, “IBM-Supplied Tables” in the *VTAM Resource Definition Reference*.

Changes to Logon Mode Table Macros

Table 20 shows logon mode table macros that have changed since VTAM V4R2 that might affect migrating to VTAM V4R4. These macros are macros whose operand values in VTAM V4R2 now have different meanings, different valid ranges, or yield different results in VTAM V4R4.

In addition to the macros shown in Table 20, other macros have changed, and new macros have been added in association with the new optional functions and enhancements listed in “Implementing New Optional Functions and Enhancements” on page 102. The additional changed and new macros do not affect migration to VTAM V4R4. For information about these additional changed and new macros, see the appropriate *VTAM Release Guides*.

For complete information about all changed and new macros, refer to “Logon Mode Table” in the *VTAM Resource Definition Reference*.

Table 20. Logon Mode Table Macro Changes that Might Affect Migrating to VTAM V4R4

Macro	Operand	Description
MODEEND	<i>name</i>	The same name coded in the name field of two or more macros will now cause assembler failures. In addition, an error message is now issued if a name specified in the name field is greater than eight characters in length.
MODEENT	<i>name</i>	The same name coded in the name field of two or more macros will now cause assembler failures. In addition, an error message is now issued if a name specified in the name field is greater than eight characters in length.
MODETAB	<i>name</i>	The same name coded in the name field of two or more macros will now cause assembler failures. In addition, an error message is now issued if a name specified in the name field is greater than eight characters in length.

Changes to USS Table Macros

Table 21 shows USS table macros that have changed since VTAM V4R2 that might affect migrating to VTAM V4R4. These are macros whose operand values in VTAM V4R2 now have different meanings, different valid ranges, or yield different results in VTAM V4R4.

In addition to the macros shown in Table 21, other macros have changed, and new macros have been added in association with the new optional functions and enhancements listed in “Implementing New Optional Functions and Enhancements” on page 102. The additional changed and new macros do not affect migration to VTAM V4R4. For information about these additional changed and new macros, see the appropriate *VTAM Release Guides*.

For complete information about all changed and new macros, refer to “Unformatted System Services (USS) Tables” in the *VTAM Resource Definition Reference*.

Table 21. USS Table Macro Changes that Might Affect Migrating to VTAM V4R4

Macro	Operand	Description
USSMSG	MSGLVL	If you do not change the value of MSGLVL in VTAM V4R4, you will not see any migration impact. However, if you change the value of MSGLVL you will see differences in messages received. This could affect automated operations. See Appendix D, “Messages Affected by the MSGLVL Option” on page D-1 in the <i>VTAM Messages</i> for further information.
USSTAB	FORMAT	The default value is now DYNAMIC.

Changes to Commands

Table 22 on page 82 shows operator commands that have changed since VTAM V4R2 that might affect migrating to VTAM V4R4. These are commands whose default values have changed or whose operand values in VTAM V4R2 now have different meanings, different valid ranges, or yield different results in VTAM V4R4.

In addition to the commands shown in Table 22 on page 82, other commands have changed, and new commands have been added in association with the new optional functions and enhancements listed in “Implementing New Optional Functions and Enhancements” on page 102. These additional changed and new commands do not affect your CLISTs or operating procedures unless you use the new optional functions or enhancements. For information about these additional changed and new commands, see the appropriate *VTAM Release Guides*.

For complete information about all changed and new commands, refer to *VTAM Operation*.

Upgrading VTAM V4R2 to VTAM V4R4

Table 22 (Page 1 of 7). Command Changes that Might Affect Migrating to VTAM V4R4

Command	Operand	Description
DISPLAY ADJSSCPS	MAX	MAX is a new operand whose default value is the value specified on a new DSPLYDEF start option. If you do not specify a value on the new DSPLYDEF start option or on the DSPLYMAX start option, the default value for the MAX operand on the DISPLAY ADJSSCPS command is 100. If you do not specify a value on the new DSPLYDEF start option and if the value specified on the DSPLYMAX start option is 100 or greater, the default value for the MAX operand is 100. If you do not specify a value on the new DSPLYDEF start option and if the value specified on the DSPLYMAX start option is less than 100, the default value for the MAX operand is the value specified on the DSPLYMAX start option.
DISPLAY APPLS	MAX	MAX is a new operand whose default value is the value specified on a new DSPLYDEF start option. If you do not specify a value on the new DSPLYDEF start option or on the DSPLYMAX start option, the default value for the MAX operand on the DISPLAY APPLS command is 100. If you do not specify a value on the new DSPLYDEF start option and if the value specified on the DSPLYMAX start option is 100 or greater, the default value for the MAX operand is 100. If you do not specify a value on the new DSPLYDEF start option and if the value specified on the DSPLYMAX start option is less than 100, the default value for the MAX operand is the value specified on the DSPLYMAX start option.
DISPLAY CDRMS	MAX	MAX is a new operand whose default value is the value specified on a new DSPLYDEF start option. If you do not specify a value on the new DSPLYDEF start option or on the DSPLYMAX start option, the default value for the MAX operand on the DISPLAY CDRMS command is 100. If you do not specify a value on the new DSPLYDEF start option and if the value specified on the DSPLYMAX start option is 100 or greater, the default value for the MAX operand is 100. If you do not specify a value on the new DSPLYDEF start option and if the value specified on the DSPLYMAX start option is less than 100, the default value for the MAX operand is the value specified on the DSPLYMAX start option.
DISPLAY CDRSCS	MAX	MAX is a new operand whose default value is the value specified on a new DSPLYDEF start option. If you do not specify a value on the new DSPLYDEF start option or on the DSPLYMAX start option, the default value for the MAX operand on the DISPLAY CDRSCS command is 100. If you do not specify a value on the new DSPLYDEF start option and if the value specified on the DSPLYMAX start option is 100 or greater, the default value for the MAX operand is 100. If you do not specify a value on the new DSPLYDEF start option and if the value specified on the DSPLYMAX start option is less than 100, the default value for the MAX operand is the value specified on the DSPLYMAX start option.
	NETID	When NETID= <i>netid</i> , the DISPLAY CDRSCS command no longer displays cross-domain resources with unknown network identifiers. The DISPLAY CDRSCS command now displays only cross-domain resources within the indicated network.

Table 22 (Page 2 of 7). Command Changes that Might Affect Migrating to VTAM V4R4

Command	Operand	Description
DISPLAY CLSTRS	MAX	MAX is a new operand whose default value is the value specified on a new DSPLYDEF start option. If you do not specify a value on the new DSPLYDEF start option or on the DSPLYMAX start option, the default value for the MAX operand on the DISPLAY CLSTRS command is 100. If you do not specify a value on the new DSPLYDEF start option and if the value specified on the DSPLYMAX start option is 100 or greater, the default value for the MAX operand is 100. If you do not specify a value on the new DSPLYDEF start option and if the value specified on the DSPLYMAX start option is less than 100, the default value for the MAX operand is the value specified on the DSPLYMAX start option.
DISPLAY DIRECTRY	MAX	When ID=*.name, the valid range of values is now 1 through the value specified on the DSPLYMAX start option. The default value is now the value specified on a new DSPLYDEF start option. If you do not specify a value on the new DSPLYDEF start option or on the DSPLYMAX start option, the default value for the MAX operand on the DISPLAY DIRECTRY command is 100. If you do not specify a value on the new DSPLYDEF start option and if the value specified on the DSPLYMAX start option is 100 or greater, the default value for the MAX operand is 100. If you do not specify a value on the new DSPLYDEF start option and if the value specified on the DSPLYMAX start option is less than 100, the default value for the MAX operand is the value specified on the DSPLYMAX start option.
DISPLAY EXIT	MAX	MAX is a new operand whose default value is the value specified on a new DSPLYDEF start option. If you do not specify a value on the new DSPLYDEF start option or on the DSPLYMAX start option, the default value for the MAX operand on the DISPLAY EXIT command is 100. If you do not specify a value on the new DSPLYDEF start option and if the value specified on the DSPLYMAX start option is 100 or greater, the default value for the MAX operand is 100. If you do not specify a value on the new DSPLYDEF start option and if the value specified on the DSPLYMAX start option is less than 100, the default value for the MAX operand is the value specified on the DSPLYMAX start option.
DISPLAY GROUPS	MAX	MAX is a new operand whose default value is the value specified on a new DSPLYDEF start option. If you do not specify a value on the new DSPLYDEF start option or on the DSPLYMAX start option, the default value for the MAX operand on the DISPLAY GROUPS command is 100. If you do not specify a value on the new DSPLYDEF start option and if the value specified on the DSPLYMAX start option is 100 or greater, the default value for the MAX operand is 100. If you do not specify a value on the new DSPLYDEF start option and if the value specified on the DSPLYMAX start option is less than 100, the default value for the MAX operand is the value specified on the DSPLYMAX start option.

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Table 22 (Page 3 of 7). Command Changes that Might Affect Migrating to VTAM V4R4

Command	Operand	Description
DISPLAY LINES	MAX	MAX is a new operand whose default value is the value specified on a new DSPLYDEF start option. If you do not specify a value on the new DSPLYDEF start option or on the DSPLYMAX start option, the default value for the MAX operand on the DISPLAY LINES command is 100. If you do not specify a value on the new DSPLYDEF start option and if the value specified on the DSPLYMAX start option is 100 or greater, the default value for the MAX operand is 100. If you do not specify a value on the new DSPLYDEF start option and if the value specified on the DSPLYMAX start option is less than 100, the default value for the MAX operand is the value specified on the DSPLYMAX start option.
DISPLAY LUGROUPS	MAX	MAX is a new operand that applies only when SCOPE=ALL and whose default value is the value specified on a new DSPLYDEF start option. If you do not specify a value on the new DSPLYDEF start option or on the DSPLYMAX start option, the default value for the MAX operand on the DISPLAY LUGROUPS command is 100. If you do not specify a value on the new DSPLYDEF start option and if the value specified on the DSPLYMAX start option is 100 or greater, the default value for the MAX operand is 100. If you do not specify a value on the new DSPLYDEF start option and if the value specified on the DSPLYMAX start option is less than 100, the default value for the MAX operand is the value specified on the DSPLYMAX start option.
DISPLAY MAJNODES	MAX	MAX is a new operand whose default value is the value specified on a new DSPLYDEF start option. If you do not specify a value on the new DSPLYDEF start option or on the DSPLYMAX start option, the default value for the MAX operand on the DISPLAY MAJNODES command is 100. If you do not specify a value on the new DSPLYDEF start option and if the value specified on the DSPLYMAX start option is 100 or greater, the default value for the MAX operand is 100. If you do not specify a value on the new DSPLYDEF start option and if the value specified on the DSPLYMAX start option is less than 100, the default value for the MAX operand is the value specified on the DSPLYMAX start option.
DISPLAY PATHTAB	MAX	MAX is a new operand whose default value is the value specified on a new DSPLYDEF start option. If you do not specify a value on the new DSPLYDEF start option or on the DSPLYMAX start option, the default value for the MAX operand on the DISPLAY PATHTAB command is 100. If you do not specify a value on the new DSPLYDEF start option and if the value specified on the DSPLYMAX start option is 100 or greater, the default value for the MAX operand is 100. If you do not specify a value on the new DSPLYDEF start option and if the value specified on the DSPLYMAX start option is less than 100, the default value for the MAX operand is the value specified on the DSPLYMAX start option.

Table 22 (Page 4 of 7). Command Changes that Might Affect Migrating to VTAM V4R4

Command	Operand	Description
DISPLAY PENDING	MAX	MAX is a new operand whose default value is the value specified on a new DSPLYDEF start option. If you do not specify a value on the new DSPLYDEF start option or on the DSPLYMAX start option, the default value for the MAX operand on the DISPLAY PENDING command is 100. If you do not specify a value on the new DSPLYDEF start option and if the value specified on the DSPLYMAX start option is 100 or greater, the default value for the MAX operand is 100. If you do not specify a value on the new DSPLYDEF start option and if the value specified on the DSPLYMAX start option is less than 100, the default value for the MAX operand is the value specified on the DSPLYMAX start option.
DISPLAY RSCLIST	MAX	The valid range of values is now 1 through the value specified on the DSPLYMAX start option. The default value is now the value specified on a new DSPLYDEF start option. If you do not specify a value on the new DSPLYDEF start option or on the DSPLYMAX start option, the default value for the MAX operand on the DISPLAY RSCLIST command is 100. If you do not specify a value on the new DSPLYDEF start option and if the value specified on the DSPLYMAX start option is 100 or greater, the default value for the MAX operand is 100. If you do not specify a value on the new DSPLYDEF start option and if the value specified on the DSPLYMAX start option is less than 100, the default value for the MAX operand is the value specified on the DSPLYMAX start option.
DISPLAY SESSIONS	MAX	MAX is a new operand whose default value is the value specified on a new DSPLYDEF start option. If you do not specify a value on the new DSPLYDEF start option or on the DSPLYMAX start option, the default value for the MAX operand on the DISPLAY SESSIONS command is 100. If you do not specify a value on the new DSPLYDEF start option and if the value specified on the DSPLYMAX start option is 100 or greater, the default value for the MAX operand is 100. If you do not specify a value on the new DSPLYDEF start option and if the value specified on the DSPLYMAX start option is less than 100, the default value for the MAX operand is the value specified on the DSPLYMAX start option.
DISPLAY STATIONS	MAX	MAX is a new operand whose default value is the value specified on a new DSPLYDEF start option. If you do not specify a value on the new DSPLYDEF start option or on the DSPLYMAX start option, the default value for the MAX operand on the DISPLAY STATIONS command is 100. If you do not specify a value on the new DSPLYDEF start option and if the value specified on the DSPLYMAX start option is 100 or greater, the default value for the MAX operand is 100. If you do not specify a value on the new DSPLYDEF start option and if the value specified on the DSPLYMAX start option is less than 100, the default value for the MAX operand is the value specified on the DSPLYMAX start option.

Table 22 (Page 5 of 7). Command Changes that Might Affect Migrating to VTAM V4R4

Command	Operand	Description
DISPLAY STATS	NUM	<p>The NUM operand is now MAX. Although continuing to specify NUM will not cause an error, IBM recommends that you specify MAX.</p> <p>The valid range of values is now 1 through the value specified on the DSPLYMAX start option. The default value is now the value specified on a new DSPLYDEF start option. If you do not specify a value on the new DSPLYDEF start option or on the DSPLYMAX start option, the default value for the NUM operand on the DISPLAY STATS command is 100. If you do not specify a value on the new DSPLYDEF start option and if the value specified on the DSPLYMAX start option is 100 or greater, the default value for the NUM operand is 100. If you do not specify a value on the new DSPLYDEF start option and if the value specified on the DSPLYMAX start option is less than 100, the default value for the NUM operand is the value specified on the DSPLYMAX start option.</p>
DISPLAY STORUSE	NUM	<p>The NUM operand is now MAX. Although continuing to specify NUM will not cause an error, IBM recommends that you specify MAX.</p> <p>The valid range of values is now 1 through the value specified on the DSPLYMAX start option. The default value is now the value specified on a new DSPLYDEF start option. If you do not specify a value on the new DSPLYDEF start option or on the DSPLYMAX start option, the default value for the NUM operand on the DISPLAY STORUSE command is 100. If you do not specify a value on the new DSPLYDEF start option and if the value specified on the DSPLYMAX start option is 100 or greater, the default value for the NUM operand is 100. If you do not specify a value on the new DSPLYDEF start option and if the value specified on the DSPLYMAX start option is less than 100, the default value for the NUM operand is the value specified on the DSPLYMAX start option.</p> <p>Note: If you want to see all GETBLK pool information, you must specify one of the following:</p> <ul style="list-style-type: none"> • A value greater than 100 on the new DSPLYDEF start option • MAX=200 on the DISPLAY STORUSE command.
DISPLAY TABLE	MAX	<p>MAX is a new operand that applies only when SCOPE=ALL and whose default value is the value specified on a new DSPLYDEF start option. If you do not specify a value on the new DSPLYDEF start option or on the DSPLYMAX start option, the default value for the MAX operand on the DISPLAY TABLE command is 100. If you do not specify a value on the new DSPLYDEF start option and if the value specified on the DSPLYMAX start option is 100 or greater, the default value for the MAX operand is 100. If you do not specify a value on the new DSPLYDEF start option and if the value specified on the DSPLYMAX start option is less than 100, the default value for the MAX operand is the value specified on the DSPLYMAX start option.</p>

Table 22 (Page 6 of 7). Command Changes that Might Affect Migrating to VTAM V4R4

Command	Operand	Description
DISPLAY TERMS	MAX	MAX is a new operand whose default value is the value specified on a new DSPLYDEF start option. If you do not specify a value on the new DSPLYDEF start option or on the DSPLYMAX start option, the default value for the MAX operand on the DISPLAY TERMS command is 100. If you do not specify a value on the new DSPLYDEF start option and if the value specified on the DSPLYMAX start option is 100 or greater, the default value for the MAX operand is 100. If you do not specify a value on the new DSPLYDEF start option and if the value specified on the DSPLYMAX start option is less than 100, the default value for the MAX operand is the value specified on the DSPLYMAX start option.
DISPLAY TGPS	MAX	MAX is a new operand whose default value is the value specified on a new DSPLYDEF start option. If you do not specify a value on the new DSPLYDEF start option or on the DSPLYMAX start option, the default value for the MAX operand on the DISPLAY TGPS command is 100. If you do not specify a value on the new DSPLYDEF start option and if the value specified on the DSPLYMAX start option is 100 or greater, the default value for the MAX operand is 100. If you do not specify a value on the new DSPLYDEF start option and if the value specified on the DSPLYMAX start option is less than 100, the default value for the MAX operand is the value specified on the DSPLYMAX start option.
DISPLAY TRL	MAX	MAX is a new operand that applies only when TRLE is not specified and whose default value is the value specified on a new DSPLYDEF start option. If you do not specify a value on the new DSPLYDEF start option or on the DSPLYMAX start option, the default value for the MAX operand on the DISPLAY TRL command is 100. If you do not specify a value on the new DSPLYDEF start option and if the value specified on the DSPLYMAX start option is 100 or greater, the default value for the MAX operand is 100. If you do not specify a value on the new DSPLYDEF start option and if the value specified on the DSPLYMAX start option is less than 100, the default value for the MAX operand is the value specified on the DSPLYMAX start option.
DISPLAY USERVAR	MAX	MAX is a new operand that applies only when ID is not specified and whose default value is the value specified on a new DSPLYDEF start option. If you do not specify a value on the new DSPLYDEF start option or on the DSPLYMAX start option, the default value for the MAX operand on the DISPLAY USERVAR command is 100. If you do not specify a value on the new DSPLYDEF start option and if the value specified on the DSPLYMAX start option is 100 or greater, the default value for the MAX operand is 100. If you do not specify a value on the new DSPLYDEF start option and if the value specified on the DSPLYMAX start option is less than 100, the default value for the MAX operand is the value specified on the DSPLYMAX start option.
MODIFY TRACE	SIZE	The default value is now 100. The minimum value is now also 100. Although specifying a value less than 100 will not cause an error, the internal trace table size will be set to 100.

Table 22 (Page 7 of 7). Command Changes that Might Affect Migrating to VTAM V4R4

Command	Operand	Description
VARY TERM	TYPE=UNCOND	If the session is an automatic logon session, regardless if it traverses an APPN node, the session is now terminated and then immediately reestablished if a session path exists at the time. To avoid having the session reestablished, specify TYPE=COND when you issue the VARY TERM command.

Changes to Command Output

This section shows some changes in command output since VTAM V4R2 that might affect automated operation procedures.

DISPLAY CDRSCS

In VTAM V4R2, when you issue a DISPLAY CDRSCS command with a specific network identifier coded on the NETID operand, you receive output that includes cross-domain resources within the indicated network and those not known by any network.

In VTAM V4R4, when you issue the same command, you receive output that includes only cross-domain resources within the indicated network. Cross-domain resources with unknown network identifiers are no longer included in the display.

DISPLAY CLSTRS

Changes have occurred in the output you receive when you issue the DISPLAY CLSTRS command in VTAM V4R4. The resource type "PHYSICAL UNIT" in message IST089I now appears as one of the following resource types:

- PU_T1
- PU_T2
- PU_T2.1.

The resource type "PU T4/5 MAJ NODE" in message IST089I now appears as "PU T4/5."

DISPLAY GROUPS

Changes have occurred in the output you receive when you issue the DISPLAY GROUPS command in VTAM V4R4. The resource type "PU T4/5 MAJ NODE" in message IST089I now appears as "PU T4/5."

DISPLAY ID

Changes have occurred in the output you receive when you issue the DISPLAY ID command for the following resources:

- Cross-domain resource manager (CDRM)
- Group
- Line
- Local SNA major node
- Model major node
- Switched major node.

Cross-Domain Resource Manager: In VTAM V4R2, when you issue a DISPLAY ID command for a cross-domain resource manager, you receive output similar to the following:

```

IST097I DISPLAY ACCEPTED
IST075I NAME = NETA.SSCP1A, TYPE = CDRM
IST1046I CP NETA.SSCP1A ALSO EXISTS
IST486I STATUS= ACTIV, DESIRED STATE= ACTIV
IST815I AUTOMATIC RECOVERY IS SUPPORTED
IST231I CDRM MAJOR NODE = VTAMSEG
IST654I I/O TRACE = OFF, BUFFER TRACE = OFF
IST1500I STATE TRACE = OFF
IST476I CDRM TYPE = HOST GATEWAY CAPABLE
IST637I SUBAREA = 1 ELEMENT = 1
IST388I DYNAMIC CDRSC DEFINITION SUPPORT = YES
IST171I ACTIVE SESSIONS = 0000000002, SESSION REQUESTS = 0000000000
IST924I -----
IST075I NAME = NETA.SSCP1A, TYPE = HOST CP
IST1046I SSCP NETA.SSCP1A ALSO EXISTS
IST486I STATUS= ACTIV, DESIRED STATE= ACTIV
IST1447I REGISTRATION TYPE = NO
IST977I MDLTAB=***NA*** ASLTAB=***NA***
IST861I MODETAB=***NA*** USSTAB=***NA*** LOGTAB=***NA***
IST934I DLOGMOD=***NA*** USS LANGTAB=***NA***
IST597I CAPABILITY-PLU ENABLED ,SLU ENABLED ,SESSION LIMIT NONE
IST231I APPL MAJOR NODE = VTAMSEG
IST654I I/O TRACE = OFF, BUFFER TRACE = OFF
IST1500I STATE TRACE = OFF
IST271I JOBNAME = VTAM, STEPNAME = VTAM, DSPNAME = IST5DA1C
IST228I ENCRYPTION = NONE
IST1050I MAXIMUM COMPRESSION LEVEL - INPUT = 0, OUTPUT = 0
IST171I ACTIVE SESSIONS = 0000000000, SESSION REQUESTS = 0000000000
IST314I END

```

When you issue the same command in VTAM V4R4, you receive output similar to the following, which includes a new SSCPID field in message IST637I.

Note: If you have applied the program temporary fix (PTF) associated with APAR OW16372, you are already getting the SSCPID field in message IST637I.

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```
IST097I DISPLAY ACCEPTED
IST075I NAME = NETA.SSCP1A, TYPE = CDRM
IST1046I CP NETA.SSCP1A ALSO EXISTS
IST486I STATUS= ACTIV, DESIRED STATE= ACTIV
IST815I AUTOMATIC RECOVERY IS SUPPORTED
IST231I CDRM MAJOR NODE = VTAMSEG
IST654I I/O TRACE = OFF, BUFFER TRACE = OFF
IST1500I STATE TRACE = OFF
IST476I CDRM TYPE = HOST GATEWAY CAPABLE
IST637I SUBAREA = 1 ELEMENT = 1 SSCPID = 1
IST388I DYNAMIC CDRSC DEFINITION SUPPORT = YES
IST171I ACTIVE SESSIONS = 0000000002, SESSION REQUESTS = 0000000000
IST924I -----
IST075I NAME = NETA.SSCP1A, TYPE = HOST CP
IST1046I SSCP NETA.SSCP1A ALSO EXISTS
IST486I STATUS= ACTIV, DESIRED STATE= ACTIV
IST1447I REGISTRATION TYPE = NO
IST977I MDLTAB=***NA*** ASLTAB=***NA***
IST861I MODETAB=***NA*** USSTAB=***NA*** LOGTAB=***NA***
IST934I DLOGMOD=***NA*** USS LANGTAB=***NA***
IST597I CAPABILITY-PLU ENABLED ,SLU ENABLED ,SESSION LIMIT NONE
IST231I APPL MAJOR NODE = VTAMSEG
IST654I I/O TRACE = OFF, BUFFER TRACE = OFF
IST1500I STATE TRACE = OFF
IST271I JOBNAME = VTAM, STEPNAME = VTAM, DSPNAME = IST5DA1C
IST228I ENCRYPTION = NONE
IST1050I MAXIMUM COMPRESSION LEVEL - INPUT = 0, OUTPUT = 0
IST171I ACTIVE SESSIONS = 0000000000, SESSION REQUESTS = 0000000000
IST314I END
```

Group: The resource type “PHYSICAL UNIT” in message IST089I now appears as one of the following resource types:

- PU_T1
- PU_T2
- PU_T2.1.

Line: The resource type “PHYSICAL UNIT” in message IST089I now appears as one of the following resource types:

- PU_T1
- PU_T2
- PU_T2.1.

Local SNA Major Node: The resource type “PHYSICAL UNIT” in message IST089I now appears as one of the following resource types:

- PU_T1
- PU_T2
- PU_T2.1.

Model Major Node: The resource type “PHYSICAL UNIT” in message IST089I now appears as one of the following resource types:

- PU_T1
- PU_T2
- PU_T2.1.

Switched Major Node: The resource type “PHYSICAL UNIT” in message IST089I now appears as one of the following resource types:

- PU_T1
- PU_T2
- PU_T2.1.

DISPLAY MAJNODES

Changes have occurred in the output you receive when you issue the DISPLAY MAJNODES command in VTAM V4R4. The resource type “PU T4/5 MAJ NODE” in message IST089I now appears as “PU T4/5.”

DISPLAY MODELS

Changes have occurred in the output you receive when you issue the DISPLAY MODELS command in VTAM V4R4 for one of the following resources:

- PU
- Model major node, when SCOPE=ALL.

PU: The resource type “PHYSICAL UNIT” in message IST089I now appears as one of the following resource types:

- PU_T1
- PU_T2
- PU_T2.1.

Model Major Node, When SCOPE=ALL: The resource type “PHYSICAL UNIT” in message IST089I now appears as one of the following resource types:

- PU_T1
- PU_T2
- PU_T2.1.

DISPLAY PENDING

Changes have occurred in the output you receive when you issue the DISPLAY PENDING command in VTAM V4R4. The resource type “PU T4/5 MAJ NODE” in message IST089I now appears as “PU T4/5.”

DISPLAY SESSIONS

In VTAM V4R2, if you specify LIST=ALL when issuing the DISPLAY SESSIONS command, you receive output similar to the following:

```

IST097I DISPLAY ACCEPTED
IST350I DISPLAY TYPE = SESSIONS
IST873I      PLU              SLU              SID              STATUS
IST874I NETA.APPL1          NETA.NETAPPL1      EAABEEC336CB5F06  ACTIV
IST874I NETA.SSCP1A         NETA.SSCP2A        EAABEEC336CB5F03  ACTIV/CP
IST874I NETA.SSCP2A         NETA.SSCP1A        F6ABEEC339CB60F0  ACTIV/CP
IST924I -----
IST878I NUMBER OF PENDING SESSIONS =          0
IST924I -----
IST878I NUMBER OF ACTIVE  SESSIONS =          3
IST1162I   LU-LU              =              1
IST1162I   CP-CP CONWINNER    =              1
IST1162I   CP-CP CONLOSER     =              1
IST924I -----
IST878I NUMBER OF QUEUED  SESSIONS =          0
IST924I -----
IST878I NUMBER OF TOTAL   SESSIONS =          3
IST924I -----
IST1161I ACTIVE SSCP SESSIONS
IST1162I   SSCP-LU              =              3
IST1162I   SSCP-PU              =              2
IST1162I   SSCP-SSCP            =              0
IST314I END
    
```

When you issue the same command in VTAM V4R4, if you have more than 100 sessions (100 is the default value on a new MAX operand on the DISPLAY SESSIONS command), or if you specify the new MAX operand and the number of sessions exceeds the value you specify on the MAX operand, some session count fields will contain a string of 10 asterisks, as shown in the following example:

```

IST097I DISPLAY ACCEPTED
IST350I DISPLAY TYPE = SESSIONS
IST873I      PLU              SLU              SID              STATUS
IST874I NETA.APPL1          NETA.NETAPPL1      EAABEEC336CB5F06  ACTIV
IST874I NETA.SSCP1A         NETA.SSCP2A        EAABEEC336CB5F03  ACTIV/CP
IST874I NETA.SSCP2A         NETA.SSCP1A        F6ABEEC339CB60F0  ACTIV/CP
IST924I -----
IST878I NUMBER OF PENDING SESSIONS =          *****
IST924I -----
IST878I NUMBER OF ACTIVE  SESSIONS =          *****
IST1162I   LU-LU              =          *****
IST1162I   CP-CP CONWINNER    =              1
IST1162I   CP-CP CONLOSER     =              1
IST924I -----
IST878I NUMBER OF QUEUED  SESSIONS =          *****
IST924I -----
IST878I NUMBER OF TOTAL   SESSIONS =          *****
IST924I -----
IST1161I ACTIVE SSCP SESSIONS
IST1162I   SSCP-LU              =              3
IST1162I   SSCP-PU              =              2
IST1162I   SSCP-SSCP            =              0
IST314I END
    
```

DISPLAY TERMS

Changes have occurred in the output you receive when you issue the DISPLAY TERMS command in VTAM V4R4. The resource type "PHYSICAL UNIT" in message IST089I now appears as one of the following resource types:

- PU_T1
- PU_T2
- PU_T2.1.

DISPLAY TOPO

Changes have occurred in the output you receive when you issue the DISPLAY TOPO command for transmission groups or when you specify LIST=ALL.

In VTAM V4R2, if you issue the DISPLAY TOPO command for transmission groups you receive output similar to the following:

```
IST097I DISPLAY ACCEPTED
IST350I DISPLAY TYPE = TOPOLOGY
IST1299I TRANSMISSION GROUPS ORIGINATING AT CP NETA.SSCP1A
IST1357I
IST1300I DESTINATION CP      TGN      STATUS  TGTYPE  VALUE WEIGHT
IST1301I NETA.SSCP2A        21      OPER   INTERM  YES  *NA*
IST1163I                    RSN                      HPR
IST1164I                    26                      YES
IST1302I                    CAPACITY PDELAY  COSTTIME  COSTBYTE
IST1303I                    32M      TERRESTR 0          0
IST1304I                    SECURITY UPARM1  UPARM2    UPARM3
IST1305I                    UNSECURE 128     128      128
IST314I END
```

In VTAM V4R4, if you issue the DISPLAY TOPO command for transmissions groups you will receive output similar to the following, which includes new and changed messages:

- IST1579I is used as an output separator
- IST1163I and IST1164I now display the number of days remaining until the TG is removed from the topology database.

```
IST097I DISPLAY ACCEPTED
IST350I DISPLAY TYPE = TOPOLOGY
IST1299I TRANSMISSION GROUPS ORIGINATING AT CP NETA.SSCP1A
IST1357I
IST1300I DESTINATION CP      TGN      STATUS  TGTYPE  VALUE WEIGHT
IST1301I NETA.SSCP2A        21      OPER   INTERM  YES  *NA*
IST1579I
IST1163I                    RSN                      HPR          TIME LEFT
IST1164I                    26                      YES          12
IST1579I
IST1302I                    CAPACITY PDELAY  COSTTIME  COSTBYTE
IST1303I                    32M      TERRESTR 0          0
IST1579I
IST1304I                    SECURITY UPARM1  UPARM2    UPARM3
IST1305I                    UNSECURE 128     128      128
IST314I END
```

In VTAM V4R2, if you specify LIST=ALL with the DISPLAY TOPO command you receive output similar to the following:

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```
IST097I DISPLAY ACCEPTED
IST350I DISPLAY TYPE = TOPOLOGY
IST1295I CP NAME          NODETYPE ROUTERES CONGESTION CP-CP WEIGHT
IST1296I NETA.SSCP2A     NN         1         NONE        YES  *NA*
IST1297I                  ICN/MDH  CDSERVR  RSN          HPR
IST1298I                  NO         NO         8            RTP
IST1223I                  BN         NATIVE
IST1224I                  NO         YES
IST1299I TRANSMISSION GROUPS ORIGINATING AT CP NETA.SSCP2A
IST1357I                  CPCP
IST1300I DESTINATION CP  TGN        STATUS  TGTYPE    VALUE WEIGHT
IST1301I NETA.SSCP1A    255       OPER    INTERM VRTG YES  *NA*
IST314I END
```

In VTAM V4R4, if you specify LIST=ALL when you issue the DISPLAY TOPO command, you will receive output similar to the following, which includes new and changed messages:

- IST1579I used as an output separator.
- IST1223I and IST1224I now displays the number of days remaining until the TG is removed from the topology database.

```
IST097I DISPLAY ACCEPTED
IST350I DISPLAY TYPE = TOPOLOGY
IST1295I CP NAME          NODETYPE ROUTERES CONGESTION CP-CP WEIGHT
IST1296I NETA.SSCP2A     NN         1         NONE        YES  *NA*
IST1579I                  -----
IST1297I                  ICN/MDH  CDSERVR  RSN          HPR
IST1298I                  NO         NO         8            RTP
IST1579I                  -----
IST1223I                  BN         NATIVE  TIME LEFT
IST1224I                  NO         YES     12
IST1299I TRANSMISSION GROUPS ORIGINATING AT CP NETA.SSCP2A
IST1357I                  CPCP
IST1300I DESTINATION CP  TGN        STATUS  TGTYPE    VALUE WEIGHT
IST1301I NETA.SSCP1A    255       OPER    INTERM VRTG YES  *NA*
IST314I END
```

DISPLAY TRACES, MODIFY TRACE, START TRACE

Changes have occurred in the output you receive when you specify TYPE=VTAM when issuing the DISPLAY TRACES, MODIFY TRACE, or START TRACE command.

In VTAM V4R2, when you specify TYPE=VTAM when issuing the DISPLAY TRACES, MODIFY TRACE, or START TRACE command you receive output containing message IST199I similar to the following:

```
IST199I OPTIONS = API APPC CFS CIO ESC LCS LOCK MSG NRM PIU
IST199I OPTIONS = PSS SMS SSCP TCP VCNS
```

In VTAM V4R4, when you specify TYPE=VTAM when issuing the DISPLAY TRACES, MODIFY TRACE, or START TRACE command you receive output containing message IST199I, which includes new trace options — CMIP, CSM, HPR, XBUF, and XCF — similar to the following:

```
IST199I OPTIONS = API APPC CFS CIO CMIP CSM ESC HPR LCS LOCK MSG NRM
IST199I OPTIONS = PIU PSS SMS SSCP TCP VCNS XBUF XCF
```

DISPLAY VTAMOPTS

When you issue the DISPLAY VTAMOPTS command in VTAM V4R4, you will receive output that includes new start options, which have been added since VTAM V4R2.

Display of a Maximum Number of Resources Enhancement

The following new messages now appear in the output of DISPLAY commands on which the MAX operand can be coded:

- IST1315I
- IST1358I
- IST1454I.

IST1315I: Message IST1315I now appears in the output of the following DISPLAY commands:

- DISPLAY ADJSSCPS
- DISPLAY APPLS
- DISPLAY CDRMS
- DISPLAY CDRSCS
- DISPLAY CLSTRS
- DISPLAY DIRECTRY, when ID=*.name
- DISPLAY EXIT
- DISPLAY GROUPS
- DISPLAY LINES
- DISPLAY LUGROUPS, when SCOPE=ALL
- DISPLAY MAJNODES
- DISPLAY PATHTAB
- DISPLAY PENDING
- DISPLAY RSCLIST
- DISPLAY SESSIONS
- DISPLAY STATIONS
- DISPLAY STATS
- DISPLAY STORUSE
- DISPLAY TABLE, when SCOPE=ALL
- DISPLAY TERMS
- DISPLAY TGPS
- DISPLAY TRL
- DISPLAY USERVAR.

The text of message IST1315I is:

IST1315I DISPLAY TRUNCATED AT keyword = number

IST1358I: Message IST1358I replaces message IST172I in the output of the following DISPLAY commands:

- DISPLAY APPLS
- DISPLAY CDRMS
- DISPLAY CDRSCS
- DISPLAY CLSTRS
- DISPLAY GROUPS
- DISPLAY LINES
- DISPLAY MAJNODES
- DISPLAY PENDING
- DISPLAY TERMS

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- DISPLAY TGPS.

The text of message IST1358I is:

```
IST1358I NO QUALIFYING MATCHES FOR id
```

The text of message IST172I is:

```
IST172I NO text
```

IST1454I: A new message, IST1454I, now appears in the output of the following DISPLAY commands:

- DISPLAY ADJSSCPS
- DISPLAY APPLS
- DISPLAY CDRMS
- DISPLAY CDRSCS
- DISPLAY CLSTRS
- DISPLAY EXIT
- DISPLAY GROUPS
- DISPLAY LINES
- DISPLAY LUGROUPS, when SCOPE=ALL
- DISPLAY MAJNODES
- DISPLAY PATHTAB
- DISPLAY PENDING
- DISPLAY RSCLIST
- DISPLAY STATIONS
- DISPLAY STORUSE
- DISPLAY TABLE, when SCOPE=ALL
- DISPLAY TERMS
- DISPLAY TGPS
- DISPLAY TRL
- DISPLAY USERVAR.

The text of message IST1454I is:

```
IST1454I count resources DISPLAYED [FOR ID = rscname]
```

This message is issued once for every ID value (*rscname*) specified on the DISPLAY command and indicates how many (*count*) resources found match the command specifications (for example ID, EXCLUDE, SCOPE, IDTYPE).

rscname is network-qualified only if the name specified on the ID operand on the corresponding DISPLAY command is network-qualified. FOR ID=*rscname* is not included if the ID operand is not coded on the command.

IST1454I is issued even if the limit specified on the MAX operand is reached for the command.

Changes to VTAM Network Operator Messages

This section shows the VTAM network operator messages that have changed or have been deleted since VTAM V4R2.

Changed Messages

The following list shows the message numbers and text of messages that have changed since VTAM V4R2. Appendix A, "Message Additions, Deletions, and Changes" in *VTAM Messages* identifies the types of changes that have occurred to messages since VTAM V4R2, including new and changed variable values, enhancements to message explanations, and changes to variable lengths.

In the following list, a percent sign (%) within the message text represents a character that is reserved for variable information. The maximum length of the variable is indicated by the number of percent signs. When some messages are displayed on your console, if the variable information is shorter than the variable field, the extra blanks are suppressed, causing the message text to shift to the left.

Do not assume from the following list that the text or tokens start in certain columns. The specified USS table determines how your system handles blank suppression. For more information about blank suppression, refer to the discussion of the "OPT" operand on the USSMSG macro in the *VTAM Resource Definition Reference*.

```

V4R2: IST077I SIO = %%% CUA = %%%%%%%%%%
V4R4: IST077I SIO = %%% CUA = %%% %%%%%%%%%%

V4R2: IST084I NETWORK NODES:
V4R4: IST084I NETWORK RESOURCES:

V4R2: IST087I TYPE = %%%%%%%%%%, CONTROL = %%%
V4R4: IST087I TYPE = %%%%%%%%%%, CONTROL = %%%, HPDT = %%%

V4R2: IST135I PHYSICAL UNIT = %%%%%%%%%%
V4R4: IST135I PHYSICAL UNIT = %%%%%%%%%% %%%%%%%%%%

V4R2: IST232I %%%, %%%%%%%%%%
V4R4: IST232I %%% %%%%%%%%%% %%%%%%%%%%

V4R2: IST247I LOAD/DUMP PROCEDURE STATUS = %%%%%%%%%%
V4R4: IST247I LOAD/DUMP PROCEDURE STATUS = %%% %%%%%%%%%%

V4R2: IST257I VTAM SDUMP FAILED WITH RETURN CODE %%%
V4R4: IST257I VTAM SDUMP FAILED WITH RETURN CODE %% REASON X'!%'

V4R2: IST316I VTAM INTERNAL TRACE USER OPTIONS ARE NOT ACTIVE
V4R4: IST316I %%% TRACE USER OPTIONS ARE NOT ACTIVE

V4R2: IST320I CONFIGURATION %%% DEFINITION FAILED - %%%%%%%%%%
V4R4: IST320I DEFINITION %%% NOT SUCCESSFUL - %%%%%%%%%%

V4R2: IST395I %%%%%%%%%%
V4R4: IST395I %%% %%% %%% %%% %%% %%%

V4R2: IST396I LNKSTA STATUS CTG GTG ADJNODE ADJSA NETID
V4R4: IST396I LNKSTA STATUS CTG GTG ADJNODE ADJSA NETID ADJLS

V4R2: IST397I %%%%%%%%%%
V4R4: IST397I %%% %%% %%% %%% %%% %%%

V4R2: IST442I ATTN = %%% RDATN = %%% IPIU = %%%
V4R4: IST442I ATTN = %%% RDATN = %%% IPDU = %%%

V4R2: IST443I OPIU = %%% RDBUF = %%% SLODN = %%%
V4R4: IST443I OPDU = %%% RDBUF = %%% SLODN = %%%

V4R2: IST453I %%% PARAMETER VALUE INVALID
V4R4: IST453I %%% PARAMETER VALUE %%% NOT VALID

V4R2: IST476I CDRM TYPE = %%%%%%%%%%
V4R4: IST476I CDRM TYPE = %%% %%%%%%%%%%
    
```

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V4R2: IST530I %%%%%%%%%% PENDING %%%%%%%%%%
V4R4: IST530I %%%%%%%%%% PENDING FROM %%%%%%%%%% TO %%%%%%%%%% FOR %%%%%%%%%%

V4R2: IST605I ERROR FOR ID = %%%%%%%%%% - %%%%%%%%%% : %%%%%%%%%%, DATA INVALID FOR THIS NODE
V4R4: IST605I ERROR FOR ID = %%%%%%%%%% - %%%%%%%%%% : %%%%%%%%%%

V4R2: IST621I %%%%%%%%%% FOR NETWORK NODE %%%%%%%%%%
V4R4: IST621I %%%%%%%%%% FOR NETWORK RESOURCE %%%%%%%%%%

V4R2: IST635I %%%%%%%%%%
V4R4: IST635I %%%%%%%%%% %%%%%%%%%% %%%%%%%%%% %%%%%%%%%% %%%%%%%%%%

V4R2: IST637I SUBAREA=%%%%%%%%%% ELEMENT=%%%%%%%%%%
V4R4: IST637I SUBAREA = %%%%%%%%%% ELEMENT = %%%%%%%%%% SSCPID = %%%%%%%%%%

V4R2: IST658I %%%%%%%%%% COMMAND FAILED - %%%%%%%%%% NOT FOUND
V4R4: IST658I %%%%%%%%%% COMMAND FAILED - %%%%%%%%%%NOT FOUND

V4R2: IST940I %%%%%%%%%%
V4R4: IST940I %%%%%%%%%%

V4R2: IST956I %%%% SAP=%%% MAC=%%%%%%%%%% %%%%%%%%%%
V4R4: IST956I %%%% SAP=%%% MAC=%%%%%%%%%% %%%%%%%%%%

V4R2: IST966I USER=%%%%%%%%%%
V4R4: IST966I USER=VCNS

V4R2: IST984I USER EXIT %%%%%%%%%% IS %%%%%%%%%%
V4R4: IST984I USER EXIT %%%%%%%%%% IS %%%%%%%%%%

V4R2: IST985I USER EXIT %%%%%%%%%% %%%%%%%%%% FAILED-CODE %%
V4R4: IST985I USER EXIT %%%%%%%%%% %%%%%%%%%% FAILED-CODE %%

V4R2: IST998E VTAM MESSAGE %%%% ISSUED BUT DOES NOT EXIST
V4R4: IST998E VTAM MESSAGE %%%%%%%%%% ISSUED BUT DOES NOTEXIST

V4R2: IST1009I SID = %%%%%%%%%%
V4R4: IST1009I SID = %%%%%%%%%%, HPDT = %%%%%%%%%%

V4R2: IST1042I %%% = %%% %%%%%%%%%% %%%%%%%%%%
V4R4: IST1042I %%%%%%%%%% = %%% %%%%%%%%%% %%%%%%%%%%

V4R2: IST1055I VALUE FOR %%%%%%%%%% MUST BE NUMERIC
V4R4: IST1055I VALUE FOR %%%%%%%%%% MUST BE %%%%%%%%%%

V4R2: IST1069I PARAMETER %% FOR %%%%%%%%%% MUST BE NUMERIC
V4R4: IST1069I PARAMETER %% FOR %%%%%%%%%% MUST BE %%%%%%%%%%

V4R2: IST1070I %%%%%%%%%% FOR %%%%%%%%%% IS NOT VALID-STARTCONTINUES
V4R4: IST1070I %%%%%%%%%% FOR %%%%%%%%%% IS NOT VALID-START CONTINUES

V4R2: IST1161I ACTIVE SSCP SESSIONS
V4R4: IST1161I SSCP SESSIONS

V4R2: IST1163I RSN
V4R4: IST1163I RSN HPR TIME LEFT

V4R2: IST1164I %%%%%%%%%%
V4R4: IST1164I %%%%%%%%%% %% %

V4R2: IST1221I %%%% DEV = %%% STATUS = %%%%%%%%%%
V4R4: IST1221I %%%%%%%%%% DEV = %%% STATUS = %%%%%%%%%% STATE = %%%%%%%%%%

V4R2: IST1223I BN NATIVE
V4R4: IST1223I BN NATIVE TIMELEFT

V4R2: IST1224I %%% %%%
V4R4: IST1224I %%% %%% %

V4R2: IST1231I IPIU = %%%%%%%%%% OPIU = %%%%%%%%%%
V4R4: IST1231I IPDU = %%%%%%%%%% OPDU = %%%%%%%%%%

V4R2: IST1236I BYTECNT0 = % BYTECNT = %
V4R4: IST1236I BYTECNT0 = % BYTECNT = %

V4R2: IST1259I VBUILD TYPE = % IS ONLY VALID FOR%
V4R4: IST1259I VBUILD TYPE = % IS ONLY VALID FOR%

V4R2: IST1263I % FOR % FORCED COLD, %
V4R4: IST1263I % FOR % FORCED COLD, %

V4R2: IST1278I %
V4R4: IST1278I % FROM % TO % FOR%

V4R2: IST1297I ICN/MDH CDSERVR RSN
V4R4: IST1297I ICN/MDH CDSERVR RSN HPR

V4R2: IST1298I % % %
V4R4: IST1298I % % %

V4R2: IST1324I VNNAME = % VNGROUP = %
V4R4: IST1324I VNNAME = % VNGROUP = %

V4R2: IST1358I NO QUALIFYING MATCHES FOR %
V4R4: IST1358I NO QUALIFYING MATCHES %

V4R2: IST1374I CURRENT MAXIMUM
V4R4: IST1374I CURRENT MAXIMUM PERCENT

V4R2: IST1375I STRUCTURE SIZE % %
V4R4: IST1375I STRUCTURE SIZE % %

V4R2: IST1376I STORAGE ELEMENTS % %
V4R4: IST1376I STORAGE ELEMENTS % %

V4R2: IST1377I LIST ENTRIES % %
V4R4: IST1377I LIST ENTRIES % %

V4R2: IST1388I FAILURE ON SOCKET API % CALL
V4R4: IST1388I SOCKET % CALL FAILED, TCP ERRORNUMBER = %

V4R2: IST1392I DISCNTIM = % DEFINED AT % FOR DISCONNECT
V4R4: IST1392I DISCNTIM = % DEFINED AT % FOR DISCONNECT

V4R2: IST1395I FLDTAB = %
V4R4: IST1395I FLDTAB = % FILTER = %

Deleted Messages

Table 23 shows the message IDs of messages that have been deleted since VTAM V4R2 and, if the messages have been replaced, the IDs of the messages that have replaced them.

Table 23. Deleted Messages in VTAM V4R4

Deleted Message	Replaced By
IST468I	None
IST469I	None
IST470I	None
IST471I	None
IST1428I	None
IST1429I	None

Resource Type Identifier Enhancements in VTAM Messages

In VTAM V4R2, the resource types displayed in the IST089I message for a physical unit or for a PU type 4 or 5 major node sometimes appear in several forms, as shown in the following lists:

Physical unit	PHYSICAL UNIT PU_T1 PU_T2 PU_T2.1
PU type 4 or 5 major node	PU T4/5 MAJ NODE PU T4/5

In VTAM V4R4, the resource types displayed in message IST089I are consistent when issued for DISPLAY commands. The resource types "PHYSICAL UNIT" and "PU T4/5 MAJ NODE" no longer appear in the IST089I message. The resource types are displayed in the following forms only:

Physical unit	PU_T1 PU_T2 PU_T2.1
PU type 4 or 5 major node	PU T4/5

If you use CLISTs to perform functions based on the resource type identifiers in IST089I, you might need to alter the CLISTs to check the identifiers for "PU_T1," "PU_T2," or "PU_T2.1" instead of "PHYSICAL UNIT," and "PU T4/5" instead of "PU T4/5 MAJ NODE."

User-Defined Message Flooding Prevention Table Enhancements

In VTAM V4R2, a message-flooding prevention table enables you to define which messages become candidates for message-flooding prevention. Some VTAM messages have long variable text fields, which causes difficulty in using the variable text fields when adding messages to the message-flooding prevention table.

In VTAM V4R4, the variable fields of some VTAM messages have changed from long individual fields to multiple shorter fields.

If you have defined any of the following messages as candidates for message suppression, you might need to modify your message-flooding prevention table to use the shorter variable text fields:

- IST077I
- IST135I
- IST232I
- IST247I
- IST395I
- IST397I
- IST476I
- IST635I
- IST956I
- IST966I.

In addition, the changes to the variable fields could affect your USS tables and CLISTs.

Refer to Appendix E, “Message Text for VTAM Operator Messages” in *VTAM Messages* for the new variable text fields.

In addition, in VTAM V4R2, duplicate message groups beginning with message IST663I are suppressed, when in fact, they should not always be. This is because the second message in the group, IST664I, contains LU names, and these can be unique in each group, as shown in the following example:

```

IST663I CDINIT      REQUEST FROM IBMGW      FAILED , SENSE=087D0001
IST664I REAL OLU=USIBMEL.ELNA9171      REAL DLU=IBMIN.IBMN2CC9
IST889I SID = FB4F5745A0B5816C
IST894I ADJSSCPS TRIED FAILURE SENSE      ADJSSCPS TRIED FAILURE SENSE
IST895I      IBMGW          08260000      IBMGW3          08860000
IST895I      IBMGW4         08860000      IBMGW2          08260000
IST314I END
IST663I CDINIT      REQUEST FROM IBMGW      FAILED , SENSE=087D0001
IST664I REAL OLU=USIBMP0.TF2LAADV      REAL DLU=IBMIN.IBMJ1EP8
IST889I SID = F1BBE7C2CE12B143
IST894I ADJSSCPS TRIED FAILURE SENSE      ADJSSCPS TRIED FAILURE SENSE
IST895I      IBMGW          08260000      IBMGW3          08860000
IST895I      IBMGW4         08860000      IBMGW2          08260000
IST314I END
IST663I CDINIT      REQUEST FROM IBMGW      FAILED , SENSE=087D0001
IST664I REAL OLU=APPN.IKPASS0A          REAL DLU=APPN.IKPASSHQ
IST889I SID = C3679E4DDC712FB1
IST894I ADJSSCPS TRIED FAILURE SENSE      ADJSSCPS TRIED FAILURE SENSE
IST895I      IBMGW          08260000      IBMGW2          08260000
IST895I      IBMGW3         08860000      IBMGW4          08860000
    
```

In VTAM V4R2, the first message group containing messages IST663I and IST664I in the example above is kept, but the other groups are suppressed. In VTAM V4R4, all of these groups are kept. None are suppressed. If the IST664I messages in the groups were truly duplicates, that is, contained the same LU names, all but the first group would still be suppressed in VTAM V4R4.

A new LIST operand has been added to the FLDENT macro in VTAM V4R4 to enable you to associate up to five additional messages with the first message in a message group. For information about this operand, refer to “LIST” in the *VTAM Resource Definition Reference*.

Changes to VTAM Application Programming Interface

The following changes have occurred to the VTAM application programming interface (API) since VTAM V4R2 that might affect migrating to VTAM V4R4:

- The component identification vector has been updated.
- New RCPRI and RCSEC return codes have been added for the following APPCCMD macros:
 - APPCCMD CONTROL=OPRCNTL,QUALIFY=CNOS
 - APPCCMD CONTROL=OPRCNTL,QUALIFY=DEFINE
 - APPCCMD CONTROL=OPRCNTL,QUALIFY=DISPLAY
 - APPCCMD CONTROL=OPRCNTL,QUALIFY=RESTORE
 - APPCCMD CONTROL=ALLOC.

In addition to these changes, other macros, vectors, and DSECTs have changed, and new macros, vectors, and DSECTs have been added in association with the new optional functions and enhancements listed in “Implementing New Optional

Functions and Enhancements” on page 102. The additional changed and new macros, vectors, and DSECTs do not require changes to your application programs unless you use the new optional functions or enhancements. For information about these additional changed and new macros, vectors, and DSECTs, see the appropriate *VTAM Release Guides*.

For complete information about all changed and new macros, vectors, and DSECTs, refer to *VTAM Programming*, the *VTAM Guide to Programming for LU 6.2* and the *VTAM Programming Reference for LU 6.2*.

Changes to Installation-Wide Exit Routines

If you are installing VTAM V4R4 from the ServerPac installation method for OS/390, you must reinstall any installation-wide exit routines residing in SYS1.LPALIB.

If you are using OS/390, you should consider using the LPALIB concatenation facilities of OS/390, instead of placing your exit routines in SYS1.LPALIB.

Changes have been made to existing exit routines that would not affect migration to VTAM V4R4, and new installation-wide exit routines have been added in association with the new optional functions and enhancements listed in “Implementing New Optional Functions and Enhancements.” For information about these additional changes and new installation-wide exit routines, see the appropriate *VTAM Release Guides*.

For complete information about all changed and new installation-wide exit routines, refer to *VTAM Customization*.

Changes to Control Blocks

If you use any of the control blocks documented in *VTAM Data Areas for MVS/ESA Volume 1*, refer to that book to determine if changes have been made to those control blocks.

Implementing New Optional Functions and Enhancements

After you have successfully installed and upgraded VTAM V4R2 to VTAM V4R4, you might want to use some of the new optional functions and enhancements available in VTAM V4R4. Because you are upgrading from VTAM V4R2, VTAM V4R4 also includes functions and enhancements introduced in VTAM V4R2.

This section lists the functions and enhancements introduced in VTAM V4R4 and VTAM V4R3. You can find comprehensive overviews of these functions and enhancements in the appropriate *VTAM Release Guides*.

Functions and Enhancements Introduced in VTAM V4R4

The following new optional functions and enhancements are introduced in VTAM V4R4. For comprehensive overviews of these new functions and enhancements, refer to the *VTAM Release Guide* for VTAM V4R4.

Advanced Peer-to-Peer Networking (APPN) Enhancements: The following functions enhance VTAM's support of advanced peer-to-peer networking.

- Asynchronous transfer mode support
- Enhanced topology database garbage collection

- Locate congestion control
- QUIESCE function for MODIFY TOPO command

High Performance Routing (HPR) Enhancements: The following functions enhance the the High Performance Routing capabilities.

- High performance routing (HPR)

LU 6.2 Application Program Interface (API) Enhancements: The following functions enhance the VTAM LU 6.2 application program interface.

- APPCCMD macroinstruction enhancements
- APPC enhancements for the Distributed Computing Environment
- Buffer tracing enhancements for LU 6.2 conversations
- Conversations between programs located on the same LU
- Deleting unusable entries from the LU-mode table
- Extended security sense codes
- High performance data transfer for APPC
- Password substitution
- STOKEN for workload balancing
- Session instance identifier enhancements

Network Dynamics: The following functions enhance dynamic access to a network. These functions can eliminate or reduce the predefinition required for resources in your network. In addition, these functions provide increased end user availability and automatic backup.

- Dynamic definition of VTAM-to-VTAM connections
- Multiple dynamic switched major nodes

Operator Interface Enhancements: The following functions enhance VTAM's operator interface.

- DISPLAY SRCHINFO command
- DISPLAY VTAMSTOR command
- Displaying active resources with sessions
- Limiting output from the DISPLAY STORUSE command
- MODIFY EXIT command enhancement

Performance Enhancements: The following functions provide enhancements to VTAM performance.

- Asynchronous transfer mode support
- Enhanced adaptive pacing support
- High performance data transfer for APPC
- New component recovery area (CRA) buffer pools
- High performance data transfer MPC
- Verifying external communication adapter connection reliability

Upgrading VTAM V4R2 to VTAM V4R4

- Verifying communication or cluster controller channel connections

Problem Diagnosis: The following functions are enhancements to VTAM's problem determination and isolation capabilities.

- Buffer tracing enhancements for LU 6.2 conversations
- DISPLAY SRCHINFO command
- DISPLAY VTAMSTOR command
- Elimination of duplicate VTAM dumps
- IST605I message group enhancement
- Tracing resource states with start list
- Unformatted system services (USS) message text enhancements
- XID message group enhancement

Security Enhancements: The following features enhance VTAM's security functions.

- Enhanced cryptographic authentication
- Message authentication support and cryptographic enhancements

Sysplex Functions: The following functions enhance VTAM's support of sysplex environments.

- Central directory server enhancement for generic resources
- Dynamic definition of VTAM-to-VTAM connections
- Generic resources enhancements
- Multinode persistent sessions
- TSO generic resources

System and Configuration Management: The following functions enhance your ability to set up, manage, and control the resources in your network.

- Applying VTAM maintenance without re-IPLing MVS
- Asynchronous transfer mode support
- Choice of communication network management (CNM) routing tables
- Delayed disconnection when no LU-LU session is established
- Dynamic reconfiguration of switched resources
- Filtering initiation failures from Session Awareness (SAW) data
- Interpret table enhancement
- High performance data transfer MPC
- Reset LU enhancement
- Search retry after dial-out failure
- Support for OS/390 concatenation
- OS/390 TCP/IP OpenEdition* DLC support

Usability Enhancements The following functions enhance VTAM's usability.

- DISPLAY SRCHINFO command
- DISPLAY VTAMSTOR command
- Dynamic reconfiguration of switched resources
- Mini VIT and FFST changes
- XID message group enhancement
- XNETALS start option enhancements

Functions and Enhancements Introduced in VTAM V4R3

The following new optional functions and enhancements were introduced in VTAM V4R3. For comprehensive overviews of these new functions and enhancements, refer to the *VTAM Release Guide* for VTAM V4R3.

Advanced Peer-to-Peer Networking (APPN) Enhancements: The following functions enhance VTAM's support of advanced peer-to-peer networking.

- Central directory server selection
- High performance routing (HPR)
- Host-to-host channel dynamics
- Logon mode and class-of-service (COS) enhancements
- Operator-initiated search
- Resource registration enhancements
- Resource verification reduction for LU 6.2 application programs

LU 6.2 Application Program Interface (API) Enhancements: The following functions enhance the VTAM LU 6.2 application program interface.

- Limited resource for LU 6.2 network management flows
- Name mismatch detection
- Preallocation of a conversation
- Problem diagnosis enhancements

Network Dynamics: The following functions enhance dynamic access to a network. These functions can eliminate or reduce the predefinition required for resources in your network. In addition, these functions provide increased end user availability and automatic backup.

- Application-supplied operands for dial or token-ring connections enhancement
- Definition of spare SDLC lines
- Dynamic definition of VTAM application programs
- Enabling dynamic definition of cross-domain resources with the CDRDYN start option
- Generic resources enhancement
- Session Enhancements for LEN CP Nodes
- Using MVS system symbols in VTAM

Operator Interface Enhancements: The following functions enhance VTAM's operator interface.

- Additional enhancements for limiting of display output by session state
- Additional unformatted system services (USS) message text enhancements
- APING command support
- Display of a maximum number of resources enhancement
- Display of cross-domain resources in a particular network enhancement
- Display of subordinate PUs by major node type
- Display of the current session awareness (SAW) data filter
- Display of VTAM start options enhancements
- DISPLAY RSCLIST command enhancements
- DISPLAY TOPO command enhancements
- Multiple resource names on the DISPLAY STATIONS command
- Network-qualified names enhancements for the DISPLAY ID command
- Resource type identifier enhancements in VTAM messages
- User-defined message flooding prevention table enhancements
- Wildcard resource names enhancements

Performance Enhancements: The following functions provide enhancements to VTAM performance.

- Specifying a symbol resolution table (SRT) size for a particular network

Problem Diagnosis: The following functions are enhancements to VTAM's problem determination and isolation capabilities.

- Tracing resource states
- Tracing session management exit routine functions

Record Application Program Interface (API) Enhancements: The following functions enhance VTAM's record application program interface.

- Vector list processing enhancements

System and Configuration Management: The following functions enhance your ability to set up, manage, and control the resources in your network.

- Automatic restart manager
- Performance monitor interface
- Support for frame relay networks over token-ring connections
- Using CMIP services and the VTAM topology agent
- VTAM support for additional NCP PU operands

Chapter 4. Upgrading VTAM V4R1 to VTAM V4R4

This chapter helps you upgrade VTAM V4R1 to VTAM V4R4.

If you are migrating to APPN: VTAM includes support for Advanced Peer-to-Peer Networking (APPN), an extension to IBM's Systems Network Architecture (SNA). This book does not explain how to upgrade an existing VTAM subarea node to an APPN node. Such an upgrade is optional; you can install VTAM V4R4 and operate it as a subarea node. IBM recommends that you install VTAM V4R4 and get it operating in a test environment at your current functional level before using any of the new optional functions or enhancements in VTAM V4R4. For information about upgrading a VTAM subarea node to an APPN node, refer to *Planning for Integrated Networks* and to Chapter 15, "Implementing a Combined APPN and Subarea Network" in the *VTAM Network Implementation Guide*.

If you are upgrading a VTAM V4R1 APPN node to VTAM V4R4: This chapter describes the migration impacts of upgrading a VTAM V4R1 APPN node to VTAM V4R4.

Planning to Upgrade VTAM V4R1 to VTAM V4R4

This section helps you prepare to upgrade VTAM V4R1 to VTAM V4R4. It describes the:

- Upward and downward compatibility of VTAM V4R4
- New functions and enhancements performed without changes to user interfaces
- Storage required to install and operate VTAM V4R4
- Software and hardware requirements for VTAM V4R4
- Target and distribution libraries required to install VTAM V4R4.

Upward Compatibility

Upward compatibility is the ability of VTAM V4R1 functions and user interfaces to work in VTAM V4R4. With the exception of the function provided by the Open Systems Interconnect (OSI) Remote Programming Interface Feature (feature number 5860, 5861, or 5862), all VTAM V4R1 functions are included in VTAM V4R4.

In general, you do not have to make any changes to your VTAM V4R1 user interfaces to continue to use V4R1 functions in VTAM V4R4. Following are conditions under which you might have to make changes and the user interfaces that you might have to change:

- If you modified the ISTRACON module in VTAM V4R1.
- If you are not using encryption
- If you are using the XNETALS option
- If you have coded a user-defined major node ISTTRL
- If you use multiple central directory servers (CDSs)
- If you accept the default value for the CDRDYN operand or coded CDRDYN=NO
- If you are using authorized transmission priority for low-entry networking (LEN) connections
- If you are using additional weighting for overused resources during route selection

- If you are using network-qualified names
- If you BIND user data field lengths greater than 65 bytes
- If you have application programs that use the network-qualified address pair control vector X'15', which is appended to the CINIT request unit passed to a LOGON exit routine
- If you have automated operation procedures
- If you have modified IBM-supplied default user-definable tables and user-modifiable modules.

If you modified the ISTRACON module in VTAM V4R1

If you modified the ISTRACON module in VTAM V4R1, be aware that ISTRACON, the replaceable constants module, is no longer part of VTAM in VTAM V4R4. Constants are now defined with start options. You must now specify your modified ISTRACON field values on the corresponding start options. See “Deleted User-Modifiable Modules” on page 129 for more information.

If you are not using encryption

The default value for the ENCRYPTN start option is now ENCRYPTN=YES. This default will produce similar results if ENCRYPTN=YES was specified in a previous release. VTAM V4R4 checks each time a session is requested to see if encryption is available. In pre-VTAM V4R4, this check was made only once during VTAM initialization. If encryption is not available, a message is issued to notify the operator. You should code ENCRYPTN=NO if you do not intend to utilize the encryption function. This will reduce the path length during session initialization and reduce the messages issued to the operators console and log.

If you are using the XNETALS option

If you code a value of XNETALS=NO as a start option, in VTAM V4R4 this value can be overridden on the definition statement for a specific connection. XNETALS is now the name of the definition statement. NETID=(,NOXNETALS) has been deleted. If it is coded, it will default to XNETALS=NO for that PU.

Verification of the NETID is performed when XNETALS=NO is in effect, even when the NETID is not specified on the PU. If CONNTYPE=APPN and XNETALS is not coded, XNETALS will default to YES as long as XNETALS=NO start option is not coded.

The default start option value of XNETALS=NO is no longer dependent on the extended border node start option.

If you have coded a user-defined major node ISTTRL

If you have coded a user-defined major node ISTTRL, you must rename it. You should avoid using the prefix IST for user-defined major node names. See the *VTAM Resource Definition Reference* for more information.

If you use multiple central directory servers (CDSs)

If you use multiple central directory servers (CDSs), a network node server distributes all locate and resource registration requests to central directory servers throughout the network. VTAM V4R4 includes a new start option, CDSREFER. If you do not specify this start option, it defaults to 1, which causes a network node server to direct all Locate and resource registration requests to the nearest central directory server in the network.

If you do not want to use this enhancement, you can specify CDSREFER=0 and have the network node server distribute all Locate and resource registration requests to central directory servers throughout the network.

If you accept the default value for the CDRDYN operand or coded CDRDYN=NO

If you are accepting the default value for the CDRDYN operand in VTAM V4R1 or if you have coded CDRDYN=NO, be aware that when you upgrade to VTAM V4R4, the host cross-domain resource manager is now authorized to dynamically define CDRSC representations. If you do not want the host cross-domain resource manager to have this authorization in VTAM V4R4, code CDRDYN=NO on the new CDRDYN start option. See Table 30 on page 125 for more information.

If you are using authorized transmission priority for low-entry networking (LEN) connections

If you are using authorized transmission priority for low-entry networking (LEN) connections, you might have to change your start option list (ATCSTR00, ATCSTRyy). For more information, see “Changes to Start Options” on page 122.

If you are using additional weighting for overused resources during route selection

If you are using additional weighting for overused resources during route selection, you might have to change your start option list (ATCSTR00, ATCSTRyy). For more information, see “Changes to Start Options” on page 122.

If you are using network-qualified names

If you are using network-qualified names, you might have to change your start option list (ATCSTR00, ATCSTRyy) and USS table. For more information, see “Changes to Start Options” on page 122 and “Changes to USS Table Macros” on page 131.

If you BIND user data field lengths greater than 65 bytes

If you BIND user data field lengths greater than 65 bytes, you might have to change your application programs. For more information see “Changes to VTAM Application Programming Interface” on page 164.

If you have application programs

You might have to change your application programs if you use the network-qualified address pair control vector X'15', which is appended to the CINIT request unit passed to a LOGON exit routine. For more information, see “Expanded Addressing Pool” on page 116.

If you have automated operation procedures

If you use automated operating procedures in VTAM V4R1, you might need to change your operating procedures in VTAM V4R4. Refer to “Changes to Commands” on page 132, “Changes to Command Output” on page 140, and “Changes to VTAM Network Operator Messages” on page 160 for more information.

Note: If you do not use automated operation procedures, you still might have to make changes to your manual operating procedures.

If you have modified IBM-supplied default user-definable tables and user-modifiable modules

If you use modified IBM-supplied default user-definable tables and user-modifiable modules you might need to change your modified tables or modified modules (renamed or copied). Refer to “Changes to IBM-Supplied Default User-Definable Tables and User-Modifiable Modules” on page 128 and “Changes to VTAM Network Operator Messages” on page 160 for more information.

New Functions and Enhancements Performed without Changes to User Interfaces

Although they do not necessarily require that you change any user interfaces, the following new functions and enhancements in VTAM V4R4 might cause you to see slightly different results in VTAM V4R4 than in VTAM V4R1. You can find comprehensive overviews of these functions in the appropriate *VTAM Release Guides*.

- Applying VTAM maintenance without re-IPLing MVS
- Central directory server enhancement for generic resources
- Choice of communication network management (CNM) routing tables
- Dynamic definition of VTAM-to-VTAM connections
- BUFF entry for 8K external buffer.
- High performance routing (HPR) for APPN users
- Host-to-host channel dynamics for APPN users
- Logon mode table association enhancements for APPN users
- Central directory server (CDS) selection enhancements for APPN users
- Verifying SNA channel-to-channel reliability
- Name mismatch detection for LU 6.2 sessions
- Automatic restart manager (ARM) support
- Start processing enhancement
- Logical maintenance interface (LMI) PU deactivation enhancement
- Automatic logon enhancements for APPN users
- Session activation enhancements
- VTAM dump analysis enhancements for APPN users
- Composite network node routing
- Four-digit addresses for channel-attached devices
- Expanded addressing pool.

In addition, you will see new and changed messages appearing in response to certain VTAM network operator commands. For information about these new and changed messages, see “Changes to Command Output” on page 140 and “Changes to VTAM Network Operator Messages” on page 160.

Applying VTAM maintenance without re-IPLing MVS

In pre-V4R4 releases, some VTAM modules resided in the MVS data set SYS1.LPALIB (LPALIB). Additional VTAM modules resided in the MVS data set SYS1.NUCLEUS (NUCLEUS). To apply maintenance to any of the modules in LPALIB or NUCLEUS, you had to re-initialize MVS.

In VTAM V4R4, most of the modules that reside in LPALIB and NUCLEUS in pre-V4R4 releases now reside in a new MVS data set called SYS1.SISTCLIB (SISTCLIB). During VTAM initialization, MVS now loads these modules into common service area (CSA) and extended common service area (ECSA) storage.

Maintenance may be applied to these modules without requiring an MVS IPL. However, you must still restart VTAM after applying maintenance.

Note: Some modules associated with TSO/VTAM and VTAM Common Management Information Protocol (CMIP) services remain in LPALIB and continue to be loaded by MVS into PLPA/EPLPA storage. Some new modules introduced in VTAM V4R4—those associated with Common Storage Manager (CSM)—reside in LPALIB and are loaded by MVS into PLPA/EPLPA storage. You must re-IPL MVS and restart VTAM to apply maintenance to the modules that still reside in LPALIB. When it is necessary to re-IPL MVS and restart VTAM to apply maintenance, the HOLDDATA instructions (++HOLD data) that accompany PTFs instruct you to do so.

Central directory server enhancement for generic resources

All network nodes in a generic resource configuration no longer are forced to act as a central directory server (CDS). If CDSERVER=NO or no CDSERVER option is defined in your start list, the network node will not start as a CDS.

Choice of communication network management (CNM) routing tables

Prior to VTAM V4R4, if you coded a supplemental communication network management (CNM) routing table, it had to be named ISTMGC00. Whenever VTAM received an unsolicited request unit, VTAM used the ISTMGC00 table (if it existed) to route the request. If ISTMGC00 did not exist, the IBM-supplied default table, ISTMGC01, was used. No message was provided if ISTMGC00 was not found.

In VTAM V4R4, if you do not choose to code a new CNM routing table, VTAM continues to work as described above. If you want to code a CNM routing table, it is recommended that you do not name it ISTMGC00 to ensure a message will be produced if it is not found.

Dynamic definition of VTAM-to-VTAM connections

In pre-V4R4 releases, to communicate with other VTAMs, you had to define PU and TRLE operands for APPN host-to-host channel connections.

In VTAM V4R4, you no longer need to define channel-to-channel connections if you use the services provided by the cross-system coupling facility (XCF) of MVS within a sysplex. The definitions needed for VTAM-to-VTAM communication are created dynamically.

Definitions for VTAMs in the sysplex and the paths to them can co-exist with XCF, but the first connection activated will set up the CP-CP session. To ensure that XCF sets up the CP-CP sessions, it is recommended that the definitions be removed or, at least, take them out of the configuration list.

In addition, you will see new and changed messages appearing in response to certain VTAM network operator commands. For information about these new and changed messages, see “Changes to Command Output” on page 53 and “Changes to VTAM Network Operator Messages” on page 57.

BUFF entry for 8K external buffer

BFRNUM is a new START or MODIFY command option used with TRACE,TYPE=VTAM,MODE=EXT. It specifies the number of 8K external trace buffers the VTAM internal trace is to allocate and use for generalized trace facility (GTF) processing. Integers 0 or 2–50 can be specified. If you omit this option, the default is 2. Two times the number of processors in the central processing unit (CPU) should ensure that enough buffers are available. If you use external VIT tracing often, BFRNUM can be increased. If you do not use external VIT tracing, you can specify BFRNUM=0 to receive the pre-VTAM V4R4 method of writing up to 256 bytes in one GTF record.

High Performance Routing (HPR) for APPN Users

In VTAM V4R4, you automatically have a level of high performance routing support, depending on the characteristics of your VTAM node. As a result of high performance routing, you will notice improved flow of data through the network and will receive new HPR-related messages and codes. For complete information about HPR support, refer to “High Performance Routing (HPR)” in the *VTAM Network Implementation Guide*.

Host-to-Host Channel Dynamics for APPN Users

In VTAM V4R1, during activation of a multipath channel (MPC) group, all READ and WRITE subchannel paths in the group must be successfully allocated to VTAM or activation of the entire group fails. In addition, if a channel path fails in an active MPC group, that path is lost to the group. Unless you choose to continue operation without the failed path, you must deactivate and reactivate the entire MPC group to recover the failed path, interrupting sessions using the MPC group.

In VTAM V4R4, if at least one READ and one WRITE path is allocated successfully, an APPN host-to-host channel connection is activated. Additional paths (defined but not ONLINE) in an MPC group can later be dynamically added to the active group using the MVS VARY ONLINE command.

Logon Mode Table Association Enhancements for APPN Users

In VTAM V4R1, the logon mode table from which the APPN class of service (COS) is selected is the one associated with the originating LU (OLU). If a table is not associated with the OLU, the IBM-supplied default logon mode table is used.

In VTAM V4R4, the logon mode table from which the APPN class of service is selected is the one associated with the secondary LU (SLU). If a table is not associated with the SLU, the IBM-supplied default logon mode table is used.

Verifying SNA Channel-to-Channel Reliability

In VTAM V4R1, a channel failure on an SNA channel-to-channel connection is not detected until I/O traffic is sent across the channel. If you maintain an SNA channel-to-channel connection as a backup between two host processors, the channel might sit idle and a failure might go undetected until I/O traffic is sent across it.

In VTAM V4R4, a small amount of I/O traffic is automatically sent across the channel at 1-minute intervals to verify the availability of the channel. If a failure is detected, VTAM responds the same way it does to any channel failure detected on an SNA channel-to-channel connection when I/O traffic is sent. VTAM's response is dependent on the values coded on the MIHTMOUT start option, and on the

REPLYTO operand on the GROUP definition statement and the MIH operand on the LINE definition statement in the channel-attachment (CTCA) major node.

Name Mismatch Detection for LU 6.2 Sessions

In large, complex networks using alias name facilities to manage duplicate resource names, errors can be caused by the way name translations occur. In VTAM V4R1, these errors can sometimes go undetected by VTAM, resulting in inappropriate session establishment. VTAM V4R4 includes enhancements that result in such errors being more likely to be detected.

For example, because of name translation errors, two session initiation requests intended for the same destination can result in attempted sessions with two different targets. In VTAM V4R1, both of these sessions are established, when only one session should be established. In VTAM V4R4, only the first session request is honored. The second session fails.

If you experience session establishment failures in VTAM V4R4, while you do not experience them under the same conditions in VTAM V4R1, you need to examine alias name facilities throughout the network to determine the cause of the failures. VTAM V4R4 provides new messages and codes and a new vector to assist you in this problem determination.

Automatic Restart Manager (ARM) Support

If VTAM V4R4 is operating with MVS/ESA V5R2 and MVS/ESA is defined to provide automatic restart support for VTAM, VTAM V4R4 is automatically restarted following an abnormal termination.

Start Processing Enhancement

In VTAM V4R1, during startup, VTAM performs open and close processing on the VTAMLST data set each time it activates a major node.

In VTAM V4R4, VTAM no longer performs open and close processing on the VTAMLST data set each time it activates a major node. This results in less time for VTAM startup to complete.

Logical Maintenance Interface (LMI) PU Deactivation Enhancement

In VTAM V4R1, you cannot deactivate an LMI PU on a physical line if frame-relay switching equipment (FRSE) PUs on the same line are still active without causing VTAM and NCP to get out of synch. The LMI PU becomes inactive to VTAM, but remains active to NCP.

In VTAM V4R4, VTAM does not deactivate an LMI PU on a physical line until all FRSE PUs on the same line are inactive.

Note: This change was introduced in VTAM V4R1 through the program temporary fix (PTF) associated with APAR OW05013. If you have applied this PTF, you are already aware of this change.

Automatic Logon Enhancements for APPN Users

In VTAM V4R1, automatic logon requests are retried only when an adjacent cross-domain resource manager (CDRM) is activated. VTAM V4R4 includes a new start option, AUTORTRY. If you do not specify this start option, it defaults to AUTOCAP, which enhances the automatic logon function by additionally retrying autologon requests when any adjacent control point that supports automatic logon requests is activated. Each time an automatic logon request is retried, you will receive the following message:

```
IST899I RETRY OF AUTOLOGON(S) TO %%%%%%%%%% IN PROGRESS
```

Note: If you do not want this enhancement, you can specify AUTORTRY=CDRM and have automatic logon requests retried only when an adjacent cross-domain resource manager is activated.

Session Activation Enhancements

If you use the IBM-supplied default logon mode table in VTAM V4R1, and an unknown logon mode name is specified during session activation, in some circumstances, sessions might be activated when they should not be or might hang. In VTAM V4R4, if during session activation an unknown logon mode name or a logon mode name that is not valid is specified, sessions that in some circumstances are brought up in VTAM V4R1 when they should not be, will no longer be brought up. In addition, sessions that in some circumstances hang in VTAM V4R1, will no longer hang.

Note: This change was introduced in VTAM V4R1 through the program temporary fix (PTF) associated with APAR OW02621. If you have applied this PTF, you already have this change.

VTAM Dump Analysis Enhancements for APPN Users

VTAM V4R4 offers five new VTAMMAP verb exit routine options for formatting and analyzing VTAM dumps. These verb exit routine options provide additional information for APPN users and now appear as choices on the VTAMMAP APPN Function Menu screen of the interactive panel interface used to issue VERBEXIT VTAMMAP subcommands. The new options are:

- FND COS
- FND DECB
- FND NODE
- FND REREC
- FND SCCB

Composite Network Node Routing

VTAM V4R4 improves the performance of session establishment for sessions that traverse a composite network node by attempting to select an optimal route for the session. It does this by using enhanced route computation and BIND rerouting.

Route computation is performed by a VTAM V4R4 network node serving the origin logical unit (OLU). When computing a route and choosing among transmission groups (TGs) of equal weight, VTAM searches for matching subarea numbers for the entry and exit transmission groups to a composite network node. If matching subarea numbers are found, VTAM selects that route. In situations where no match is found (that is, the route must take at least one hop within the composite network node), non-optimal routes can still result because the topology of the composite network node is not known by the APPN topology and route selection process.

BIND rerouting is performed by a VTAM V4R4 composite network node. When a BIND arrives at a VTAM V4R4 composite network node and the entry and exit transmission groups use two different subareas, VTAM searches for an alternate exit TG that:

- Originates at the same subarea as the entry transmission group
- Terminates at the same control point as the original exit transmission group
- Has the same characteristics as the original exit transmission group.

If these criteria are met, VTAM reroutes the BIND to the alternate exit transmission group. By rerouting a BIND to a transmission group with the same subarea as the entry transmission group, VTAM prevents unnecessary hops within the composite network node. The BIND path preceding the composite network node cannot be altered because VTAM reroutes the BIND only after it enters the composite network node.

Sharing an NCP between two composite network nodes can result in VTAM choosing a non-optimal path.

Making the characteristics of transmission groups between two network nodes identical, if viable for the network, allows VTAM more flexibility in optimizing paths through composite network nodes.

Four-Digit Addresses for Channel-Attached Devices

In VTAM V4R1, depending on which release of MVS/ESA you are running under, addresses for channel-attached devices appear in some VTAM messages and VTAM internal trace (VIT) entries as 4-digit addresses with the leftmost digit always being 0. In VTAM V4R4, again depending on which release of MVS/ESA you are running under, these 4-digit channel-attached device addresses do not always have 0 as the leftmost digit.

The messages in which a 4-digit channel device address can appear are:

```
IST077I SIO = %%% CUA = %%%%%%%%%%
IST089I %%% TYPE=%%% %%% %%%
IST751I SIO = %%%, ERROR CT = %%%, CUA = %%%
IST958I INBND=%%% OUTBND=%%% PENDING=%%% ATTN=%%% CUA=%%%
IST1021I MEDIUM=%%%,ADAPNO=%%%,CUA=%%%,SNA SAP=%%%
IST1023E START I/O TIMEOUT OCCURRED FOR CUA=%%%
```

The VIT entries in which a 4-digit channel device address can appear are:

- ATT
- ERPI or ERPL
- HIOB, HIOH, HIOX
- INTI, INTL, INTX
- LCSL, LCSP, LCSS, LCSX
- SIOI, SIOL, SIOX
- SIO2.

Expanded Addressing Pool

In VTAM V4R1, an element address is 16 bits in length, allowing VTAM to assign a maximum number of 64K element addresses for its subarea. VTAM V4R4 can additionally assign up to 16384K element addresses for its subarea.

If you choose to let VTAM assign up to 16384K element addresses for its subarea (by specifying ENHADDR=YES in your start option list), you might experience migration impacts to application programs that use the network-qualified address pair control vector X'15'. This control vector is appended to the CINIT request unit that is passed to a LOGON exit routine.

In VTAM V4R1, the subarea number is contained in the first four bytes of the network address fields in control vector X'15', with the first two bytes always being 0. In VTAM V4R4, the first two bytes might not be 0; they can now contain an index value, allowing VTAM to assign more than 64K element addresses for its subarea. The subarea number is now contained in only the second two bytes of the network address fields. Therefore, if your application program is looking at the entire first four bytes of the network address fields for the subarea number, you need to change your application program to look at only the second two bytes.

Downward Compatibility

Downward compatibility is the ability of VTAM V4R4 to communicate with and work with prior versions and releases of VTAM and other products in your network. If you have pre-VTAM V4R4 versions and releases of VTAM and other products in your network with which VTAM V4R4 will communicate, you might need to apply program temporary fixes (PTFs) to those versions, releases, and products to ensure that they are compatible. Refer to the *VTAM Program Directory* for VTAM V4R4 and the preventive service planning (PSP) bucket for a complete list of the IBM products to which you might need to apply PTFs, the conditions under which you might need to apply the PTFs, and the PTF numbers. You can access the PSP bucket through the following sources:

- Information Access
- SoftwareXcel Extended
- IBMLink (ServiceLink).

If you do not have access to these sources, contact the IBM Support Center at 1-800-237-5511 (U.S. and Canada) to determine which PTFs you need to apply.

Storage Requirements

In general, the storage required to install and operate VTAM V4R4 has increased, regardless of whether you use the new optional functions or enhancements introduced in VTAM V4R4. Particularly, the storage needed for CSA/ECSA has increased due to the VTAM V4R4 maintenance enhancements. You will need to define a sufficient amount of CSA/ECSA storage on the CSA parameter in the IEASYSxx parmlib member.

See Appendix A, "Estimating Storage" to determine the approximate storage required to install and operate VTAM V4R4 in your system.

Data Compression Impacts: You will see an increase in MVS data space storage usage if you are currently using the data compression function that was introduced in VTAM V3R4.1, are running under MVS/ESA V5R1, or MVS/ESA

V5R1 with the Compression and Expansion Services program temporary fix (PTF) UY91011, and have VTAM running in one of the following:

- IBM ES/9000* 9021 711-based Model Processor
- IBM ES/9000 9121 511-based Model Processor.

Because Appendix A, “Estimating Storage” does not calculate storage requirements for data spaces, the expected increase in MVS data space storage is shown in Table 24.

Table 24. Increase in MVS Data Space Storage for Outbound Flow per Half Session

Data Compression Levels		
Level 2	Level 3	Level 4
8K + H	16K + H	60K + H
Worst case: 74K	Worst case: 82K	Worst case: 126K

Notes:

1. Storage increase does not include the amount of MVS data space needed to provide V3R4.1-level data compression.
2. “H” is determined by taking the value specified on the RUSIZES operand on the MODEENT macro in the logon mode table and adding 8 bytes, then rounding that number to the next highest of the following values: 2K, 4K, 12K, 16K, 31.5K, 60K, or 66K.
3. K = 1024 bytes.

Refer to the *VTAM Resource Definition Reference* for information about specifying a value on the RUSIZES operand on the MODEENT macro in the logon mode table.

Conversation ID Table Impacts: In addition, the conversation ID (CID) table default size has doubled since VTAM V4R1. As a result, you might have to adjust the value you specify on the CINDXSIZ start option. If you modified the ISTRACON module in VTAM V4R1, this value might be specified on the RACCITSZ constant instead. You must now specify it on the CINDXSIZ start option (see “Deleted User-Modifiable Modules” on page 129).

Software Requirements

VTAM V4R4 requires, at a minimum, MVS/ESA SP V4R3. VTAM V4R4 also operates with the later versions, releases, and modifications of this operating system unless otherwise stated. Prior versions, releases, and modifications are not supported.

Some VTAM V4R4 functions require a later version or release of MVS/ESA. In addition, some VTAM V4R4 functions listed in “Implementing New Optional Functions and Enhancements” on page 165 require other software products. You can find comprehensive overviews of these functions in the appropriate *VTAM Release Guides*. These descriptions also point out which functions require other software products.

Software Recommendations

VTAM V4R4 works with other products, such as TME 10 NetView for OS/390 and NCP, to provide network management functions and to provide certain communication functions, such as remote, channel-to-channel, local area network (LAN), X.25, and frame-relay communication. For the specific versions and releases of NCP and NetView that VTAM V4R4 works with, refer to the *VTAM Program Directory*.

First Failure Support Technology (FFST) is a key element in the VTAM problem diagnosis strategy. If you should encounter a VTAM problem and FFST is not available, problem diagnosis time can be dramatically lengthened. See the *First Failure Support Technology VM & MVS Operator's Guide* for more information.

The VTAM dump analysis enhancements and VIT analysis tool should be enabled to provide diagnosis help. See "Installing the VTAM Dump Analysis and the VIT Analysis Tools" on page 22 for more information.

Hardware Requirements

VTAM V4R4 runs in the same processors in which MVS/ESA SP V4R3 and later MVS/ESA versions and releases run. Some VTAM V4R4 functions listed in "Implementing New Optional Functions and Enhancements" on page 165 require certain models of processors. In addition, some VTAM V4R4 functions require other hardware products. You can find comprehensive overviews of these functions in the appropriate *VTAM Release Guides*.

Data Set Requirements

New target and distribution libraries (or data sets) are required to install VTAM V4R4. Storage requirements for some remaining libraries (those that are required to install VTAM V4R1 and are still required to install VTAM V4R4) have changed.

This section shows the storage requirements for the new and changed target and distribution libraries.

New Data Sets

Table 25 shows the new target and distribution libraries in VTAM V4R4 for which you must allocate storage.

Table 25 (Page 1 of 3). New Data Sets in VTAM V4R4

Target Library or Data Set Name	Distribution Library or Data Set Name	Contents
SYS1.MIGLIB Note: SYS1.MIGLIB is an IPCS data set that might already exist on your system. If you have already allocated SYS1.MIGLIB for the IPCS product, you must ensure there is enough space for VTAM modules.	SYS1.AOS26 Note: SYS1.AOS26 is not a new data set, but is changed because of VTAM's use of the SYS1.MIGLIB data set.	VTAM formatted dump routines for the Interactive Problem Control System (IPCS).

Table 25 (Page 2 of 3). New Data Sets in VTAM V4R4

Target Library or Data Set Name	Distribution Library or Data Set Name	Contents
SYS1.SAPPDAT2	SYS1.AAPPDAT2	APPZUMEM message member for the APPC application suite
SYS1.SAPPDAT4	SYS1.AAPPDAT4	ANAME database skeleton, APPNAMDF, for the APPC application suite
SYS1.SAPPMOD1	SYS1.AAPPMOD1	Application load modules for the APPC application suite
None	SYS1.AAPPMOD2	ANAME and AFTP application program interface load modules for the APPC application suite
SYS1.SAPPSAMP	SYS1.AAPPSAMP	Installation and execution samples for the APPC application suite
SYS1.SISTASGD	SYS1.AISTASGD	ASN.1 and GDMO syntax data sets for VTAM common management information Protocol (CMIP) Services
SYS1.SISTASN1	SYS1.AISTASN1	Contains two categories of data set members: <ul style="list-style-type: none"> • Abstract syntax notation 1 (ASN.1) definition data sets for VTAM CMIP services • ACYPRES: List of abstract syntax notation 1 (ASN.1) definition data sets for VTAM CMIP services.
SYS1.SISTCLIB	SYS1.AOS26 Note: SYS1.AOS26 is not a new data set, but is changed because of the new SYS1.SISTCLIB data set and changes to the existing SYS1.LPALIB and SYS1.NUCLEUS data sets.	VTAM modules to be loaded into common service area and extended common service area (CSA/ECSA) storage.
SYS1.SISTCMIP	SYS1.AISTCMIP	Directory definition file for VTAM CMIP services. The member name of the directory definition file is ACYDDF.

Upgrading VTAM V4R1 to VTAM V4R4

Table 25 (Page 3 of 3). New Data Sets in VTAM V4R4

Target Library or Data Set Name	Distribution Library or Data Set Name	Contents
SYS1.SISTDAT3 SYS1.SISTMAC2 SYS1.SISTLMD1	SYS1.AISTDAT3 SYS1.AISTMAC2	These data sets are used by the AnyNet/MVS function now included in VTAM V4R4. If you have not previously installed the AnyNet/MVS feature, these data sets will be new.
SYS1.SISTGDMO	SYS1.AISTGDMO	Compiled definitions for the ISO standard, <i>Guidelines for the Definition of Managed Objects (GDMO)</i> , for VTAM CMIP services. This is a partitioned data set consisting of one member, ACYGDMO.

Table 26 shows the approximate storage requirements for these libraries to help you plan for installing VTAM V4R4. For precise requirements, refer to the *VTAM Program Directory* for VTAM V4R4.

Table 26 (Page 1 of 2). Storage Requirements for New Data Sets in VTAM V4R4

Library or Data Set Name	DSORG	RECFM	LRECL	Block Size	Number of Blocks	Number of Directory Blocks
SYS1.AAPPDAT2	PO	VB	259	6475	19	1
SYS1.AAPPDAT4	PO	VB	213	213	10	1
SYS1.AAPPMOD1	PO	U	0	6144	345	19
SYS1.AAPPMOD2	PO	U	0	6144	266	13
SYS1.AAPPSAMP	PO	FB	80	8800	21	2
SYS1.AISTASGD	PO	VB	512	8192	316	4
SYS1.AISTASN1	PO	FB	1024	8192	48	3
SYS1.AISTCMIP	PO	FB	80	8800	1	1
SYS1.AISTDAT3	PO	FB	80	3200	49	1
SYS1.AISTGDMO	PO	FB	500	8000	706	1
SYS1.AISTMAC2	PO	FB	80	8800	31	3
SYS1.MIGLIB	PO	U	0	6144	119	1
SYS1.SAPPDAT2	PO	VB	259	6475	19	1
SYS1.SAPPDAT4	PO	VB	213	213	10	1
SYS1.SAPPMOD1	PO	U	0	6144	902	2
SYS1.SAPPSAMP	PO	FB	80	8800	21	2
SYS1.SISTASGD	PO	VB	512	8192	316	4
SYS1.SISTASN1	PO	FB	1024	8192	48	3
SYS1.SISTCLIB	PO	U	0	6144	434	69

Table 26 (Page 2 of 2). Storage Requirements for New Data Sets in VTAM V4R4

Library or Data Set Name	DSORG	RECFM	LRECL	Block Size	Number of Blocks	Number of Directory Blocks
SYS1.SISTCMIP	PO	FB	80	8800	1	1
SYS1.SISTDAT3	PO	FB	80	3200	48	1
SYS1.SISTGDMO	PO	FB	500	8000	706	1
SYS1.SISTLMD1	PO	U	0	6144	50	1
SYS1.SISTMAC2	PO	FB	80	8800	31	3

Changed Data Sets

Table 27 shows the approximate storage requirements for target and distribution libraries that have changed in size or number of blocks since VTAM V4R1. The values in this table are approximate and are presented in this book to help you plan for installing VTAM V4R4. For precise requirements, refer to the *VTAM Program Directory* for VTAM V4R4.

Table 27 (Page 1 of 2). Storage Requirements for Changed Data Sets in VTAM V4R4

Library or Data Set Name	DSORG	RECFM	LRECL	Block Size	Number of Blocks	Number of Directory Blocks
SYS1.AGENLIB	PO	FB	80	8800	1 ↓	1
SYS1.AISTCLI0	PO	FB	80	8800	262 ↑	1
SYS1.AISTCLS1	PO	FB	80	8800	28 ↓	1
SYS1.AISTDAT1	PO	VB	6156	6160	217 ↓	1
SYS1.AISTDAT2	PO	VB	259	6475	26 ↑	1
SYS1.AISTMAC1	PO	FB	80	8800	74 ↑	2
SYS1.AISTMSG0	PO	FB	80	8800	5 ↑	1
SYS1.AISTPNL0	PO	FB	80	8800	39 ↓	8 ↑
SYS1.AISTPNL1	PO	FB	80	8800	173 ↓	19 ↑
SYS1.AMACLIB	PO	FB	80	8800	513 ↑	6 ↑
SYS1.AOSB3	PO	U	0	6144	2	1
SYS1.AOST3	PO	U	0	6144	84 ↑	12
SYS1.AOST4	PO	U	0	6144	8 ↑	1
SYS1.AOS24	PO	U	0	6144	49 ↑	5
SYS1.AOS26	PO	U	0	6144	5745 ↑	681 ↑
SYS1.ASAMPLIB	PO	FB	80	8800	379 ↑	4
SYS1.ATSOMAC	PO	FB	80	8800	19 ↓	1
SYS1.LINKLIB	PO	U	0	6144	138 ↑	6
SYS1.LPALIB	PO	U	0	6144	130 ↓	23 ↓
SYS1.MACLIB	PO	FB	80	8800	534 ↑	7 ↑

Note: An upward-pointing arrow (↑) next to the value indicates that the number of blocks or directory blocks has increased. A downward-pointing arrow (↓) indicates that the number has decreased.

Table 27 (Page 2 of 2). Storage Requirements for Changed Data Sets in VTAM V4R4

Library or Data Set Name	DSORG	RECFM	LRECL	Block Size	Number of Blocks	Number of Directory Blocks
SYS1.NUCLEUS	PO	U	0	6144	2703 ↑	1
SYS1.SAMPLIB	PO	FB	80	8800	379 ↑	4 ↑
SYS1.SISTCLI0	PO	FB	80	8800	263 ↑	1
SYS1.SISTCLS1	PO	FB	80	8800	28	1
SYS1.SISTDAT1	PO	VB	6156	6160	163 ↑	1
SYS1.SISTDAT2	PO	VB	259	6475	26 ↑	1
SYS1.SISTDEBUG	PO	U	0	6144	120 ↑	1
SYS1.SISTMAC1	PO	FB	80	8800	76 ↑	2
SYS1.SISTMSG0	PO	FB	80	8800	5	1
SYS1.SISTPNL0	PO	FB	80	8800	41 ↑	8 ↑
SYS1.SISTPNL1	PO	FB	80	8800	173 ↑	19 ↑
SYS1.VTAMLIB	PO	U	0	6144	2078 ↑	59 ↑

Note: An upward-pointing arrow (↑) next to the value indicates that the number of blocks or directory blocks has increased. A downward-pointing arrow (↓) indicates that the number has decreased.

If SYS1.SISTPNL0 is used as the target data set when compiling the panels in SYS1.SISTPNL1, the basic allocation for SYS1.SISTPNL0 must be increased to 154 blocks of space and 60 directory blocks.

Considerations for Support of Multiple VTAM Versions and Releases

If your installation supports multiple versions and releases of VTAM at the same time, be aware that USS tables assembled using VTAM V4R4 libraries cannot operate in MVS/370* VTAM systems.

Upgrading VTAM V4R1 User Interfaces to VTAM V4R4

This section explains the changes you need to make to existing VTAM V4R1 user interfaces (system definitions, application programs, exit routines, tables, modules, and operating procedures) to ensure that those user interfaces continue to work and produce the same functions in VTAM V4R4.

Changes to Start Options

Table 28 on page 123 shows start options that have changed since VTAM V4R1 that might affect migrating to VTAM V4R4. These are options whose default values have changed or whose operand values in VTAM V4R1 now have different meanings, different valid ranges, or yield different results in VTAM V4R4.

In addition to the start options shown in Table 28 on page 123, other options have changed, and new options have been added in association with the new optional functions and enhancements listed in “Implementing New Optional Functions and Enhancements” on page 165. The additional changed and new start options do

not affect migration to VTAM V4R4. For information about these additional changed and new start options, see the appropriate *VTAM Release Guides*.

For complete information about all changed and new start options, refer to Chapter 4, "Start Options" in the *VTAM Resource Definition Reference*.

Table 28 (Page 1 of 2). Start Option Changes that Might Affect Migrating to VTAM V4R4

Start Option	Operand	Description
AUTHLEN		<p>The default value is now YES.</p> <p>Note: This start option was introduced in VTAM V4R1 through the program temporary fix (PTF) associated with APAR OY67139. At that time, the default value for the start option was NO, causing no change in function. If you did not apply this PTF, you are still affected by the changed default value in VTAM V4R4 because in VTAM V4R1, unless you apply the PTF and specify AUTHLEN=YES, when VTAM forwards a BIND from a LEN-attached node into a subarea network, it sets the transmission priority field to medium priority (X'01') regardless of the value specified on a BIND received from a LEN-attached node. Now, in VTAM V4R4, unless you specify AUTHLEN=NO, VTAM copies a transmission priority field from the received BIND onto the BIND sent into the network.</p>
CINDXSIZ		<p>The default value is now 8176.</p>
CDRDYN		<p>CDRDYN is a new start option whose value overrides the value specified on the CDRDYN operand on the CDRM definition statement in the cross-domain resource manager major node for a host cross-domain resource manager. The default value for the new CDRDYN start option is YES.</p> <p>The default value for the CDRDYN operand is NO, meaning that the host cross-domain resource manager is not authorized to dynamically define CDRSC representations of cross-domain or cross-network subarea or APPN resources.</p> <p>If you are accepting the default value for the CDRDYN operand in VTAM V4R1 or if you have coded CDRDYN=NO, be aware that when you upgrade to VTAM V4R4, the host cross-domain resource manager is now authorized to dynamically define CDRSC representations. If you do not want the host cross-domain resource manager to have this authorization in VTAM V4R4, code CDRDYN=NO on the new CDRDYN start option.</p> <p>Note: The CDRDYN start option was introduced in VTAM V4R1 through the program temporary fix (PTF) associated with APAR OW04212. If you have applied this PTF, you are already aware of this start option. In VTAM V4R1, with the PTF applied, if you do not code the CDRDYN start option, whether the host cross-domain resource manager is authorized to dynamically define cross-domain CDRSC representations is determined by the type of node you are defining. For end nodes and network nodes, the CDRDYN start option, in effect, defaults to YES. For subarea nodes, interchange nodes, and migration data host nodes, the CDRDYN start option defaults to NO prior to CDRM major node activation. After CDRM major node activation, the value specified on the CDRDYN operand is used. If you do code the CDRDYN start option, the value specified on the start option is used for all types of nodes.</p>

Upgrading VTAM V4R1 to VTAM V4R4

Table 28 (Page 2 of 2). Start Option Changes that Might Affect Migrating to VTAM V4R4

Start Option	Operand	Description
DYNLU		<p>When DYNLU=NO, no longer means that a CP-CP session cannot be started unless the adjacent control point has a predefined cross-domain resource. Dynamic cross-domain resources can now be used for adjacent control points.</p> <p>Note: This change was introduced in VTAM V4R1 through the PTF associated with APAR OY63275. If you have applied this PTF, you already have this change.</p>
ENCRYPTN		<p>The default value of YES has been added. This default will produce similar results if ENCRYPTN=YES was specified in a previous release. You should specify ENCRYPTN=NO if you do not intend to use encryption.</p>
HPR		<p>For a network node with HOSTSA coded, the default value was HPR=ANR. For all situations, the default is now HPR=RTP.</p>
HPRPST		<p>The default time limit values for low, medium, and high transmission priority connections have been changed from 60 seconds to 8 minutes, 4 minutes, and 1 minute. A network transmission priority with a default value of 1 minute has also been added to the HPRPST start option.</p>
MSGLEVEL or MSGLVL		<p>If you do not change the value of your MSGLEVEL start option in VTAM V4R4, you will not see any migration impact. However, if you change the value of your start option you will see differences in messages received. This could affect automated operations. See Appendix D, "Messages Affected by the MSGLVL Option" on page D-1 in the <i>VTAM Messages</i> for further information.</p>
RESWGHT		<p>RESWGHT is no longer valid. Although continuing to specify RESWGHT will not cause an error, IBM recommends that you delete it from your start option list.</p>
TRACE	SIZE	<p>The default value is now 100. The minimum value is now also 100. Although specifying a value less than 100 will not cause an error, the internal trace table size will be set to 100.</p>
XNETALS		<p>The default value of NO for the XNETALS start option is no longer dependent on the extended border node start option value.</p>

Changes to Buffer Pools

In VTAM V4R4, a new buffer pool, TIBUF, has been added to support high performance data transfer (HPDT). A large number of pages are taken up within the pool when VTAM is started. If you are not in an environment which will take advantage of HPDT, you should code TIBUF=0 as a start option or on your START command.

Two new buffer pools, CRA4 and CRA8, have been added for scheduling and error recovery. These new pools cannot be defined or changed; they are available for VTAM private use only. VTAM regulates the size and expansion of these pools. The DISPLAY BFRUSE command provides the same information about the CRA4 and CRA8 as it does about other buffer pools. The length of the header for the IO buffer pool has increased. If you do not use the data encryption facility, the header is now 91 bytes. If you do use the data encryption facility, the header is now 98 bytes. As a result of this increase, you might not get as many buffers per page and might need to adjust your buffer size for maximum efficient storage use. For

information on how to choose buffer pool specifications, refer to “Buffer Pools” in the *VTAM Network Implementation Guide*.

Table 29 shows IBM-supplied buffer pools whose default values or maximum values have changed since VTAM V4R1.

Table 29. Buffer Pool Value Changes that Might Affect Migrating to VTAM V4R4

Buffer Pool Name	Value	Description
BSBUF	baseno	The default value is now 17.
	bufsize	The default value is now 240.
	xpanpt	The default value is now 16.
CRPLBUF	bufsize	The default value is now 144.
IOBUF	xpanlim	The maximum value that can now be specified is 2,097,152. The minimum value that can now be specified is 256.

Changes to Definition Statements

Table 30 shows definition statements that have changed since VTAM V4R1 that might affect migrating to VTAM V4R4. These are statements whose default values have changed or whose operand values in VTAM V4R1 now have different meanings, different valid ranges, or yield different results in VTAM V4R4.

In addition to the definition statements shown in Table 30, other definition statements have changed, and new definition statements have been added in association with the new optional functions and enhancements listed in “Implementing New Optional Functions and Enhancements” on page 165. The additional changed and new definition statements do not require changes to your system definitions unless you use the new optional functions or enhancements. For information about these additional changed and new definition statements, see the appropriate *VTAM Release Guides*.

For complete information about all changed and new definition statements, refer to Chapter 2, “Major Nodes” in the *VTAM Resource Definition Reference*.

Table 30 (Page 1 of 4). Definition Statement Changes that Might Affect Migrating to VTAM V4R4

Major Node	Definition Statement	Operand	Description
Adjacent control point	ADJCP	NETID	When an adjacent control point is defined without a network identifier, any network identifier associated with that adjacent control point is now considered to be predefined. Therefore, the session is always established dynamically, even if DYNADJCP=NO is specified in the start option list. Note: This change was introduced in VTAM V4R1 through the program temporary fix (PTF) associated with APAR OY62770. If you have applied this PTF, you already have this change.
Channel attachment	DELAY		For LNCTL=CTCA, default is now 0. Changed from 0.100 seconds.

Upgrading VTAM V4R1 to VTAM V4R4

Table 30 (Page 2 of 4). Definition Statement Changes that Might Affect Migrating to VTAM V4R4

Major Node	Definition Statement	Operand	Description
Cross-domain resource	CDRSC	VFYOWNER	<p>When VFYOWNER=NO and the cross-domain resource is across an APPN-subarea boundary and the owning SSCP received on an initiation request does not match the owner specified on the CDRSC definition statement, the cross-domain resource definition is no longer updated with the owning SSCP name received if:</p> <ul style="list-style-type: none"> The cross-domain resource is predefined with the NETID operand on the NETWORK definition statement. You code CDRM=<i>cdrmname</i>. <p>Note: This change was introduced in VTAM V4R1 through the PTF associated with APAR OY64560. If you have applied this PTF, you already have this change.</p>
	GROUP	VFYOWNER	<p>When VFYOWNER=NO and the cross-domain resource is across an APPN-subarea boundary and the owning SSCP received on an initiation request does not match the owner specified on the CDRSC definition statement, the cross-domain resource definition is no longer updated with the owning SSCP name received if:</p> <ul style="list-style-type: none"> The cross-domain resource is predefined with the NETID operand on the NETWORK definition statement. You code CDRM=<i>cdrmname</i>. <p>Note: This change was introduced in VTAM V4R1 through the PTF associated with APAR OY64560. If you have applied this PTF, you already have this change.</p>

Table 30 (Page 3 of 4). Definition Statement Changes that Might Affect Migrating to VTAM V4R4

Major Node	Definition Statement	Operand	Description
Cross-domain resource manager	CDRM	CDRDYN	<p>For a host cross-domain resource manager, the value specified on the CDRDYN operand is now overridden by the value specified on a new CDRDYN start option. The default value for the new CDRDYN start option is YES.</p> <p>The default value for the CDRDYN operand is NO, meaning that the host cross-domain resource manager is not authorized to dynamically define CDRSC representations of cross-domain or cross-network subarea or APPN resources.</p> <p>If you are accepting the default value for the CDRDYN operand in VTAM V4R1 or if you have coded CDRDYN=NO, be aware that when you upgrade to VTAM V4R4, the host cross-domain resource manager is now authorized to dynamically define CDRSC representations. If you do not want the host cross-domain resource manager to have this authorization in VTAM V4R4, code CDRDYN=NO on the new CDRDYN start option.</p> <p>Note: The CDRDYN start option was introduced in VTAM V4R1 through the program temporary fix (PTF) associated with APAR OW04212. If you have applied this PTF, you are already aware of this start option. In VTAM V4R1, with the PTF applied, if you do not code the CDRDYN start option, whether the host cross-domain resource manager is authorized to dynamically define cross-domain CDRSC representations is determined by the type of node you are defining. For end nodes and network nodes, the CDRDYN start option, in effect, defaults to YES. For subarea nodes, interchange nodes, and migration data host nodes, the CDRDYN start option defaults to NO prior to CDRM major node activation. After CDRM major node activation, the value specified on the CDRDYN operand is used. If you do code the CDRDYN start option, the value specified on the start option is used for all types of nodes.</p>
Local SNA Model NCP Switched	PU	NETID	<p>The NETID=(,NOXNETALS) option has been deleted. If it is coded, it will default to XNETALS=NO for that PU. Verification of the NETID is performed when XNETALS=NO is in effect, even when the NETID is not specified on the PU.</p>
Local SNA Model NCP Switched	PU	XNETALS	<p>If CONNTYPE=APPN and XNETALS is not coded, XNETALS will default to YES as long as XNETALS=NO start option is not coded. If CONNTYPE=LEN and XNETALS is not coded, XNETALS will default to NO. The value of the definition statement will override the value of the start option.</p>
Local SNA	PU	TOPO	<p>NONE is no longer a valid value. CONNECT is now the only valid value. You no longer need to code the TOPO operand. Although continuing to code the TOPO operand will not cause an error, IBM recommends that you delete it from your system definitions.</p>
		TGN	<p>The valid range of values is now 0–20.</p>

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Table 30 (Page 4 of 4). Definition Statement Changes that Might Affect Migrating to VTAM V4R4

Major Node	Definition Statement	Operand	Description
Model	PU	TOPO	NONE is no longer a valid value. CONNECT is now the only valid value. You no longer need to code the TOPO operand. Although continuing to code the TOPO operand will not cause an error, IBM recommends that you delete it from your system definitions.
NCP	PU	TOPO	NONE is no longer a valid value. CONNECT is now the only valid value. You no longer need to code the TOPO operand. Although continuing to code the TOPO operand will not cause an error, IBM recommends that you delete it from your system definitions.
		TGN	The valid range of values is now 0–20.
	PCCU	TGN	The valid range of values is now 0–20.
		VFYC	The default value is now YES.
	DELAY	For LNCTL=NCP, default is now 0. Changed from 0.100 seconds.	
Switched	PU	TOPO	NONE is no longer a valid value. CONNECT is now the only valid value. You no longer need to code the TOPO operand. Although continuing to code the TOPO operand will not cause an error, IBM recommends that you delete it from your system definitions.
		TGN	The valid range of values for an APPN TG is now 0–20.
Switched	VBUILD	MAXGRP MAXDLUR MAXNO	The size of the switched major node tables is now dynamically determined. The need for these operands has been eliminated. If they are coded, they will be ignored.
	PU	MAXPATH	
Switched	PATH	DIALNO	Default is now 242. Changed from 32.
TRL	TRLE	MAXBFRU	Default is now 5. Changed from 1.
XCA and NCP	CAPACITY		Default is now 4M for connections to virtual nodes (VNNAME and VNGROUP are coded). Changed from 8K.
XCA	DELAY		Default is now 0. Changed from 50 milliseconds.

Changes to IBM-Supplied Default User-Definable Tables and User-Modifiable Modules

If you have modified any IBM-supplied default user-definable tables or user-modifiable modules in VTAM V4R1 that you have not renamed, those tables and modules will be deleted and replaced when you install VTAM V4R4. To keep your modified tables or modules:

1. Make copies of them before you install VTAM V4R4.
2. Merge your modifications back into the appropriate tables and modules after you install VTAM V4R4.
3. Reassemble the tables and modules into which you have merged your modifications.

If you have modified and renamed any IBM-supplied default user-definable tables or user-modifiable modules in VTAM V4R1:

1. Compare your modified tables and modules to those shipped with VTAM V4R4 after you install VTAM V4R4.
2. Merge any differences into your modified tables and modules.
3. Reassemble your modified tables and modules.

Changes to IBM-Supplied Default User-Definable Tables

The following IBM-supplied default user-definable tables have changed since VTAM V4R1:

- CNM routing table
- Logon mode table
- Operation-level USS table
- Session-level USS table.

CNM Routing Table: The CNM routing table can no longer be stored in SYS1.LPALIB. It can only reside in SYS1.VTAMLIB.

Logon Mode Table: The value on the RUSIZES operand on the MODEENT macro in the SNASVCMG entry has changed from X'8585' to X'9797'.

The value on the RUSIZES operand on the MODEENT macro in the ISTCOSDF entry has changed from X'8585' to X'8989'.

For information about the logon mode table, refer to “Logon Mode Table” and Appendix A, “IBM-Supplied Tables” in the *VTAM Resource Definition Reference*.

Operation-Level USS Table: For information about the changes to the operation-level USS table, refer to “Unformatted System Services (USS) Tables” and Appendix A, “IBM-Supplied Tables” in the *VTAM Resource Definition Reference*.

Session-Level USS Table: For information about changes to the session-level USS table, refer to “Unformatted System Services (USS) Tables” and Appendix A, “IBM-Supplied Tables” in the *VTAM Resource Definition Reference*.

Deleted User-Modifiable Modules

ISTRACON, the replaceable constants module, is no longer part of VTAM. All constants are now defined with start options.

If you modified (“zapped”) the ISTRACON module in VTAM V4R1, the values you replaced in the ISTRACON fields became the default values for the corresponding start options, shown in Appendix H, “Migrating from Use of VTAM Constant Values to V4R3 Start Options” in *VTAM Customization*. You must now code those values on the corresponding start options.

You can determine which ISTRACON fields you modified in VTAM V4R1 by issuing the DISPLAY VTAMOPTS command while you are still running VTAM V4R1 and then comparing the start option values displayed to the IBM-supplied default values shown in the following list:

ASIRFMSG=OLUSSCP

BSCTMOUT=286

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```
CINDXSIZ=8176
ESIRFMSG=ALLSSCP
FSIRFMSG=OLUSSCP
HNTSIZE=4080
HSRTSIZE=9973
INOPDUMP=OFF
IOMSGLIM=2147483647
IRNSTRGE=0
MAXLURU=6144
MAXSSCPS=10
MIHTMOUT=1800
MXSAWBUF=10000
MXSSCPRU=4096
MXSUBNUM=511
NCPBUFSZ=512
OSRTSIZE=43
PDTRCBUF=2
PIUMAXDS=200
PLUALMSG=NOSUPP
PSSTRACE=NORB
SAWMAXDS=100
SAWMXQPK=0
SDLCMDRS=YES
SIRFMSG=ALLSSCP
SLUALMSG=NOSUPP
SNAPREQ=1000
SSDTMOUT=30
TRANSLAT=(0,1,2,3,4,5,6,7)
VTAMEAS=32001
```

If the value displayed by the DISPLAY VTAMOPTS command for a start option does not match the IBM-supplied default value, that means you either modified the corresponding ISTRACON field in VTAM V4R1 or overrode the IBM-supplied default value by specifying a different value on the start option. If you modified the corresponding ISTRACON field in VTAM V4R1, you should now specify that value on the appropriate start option before you start VTAM V4R4. If the value matches the IBM-supplied default value, you do not have to do anything. However, if you choose to replace the default value in the future, specify your new value on the appropriate start option.

Changes to Logon Mode Table Macros

Table 31 shows logon mode table macros that have changed since VTAM V4R1 that might affect migrating to VTAM V4R4. These are macros whose operand values in VTAM V4R1 now have different meanings, different valid ranges, or yield different results in VTAM V4R4.

In addition to the macros shown in Table 31, other macros have changed, and new macros have been added in association with the new optional functions and enhancements listed in “Implementing New Optional Functions and Enhancements” on page 165. The additional changed and new macros do not affect migration to VTAM V4R4. For information about these additional changed and new macros, see the appropriate *VTAM Release Guides*.

For complete information about all changed and new macros, refer to “Logon Mode Table” in the *VTAM Resource Definition Reference*.

Table 31. Logon Mode Table Macro Changes that Might Affect Migrating to VTAM V4R4

Macro	Operand	Description
MODEEND	<i>name</i>	The same name coded in the name field of two or more macros will now cause assembler failures. In addition, an error message is now issued if a name specified in the name field is greater than eight characters in length.
MODEENT	<i>name</i>	The same name coded in the name field of two or more macros will now cause assembler failures. In addition, an error message is now issued if a name specified in the name field is greater than eight characters in length.
MODETAB	<i>name</i>	The same name coded in the name field of two or more macros will now cause assembler failures. In addition, an error message is now issued if a name specified in the name field is greater than eight characters in length.

Changes to USS Table Macros

Table 32 on page 132 shows USS table macros that have changed since VTAM V4R1 that might affect migrating to VTAM V4R4. These are macros whose operand values in VTAM V4R1 now have different meanings, different valid ranges, or yield different results in VTAM V4R4.

In addition to the macros shown in Table 32 on page 132, other macros have changed, and new macros have been added in association with the new optional functions and enhancements in VTAM V4R4. The additional changed and new macros do not affect migration to VTAM V4R4. For information about the additional changed and new macros listed in “Implementing New Optional Functions and Enhancements” on page 165, see the appropriate *VTAM Release Guides*.

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For complete information about all changed and new macros, refer to “Unformatted System Services (USS) Tables” in the *VTAM Resource Definition Reference*.

Table 32. USS Table Macro Changes that Might Affect Migrating to VTAM V4R4

Macro	Operand	Description
USSCMD		The USSCMD macro can no longer be used to define USS tables for MVS/370 systems. USS tables assembled with VTAM V4R4 libraries will no longer operate in MVS/370 VTAM systems.
USSEND		The USSEND macro can no longer be used to define USS tables for MVS/370 systems. USS tables assembled with VTAM V4R4 libraries will no longer operate in MVS/370 VTAM systems.
USSMSG	MSGLVL	If you do not change the value of MSGLVL in VTAM V4R4, you will not see any migration impact. However, if you change the value of MSGLVL you will see differences in messages received. This could affect automated operations. See Appendix D, “Messages Affected by the MSGLVL Option” on page D-1 in the <i>VTAM Messages</i> for further information.
USSPARM		The USSPARM macro can no longer be used to define USS tables for MVS/370 systems. USS tables assembled with VTAM V4R4 libraries will no longer operate in MVS/370 VTAM systems.
USSTAB		The USSTAB macro can no longer be used to define USS tables for MVS/370 systems. USS tables assembled with VTAM V4R4 libraries will no longer operate in MVS/370 VTAM systems.
	FORMAT	The default value is now DYNAMIC.

Changes to Commands

Table 33 on page 133 shows operator commands that have changed since VTAM V4R1 that might affect migrating to VTAM V4R4. These are commands whose default values have changed or whose operand values in VTAM V4R1 now have different meanings, different valid ranges, or yield different results in VTAM V4R4.

In addition to the commands shown in Table 33 on page 133, other commands have changed, and new commands have been added in association with the new optional functions and enhancements listed in “Implementing New Optional Functions and Enhancements” on page 165. These additional changed and new commands do not affect your CLISTs or operating procedures unless you use the new optional functions or enhancements. For information about these additional changed and new commands, see the appropriate *VTAM Release Guides*.

For complete information about all changed and new commands, refer to *VTAM Operation*.

Table 33 (Page 1 of 7). Command Changes that Might Affect Migrating to VTAM V4R4

Command	Operand	Description
DISPLAY ADJSSCPS	MAX	MAX is a new operand whose default value is the value specified on a new DSPLYDEF start option. If you do not specify a value on the new DSPLYDEF start option or on a new DSPLYMAX start option, the default value for the MAX operand on the DISPLAY ADJSSCPS command is 100. If you do not specify a value on the new DSPLYDEF start option and if the value specified on the new DSPLYMAX start option is 100 or greater, the default value for the MAX operand is 100. If you do not specify a value on the new DSPLYDEF start option and if the value specified on the new DSPLYMAX start option is less than 100, the default value for the MAX operand is the value specified on the new DSPLYMAX start option.
DISPLAY APPLS	MAX	MAX is a new operand whose default value is the value specified on a new DSPLYDEF start option. If you do not specify a value on the new DSPLYDEF start option or on a new DSPLYMAX start option, the default value for the MAX operand on the DISPLAY APPLS command is 100. If you do not specify a value on the new DSPLYDEF start option and if the value specified on the new DSPLYMAX start option is 100 or greater, the default value for the MAX operand is 100. If you do not specify a value on the new DSPLYDEF start option and if the value specified on the new DSPLYMAX start option is less than 100, the default value for the MAX operand is the value specified on the new DSPLYMAX start option.
DISPLAY CDRMS	MAX	MAX is a new operand whose default value is the value specified on a new DSPLYDEF start option. If you do not specify a value on the new DSPLYDEF start option or on a new DSPLYMAX start option, the default value for the MAX operand on the DISPLAY CDRMS command is 100. If you do not specify a value on the new DSPLYDEF start option and if the value specified on the new DSPLYMAX start option is 100 or greater, the default value for the MAX operand is 100. If you do not specify a value on the new DSPLYDEF start option and if the value specified on the new DSPLYMAX start option is less than 100, the default value for the MAX operand is the value specified on the new DSPLYMAX start option.
DISPLAY CDRSCS	MAX	MAX is a new operand whose default value is the value specified on a new DSPLYDEF start option. If you do not specify a value on the new DSPLYDEF start option or on a new DSPLYMAX start option, the default value for the MAX operand on the DISPLAY CDRSCS command is 100. If you do not specify a value on the new DSPLYDEF start option and if the value specified on the new DSPLYMAX start option is 100 or greater, the default value for the MAX operand is 100. If you do not specify a value on the new DSPLYDEF start option and if the value specified on the new DSPLYMAX start option is less than 100, the default value for the MAX operand is the value specified on the new DSPLYMAX start option.
	NETID	When NETID= <i>netid</i> , the DISPLAY CDRSCS command no longer displays cross-domain resources with unknown network identifiers. The DISPLAY CDRSCS command now displays only cross-domain resources within the indicated network.

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Table 33 (Page 2 of 7). Command Changes that Might Affect Migrating to VTAM V4R4

Command	Operand	Description
DISPLAY CLSTRS	MAX	MAX is a new operand whose default value is the value specified on a new DSPLYDEF start option. If you do not specify a value on the new DSPLYDEF start option or on a new DSPLYMAX start option, the default value for the MAX operand on the DISPLAY CLSTRS command is 100. If you do not specify a value on the new DSPLYDEF start option and if the value specified on the new DSPLYMAX start option is 100 or greater, the default value for the MAX operand is 100. If you do not specify a value on the new DSPLYDEF start option and if the value specified on the new DSPLYMAX start option is less than 100, the default value for the MAX operand is the value specified on the new DSPLYMAX start option.
DISPLAY COS	ID	If you code the HOSTPU start option, the ID operand will now default to the value you specify on the HOSTPU start option. Note: This change was introduced in VTAM V4R1 through the program temporary fix (PTF) associated with APAR OY63478. If you have applied this PTF, you already have this change.
DISPLAY DIRECTRY	ID	The DISPLAY DIRECTRY command now displays the correct name of the owning CP for a cross-network resource that is accessed through a border node that: <ul style="list-style-type: none"> • Is adjacent to the host from which you are issuing the command • Appears to that host as an end node • Is served by that host; in other words, the host from which you are issuing the command is the network node server for the border node.
	MAX	When ID=*.name, the valid range of values is now 1 through the value specified on a new DSPLYMAX start option. The default value is now the value specified on a new DSPLYDEF start option. If you do not specify a value on the new DSPLYDEF start option or on a new DSPLYMAX start option, the default value for the MAX operand on the DISPLAY DIRECTRY command is 100. If you do not specify a value on the new DSPLYDEF start option and if the value specified on the new DSPLYMAX start option is 100 or greater, the default value for the MAX operand is 100. If you do not specify a value on the new DSPLYDEF start option and if the value specified on the new DSPLYMAX start option is less than 100, the default value for the MAX operand is the value specified on the new DSPLYMAX start option.
DISPLAY EXIT	MAX	MAX is a new operand whose default value is the value specified on a new DSPLYDEF start option. If you do not specify a value on the new DSPLYDEF start option or on a new DSPLYMAX start option, the default value for the MAX operand on the DISPLAY EXIT command is 100. If you do not specify a value on the new DSPLYDEF start option and if the value specified on the new DSPLYMAX start option is 100 or greater, the default value for the MAX operand is 100. If you do not specify a value on the new DSPLYDEF start option and if the value specified on the new DSPLYMAX start option is less than 100, the default value for the MAX operand is the value specified on the new DSPLYMAX start option.

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Command	Operand	Description
DISPLAY GROUPS	MAX	MAX is a new operand whose default value is the value specified on a new DSPLYDEF start option. If you do not specify a value on the new DSPLYDEF start option or on a new DSPLYMAX start option, the default value for the MAX operand on the DISPLAY GROUPS command is 100. If you do not specify a value on the new DSPLYDEF start option and if the value specified on the new DSPLYMAX start option is 100 or greater, the default value for the MAX operand is 100. If you do not specify a value on the new DSPLYDEF start option and if the value specified on the new DSPLYMAX start option is less than 100, the default value for the MAX operand is the value specified on the new DSPLYMAX start option.
DISPLAY ID	ID	The DISPLAY ID command now displays the correct name of the owning CP for a cross-network resource that is accessed through a border node that: <ul style="list-style-type: none"> • Is adjacent to the host from which you are issuing the command • Appears to that host as an end node • Is served by that host; in other words, the host from which you are issuing the command is the network node server for the border node.
DISPLAY LINES	MAX	MAX is a new operand whose default value is the value specified on a new DSPLYDEF start option. If you do not specify a value on the new DSPLYDEF start option or on a new DSPLYMAX start option, the default value for the MAX operand on the DISPLAY LINES command is 100. If you do not specify a value on the new DSPLYDEF start option and if the value specified on the new DSPLYMAX start option is 100 or greater, the default value for the MAX operand is 100. If you do not specify a value on the new DSPLYDEF start option and if the value specified on the new DSPLYMAX start option is less than 100, the default value for the MAX operand is the value specified on the new DSPLYMAX start option.
DISPLAY LUGROUPS	MAX	MAX is a new operand that applies only when SCOPE=ALL and whose default value is the value specified on a new DSPLYDEF start option. If you do not specify a value on the new DSPLYDEF start option or on a new DSPLYMAX start option, the default value for the MAX operand on the DISPLAY LUGROUPS command is 100. If you do not specify a value on the new DSPLYDEF start option and if the value specified on the new DSPLYMAX start option is 100 or greater, the default value for the MAX operand is 100. If you do not specify a value on the new DSPLYDEF start option and if the value specified on the new DSPLYMAX start option is less than 100, the default value for the MAX operand is the value specified on the new DSPLYMAX start option.

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Table 33 (Page 4 of 7). Command Changes that Might Affect Migrating to VTAM V4R4

Command	Operand	Description
DISPLAY MAJNODES	MAX	MAX is a new operand whose default value is the value specified on a new DSPLYDEF start option. If you do not specify a value on the new DSPLYDEF start option or on a new DSPLYMAX start option, the default value for the MAX operand on the DISPLAY MAJNODES command is 100. If you do not specify a value on the new DSPLYDEF start option and if the value specified on the new DSPLYMAX start option is 100 or greater, the default value for the MAX operand is 100. If you do not specify a value on the new DSPLYDEF start option and if the value specified on the new DSPLYMAX start option is less than 100, the default value for the MAX operand is the value specified on the new DSPLYMAX start option.
DISPLAY PATHTAB	MAX	MAX is a new operand whose default value is the value specified on a new DSPLYDEF start option. If you do not specify a value on the new DSPLYDEF start option or on a new DSPLYMAX start option, the default value for the MAX operand on the DISPLAY PATHTAB command is 100. If you do not specify a value on the new DSPLYDEF start option and if the value specified on the new DSPLYMAX start option is 100 or greater, the default value for the MAX operand is 100. If you do not specify a value on the new DSPLYDEF start option and if the value specified on the new DSPLYMAX start option is less than 100, the default value for the MAX operand is the value specified on the new DSPLYMAX start option.
DISPLAY PENDING	MAX	MAX is a new operand whose default value is the value specified on a new DSPLYDEF start option. If you do not specify a value on the new DSPLYDEF start option or on a new DSPLYMAX start option, the default value for the MAX operand on the DISPLAY PENDING command is 100. If you do not specify a value on the new DSPLYDEF start option and if the value specified on the new DSPLYMAX start option is 100 or greater, the default value for the MAX operand is 100. If you do not specify a value on the new DSPLYDEF start option and if the value specified on the new DSPLYMAX start option is less than 100, the default value for the MAX operand is the value specified on the new DSPLYMAX start option.
DISPLAY SESSIONS	MAX	MAX is a new operand whose default value is the value specified on a new DSPLYDEF start option. If you do not specify a value on the new DSPLYDEF start option or on a new DSPLYMAX start option, the default value for the MAX operand on the DISPLAY SESSIONS command is 100. If you do not specify a value on the new DSPLYDEF start option and if the value specified on the new DSPLYMAX start option is 100 or greater, the default value for the MAX operand is 100. If you do not specify a value on the new DSPLYDEF start option and if the value specified on the new DSPLYMAX start option is less than 100, the default value for the MAX operand is the value specified on the new DSPLYMAX start option.

Table 33 (Page 5 of 7). Command Changes that Might Affect Migrating to VTAM V4R4

Command	Operand	Description
DISPLAY STATIONS	MAX	<p>MAX is a new operand whose default value is the value specified on a new DSPLYDEF start option. If you do not specify a value on the new DSPLYDEF start option or on a new DSPLYMAX start option, the default value for the MAX operand on the DISPLAY STATIONS command is 100. If you do not specify a value on the new DSPLYDEF start option and if the value specified on the new DSPLYMAX start option is 100 or greater, the default value for the MAX operand is 100. If you do not specify a value on the new DSPLYDEF start option and if the value specified on the new DSPLYMAX start option is less than 100, the default value for the MAX operand is the value specified on the new DSPLYMAX start option.</p>
DISPLAY STATS	NUM	<p>The NUM operand is now MAX. Although continuing to specify NUM will not cause an error, IBM recommends that you specify MAX.</p> <p>The valid range of values is now 1 through the value specified on a new DSPLYMAX start option. The default value is now the value specified on a new DSPLYDEF start option. If you do not specify a value on the new DSPLYDEF start option or on a new DSPLYMAX start option, the default value for the NUM operand on the DISPLAY STATS command is 100. If you do not specify a value on the new DSPLYDEF start option and if the value specified on the new DSPLYMAX start option is 100 or greater, the default value for the NUM operand is 100. If you do not specify a value on the new DSPLYDEF start option and if the value specified on the new DSPLYMAX start option is less than 100, the default value for the NUM operand is the value specified on the new DSPLYMAX start option.</p>
DISPLAY STORUSE	NUM	<p>The NUM operand is now MAX. Although continuing to specify NUM will not cause an error, IBM recommends that you specify MAX.</p> <p>The valid range of values is now 1 through the value specified on a new DSPLYMAX start option. The default value is now the value specified on a new DSPLYDEF start option. If you do not specify a value on the new DSPLYDEF start option or on a new DSPLYMAX start option, the default value for the NUM operand on the DISPLAY STORUSE command is 100. If you do not specify a value on the new DSPLYDEF start option and if the value specified on the new DSPLYMAX start option is 100 or greater, the default value for the NUM operand is 100. If you do not specify a value on the new DSPLYDEF start option and if the value specified on the new DSPLYMAX start option is less than 100, the default value for the NUM operand is the value specified on the new DSPLYMAX start option.</p> <p>Note: If you want to see all GETBLK pool information, you must specify one of the following:</p> <ul style="list-style-type: none"> • A value greater than 100 on the new DSPLYDEF start option • MAX=200 on the DISPLAY STORUSE command.

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Table 33 (Page 6 of 7). Command Changes that Might Affect Migrating to VTAM V4R4

Command	Operand	Description
DISPLAY TABLE	MAX	MAX is a new operand that applies only when SCOPE=ALL and whose default value is the value specified on a new DSPLYDEF start option. If you do not specify a value on the new DSPLYDEF start option or on a new DSPLYMAX start option, the default value for the MAX operand on the DISPLAY TABLE command is 100. If you do not specify a value on the new DSPLYDEF start option and if the value specified on the new DSPLYMAX start option is 100 or greater, the default value for the MAX operand is 100. If you do not specify a value on the new DSPLYDEF start option and if the value specified on the new DSPLYMAX start option is less than 100, the default value for the MAX operand is the value specified on the new DSPLYMAX start option.
DISPLAY TERMS	MAX	MAX is a new operand whose default value is the value specified on a new DSPLYDEF start option. If you do not specify a value on the new DSPLYDEF start option or on a new DSPLYMAX start option, the default value for the MAX operand on the DISPLAY TERMS command is 100. If you do not specify a value on the new DSPLYDEF start option and if the value specified on the new DSPLYMAX start option is 100 or greater, the default value for the MAX operand is 100. If you do not specify a value on the new DSPLYDEF start option and if the value specified on the new DSPLYMAX start option is less than 100, the default value for the MAX operand is the value specified on the new DSPLYMAX start option.
DISPLAY TGPS	MAX	MAX is a new operand whose default value is the value specified on a new DSPLYDEF start option. If you do not specify a value on the new DSPLYDEF start option or on a new DSPLYMAX start option, the default value for the MAX operand on the DISPLAY TGPS command is 100. If you do not specify a value on the new DSPLYDEF start option and if the value specified on the new DSPLYMAX start option is 100 or greater, the default value for the MAX operand is 100. If you do not specify a value on the new DSPLYDEF start option and if the value specified on the new DSPLYMAX start option is less than 100, the default value for the MAX operand is the value specified on the new DSPLYMAX start option.
DISPLAY TRL	MAX	MAX is a new operand that applies only when TRLE is not specified and whose default value is the value specified on a new DSPLYDEF start option. If you do not specify a value on the new DSPLYDEF start option or on a new DSPLYMAX start option, the default value for the MAX operand on the DISPLAY TRL command is 100. If you do not specify a value on the new DSPLYDEF start option and if the value specified on the new DSPLYMAX start option is 100 or greater, the default value for the MAX operand is 100. If you do not specify a value on the new DSPLYDEF start option and if the value specified on the new DSPLYMAX start option is less than 100, the default value for the MAX operand is the value specified on the new DSPLYMAX start option.

Table 33 (Page 7 of 7). Command Changes that Might Affect Migrating to VTAM V4R4

Command	Operand	Description
DISPLAY USERVAR	MAX	MAX is a new operand that applies only when ID is not specified and whose default value is the value specified on a new DSPLYDEF start option. If you do not specify a value on the new DSPLYDEF start option or on a new DSPLYMAX start option, the default value for the MAX operand on the DISPLAY USERVAR command is 100. If you do not specify a value on the new DSPLYDEF start option and if the value specified on the new DSPLYMAX start option is 100 or greater, the default value for the MAX operand is 100. If you do not specify a value on the new DSPLYDEF start option and if the value specified on the new DSPLYMAX start option is less than 100, the default value for the MAX operand is the value specified on the new DSPLYMAX start option.
MODIFY TRACE	SAVE	For a buffer contents or I/O trace, when you specify SAVE=YES, the MODIFY TRACE command now saves the trace command for resources that are found.
	SIZE	The default value is now 100. The minimum value is now also 100. Although specifying a value less than 100 will not cause an error, the internal trace table size will be set to 100.
VARY TERM	TYPE=UNCOND	If the session is an automatic logon session, regardless if it traverses an APPN node, the session is now terminated and then immediately reestablished if a session path exists at the time. To avoid having the session reestablished, specify TYPE=COND when you issue the VARY TERM command.

Changes to Command Output

This section shows some changes in command output since VTAM V4R1 that might affect automated operation procedures.

DISPLAY ADJCP

In VTAM V4R1, if you specify E or SCOPE=ALL when issuing the DISPLAY ADJCP command, you receive output similar to the following:

```
IST097I DISPLAY ACCEPTED
IST350I DISPLAY TYPE = ADJACENT CONTROL POINT
IST486I STATUS= ACTIV, DESIRED STATE= ACTIV
IST1197I ADJCP MAJOR NODE = ISTADJCP
IST1101I ADJCP DISPLAY SUMMARY FOR NETA.SSCP1A
IST1102I NODENAME          NODETYPE CONNECTIONS CP CONNECTIONS
IST1103I NETA.SSCP1A      NN          2          2
IST1104I CONNECTION SUMMARY FOR NETA.SSCP1A
IST1105I RESOURCE STATUS TGN CP-CP TG CHARACTERISTICS
IST1106I SW2A1A AC/R 22 YES 802D000000000000000017100808080
IST1106I LSNA3APU AC/R 21 YES 802D000000000000000017100808080
IST314I END
```

When you issue the same command in VTAM V4R4, you receive output similar to the following, which includes a new column (NATIVE) in messages IST1102I and IST1103I that indicates whether the node being displayed is in the same subnetwork as the node from which you issue the command:

```
IST097I DISPLAY ACCEPTED
IST350I DISPLAY TYPE = ADJACENT CONTROL POINT
IST486I STATUS= ACTIV, DESIRED STATE= ACTIV
IST1197I ADJCP MAJOR NODE = ISTADJCP
IST1101I ADJCP DISPLAY SUMMARY FOR NETA.SSCP1A
IST1102I NODENAME          NODETYPE CONNECTIONS CP CONNECTIONS NATIVE
IST1103I NETA.SSCP1A      NN          2          2          *NA*
IST1104I CONNECTION SUMMARY FOR NETA.SSCP1A
IST1105I RESOURCE STATUS TGN CP-CP TG CHARACTERISTICS
IST1106I SW2A1A AC/R 22 YES 982D000000000000000017100808080
IST1106I LSNA3APU AC/R 21 YES 982D000000000000000017100808080
IST314I END
```

DISPLAY CDRSCS

In VTAM V4R1, when you issue a DISPLAY CDRSCS command with a specific network identifier coded on the NETID operand, you receive output that includes cross-domain resources within the indicated network and those not known by any network.

In VTAM V4R4, when you issue the same command, you receive output that includes only cross-domain resources within the indicated network. Cross-domain resources with unknown network identifiers are no longer included in the display.

DISPLAY CLSTRS

Changes have occurred in the output you receive when you issue the DISPLAY CLSTRS command in VTAM V4R4. The resource type "PHYSICAL UNIT" in message IST089I now appears as one of the following resource types:

- PU_T1
- PU_T2
- PU_T2.1.

The resource type "PU T4/5 MAJ NODE" in message IST089I now appears as "PU T4/5."

DISPLAY CNOS

In VTAM V4R1, when you issue the DISPLAY CNOS command, you receive output similar to the following:

```
IST097I DISPLAY ACCEPTED
IST1001I ID= APPCAP05 LUNAME= NETA.APPCDA1 LOGMODE= INTERACT
IST1002I RCPRI=0000 RCSEC=0000
IST1005I SESSCAP =PARALLEL CONVSECL=AVPV      CONVSECP=AVPV
IST1005I DRAINL  =NO      DRAINR  =NO      DDRAINL  =NALLOW
IST1005I SESSCNT =        0 FREECNT =        0 QALLOC  =        0
IST1005I WINLCNT =        0 WINRCNT =        0 AUTOSES  =        0
IST1005I DRESPL  =NALLOW  RESP    =***NA*** DELETE  =NALLOW
IST1005I SYNCLVL =CONFIRM
IST1003I SESSLIM CNOS=        2 DEFINE=        4
IST1003I MINWINL CNOS=        1 DEFINE=        2
IST1003I MINWINR CNOS=        1 DEFINE=        2
IST314I END
```

When you issue the same command in VTAM V4R4, you receive output similar to the following, which includes a new CONVCAP field in message IST1005I:

```
IST097I DISPLAY ACCEPTED
IST1001I ID= APPCAP05 LUNAME= NETA.APPCDA1 LOGMODE= INTERACT
IST1002I RCPRI=0000 RCSEC=0000
IST1005I SESSCAP =PARALLEL CONVSECL=AVPV      CONVSECP=AVPV
IST1005I DRAINL  =NO      DRAINR  =NO      DDRAINL  =NALLOW
IST1005I SESSCNT =        0 FREECNT =        0 QALLOC  =        0
IST1005I WINLCNT =        0 WINRCNT =        0 AUTOSES  =        0
IST1005I DRESPL  =NALLOW  RESP    =***NA*** DELETE  =NALLOW
IST1005I SYNCLVL =CONFIRM  CONVCAP =HDX
IST1003I SESSLIM CNOS=        2 DEFINE=        4
IST1003I MINWINL CNOS=        1 DEFINE=        2
IST1003I MINWINR CNOS=        1 DEFINE=        2
IST314I END
```

DISPLAY CONVID

In VTAM V4R1, when you issue a DISPLAY CONVID command and specify on the ID operand the name of a resource other than an application program, you receive a message similar to the following:

```
IST1004I DISPLAY CONVID FOR CDAPPL1 FAILED - NODE NOT APPC CAPABLE
```

When you issue the same command in VTAM V4R4, you receive the following message:

```
IST453I ID PARAMETER VALUE INVALID
```

Note: This change was introduced in VTAM V4R1 through the program temporary fix (PTF) associated with APAR OY62155. If you have applied this PTF, you already have this change.

DISPLAY EXIT

In VTAM V4R1, when you issue the DISPLAY EXIT command, you receive output similar to the following:

```
IST097I DISPLAY ACCEPTED
IST350I DISPLAY TYPE = EXIT
IST1250I NAME      LEVEL  MODULE      STATUS
IST1251I ISTCMMND ***NA***                INACTIVE
IST1251I ISTEUCUV ***NA*** ISTEUCUV        ACTIVE
IST1251I ELMCLUSP ***NA***                INACTIVE
IST1251I ISTECCS   ***NA***                INACTIVE
IST1251I ISTECS   ***NA*** ISTECS         ACTIVE
IST1251I ISTECAA   ***NA***                INACTIVE
IST1251I ISTEVC   ***NA***                INACTIVE
IST1251I ISTECDM   ***NA***                INACTIVE
IST314I END
```

When you issue the same command in VTAM V4R4, you receive output similar to the following, which includes a new exit, ISTEVCGR:

```
IST097I DISPLAY ACCEPTED
IST350I DISPLAY TYPE = EXIT
IST1250I NAME      LEVEL  MODULE      STATUS
IST1251I ISTCMMND ***NA***                INACTIVE
IST1251I ISTEUCUV ***NA*** ISTEUCUV        ACTIVE
IST1251I ELMCLUSP ***NA***                INACTIVE
IST1251I ISTECCS   ***NA***                INACTIVE
IST1251I ISTECS   ***NA*** ISTECS         ACTIVE
IST1251I ISTECAA   ***NA***                INACTIVE
IST1251I ISTEVC   ***NA***                INACTIVE
IST1251I ISTECDM   ***NA***                INACTIVE
IST1251I ISTEVCGR ***NA***                INACTIVE
IST314I END
```

DISPLAY GROUPS

Changes have occurred in the output you receive when you issue the DISPLAY GROUPS command in VTAM V4R4. The resource type "PU T4/5 MAJ NODE" in message IST089I now appears as "PU T4/5."

DISPLAY ID

Changes have occurred in the output you receive when you issue the DISPLAY ID command for the following resources:

- Cross-domain resource (CDRSC)
- Cross-domain resource manager (CDRM)
- Group
- Line
- Local SNA major node
- Model major node
- Operator console (ISTNOP)
- Switched major node.

Cross-Domain Resource Manager: In VTAM V4R1, when you issue a DISPLAY ID command for a cross-domain resource manager, you receive output similar to the following:

```

IST097I DISPLAY ACCEPTED
IST075I NAME = NETA.SSCP1A, TYPE = CDRM
IST1046I CP NETA.SSCP1A ALSO EXISTS
IST486I STATUS= ACTIV, DESIRED STATE= ACTIV
IST815I AUTOMATIC RECOVERY IS SUPPORTED
IST231I CDRM MAJOR NODE = VTAMSEG
IST654I I/O TRACE = OFF, BUFFER TRACE = OFF
IST1500I STATE TRACE = OFF
IST476I CDRM TYPE = HOST GATEWAY CAPABLE
IST637I SUBAREA = 1 ELEMENT = 1
IST388I DYNAMIC CDRSC DEFINITION SUPPORT = YES
IST171I ACTIVE SESSIONS = 0000000002, SESSION REQUESTS = 0000000000
IST924I -----
IST075I NAME = NETA.SSCP1A, TYPE = HOST CP
IST1046I SSCP NETA.SSCP1A ALSO EXISTS
IST486I STATUS= ACTIV, DESIRED STATE= ACTIV
IST1447I REGISTRATION TYPE = NO
IST977I MDLTAB=***NA*** ASLTAB=***NA***
IST861I MODETAB=***NA*** USSTAB=***NA*** LOGTAB=***NA***
IST934I DLOGMOD=***NA*** USS LANGTAB=***NA***
IST597I CAPABILITY-PLU ENABLED ,SLU ENABLED ,SESSION LIMIT NONE
IST231I APPL MAJOR NODE = VTAMSEG
IST654I I/O TRACE = OFF, BUFFER TRACE = OFF
IST1500I STATE TRACE = OFF
IST271I JOBNAME = VTAM, STEPNAME = VTAM, DSPNAME = IST5DA1C
IST228I ENCRYPTION = NONE
IST1050I MAXIMUM COMPRESSION LEVEL - INPUT = 0, OUTPUT = 0
IST171I ACTIVE SESSIONS = 0000000000, SESSION REQUESTS = 0000000000
IST314I END
    
```

When you issue the same command in VTAM V4R4, you receive output similar to the following, which includes a new SSCPID field in message IST637I:

Upgrading VTAM V4R1 to VTAM V4R4

```
IST097I DISPLAY ACCEPTED
IST075I NAME = NETA.SSCP1A, TYPE = CDRM
IST1046I CP NETA.SSCP1A ALSO EXISTS
IST486I STATUS= ACTIV, DESIRED STATE= ACTIV
IST815I AUTOMATIC RECOVERY IS SUPPORTED
IST231I CDRM MAJOR NODE = VTAMSEG
IST654I I/O TRACE = OFF, BUFFER TRACE = OFF
IST1500I STATE TRACE = OFF
IST476I CDRM TYPE = HOST GATEWAY CAPABLE
IST637I SUBAREA = 1 ELEMENT = 1 SSCPID = 1
IST388I DYNAMIC CDRSC DEFINITION SUPPORT = YES
IST171I ACTIVE SESSIONS = 0000000002, SESSION REQUESTS = 0000000000
IST924I -----
IST075I NAME = NETA.SSCP1A, TYPE = HOST CP
IST1046I SSCP NETA.SSCP1A ALSO EXISTS
IST486I STATUS= ACTIV, DESIRED STATE= ACTIV
IST1447I REGISTRATION TYPE = NO
IST977I MDLTAB=***NA*** ASLTAB=***NA***
IST861I MODETAB=***NA*** USSTAB=***NA*** LOGTAB=***NA***
IST934I DLOGMOD=***NA*** USS LANGTAB=***NA***
IST597I CAPABILITY-PLU ENABLED ,SLU ENABLED ,SESSION LIMIT NONE
IST231I APPL MAJOR NODE = VTAMSEG
IST654I I/O TRACE = OFF, BUFFER TRACE = OFF
IST1500I STATE TRACE = OFF
IST271I JOBNAME = VTAM, STEPNAME = VTAM, DSPNAME = IST5DA1C
IST228I ENCRYPTION = NONE
IST1050I MAXIMUM COMPRESSION LEVEL - INPUT = 0, OUTPUT = 0
IST171I ACTIVE SESSIONS = 0000000000, SESSION REQUESTS = 0000000000
IST314I END
```

Cross-Domain Resource: In VTAM V4R1, if you specify E or SCOPE=ALL when issuing the DISPLAY ID command for a cross-domain resource, you receive output similar to the following:

```
IST097I DISPLAY ACCEPTED
IST075I NAME = NETA.APPCDA1, TYPE = CDRSC
IST486I STATUS= ACT/S----Y, DESIRED STATE= ACTIV
IST977I MDLTAB=***NA*** ASLTAB=***NA***
IST861I MODETAB=***NA*** USSTAB=***NA*** LOGTAB=***NA***
IST934I DLOGMOD=***NA*** USS LANGTAB=***NA***
IST597I CAPABILITY-PLU ENABLED ,SLU ENABLED ,SESSION LIMIT NONE
IST231I CDRSC MAJOR NODE = ISTDY
IST479I CDRM NAME = SSCP1A, VERIFY OWNER = NO
IST1044I ALSLIST = ISTAPNPU
IST082I DEVTYPE = INDEPENDENT LU / CDRSC
IST654I I/O TRACE = OFF, BUFFER TRACE = OFF
IST228I ENCRYPTION = NONE
IST171I ACTIVE SESSIONS = 0000000001, SESSION REQUESTS = 0000000000
IST206I SESSIONS:
IST1081I ADJACENT LINK STATION = P3A21
IST634I NAME      STATUS      SID          SEND RECV VR TP NETID
IST635I APPCAP05 ACTIV-P     EAABEEC343C18BE2 0001 0001 0 0 NETA
IST924I -----
IST075I NAME = NETA.APPCDA1, TYPE = DIRECTORY ENTRY
IST1186I DIRECTORY ENTRY = DYNAMIC LU
IST1184I CPNAME = NETA.SSCP2A - NETSRVR = ***NA***
IST314I END
```

When you issue the same command in VTAM V4R4, you receive output similar to the following, which includes a new message, IST1333I; and following message IST479I, includes message IST1184I, which shows the owning CP name.

Note: If you have applied the program temporary fix (PTF) associated with APAR OY65721, you are already getting message IST1333I.

```

IST097I DISPLAY ACCEPTED
IST075I NAME = NETA.APPCDA1, TYPE = CDRSC
IST486I STATUS= ACT/S---Y, DESIRED STATE= ACTIV
IST977I MDLTAB=***NA*** ASLTAB=***NA***
IST1333I ADJLIST = ***NA***
IST861I MODETAB=***NA*** USSTAB=***NA*** LOGTAB=***NA***
IST934I DLOGMOD=***NA*** USS LANGTAB=***NA***
IST597I CAPABILITY-PLU ENABLED ,SLU ENABLED ,SESSION LIMIT NONE
IST231I CDRSC MAJOR NODE = ISTCDRDY
IST479I CDRM NAME = SSCP1A, VERIFY OWNER = NO
IST1184I CPNAME = NETA.SSCP2A - NETSRVR = ***NA***
IST1044I ALSLIST = ISTAPNPU
IST082I DEVTYPE = INDEPENDENT LU / CDRSC
IST654I I/O TRACE = OFF, BUFFER TRACE = OFF
IST228I ENCRYPTION = NONE
IST171I ACTIVE SESSIONS = 0000000001, SESSION REQUESTS = 0000000000
IST206I SESSIONS:
IST1081I ADJACENT LINK STATION = P3A21
IST634I NAME      STATUS      SID          SEND RECV VR TP NETID
IST635I APPCAP05 ACTIV-P    EAABEEC343C11C41 0001 0001  0  0 NETA
IST924I -----
IST075I NAME = NETA.APPCDA1, TYPE = DIRECTORY ENTRY
IST1186I DIRECTORY ENTRY = DYNAMIC LU
IST1184I CPNAME = NETA.SSCP2A - NETSRVR = ***NA***
IST314I END

```

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Cross-Domain Resource Manager: In VTAM V4R1, when you issue a DISPLAY ID command for a cross-domain resource manager, you receive output similar to the following:

```
IST097I DISPLAY ACCEPTED
IST075I NAME = NETA.SSCP1A, TYPE = CDRM
IST1046I CP NETA.SSCP1A ALSO EXISTS
IST486I STATUS= ACTIV, DESIRED STATE= ACTIV
IST815I AUTOMATIC RECOVERY IS SUPPORTED
IST231I CDRM MAJOR NODE = VTAMSEG
IST654I I/O TRACE = OFF, BUFFER TRACE = OFF
IST1500I STATE TRACE = OFF
IST476I CDRM TYPE = HOST GATEWAY CAPABLE
IST637I SUBAREA = 1 ELEMENT = 1
IST388I DYNAMIC CDRSC DEFINITION SUPPORT = YES
IST171I ACTIVE SESSIONS = 0000000002, SESSION REQUESTS = 0000000000
IST924I -----
IST075I NAME = NETA.SSCP1A, TYPE = HOST CP
IST1046I SSCP NETA.SSCP1A ALSO EXISTS
IST486I STATUS= ACTIV, DESIRED STATE= ACTIV
IST1447I REGISTRATION TYPE = NO
IST977I MDLTAB=***NA*** ASLTAB=***NA***
IST861I MODETAB=***NA*** USSTAB=***NA*** LOGTAB=***NA***
IST934I DLOGMOD=***NA*** USS LANGTAB=***NA***
IST597I CAPABILITY-PLU ENABLED ,SLU ENABLED ,SESSION LIMIT NONE
IST231I APPL MAJOR NODE = VTAMSEG
IST654I I/O TRACE = OFF, BUFFER TRACE = OFF
IST1500I STATE TRACE = OFF
IST271I JOBNAME = VTAM, STEPNAME = VTAM, DSPNAME = IST5DA1C
IST228I ENCRYPTION = NONE
IST1050I MAXIMUM COMPRESSION LEVEL - INPUT = 0, OUTPUT = 0
IST171I ACTIVE SESSIONS = 0000000000, SESSION REQUESTS = 0000000000
IST314I END
```

When you issue the same command in VTAM V4R4, you receive output similar to the following, which includes a new SSCPID field in message IST637I:


```

IST097I DISPLAY ACCEPTED
IST075I NAME = NETA.SSCP1A, TYPE = CDRM
IST1046I CP NETA.SSCP1A ALSO EXISTS
IST486I STATUS= ACTIV, DESIRED STATE= ACTIV
IST815I AUTOMATIC RECOVERY IS SUPPORTED
IST231I CDRM MAJOR NODE = VTAMSEG
IST654I I/O TRACE = OFF, BUFFER TRACE = OFF
IST1500I STATE TRACE = OFF
IST476I CDRM TYPE = HOST GATEWAY CAPABLE
IST637I SUBAREA = 1 ELEMENT = 1 SSCPID = 1
IST388I DYNAMIC CDRSC DEFINITION SUPPORT = YES
IST171I ACTIVE SESSIONS = 0000000002, SESSION REQUESTS = 0000000000
IST924I -----
IST075I NAME = NETA.SSCP1A, TYPE = HOST CP
IST1046I SSCP NETA.SSCP1A ALSO EXISTS
IST486I STATUS= ACTIV, DESIRED STATE= ACTIV
IST1447I REGISTRATION TYPE = NO
IST977I MDLTAB=***NA*** ASLTAB=***NA***
IST861I MODETAB=***NA*** USSTAB=***NA*** LOGTAB=***NA***
IST934I DLOGMOD=***NA*** USS LANGTAB=***NA***
IST597I CAPABILITY-PLU ENABLED ,SLU ENABLED ,SESSION LIMIT NONE
IST231I APPL MAJOR NODE = VTAMSEG
IST654I I/O TRACE = OFF, BUFFER TRACE = OFF
IST1500I STATE TRACE = OFF
IST271I JOBNAME = VTAM, STEPNAME = VTAM, DSPNAME = IST5DA1C
IST228I ENCRYPTION = NONE
IST1050I MAXIMUM COMPRESSION LEVEL - INPUT = 0, OUTPUT = 0
IST171I ACTIVE SESSIONS = 0000000000, SESSION REQUESTS = 0000000000
IST314I END

```

Group: The resource type “PHYSICAL UNIT” in message IST089I now appears as one of the following resource types:

- PU_T1
- PU_T2
- PU_T2.1.

Line: The resource type “PHYSICAL UNIT” in message IST089I now appears as one of the following resource types:

- PU_T1
- PU_T2
- PU_T2.1.

Local SNA Major Node: The resource type “PHYSICAL UNIT” in message IST089I now appears as one of the following resource types:

- PU_T1
- PU_T2
- PU_T2.1.

Model Major Node: The resource type “PHYSICAL UNIT” in message IST089I now appears as one of the following resource types:

- PU_T1
- PU_T2
- PU_T2.1.

Operator Console: In VTAM V4R1, when you issue a DISPLAY ID command for the operator console (ISTNOP), you receive output similar to the following:

```
IST097I DISPLAY ACCEPTED
IST075I NAME = NETA.ISTNOP, TYPE = APPL
IST486I STATUS= ACTIV, DESIRED STATE= ACTIV
IST977I MDLTAB=***NA*** ASLTAB=***NA***
IST861I MODETAB=***NA*** USSTAB=***NA*** LOGTAB=***NA***
IST934I DLOGMOD=***NA*** USS LANGTAB=***NA***
IST597I CAPABILITY-PLU INHIBITED,SLU INHIBITED,SESSION LIMIT NONE
IST231I APPL MAJOR NODE = VTAMSEG
IST654I I/O TRACE = OFF, BUFFER TRACE = OFF
IST271I JOBNAME = ***NA***, STEPNAME = ***NA***, DSPNAME = ***NA***
IST228I ENCRYPTION = NONE
IST1050I MAXIMUM COMPRESSION LEVEL - INPUT = 0, OUTPUT = 0
IST171I ACTIVE SESSIONS = 0000000000, SESSION REQUESTS = 0000000000
IST172I NO SESSIONS EXIST
IST314I END
```

When you issue the same command in VTAM V4R4, you receive output similar to the following, which includes a new message, IST1395I:

```
IST097I DISPLAY ACCEPTED
IST075I NAME = NETA.ISTNOP, TYPE = APPL
IST486I STATUS= ACTIV, DESIRED STATE= ACTIV
IST977I MDLTAB=***NA*** ASLTAB=***NA***
IST1395I FLDTAB = ISTMSFLD
IST861I MODETAB=***NA*** USSTAB=***NA*** LOGTAB=***NA***
IST934I DLOGMOD=***NA*** USS LANGTAB=***NA***
IST597I CAPABILITY-PLU INHIBITED,SLU INHIBITED,SESSION LIMIT NONE
IST231I APPL MAJOR NODE = VTAMSEG
IST654I I/O TRACE = OFF, BUFFER TRACE = OFF
IST271I JOBNAME = ***NA***, STEPNAME = ***NA***, DSPNAME = ***NA***
IST228I ENCRYPTION = NONE
IST1050I MAXIMUM COMPRESSION LEVEL - INPUT = 0, OUTPUT = 0
IST171I ACTIVE SESSIONS = 0000000000, SESSION REQUESTS = 0000000000
IST172I NO SESSIONS EXIST
IST314I END
```

Switched Major Node: The resource type “PHYSICAL UNIT” in message IST089I now appears as one of the following resource types:

- PU_T1
- PU_T2
- PU_T2.1.

DISPLAY MAJNODES

Changes have occurred in the output you receive when you issue the DISPLAY MAJNODES command in VTAM V4R4. The resource type “PU T4/5 MAJ NODE” in message IST089I now appears as “PU T4/5.”

DISPLAY MODELS

Changes have occurred in the output you receive when you issue the DISPLAY MODELS command in VTAM V4R4 for one of the following resources:

- PU
- Model major node, when SCOPE=ALL.

PU: The resource type “PHYSICAL UNIT” in message IST089I now appears as one of the following resource types:

- PU_T1
- PU_T2
- PU_T2.1.

Model Major Node, When SCOPE=ALL: The resource type “PHYSICAL UNIT” in message IST089I now appears as one of the following resource types:

- PU_T1
- PU_T2
- PU_T2.1.

DISPLAY PENDING

Changes have occurred in the output you receive when you issue the DISPLAY PENDING command in VTAM V4R4. The resource type “PU T4/5 MAJ NODE” in message IST089I now appears as “PU T4/5.”

DISPLAY SESSIONS

In VTAM V4R1, when you issue a DISPLAY SESSIONS command from a VTAM network node for a session between a PLU on this host and a SLU that is reachable through APPN, you receive output similar to the following:

```
IST097I DISPLAY ACCEPTED
IST350I DISPLAY TYPE = SESSIONS
IST879I PLU/OLU REAL = NETA.APPL1      ALIAS = ***NA***
IST879I SLU/DLU REAL = NETA.NETAPPL1   ALIAS = ***NA***
IST880I SETUP STATUS = ACTIV
IST875I ADJSSCP TOWARDS SLU = ISTAPNCP
IST875I ALSNAME TOWARDS SLU = SW1A2A
IST933I LOGMODE=INTERACT, COS=*BLANK*
IST314I END
```

When you issue the same command in VTAM V4R4, you receive output similar to the following, which includes message IST875I (following message IST933I), showing the APPN class-of-service being used.

Upgrading VTAM V4R1 to VTAM V4R4

```
IST097I DISPLAY ACCEPTED
IST350I DISPLAY TYPE = SESSIONS
IST879I PLU/OLU REAL = NETA.APPL1      ALIAS = ***NA***
IST879I SLU/DLU REAL = NETA.NETAPPL1   ALIAS = ***NA***
IST880I SETUP STATUS = ACTIV
IST875I ADJSSCP TOWARDS SLU = ISTAPNCP
IST875I ALSNAME TOWARDS SLU = SW1A2A
IST933I LOGMODE=INTERACT, COS=*BLANK*
IST875I APPNCOS TOWARDS SLU = #INTER
IST314I END
```

In VTAM V4R1, if you specify LIST=ALL when issuing the DISPLAY SESSIONS command, you receive output similar to the following:

```
IST097I DISPLAY ACCEPTED
IST350I DISPLAY TYPE = SESSIONS
IST873I      PLU              SLU              SID              STATUS
IST874I NETA.APPL1          NETA.NETAPPL1     EAABEEC336CAAC10  ACTIV
IST878I NUMBER OF PENDING SESSIONS =          0
IST878I NUMBER OF ACTIVE  SESSIONS =          1
IST878I NUMBER OF QUEUED  SESSIONS =          0
IST878I NUMBER OF TOTAL   SESSIONS =          1
IST314I END
```

When you issue the same command in VTAM V4R4, you receive output similar to the following:

```
IST097I DISPLAY ACCEPTED
IST350I DISPLAY TYPE = SESSIONS
IST873I      PLU              SLU              SID              STATUS
IST874I NETA.APPL1          NETA.NETAPPL1     EAABEEC336CB5F06  ACTIV
IST874I NETA.SSCP1A        NETA.SSCP2A       EAABEEC336CB5F03  ACTIV/CP
IST874I NETA.SSCP2A        NETA.SSCP1A       F6ABEEC339CB60F0  ACTIV/CP
IST924I -----
IST878I NUMBER OF PENDING SESSIONS =          0
IST924I -----
IST878I NUMBER OF ACTIVE  SESSIONS =          3
IST1162I  LU-LU              =          1
IST1162I  CP-CP CONWINNER    =          1
IST1162I  CP-CP CONLOSER     =          1
IST924I -----
IST878I NUMBER OF QUEUED  SESSIONS =          0
IST924I -----
IST878I NUMBER OF TOTAL   SESSIONS =          3
IST924I -----
IST1161I ACTIVE SSCP SESSIONS
IST1162I  SSCP-LU            =          3
IST1162I  SSCP-PU            =          2
IST1162I  SSCP-SSCP          =          0
IST314I END
```

Additionally, if you have more than 100 sessions (100 is the default value on a new MAX operand on the DISPLAY SESSIONS command), or if you specify the new MAX operand and the number of sessions exceeds the value you specify on the MAX operand, some session count fields will contain a string of 10 asterisks, as shown in the following example:

```

IST097I DISPLAY ACCEPTED
IST350I DISPLAY TYPE = SESSIONS
IST873I      PLU              SLU              SID              STATUS
IST874I NETA.APPL1          NETA.NETAPPL1      EAABEEC336CB5F06  ACTIV
IST874I NETA.SSCP1A        NETA.SSCP2A      EAABEEC336CB5F03  ACTIV/CP
IST874I NETA.SSCP2A        NETA.SSCP1A      F6ABEEC339CB60F0  ACTIV/CP
IST924I -----
IST878I NUMBER OF PENDING SESSIONS =          *****
IST924I -----
IST878I NUMBER OF ACTIVE  SESSIONS =          *****
IST1162I   LU-LU              =          *****
IST1162I   CP-CP CONWINNER    =          1
IST1162I   CP-CP CONLOSER    =          1
IST924I -----
IST878I NUMBER OF QUEUED  SESSIONS =          *****
IST924I -----
IST878I NUMBER OF TOTAL   SESSIONS =          *****
IST924I -----
IST1161I ACTIVE SSCP SESSIONS
IST1162I   SSCP-LU              =          3
IST1162I   SSCP-PU              =          2
IST1162I   SSCP-SSCP            =          0
IST314I END
  
```

DISPLAY STATS

When you issue the DISPLAY STATS command in VTAM V4R4, you will receive output that includes new statistics, which have been added since VTAM V4R1.

In addition, the following message showing the component ID for VTAM V4R4 now appears following message IST350I:

```
IST1349I COMPONENT ID IS 5695-11701-301
```

Also, a new ID, 151, has been added to message IST1227I to show the total number of dependent logical units for a PU type 4 or 5 resource.

Note: This ID was introduced in VTAM V4R1 through the program temporary fix (PTF) associated with APAR OY62666. If you have applied this PTF, you are already receiving message IST1227I with ID 151.

DISPLAY TERMS

Changes have occurred in the output you receive when you issue the DISPLAY TERMS command in VTAM V4R4. The resource type "PHYSICAL UNIT" in message IST089I now appears as one of the following resource types:

- PU_T1
- PU_T2
- PU_T2.1.

DISPLAY TOPO

Changes have occurred in the output you receive when you issue the DISPLAY TOPO command for the following list types:

- All
- Summary.

LIST=ALL: In VTAM V4R1, if you specify LIST=ALL when issuing the DISPLAY TOPO command, you receive output similar to the following:

```
IST097I DISPLAY ACCEPTED
IST350I DISPLAY TYPE = TOPOLOGY
IST1295I CP NAME          NODETYPE ROUTERES CONGESTION CP-CP WEIGHT
IST1296I NETA.SSCP2A      NN          1          NONE      *NA*  *NA*
IST1297I                  ICN/MDH   CDSERVR  RSN          BASEWEIGHT
IST1298I                  YES        NO          2          *NA*
IST1299I TRANSMISSION GROUPS ORIGINATING AT CP NETA.SSCP2A
IST1357I                  CPCP
IST1300I DESTINATION CP   TGN          STATUS   TGTYPE      VALUE WEIGHT
IST1301I NETA.SSCP1A     21          OPER     INTERM      YES  *NA*
IST314I END
```

When you issue the same command in VTAM V4R4, you receive output similar to the following, which includes three new messages, IST1223I, IST1224I, and IST1579I.

```
IST097I DISPLAY ACCEPTED
IST350I DISPLAY TYPE = TOPOLOGY
IST1295I CP NAME          NODETYPE ROUTERES CONGESTION CP-CP WEIGHT
IST1296I NETA.SSCP2A      NN          1          NONE      YES  *NA*
IST1579I                  -----
IST1297I                  ICN/MDH   CDSERVR  RSN          HPR
IST1298I                  NO        NO          8          RTP
IST1579I                  -----
IST1223I                  BN          NATIVE   TIME LEFT
IST1224I                  NO        YES      12
IST1299I TRANSMISSION GROUPS ORIGINATING AT CP NETA.SSCP2A
IST1357I                  CPCP
IST1300I DESTINATION CP   TGN          STATUS   TGTYPE      VALUE WEIGHT
IST1301I NETA.SSCP1A     255         OPER     INTERM VRTG YES  *NA*
IST314I END
```

LIST=SUMMARY: In VTAM V4R1, when you specify LIST=SUMMARY when issuing the DISPLAY TOPO command, you receive output similar to the following:

```
IST097I DISPLAY ACCEPTED
IST350I DISPLAY TYPE = TOPOLOGY
IST1306I LAST CHECKPOINT ADJ NN EN SERVED EN CDSERVR ICN
IST1307I NONE           1  2  0  0      0      2
IST314I END
```

When you issue the same command in VTAM V4R4, you receive output similar to the following, which includes a new column (BN) in messages IST1306I and IST1307I:

```
IST097I DISPLAY ACCEPTED
IST350I DISPLAY TYPE = TOPOLOGY
IST1306I LAST CHECKPOINT  ADJ  NN  EN  SERVED EN  CDSERVR  ICN  BN
IST1307I NONE              1   2   0   0         0       2   0
IST314I END
```

DISPLAY TRACES

Changes have occurred in the output you receive when you issue the DISPLAY TRACES command for the following types:

- NODES
- VTAM.

TYPE=NODES: In VTAM V4R1, if you specify TYPE=NODES when issuing a DISPLAY TRACES command, and you have a buffer contents or I/O trace active, you receive output similar to the following:

```
IST097I DISPLAY ACCEPTED
IST350I DISPLAY TYPE = TRACES,TYPE=NODES
IST075I NAME = SSCP1A, TYPE = CDRM
IST1041I SSCP1A          CDRM
IST1042I  IO  = ON
IST924I -----
IST075I NAME = APPL1A, TYPE = APPL SEGMENT
IST1041I NETA.APPL1      APPL
IST1042I  BUF  = ON  - AMOUNT = PARTIAL
IST1041I NETA.APPL2      APPL
IST1042I  BUF  = ON  - AMOUNT = PARTIAL
IST924I -----
IST075I NAME = CDRSC1A, TYPE = CDRSC SEGMENT
IST1041I NETA.NETAPPL1   CDRSC
IST1042I  IO  = ON  - AMOUNT = **NA**
IST924I -----
IST1422I SAVED TRACE REQUESTS FOR NETA.NOAPP1
IST1041I NETA.NOAPP1     N/A
IST1042I  BUF  = SAVED - AMOUNT = PARTIAL
IST314I END
```

Upgrading VTAM V4R1 to VTAM V4R4

When you issue the same command in VTAM V4R4, you receive output similar to the following which includes a new field in message IST1042I, indicating whether the trace command was saved for the resource:

```
IST097I DISPLAY ACCEPTED
IST350I DISPLAY TYPE = TRACES,TYPE=NODES
IST075I NAME = SSCP1A, TYPE = CDRM
IST1041I SSCP1A          CDRM
IST1042I IO = ON - AMOUNT = **NA** - SAVED = YES
IST924I -----
IST075I NAME = NETA.SSCP1A, TYPE = HOST CP
IST1041I NETA.SSCP1A    HOST CP
IST1042I IO = ON - AMOUNT = **NA** - SAVED = YES
IST924I -----
IST075I NAME = APPL1A, TYPE = APPL SEGMENT
IST1041I NETA.APPL1     APPL
IST1042I BUF = ON - AMOUNT = PARTIAL - SAVED = YES
IST1041I NETA.APPL2     APPL
IST1042I BUF = ON - AMOUNT = PARTIAL - SAVED = NO
IST924I -----
IST075I NAME = CDRSC1A, TYPE = CDRSC SEGMENT
IST1041I NETA.NETAPPL1  CDRSC
IST1042I IO = ON - AMOUNT = **NA** - SAVED = YES
IST924I -----
IST1422I SAVED TRACE REQUESTS FOR NETA.NOAPP1
IST1041I NETA.NOAPP1    N/A
IST1042I BUF = SAVED - AMOUNT = PARTIAL
IST314I END
```

The output you receive in VTAM V4R4 also indicates that tracing is active for a host CP, even if you have defined your VTAM as a subarea node and not as an APPN node. This host CP is used for management services transport and is not used for session setup or routing.

TYPE=VTAM: In VTAM V4R1, if you specify TYPE=VTAM,OPTION=ALL on the START command or MODIFY TRACE command before issuing the DISPLAY TRACES command, when you issue the DISPLAY TRACES command, you receive output similar to the following:

```
IST097I DISPLAY ACCEPTED
IST350I DISPLAY TYPE = TRACES,TYPE=VTAM
IST315I VTAM INTERNAL TRACE ACTIVE - MODE = INT, SIZE = 200
IST199I OPTIONS = API APPC CIO ESC LCS LOCK MSG NRM PIU PSS SMS SSCP
IST199I OPTIONS = VCNS
IST314I END
```

When you issue the same command in VTAM V4R4, you receive output similar to the following, which includes new trace options—CFS, CMIP, CSM, HPR, and TCP, XBUF, XCF—in message IST199I:

```
IST097I DISPLAY ACCEPTED
IST350I DISPLAY TYPE = TRACES,TYPE=VTAM
IST315I VTAM INTERNAL TRACE ACTIVE - MODE = INT, SIZE = 200
IST199I OPTIONS = API APPC CFS CIO CMIP CSM ESC HPR LCS LOCK MSG NRM PIU
IST199I OPTIONS = PSS SMA SSCP TCP VCNS XBUF XCF
IST314I END
```


DISPLAY VTAMOPTS

When you issue the DISPLAY VTAMOPTS command in VTAM V4R4, you will receive output that includes new start options, which have been added since VTAM V4R1.

```

IST097I DISPLAY ACCEPTED
IST1188I ACF/VTAM V4R1 STARTED AT 21:38:22 ON 11/03/93
IST1349I COMPONENT ID IS 5695-11701-101
IST1348I VTAM STARTED AS INTERCHANGE NODE
IST1189I ALSREQ = NO APPNCOS = NONE
IST1189I ASIRFMSG = 0LUSSCP ASYDE = TERM
IST1189I BSCMDRS = (STATS,INOPS) BSCTMOUT = 286
IST1189I CACHETI = 8 CDRSCTI = 480S
IST1189I CDSERVR = NO CINDXSIZ = 4080
IST1189I CMPVTAM = 0 COLD = YES
IST1189I CONFIG = 2A CONNTYPE = APPN
IST1189I CPCP = YES CSALIMIT = NOLIMIT
IST1189I CSA24 = NOLIMIT DATEFORM = MDY
IST1189I DIRSIZE = 0 DIRTIME = 691200S
IST1189I DISCNTIM = 15 DLRTCB = 10
IST1189I DYNADJCP = YES DYNASSCP = YES
IST1189I DYNLU = YES ENCRYPTN = 24
IST1189I ESIRFMSG = ALLSSCP FSIRFMSG = 0LUSSCP
IST1189I GWSSCP = NO HNTSIZE = 4080
IST1189I HOSTPU = ISTEPUS HOSTSA = 2
IST1189I HOTIOTRM = 0 HSRTSIZE = 9973
IST1189I INITDB = ALL INOPDUMP = OFF
IST1189I IOINT = 180 IOMSGLIM = 2147483647
IST1189I IOPURGE = 0 IRNSTRGE = 0
IST1189I LIST = 2A MAINTLVL = *BLANKS*
IST1189I MAXLURU = 6144 MAXSSCPS = 10
IST1189I MAXSUBA = 255 MIHTMOUT = 1800
IST1189I MSGLEVEL = BASE MSGMOD = NO
IST1189I MXSAWBUF = 10000 MXSSCPRU = 4096
IST1189I MXSUBNUM = 511 NCPBUFSZ = 512
IST1189I NETID = NETA NMVTLOG = NPDA
IST1189I NODELST = *BLANKS* NODETYPE = NN
IST1189I NQNMODE = NAME NUMTREES = 100
IST1189I OSRTSIZE = 43 PDTRCBUF = 2
IST1189I PIUMAXDS = 200 PLUALMSG = NOSUPP
IST1189I PPOLOG = NO PSSTRACE = NORB
IST1189I RESUSAGE = 100 RESWGHT = 0
IST1189I ROUTERES = 1 SAWMAXDS = 100
IST1189I SAWMXQPK = 0 SDLCMDRS = (STATS,INOPS)
IST1189I SECLVLCP = ***NA*** SIRFMSG = ALLSSCP
IST1189I SLUALMSG = NOSUPP SNAPREQ = 1000
IST1189I SONLIM = (60,30) SORDER = APPN
IST1189I SSCPDYN = YES SSCPID = 2
IST1189I SSCPNAME = SSCP2A SSCPORD = PRIORITY
IST1189I SSDTMOUT = 30 SSEARCH = YES
IST1189I SUPP = NOSUP SWNORDER = CPNAME
IST1189I TNSTAT = OFF TRANSLAT = (0,1,2,3,4,5,6,7)
IST1189I USSTAB = *BLANKS* VERIFYCP = NONE
IST1189I VTAMEAS = 32001 WARM = NO
IST1189I XNETALS = NO
IST314I END

```

Upgrading VTAM V4R1 to VTAM V4R4

When you issue the same command in VTAM V4R4, you receive output similar to the following, which includes several new start options:

```
IST097I DISPLAY ACCEPTED
IST1188I ACF/VTAM V4R4 STARTED AT 11:00:07 ON 11/04/96
IST1349I COMPONENT ID IS 5695-11701-401
IST1348I VTAM STARTED AS INTERCHANGE NODE
IST1189I ALSREQ = NO APPNCOS = NONE
IST1189I ASIRFMSG = OLUSSCP ASYDE = TERM
IST1189I AUTHLEN = YES AUTORTRY = AUTOCAP
IST1189I AUTOTI = 0 BN = YES
IST1189I BNDYN = ***NA*** BNORD = ***NA***
IST1189I BSCMDRS = (STATS,INOPS) BSCTMOUT = 286
IST1189I CACHETI = 8 CDRDYN = YES
IST1189I CDRSCTI = 480S CDSERVER = NO
IST1189I CDSREFER = 1 CINDXSIZ = 8176
IST1189I CMPMIPS = 100 CMPVTAM = 0
IST1189I CNMTAB = *BLANKS* COLD = YES
IST1189I CONFIG = 1A CONNTYPE = APPN
IST1189I CPCDRSC = NO CPCP = YES
IST1189I CSALIMIT = NOLIMIT CSA24 = NOLIMIT
IST1189I DATEFORM = MDY DIRSIZE = 0
IST1189I DIRTIME = 691200S DISCNTIM = (15,0)
IST1189I DLRTCB = 10 DSPLYDEF = 100
IST1189I DSPLYMAX = 65535 DSPLYWLD = FULLWILD
IST1189I DYNADJCP = YES DYNASSCP = YES
IST1189I DYNDLGMD = NONE DYNLU = YES
IST1189I DYNMODTB = NONE ENCRPREF = NONE
IST1189I ENCRYPTN = 24 ENHADDR = YES
IST1189I ESIRFMSG = ALLSSCP FLDTAB = ISTMSFLD
IST1189I FSIRFMSG = OLUSSCP GWSSCP = YES
IST1189I HNTSIZE = 4080 HOSTPU = ISTPUS
IST1189I HOSTSA = 1 HOTIOTRM = 0
IST1189I HPR = (NONE,NONE) HPRPST = LOW 0S
IST1189I HPRPST = MEDIUM 480S HPRPST = HIGH 240S
IST1189I HPRPST = NETWRK 120S HSRTSIZE = 9973
IST1189I INITDB = ALL INOPDUMP = OFF
IST1189I IOINT = 180 IOMSGLIM = 2147483647
IST1189I IOPURGE = 0 IRNSTRGE = 0
IST1189I ISTCOSDF = INDLU LIMINTCP = ***NA***
IST1189I LIST = 1A MAINTLVL = *BLANKS*
IST1189I MAXLOCAT = 5000 MAXLURU = 6144
IST1189I MAXSSCPS = 10 MAXSUBA = 255
IST1189I MIHTMOUT = 1800 MSGLEVEL = BASE
IST1189I MSGMOD = NO MXSAWBUF = 10000
IST1189I MXSSCPRU = 4096 MXSUBNUM = 511
IST1189I NCPBUFSZ = 512 NETID = NETA
IST1189I NMVTLOG = NPDA NODELST = *BLANKS*
IST1189I NODETYPE = NN NQNMODE = NAME
IST1189I NSRTSIZE = *BLANKS* NUMTREES = 100
IST1189I OSIEVENT = PATTERNS OSIMGMT = NO
IST1189I OSITOP0 = NOLLINES OSITOP0 = ILUCDRSC
IST1189I OSRTSIZE = 43 PDTRCBUF = 2
IST1189I PIUMAXDS = 200 PLUALMSG = NOSUPP
IST1189I PPOLOG = NO PSSTRACE = NORB
IST1189I RESUSAGE = 100 ROUTERES = 1
IST1189I SAWMAXDS = 100 SAWMXQPK = 0
IST1189I SDLCMDRS = (STATS,INOPS) SECLVLCP = ***NA***
```

```

IST1189I SIRFMSG = ALLSSCP
IST1189I SMEAUTH = DISCARD
IST1189I SNVC = ***NA***
IST1189I SORDER = APPN
IST1189I SRCOUNT = 10
IST1189I SSCPDYN = YES
IST1189I SSCPNAME = SSCP1A
IST1189I SSDTMOUT = 30
IST1189I STRGR = ***NA***
IST1189I SUPP = NOSUP
IST1189I TNSTAT = OFF
IST1189I UPDDELAY = 60S
IST1189I VERIFYCP = NONE
IST1189I VFYREDTI = OFF
IST1189I VRTGCPCP = YES
IST1189I WARM = NO
IST1189I XNETALS = YES
IST314I END

SLUALMSG = NOSUPP
SNAPREQ = 1000
SONLIM = (60,30)
SRCHRED = OFF
SRTIMER = 30S
SSCPID = 1
SSCPORD = PRIORITY
SSEARCH = YES
STRMNPS = ***NA***
SWNORDER = CPNAME
TRANSLAT = (0,1,2,3,4,5,6,7)
USSTAB = *BLANKS*
VFYRED = YES
VRTG = NO
VTAMEAS = 32001
XCFINIT = ***NA***

```

MODIFY TRACE

In VTAM V4R1, if you specify TYPE=VTAM, OPTION=ALL when issuing the MODIFY TRACE command, you receive output similar to the following:

```

IST097I MODIFY ACCEPTED
IST315I VTAM INTERNAL TRACE ACTIVE - MODE = INT, SIZE = 200
IST199I OPTIONS = API APPC CIO ESC LCS LOCK MSG NRM PIU PSS SMS SSCP
IST199I OPTIONS = VCNS
IST314I END

```

When you issue the same command in VTAM V4R4, you receive output similar to the following, which includes new trace options—CFS, CMIP, CSM, HPR, and TCP, XBUF, XCF—in message IST199I:

```

IST097I MODIFY ACCEPTED
IST315I VTAM INTERNAL TRACE ACTIVE - MODE = INT, SIZE = 200
IST199I OPTIONS = API APPC CFS CIO CMIP CSM ESC HPR LCS LOCK MSG NRM PIU
IST199I OPTIONS = PSS SMA SSCP TCP VCNS XBUF XCF
IST314I END

```

START

In VTAM V4R1, if you specify TRACE,TYPE=VTAM,OPTION=ALL when issuing the START command, you receive output similar to the following:

```
IST315I VTAM INTERNAL TRACE ACTIVE - MODE = INT, SIZE = 200
IST199I OPTIONS = API APPC CIO ESC LCS LOCK MSG NRM PIU PSS SMS SSCP
IST199I OPTIONS = VCNS
IST314I END
```

When you issue the same command in VTAM V4R4, you receive output similar to the following, which includes new trace options, CFS, CMIP, HPR, TCP, XBUF, and XCF in message IST199I:

```
IST315I VTAM INTERNAL TRACE ACTIVE - MODE = INT, SIZE = 200
IST199I OPTIONS = API APPC CFS CIO CMIP CSM ESC HPR LCS LOCK MSG NRM
IST199I OPTIONS = PIU PSS SMS SSCP TCP VCNS XBUF XCF
IST314I END
```

Display of a Maximum Number of Resources Enhancement

The following new messages now appear in the output of DISPLAY commands on which the MAX operand can be coded:

- IST1315I
- IST1358I
- IST1454I.

IST1315I: Message IST1315I now appears in the output of the following DISPLAY commands:

- DISPLAY ADJSSCPS
- DISPLAY APPLS
- DISPLAY CDRMS
- DISPLAY CDRSCS
- DISPLAY CLSTRS
- DISPLAY DIRECTRY, when ID=*.name
- DISPLAY EXIT
- DISPLAY GROUPS
- DISPLAY LINES
- DISPLAY LUGROUPS, when SCOPE=ALL
- DISPLAY MAJNODES
- DISPLAY PATHTAB
- DISPLAY PENDING
- DISPLAY SESSIONS
- DISPLAY STATIONS
- DISPLAY STATS
- DISPLAY STORUSE
- DISPLAY TABLE, when SCOPE=ALL
- DISPLAY TERMS
- DISPLAY TGPS
- DISPLAY USERVAR.

The text of message IST1315I is:

```
IST1315I DISPLAY TRUNCATED AT keyword = number
```

IST1358I: Message IST1358I replaces message IST172I in the output of the following DISPLAY commands:

- DISPLAY APPLS
- DISPLAY CDRMS
- DISPLAY CDRSCS
- DISPLAY CLSTRS
- DISPLAY GROUPS
- DISPLAY LINES
- DISPLAY MAJNODES
- DISPLAY PENDING
- DISPLAY TERMS
- DISPLAY TGPS.

The text of message IST1358I is:

IST1358I NO QUALIFYING MATCHES FOR id

The text of message IST172I is:

IST172I NO text

IST1454I: A new message, IST1454I, now appears in the output of the following DISPLAY commands:

- DISPLAY ADJSSCPS
- DISPLAY APPLS
- DISPLAY CDRMS
- DISPLAY CDRSCS
- DISPLAY CLSTRS
- DISPLAY EXIT
- DISPLAY GROUPS
- DISPLAY LINES
- DISPLAY LUGROUPS, when SCOPE=ALL
- DISPLAY MAJNODES
- DISPLAY PATHTAB
- DISPLAY PENDING
- DISPLAY STATIONS
- DISPLAY STORUSE
- DISPLAY TABLE, when SCOPE=ALL
- DISPLAY TERMS
- DISPLAY TGPS
- DISPLAY USERVAR.

The text of message IST1454I is:

IST1454I count resources DISPLAYED [FOR ID = rscname]

This message is issued once for every ID value (*rscname*) specified on the DISPLAY command and indicates how many (*count*) resources found match the command specifications (for example ID, EXCLUDE, SCOPE, IDTYPE).

rscname is network-qualified only if the name specified on the ID operand on the corresponding DISPLAY command is network-qualified. FOR ID=*rscname* is not included if the ID operand is not coded on the command.

IST1454I is issued even if the limit specified on the MAX operand is reached for the command.

Changes to VTAM Network Operator Messages

This section shows the VTAM network operator messages that have changed or have been deleted since VTAM V4R1.

Changed Messages

The following list shows the message numbers and text of messages that have changed since VTAM V4R1. Appendix A, "Message Additions, Deletions, and Changes" in *VTAM Messages* identifies the types of changes that have occurred to messages since VTAM V4R1, including new and changed variable values, enhancements to message explanations, and changes to variable lengths.

In the following list, a percent sign (%) within the message text represents a character that is reserved for variable information. The maximum length of the variable is indicated by the number of percent signs. When some messages are displayed on your console, if the variable information is shorter than the variable field, the extra blanks are suppressed, causing the message text to shift to the left.

Do not assume from the following list that the text or tokens start in certain columns. The specified USS table determines how your system handles blank suppression. For more information about blank suppression, refer to the discussion of the "OPT" operand on the USSMSG macro in the *VTAM Resource Definition Reference*.

```
V4R1: IST052I %%%%%%%%% IS AN INVALID START PARAMETER KEYWORD - IGNORED
V4R4: IST052I %%%%%%%%% IS AN INVALID START OPTION KEYWORD - IGNORED

V4R1: IST077I SIO = %%%% CUA = %%%%%%%%%%%%%%%%%%%%%%%%%
V4R4: IST077I SIO = %%%% CUA = %%% %%%%%%%%%%%%%%%%%%%%%%%%%

V4R1: IST084I NETWORK NODES:
V4R4: IST084I NETWORK RESOURCES:

V4R1: IST087I TYPE = %%%%%%%%%%%%%%%%%%%%%%%%%, CONTROL = %%%
V4R4: IST087I TYPE = %%%%%%%%%%%%%%%%%%%%%%%%%, CONTROL = %%%, HPDT = %%%

V4R1: IST089I %%%%%%%%% TYPE = %%%%%%%%%%%%%%%%%%%%%%%%%, %%%%%%%%% %%%%%%%%%
V4R4: IST089I %%%%%%%%% TYPE = %%%%%%%%%%%%%%%%%%%%%%%%%, %%%%%%%%% %%%%%%%%%

V4R1: IST135I PHYSICAL UNIT = %%%%%%%%%%%%%%%%%%%%%%%%%
V4R4: IST135I PHYSICAL UNIT = %%%%%%%%% %%%%%%%%%

V4R1: IST154I EXPANSION FAILED FOR %% BUFFER POOL - CODE %%
V4R4: IST154I EXPANSION FAILED FOR %% BUFFER POOL - CODE %, USERID=%%%%%%%%%

V4R1: IST172I NO %%%%%%%%% %%%%%%%%%
V4R4: IST172I NO %%%%%%%%% %%%%%%%%%

V4R1: IST232I %%%%%%%%%, %%%%%%%%%%%%%%%%%%%%%%%%%
V4R4: IST232I %%%%%%%%% %%%%%%%%% %%%%%%%%%

V4R1: IST247I LOAD/DUMP PROCEDURE STATUS = %%%%%%%%%%%%%%%%%%%%%%%%%
V4R4: IST247I LOAD/DUMP PROCEDURE STATUS = %%%%%%%%% %%%%%%%%%%%%%%%%%%%%%%%%%

V4R1: IST257I VTAM SDUMP FAILED WITH RETURN CODE %%%
V4R4: IST257I VTAM SDUMP FAILED WITH RETURN CODE %% REASON X'!%'

V4R1: IST301I INSUFFICIENT VFBUF STORAGE FOR I/O TRACE TABLE
V4R4: IST301I INSUFFICIENT PRIVATE FIXED STORAGE FOR I/O TRACE TABLE
```

V4R1: IST316I VTAM INTERNAL TRACE USER OPTIONS ARE NOW INACTIVE
V4R4: IST316I %%%%%%%%%% TRACE USER OPTIONS ARE NOT ACTIVE

V4R1: IST320I CONFIGURATION %%%%%%%%%% DEFINITION FAILED - %%%%%%%%%%
V4R4: IST320I DEFINITION %%%%%%%%%% NOT SUCCESSFUL - %%%%%%%%%%

V4R1: IST395I %%%%%%%%%%
V4R4: IST395I %%%%%%%%%% %%%%%%%%%% %%%%%%%%%% %%%%%%%%%% %%%%%%%%%%

V4R1: IST396I LNKSTA STATUS CTG GTG ADJNODE ADJSA NETID
V4R4: IST396I LNKSTA STATUS CTG GTG ADJNODE ADJSA NETID ADJLS

V4R1: IST397I %%%%%%%%%%
V4R4: IST397I %%%%%%%%%% %%%%%%%%%% %%%%%%%%%% %%%%%%%%%% %%%%%%%%%%

V4R1: IST442I ATTN = %%%%%%%%%% RDATN = %%%%%%%%%% IPIU = %%%%%%%%%%
V4R4: IST442I ATTN = %%%%%%%%%% RDATN = %%%%%%%%%% IPDU = %%%%%%%%%%

V4R1: IST443I OPIU = %%%%%%%%%% RDBUF = %%%%%%%%%% SLODN = %%%%%%%%%%
V4R4: IST443I OPDU = %%%%%%%%%% RDBUF = %%%%%%%%%% SLODN = %%%%%%%%%%

V4R1: IST453I %%%%%%%%%% PARAMETER VALUE INVALID
V4R4: IST453I %%%%%%%%%% PARAMETER VALUE %%%%%%%%%% NOT VALID

V4R1: IST476I CDRM TYPE = %%%%%%%%%%
V4R4: IST476I CDRM TYPE = %%%%%%%%%%

V4R1: IST522I %%%%%%%%%% SA %%%%%%%%%% TO SA %%%%%%%%%%
V4R4: IST522I %%%%%%%%%% SA %%%%%%%%%% TO SA %%%%%%%%%%

V4R1: IST530I %%%%%%%%%% PENDING %%%%%%%%%%
V4R4: IST530I %%%%%%%%%% PENDING FROM %%%%%%%%%% TO %%%%%%%%%% FOR %%%%%%%%%%

V4R1: IST605I ERROR FOR ID = %%%%%%%%%% - %%%%%%%%%% : %%%%%%%%%%, DATA INVALID FOR THIS NODE
V4R4: IST605I ERROR FOR ID = %%%%%%%%%% - %%%%%%%%%% : %%%%%%%%%%

V4R1: IST621I %%%%%%%%%% FOR NETWORK NODE %%%%%%%%%%
V4R4: IST621I %%%%%%%%%% FOR NETWORK RESOURCE %%%%%%%%%%

V4R1: IST635I %%%%%%%%%%
V4R4: IST635I %%%%%%%%%% %%%%%%%%%% %%%%%%%%%% %%%%%%%%%%

V4R1: IST637I SUBAREA=%%%%%%%%%% ELEMENT=%%%%%%%%%%
V4R4: IST637I SUBAREA = %%%%%%%%%% ELEMENT = %%%%%%%%%% SSCPID = %%%%%%%%%%

V4R1: IST655I %%%%%%%%%% TRACE STATUS = %%%%%%%%%%
V4R4: IST655I %%%%%%%%%% TRACE STATUS = %%%%%%%%%%

V4R1: IST658I %%%%%%%%%% COMMAND FAILED - %%%%%%%%%% NOT FOUND
V4R4: IST658I %%%%%%%%%% COMMAND FAILED - %%%%%%%%%%NOT FOUND

V4R1: IST784I SESSION(S) EXIST(S) WITH UNKNOWN PARTNER
V4R4: IST784I SESSION(S) EXIST(S) WITH UNKNOWN PARTNER(S)

V4R1: IST786I %%%%%%%%%% COMMAND REJECTED - %%%%%%%%%%
V4R4: IST786I %%%%%%%%%% COMMAND REJECTED - %%%%%%%%%%

V4R1: IST833I SKIPPING TO NEXT %%%%%%%%%%
V4R4: IST833I SKIPPING TO NEXT %%%%%%%%%%

V4R1: IST940I %%%%%%%%%%
V4R4: IST940I %%%%%%%%%%

V4R1: IST956I %%%%%%%%%% SAP=%%%%%%%%%% MAC=%%%%%%%%%% %%%%%%%%%%
V4R4: IST956I %%%%%%%%%% SAP=%%%%%%%%%% MAC=%%%%%%%%%% %%%%%%%%%%

V4R1: IST966I USER=%%%%%%%%%%
V4R4: IST966I USER=VCNS

V4R1: IST984I USER EXIT %%%%%%%%%% IS %%%%%%%%%%
V4R4: IST984I USER EXIT %%%%%%%%%% IS %%%%%%%%%%

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V4R1: IST985I USER EXIT %%%%%%%%%% FAILED-CODE %
V4R4: IST985I USER EXIT %%%%%%%%%% FAILED-CODE %

V4R1: IST998E VTAM MESSAGE %%%% ISSUED BUT DOES NOT EXIST
V4R4: IST998E VTAM MESSAGE %%%% ISSUED BUT DOES NOTEXIST

V4R1: IST1009I SID = %%%%%%%%%%
V4R4: IST1009I SID = %%%%%%%%%%, HPDT = %%%

V4R1: IST1042I %%% = %%% %%%%%%%%%%
V4R4: IST1042I %%% = %%% %%%%%%%%%%

V4R1: IST1055I VALUE FOR %%%% MUST BE NUMERIC
V4R4: IST1055I VALUE FOR %%%% MUST BE %%%%

V4R1: IST1069I PARAMETER %% FOR %%%% MUST BE NUMERIC
V4R4: IST1069I PARAMETER %% FOR %%%% MUST BE %%%%

V4R1: IST1070I %%%% FOR %%%% IS NOT VALID-STARTCONTINUES
V4R4: IST1070I %%%% FOR %%%% IS NOT VALID-START CONTINUES

V4R1: IST1090I TGP FOR % %%%%%%%%%% IS SETTO %%%%
V4R4: IST1090I TGP FOR %%%% %%%%%%%%%% ISSET TO %%%%

V4R1: IST1091I MODIFY TGP FAILED - % %%%%%%%%%% IS UNKNOWN
V4R4: IST1091I MODIFY TGP FAILED - %%%% %%%%%%%%%% IS UNKNOWN

V4R1: IST1093I %%%% IS IGNORED-ONLY VALID WHEN %%%% IS SPECIFIED
V4R4: IST1093I %%%% IS IGNORED-ONLY VALID WHEN %%%% IS SPECIFIED

V4R1: IST1102I NODENAME NODETYPE CONNECTIONS CP CONNECTIONS
V4R4: IST1102I NODENAME NODETYPE CONNECTIONS CP CONNECTIONS NATIVE

V4R1: IST1103I %%%%%%%%%% %%% %%% %%%
V4R4: IST1103I %%%%%%%%%% %%% %%% %%% %%%

V4R1: IST1120I %%%% APPNCOS DEFINITION FAILED-INSUFFICIENT STORAGE
V4R4: IST1120I %%%% DEFINITION FAILED-INSUFFICIENT STORAGE

V4R1: IST1161I ACTIVE SSCP SESSIONS
V4R4: IST1161I SSCP SESSIONS

V4R1: IST1162I %%%%%%%%%% = %%%%%%%%%%
V4R4: IST1162I %%%%%%%%%% = %%%%%%%%%%

V4R1: IST1163I RSN BASEWEIGHT
V4R4: IST1163I RSN HPR TIME LEFT

V4R1: IST1164I %%%%%%%%%% %%%%
V4R4: IST1164I %%%%%%%%%% %% %

V4R1: IST1193I CP-CP SESSION DEACTIVATION FAILURE FOR %%%%%%%%%%
V4R4: IST1193I %%%% SESSION DEACTIVATION FAILURE FOR %%%%%%%%%%

V4R1: IST1214I FFST %%%%%%%%%%
V4R4: IST1214I FFST %%%%%%%%%%

V4R1: IST1221I %%%% DEV = %%%% STATUS = %%%%%%%%%%
V4R4: IST1221I %%%% DEV = %%%% STATUS = %%%% STATE = %%%%%%%%%%

V4R1: IST1222I %%%% DEVICE %%% IS INOPERATIVE, LINENAME IS %%%%
V4R4: IST1222I %%%% DEVICE %%% IS INOPERATIVE, NAME IS %%%%

V4R1: IST1231I IPIU = %%%%%%%%%% OPIU = %%%%%%%%%%
V4R4: IST1231I IPDU = %%%%%%%%%% OPDU = %%%%%%%%%%

V4R1: IST1236I BYTECNTO = %%%%%%%%%% BYTECNT = %%%%%%%%%%
V4R4: IST1236I BYTECNTO = %%%%%%%%%% BYTECNT = %%%%%%%%%%

V4R1: IST1259I VBUILD TYPE = %%%% IS ONLY VALID FOR%%
V4R4: IST1259I VBUILD TYPE = %%%% IS ONLY VALID FOR%%


```

V4R1: IST1263I %%%%%%%%% FOR %%%%%%%%%% FORCED COLD, %%%%%%%%% %%%
V4R4: IST1263I %%%%%%%%% FOR %%%%%%%%%% FORCED COLD, %%%%%%%%%%

V4R1: IST1278I %%%%%%%%% PENDING %%%%%%%%%%
V4R4: IST1278I %%%%%%%%% FROM %%%%%%%%% TO %%%%%%%%% FOR%%%%%%%%

V4R1: IST1297I ICN/MDH CDSERVR RSN BASEWEIGHT
V4R4: IST1297I ICN/MDH CDSERVR RSN HPR

V4R1: IST1298I %%      %%      %%%%%%%%% %%%
V4R4: IST1298I %%      %%      %%%%%%%%% %%%

V4R1: IST1300I DESTINATION CP TGN STATUS TGTYPE VALUE WEIGHT
V4R4: IST1300I DESTINATION CP TGN STATUS TGTYPE VALUE WEIGHT

V4R1: IST1301I %%%%%%%%% %%% %%% %%%%%%%%% %%% %%%
V4R4: IST1301I %%%%%%%%% %%% %%% %%%%%%%%% %%% %%%

V4R1: IST1306I LAST CHECKPOINT ADJ NN EN SERVED EN CDSERVR ICN
V4R4: IST1306I LAST CHECKPOINT ADJ NN EN SERVED EN CDSERVR ICN BN

V4R1: IST1315I DISPLAY TRUNCATED AT NUM = %%%%%%%%%
V4R4: IST1315I DISPLAY TRUNCATED AT %% = %%%%%%%%%

V4R1: IST1345I ID VALUE DESCRIPTION
V4R4: IST1345I ID VALUE DESCRIPTION
    
```

Deleted Messages

Table 34 shows the message IDs of messages that have been deleted since VTAM V4R1 and, if the messages have been replaced, the IDs of the messages that have replaced them.

Table 34. Deleted Messages in VTAM V4R4

Deleted Message	Replaced By
IST468I	None
IST469I	None
IST470I	None
IST471I	None
IST573I	None

Resource Type Identifier Enhancements in VTAM Messages

In VTAM V4R1, the resource types displayed in the IST089I message for a physical unit or for a PU type 4 or 5 major node sometimes appear in several forms, as shown in the following lists:

- Physical unit**
 - PHYSICAL UNIT
 - PU_T1
 - PU_T2
 - PU_T2.1

- PU type 4 or 5 major node**
 - PU T4/5 MAJ NODE
 - PU T4/5

In VTAM V4R4, the resource types displayed in message IST089I are consistent when issued for DISPLAY commands. The resource types "PHYSICAL UNIT" and "PU T4/5 MAJ NODE" no longer appear in the IST089I message. The resource types are displayed in the following forms only:

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Physical unit	PU_T1 PU_T2 PU_T2.1
PU type 4 or 5 major node	PU T4/5

If you use CLISTs to perform functions based on the resource type identifiers in IST089I, you might need to alter the CLISTs to check the identifiers for “PU_T1,” “PU_T2,” or “PU_T2.1” instead of “PHYSICAL UNIT,” and “PU T4/5” instead of “PU T4/5 MAJ NODE.”

Changes to VTAM Application Programming Interface

The following changes have occurred to the VTAM application programming interface (API) since VTAM V4R1:

- The component identification vector has been updated.
- New RCPRI and RCSEC return codes have been added for the following APPCCMD macros:
 - APPCCMD CONTROL=OPRCNTL,QUALIFY=CNOS
 - APPCCMD CONTROL=OPRCNTL,QUALIFY=DEFINE
 - APPCCMD CONTROL=OPRCNTL,QUALIFY=DISPLAY
 - APPCCMD CONTROL=OPRCNTL,QUALIFY=RESTORE
 - APPCCMD CONTROL=ALLOC.
- The NIBSLWRK bit has been added to the ISTDNIB DSECT. This bit is set on when the SIMLOGON macro for that NIB has successfully completed. A successful completion is indicated by the receipt of a positive INITIATE RSP.
- VTAM restricts the length of the user data field in the BIND to 0–65 bytes. VTAM does not currently enforce this restriction; however, subsequent releases might. IBM recommends that you begin placing no more than 65 bytes of data in the user data field when coding new application programs or migrating existing application programs.

In addition to these changes, other macros, vectors, and DSECTs have changed, and new macros, vectors, and DSECTs have been added in association with the new optional functions and enhancements listed in “Implementing New Optional Functions and Enhancements” on page 165. The additional changed and new macros, vectors, and DSECTs do not require changes to your application programs unless you use the new optional functions or enhancements. For information about these additional changed and new macros, vectors, and DSECTs, see the appropriate *VTAM Release Guides*.

For complete information about all changed and new macros, vectors, and DSECTs, refer to *VTAM Programming*, the *VTAM Guide to Programming for LU 6.2* and the *VTAM Programming Reference for LU 6.2*.

Changes to Installation-Wide Exit Routines

This section shows changes to installation-wide exit routines that could affect migration to VTAM V4R4. In addition to these changes, other changes have been made, and new installation-wide exit routines have been added in association with the new optional functions and enhancements listed in “Implementing New Optional Functions and Enhancements” on page 165. For information about these

additional changes and new installation-wide exit routines, see the appropriate *VTAM Release Guides*.

For complete information about all changed and new installation-wide exit routines, refer to *VTAM Customization*.

If you are installing VTAM V4R4 from the ServerPac installation method for OS/390, you must reinstall any installation-wide exit routines residing in SYS1.LPALIB.

If you are using OS/390, you should consider using the LPALIB concatenation facilities of OS/390, instead of placing your exit routines in SYS1.LPALIB.

Directory Services Management Exit (DSME) Routine

A new indicator has been added to the exit options parameter list. This indicator indicates whether APPN multiple network connectivity (also known as border node support) is supported. For more information, refer to “Directory Services Management Exit Routine” in *VTAM Customization*.

Session Management Exit (SME) Routine

New information is provided on the PLU and SLU resource identifier control (RIC) vectors. This information follows all existing information in the PLU and SLU resource identifier vectors and is provided to the session management exit routine in all cases, even if APPN multiple-network connectivity is not supported. For more information, refer to “Session Management Exit Routine” in *VTAM Customization*.

Changes to Control Blocks

If you use any of the control blocks documented in *VTAM Data Areas for MVS/ESA Volume 1*, refer to that book to determine if changes have been made to those control blocks.

Implementing New Optional Functions and Enhancements

After you have successfully installed and upgraded VTAM V4R1 to VTAM V4R4, you might want to use some of the new optional functions and enhancements available in VTAM V4R4. Because you are upgrading from VTAM V4R1, VTAM V4R4 also includes functions and enhancements introduced in VTAM V4R3 and V4R2.

This section lists the functions and enhancements introduced in VTAM V4R4, V4R3, and V4R2. You can find comprehensive overviews of these functions and enhancements in the appropriate *VTAM Release Guides*.

Functions and Enhancements Introduced in VTAM V4R4

The following new optional functions and enhancements are introduced in VTAM V4R4. For comprehensive overviews of these new functions and enhancements, refer to the *VTAM Release Guide* for VTAM V4R4.

Advanced Peer-to-Peer Networking (APPN) Enhancements: The following functions enhance VTAM's support of advanced peer-to-peer networking.

- Asynchronous transfer mode support
- Enhanced topology database garbage collection

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- Locate congestion control
- QUIESCE function for MODIFY TOPO command

High Performance Routing (HPR) Enhancements: The following functions enhance the the High Performance Routing capabilities.

- High performance routing (HPR)

LU 6.2 Application Program Interface (API) Enhancements: The following functions enhance the VTAM LU 6.2 application program interface.

- APPCCMD macroinstruction enhancements
- APPC enhancements for the Distributed Computing Environment
- Buffer tracing enhancements for LU 6.2 conversations
- Conversations between programs located on the same LU
- Deleting unusable entries from the LU-mode table
- Extended security sense codes
- High performance data transfer for APPC
- Password substitution
- STOKEN for workload balancing
- Session instance identifier enhancements

Network Dynamics: The following functions enhance dynamic access to a network. These functions can eliminate or reduce the predefinition required for resources in your network. In addition, these functions provide increased end user availability and automatic backup.

- Dynamic definition of VTAM-to-VTAM connections
- Multiple dynamic switched major nodes

Operator Interface Enhancements: The following functions enhance VTAM's operator interface.

- DISPLAY SRCHINFO command
- DISPLAY VTAMSTOR command
- Displaying active resources with sessions
- Limiting output from the DISPLAY STORUSE command
- MODIFY EXIT command enhancement

Performance Enhancements: The following functions provide enhancements to VTAM performance.

- Asynchronous transfer mode support
- Enhanced adaptive pacing support
- High performance data transfer for APPC
- New component recovery area (CRA) buffer pools
- High performance data transfer MPC
- Verifying external communication adapter connection reliability

- Verifying communication or cluster controller channel connections

Problem Diagnosis: The following functions are enhancements to VTAM's problem determination and isolation capabilities.

- Buffer tracing enhancements for LU 6.2 conversations
- DISPLAY SRCHINFO command
- DISPLAY VTAMSTOR command
- Elimination of duplicate VTAM dumps
- IST605I message group enhancement
- Tracing resource states with start list
- Unformatted system services (USS) message text enhancements
- XID message group enhancement

Security Enhancements: The following features enhance VTAM's security functions.

- Enhanced cryptographic authentication
- Message authentication support and cryptographic enhancements

Sysplex Functions: The following functions enhance VTAM's support of sysplex environments.

- Central directory server enhancement for generic resources
- Dynamic definition of VTAM-to-VTAM connections
- Generic resources enhancements
- Multinode persistent sessions
- TSO generic resources

System and Configuration Management: The following functions enhance your ability to set up, manage, and control the resources in your network.

- Applying VTAM maintenance without re-IPLing MVS
- Asynchronous transfer mode support
- Choice of communication network management (CNM) routing tables
- Delayed disconnection when no LU-LU session is established
- Dynamic reconfiguration of switched resources
- Filtering initiation failures from Session Awareness (SAW) data
- Interpret table enhancement
- High performance data transfer MPC
- Reset LU enhancement
- Search retry after dial-out failure
- Support for OS/390 concatenation
- OS/390 TCP/IP OpenEdition* DLC support

Usability Enhancements The following functions enhance VTAM's usability.

- DISPLAY SRCHINFO command
- DISPLAY VTAMSTOR command
- Dynamic reconfiguration of switched resources
- Mini VIT and FFST changes
- XID message group enhancement
- XNETALS start option enhancements

Functions and Enhancements Introduced in VTAM V4R3

The following new optional functions and enhancements were introduced in VTAM V4R3. For comprehensive overviews of these new functions and enhancements, refer to the *VTAM Release Guide* for VTAM V4R3.

Advanced Peer-to-Peer Networking (APPN) Enhancements: The following functions enhance VTAM's support of advanced peer-to-peer networking.

- Central directory server selection
- High performance routing (HPR)
- Host-to-host channel dynamics
- Logon mode and class-of-service (COS) enhancements
- Operator-initiated search
- Resource registration enhancements
- Resource verification reduction for LU 6.2 application programs

LU 6.2 Application Program Interface (API) Enhancements: The following functions enhance the VTAM LU 6.2 application program interface.

- Limited resource for LU 6.2 network management flows
- Name mismatch detection
- Preallocation of a conversation
- Problem diagnosis enhancements

Network Dynamics: The following functions enhance dynamic access to a network. These functions can eliminate or reduce the predefinition required for resources in your network. In addition, these functions provide increased end user availability and automatic backup.

- Application-supplied operands for dial or token-ring connections enhancement
- Definition of spare SDLC lines
- Dynamic definition of VTAM application programs
- Enabling dynamic definition of cross-domain resources with the CDRDYN start option
- Generic resources enhancement
- Session Enhancements for LEN CP Nodes
- Using MVS system symbols in VTAM

Operator Interface Enhancements: The following functions enhance VTAM's operator interface.

- Additional enhancements for limiting of display output by session state
- Additional unformatted system services (USS) message text enhancements
- APING command support
- Display of a maximum number of resources enhancement
- Display of cross-domain resources in a particular network enhancement
- Display of subordinate PUs by major node type
- Display of the current session awareness (SAW) data filter
- Display of VTAM start options enhancements
- DISPLAY RSCLIST command enhancements
- DISPLAY TOPO command enhancements
- Multiple resource names on the DISPLAY STATIONS command
- Network-qualified names enhancements for the DISPLAY ID command
- Resource type identifier enhancements in VTAM messages
- User-defined message flooding prevention table enhancements
- Wildcard resource names enhancements

Performance Enhancements: The following functions provide enhancements to VTAM performance.

- Specifying a symbol resolution table (SRT) size for a particular network

Problem Diagnosis: The following functions are enhancements to VTAM's problem determination and isolation capabilities.

- Tracing resource states
- Tracing session management exit routine functions

Record Application Program Interface (API) Enhancements: The following functions enhance VTAM's record application program interface.

- Vector list processing enhancements

System and Configuration Management: The following functions enhance your ability to set up, manage, and control the resources in your network.

- Automatic restart manager
- Performance monitor interface
- Support for frame relay networks over token-ring connections
- Using CMIP services and the VTAM topology agent
- VTAM support for additional NCP PU operands

Functions and Enhancements Introduced in VTAM V4R2

The following new optional functions and enhancements were introduced in VTAM V4R2. For comprehensive overviews of these new functions and enhancements, refer to the *VTAM Release Guide* for VTAM V4R2.

Advanced Peer-to-Peer Networking (APPN) Enhancements: The following functions enhance VTAM's support of advanced peer-to-peer networking.

- Connection network
- Host-to-Host channel
- Multiple network connectivity

LU 6.2 Application Program Interface (API) Enhancements: The following functions enhance the VTAM LU 6.2 application program interface.

- LU 6.2 conversation status
- LU 6.2 deallocate request processing
- LU 6.2 full-duplex support
- LU 6.2 receive immediate

Network Dynamics: The following functions enable dynamic access to a network. These functions can eliminate or reduce the predefinition required for resources in your network. In addition, these functions provide increased end user availability and automatic backup.

- Controlling the use of logon mode table entry, ISTCOSDF
- Expanded dial information
- Generic resources

Operator Interface Enhancements: The following functions enhance VTAM's operator interface.

- Display of a maximum number of resources
- Display of NCP lines and PUs by ownership
- Display of VTAM storage use, enhancements
- DISPLAY RSCLIST command
- Inactivating LUs in a pending-notify state
- Limiting of display output by session state, enhancements
- User-defined message-flooding prevention table
- Wildcard resource names

Performance Enhancements: The following functions provide enhancements to VTAM performance.

- Authorized transmission priority for LEN connections
- Automatic logon enhancements
- Data compression enhancements
- Delayed disconnection
- Eliminating and reducing searches for unavailable resources

- Session limits for switched resources

Problem Diagnosis: The following functions are enhancements to VTAM's problem determination and isolation capabilities.

- Additional VTAM dump analysis tool enhancements
- Communication network management (CNM) trace

Record Application Program Interface (API) Enhancements: The following functions enhance VTAM's record application program interface.

- Functional recovery routine (FRR) stack preservation

System and Configuration Management: The following functions enhance your ability to set up, manage, and control the resources in your network.

- Adjacent SSCP lists for cross-domain resources
- Dependent LU server
- Expanded addressing pool
- Four-digit device addressing
- Specifying search order for locating switched PUs
- Virtual-route-based transmission groups

Chapter 5. Upgrading VTAM V3R4.2 to VTAM V4R4

This chapter helps you upgrade VTAM V3R4.2 to VTAM V4R4.

If you are migrating to APPN: VTAM includes support for Advanced Peer-to-Peer Networking (APPN), an extension to IBM's Systems Network Architecture (SNA). This book does not explain how to upgrade an existing VTAM subarea node to an APPN node. Such an upgrade is optional; you can install VTAM V4R4 and operate it as a subarea node. IBM recommends that you install VTAM V4R4 and get it operating in a test environment at your current functional level before using any of the new optional functions or enhancements in VTAM V4R4. For information about upgrading a VTAM subarea node to an APPN node, refer to *Planning for Integrated Networks* and to Chapter 15, "Implementing a Combined APPN and Subarea Network" in the *VTAM Network Implementation Guide*.

Planning to Upgrade VTAM V3R4.2 to VTAM V4R4

This section helps you prepare to upgrade VTAM V3R4.2 to VTAM V4R4. It describes the:

- Upward and downward compatibility of VTAM V4R4
- New functions and enhancements performed without changes to user interfaces
- Storage required to install and operate VTAM V4R4
- Software and hardware requirements for VTAM V4R4
- Target and distribution libraries required to install VTAM V4R4.

Upward Compatibility

Upward compatibility is the ability of VTAM V3R4.2 functions and user interfaces to work in VTAM V4R4. With the exception of the function provided by the Open Systems Interconnect (OSI) Remote Programming Interface Feature (feature number 5860, 5861, or 5862), all VTAM V3R4.2 functions are included in VTAM V4R4. The function provided by the Multiprotocol Transport Feature (MPTF) is now provided by the VTAM AnyNet/MVS function.

In general, you do not have to make any changes to your VTAM V3R4.2 user interfaces to continue to use V3R4.2 functions in VTAM V4R4. Following are conditions under which you might have to make changes and the user interfaces that you might have to change:

- If you modified the ISTRACON module in VTAM V3R4.2
- If you are not using encryption
- If you have coded a user-defined major node ISTTRL
- If you accept the default value for the CDRDYN operand or coded CDRDYN=NO
- If you are using authorized transmission priority for low-entry networking (LEN) connections
- If you BIND user data field lengths greater than 65 bytes
- If you have application programs that use the network-qualified address pair control vector X'15', which is appended to the CINIT request unit passed to a LOGON exit routine
- If you use first failure data capture

- If you use resource owner verification for sessions that will now traverse an APPN node
- If you use autologon sessions that will now traverse an APPN node
- If you use interactive problem control system (IPCS) command lists (CLISTs) to format and analyze VTAM dump data
- If you have automated operation procedures
- If you use unformatted system services (USS) or VTAM messages that exceed 251 characters
- If you use the configuration restart facility
- If you have modified IBM-supplied default user-definable tables and user-modifiable modules.

If you modified the ISTRACON module in VTAM V3R4.2

If you modified the ISTRACON module in VTAM V3R4.2, be aware that ISTRACON, the replaceable constants module, is no longer part of VTAM in VTAM V4R4. Constants are now defined with start options. You must now specify your modified ISTRACON field values on the corresponding start options. See “Deleted User-Modifiable Modules” on page 196 for more information.

If you are not using encryption

The default value for the ENCRYPTN start option is now ENCRYPTN=YES. This default will produce similar results if ENCRYPTN=YES was specified in a previous release. VTAM V4R4 checks each time a session is requested to see if encryption is available. In pre-VTAM V4R4, this check was made only once during VTAM initialization. If encryption is not available, a message is issued to notify the operator. You should code ENCRYPTN=NO if you do not intend to utilize the ENCRYPTION function. This will reduce the path length during session initialization and reduce the messages issued to the operators console and log.

If you have coded a user-defined major node ISTTRL

If you have coded a user-defined major node ISTTRL, you must rename it. You should avoid using the prefix IST for user-defined major node names. See the *VTAM Resource Definition Reference* for more information.

If you accept the default value for the CDRDYN operand or coded CDRDYN=NO

If you are accepting the default value for the CDRDYN operand in VTAM V4R1 or if you have coded CDRDYN=NO, be aware that when you upgrade to VTAM V4R4, the host cross-domain resource manager is now authorized to dynamically define CDRSC representations. If you do not want the host cross-domain resource manager to have this authorization in VTAM V4R4, code CDRDYN=NO on the new CDRDYN start option. See Table 42 on page 192 for more information.

If you are using authorized transmission priority for low-entry networking (LEN) connections

If you are using authorized transmission priority for low-entry networking (LEN) connections, you might have to change your start option list (ATCSTR00, ATCSTRyy). For more information, see “Changes to Start Options” on page 190.

If you BIND user data field lengths greater than 65 bytes

If you BIND user data field lengths greater than 65 bytes, you might have to change your application programs. For more information see “Changes to VTAM Application Programming Interface” on page 229.

If you have application programs

You might have to change your application programs if you use the network-qualified address pair control vector X'15', which is appended to the CINIT request unit passed to a LOGON exit routine. For more information, see “Expanded Addressing Pool” on page 179.

If you use first failure data capture

If you use first failure data capture you might need to change your start option list (ATCSTR00, ATCSTRyy) and your operating procedures. For more information, see “Changes to Start Options” on page 190, “Changes to Messages” on page 224, and “Changes to Commands” on page 199.

If you use resource owner verification for sessions that will now traverse an APPN node

If you use resource owner verification for sessions that will now traverse an APPN node you might have to change your system definitions in VTAMLST. For more information, see “Changes to Definition Statements” on page 192.

If you use autologon sessions that will now traverse an APPN node

If you use autologon sessions that will now traverse an APPN node you might have to change your operating procedures. For more information, see “Changes to Commands” on page 199.

If you use interactive problem control system (IPCS) command lists (CLISTs) to format and analyze VTAM dump data

If you use interactive problem control system (IPCS) command lists (CLISTs) to format and analyze VTAM dump data you might have to change your operating procedures. For more information, see “Changes to IPCS Service Aids for Formatting and Analyzing VTAM Dump Data” on page 230.

If you have automated operation procedures

If you use automated operating procedures in VTAM V3R4.2, you might need to change your operating procedures in VTAM V4R4. Refer to “Changes to Messages” on page 224, “Message Processing Enhancements” on page 181, “Four-Digit Addresses for Channel-Attached Devices” on page 178, “Changes to Commands” on page 199, and “Changes to Command Output” on page 205, for more information.

Note: If you do not use automated operation procedures, you still might have to make changes to your manual operating procedures.

If you use unformatted system services (USS) or VTAM messages that exceed 251 characters

If you use unformatted system services (USS) or have VTAM messages that exceed 251 characters in VTAM V3R4.2, you might have to change your modified IBM-supplied USS tables (renamed or copied) and your user-written USS tables in

VTAM V4R4. For more information, see “Changes to USS Table Macros” on page 198.

If you use the configuration restart facility

If you use the configuration restart facility in VTAM V3R4.2, you might have to change your configuration restart data sets in VTAM V4R4. For more information, see “Changed Data Sets” on page 189.

If you have modified IBM-supplied default user-definable tables and user-modifiable modules

If you use modified IBM-supplied default user-definable tables and user-modifiable modules you might need to change your modified tables or modified modules (renamed or copied). Refer to “Changes to IBM-Supplied Default User-Definable Tables and User-Modifiable Modules” on page 195 and “Changes to Messages” on page 224 for more information.

New Functions and Enhancements Performed without Changes to User Interfaces

Although they do not necessarily require that you change any user interfaces, the following new functions and enhancements in VTAM V4R4 might cause you to see slightly different results in VTAM V4R4 than in VTAM V3R4.2. You can find comprehensive overviews of these functions in the appropriate *VTAM Release Guides*.

- Applying VTAM maintenance without re-IPLing MVS
- Choice of communication network management (CNM) routing tables
- BUFF entry for 8K external buffer.
- Verifying SNA channel-to-channel reliability
- Name mismatch detection for LU 6.2 sessions
- Automatic restart manager (ARM) support
- Start processing enhancement
- Logical maintenance interface (LMI) PU deactivation enhancement
- Four-digit addresses for channel-attached devices
- Expanded addressing pool
- Session setup enhancements
- Session routing enhancements
- LU 6.2 session handling enhancements
- Command processing enhancements and changes
- Message processing enhancements
- Message routing enhancements
- Start option processing enhancements.

In addition, you will see new and changed messages appearing in response to certain VTAM network operator commands. For information about these new and changed messages, see “Changes to Command Output” on page 205 and “Changes to Messages” on page 224.

Applying VTAM maintenance without re-IPLing MVS

In pre-V4R4 releases, some VTAM modules resided in the MVS data set SYS1.LPALIB (LPALIB). Additional VTAM modules resided in the MVS data set SYS1.NUCLEUS (NUCLEUS). To apply maintenance to any of the modules in LPALIB or NUCLEUS, you had to re-initialize MVS.

In VTAM V4R4, most of the modules that reside in LPALIB and NUCLEUS in pre-V4R4 releases now reside in a new MVS data set called SYS1.SISTCLIB (SISTCLIB). During VTAM initialization, MVS now loads these modules into common service area (CSA) and extended common service area (ECSA) storage. Maintenance may be applied to these modules without requiring an MVS IPL. However, you must still restart VTAM after applying maintenance.

Note: Some modules associated with TSO/VTAM and VTAM Common Management Information Protocol (CMIP) services remain in LPALIB and continue to be loaded by MVS into PLPA/EPLPA storage. Some new modules introduced in VTAM V4R4—those associated with Common Storage Manager (CSM)—reside in LPALIB and are loaded by MVS into PLPA/EPLPA storage. You must re-IPL MVS and restart VTAM to apply maintenance to the modules that still reside in LPALIB. When it is necessary to re-IPL MVS and restart VTAM to apply maintenance, the HOLDDATA instructions (HOLD data) that accompany PTFs instruct you to do so.

Choice of communication network management (CNM) routing tables

Prior to VTAM V4R4, if you coded a supplemental communication network management (CNM) routing table, it had to be named ISTMGC00. Whenever VTAM received an unsolicited request unit, VTAM used the ISTMGC00 table (if it existed) to route the request. If ISTMGC00 did not exist, the IBM-supplied default table, ISTMGC01, was used. No message was provided if ISTMGC00 was not found.

In VTAM V4R4, if you do not choose to code a new CNM routing table, VTAM continues to work as described above. If you want to code a CNM routing table, it is recommended that you do not name it ISTMGC00 to ensure a message will be produced if it is not found.

BUFF entry for 8K external buffer

BFRNUM is a new START or MODIFY command option used with TRACE,TYPE=VTAM,MODE=EXT. It specifies the number of 8K external trace buffers the VTAM internal trace is to allocate and use for generalized trace facility (GTF) processing. Integers 0 or 2–50 can be specified. If you omit this option, the default is 2. Two times the number of processors in the central processing unit (CPU) should ensure that enough buffers are available. If you use external VIT tracing often, BFRNUM can be increased. If you do not use external VIT tracing, you can specify BFRNUM=0 to receive the pre-VTAM V4R4 method of writing up to 256 bytes in one GTF record.

Verifying SNA Channel-to-Channel Reliability

In VTAM V3R4.2, a channel failure on an SNA channel-to-channel connection is not detected until I/O traffic is sent across the channel. If you maintain an SNA channel-to-channel connection as a backup between two host processors, the channel might sit idle and a failure might go undetected until I/O traffic is sent across it.

In VTAM V4R4, a small amount of I/O traffic is automatically sent across the channel at 1-minute intervals to verify the availability of the channel. If a failure is detected, VTAM responds the same way it does to any channel failure detected on an SNA channel-to-channel connection when I/O traffic is sent. VTAM's response is dependent on the values coded on the MIHTMOUT start option, and on the

REPLYTO operand on the GROUP definition statement and the MIH operand on the LINE definition statement in the channel-attachment (CTCA) major node.

Name Mismatch Detection for LU 6.2 Sessions

In large, complex networks using alias name facilities to manage duplicate resource names, errors can be caused by the way name translations occur. In VTAM V3R4.2, these errors can sometimes go undetected by VTAM, resulting in inappropriate session establishment. VTAM V4R4 includes enhancements that result in such errors being more likely to be detected.

For example, because of name translation errors, two session initiation requests intended for the same destination can result in attempted sessions with two different targets. In VTAM V3R4.2, both of these sessions are established, when only one session should be established. In VTAM V4R4, only the first session request is honored. The second session fails.

If you experience session establishment failures in VTAM V4R4, while you do not experience them under the same conditions in VTAM V3R4.2, you need to examine alias name facilities throughout the network to determine the cause of the failures. VTAM V4R4 provides new messages and codes and a new vector to assist you in this problem determination.

Automatic Restart Manager (ARM) Support

If VTAM V4R4 is operating with MVS/ESA V5R2 and MVS/ESA is defined to provide automatic restart support for VTAM, VTAM V4R4 is automatically restarted following an abnormal termination.

Start Processing Enhancement

In VTAM V3R4.2, during startup, VTAM performs open and close processing on the VTAMLST data set each time it activates a major node.

In VTAM V4R4, VTAM no longer performs open and close processing on the VTAMLST data set each time it activates a major node. This results in less time for VTAM startup to complete.

Logical Maintenance Interface (LMI) PU Deactivation Enhancement

In VTAM V3R4.2, you cannot deactivate an LMI PU on a physical line if frame-relay switching equipment (FRSE) PUs on the same line are still active without causing VTAM and NCP to get out of synch. The LMI PU becomes inactive to VTAM, but remains active to NCP.

In VTAM V4R4, VTAM does not deactivate an LMI PU on a physical line until all FRSE PUs on the same line are inactive.

Four-Digit Addresses for Channel-Attached Devices

VTAM V4R4 allows channel device addresses greater than X'FFF' by supporting four-digit device addresses (up to X'FFFF'). The address you specify on the following operands can be a 3-digit or 4-digit hexadecimal device address:

- ADDRESS operand on the LINE definition statement in the channel-attachment major node
- CUADDR operand on the:

- LOCAL definition statement in the local non-SNA major node
- PCCU definition statement in the NCP major node
- PU definition statement in the local SNA major node
- PORT definition statement in the external communication adapter major node
- DUMPSTA and LOADSTA operands on the PCCU definition statement in the NCP major node
- READ and WRITE operands on the LINE definition statement in the channel-attachment major node and in a new transport resource list major node.

This hexadecimal number must match the value assigned to the device during operating system I/O definition. If you specify only 3 digits, VTAM pads the address with zeros on the left.

Four-digit channel device addressing relieves the current limitation of 3-digit numbers that restricts specification of channel-attached devices to 4096. You can now specify as many as 65536 channel-attached devices.

As a result of 4-digit channel device addressing, addresses for channel-attached devices now appear in some VTAM messages and VTAM internal trace (VIT) entries as 4-digit addresses. This could affect automated operation procedures.

The messages in which the channel device address now appears as a 4-digit address are:

```
IST077I SIO = %%% CUA = %%%%%%%%%%
IST089I %%% TYPE=%%%%%%%%%% %%%%%%%%%%
IST751I SIO = %%%, ERROR CT = %%%, CUA = %%%
IST958I INBND=%%% OUTBND=%%% PENDING=%%% ATTN=%%% CUA=%%%
IST1021I MEDIUM=%%%,ADAPNO=%%%,CUA=%%%,SNA SAP=%%%
IST1023E START I/O TIMEOUT OCCURRED FOR CUA=%%%
```

The VIT entries in which the channel device address now appears as a 4-digit address are:

- ATT
- ERPI or ERPL
- HIOB, HIOH, HIOX
- INTI, INTL, INTX
- LCSL, LCSP, LCSS, LCSX
- SIOI, SIOL, SIOX
- SIO2.

Expanded Addressing Pool

In VTAM V3R4.2, an element address is 15 bits in length, allowing VTAM to assign a maximum number of 32K element addresses for its subarea. In VTAM V4R4, the element address is increased to 16 bits, allowing a maximum number of 64K element addresses for each subarea. VTAM V4R4 can additionally assign up to 16384K element addresses for its subarea.

Note: This change is only for VTAM. NCP, while it can accommodate a larger element address, can still assign only 32K element addresses for its subarea.

If you choose to let VTAM assign up to 16348K element addresses for its subarea (by specifying ENHADDR=YES in your start option list), you might experience migration impacts to application programs that use the network-qualified address pair control vector X'15'. This vector is appended to the CINIT request unit that is passed to a LOGON exit routine.

In VTAM V3R4.2, the subarea number is contained in the first four bytes of the network address fields in control vector X'15', with the first two bytes always being 0. In VTAM V4R4, the first two bytes might not be 0; they can now contain an index value, allowing VTAM to assign more than 64K element addresses for its subarea. The subarea number is now contained in only the second two bytes of the network address fields. Therefore, if your application program is looking at the entire first four bytes of the network address fields for the subarea number, you need to change your application program to look at only the second two bytes.

Session Setup Enhancements

In a multiple-network environment, when a session initiation request leaves the first gateway, VTAM V3R4.2 assumes that the network identifier of the adjacent system services control point (SSCP) is the network identifier of the destination logical unit (LU) and sends a CDINIT request using this network identifier. If the assumed network identifier is incorrect, VTAM resends the CDINIT request using the network identifier of the next adjacent SSCP and continues doing so until the correct network identifier is found or its list of adjacent SSCPs is exhausted. This is often referred to as NETID assumption.

VTAM V4R4 does not use NETID assumption. Instead, it sends a directory search list (DSRLST) request to determine the network identifier of the destination LU before sending a CDINIT request. This results in:

- Reduced search time
- Broader scope of search
- More efficient processing
- Elimination of error messages that are not valid
- More frequent session setups
- Queuing of session requests.

Session Routing Enhancements

In VTAM V3R4.2, when a search or session request through a particular SSCP fails (for example, because there are no other SSCPs to which the request can be routed), any cross-domain resource information the SSCP has is ignored by the originating SSCP. With VTAM V4R4, the cross-domain resource information is returned to the originating SSCP with name characteristics that are used by the originating SSCP to continue the search for the specified target.

LU 6.2 Session Handling Enhancements

Session-related application program interface (API) requests for LU 6.2 sessions are processed faster in VTAM V4R4 and with less chance for error. This results in improved performance and reliability.

Command Processing Enhancements and Changes

In VTAM V3R4.2, when an operator enters a configuration command (such as a VARY command) and processing is taking place on the work queues, VTAM waits until that processing is complete before acting on the command. In VTAM V4R4, priority is given to the command; it goes to the front of the work queue when it is entered. This results in improved performance of configuration command processing.

Message Processing Enhancements

Enhancements have been made in VTAM V4R4 to the way messages are routed and changes have been made to the way partial groups of messages are handled.

Message Routing Enhancements: In VTAM V4R4, the message format of all messages is determined by the destination specified in the USS table.

In VTAM V3R4.2, if the PPOLOG start option specifies YES, VTAM commands and messages issued by the system console are also sent to the primary program operator (PPO). The commands and messages sent to the PPO are formatted for the system console. In VTAM V4R4, the commands and messages sent to the PPO are formatted for the PPO.

Percolated messages are also sent to the PPO in VTAM V3R4.2. The percolated messages are formatted for the system console or a secondary program operator (SPO), depending on the originator of the command. In VTAM V4R4, the percolated messages sent to the PPO are formatted for the PPO, regardless of the originator of the command. (For a list of messages that can be percolated, refer to “Message Rerouting and Percolation” in *VTAM Messages*.)

As a result of these changes, if you have a program operator that parses messages by column, you might need to change your automated operation procedures. Whether your automated operation procedures are affected depends on which USS table is specified for your system console and each program operator application (POA), and whether those USS tables define messages with or without blank suppression.

Message format differences are summarized in Table 35.

Table 35. Message Format Differences

	IBM-Supplied Default USS Table (ISTINCNO)	IBM-Supplied Default USS Table (ISTCFCMM)
Formats messages for:	System console	POA
Blank suppression available?	Yes	No
Number of blanks after message ID:	1	2

Note: ISTINCNO can be used for the POA if a message is not found in ISTCFCMM. User-defined tables can also be associated with the system console or POAs. For more information about the order of search for a message, refer to “Order of USS Table Use” in the *VTAM Resource Definition Reference*.

Following is an example of how messages appear in VTAM V3R4.2 and in VTAM V4R4.

- VTAM V3R4.2 Example

In VTAM V3R4.2, if you are using the default USS tables for your system console and POAs and issue a MODIFY USERVAR command from the system console, the PPO will receive a percolated copy of message IST825I in the following format:

```
IST825I USERVAR DEFINED - NAME = NAME1, VALUE = APPL1
```

This message is identical to the original message built for the system console according to the IBM-supplied default table, ISTINCNO. It has extra blanks suppressed and has one blank following the message ID (IST825I).

If the MODIFY USERVAR command had been issued from an SPO, the original message IST825I for the SPO and the percolated copy of the message for the PPO would have been formatted according to the IBM-supplied default USS table, ISTCFCMM. It would have two blanks following the message ID. Extra blanks would not be suppressed:

```
IST825I  USERVAR DEFINED - NAME = NAME1  , VALUE = APPL1
```

If the PPO was not available, an exact copy would have been sent to the system console.

- VTAM V4R4 Example

In VTAM V4R4, if you are using the default USS tables for your system console and POAs and issue a MODIFY USERVAR command from the system console, the system console will receive message IST825I formatted according to ISTINCNO. Extra blanks will be suppressed and one blank will follow the message ID:

```
IST825I USERVAR DEFINED - NAME = NAME1, VALUE = APPL1
```

The PPO will receive the percolated message IST825I formatted according to ISTCFCMM. Two blanks will follow the message ID. Extra blanks will not be suppressed:

```
IST825I  USERVAR DEFINED - NAME = NAME1  , VALUE = APPL1
```

Changes to the Way Partial Groups of Messages Are Handled: In addition, partial groups of messages are no longer sent to a program operator when that program operator's message queue limit (specified on the POAQLIM operand on the APPL definition statement that defines the program operator) is reached. Instead, if the group is solicited, the entire group is discarded. If the group is unsolicited, the entire group is rerouted to the system console.

Start Option Processing Enhancements

VTAM V4R4 responds differently from VTAM V3R4.2 when it cannot find the user-defined start option list, ATCSTR00. In VTAM V3R4.2, VTAM issues a warning message and start processing continues using internal default values. In VTAM V4R4, VTAM halts start processing and issues a prompting message giving you a choice of actions. You must respond to the prompting message for processing to continue. If you prefer not to use ATCSTR00 and you do not want to get the prompting message, create an empty ATCSTR00 start option list (containing only comments) so that start processing will not be interrupted. The prompting message gives you the following choice of actions:

- Continue start processing using internal default values.
- Specify a different start option list, ATCSTRyy, that VTAM uses in place of ATCSTR00.

- Halt VTAM, which cancels the start attempt. You can then make the ATCSTR00 start option list available and try again.

Errors found in a start option list are also handled differently in VTAM V4R4. In VTAM V3R4.2, VTAM prompts you to correct and reenter any start options that are specified incorrectly. In VTAM V4R4, you have several choices:

- Continue to process the start option list, and then reenter the correct start options.
- Use a different ATCSTR yy start option list, where yy specifies the identifier of the start option list you want to use. This cancels the start attempt and restarts processing with the specified start option list.
- Halt VTAM, which cancels the start attempt. You can then correct and reenter the start options and try again.

Note: You can also use a new LISTBKUP start option in VTAM V4R4 to choose how VTAM will react if it encounters an error while processing a start option list. With the LISTBKUP start option, you can override the new processing described above and specify that you want VTAM to handle start option errors the same way it does in VTAM V3R4.2. The LISTBKUP start option also allows you to specify a different start option list to be used when errors are found in the original start option list. It also allows you to specify that the options in error be set to internal default values. For more information about the LISTBKUP start option, refer to “LISTBKUP” in the *VTAM Resource Definition Reference*.

Downward Compatibility

Downward compatibility is the ability of VTAM V4R4 to communicate with and work with prior versions and releases of VTAM and other products in your network. If you have pre-VTAM V4R4 releases of VTAM and other products in your network with which VTAM V4R4 will communicate, you might need to apply program temporary fixes (PTFs) to those versions, releases, and products to ensure that they are compatible. Refer to the *VTAM Program Directory* for VTAM V4R4 and the preventive service planning (PSP) bucket for a complete list of the IBM products to which you might need to apply PTFs, the conditions under which you might need to apply the PTFs, and the PTF numbers. You can access the PSP bucket through the following sources:

- Information Access
- SoftwareXcel Extended
- IBMLink (ServiceLink).

If you do not have access to these sources, contact the IBM Support Center at 1-800-237-5511 (U.S. and Canada) to determine which PTFs you need to apply.

Storage Requirements

In general, the storage required to install and operate VTAM V4R4 has increased, regardless of whether you use the new optional functions or enhancements introduced in VTAM V4R4. Particularly, the storage needed for CSA/ECSA has increased due to the VTAM V4R4 maintenance enhancements. You will need to define a sufficient amount of CSA/ECSA storage on the CSA parameter in the IEASYSxx parmlib member.

See Appendix A, “Estimating Storage” to determine the approximate storage required to install and operate VTAM V4R4 in your system.

Data Compression Impacts: You will see an increase in MVS data space storage usage if you are currently using the data compression function that was introduced in VTAM V3R4.1, are running under MVS/ESA V5R1, or MVS/ESA V5R1 with the Compression and Expansion Services program temporary fix (PTF) UY91011, and have VTAM running in one of the following:

- IBM ES/9000 9021 711-based Model Processor
- IBM ES/9000 9121 511-based Model Processor.

Because Appendix A, “Estimating Storage” does not calculate storage requirements for data spaces, the expected increase in MVS data space storage is shown in Table 36.

Table 36. Increase in MVS Data Space Storage for Outbound Flow per Half Session

Data Compression Levels		
Level 2	Level 3	Level 4
8K + H	16K + H	60K + H
Worst case: 74K	Worst case: 82K	Worst case: 126K

Notes:

1. Storage increase does not include the amount of MVS data space needed to provide V3R4.1-level data compression.
2. “H” is determined by taking the value specified on the RUSIZES operand on the MODEENT macro in the logon mode table and adding 8 bytes, then rounding that number to the next highest of the following values: 2K, 4K, 12K, 16K, 31.5K, 60K, or 66K.
3. K = 1024 bytes.

Refer to the *VTAM Resource Definition Reference* for information about specifying a value on the RUSIZES operand on the MODEENT macro in the logon mode table.

Conversation ID Table Impacts: In addition, the conversation ID (CID) table default size has doubled since VTAM V3R4.2. As a result, you might have to adjust the value you specify on the CINDXSIZ start option. In VTAM V3R4.2, this value is specified on the RACCITSZ constant in the ISTRACON module. If you need to adjust it, you must now specify it on the CINDXSIZ start option (see “Deleted User-Modifiable Modules” on page 196).

Software Requirements

VTAM V4R4 requires, at a minimum, MVS/ESA SP V4R3. VTAM V4R4 also operates with the later versions, releases, and modifications of this operating system unless otherwise stated. Prior versions, releases, and modifications are not supported.

Some VTAM V4R4 functions listed in “Implementing New Optional Functions and Enhancements” on page 232 require a later version or release of MVS/ESA. In addition, some VTAM V4R4 functions require other software products. You can find comprehensive overviews of these functions in the appropriate *VTAM Release Guides*.

Software Recommendations

VTAM V4R4 works with other products, such as TME 10 NetView for OS/390 and NCP, to provide network management functions and to provide certain communication functions, such as remote, channel-to-channel, local area network (LAN), X.25, and frame-relay communication. For the specific versions and releases of NCP and NetView that VTAM V4R4 works with, refer to the *VTAM Program Directory*.

First Failure Support Technology (FFST) is a key element in the VTAM problem diagnosis strategy. If you should encounter a VTAM problem and FFST is not available, problem diagnosis time can be dramatically lengthened. See the *First Failure Support Technology VM & MVS Operator's Guide* for more information.

The VTAM dump analysis enhancements and VIT analysis tool should be enabled to provide diagnosis help. See “Installing the VTAM Dump Analysis and the VIT Analysis Tools” on page 22 for more information.

Hardware Requirements

VTAM V4R4 runs in the same processors in which MVS/ESA SP V4R3 and later MVS/ESA versions and releases run. Some VTAM V4R4 functions listed in “Implementing New Optional Functions and Enhancements” on page 232 require certain models of processors. In addition, some VTAM V4R4 functions require other hardware products. You can find comprehensive overviews of these functions and enhancements in the appropriate *VTAM Release Guides*.

Data Set Requirements

New target and distribution libraries (data sets) are required to install VTAM V4R4. Storage requirements for some remaining libraries (those that are required to install VTAM V3R4.2 and are still required to install VTAM V4R4) have changed.

This section shows the storage requirements for the new and changed target and distribution libraries.

New Data Sets

Table 37 shows the new target and distribution libraries in VTAM V4R4 for which you must allocate storage.

Table 37 (Page 1 of 3). New Data Sets in VTAM V4R4

Target Library Name	Distribution Library Name	Contents
SYS1.MIGLIB Note: SYS1.MIGLIB is an IPCS data set that might already exist on your system. If you have already allocated SYS1.MIGLIB for the IPCS product, you must ensure there is enough space for VTAM modules.	SYS1.AOS26 Note: SYS1.AOS26 is not a new data set, but is changed because of VTAM's use of the SYS1.MIGLIB data set.	VTAM formatted dump routines for the Interactive Problem Control System (IPCS).

Table 37 (Page 2 of 3). New Data Sets in VTAM V4R4

Target Library Name	Distribution Library Name	Contents
SYS1.SAPPDAT2	SYS1.AAPPDAT2	APPZUMEM message member for the APPC application suite
SYS1.SAPPDAT4	SYS1.AAPPDAT4	ANAME database skeleton, APPNAMDF, for the APPC application suite
SYS1.SAPPMOD1	SYS1.AAPPMOD1	Application load modules for the APPC application suite
None	SYS1.AAPPMOD2	ANAME and AFTP application program interface load modules for the APPC application suite
SYS1.SAPPSAMP	SYS1.AAPPSAMP	Installation and execution samples for the APPC application suite
SYS1.SISTASGD	SYS1.AISTASGD	ASN.1 and GDMO syntax data sets for VTAM common management information Protocol (CMIP) Services
SYS1.SISTASN1	SYS1.AISTASN1	Contains two categories of data set members: <ul style="list-style-type: none"> • Abstract syntax notation 1 (ASN.1) definition data sets for VTAM CMIP services • ACYPRES: List of abstract syntax notation 1 (ASN.1) definition data sets for VTAM CMIP services.
SYS1.SISTCLI0	SYS1.AISTCLI0	Tables and REXX execs to support the interactive panel interface used to format and analyze VTAM dump and VTAM internal trace (VIT) data.
SYS1.SISTCLIB	SYS1.AOS26 Note: SYS1.AOS26 is not a new data set, but is changed because of the new SYS1.SISTCLIB data set and changes to the existing SYS1.LPALIB and SYS1.NUCLEUS data sets.	VTAM modules to be loaded into common service area and extended common service area (CSA/ECSA) storage.

Table 37 (Page 3 of 3). New Data Sets in VTAM V4R4

Target Library Name	Distribution Library Name	Contents
SYS1.SISTCMIP	SYS1.AISTCMIP	Directory definition file for VTAM CMIP services. The member name of the directory definition file is ACYDDF.
SYS1.SISTDAT3 SYS1.SISTMAC2 SYS1.SISTLMD1	SYS1.AISTDAT3 SYS1.AISTMAC2	These data sets are used by the AnyNet/MVS function which is included in VTAM V4R4.
SYS1.SISTDEBUG	None	Modules to support the interactive panel interface used to format and analyze VTAM dump and VIT data.
SYS1.SISTGDMO	SYS1.AISTGDMO	Compiled definitions for the ISO standard, <i>Guidelines for the Definition of Managed Objects (GDMO)</i> , for VTAM CMIP services. This is a partitioned data set consisting of one member, ACYGDMO.
SYS1.SISTMSG0	SYS1.AISTMSG0	Messages to support the interactive panel interface used to format and analyze VTAM dump and VIT data.
SYS1.SISTPNL0	SYS1.AISTPNL0	Compiled panels to support the interactive panel interface used to format and analyze VTAM dump and VIT data.
SYS1.SISTPNL1	SYS1.AISTPNL1	Tables and Interactive Structured Programming Facility (ISPF) help panels, which you must compile, to support the interactive panel interface used to format and analyze VTAM dump and VIT data.

Table 38 shows the approximate storage requirements for these libraries to help you plan for installing VTAM V4R4. For precise requirements, refer to the *VTAM Program Directory* for VTAM V4R4.

Table 38 (Page 1 of 2). Storage Requirements for New Data Sets in VTAM V4R4

Library or Data Set Name	DSORG	RECFM	LRECL	Block Size	Number of Blocks	Number of Directory Blocks
SYS1.AAPPDAT2	PO	VB	259	6475	19	1
SYS1.AAPPDAT4	PO	VB	213	213	10	1

Upgrading VTAM V3R4.2 to VTAM V4R4

Table 38 (Page 2 of 2). Storage Requirements for New Data Sets in VTAM V4R4

Library or Data Set Name	DSORG	RECFM	LRECL	Block Size	Number of Blocks	Number of Directory Blocks
SYS1.AAPPMOD1	PO	U	0	6144	345	19
SYS1.AAPPMOD2	PO	U	0	6144	266	13
SYS1.AAPPSAMP	PO	FB	80	8800	30	2
SYS1.AISTASGD	PO	VB	512	8192	316	4
SYS1.AISTASN1	PO	FB	1024	8192	48	3
SYS1.AISTCLI0	PO	F	80	8800	262	1
SYS1.AISTCMIP	PO	FB	80	8800	1	1
SYS1.AISTDAT3	PO	FB	80	3200	49	1
SYS1.AISTGDMO	PO	FB	500	8000	706	1
SYS1.AISTMAC2	PO	FB	80	8800	31	3
SYS1.AISTMSG0	PO	FB	80	8800	5	1
SYS1.AISTPNL0	PO	FB	80	8800	39	8
SYS1.AISTPNL1	PO	FB	80	8800	173	19
SYS1.MIGLIB	PO	U	0	6144	119	1
SYS1.SAPPDAT2	PO	VB	259	6475	19	1
SYS1.SAPPDAT4	PO	VB	213	213	10	1
SYS1.SAPPMOD1	PO	U	0	6144	902	2
SYS1.SAPPSAMP	PO	FB	80	8800	21	2
SYS1.SISTASGD	PO	VB	512	8192	316	4
SYS1.SISTASN1	PO	FB	1024	8192	48	3
SYS1.SISTCLI0	PO	FB	80	8800	263	1
SYS1.SISTCLIB	PO	U	0	6144	434	69
SYS1.SISTCMIP	PO	FB	80	8800	1	1
SYS1.SISTDAT3	PO	FB	80	3200	48	1
SYS1.SISTDEBUG	PO	U	0	6144	120	1
SYS1.SISTGDMO	PO	FB	500	8000	706	1
SYS1.SISTLMD1	PO	U	0	6144	50	1
SYS1.SISTMAC2	PO	FB	80	8800	31	3
SYS1.SISTMSG0	PO	FB	80	8800	5	1
SYS1.SISTPNL0	PO	FB	80	8800	41	8
SYS1.SISTPNL1	PO	FB	80	8800	173	19

If SYS1.SISTPNL0 is used as the target library when compiling the panels in SYS1.SISTPNL1, the basic allocation for SYS1.SISTPNL0 must be increased to 154 blocks of space and 60 directory blocks.

Deleted Data Sets

The following libraries are not required to install VTAM V4R4:

- SYS1.AISTDAT5
- SYS1.SISTDAT5.

Changed Data Sets

Table 39 shows the approximate storage requirements for target and distribution libraries that have changed in size or number of blocks since VTAM V3R4.2. The values in this table are approximate and are presented in this book to help you plan for installing VTAM V4R4. For precise requirements, refer to the *VTAM Program Directory* for VTAM V4R4.

In addition, the following changes have occurred in the VSAM utility control statements used to allocate space for a configuration restart data set:

- The key length has changed from 4 bytes to 18 bytes.
- The average record size has changed from 24 bytes to 46 bytes.
- The maximum record size has changed from 136 bytes to 158 bytes.

You must delete any configuration data sets you defined for VTAM V3R4.2 and redefine them for VTAM V4R4 using the new key length and record size values shown in the preceding list.

For more information about defining configuration restart data sets, refer to “Data Sets Containing Information for VTAM” in the *VTAM Network Implementation Guide*.

Table 39 (Page 1 of 2). Storage Requirements for Changed Data Sets in VTAM V4R4

Library or Data Set Name	DSORG	RECFM	LRECL	Block Size	Number of Blocks	Number of Directory Blocks
SYS1.AGENLIB	PO	FB	80	8800	1 ↓	1
SYS1.AISTCLS1	PO	FB	80	8800	28 ↓	1 ↓
SYS1.AISTDAT1	PO	VB	6156	6160	217 ↓	1
SYS1.AISTDAT2	PO	VB	259	6475	26 ↑	1
SYS1.AISTMAC1	PO	FB	80	8800	74 ↑	2
SYS1.AMACLIB	PO	FB	80	8800	513 ↑	6 ↑
SYS1.AOSB3	PO	U	0	6144	2 ↓	1
SYS1.AOST3	PO	U	0	6144	84 ↑	12
SYS1.AOST4	PO	U	0	6144	8	1
SYS1.AOS24	PO	U	0	6144	49 ↑	5
SYS1.AOS26	PO	U	0	6144	5745 ↑	681 ↑
SYS1.ASAMPLIB	PO	FB	80	8800	379 ↑	4 ↑
SYS1.ATSOMAC	PO	FB	80	8800	19 ↑	1
SYS1.LINKLIB	PO	U	0	6144	138 ↑	6 ↑

Note: An upward-pointing arrow (↑) next to the value indicates that the number of blocks or directory blocks has increased. A downward-pointing arrow (↓) indicates that the number has decreased.

Table 39 (Page 2 of 2). Storage Requirements for Changed Data Sets in VTAM V4R4

Library or Data Set Name	DSORG	RECFM	LRECL	Block Size	Number of Blocks	Number of Directory Blocks
SYS1.LPALIB	PO	U	0	6144	130 ↓	23 ↓
SYS1.MACLIB	PO	FB	80	8800	513 ↑	6 ↑
SYS1.NUCLEUS	PO	U	0	6144	2703 ↑	1
SYS1.SAMPLIB	PO	FB	80	8800	379 ↑	4 ↑
SYS1.SISTCLS1	PO	FB	80	8800	28 ↓	1 ↓
SYS1.SISTDAT1	PO	VB	6156	6160	163 ↓	1
SYS1.SISTDAT2	PO	VB	259	6475	26 ↑	1
SYS1.SISTMAC1	PO	FB	80	6160	102 ↑	2
SYS1.VTAMLIB	PO	U	0	6144	2078 ↑	59 ↑

Note: An upward-pointing arrow (↑) next to the value indicates that the number of blocks or directory blocks has increased. A downward-pointing arrow (↓) indicates that the number has decreased.

Considerations for Support of Multiple VTAM Versions and Releases

If your installation supports multiple versions and releases of VTAM at the same time, be aware that USS tables assembled using VTAM V4R4 libraries cannot operate in MVS/370* VTAM systems.

Upgrading VTAM V3R4.2 User Interfaces to VTAM V4R4

This section explains the changes you need to make to existing VTAM V3R4.2 user interfaces (system definitions, application programs, exit routines, tables, modules, and operating procedures) to ensure that those user interfaces continue to work and produce the same functions in VTAM V4R4.

Changes to Start Options

Table 40 on page 191 shows start options that have changed since VTAM V3R4.2 that might affect migrating to VTAM V4R4. These are options whose default values have changed or whose operand values in VTAM V3R4.2 now have different meanings, different valid ranges, or yield different results in VTAM V4R4.

In addition to the start options shown in Table 40 on page 191, other options have changed, and new options have been added in association with the new optional functions and enhancements listed in “Implementing New Optional Functions and Enhancements” on page 232. The additional changed and new start options do not affect migration to VTAM V4R4. For information about these additional changed and new start options, see the appropriate *VTAM Release Guides*.

For complete information about all changed and new start options, refer to Chapter 4, “Start Options” in the *VTAM Resource Definition Reference*.

Table 40. Start Option Changes that Might Affect Migrating to VTAM V4R4

Start Option	Operand	Description
AUTHLEN		<p>The default value is now YES.</p> <p>Note: This start option was introduced in VTAM V3R4.2 through the program temporary fix (PTF) associated with APAR OY66993. At that time, the default value for the start option was NO, causing no change in function. If you did not apply this PTF, you are still affected by the changed default value in VTAM V4R4 because in VTAM V3R4.2, unless you apply the PTF and specify AUTHLEN=YES, when VTAM forwards a BIND from a LEN-attached node into a subarea network, it sets the transmission priority field to medium priority (X'01') regardless of the value specified on a BIND received from a LEN-attached node. Now, in VTAM V4R4, unless you specify AUTHLEN=NO, VTAM copies a transmission priority field from the received BIND onto the BIND sent into the network.</p>
ENCRYPTN		<p>The default value of YES has been added. This default will produce similar results if ENCRYPTN=YES was specified in a previous release. You should specify ENCRYPTN=NO if you do not intend to use encryption.</p>
FFDC		<p>FFDC is no longer needed. Although it will not cause an error, IBM recommends that you delete FFDC from your start option list.</p> <p>First failure data capture is replaced by support for First Failure Support Technology (FFST), an operating system diagnosis feature. IBM strongly recommends that you install and use the FFST feature to capture critical information for VTAM V4R4 problem diagnosis.</p>
TRACE	SIZE	<p>The default value is now 100. The minimum value is now also 100. Although specifying a value less than 100 will not cause an error, the internal trace table size will be set to 100.</p>

Changes to Buffer Pools

In VTAM V4R4, a new buffer pool, TIBUF, has been added to support high performance data transfer (HPDT). A large number of pages are taken up within the pool when VTAM is started. If you are not in an environment which will take advantage of HPDT, you should code TIBUF=0 as a start option or on your START command.

Two new buffer pools, CRA4 and CRA8, have been added for scheduling and error recovery. These new pools cannot be defined or changed; they are available for VTAM private use only. VTAM regulates the size and expansion of these pools. The DISPLAY BFRUSE command provides the same information about the CRA4 and CRA8 as it does about other buffer pools.

The IOBUF buffer pool size must be at least 182 for local SNA and external communication adapter (XCA) major nodes that are connected to peripheral nodes.

The length of the header for the IO buffer pool has increased. If you do not use the data encryption facility, the header is now 91 bytes. If you do use the data encryption facility, the header is now 98 bytes. As a result of this increase, you might not get as many buffers per page and might need to adjust your buffer size for maximum efficient storage use. For information on how to choose buffer pool specifications, refer to "Buffer Pools" in the *VTAM Network Implementation Guide*.

Upgrading VTAM V3R4.2 to VTAM V4R4

Table 41 on page 192 shows IBM-supplied buffer pools whose default values or maximum values have changed since VTAM V3R4.2.

Table 41. Buffer Pool Value Changes that Might Affect Migrating to VTAM V4R4

Buffer Pool Name	Value	Description
BSBUF	baseno	The default value is now 17.
	bufsize	The default value is now 240.
	xpanpt	The default value is now 16.
CRPLBUF	bufsize	The default value is now 144.
IOBUF	bufsize	The default value is now 184.
		The maximum value that can now be specified if you use the data encryption facility is 4000.
	xpanlim	The maximum value that can now be specified is 2,097,152. The minimum value that can now be specified is 256.
LFBUF	bufsize	The default value is now 120.
SFBUF	bufsize	The default value is 112.
SPBUF	bufsize	The default value is now 144.
XDBUF	bufsize	The default value is now 681.

Changes to Definition Statements

Table 42 shows definition statements that have changed since VTAM V3R4.2 that might affect migrating to VTAM V4R4. These are statements whose default values have changed or whose operand values in VTAM V3R4.2 now have different meanings, different valid ranges, or yield different results in VTAM V4R4.

Note: VTAM V4R4 no longer accepts names that begin with a numeric character in definition statements.

In addition to the definition statements shown in Table 42, other definition statements have changed, and new definition statements have been added in association with the new optional functions and enhancements listed in “Implementing New Optional Functions and Enhancements” on page 232. The additional changed and new definition statements do not require changes to your system definitions unless you use the new optional functions or enhancements. For information about these additional changed and new definition statements, see the appropriate *VTAM Release Guides*.

For complete information about all changed and new definition statements, refer to Chapter 2, “Major Nodes” in the *VTAM Resource Definition Reference*.

Table 42 (Page 1 of 3). Definition Statement Changes that Might Affect Migrating to VTAM V4R4

Major Node	Definition Statement	Operand	Description
Application program	APPL	VPACING	The default value is now 7.
Channel-attachment	GROUP LINE PU	DELAY	For LNCTL=CTCA, default is now 0. Changed from 0.100 seconds.

Table 42 (Page 2 of 3). Definition Statement Changes that Might Affect Migrating to VTAM V4R4

Major Node	Definition Statement	Operand	Description
Channel-attachment (NCP)	GROUP	MAXBFRU	The default value is now 3.
	LINE	MAXBFRU	The default value is now 3.
Cross-domain resource	CDRSC	VFYOWNER	<p>Specifying VFYOWNER=YES is not valid for sessions that now traverse an APPN node, even though the cross-domain resource might be defined in a VTAM subarea node.</p> <p>When VFYOWNER=NO and the cross-domain resource is across an APPN-subarea boundary and the owning SSCP received on an initiation request does not match the owner specified on the CDRSC definition statement, the cross-domain resource definition is no longer updated with the owning SSCP name received if:</p> <ul style="list-style-type: none"> The cross-domain resource is predefined with the NETID operand on the NETWORK definition statement. You code CDRM=<i>cdrmname</i>. <p>Note: This change was introduced In VTAM V3R4.2 through the program temporary fix (PTF) associated with APAR OY66363. If you have applied this PTF, you already have this change.</p>
	GROUP	VFYOWNER	<p>Specifying VFYOWNER=YES is not valid for sessions that now traverse an APPN node, even though the cross-domain resource might be defined in a VTAM subarea node.</p> <p>When VFYOWNER=NO and the cross-domain resource is across an APPN-subarea boundary and the owning SSCP received on an initiation request does not match the owner specified on the CDRSC definition statement, the cross-domain resource definition is no longer updated with the owning SSCP name received if:</p> <ul style="list-style-type: none"> The cross-domain resource is predefined with the NETID operand on the NETWORK definition statement. You code CDRM=<i>cdrmname</i>. <p>Note: This change was introduced In VTAM V3R4.2 through the program temporary fix (PTF) associated with APAR OY66363. If you have applied this PTF, you already have this change.</p>

Upgrading VTAM V3R4.2 to VTAM V4R4

Table 42 (Page 3 of 3). Definition Statement Changes that Might Affect Migrating to VTAM V4R4

Major Node	Definition Statement	Operand	Description
Cross-domain resource manager	CDRM	CDRDYN	<p>For a host cross-domain resource manager, the value specified on the CDRDYN operand is now overridden by the value specified on a new CDRDYN start option. The default value for the new CDRDYN start option is YES.</p> <p>The default value for the CDRDYN operand is NO, meaning that the host cross-domain resource manager is not authorized to dynamically define CDRSC representations of cross-domain or cross-network subarea or APPN resources.</p> <p>If you are accepting the default value for the CDRDYN operand in VTAM V3R4.2 or if you have coded CDRDYN=NO, be aware that when you upgrade to VTAM V4R4, the host cross-domain resource manager is now authorized to dynamically define CDRSC representations. If you do not want the host cross-domain resource manager to have this authorization in VTAM V4R4, code CDRDYN=NO on the new CDRDYN start option.</p>
Local SNA	PU	MAXBFRU	The default value is now 3.
LU group	LU	LUDR	VTAM no longer ignores this operand.
NCP	GROUP	LUDR PUDR	VTAM no longer ignores this operand.
		HOST	MAXBFRU
	LINE	LUDR PUDR	VTAM no longer ignores this operand.
	LU	LUDR	VTAM no longer ignores this operand.
	PCCU	VFCY	The default value is now YES.
		DELAY	For LNCTL=NCP, default is now 0. Changed from 0.100 seconds.
Switched	PU	TOPO	NONE is no longer a valid value. CONNECT is now the only valid value. You no longer need to code the TOPO operand. Although continuing to code the TOPO operand will not cause an error, IBM recommends that you delete it from your system definitions.
		TGN	The valid range of values for an APPN TG is now 0–20.
Switched	VBUILD	MAXGRP MAXDLUR MAXNO	The size of the switched major node tables is now dynamically determined. The need for these operands has been eliminated. If they are coded, they will be ignored.
		PU	MAXPATH
Switched	PATH	DIALNO	Default is now 242. Changed from 32.
TRL	TRLE	MAXBFRU	Default is now 5. Changed from 1.
XCA and NCP	CAPACITY		Default is now 4M for connections to virtual nodes (VNNAME and VNGROUP are coded). Changed from 8K.
XCA	DELAY		Default is now 0. Changed from 50 milliseconds.

Changes to IBM-Supplied Default User-Definable Tables and User-Modifiable Modules

If you have modified any IBM-supplied default user-definable tables or user-modifiable modules in VTAM V3R4.2 that you have not renamed, those tables and modules will be deleted and replaced when you install VTAM V4R4. To keep your modified IBM-supplied VTAM V3R4.2 tables or modules:

1. Make copies of them before you install VTAM V4R4.
2. Merge your modifications back into the appropriate tables and modules after you install VTAM V4R4.
3. Reassemble the tables and modules into which you have merged your modifications.

If you have modified and renamed any IBM-supplied default user-definable tables or user-modifiable modules in VTAM V3R4.2:

1. Compare your modified tables and modules to those shipped with VTAM V4R4 after you install VTAM V4R4.
2. Merge any differences into your modified tables and modules.
3. Reassemble your modified tables and modules.

Changes to IBM-Supplied Default Tables

The following IBM-supplied default tables have changed since VTAM V3R4.2:

- Communication network management (CNM) routing table
- Logon mode table
- Operation-level USS table
- Session awareness (SAW) data filter
- Session-level USS table.

Communication Network Management (CNM) Routing Table: For information about changes to the communication network management routing table, refer to “CNM Routing Table ” in *VTAM Customization*.

Logon Mode Table: The value on the RUSIZES operand on the MODEENT macro in the SNASVCMG entry has changed from X'8585' to X'9797'.

A new entry, ISTCOSDF, has been added. This entry is used when an unknown logon mode name is specified during session activation for independent LUs. If you do not want VTAM to use this logon mode entry, you must specify ISTCOSDF=NONE in your start list before you start VTAM V4R4. For information about the ISTCOSDF start option, refer to Chapter 4, “Start Options” in the *VTAM Resource Definition Reference*.

A new operand, APPNCOS, has been added to the MODEENT macro for all entries.

For information about these and other changes to the logon mode table, refer to “Logon Mode Table” and Appendix A, “IBM-Supplied Tables” in the *VTAM Resource Definition Reference*.

Operation-Level USS Table: All operands of the VARY command are now defined in ISTINCNO, the operation-level USS table. You can redefine these operands by creating your own USS table.

For information about this and other changes to the operation-level USS table, refer to “Unformatted System Services (USS) Tables” and Appendix A, “IBM-Supplied Tables” in the *VTAM Resource Definition Reference*.

Session Awareness (SAW) Data Filter: Changes have been made to the way session awareness data filter macros are processed, requiring you to reassemble this table when you install VTAM V4R4. For information about the session awareness data filter, refer to “Session Awareness (SAW) Data Filter” in the *VTAM Resource Definition Reference*.

Session-Level USS Table: For information about changes to the session-level USS table, refer to “Unformatted System Services (USS) Tables” and Appendix A, “IBM-Supplied Tables” in the *VTAM Resource Definition Reference*.

Deleted User-Modifiable Modules

The following user-modifiable modules have been deleted since VTAM V3R4.2:

- Messages module, ISTCFCWM
- Replaceable constants module, ISTRACON.

Messages Module: The messages module, ISTCFCWM, is no longer part of VTAM.

Replaceable Constants Module: The replaceable constants module, ISTRACON, is no longer part of VTAM. All constants are now defined with start options.

If you modified (“zapped”) the ISTRACON module in VTAM V3R4.2, the values you replaced in the ISTRACON fields became the default values for the corresponding start options, shown in Appendix H, “Migrating from Use of VTAM Constant Values to V4R3 Start Options” in *VTAM Customization*. You must now code those values on the corresponding start options.

You can determine which ISTRACON fields you modified in VTAM V3R4.2 by comparing the value specified in the ISTRACON field with the IBM-supplied default value for the corresponding start option. Use Appendix H, “Migrating from Use of VTAM Constant Values to V4R3 Start Options” in *VTAM Customization* to find the locations in the ISTRACON module where the fields are defined. If the value specified in the ISTRACON field does not match the IBM-supplied default value, that means you have modified the corresponding ISTRACON field in VTAM V3R4.2 and should now specify that value on the appropriate start option before you start VTAM V4R4. If the value matches the IBM-supplied default value, you do not have to do anything. However, if you choose to replace the default value in the future, specify your new value on the appropriate start option.

Note the changes shown in Table 43 on page 197 that occurred to the constants defined in the ISTRACON module since VTAM V3R4.2. These changes might affect migrating to VTAM V4R4.

Table 43. Constant Changes that Might Affect Migrating to VTAM V4R4

Constant	Corresponding Start Option	Description
RACCITSZ	CINDXSIZ	The maximum value became 16777199; default value became 8176. If you choose to use a value that is within the new valid range and differs from the IBM-supplied default value, specify it on the CINDXSIZ start option before you start VTAM V4R4.
RACHNTSZ	HNTSIZE	The maximum value became 16777199; minimum value and default value became 4080. If you need to change your current value so that it is within the new valid range, or if you choose to use a value that differs from the IBM-supplied default value, specify it on the HNTSIZE start option before you start VTAM V4R4.
RACEAS	VTAMEAS	The default value became 32001. If you choose to use a value that differs from this default value, specify it on the VTAMEAS start option before you start VTAM V4R4.
RACHXSRT	HSRTSIZE	The maximum value became 2097148. If you need to change your current value so that it is within the new valid range, or if you choose to use a value that differs from the IBM-supplied default value, specify it on the HSRTSIZE start option before you start VTAM V4R4.
RACXNSRT	OSRTSIZE	The maximum value became 2097148. If you need to change your current value so that it is within the new valid range, or if you choose to use a value that differs from the IBM-supplied default value, specify it on the OSRTSIZE start option before you start VTAM V4R4.

Changes to Logon Mode Table Macros

Table 44 on page 198 shows logon mode table macros that have changed since VTAM V3R4.2 that might affect migrating to VTAM V4R4. These are macros whose operand values in VTAM V3R4.2 now have different meanings, different valid ranges, or yield different results in VTAM V4R4.

In addition to the macros shown in Table 44 on page 198, other macros have changed, and new macros have been added in association with the new optional functions and enhancements listed in “Implementing New Optional Functions and Enhancements” on page 232. The additional changed and new macros do not affect migration to VTAM V4R4. For information about these additional changed and new macros, see the appropriate *VTAM Release Guides*.

For complete information about all changed and new macros, refer to “Logon Mode Table” in the *VTAM Resource Definition Reference*.

Table 44. Logon Mode Table Macro Changes that Might Affect Migrating to VTAM V4R4

Macro	Operand	Description
MODEEND	<i>name</i>	The same name coded in the name field of two or more macros will now cause assembler failures. In addition, an error message is now issued if a name specified in the name field is greater than eight characters in length.
MODEENT	<i>name</i>	The same name coded in the name field of two or more macros will now cause assembler failures. In addition, an error message is now issued if a name specified in the name field is greater than eight characters in length.
MODETAB	<i>name</i>	The same name coded in the name field of two or more macros will now cause assembler failures. In addition, an error message is now issued if a name specified in the name field is greater than eight characters in length.

Changes to USS Table Macros

Table 45 shows USS table macros that have changed since VTAM V3R4.2 that might affect migrating to VTAM V4R4. These are macros whose operand values in VTAM V3R4.2 now have different meanings, different valid ranges, or yield different results in VTAM V4R4.

In addition to the macros shown in Table 45, other macros have changed, and new macros have been added in association with the new optional functions and enhancements listed in “Implementing New Optional Functions and Enhancements” on page 232. The additional changed and new macros do not affect migration to VTAM V4R4. For information about these additional changed and new macros, see the appropriate *VTAM Release Guides*.

For complete information about all changed and new macros, refer to “Unformatted System Services (USS) Tables” in the *VTAM Resource Definition Reference*.

Table 45 (Page 1 of 2). USS Table Macro Changes that Might Affect Migrating to VTAM V4R4

Macro	Operand	Description
USSCMD		The USSCMD macro can no longer be used to define USS tables for MVS/370 systems. USS tables assembled with VTAM V4R4 libraries will no longer operate in MVS/370 VTAM systems.
USSEND		The USSEND macro can no longer be used to define USS tables for MVS/370 systems. USS tables assembled with VTAM V4R4 libraries will no longer operate in MVS/370 VTAM systems.

Table 45 (Page 2 of 2). USS Table Macro Changes that Might Affect Migrating to VTAM V4R4

Macro	Operand	Description
USSMSG		The USSMSG macro can no longer be used to define USS tables for MVS/370 systems. USS tables assembled with VTAM V4R4 libraries will no longer operate in MVS/370 VTAM systems.
	TEXT	If you did not reassemble your USS tables when you upgraded to VTAM V3R4.2, messages defined on the TEXT operand that exceeded 251 characters would be truncated before being sent. If you did reassemble your USS tables when you upgraded to VTAM V3R4.2, and you had messages defined greater than 251 characters, your USS tables would not assemble. This is still true in VTAM V4R4. Be aware that if you have messages defined greater than 251 characters and you reassemble your USS tables in VTAM V4R4 for the first time since before upgrading to VTAM V3R4.2, your USS tables might not assemble. Therefore, use caution when modifying or creating your own VTAM messages using the TEXT operand.
USSPARM		The USSPARM macro can no longer be used to define USS tables for MVS/370 systems. USS tables assembled with VTAM V4R4 libraries will no longer operate in MVS/370 VTAM systems.
USSTAB		The USSTAB macro can no longer be used to define USS tables for MVS/370 systems. USS tables assembled with VTAM V4R4 libraries will no longer operate in MVS/370 VTAM systems.
	FORMAT	The default value is now DYNAMIC.

Changes to Commands

Table 46 on page 200 shows operator commands that have changed since VTAM V3R4.2 that might affect migrating to VTAM V4R4. These are commands whose default values have changed or whose operand values in VTAM V3R4.2 now have different meanings, different valid ranges, or yield different results in VTAM V4R4.

In addition to the commands shown in Table 46 on page 200, other commands have changed, and new commands have been added in association with the new optional functions and enhancements listed in “Implementing New Optional Functions and Enhancements” on page 232. These additional changed and new commands do not affect your CLISTs or operating procedures unless you use the new optional functions or enhancements. For information about these additional changed and new commands, see the appropriate *VTAM Release Guides*.

For complete information about all changed and new commands, refer to *VTAM Operation*.

Upgrading VTAM V3R4.2 to VTAM V4R4

Table 46 (Page 1 of 6). Command Changes that Might Affect Migrating to VTAM V4R4

Command	Operand	Description
DISPLAY ADJSSCPS	MAX	MAX is a new operand whose default value is the value specified on a new DSPLYDEF start option. If you do not specify a value on the new DSPLYDEF start option or on a new DSPLYMAX start option the default value for the MAX operand on the DISPLAY ADJSSCPS command is 100. If you do not specify a value on the new DSPLYDEF start option and if the value specified on the new DSPLYMAX start option is 100 or greater, the default value for the MAX operand is 100. If you do not specify a value on the new DSPLYDEF start option and if the value specified on the new DSPLYMAX start option is less than 100, the default value for the MAX operand is the value specified on the new DSPLYMAX start option.
DISPLAY APPLS	MAX	MAX is a new operand whose default value is the value specified on a new DSPLYDEF start option. If you do not specify a value on the new DSPLYDEF start option or on a new DSPLYMAX start option the default value for the MAX operand on the DISPLAY APPLS command is 100. If you do not specify a value on the new DSPLYDEF start option and if the value specified on the new DSPLYMAX start option is 100 or greater, the default value for the MAX operand is 100. If you do not specify a value on the new DSPLYDEF start option and if the value specified on the new DSPLYMAX start option is less than 100, the default value for the MAX operand is the value specified on the new DSPLYMAX start option.
DISPLAY BFRUSE	BUFFER=SUMMARY	Display of private storage usage now includes the storage for VTAM's object code, tables, and installation-wide exit routines.
	BUFFER=*	Display of private storage usage now includes the storage for VTAM's object code, tables, and installation-wide exit routines.
DISPLAY CDRMS	MAX	MAX is a new operand whose default value is the value specified on a new DSPLYDEF start option. If you do not specify a value on the new DSPLYDEF start option or on a new DSPLYMAX start option the default value for the MAX operand on the DISPLAY CDRMS command is 100. If you do not specify a value on the new DSPLYDEF start option and if the value specified on the new DSPLYMAX start option is 100 or greater, the default value for the MAX operand is 100. If you do not specify a value on the new DSPLYDEF start option and if the value specified on the new DSPLYMAX start option is less than 100, the default value for the MAX operand is the value specified on the new DSPLYMAX start option.

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Command	Operand	Description
DISPLAY CDRSCS	MAX	MAX is a new operand whose default value is the value specified on a new DSPLYDEF start option. If you do not specify a value on the new DSPLYDEF start option or on a new DSPLYMAX start option the default value for the MAX operand on the DISPLAY CDRSCS command is 100. If you do not specify a value on the new DSPLYDEF start option and if the value specified on the new DSPLYMAX start option is 100 or greater, the default value for the MAX operand is 100. If you do not specify a value on the new DSPLYDEF start option and if the value specified on the new DSPLYMAX start option is less than 100, the default value for the MAX operand is the value specified on the new DSPLYMAX start option.
	NETID	When NETID= <i>netid</i> , the DISPLAY CDRSCS command no longer displays cross-domain resources with unknown network identifiers. The DISPLAY CDRSCS command now displays only cross-domain resources within the indicated network.
DISPLAY CLSTRS	MAX	MAX is a new operand whose default value is the value specified on a new DSPLYDEF start option. If you do not specify a value on the new DSPLYDEF start option or on a new DSPLYMAX start option the default value for the MAX operand on the DISPLAY CLSTRS command is 100. If you do not specify a value on the new DSPLYDEF start option and if the value specified on the new DSPLYMAX start option is 100 or greater, the default value for the MAX operand is 100. If you do not specify a value on the new DSPLYDEF start option and if the value specified on the new DSPLYMAX start option is less than 100, the default value for the MAX operand is the value specified on the new DSPLYMAX start option.
DISPLAY COS	ID	If you code the HOSTPU start option, the ID operand will now default to the value you specify on the HOSTPU start option.
DISPLAY ID	ID	If ID is a line group, line, or PU, the DISPLAY ID command now displays information about independent LUs that have active sessions through one or more of the PUs in the display output.
	NETID	The NETID operand on the DISPLAY ID command cannot be used to display information about cross-domain resource minor nodes or independent LUs. Instead, specify a network-qualified name on the ID operand.
DISPLAY GROUPS	MAX	MAX is a new operand whose default value is the value specified on a new DSPLYDEF start option. If you do not specify a value on the new DSPLYDEF start option or on a new DSPLYMAX start option the default value for the MAX operand on the DISPLAY GROUPS command is 100. If you do not specify a value on the new DSPLYDEF start option and if the value specified on the new DSPLYMAX start option is 100 or greater, the default value for the MAX operand is 100. If you do not specify a value on the new DSPLYDEF start option and if the value specified on the new DSPLYMAX start option is less than 100, the default value for the MAX operand is the value specified on the new DSPLYMAX start option.

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Command	Operand	Description
DISPLAY LINES	MAX	MAX is a new operand whose default value is the value specified on a new DSPLYDEF start option. If you do not specify a value on the new DSPLYDEF start option or on a new DSPLYMAX start option the default value for the MAX operand on the DISPLAY LINES command is 100. If you do not specify a value on the new DSPLYDEF start option and if the value specified on the new DSPLYMAX start option is 100 or greater, the default value for the MAX operand is 100. If you do not specify a value on the new DSPLYDEF start option and if the value specified on the new DSPLYMAX start option is less than 100, the default value for the MAX operand is the value specified on the new DSPLYMAX start option.
DISPLAY LUGROUPS	MAX	MAX is a new operand that applies only when SCOPE=ALL and whose default value is the value specified on a new DSPLYDEF start option. If you do not specify a value on the new DSPLYDEF start option or on a new DSPLYMAX start option the default value for the MAX operand on the DISPLAY LUGROUPS command is 100. If you do not specify a value on the new DSPLYDEF start option and if the value specified on the new DSPLYMAX start option is 100 or greater, the default value for the MAX operand is 100. If you do not specify a value on the new DSPLYDEF start option and if the value specified on the new DSPLYMAX start option is less than 100, the default value for the MAX operand is the value specified on the new DSPLYMAX start option.
DISPLAY MAJNODES	MAX	MAX is a new operand whose default value is the value specified on a new DSPLYDEF start option. If you do not specify a value on the new DSPLYDEF start option or on a new DSPLYMAX start option the default value for the MAX operand on the DISPLAY MAJNODES command is 100. If you do not specify a value on the new DSPLYDEF start option and if the value specified on the new DSPLYMAX start option is 100 or greater, the default value for the MAX operand is 100. If you do not specify a value on the new DSPLYDEF start option and if the value specified on the new DSPLYMAX start option is less than 100, the default value for the MAX operand is the value specified on the new DSPLYMAX start option.
DISPLAY PATHTAB	MAX	MAX is a new operand whose default value is the value specified on a new DSPLYDEF start option. If you do not specify a value on the new DSPLYDEF start option or on a new DSPLYMAX start option the default value for the MAX operand on the DISPLAY PATHTAB command is 100. If you do not specify a value on the new DSPLYDEF start option and if the value specified on the new DSPLYMAX start option is 100 or greater, the default value for the MAX operand is 100. If you do not specify a value on the new DSPLYDEF start option and if the value specified on the new DSPLYMAX start option is less than 100, the default value for the MAX operand is the value specified on the new DSPLYMAX start option.

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Command	Operand	Description
DISPLAY PENDING	MAX	MAX is a new operand whose default value is the value specified on a new DSPLYDEF start option. If you do not specify a value on the new DSPLYDEF start option or on a new DSPLYMAX start option the default value for the MAX operand on the DISPLAY PENDING command is 100. If you do not specify a value on the new DSPLYDEF start option and if the value specified on the new DSPLYMAX start option is 100 or greater, the default value for the MAX operand is 100. If you do not specify a value on the new DSPLYDEF start option and if the value specified on the new DSPLYMAX start option is less than 100, the default value for the MAX operand is the value specified on the new DSPLYMAX start option.
DISPLAY SESSIONS	LIST=ALL	When LIST=ALL and SCOPE=ALL, the DISPLAY SESSIONS command now also displays the number of queued and pending sessions in each state. When LIST=ALL and SCOPE=PEND, the DISPLAY SESSIONS command now also displays the number of pending sessions in each state. When LIST=ALL and SCOPE=Q, the DISPLAY SESSIONS command now also displays the number of queued sessions in each state.
	MAX	MAX is a new operand whose default value is the value specified on a new DSPLYDEF start option. If you do not specify a value on the new DSPLYDEF start option or on a new DSPLYMAX start option the default value for the MAX operand on the DISPLAY SESSIONS command is 100. If you do not specify a value on the new DSPLYDEF start option and if the value specified on the new DSPLYMAX start option is 100 or greater, the default value for the MAX operand is 100. If you do not specify a value on the new DSPLYDEF start option and if the value specified on the new DSPLYMAX start option is less than 100, the default value for the MAX operand is the value specified on the new DSPLYMAX start option.
DISPLAY STATIONS	MAX	MAX is a new operand whose default value is the value specified on a new DSPLYDEF start option. If you do not specify a value on the new DSPLYDEF start option or on a new DSPLYMAX start option the default value for the MAX operand on the DISPLAY STATIONS command is 100. If you do not specify a value on the new DSPLYDEF start option and if the value specified on the new DSPLYMAX start option is 100 or greater, the default value for the MAX operand is 100. If you do not specify a value on the new DSPLYDEF start option and if the value specified on the new DSPLYMAX start option is less than 100, the default value for the MAX operand is the value specified on the new DSPLYMAX start option.

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Command	Operand	Description
DISPLAY STORUSE	NUM	<p>The NUM operand is now MAX. Although continuing to specify NUM will not cause an error, IBM recommends that you specify MAX.</p> <p>The valid range of values is now 1 through the value specified on a new DSPLYMAX start option. The default value is now the value specified on a new DSPLYDEF start option. If you do not specify a value on the new DSPLYDEF start option or on a new DSPLYMAX start option the default value for the NUM operand on the DISPLAY STORUSE command is 100. If you do not specify a value on the new DSPLYDEF start option and if the value specified on the new DSPLYMAX start option is 100 or greater, the default value for the NUM operand is 100. If you do not specify a value on the new DSPLYDEF start option and if the value specified on the new DSPLYMAX start option is less than 100, the default value for the NUM operand is the value specified on the new DSPLYMAX start option.</p> <p>Note: If you want to see all GETBLK pool information, you must specify one of the following values:</p> <ul style="list-style-type: none"> • A value greater than 100 on the new DSPLYDEF start option • MAX=200 on the DISPLAY STORUSE command.
DISPLAY TABLE	MAX	<p>MAX is a new operand that applies only when SCOPE=ALL and whose default value is the value specified on a new DSPLYDEF start option. If you do not specify a value on the new DSPLYDEF start option or on a new DSPLYMAX start option the default value for the MAX operand on the DISPLAY TABLE command is 100. If you do not specify a value on the new DSPLYDEF start option and if the value specified on the new DSPLYMAX start option is 100 or greater, the default value for the MAX operand is 100. If you do not specify a value on the new DSPLYDEF start option and if the value specified on the new DSPLYMAX start option is less than 100, the default value for the MAX operand is the value specified on the new DSPLYMAX start option.</p>
DISPLAY TERMS	MAX	<p>MAX is a new operand whose default value is the value specified on a new DSPLYDEF start option. If you do not specify a value on the new DSPLYDEF start option or on a new DSPLYMAX start option the default value for the MAX operand on the DISPLAY TERMS command is 100. If you do not specify a value on the new DSPLYDEF start option and if the value specified on the new DSPLYMAX start option is 100 or greater, the default value for the MAX operand is 100. If you do not specify a value on the new DSPLYDEF start option and if the value specified on the new DSPLYMAX start option is less than 100, the default value for the MAX operand is the value specified on the new DSPLYMAX start option.</p>

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Command	Operand	Description
DISPLAY USERVAR	MAX	MAX is a new operand that applies only when ID is not specified and whose default value is the value specified on a new DSPLYDEF start option. If you do not specify a value on the new DSPLYDEF start option or on a new DSPLYMAX start option the default value for the MAX operand on the DISPLAY USERVAR command is 100. If you do not specify a value on the new DSPLYDEF start option and if the value specified on the new DSPLYMAX start option is 100 or greater, the default value for the MAX operand is 100. If you do not specify a value on the new DSPLYDEF start option and if the value specified on the new DSPLYMAX start option is less than 100, the default value for the MAX operand is the value specified on the new DSPLYMAX start option.
MODIFY FFDC		MODIFY FFDC is no longer valid. Although it will not cause an error, IBM recommends that you delete MODIFY FFDC from CLISTs and operating procedures.
MODIFY NOFFDC		MODIFY NOFFDC is no longer valid. Although it will not cause an error, IBM recommends that you delete MODIFY NOFFDC from CLISTs and operating procedures.
VARY INACT	ID	If the resource specified on the ID operand is a host cross-domain resource manager (CDRM), you must now also specify the IDTYPE operand on this command to deactivate the CDRM.
MODIFY TRACE	SIZE	The default value is now 100. The minimum value is now also 100. Although specifying a value less than 100 will not cause an error, the internal trace table size will be set to 100.
VARY TERM	TYPE=UNCOND	If the session is an automatic logon session, the session is now terminated and then immediately reestablished if a session path exists at the time. To avoid having the session reestablished, specify TYPE=COND when you issue the VARY TERM command. Note: If you use NetView V2R4 or a later version or release and issue the VARY TERM command to stop a SNASVCMG session, be aware that your network management might be disrupted.

Changes to Command Output

This section shows some changes in command output since VTAM V3R4.2 that might affect automated operation procedures.

DISPLAY CDRSCS

In VTAM V3R4.2, when you issue a DISPLAY CDRSCS command with a specific network identifier coded on the NETID operand, you receive output that includes cross-domain resources within the indicated network and those not known by any network.

In VTAM V4R4, when you issue the same command, you receive output that includes only cross-domain resources within the indicated network. Cross-domain resources with unknown network identifiers are no longer included in the display.

DISPLAY CLSTRS

Changes have occurred in the output you receive when you issue the DISPLAY CLSTRS command in VTAM V4R4. The resource type "PHYSICAL UNIT" in message IST089I now appears as one of the following resource types:

- PU_T1
- PU_T2
- PU_T2.1.

The resource type "PU T4/5 MAJ NODE" in message IST089I now appears as "PU T4/5."

DISPLAY CNOS

In VTAM V3R4.2, when you issue the DISPLAY CNOS command, you receive output similar to the following:

```
IST097I DISPLAY ACCEPTED
IST1001I ID= APPCAP05 LUNAME= NETA.APPCDA1 LOGMODE= INTERACT
IST1002I RCPRI=0000 RCSEC=0000
IST1005I SESSCAP =PARALLEL CONVSECL=AVPV      CONVSECP=AVPV
IST1005I DRAINL  =NO      DRAINR  =NO      DDRAINL  =NALLOW
IST1005I SESSCNT =        0 FREECNT =        0 QALLOC  =        0
IST1005I WINLCNT =        0 WINRCNT =        0 AUTOSES  =        0
IST1005I DRESPL  =NALLOW  RESP    =***NA*** DELETE  =NALLOW
IST1005I SYNCLVL =CONFIRM
IST1003I SESSLIM CNOS=        2 DEFINE=        4
IST1003I MINWINL CNOS=        1 DEFINE=        2
IST1003I MINWINR CNOS=        1 DEFINE=        2
IST314I END
```

When you issue the same command in VTAM V4R4, you receive output similar to the following, which includes a new CONVCAP field in message IST1005I:

```
IST097I DISPLAY ACCEPTED
IST1001I ID= APPCAP05 LUNAME= NETA.APPCDA1 LOGMODE= INTERACT
IST1002I RCPRI=0000 RCSEC=0000
IST1005I SESSCAP =PARALLEL CONVSECL=AVPV      CONVSECP=AVPV
IST1005I DRAINL  =NO      DRAINR  =NO      DDRAINL  =NALLOW
IST1005I SESSCNT =        0 FREECNT =        0 QALLOC  =        0
IST1005I WINLCNT =        0 WINRCNT =        0 AUTOSES  =        0
IST1005I DRESPL  =NALLOW  RESP    =***NA*** DELETE  =NALLOW
IST1005I SYNCLVL =CONFIRM  CONVCAP =HDX
IST1003I SESSLIM CNOS=        2 DEFINE=        4
IST1003I MINWINL CNOS=        1 DEFINE=        2
IST1003I MINWINR CNOS=        1 DEFINE=        2
IST314I END
```

DISPLAY CONVID

In VTAM V3R4.2, when you issue a DISPLAY CONVID command and specify on the ID operand the name of a resource other than an application program, you receive a message similar to the following:

```
IST1004I DISPLAY CONVID FOR CDAPPL1 FAILED - NODE NOT APPC CAPABLE
```

When you issue the same command in VTAM V4R4, you receive the following message:

```
IST453I ID PARAMETER VALUE INVALID
```

DISPLAY GROUPS

Changes have occurred in the output you receive when you issue the DISPLAY GROUPS command in VTAM V4R4. The resource type "PU T4/5 MAJ NODE" in message IST089I now appears as "PU T4/5."

DISPLAY ID

In VTAM V3R4.2, if you specify a network-qualified name on the ID operand of the DISPLAY ID command, the resource name in message IST075I is network-qualified. If you specify a non-network-qualified name on the ID operand of the DISPLAY ID command, the resource name in message IST075I is not network-qualified.

In VTAM V4R4, if you specify a non-network-qualified name on the ID operand of the DISPLAY ID command, the resource name in message IST075I is network-qualified for the following resources:

- Application programs
- Cross-domain resources (CDRSCs)
- Cross-domain resource managers (CDRMs)
- Logical units (LUs).

The resource names for any other resources are non-network-qualified in message IST075I.

The resource name in message IST075I is network-qualified only for the following resources:

- Application programs
- Cross-domain resources (CDRSCs)
- Cross-domain resource managers (CDRMs)
- Logical units (LUs).

If you specify a network-qualified name for any other type of resource, the resource name in message IST075I is not network-qualified.

If you use CLISTs to perform functions based on the resource name in IST075I, you might need to alter the CLISTs to check for network-qualified names only for application programs, CDRSCs, CDRMs, and LUs.

Additional changes have occurred in the output you receive when you issue the DISPLAY ID command for the following resources:

- Cross-domain resource (CDRSC)
- Cross-domain resource manager (CDRMC)
- Group

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- Host cross-domain resource manager (CDRM)
- Line
- Local SNA major node
- Model major node
- Operator console (ISTNOP)
- Switched major node.

Cross-Domain Resource: In VTAM V3R4.2, if you specify E or SCOPE=ALL when issuing the DISPLAY ID command for a cross-domain resource, you receive output similar to the following:

```
IST097I DISPLAY ACCEPTED
IST075I NAME = APPL3, TYPE = CDRSC
IST486I STATUS= ACT/S, DESIRED STATE= ACTIV
IST977I MDLTAB=***NA*** ASLTAB=***NA***
IST861I MODETAB=***NA*** USSTAB=***NA*** LOGTAB=***NA***
IST934I DLOGMOD=***NA*** USS LANGTAB=***NA***
IST597I CAPABILITY-PLU ENABLED ,SLU ENABLED ,SESSION LIMIT NONE
IST231I CDRSC MAJOR NODE = CDRSC2A
IST1044I ALSLIST = SW2A1A
IST082I DEVTYPE = INDEPENDENT LU / CDRSC
IST654I I/O TRACE = OFF, BUFFER TRACE = OFF
IST228I ENCRYPTION = NONE
IST171I ACTIVE SESSIONS = 0000000001, SESSION REQUESTS = 0000000000
IST206I SESSIONS:
IST1081I ADJACENT LINK STATION = SW2A1A
IST634I NAME      STATUS      SID          SEND RECV VR TP NETID
IST635I NETAPPL3 ACTIV-S    EAABEEC34435F6AB 0000 0000 0 0 NETA
IST314I END
```

When you issue the same command in VTAM V4R4, you receive output similar to the following, which includes a new message, IST1333I.

Note: If you have applied the program temporary fix (PTF) associated with APAR OY59824, you are already getting this new message.

```
IST097I DISPLAY ACCEPTED
IST075I NAME = NETA.APPL3, TYPE = CDRSC
IST486I STATUS= ACT/S, DESIRED STATE= ACTIV
IST977I MDLTAB=***NA*** ASLTAB=***NA***
IST1333I ADJLIST = ***NA***
IST861I MODETAB=***NA*** USSTAB=***NA*** LOGTAB=***NA***
IST934I DLOGMOD=***NA*** USS LANGTAB=***NA***
IST597I CAPABILITY-PLU ENABLED ,SLU ENABLED ,SESSION LIMIT NONE
IST231I CDRSC MAJOR NODE = CDRSC2A
IST1044I ALSLIST = SW2A1A
IST082I DEVTYPE = INDEPENDENT LU / CDRSC
IST654I I/O TRACE = OFF, BUFFER TRACE = OFF
IST228I ENCRYPTION = NONE
IST171I ACTIVE SESSIONS = 0000000001, SESSION REQUESTS = 0000000000
IST206I SESSIONS:
IST1081I ADJACENT LINK STATION = SW2A1A
IST634I NAME      STATUS      SID          SEND RECV VR TP NETID
IST635I NETAPPL3 ACTIV-S    EAABEEC34435F6AB 0000 0000 0 0 NETA
IST314I END
```

Cross-Domain Resource Manager: In VTAM V3R4.2, when you issue a DISPLAY ID command for a cross-domain resource manager, you receive output similar to the following:

```

IST097I DISPLAY ACCEPTED
IST075I NAME = NETA.SSCP1A, TYPE = CDRM
IST1046I CP NETA.SSCP1A ALSO EXISTS
IST486I STATUS= ACTIV, DESIRED STATE= ACTIV
IST815I AUTOMATIC RECOVERY IS SUPPORTED
IST231I CDRM MAJOR NODE = VTAMSEG
IST654I I/O TRACE = OFF, BUFFER TRACE = OFF
IST1500I STATE TRACE = OFF
IST476I CDRM TYPE = HOST GATEWAY CAPABLE
IST637I SUBAREA = 1 ELEMENT = 1
IST388I DYNAMIC CDRSC DEFINITION SUPPORT = YES
IST171I ACTIVE SESSIONS = 0000000002, SESSION REQUESTS = 0000000000
IST924I -----
IST075I NAME = NETA.SSCP1A, TYPE = HOST CP
IST1046I SSCP NETA.SSCP1A ALSO EXISTS
IST486I STATUS= ACTIV, DESIRED STATE= ACTIV
IST1447I REGISTRATION TYPE = NO
IST977I MDLTAB=***NA*** ASLTAB=***NA***
IST861I MODETAB=***NA*** USSTAB=***NA*** LOGTAB=***NA***
IST934I DLOGMOD=***NA*** USS LANGTAB=***NA***
IST597I CAPABILITY-PLU ENABLED ,SLU ENABLED ,SESSION LIMIT NONE
IST231I APPL MAJOR NODE = VTAMSEG
IST654I I/O TRACE = OFF, BUFFER TRACE = OFF
IST1500I STATE TRACE = OFF
IST271I JOBNAME = VTAM, STEPNAME = VTAM, DSPNAME = IST5DA1C
IST228I ENCRYPTION = NONE
IST1050I MAXIMUM COMPRESSION LEVEL - INPUT = 0, OUTPUT = 0
IST171I ACTIVE SESSIONS = 0000000000, SESSION REQUESTS = 0000000000
IST314I END

```

When you issue the same command in VTAM V4R3, you receive output similar to the following, which includes a new SSCPID field in message IST637I:

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```
IST097I DISPLAY ACCEPTED
IST075I NAME = NETA.SSCP1A, TYPE = CDRM
IST1046I CP NETA.SSCP1A ALSO EXISTS
IST486I STATUS= ACTIV, DESIRED STATE= ACTIV
IST815I AUTOMATIC RECOVERY IS SUPPORTED
IST231I CDRM MAJOR NODE = VTAMSEG
IST654I I/O TRACE = OFF, BUFFER TRACE = OFF
IST1500I STATE TRACE = OFF
IST476I CDRM TYPE = HOST GATEWAY CAPABLE
IST637I SUBAREA = 1 ELEMENT = 1 SSCPID = 1
IST388I DYNAMIC CDRSC DEFINITION SUPPORT = YES
IST171I ACTIVE SESSIONS = 0000000002, SESSION REQUESTS = 0000000000
IST924I -----
IST075I NAME = NETA.SSCP1A, TYPE = HOST CP
IST1046I SSCP NETA.SSCP1A ALSO EXISTS
IST486I STATUS= ACTIV, DESIRED STATE= ACTIV
IST1447I REGISTRATION TYPE = NO
IST977I MDLTAB=***NA*** ASLTAB=***NA***
IST861I MODETAB=***NA*** USSTAB=***NA*** LOGTAB=***NA***
IST934I DLOGMOD=***NA*** USS LANGTAB=***NA***
IST597I CAPABILITY-PLU ENABLED ,SLU ENABLED ,SESSION LIMIT NONE
IST231I APPL MAJOR NODE = VTAMSEG
IST654I I/O TRACE = OFF, BUFFER TRACE = OFF
IST1500I STATE TRACE = OFF
IST271I JOBNAME = VTAM, STEPNAME = VTAM, DSPNAME = IST5DA1C
IST228I ENCRYPTION = NONE
IST1050I MAXIMUM COMPRESSION LEVEL - INPUT = 0, OUTPUT = 0
IST171I ACTIVE SESSIONS = 0000000000, SESSION REQUESTS = 0000000000
IST314I END
```

Group: The resource type “PHYSICAL UNIT” in message IST089I now appears as one of the following resource types:

- PU_T1
- PU_T2
- PU_T2.1.

Host Cross-Domain Resource Manager: In VTAM V3R4.2, when you issue a DISPLAY ID command for a host cross-domain resource manager, you receive output similar to the following:

```
IST097I DISPLAY ACCEPTED
IST075I NAME = NETA.SSCP1A, TYPE = CDRM
IST486I STATUS= ACTIV, DESIRED STATE= ACTIV
IST815I AUTOMATIC RECOVERY IS SUPPORTED
IST231I CDRM MAJOR NODE = VTAMSEG
IST654I I/O TRACE = OFF, BUFFER TRACE = OFF
IST476I CDRM TYPE = HOST, GATEWAY CAPABLE
IST637I SUBAREA= 1 ELEMENT= 1
IST388I DYNAMIC CDRSC DEFINITION SUPPORT = YES
IST171I ACTIVE SESSIONS = 0000000001, SESSION REQUESTS = 0000000
IST314I END
```

When you issue the same command in VTAM V4R4, you receive output similar to the following:

```
IST097I DISPLAY ACCEPTED
IST075I NAME = NETA.SSCP1A, TYPE = CDRM
IST1046I CP NETA.SSCP1A ALSO EXISTS
IST486I STATUS= ACTIV, DESIRED STATE= ACTIV
IST815I AUTOMATIC RECOVERY IS SUPPORTED
IST231I CDRM MAJOR NODE = VTAMSEG
IST654I I/O TRACE = OFF, BUFFER TRACE = OFF
IST476I CDRM TYPE = HOST, GATEWAY CAPABLE
IST637I SUBAREA= 1 ELEMENT= 1
IST388I DYNAMIC CDRSC DEFINITION SUPPORT = YES
IST171I ACTIVE SESSIONS = 0000000001, SESSION REQUESTS = 0000000
IST924I -----
IST075I NAME = NETA.SSCP1A, TYPE = HOST CP
IST1046I SSCP NETA.SSCP1A ALSO EXISTS
IST486I STATUS= ACTIV, DESIRED STATE= ACTIV
IST977I MDLTAB=***NA*** ASLTAB=***NA***
IST861I MODETAB=***NA*** USSTAB=***NA*** LOGTAB=***NA***
IST934I DLOGMOD=***NA*** USS LANGTAB=***NA***
IST597I CAPABILITY-PLU ENABLED ,SLU ENABLED ,SESSION LIMIT NON
IST231I APPL MAJOR NODE = VTAMSEG
IST654I I/O TRACE = OFF, BUFFER TRACE = OFF
IST271I JOBNAME = VTAM, STEPNAME = VTAM, DSPNAME = 0AAABIST
IST228I ENCRYPTION = NONE
IST1050I MAXIMUM COMPRESSION LEVEL - INPUT = 0, OUTPUT = 0
IST171I ACTIVE SESSIONS = 0000000000, SESSION REQUESTS = 0000000
IST314I END
```

The output you receive in VTAM V4R4 indicates that you have a host CP, even if you have defined your VTAM as a subarea node and not as an APPN node. This host CP is used for management services transport and is not used for session setup or routing.

Line: The resource type “PHYSICAL UNIT” in message IST089I now appears as one of the following resource types:

- PU_T1
- PU_T2
- PU_T2.1.

Upgrading VTAM V3R4.2 to VTAM V4R4

Local SNA Major Node: The resource type “PHYSICAL UNIT” in message IST089I now appears as one of the following resource types:

- PU_T1
- PU_T2
- PU_T2.1.

Model Major Node: The resource type “PHYSICAL UNIT” in message IST089I now appears as one of the following resource types:

- PU_T1
- PU_T2
- PU_T2.1.

Operator Console: In VTAM V3R4.2, when you issue a DISPLAY ID command for the operator console (ISTNOP), you receive output similar to the following:

```
IST097I DISPLAY ACCEPTED
IST075I NAME = NETA.ISTNOP, TYPE = APPL
IST486I STATUS= ACTIV, DESIRED STATE= ACTIV
IST977I MDLTAB=***NA*** ASLTAB=***NA***
IST861I MODETAB=***NA*** USSTAB=***NA*** LOGTAB=***NA***
IST934I DLOGMOD=***NA*** USS LANGTAB=***NA***
IST597I CAPABILITY-PLU INHIBITED,SLU INHIBITED,SESSION LIMIT NONE
IST231I APPL MAJOR NODE = VTAMSEG
IST654I I/O TRACE = OFF, BUFFER TRACE = OFF
IST271I JOBNAME = ***NA***, STEPNAME = ***NA***, DSPNAME = ***NA***
IST228I ENCRYPTION = NONE
IST1050I MAXIMUM COMPRESSION LEVEL - INPUT = 0, OUTPUT = 0
IST171I ACTIVE SESSIONS = 0000000000, SESSION REQUESTS = 0000000000
IST172I NO SESSIONS EXIST
IST314I END
```

When you issue the same command in VTAM V4R4, you receive output similar to the following, which includes a new message, IST1395I:

```
IST097I DISPLAY ACCEPTED
IST075I NAME = NETA.ISTNOP, TYPE = APPL
IST486I STATUS= ACTIV, DESIRED STATE= ACTIV
IST977I MDLTAB=***NA*** ASLTAB=***NA***
IST1395I FLDTAB = ISTMSFLD
IST861I MODETAB=***NA*** USSTAB=***NA*** LOGTAB=***NA***
IST934I DLOGMOD=***NA*** USS LANGTAB=***NA***
IST597I CAPABILITY-PLU INHIBITED,SLU INHIBITED,SESSION LIMIT NONE
IST231I APPL MAJOR NODE = VTAMSEG
IST654I I/O TRACE = OFF, BUFFER TRACE = OFF
IST271I JOBNAME = ***NA***, STEPNAME = ***NA***, DSPNAME = ***NA***
IST228I ENCRYPTION = NONE
IST1050I MAXIMUM COMPRESSION LEVEL - INPUT = 0, OUTPUT = 0
IST171I ACTIVE SESSIONS = 0000000000, SESSION REQUESTS = 0000000000
IST172I NO SESSIONS EXIST
IST314I END
```

Switched Major Node: The resource type “PHYSICAL UNIT” in message IST089I now appears as one of the following resource types:

- PU_T1
- PU_T2
- PU_T2.1.

DISPLAY MAJNODES

Changes have occurred in the output you receive when you issue the DISPLAY MAJNODES command in VTAM V4R4. The resource type “PU T4/5 MAJ NODE” in message IST089I now appears as “PU T4/5.”

DISPLAY MODELS

Changes have occurred in the output you receive when you issue the DISPLAY MODELS command in VTAM V4R4 for one of the following resources:

- PU
- Model major node, when SCOPE=ALL.

PU: The resource type “PHYSICAL UNIT” in message IST089I now appears as one of the following resource types:

- PU_T1
- PU_T2
- PU_T2.1.

Model Major Node, When SCOPE=ALL: The resource type “PHYSICAL UNIT” in message IST089I now appears as one of the following resource types:

- PU_T1
- PU_T2
- PU_T2.1.

DISPLAY PENDING

Changes have occurred in the output you receive when you issue the DISPLAY PENDING command in VTAM V4R4. The resource type “PU T4/5 MAJ NODE” in message IST089I now appears as “PU T4/5.”

DISPLAY SESSIONS

In VTAM V3R4.2, if you specify LIST=ALL when issuing the DISPLAY SESSIONS command, you receive output similar to the following:

```
IST097I DISPLAY ACCEPTED
IST350I DISPLAY TYPE = SESSIONS
IST873I      PLU              SLU              SID              STATUS
IST874I NETA.APPL1          NETA.NETAPPL1    EAABEEC336CAAC10  ACTIV
IST878I NUMBER OF PENDING SESSIONS =          0
IST878I NUMBER OF ACTIVE SESSIONS =           1
IST878I NUMBER OF QUEUED SESSIONS =           0
IST878I NUMBER OF TOTAL SESSIONS =            1
IST314I END
```

When you issue the same command in VTAM V4R4, you receive output similar to the following:

```
IST097I DISPLAY ACCEPTED
IST350I DISPLAY TYPE = SESSIONS
IST873I      PLU              SLU              SID              STATUS
IST874I NETA.APPL1          NETA.NETAPPL1    EAABEEC336CB5F06  ACTIV
IST924I -----
IST878I NUMBER OF PENDING SESSIONS =          0
IST924I -----
IST878I NUMBER OF ACTIVE SESSIONS =           1
IST1162I  LU-LU              =              1
IST924I -----
IST878I NUMBER OF QUEUED SESSIONS =           0
IST924I -----
IST878I NUMBER OF TOTAL SESSIONS =            1
IST924I -----
IST1161I ACTIVE SSCP SESSIONS
IST1162I  SSCP-LU              =              3
IST1162I  SSCP-PU              =              2
IST1162I  SSCP-SSCP           =              0
IST314I END
```

Additionally, if you have more than 100 sessions (100 is the default value on a new MAX operand on the DISPLAY SESSIONS command), or if you specify the new MAX operand and the number of sessions exceeds the value you specify on the MAX operand, some session count fields will contain a string of 10 asterisks, as shown in the following example:

```

IST097I DISPLAY ACCEPTED
IST350I DISPLAY TYPE = SESSIONS
IST873I      PLU              SLU              SID              STATUS
IST874I NETA.APPL1          NETA.NETAPPL1      EAABEEC336CB5F06  ACTIV
IST924I -----
IST878I NUMBER OF PENDING SESSIONS =          *****
IST924I -----
IST878I NUMBER OF ACTIVE  SESSIONS =          *****
IST1162I   LU-LU              =                *****
IST924I -----
IST878I NUMBER OF QUEUED  SESSIONS =          *****
IST924I -----
IST878I NUMBER OF TOTAL   SESSIONS =          *****
IST924I -----
IST1161I ACTIVE SSCP SESSIONS
IST1162I   SSCP-LU              =                3
IST1162I   SSCP-PU              =                2
IST1162I   SSCP-SSCP            =                0
IST314I END

```

DISPLAY TERMS

Changes have occurred in the output you receive when you issue the DISPLAY TERMS command in VTAM V4R4. The resource type "PHYSICAL UNIT" in message IST089I now appears as one of the following resource types:

- PU_T1
- PU_T2
- PU_T2.1.

DISPLAY TRACES

Changes have occurred in the output you receive when you issue the DISPLAY TRACES command for the following types:

- NODES
- VTAM.

TYPE=NODES: In VTAM V3R4.2, if you specify TYPE=NODES when issuing a DISPLAY TRACES command, and you have a buffer contents or I/O trace active for a host cross-domain resource manager, you receive output similar to the following:

```
IST097I DISPLAY ACCEPTED
IST350I DISPLAY TYPE = TRACES,TYPE=NODES
IST075I NAME = SSCP1A, TYPE = CDRM
IST1041I SSCP1A          CDRM
IST1042I  IO    = ON
IST924I -----
IST075I NAME = APPL1A, TYPE = APPL SEGMENT
IST1041I NETA.APPL1      APPL
IST1042I  BUF  = ON    - AMOUNT = PARTIAL
IST1041I NETA.APPL2      APPL
IST1042I  BUF  = ON    - AMOUNT = PARTIAL
IST924I -----
IST075I NAME = CDRSC1A, TYPE = CDRSC SEGMENT
IST1041I NETA.NETAPPL1   CDRSC
IST1042I  IO    = ON    - AMOUNT = **NA**
IST924I -----
IST1422I SAVED TRACE REQUESTS FOR NETA.NOAPP1
IST1041I NETA.NOAPP1     N/A
IST1042I  BUF  = SAVED - AMOUNT = PARTIAL
IST314I END
```

When you issue the same command in VTAM V4R4, you receive output similar to the following, which includes a new field in message IST1042I, indicating whether the trace command was saved for the resource:

```

IST097I DISPLAY ACCEPTED
IST350I DISPLAY TYPE = TRACES,TYPE=NODES
IST075I NAME = SSCP1A, TYPE = CDRM
IST1041I SSCP1A          CDRM
IST1042I  IO  = ON    - AMOUNT = **NA**   - SAVED = YES
IST924I -----
IST075I NAME = NETA.SSCP1A, TYPE = HOST CP
IST1041I NETA.SSCP1A    HOST CP
IST1042I  IO  = ON    - AMOUNT = **NA**   - SAVED = YES
IST924I -----
IST075I NAME = APPL1A, TYPE = APPL SEGMENT
IST1041I NETA.APPL1     APPL
IST1042I  BUF = ON    - AMOUNT = PARTIAL  - SAVED = YES
IST1041I NETA.APPL2     APPL
IST1042I  BUF = ON    - AMOUNT = PARTIAL  - SAVED = NO
IST924I -----
IST075I NAME = CDRSC1A, TYPE = CDRSC SEGMENT
IST1041I NETA.NETAPPL1  CDRSC
IST1042I  IO  = ON    - AMOUNT = **NA**   - SAVED = YES
IST924I -----
IST1422I SAVED TRACE REQUESTS FOR NETA.NOAPP1
IST1041I NETA.NOAPP1    N/A
IST1042I  BUF = SAVED - AMOUNT = PARTIAL
IST314I END

```

The output you receive in VTAM V4R4 also indicates that tracing is active for a host CP, even if you have defined your VTAM as a subarea node and not as an APPN node. This host CP is used for management services transport and is not used for session setup or routing.

TYPE=VTAM: In VTAM V3R4.2, if you specify TYPE=VTAM,OPTION=ALL on the START command or MODIFY TRACE command before issuing the DISPLAY TRACES command, when you issue the DISPLAY TRACES command, you receive output similar to the following:

```

IST097I DISPLAY ACCEPTED
IST350I DISPLAY TYPE = TRACES,TYPE=VTAM
IST315I VTAM INTERNAL TRACE ACTIVE - MODE = INT, SIZE = 200
IST199I OPTIONS = API APPC CIO ESC LCS LOCK MSG NRM PIU PSS SMS SSCP
IST199I OPTIONS = VCNS
IST314I END

```

When you issue the same command in VTAM V4R4, you receive output similar to the following, which includes new trace options—CFS, CMIP, CSM, HPR, TCP, XBUF, and XCF—in message IST199I:

```

IST097I DISPLAY ACCEPTED
IST350I DISPLAY TYPE = TRACES,TYPE=VTAM
IST315I VTAM INTERNAL TRACE ACTIVE - MODE = INT, SIZE = 200
IST199I OPTIONS = API APPC CFS CIO CMIP CSM ESC HPR LCS LOCK MSG NRM PIU
IST199I OPTIONS = PSS SMA SSCP TCP VCNS XBUF XCF
IST314I END

```

DISPLAY VTAMOPTS

When you issue a DISPLAY VTAMOPTS command in VTAM V4R4, you receive the following new message:

```
IST1348I  VTAM STARTED AS SUBAREA NODE
```

In addition, new start options, which have been added since VTAM V3R4.2, will be displayed.

MODIFY CSALIMIT

In VTAM V3R4.2, when you issue a MODIFY CSALIMIT command and the command completes successfully, you receive the following message:

```
IST223I  MODIFY CSALIMIT COMMAND COMPLETED
```

In VTAM V4R4, when you issue a MODIFY CSALIMIT command and the command completes successfully, you will receive message IST223I in the following format:

```
IST223I  MODIFY COMMAND COMPLETED
```

MODIFY IOPD

In VTAM V3R4.2, when you issue a MODIFY IOPD command and the command completes successfully, you receive the following message:

```
IST223I  MODIFY IOPD COMMAND COMPLETED
```

In VTAM V4R4, when you issue a MODIFY IOPD command and the command completes successfully, you will receive message IST223I in the following format:

```
IST223I  MODIFY COMMAND COMPLETED
```

MODIFY MSGMOD

In VTAM V3R4.2, when you issue a MODIFY MSGMOD command and the command completes successfully, you receive the following message:

```
IST223I  MODIFY MSGMOD COMMAND COMPLETED
```

In VTAM V4R4, when you issue a MODIFY MSGMOD command and the command completes successfully, you will receive message IST223I in the following format:

```
IST223I  MODIFY COMMAND COMPLETED
```


MODIFY NOTRACE

In VTAM V3R4.2, when you issue a MODIFY NOTRACE command for a host cross-domain resource manager, you receive output similar to the following:

```
IST097I MODIFY ACCEPTED
IST512I TRACE TERMINATED FOR NODE = SSCP1A
```

If you specify V4R4, V4R2, or V4R1 on the MSGLEVEL start option or on the MSGLVL operand of the USSMSG macro in the USS table where message IST1143I is defined, the output you receive in VTAM V4R4 when you issue the same command is similar to the following:

```
IST097I MODIFY ACCEPTED
IST1143I TRACE TERMINATED FOR NETA.SSCP1A
IST1045I NODE TYPE = CDRM
IST314I  END
IST1143I TRACE TERMINATED FOR NETA.SSCP1A
IST1045I NODE TYPE = HOST CP
IST314I  END
```

The output you receive indicates that tracing has been stopped for a host CP node, even if you have defined your VTAM as a subarea node and not as an APPN node. This host CP is used for management services transport and is not used for session setup or routing.

If you use the default value BASE for the MSGLEVEL start option or the MSGLVL operand, you receive output similar to the following, showing duplicate messages rather than the expanded, more informative output received when MSGLEVEL or MSGLVL=V4R4, V4R2, or V4R1:

```
IST097I MODIFY ACCEPTED
IST512I TRACE TERMINATED FOR NODE = SSCP1A
IST512I TRACE TERMINATED FOR NODE = SSCP1A
```

MODIFY PPOLOG

In VTAM V3R4.2, when you issue a MODIFY PPOLOG command and the command completes successfully, you receive the following message:

```
IST223I  MODIFY PPOLOG COMMAND COMPLETED
```

In VTAM V4R4, when you issue a MODIFY PPOLOG command and the command completes successfully, you will receive message IST223I in the following format:

```
IST223I  MODIFY COMMAND COMPLETED
```

MODIFY SUPP

In VTAM V3R4.2, when you issue a MODIFY SUPP command and the command completes successfully, you receive the following message:

```
IST223I  MODIFY SUPP COMMAND COMPLETED
```

In VTAM V4R4, when you issue a MODIFY SUPP command and the command completes successfully, you will receive message IST223I in the following format:

```
IST223I  MODIFY COMMAND COMPLETED
```

MODIFY TRACE

In VTAM V3R4.2, when you issue a MODIFY TRACE command for a host cross-domain resource manager, you receive output similar to the following:

```
IST097I MODIFY ACCEPTED
IST513I TRACE INITIATED FOR NODE = SSCP1A
```

If you specify V4R4, V4R2, or V4R1 on the MSGLEVEL start option or on the MSGLVL operand of the USSMSG macro in the USS table where message IST1144I is defined, the output you receive in VTAM V4R4 when you issue the same command is similar to the following:

```
IST097I MODIFY ACCEPTED
IST1144I TRACE INITIATED FOR NETA.SSCP1A
IST1045I NODE TYPE = CDRM
IST314I  END
IST1144I TRACE INITIATED FOR NETA.SSCP1A
IST1045I NODE TYPE = HOST CP
IST314I  END
```

The output you receive indicates that tracing has been started for a host CP node, even if you have defined your VTAM as a subarea node and not as an APPN node. This host CP is used for management services transport and is not used for session setup or routing.

If you use the default value BASE for the MSGLEVEL start option or the MSGLVL operand, you receive output similar to the following, showing duplicate messages rather than the expanded, more informative output received when MSGLEVEL or MSGLVL=V4R4, V4R2, or V4R1:

```
IST097I MODIFY ACCEPTED
IST513I TRACE INITIATED FOR NODE = SSCP1A
IST513I TRACE INITIATED FOR NODE = SSCP1A
```

In VTAM V3R4.2, if you specify TYPE=VTAM, OPTION=ALL when issuing the MODIFY TRACE command, you receive output similar to the following:

```
IST097I MODIFY ACCEPTED
IST315I VTAM INTERNAL TRACE ACTIVE - MODE = INT, SIZE = 200
IST199I OPTIONS = API APPC CIO ESC LCS LOCK MSG NRM PIU PSS SMS SSCP
IST199I OPTIONS = VCNS
IST314I  END
```

When you issue the same command in VTAM V4R4, you receive output similar to the following, which includes new trace options—CFS, CMIP, CSM, HPR, TCP, SBUF, and XCF—in message IST199I:

```
IST097I MODIFY ACCEPTED
IST315I VTAM INTERNAL TRACE ACTIVE - MODE = INT, SIZE = 200
IST199I OPTIONS = API APPC CFS CIO CMIP CSM ESC HPR LCS LOCK MSG NRM PIU
IST199I OPTIONS = PSS SMA SSCP TCP VCNS XBUF XCF
IST314I  END
```

MODIFY USERVAR

When you issue a MODIFY USERVAR command to change the value of a USERVAR that was previously defined, the first message in the message group you receive will now always be:

```
IST1283I  MODIFY USERVAR COMMAND COMPLETE
```

Other messages in the group have not changed.

MODIFY VTAMOPTS

In VTAM V3R4.2, when you issue a MODIFY VTAMOPTS command and the command completes successfully, you receive the following message:

```
IST223I  MODIFY VTAMOPTS COMMAND COMPLETED
```

In VTAM V4R4, when you issue a MODIFY VTAMOPTS command and the command completes successfully, you will receive message IST223I in the following format:

```
IST223I  MODIFY COMMAND COMPLETED
```

START

When you issue a START command in VTAM V4R4, you receive the following new message:

```
IST1348I  VTAM STARTED AS SUBAREA NODE
```

In VTAM V3R4.2, if you specify TRACE,TYPE=VTAM,OPTION=ALL when issuing the START command, you receive output similar to the following:

```
IST315I  VTAM INTERNAL TRACE ACTIVE - MODE = INT, SIZE = 200
IST199I  OPTIONS = API APPC CIO ESC LCS LOCK MSG NRM PIU PSS SMS SSCP
IST199I  OPTIONS = VCNS
IST314I  END
```

When you issue the same command in VTAM V4R4, you receive output similar to the following, which includes new trace options—CFS, CSM, TCP, XBUF, and XCF—in message IST199I:

```
IST315I  VTAM INTERNAL TRACE ACTIVE - MODE = INT, SIZE = 200
IST199I  OPTIONS = API APPC CFS CIO CMIP CSM ESC HPR LCS LOCK MSG NRM PIU
IST199I  OPTIONS = PSS SMA SSCP TCP VCNS XBUF XCF
IST314I  END
```

VARY ACT

In VTAM V3R4.2, when you issue a VARY ACT command, you receive output similar to the following:

```
IST097I VARY ACCEPTED
IST093I SSCP1A ACTIVE
```

If you specify V4R4, V4R2, or V4R1 on the MSGLEVEL start option or on the MSGLVL operand of the USSMSG macro in the USS table where message IST1132I is defined, the output you receive in VTAM V4R4 when you issue a VARY ACT command is similar to the following:

```
IST097I MODIFY ACCEPTED
IST1132I NETA.SSCP1A IS ACTIVE, TYPE = CDRM
IST1132I NETA.SSCP1A IS ACTIVE, TYPE = HOST CP
```

The output you receive indicates that a host CP node has been activated, even if you have defined your VTAM as a subarea node and not as an APPN node. This host CP is used for management services transport and is not used for session setup or routing.

If you use the default value BASE for the MSGLEVEL start option or the MSGLVL operand, you receive output similar to the following, showing duplicate messages rather than the expanded, more informative output received when MSGLEVEL or MSGLVL=V4R4, V4R2, or V4R1:

```
IST097I VARY ACCEPTED
IST093I SSCP1A ACTIVE
IST093I SSCP1A ACTIVE
```

VARY DIAL

In VTAM V3R4.2, when you issue a VARY DIAL command and it completes successfully, you receive the following message:

```
IST093I %%%%%%%%% ACTIVE
```

In VTAM V4R4, you will no longer receive message IST093I. Instead, you will receive the following message:

```
IST241I VARY DIAL COMMAND COMPLETE FOR %%%%%%%%%
```

VARY HANGUP

In VTAM V3R4.2, when you issue a VARY HANGUP command and it completes successfully, you receive the following message:

```
IST621I RECOVERY SUCCESSFUL FOR NETWORK NODE %%%%%%%%%
```

In VTAM V4R4, you will no longer receive message IST621I. Instead, you will receive the following message:

```
IST241I VARY HGUP COMMAND COMPLETE FOR %%%%%%%%%
```

Display of a Maximum Number of Resources Enhancement

The following new messages now appear in the output of DISPLAY commands on which the MAX operand can be coded:

- IST1315I
- IST1358I
- IST1454I.

IST1315I: Message IST1315I now appears in the output of the following DISPLAY commands:

- DISPLAY ADJSSCPS
- DISPLAY APPLS
- DISPLAY CDRMS
- DISPLAY CDRSCS
- DISPLAY CLSTRS
- DISPLAY GROUPS
- DISPLAY LINES
- DISPLAY LUGROUPS, when SCOPE=ALL
- DISPLAY MAJNODES
- DISPLAY PATHTAB
- DISPLAY PENDING
- DISPLAY SESSIONS
- DISPLAY STATIONS
- DISPLAY STORUSE
- DISPLAY TABLE, when SCOPE=ALL
- DISPLAY TERMS
- DISPLAY USERVAR.

The text of message IST1315I is:

IST1315I DISPLAY TRUNCATED AT keyword = number

IST1358I: Message IST1358I replaces message IST172I in the output of the following DISPLAY commands:

- DISPLAY APPLS
- DISPLAY CDRMS
- DISPLAY CDRSCS
- DISPLAY CLSTRS
- DISPLAY GROUPS
- DISPLAY LINES
- DISPLAY MAJNODES
- DISPLAY PENDING
- DISPLAY TERMS.

The text of message IST1358I is:

IST1358I NO QUALIFYING MATCHES FOR id

The text of message IST172I is:

IST172I NO text

IST1454I: A new message, IST1454I, now appears in the output of the following DISPLAY commands:

- DISPLAY ADJSSCPS
- DISPLAY APPLS
- DISPLAY CDRMS
- DISPLAY CDRSCS
- DISPLAY CLSTRS
- DISPLAY GROUPS
- DISPLAY LINES
- DISPLAY LUGROUPS, when SCOPE=ALL
- DISPLAY MAJNODES

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- DISPLAY PATHTAB
- DISPLAY PENDING
- DISPLAY STATIONS
- DISPLAY STORUSE
- DISPLAY TABLE, when SCOPE=ALL
- DISPLAY TERMS
- DISPLAY USERVAR.

The text of message IST1454I is:

```
IST1454I count resources DISPLAYED [FOR ID = rscname]
```

This message is issued once for every ID value (*rscname*) specified on the DISPLAY command and indicates how many (*count*) resources found match the command specifications (for example ID, EXCLUDE, SCOPE, IDTYPE).

rscname is network-qualified only if the name specified on the ID operand on the corresponding DISPLAY command is network-qualified. FOR ID=*rscname* is not included if the ID operand is not coded on the command.

IST1454I is issued even if the limit specified on the MAX operand is reached for the command.

Changes to Messages

This section shows the messages that have changed or have been deleted since VTAM V3R4.2.

Changed Messages

The following list shows the message numbers and text of messages that have changed since VTAM V3R4.2. Appendix A, "Message Additions, Deletions, and Changes" in *VTAM Messages* identifies the types of changes that have occurred to messages since VTAM V3R4.2, including new and changed variable values, enhancements to message explanations, and changes to variable lengths.

In the following list, a percent sign (%) within the message text represents a character that is reserved for variable information. The maximum length of the variable is indicated by the number of percent signs. When some messages are displayed on your console, if the variable information is shorter than the variable field, the extra blanks are suppressed, causing the message text to shift to the left.

Do not assume from the following list that the text or tokens start in certain columns. The specified USS table determines how your system handles blank suppression. For more information about blank suppression, refer to the discussion of the "OPT" operand on the USSMSG macro in the *VTAM Resource Definition Reference*.

VTAM Network Operator Messages: The following list shows the VTAM network operator messages that have changed since VTAM V3R4.2:

```
V3R4.2: IST049I VTAM START REJECTED - OPEN FOR VTAM ACB FAILED, ACB ERROR FLAG = %%  
V4R4:   IST049I VTAM START REJECTED - %%%%%%%%% FOR %% ACBFAILED
```

```
V3R4.2: IST052I %%%%%%%%% IS AN INVALID START PARAMETER KEYWORD - IGNORED  
V4R4:   IST052I %%%%%%%%% IS AN INVALID START OPTION KEYWORD - IGNORED
```

```
V3R4.2: IST077I SIO = %%%% CUA = %%%%%%%%%%  
V4R4:   IST077I SIO = %%%% CUA = %%% %%%%%%%%%%
```

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V3R4.2: IST084I NETWORK NODES:
V4R4: IST084I NETWORK RESOURCES:

V3R4.2: IST087I TYPE = %%%%%%%%%%, CONTROL = %%%
V4R4: IST087I TYPE = %%%%%%%%%%, CONTROL = %%%, HPDT = %%%

V3R4.2: IST135I PHYSICAL UNIT = %%%%%%%%%%
V4R4: IST135I PHYSICAL UNIT = %%%%%%%%%%

V3R4.2: IST154I EXPANSION FAILED FOR %% BUFFER POOL - CODE %%
V4R4: IST154I EXPANSION FAILED FOR %% BUFFER POOL - CODE %, USERID=%%%%%%%%%%

V3R4.2: IST172I NO %%%%%%%%%%
V4R4: IST172I NO %%%%%%%%%%

V3R4.2: IST232I %%%%%%%%%%, %%%%%%%%%%
V4R4: IST232I %%%%%%%%%% %%%%%%%%%%

V3R4.2: IST247I LOAD/DUMP PROCEDURE STATUS = %%%%%%%%%%
V4R4: IST247I LOAD/DUMP PROCEDURE STATUS = %%%%%%%%%%

V3R4.2: IST257I VTAM SDUMP FAILED WITH RETURN CODE %%%
V4R4: IST257I VTAM SDUMP FAILED WITH RETURN CODE %% REASON X'%'

V3R4.2: IST301I INSUFFICIENT VFBUF STORAGE FOR I/O TRACE TABLE
V4R4: IST301I INSUFFICIENT PRIVATE FIXED STORAGE FOR I/O TRACE TABLE

V3R4.2: IST316I VTAM INTERNAL TRACE USER OPTIONS ARE NOW INACTIVE
V4R4: IST316I %%%%%%%%%% TRACE USER OPTIONS ARE NOT ACTIVE

V3R4.2: IST320I CONFIGURATION %%%%%%%%%% DEFINITION FAILED - %%%%%%%%%%
V4R4: IST320I DEFINITION %%%%%%%%%% NOT SUCCESSFUL - %%%%%%%%%%

V3R4.2: IST350I DISPLAY TYPE = %%%%%%%%%%
V4R4: IST350I DISPLAY TYPE = %%%%%%%%%%

V3R4.2: IST395I %%%%%%%%%%
V4R4: IST395I %%%%%%%%%%

V3R4.2: IST396I	LNKSTA	STATUS	CTG	GTG	ADJNODE	ADJSA	NETID
V4R4: IST396I	LNKSTA	STATUS	CTG	GTG	ADJNODE	ADJSA	NETID

V3R4.2: IST397I %%%%%%%%%%
V4R4: IST397I %%%%%%%%%%

V3R4.2: IST442I ATTN = %%%%%%%%%% RDATN = %%%%%%%%%% IPIU = %%%%%%%%%%
V4R4: IST442I ATTN = %%%%%%%%%% RDATN = %%%%%%%%%% IPDU = %%%%%%%%%%

V3R4.2: IST443I OPIU = %%%%%%%%%% RDBUF = %%%%%%%%%% SLODN = %%%%%%%%%%
V4R4: IST443I OPDU = %%%%%%%%%% RDBUF = %%%%%%%%%% SLODN = %%%%%%%%%%

V3R4.2: IST448I %%%%%%%%%% OPTION IGNORED - %%%%%%%%%%
V4R4: IST448I %%%%%%%%%% OPTION IGNORED - %%%%%%%%%%

V3R4.2: IST453I %%%%%%%%%% PARAMETER VALUE INVALID
V4R4: IST453I %%%%%%%%%% PARAMETER VALUE %%%%%%%%%% NOT VALID

V3R4.2: IST476I CDRM TYPE = %%%%%%%%%%
V4R4: IST476I CDRM TYPE = %%%%%%%%%%

V3R4.2: IST522I %%% %%% SA %%%%%%%%%% TO SA %%%%%%%%%%
V4R4: IST522I %% %%% SA %%%%%%%%%% TO SA %%%%%%%%%%

V3R4.2: IST530I %%%%%%%%%% PENDING %%%%%%%%%%
V4R4: IST530I %%%%%%%%%% PENDING FROM %%%%%%%%%% TO %%%%%%%%%% FOR %%%%%%%%%%

V3R4.2: IST605I ERROR FOR ID = %%%%%%%%%% - %%%%%%%%%% : %%%%%%%%%%, DATA INVALID FOR THIS
NODE
V4R4: IST605I ERROR FOR ID = %%%%%%%%%% - %%%%%%%%%% : %%%%%%%%%%

Upgrading VTAM V3R4.2 to VTAM V4R4

V3R4.2: IST621I %%%%%%%%%% FOR NETWORK NODE %%%%%%%%%%
V4R4: IST621I %%%%%%%%%% FOR NETWORK RESOURCE %%%%%%%%%%

V3R4.2: IST623I DEFAULT ADJACENT SSCP TABLE %%%%%%%%%%
V4R4: IST623I %%%%%%%%%% ADJACENT SSCP TABLE %%%%%%%%%%

V3R4.2: IST624I %%%%%%%%%%
V4R4: IST624I %%%%%%%%%% %%%%%%%%%% %%%%%%%%%%

V3R4.2: IST635I %%%%%%%%%%
V4R4: IST635I %%%%%%%%%% %%%%%%%%%% %%%%%%%%%% %%%%%%%%%%

V3R4.2: IST637I SUBAREA=%%%%%%%%%% ELEMENT=%%%%%%%%%%
V4R4: IST637I SUBAREA = %%%%%%%%%% ELEMENT = %%%%%%%%%% SSCPID = %%%%%%%%%%

V3R4.2: IST654I I/O TRACE = %%%%%%%%%%, BUFFER TRACE = %%%%%%%%%%
V4R4: IST654I I/O TRACE = %%%%%%%%%%, BUFFER TRACE = %%%%%%%%%%

V3R4.2: IST655I %%%%%%%%%% TRACE STATUS = %%%%%%%%%%
V4R4: IST655I %%%%%%%%%% TRACE STATUS = %%%%%%%%%%

V3R4.2: IST658I %%%%%%%%%% COMMAND FAILED - %%%%%%%%%% NOT FOUND
V4R4: IST658I %%%%%%%%%% COMMAND FAILED - %%%%%%%%%%NOT FOUND

V3R4.2: IST751I SIO = %%%%%%%%%%, ERROR CT = %%%%%%%%%%, CUA = %%%%%%%%%%
V4R4: IST751I SIO = %%%%%%%%%%, ERROR CT = %%%%%%%%%%, CUA = %%%%%%%%%%

V3R4.2: IST784I SESSION(S) EXIST(S) WITH UNKNOWN PARTNER
V4R4: IST784I SESSION(S) EXIST(S) WITH UNKNOWN PARTNER(S)

V3R4.2: IST786I %%%%%%%%%% COMMAND REJECTED - %%%%%%%%%%
V4R4: IST786I %%%%%%%%%% COMMAND REJECTED - %%%%%%%%%%

V3R4.2: IST796I HOSTSA VALUE EXCEEDS MAXSUBA
V4R4: IST796I HOSTSA VALUE EXCEEDS %%%%%%%%%%

V3R4.2: IST833I SKIPPING TO NEXT %%%%%%%%%%
V4R4: IST833I SKIPPING TO NEXT %%%%%%%%%%

V3R4.2: IST935I ORIGIN=%%%%%%%%%%, NETID=%%%%%%%%%%, ID=%%%%%%%%%%
V4R4: IST935I ORIGIN=%%%%%%%%%%, NETID=%%%%%%%%%%, ID=%%%%%%%%%%

V3R4.2: IST940I %%%%%%%%%%
V4R4: IST940I %%%%%%%%%%

V3R4.2: IST956I %%%%%%%%%% SAP=%%%%%%%%%% MAC=%%%%%%%%%% %%%%%%%%%%
V4R4: IST956I %%%%%%%%%% SAP=%%%%%%%%%% MAC=%%%%%%%%%% %%%%%%%%%%

V3R4.2: IST958I INBND=%%%%%%%%%% OUTBND=%%%%%%%%%% PENDING=%%%%%%%%%% ATTN=%%%%%%%%%% CUA=%%%%%%%%%%
V4R4: IST958I INBND=%%%%%%%%%% OUTBND=%%%%%%%%%% PENDING=%%%%%%%%%% ATTN=%%%%%%%%%% CUA=%%%%%%%%%%

V3R4.2: IST966I USER=%%%%%%%%%%
V4R4: IST966I USER=VCNS

V3R4.2: IST984I USER EXIT %%%%%%%%%% IS %%%%%%%%%%
V4R4: IST984I USER EXIT %%%%%%%%%% IS %%%%%%%%%%

V3R4.2: IST985I USER EXIT %%%%%%%%%% %%%%%%%%%% FAILED-CODE %%%%%%%%%%
V4R4: IST985I USER EXIT %%%%%%%%%% %%%%%%%%%% FAILED-CODE %%%%%%%%%%

V3R4.2: IST998E VTAM MESSAGE %%%%%%%%%% ISSUED BUT DOES NOT EXIST
V4R4: IST998E VTAM MESSAGE %%%%%%%%%% ISSUED BUT DOES NOTEXIST

V3R4.2: IST1009I SID = %%%%%%%%%%
V4R4: IST1009I SID = %%%%%%%%%%, HPDT = %%%%%%%%%%

V3R4.2: IST1021I MEDIUM=%%%%%%%%%%,ADAPNO=%%%%%%%%%%,CUA=%%%%%%%%%%,SNA SAP=%%%%%%%%%%
V4R4: IST1021I MEDIUM=%%%%%%%%%%,ADAPNO=%%%%%%%%%%,CUA=%%%%%%%%%%,SNASAP=%%%%%%%%%%

V3R4.2: IST1023E START I/O TIMEOUT OCCURRED FOR CUA=%%%%%%%%%%
V4R4: IST1023E START I/O TIMEOUT OCCURRED FOR CUA=%%%%%%%%%%

V3R4.2: IST1024I I/O ERROR ON READ FOR CUA=%%-BYTE COUNTMISMATCH
 V4R4: IST1024I I/O ERROR ON READ FOR CUA=%%-BYTE COUNT MISMATCH

V3R4.2: IST1042I %% = %%
 V4R4: IST1042I %% = %% %%%%%%%%%%

V3R4.2: IST1054I VALUE FOR %%%%%%%%%% MUST BE BETWEEN %%%%%%%%%% AND %%%%%%%%%%
 V4R4: IST1054I VALUE FOR %%%%%%%%%% MUST BE BETWEEN %%%%%%%%%% AND %%%%%%%%%%

V3R4.2: IST1055I VALUE FOR %%%%%%%%%% MUST BE NUMERIC
 V4R4: IST1055I VALUE FOR %%%%%%%%%% MUST BE %%%%%%%%%%

V3R4.2: IST1056I %%%%%%%%%% PARAMETER %% MUST BE BETWEEN %% AND %%%%%%%%%%
 V4R4: IST1056I %%%%%%%%%% PARAMETER %% MUST BE BETWEEN %% AND %%%%%%%%%%

V3R4.2: IST1069I PARAMETER %% FOR %%%%%%%%%% MUST BE NUMERIC
 V4R4: IST1069I PARAMETER %% FOR %%%%%%%%%% MUST BE %%%%%%%%%%

V3R4.2: IST1070I %%%%%%%%%% FOR %%%%%%%%%% IS NOT VALID-STARTCONTINUES
 V4R4: IST1070I %%%%%%%%%% FOR %%%%%%%%%% IS NOT VALID-START CONTINUES

V3R4.2: IST1183I %%%%%%%%%% EXIT RETURNED A CODE OF %%
 V4R4: IST1183I %%%%%%%%%% EXIT RETURNED A CODE OF %% %%%%%%%%%%

V3R4.2: IST1388I FAILURE ON SOCKET API %%%%%%%%%% CALL
 V4R4: IST1388I SOCKET %%%%%%%%%% CALL FAILED, TCP ERRORNUMBER = %%%%%%%%%%

Watch Out!

Although the text of message IST075I has not changed, the way VTAM displays it has, and this could affect your automated operation procedures.

In VTAM V3R4.2, if you specify a network-qualified name on the ID operand of the DISPLAY ID command, the resource name in message IST075I is network-qualified. If you specify a non-network-qualified name on the ID operand of the DISPLAY ID command, the resource name in message IST075I is not network-qualified.

In VTAM V4R4, if you specify a non-network-qualified name on the ID operand of the DISPLAY ID command, the resource name in message IST075I is network-qualified for the following resources:

- Application programs
- Cross-domain resources (CDRSCs)
- Cross-domain resource managers (CDRMs)
- Logical units (LUs).

The resource names for any other resources are non-network-qualified in message IST075I.

If you use CLISTs to perform functions based on the resource name in IST075I, you might need to alter the CLISTs to check for network-qualified names only for application programs, CDRSCs, CDRMs, and LUs.

Deleted Messages

This section shows the message IDs of messages that have been deleted since VTAM V3R4.2 and, if the messages have been replaced, the IDs of the messages that have replaced them.

VTAM Network Operator Messages: Table 47 shows VTAM network operator messages that have been deleted since VTAM V3R4.2.

Table 47. Deleted VTAM Network Operator Messages in VTAM V4R4

Deleted Message	Replaced By
IST032I	None
IST047I	None
IST099I	None
IST114I	IST1249I
IST125A	IST1311A
IST468I	None
IST469I	None
IST470I	None
IST471I	None
IST573I	None
IST941I	None
IST942I	None
IST992I	None

TSO/VTAM Network Operator Messages: Table 48 shows TSO/VTAM network operator messages that have been deleted since VTAM V3R4.2.

Table 48. Deleted TSO/VTAM Network Operator Messages in VTAM V4R4

Deleted Message	Replaced By
IKT019I	IKT028I
IKT024I	IKT029I
IKT027I	IKT030I
IKT107I	IKT115I
IKT108I	IKT116I
IKT110I	IKT117I
IKT113I	IKT118I
IKT114I	IKT119I

Resource Type Identifier Enhancements in VTAM Messages

In VTAM V3R4.2, the resource types displayed in the IST089I message for a physical unit or for a PU type 4 or 5 major node sometimes appear in several forms, as shown in the following lists:

Physical unit	PHYSICAL UNIT
	PU_T1
	PU_T2
	PU_T2.1

PU type 4 or 5 major node PU T4/5 MAJ NODE
 PU T4/5

In VTAM V4R4, the resource types displayed in message IST089I are consistent when issued for DISPLAY commands. The resource types “PHYSICAL UNIT” and “PU T4/5 MAJ NODE” no longer appear in the IST089I message. The resource types display in the following forms only:

Physical unit PU_T1
 PU_T2
 PU_T2.1

PU type 4 or 5 major node PU T4/5

If you use CLISTs to perform functions based on the resource type identifiers in IST089I, you might need to alter the CLISTs to check the identifiers for “PU_T1,” “PU_T2,” or “PU_T2.1” instead of “PHYSICAL UNIT,” and “PU T4/5” instead of “PU T4/5 MAJ NODE.”

Changes to VTAM Application Programming Interface

The following changes have occurred to the VTAM application programming interface (API) since VTAM V3R4.2:

- The component identification vector has been updated.
- New RCPRI and RCSEC return codes have been added for the following APPCCMD macros:
 - APPCCMD CONTROL=OPRCNTL,QUALIFY=CNOS
 - APPCCMD CONTROL=OPRCNTL,QUALIFY=DEFINE
 - APPCCMD CONTROL=OPRCNTL,QUALIFY=DISPLAY
 - APPCCMD CONTROL=OPRCNTL,QUALIFY=RESTORE
 - APPCCMD CONTROL=ALLOC.
- The NIBSLWRK bit has been added to the ISTDNIB DSECT. This bit is set on when the SIMLOGON macro for that NIB has successfully completed. A successful completion is indicated by the receipt of a positive INITIATE RSP.
- VTAM restricts the length of the user data field in the BIND to 0–65 bytes. VTAM does not currently enforce this restriction; however, subsequent releases might. IBM recommends that you begin placing no more than 65 bytes of data in the user data field when coding new application programs or migrating existing application programs.
- The REQ and NREQ values on the CHNGDIR operand on the SEND and RPL macros are no longer valid.

In addition to these changes, other macros, vectors, and DSECTs have changed, and new macros, vectors, and DSECTs have been added in association with the new optional functions and enhancements listed in “Implementing New Optional Functions and Enhancements” on page 232. The additional changed and new macros, vectors, and DSECTs do not require changes to your application programs unless you use the new optional functions or enhancements. For information about these additional changed and new macros, vectors, and DSECTs, see the appropriate *VTAM Release Guides*.

For complete information about all changed and new macros, vectors, and DSECTs, refer to *VTAM Programming*, the *VTAM Guide to Programming for LU 6.2* and the *VTAM Programming Reference for LU 6.2*.

Changes to Installation-Wide Exit Routines

This section shows changes to installation-wide exit routines that could affect migration to VTAM V4R4. In addition to these changes, other changes have been made, and new installation-wide exit routines have been added in association with the new optional functions and enhancements listed in “Implementing New Optional Functions and Enhancements” on page 232. For information about these additional changes and new installation-wide exit routines, see the appropriate *VTAM Release Guides*.

For complete information about all changed and new installation-wide exit routines, refer to *VTAM Customization*.

If you are installing VTAM V4R4 from the ServerPac installation method for OS/390, you must reinstall any installation-wide exit routines residing in SYS1.LPALIB.

If you are using OS/390, you should consider using the LPALIB concatenation facilities of OS/390, instead of placing your exit routines in SYS1.LPALIB.

Session Management Exit (SME) Routine

New information is provided on the PLU and SLU resource identifier control (RIC) vectors. This information follows all existing information in the PLU and SLU resource identifier vectors and is provided to the session management exit routine in all cases, even if APPN multiple-network connectivity is not supported.

In VTAM V3R4.2, the initial authorization function is called each time an adjacent SSCP is selected in the DLU direction. In VTAM V4R4, the initial authorization function is called once during session initiation.

For more information about these changes, refer to “Session Management Exit Routine” in *VTAM Customization*.

Changes to IPCS Service Aids for Formatting and Analyzing VTAM Dump Data

Most functions provided by the interactive problem control system (IPCS) command lists (CLISTs) to format and analyze VTAM dumps in VTAM V3R4.2 are now offered as VTAMMAP verb exit routine options in VTAM V4R4. To invoke these options, you can use a new interactive panel interface or you can use the IPCS subcommand VERBEXIT VTAMMAP (on the IPCS command line or in a batch job). You can no longer invoke the CLIST functions by specifying the CLIST names on the IPCS command line (there are some exceptions; see “Functions Still Available through IPCS CLISTs” on page 231.) For information about how to use the new interactive panel interface, refer to “Using the Panel Interface” in *VTAM Diagnosis*. For information about how to use the VERBEXIT VTAMMAP subcommand, refer to “Enhanced VTAM Dump Analysis Tools” in *VTAM Diagnosis*.

In addition, you can no longer invoke multiple options simultaneously using the VERBEXIT VTAMMAP subcommand. Also, if you specify an RDTE name when invoking the following options using the VERBEXIT VTAMMAP subcommand:

- RDTFULL
- RDTHIER
- SES
- RDTSUM.

you must now specify the VERBEXIT VTAMMAP subcommand in the following format:

```
VERBEXIT VTAMMAP 'option_name RDTE(name)'
```

VTAMMAP Verb Exit Routine Options Previously Available through IPCS CLISTS

The following functions, which are available in VTAM V3R4.2 through IPCS CLISTS, are now VTAMMAP verb exit routine options and can be invoked through a new interactive panel interface or through the VERBEXIT VTAMMAP subcommand (on the IPCS command line or in a batch job):

- FINDDSIB
- FINDSIB
- HOST
- PABSCAN
- SIBCHECK
- SPANC
- VTFNDMOD
- VTMODS
- VTVIT
- VTVRBLK
- VTWRE.

Functions Still Available through IPCS CLISTS

The functions available in VTAM V3R4.2 through the IPCS CLISTS in Table 49 are still available through IPCS CLISTS in VTAM V4R4. The names of the CLISTS have changed. You invoke the functions by specifying the new CLIST names on the IPCS command line.

Table 49. Functions Still Available through IPCS CLISTS

Old CLIST Name	New CLIST Name
DUMPED	ISTVDUMP
SLIPREGS	ISTVSLIP
STORMAP	ISTVMAP
VTABEND	ISTVABND
VTSAVE	ISTVSAVE

Combined IPCS CLIST Functions

The function available through the VTASID CLIST in VTAM V3R4.2 is now available through the VTAMMAP HOST option in VTAM V4R4.

The functions available through the RUEEXIT, RUPEEXIT, and SIBEXIT CLISTS in VTAM V3R4.2 are now available through the VTAMMAP SPANC option in VTAM V4R4.

Replaced IPCS CLIST Functions

The function available through the FFDCDUMP CLIST in VTAM V3R4.2 is now available through the First Failure Support Technology (FFST) diagnosis feature in VTAM V4R4. For information about VTAM's support of FFST, refer to "First Failure Support Technology (FFST) for VTAM " in *VTAM Diagnosis*.

Replaced VTAMMAP Verb Exit Routine Options

The VIT option has been deleted and replaced by the new FORMAT and NOFORMAT operands on the VTBASIC and ALL options.

Changes to Control Blocks

If you use any of the control blocks documented in *VTAM Data Areas for MVS/ESA Volume 1*, refer to that book to determine if changes have been made to those control blocks.

Implementing New Optional Functions and Enhancements

After you have successfully installed and upgraded VTAM V3R4.2 to VTAM V4R4, you might want to use some of the new optional functions and enhancements available in VTAM V4R4. Because you are upgrading from VTAM V3R4.2, VTAM V4R4 also includes functions and enhancements introduced in VTAM V4R3, V4R2, and V4R1.

This section lists the functions and enhancements introduced in VTAM V4R4, V4R3, V4R2, and V4R1. You can find comprehensive overviews of these functions and enhancements in the appropriate *VTAM Release Guides*.

Functions and Enhancements Introduced in VTAM V4R4

The following new optional functions and enhancements are introduced in VTAM V4R4. For comprehensive overviews of these new functions and enhancements, refer to the *VTAM Release Guide* for VTAM V4R4.

Advanced Peer-to-Peer Networking (APPN) Enhancements: The following functions enhance VTAM's support of advanced peer-to-peer networking.

- Asynchronous transfer mode support
- Enhanced topology database garbage collection
- Locate congestion control
- QUIESCE function for MODIFY TOPO command

High Performance Routing (HPR) Enhancements: The following functions enhance the the High Performance Routing capabilities.

- High performance routing (HPR)

LU 6.2 Application Program Interface (API) Enhancements: The following functions enhance the VTAM LU 6.2 application program interface.

- APPCCMD macroinstruction enhancements
- APPC enhancements for the Distributed Computing Environment
- Buffer tracing enhancements for LU 6.2 conversations
- Conversations between programs located on the same LU

- Deleting unusable entries from the LU-mode table
- Extended security sense codes
- High performance data transfer for APPC
- Password substitution
- STOKEN for workload balancing
- Session instance identifier enhancements

Network Dynamics: The following functions enhance dynamic access to a network. These functions can eliminate or reduce the predefinition required for resources in your network. In addition, these functions provide increased end user availability and automatic backup.

- Dynamic definition of VTAM-to-VTAM connections
- Multiple dynamic switched major nodes

Operator Interface Enhancements: The following functions enhance VTAM's operator interface.

- DISPLAY SRCHINFO command
- DISPLAY VTAMSTOR command
- Displaying active resources with sessions
- Limiting output from the DISPLAY STORUSE command
- MODIFY EXIT command enhancement

Performance Enhancements: The following functions provide enhancements to VTAM performance.

- Asynchronous transfer mode support
- Enhanced adaptive pacing support
- High performance data transfer for APPC
- New component recovery area (CRA) buffer pools
- High performance data transfer MPC
- Verifying external communication adapter connection reliability
- Verifying communication or cluster controller channel connections

Problem Diagnosis: The following functions are enhancements to VTAM's problem determination and isolation capabilities.

- Buffer tracing enhancements for LU 6.2 conversations
- DISPLAY SRCHINFO command
- DISPLAY VTAMSTOR command
- Elimination of duplicate VTAM dumps
- IST605I message group enhancement
- Tracing resource states with start list
- Unformatted system services (USS) message text enhancements
- XID message group enhancement

Security Enhancements: The following features enhance VTAM's security functions.

- Enhanced cryptographic authentication
- Message authentication support and cryptographic enhancements

Sysplex Functions: The following functions enhance VTAM's support of sysplex environments.

- Central directory server enhancement for generic resources
- Dynamic definition of VTAM-to-VTAM connections
- Generic resources enhancements
- Multinode persistent sessions
- TSO generic resources

System and Configuration Management: The following functions enhance your ability to set up, manage, and control the resources in your network.

- Applying VTAM maintenance without re-IPLing MVS
- Asynchronous transfer mode support
- Choice of communication network management (CNM) routing tables
- Delayed disconnection when no LU-LU session is established
- Dynamic reconfiguration of switched resources
- Filtering initiation failures from Session Awareness (SAW) data
- Interpret table enhancement
- High performance data transfer MPC
- Reset LU enhancement
- Search retry after dial-out failure
- Support for OS/390 concatenation
- OS/390 TCP/IP OpenEdition* DLC support

Usability Enhancements The following functions enhance VTAM's usability.

- DISPLAY SRCHINFO command
- DISPLAY VTAMSTOR command
- Dynamic reconfiguration of switched resources
- Mini VIT and FFST changes
- XID message group enhancement
- XNETALS start option enhancements

Functions and Enhancements Introduced in VTAM V4R3

The following new optional functions and enhancements were introduced in VTAM V4R3. For comprehensive overviews of these new functions and enhancements, refer to the *VTAM Release Guide* for VTAM V4R3.

Advanced Peer-to-Peer Networking (APPN) Enhancements: The following functions enhance VTAM's support of advanced peer-to-peer networking.

- Central directory server selection
- High performance routing (HPR)
- Host-to-host channel dynamics
- Logon mode and class-of-service (COS) enhancements
- Operator-initiated search
- Resource registration enhancements
- Resource verification reduction for LU 6.2 application programs

LU 6.2 Application Program Interface (API) Enhancements: The following functions enhance the VTAM LU 6.2 application program interface.

- Limited resource for LU 6.2 network management flows
- Name mismatch detection
- Preallocation of a conversation
- Problem diagnosis enhancements

Network Dynamics: The following functions enhance dynamic access to a network. These functions can eliminate or reduce the predefinition required for resources in your network. In addition, these functions provide increased end user availability and automatic backup.

- Application-supplied operands for dial or token-ring connections enhancement
- Definition of spare SDLC lines
- Dynamic definition of VTAM application programs
- Enabling dynamic definition of cross-domain resources with the CDRDYN start option
- Generic resources enhancement
- Session Enhancements for LEN CP Nodes
- Using MVS system symbols in VTAM

Operator Interface Enhancements: The following functions enhance VTAM's operator interface.

- Additional enhancements for limiting of display output by session state
- Additional unformatted system services (USS) message text enhancements
- APING command support
- Display of a maximum number of resources enhancement
- Display of cross-domain resources in a particular network enhancement
- Display of subordinate PUs by major node type
- Display of the current session awareness (SAW) data filter
- Display of VTAM start options enhancements
- DISPLAY RSCLIST command enhancements

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- DISPLAY TOPO command enhancements
- Multiple resource names on the DISPLAY STATIONS command
- Network-qualified names enhancements for the DISPLAY ID command
- Resource type identifier enhancements in VTAM messages
- User-defined message flooding prevention table enhancements
- Wildcard resource names enhancements

Performance Enhancements: The following functions provide enhancements to VTAM performance.

- Specifying a symbol resolution table (SRT) size for a particular network

Problem Diagnosis: The following functions are enhancements to VTAM's problem determination and isolation capabilities.

- Tracing resource states
- Tracing session management exit routine functions

Record Application Program Interface (API) Enhancements: The following functions enhance VTAM's record application program interface.

- Vector list processing enhancements

System and Configuration Management: The following functions enhance your ability to set up, manage, and control the resources in your network.

- Automatic restart manager
- Performance monitor interface
- Support for frame relay networks over token-ring connections
- Using CMIP services and the VTAM topology agent
- VTAM support for additional NCP PU operands

Functions and Enhancements Introduced in VTAM V4R2

The following new optional functions and enhancements were introduced in VTAM V4R2. For comprehensive overviews of these new functions and enhancements, refer to the *VTAM Release Guide* for VTAM V4R2.

Advanced Peer-to-Peer Networking (APPN) Enhancements: The following functions enhance VTAM's support of advanced peer-to-peer networking.

- Connection network
- Host-to-Host channel
- Multiple network connectivity

LU 6.2 Application Program Interface (API) Enhancements: The following functions enhance the VTAM LU 6.2 application program interface.

- LU 6.2 conversation status
- LU 6.2 deallocate request processing
- LU 6.2 full-duplex support
- LU 6.2 receive immediate

Network Dynamics: The following functions enable dynamic access to a network. These functions can eliminate or reduce the predefinition required for resources in your network. In addition, these functions provide increased end user availability and automatic backup.

- Controlling the use of logon mode table entry, ISTCOSDF
- Expanded dial information
- Generic resources

Operator Interface Enhancements: The following functions enhance VTAM's operator interface.

- Display of a maximum number of resources
- Display of NCP lines and PUs by ownership
- Display of VTAM storage use, enhancements
- DISPLAY RSCLIST command
- Inactivating LUs in a pending-notify state
- Limiting of display output by session state, enhancements
- User-defined message-flooding prevention table
- Wildcard resource names

Performance Enhancements: The following functions provide enhancements to VTAM performance.

- Authorized transmission priority for LEN connections
- Automatic logon enhancements
- Data compression enhancements
- Delayed disconnection
- Eliminating and reducing searches for unavailable resources
- Session limits for switched resources

Problem Diagnosis: The following functions are enhancements to VTAM's problem determination and isolation capabilities.

- Additional VTAM dump analysis tool enhancements
- Communication network management (CNM) trace

Record Application Program Interface (API) Enhancements: The following functions enhance VTAM's record application program interface.

- Functional recovery routine (FRR) stack preservation

System and Configuration Management: The following functions enhance your ability to set up, manage, and control the resources in your network.

- Adjacent SSCP lists for cross-domain resources
- Dependent LU server
- Expanded addressing pool
- Four-digit device addressing

- Specifying search order for locating switched PUs
- Virtual-route-based transmission groups

Functions and Enhancements Introduced in VTAM V4R1

The following new optional functions and enhancements were introduced in VTAM V4R1. For comprehensive overviews of these new functions and enhancements, refer to the *VTAM Release Guide* for VTAM V4R1.

Installation-Wide Exit Routine Enhancements: The following functions enhance the capabilities of VTAM installation-wide exit routines.

- Sending user data through the session management exit routine during session initiation
- Specifying load module name for installation-wide exit routines
- User data field expansion for installation-wide exit routines

LU 6.2 Application Program Interface (API) Enhancements: The following functions enhance the VTAM LU 6.2 application program interface.

- Allocation of a conversation group
- Allocation of a conversation to avoid a deadlock
- Deactivation of a conversation group
- Security enhancements for LU 6.2

Network Dynamics: The following functions enable dynamic access to a network. These functions can eliminate or reduce the predefinition required for resources in your network. In addition, these functions provide increased end user availability and automatic backup.

- Advanced peer-to-peer networking (APPN) support
- Dynamic reconfiguration of PUs on a frame relay line
- Dynamic reconfiguration of retry values and 3174 group addresses

Operator Interface Enhancements: The following functions enhance VTAM's operator interface.

- Abbreviations on buffer pool start options
- DISPLAY ADJSSCPS command enhancement
- Display of VTAM maintenance level
- DISPLAY SESSIONS command enhancement
- Limiting of display output by session state
- Limiting of display output by specifying individual nodes
- Modify VTAM start options enhancements
- Specifying of replaceable constants on start options
- Start list processing enhancements
- USS message text enhancements
- Wildcard network identifiers

Performance Enhancements: The following functions provide enhancements to VTAM performance.

- Automatic recovery from an outstanding session request enhancement
- Automatic termination of sessions using too much of IO buffer pool
- Multipath channels between host processors

Problem Diagnosis: The following functions are enhancements to VTAM's problem determination and isolation capabilities.

- Analysis tools for an externally recorded VIT
- Buffer contents trace enhancements
- Capturing of diagnosis information with First Failure Support Technology (FFST)
- Saving the trace command for future use
- VTAM dump analysis tool enhancements

Security Enhancements: The following features enhance VTAM's security functions.

- End-to-End session cryptography

System and Configuration Management: The following functions enhance your ability to set up, manage, and control the resources in your network.

- Centralized definition of cross-domain resources
- Dynamic reconfiguration enhancement
- Network qualified names
- PU dial at major node activation
- Sift-down effect in application program and cross-domain resource major nodes

Usability Enhancements: The following functions enhance VTAM's usability and improve the retrievability of VTAM information.

- Displayable softcopy publication enhancements

Appendix A. Estimating Storage

This appendix describes how to estimate the virtual storage required to run VTAM V4R4 on the MVS/ESA operating system. Select and review the applicable worksheets from the following list to arrive at the VTAM V4R4 storage requirements:

- APPN
 - Interchange node (ICN) or network node (NN)
 - Migration data host (MDH) and end node (EN)
- Subarea
 - Communication management configuration (CMC)
 - Data host (DH)

General Information:

These worksheets address VTAM V4R4 storage above the 16M line. The amount of storage below the line for Common is 150KB and Private is 64KB.

The heading 'DISPLAY STATS ID' refers to the particular statistic identifier in the output from the D NET,STATS command. This value is used in the corresponding step of the worksheet. There are some statistics that D NET,STATS does not capture. They will be indicated with N/A.

Dynamic storage provides for temporary storage demands and is required until the process using it is completed or no longer active. Dynamic storage can be used for normal session establishment as well as error recovery situations. Dynamic storage usage varies depending on configuration and is related to the number of sessions being established. The worksheet provides an approximation of the amount of dynamic storage needed for a given configuration assuming a worst case scenario for system recovery.

The following assumptions have been made for estimating VTAM V4R4 storage. The assumptions do not imply nor recommend these values be used for your configuration.

- All PUs and LUs defined in configuration are activated.
- Tables such as USSTAB,COSTAB, or user exit routines are not used.
- Default buffer pool values, dynamic buffer expansion, and default values specified by VTAM start options are used.
- Dynamic storage needs are based on full system recovery.

APPN Interchange Node (ICN) or Network Node (NN)

For an APPN interchange node (ICN) or network node (NN) configuration, use the following worksheet:

Step	Description	FORMULAS (decimal)	COMMON	PRIVATE	DISPLAY STATS ID
1	Number of 4K pages allocated for the VTAM internal trace table.	$(\text{trace tab} + 4) \times 4096 =$ _____			2
2	Determine the size of the IOBUF parameter. This value is defined in the VTAM start list. These buffers hold data transmitted either to or from VTAM.	Used in questions 4 & 12			3
3	Number of channel attached communication controllers (NCP) that are activated and owned by this VTAM.	$(\text{NCPs} \times 1200) =$ _____			5
4	Sum value of MAXBFRU parameters for all channel attached communications controllers activated by this VTAM. MAXBFRU is defined in the HOST definition statement in the NCP channel attached major node definition.	$((\text{IOBUF size} + 98) \times 2 \times \text{maxbfu NCPs}) =$ _____			3 & 6
5	Number of PUs defined in this VTAM. Include all PUs that are defined to VTAM in PU definition statements and controllers defined in CLUSTER definition statements. Include locally attached, remotely attached, dynamically added, switched, ICA and NCP (including NTRI) PUs.	$(\text{defined PUs} \times 850) =$ _____			48 & 67

Figure 20 (Part 1 of 4). APPN Interchange Node (ICN) or Network Node (NN) Storage Worksheet

6	Number of device-type LUs defined in this VTAM. Include the locally attached LUs and the LUs that are attached through an NCP. In addition, include the LUs that are defined to VTAM in LU definition statements and the devices defined in TERMINAL statements. Do not include applications.	(defined LUs x 780) = _____	50
7	Number of independent LUs either locally, remotely or CDRSC defined. Include all independent LUs for which VTAM provides boundary function services and all NTRI independent LUs.	(indep LUs x 270) = _____	80
		(indep LUs x 360) = _____	80
8	Number of LU6.2 sessions with application LUs owned by this VTAM. LU6.2 sessions are valid only for applications where APPC=YES is specified in the APPL major node definition. Include all same domain, cross-domain, and cross network LU6.2 sessions.	(LU6.2 ses x 840) = _____	58
9	Number of device-type LUs owned by this VTAM in session with an application program	(LUs w/appls x 500) = _____	71
	owned by this VTAM.	(LUs w/appls x 400) = _____	71
10	Number of device-type LUs owned by this VTAM that are in session with an application program in another VTAM.	(cross node LU ses x 400) = _____	73
11	Number of LU6.2 sessions where both LUs are owned by this VTAM.	(LU6.2 ses x 430) = _____	77

Figure 20 (Part 2 of 4). APPN Interchange Node (ICN) or Network Node (NN) Storage Worksheet

Estimating Storage

12	Number of device type (non-application) LUs that are in session with a TSO application.	(TSO LUs) x (2300 + IOBUF size)	= _____	55 & 3
13	Number of ENs that establish CP-CP sessions with this VTAM.	(adj end node x 3170)	= _____	104
		(adj end node x 920)	= _____	104
14	Number of transmission groups that are used between this node and attached or served end nodes.	(end node TGs x 690)	= _____	142
15	Number of transmission groups that are used between this node and other network nodes.	(network node TGs x 690)	= _____	143
16	If VTAM AGENT is being used, enter the number of resources being monitored.	(num res x 3500)	= _____	N/A
		Total Common	= _____ 1024	= ____ K (total common)
		Total Private	= _____ 1024	= ____ K (total private)

Figure 20 (Part 3 of 4). APPN Interchange Node (ICN) or Network Node (NN) Storage Worksheet

S U M M A R Y

Calculated COMMON storage for ICN/NN configuration from above = _____K (total common)

DYNAMIC COMMON STORAGE (4 x total common) = _____K

VTAM AGENT STORAGE (if used) + 2000K

VTAM SYSPLEX STORAGE (if used)= _____

VTAM BASE STORAGE (COMMON) + 2940K

TOTAL VTAM COMMON STORAGE = _____K

Calculated PRIVATE storage for ICN/NN configuration from above = _____K (total private)

DYNAMIC PRIVATE STORAGE (2 x total private) = _____K

VTAM SYSPLEX STORAGE (if used) = _____

VTAM BASE STORAGE (PRIVATE) + 6587K

TOTAL VTAM PRIVATE STORAGE = _____K

Figure 20 (Part 4 of 4). APPN Interchange Node (ICN) or Network Node (NN) Storage Worksheet

APPN Migration Data Host (MDH) and End Node (EN)

For an APPN migration data host (MDH) or end node (EN) configuration, use the following worksheet:

Step	Description	FORMULAS (decimal)	DISPLAY	
			COMMON	PRIVATE STATS ID
1	Number of 4K pages allocated for the VTAM internal trace table.	$(\text{trace tab} + 4) \times 4096$	= _____	2
2	Number of device-type LUs owned by this VTAM in session with an application program	$(\text{LUs w/appls} \times 400)$	= _____	71
	owned by this VTAM.	$(\text{LUs w/appls} \times 500)$	= _____	71
3	Number of cross node sessions between an application program in this VTAM and a device type LU owned by another node or VTAM.	$(\text{cross node appl} \times 980)$	= _____	112
		$(\text{cross node appl} \times 500)$	= _____	112
Total Common			= _____ 1024	= ____ K (total common)
Total Private			= _____ 1024	= ____ K (total private)

Figure 21 (Part 1 of 2). APPN Migration Data Host (MDH) and End Node (EN) Worksheet

S U M M A R Y

Calculated COMMON storage for MDH/EN configuration from above = _____K (totcom)

DYNAMIC COMMON STORAGE (2 x total common) = _____K

VTAM SYSPLEX STORAGE (if used)= _____

VTAM BASE STORAGE (COMMON) + 2940K

TOTAL VTAM COMMON STORAGE = _____K

Calculated PRIVATE storage for MDH/EN configuration from above = _____K (totpri)

DYNAMIC PRIVATE STORAGE (2 x total private) = _____K

VTAM SYSPLEX STORAGE (if used)= _____

VTAM BASE STORAGE (PRIVATE) + 6587K

TOTAL VTAM PRIVATE STORAGE = _____K

Figure 21 (Part 2 of 2). APPN Migration Data Host (MDH) and End Node (EN) Worksheet

Estimating Storage

Subarea Data Host (DH)

For a subarea data host (DH) configuration, use the following worksheet:

Step	Description	FORMULAS (decimal)	COMMON	DISPLAY	
				PRIVATE	STATS ID
1	Number of 4K pages allocated for the VTAM internal trace table.	$(\text{trace tab} + 4) \times 4096$	= _____		2
2	Number of device-type LUs owned by this VTAM in session with an application program owned by this VTAM.	(LUs w/appls x 400)		= _____	71
		COMMON STORAGE: (LUs w/appls x 500)	= _____		71
3	Number of cross domain sessions between an application program in this VTAM and a device type LU owned by another VTAM.	PRIVATE: (cross node appl x 910)		= _____	112
		COMMON STORAGE: (cross node appl x 500)	= _____		112
Total Common			= _____	= _____ K (total common)	
			1024		
Total Private			= _____	= _____ K (total private)	
			1024		

Figure 22 (Part 1 of 2). Subarea Data Host (DH) Worksheet

S U M M A R Y

Calculated COMMON storage for DH configuration from above = _____K (total common)

DYNAMIC COMMON STORAGE (2 x total common) = _____K

VTAM BASE STORAGE (COMMON) + 2891K

TOTAL VTAM COMMON STORAGE = _____K

Calculated PRIVATE storage for DH configuration from above = _____(total private)

DYNAMIC PRIVATE STORAGE (2 x total private) = _____K

VTAM SYSPLEX STORAGE (if used)= _____

VTAM BASE STORAGE (PRIVATE) + 5037K

TOTAL VTAM PRIVATE STORAGE = _____K

Figure 22 (Part 2 of 2). Subarea Data Host (DH) Worksheet

Estimating Storage

Subarea Communication Management Configuration (CMC)

For a subarea communication management configuration (CMC), use the following worksheet:

Step	Description	FORMULAS (decimal)	COMMON	PRIVATE	STATS ID
1	Number of 4K pages allocated for the VTAM internal trace table.	$(\text{trace tab} + 4) \times 4096 = \underline{\hspace{2cm}}$			2
2	Determine the size of the IOBUF parameter. This value is defined in the VTAM start list. These buffers hold data transmitted either to or from VTAM.	Used in questions 4 & 10			3
3	Number of channel attached communication controllers (NCP) that are activated and owned by this VTAM.	$(\text{NCPs} \times 1200) = \underline{\hspace{2cm}}$			5
4	Sum value of MAXBFRU parameters for all channel attached communications controllers activated by this VTAM. MAXBFRU is defined in the HOST definition statement in the NCP channel attached major node definition.	$((\text{IOBUF size} + 98) \times 2 \times \text{maxbfu NCPs}) = \underline{\hspace{2cm}}$			3 & 6
5	Number of PUs defined in this VTAM. Include all PUs that are defined to VTAM in PU definition statements and controllers defined in CLUSTER definition statements. Include locally attached, remotely attached, dynamically added, switched, ICA and NCP (including NTRI) PUs.	$(\text{defined PUs} \times 850) = \underline{\hspace{2cm}}$			48 & 67

Figure 23 (Part 1 of 3). Subarea Communication Management Configuration (CMC) Worksheet

6	Number of device-type LUs defined in this VTAM. Include the locally attached LUs and the LUs that are attached through an NCP. In addition, include the LUs that are defined to VTAM in LU definition statements and the devices defined in TERMINAL statements. Do not include applications.	(defined LUs x 780)	= _____	50
7	Number of independent LUs either locally, remotely or CDRSC defined. Include all independent LUs for which VTAM provides boundary function services and all NTRI independent LUs.	(indep Lus x 270)	= _____	80
		(indep Lus x 360)	= _____	80
8	Number of device-type LUs owned by this VTAM in session with an application program owned by this VTAM.	(LUs w/appls x 500)	= _____	71
		(LUs w/appls x 400)	= _____	71
9	Number of device-type LUs owned by this VTAM that are in session with an application program in another VTAM.	(cross node LU ses x 400)	= _____	73
10	Number of device type (non-application) LUs that are in session with a TSO application.	(TSO LUs) x (2300 + IOBUF size)	= _____	55 & 3
11	If VTAM AGENT is being used, enter the number of resources being monitored.	(num res x 3500)	= _____	N/A

Figure 23 (Part 2 of 3). Subarea Communication Management Configuration (CMC) Worksheet

Estimating Storage

Total Common	=	_____	=	_____	K (total common)
		1024			
Total Private	=	_____	=	_____	K (total private)
		1024			
<hr/>					
S U M M A R Y					
<hr/>					
Calculated COMMON storage for CMC configuration from above	=	_____	K (total common)		
DYNAMIC COMMON STORAGE (4 x total common)	=	_____	K		
VTAM AGENT STORAGE (if used)	+ 2000K				
VTAM BASE STORAGE (COMMON)	+ 2891K				
TOTAL VTAM COMMON STORAGE	=	_____	K		
Calculated PRIVATE storage for CMC configuration from above	=	_____	K (total private)		
DYNAMIC PRIVATE STORAGE (2 x total private)	=	_____	K		
VTAM SYSPLEX STORAGE (if used)	=	_____			
VTAM BASE STORAGE (PRIVATE)	+ 5037K				
TOTAL VTAM PRIVATE STORAGE	=	_____	K		

Figure 23 (Part 3 of 3). Subarea Communication Management Configuration (CMC) Worksheet

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Bibliography

VTAM V4R4 Publications

Following are descriptions of the books in the VTAM V4R4 library. The books are arranged in the following categories:

- Softcopy Information
- Marketing Information
- Planning
- Installation, Resource Definition, and Tuning
- Customization
- Operation
- Writing Application Programs
- Diagnosis
- VTAM AnyNet
- APPC Application Suite.

The complete set of unlicensed books in this section can be ordered using a single order number, SBOF-7011.

Softcopy Information

IBM Networking Softcopy Collection

Kit CD-ROM (SK2T-6012): The softcopy library contains softcopy versions of the licensed and unlicensed books for VTAM V4R4.

All of the unlicensed and licensed VTAM books described in this section are available in softcopy on this CD-ROM. These softcopy files can be read using any of the IBM BookManager READ programs. They can also be read with the IBM Library Reader program shipped on this CD.

The CD also contains softcopy of the unlicensed books of many other products.

Marketing Information

A Networking Overview and the following IBM Networking Previews are available:

- AnyNet
- VTAM.

Ask your IBM marketing representative for more information.

Planning and Installation

VTAM Licensed Program

Specifications (GC31-8379): This flyer is the warranty for VTAM and includes:

- A list of new functions
- Descriptions of VTAM features
- Machine requirements
- Programming requirements.

VTAM Release Guide (GC31-6545): This guide provides an overview of the new functions in VTAM V4R4 and includes:

- Advantages of new functions
- Planning considerations for new functions
- Effect of new functions on existing functions
- Changes to commands, definition statements, and messages
- Programming requirements, such as the release of NCP required.

VTAM Installation and Migration Guide

(GC31-8367): This guide helps you upgrade VTAM V4R3, V4R2, V4R1, or V3R4.2 to VTAM V4R4. It includes:

- Installation procedures
- Planning to upgrade to VTAM V4R4
 - Upward and downward compatibility
 - Software and hardware requirements
 - Storage requirements
 - Impacts of new functions and enhancements performed without changes to user interfaces
 - Changes to installation process
- Upgrading user interfaces to VTAM V4R4
 - Changes to start options
 - Changes to buffer pools
 - Changes to definition statements
 - Changes to IBM-supplied default user-definable tables and modules
 - Changes to user-definable table macroinstructions
 - Changes to commands
 - Changes to messages
 - Changes to VTAM application programming interface
 - Changes to installation-wide exit routines
 - Changes to control blocks.

VTAM Program Directory: This document is shipped with the product tape and explains the steps for installing VTAM.

Bibliography

VTAM Glossary (GC31-8366): This glossary defines terms and abbreviations for VTAM and related products. It includes information from the IBM *Dictionary of Computing*, SC20-1699.

Planning for Integrated Networks

(SC31-8062): This book helps you plan for SNA (subarea and APPN) and TCP/IP networks. It includes discussion of protocol strategies, migration scenarios, processing goals, and management considerations.

Resource Definition, Configuration, and Tuning

VTAM Network Implementation Guide

(SC31-8370): This book presents the major concepts involved in implementing a VTAM network, and includes:

- Buffer pools, slowdown, pacing, storage considerations
- Implementation considerations
- Sample major node definitions
- Migration considerations
- Tables and filters
- TSO, VCNS, and other programs that run with VTAM
- Tuning procedures
- VTAM start options.

Use this book in conjunction with the *VTAM Resource Definition Reference*.

VTAM Resource Definition Reference

(SC31-8377): This book describes each VTAM definition statement, start option, and macroinstruction for user tables. It also describes NCP definition statements that affect VTAM. The information includes:

- IBM-supplied default tables (logon mode and USS)
- Major node definitions
- User-defined tables and filters
- VTAM start options.

If you are unfamiliar with the major concepts involved in implementing a VTAM network, use this book in conjunction with the *VTAM Network Implementation Guide*.

VTAM Resource Definition Samples

(SC31-8378): This book contains sample definitions to help you implement VTAM functions in your networks, and includes sample major node definitions.

Use this book in conjunction with the *VTAM Network*

Implementation Guide and *VTAM Resource Definition Reference*.

Operation

VTAM Operation (SC31-8372): This book serves as a reference for programmers and operators requiring detailed information about specific operator commands. The information includes:

- VTAM commands and start options
- Logon manager commands
- DISPLAY output examples (messages received)
- VSCS commands.

VTAM Operation Quick Reference

(SX75-0208): This book contains essential information about VTAM operator commands.

VTAM Messages (GC31-8368): This book describes the following types of messages and other associated information:

- Messages:
 - ELM messages for logon manager
 - IKT messages for TSO/VTAM
 - IST messages for VTAM network operators
 - ISU messages for sockets-over-SNA
 - IVT messages for the communications storage manager
 - IUT messages
 - USS messages
- Other information that displays in VTAM messages:
 - Command and RU types in VTAM messages
 - Node and ID types in VTAM messages
- Supplemental message-related information:
 - Message additions, deletions, and changes
 - Message flooding prevention
 - Message groups and subgroups
 - Message routing and suppression including descriptor codes, routing codes, and suppression levels for ELM, IKT, IST, and ISU messages
 - Message text and description formats
 - Message text of MSGLVL option messages including general information on the MSGLVL option
 - Message text of all VTAM network operator messages including variable field lengths

VTAM Codes (GC31-8369): This book describes codes and other information that display in VTAM messages:

- Sense codes including VTAM sense code hints, SNA sense field values for RPL-based macroinstructions, and 3270 SNA and non-SNA device sense fields
- Return codes for macroinstructions including ACB OPEN and CLOSE macroinstruction error fields, RTNCD-FDB2 return code combinations, and LU 6.2 RCPRI-RCSEC return codes
- Data link control (DLC) status codes
- Status codes including resource status and session state codes
- Wait state event codes and IDs
- Abend codes
- ATM network-generated cause and diagnostic codes.

Using IBM CommandTree/2

(SC31-7013): IBM CommandTree/2 is a workstation product that enables an operator to construct commands and send them to a specified destination for processing. The VTAM command set library includes:

- VTAM commands
- Logon manager commands
- Help for commands and start options.

Customization

VTAM Customization (LY43-0075): This book enables you to customize VTAM, and includes:

- Communication network management (CNM) routing table
- Logon-interpret routine requirements
- Logon manager installation-wide exit routine for the CLU search exit
- TSO/VTAM installation-wide exit routines
- VTAM installation-wide exit routines:
 - Command verification exit (ISTCMMND)
 - Configuration services XID exit (ISTEXCCS) with description of IBM-supplied default exit
 - Directory services management exit (ISTEXCDM)
 - Generic resource resolution exit (ISTEXCGR)
 - Performance monitor exit (ISTEXCPM)
 - SDDLU exit (ISTEXCSD) with description of IBM-supplied default exit

- Session accounting exit (ISTAUCAG)
- Session authorization exit (ISTAUCAT)
- Session management exit (ISTEXCAA) with example
- TPRINT processing exit (ISTRAEUE)
- USERVAR exit (ISTEXCUV) with description of IBM-supplied default exit
- Virtual route pacing window size calculation exit (ISTPUCWC)
- Virtual route selection exit (ISTEXCVR).

Writing Application Programs

VTAM Programming (SC31-8373): This book describes how to use VTAM macroinstructions to send data to and receive data from (1) a terminal in either the same or a different domain, or (2) another application program in either the same or a different domain. The information includes:

- API concepts
 - Cryptography
 - RUs and exchanges
 - Session establishment and termination
- BIND area format
- Communication Network Management Interface
- Dictionary of VTAM macroinstructions
- OPEN or CLOSE errors
- Operating system differences
- Program Operator Coding requirements
- RAPI DSECTs and control block mappings
- RAPI global variables
- Vector lists
- RPL-based macroinstructions
- RPL RTNCD,FDB2 codes
- User exit routines.

VTAM Guide to Programming for LU

6.2 (SC31-8374): This book describes how to use the VTAM LU 6.2 application programming interface for host application programs. This book applies to programs that use only LU 6.2 sessions or that use LU 6.2 sessions along with other session types. (Only LU 6.2 sessions are covered in this book.) The information includes:

- VTAM's implementation of the LU 6.2 architecture
- Design considerations for LU 6.2 application programs
- Negotiating session limits with partner LUs
- BIND image and response
- Allocating and deallocating conversations
- FMH-5 and PIP data
- Conversation states
- Sending and receiving data
- Using high performance data transfer (HPDT)

Bibliography

- Session- and conversation-level security and data encryption
- Register usage
- Sync point services
- LU 6.2 global variables
- Vector lists
- Sense codes for FMH-7 and UNBIND
- RCPRI,RCSEC codes
- User exit routines.

VTAM Programming Reference for LU

6.2 (SC31-8375): This book provides reference material for the VTAM LU 6.2 programming interface for host application programs. The information includes:

- APPCCMD macroinstructions
- Primary and secondary return codes (RCPRI, RCSEC)
- DSECTs
- Examples of using VTAM's LU 6.2 API
- Register usage

VTAM Programming for CSM

(SC31-8420): This book describes how applications use the communications storage manager. The information includes:

- Creating and deleting buffer pools
- Obtaining and freeing buffers
- Return codes and reason codes
- DSECTs

VTAM CMIP Services and Topology Agent Programming Guide

(SC31-8365): This book describes the Common Management Information Protocol (CMIP) programming interface for application programmers to use in coding CMIP application programs. The book provides guide and reference information about CMIP services and the VTAM topology agent and includes the following topics:

- Management information base (MIB) API functions
- CMIP message strings
- Special CMIP message strings
- Read queue exit routine
- Sample CMIP application program
- VTAM resources as CMIP objects
- Naming conventions for objects
- VTAM resources and OSI states
- Attributes to object cross-reference
- ASN.1 syntax for CMIP messages
- GDMO table format
- ACYAPHDH header file.

Diagnosis

VTAM Diagnosis (LY43-0078): This book helps you identify a VTAM problem, classify it, and collect information about it before you call the IBM Support Center. The information collected includes traces, dumps, and other problem documentation. The information includes:

- Command syntax for running traces and collecting and analyzing dumps
- VIT entries
- Procedures for collecting documentation (VTAM, TSO)
- VTAM internal trace and VIT analysis tool
- FFST Probes
- Channel programs
- Flow diagrams
- Procedures for locating buffer pools
- CPCB operation codes
- Storage and control block ID codes
- PIU discard reason codes
- Offset names and locations for VTAM buffer pools.

VTAM Data Areas for MVS/ESA Volume

1 (LY43-0076): This book describes VTAM data areas and can be used to read a VTAM dump. It is intended for IBM programming service representatives and customer personnel who are diagnosing problems with VTAM.

VTAM Data Areas for MVS/ESA Volume

2 (LY40-0077): This book describes VTAM data areas and can be used to read a VTAM dump. It is intended for IBM programming service representatives and customer personnel who are diagnosing problems with VTAM.

VTAM AnyNet

VTAM AnyNet Guide to SNA over

TCP/IP (SC31-8376): This guide provides information to help you install, configure, use, and diagnose SNA over TCP/IP.

VTAM AnyNet Guide to Sockets over

SNA (SC31-8371): This guide provides information to help you install, configure, use, and diagnose Sockets over SNA. It also provides information to help you prepare application programs to use sockets over SNA.

APPC Application Suite

APPC Application Suite User's Guide

(SC31-6532): This book documents the end-user interface (concepts, commands, and messages) for the AFTP, ANAME, and APING facilities of the APPC application suite. Although its primary audience is the end user, administrators and application programmers may also find it useful.

APPC Application Suite Administration

(SC31-6533): This book contains the information that administrators need to configure the APPC application suite and to manage the APING, ANAME, AFTP, and A3270 servers.

APPC Application Suite Programming

(SC31-6534): This book provides the information application programmers need to add the functions of the AFTP and ANAME APIs to their application programs.

Multiprotocol Transport Networking (MPTN) Architecture Publications

Following are selected publications for MPTN:

Networking Blueprint Executive Overview (GC31-7057)

Multiprotocol Transport Networking: Technical Overview (GC31-7073)

Multiprotocol Transport Networking: Formats (GC31-7074)

OS/390 Publications

Following are selected publications for OS/390:

OS/390 Information Roadmap (GC28-1727)

OS/390 MVS Initialization and Tuning Reference (SC28-1752)

OS/390 MVS System Commands (GC28-1781)

OS/390 Up and Running! (GC28-1726)

VTAM V4R3 Publications

Following are selected publications for VTAM V4R3:

VTAM Release Guide (GC31-6555)

VTAM Installation and Migration Guide (GC31-6547)

VTAM V4R2 Publications

Following are selected publications for VTAM V4R2:

VTAM Release Guide (GC31-6492)

VTAM Migration Guide (GC31-6491)

VTAM V4R1 Publications

Following are selected publications for VTAM V4R1:

VTAM Release Guide (GC31-6441)

VTAM V3R4.2 Publications

Following are selected publications for VTAM V3R4.2:

VTAM Release Guide (LY43-0062)

MVS/ESA Publications

Following are selected publications for MVS/ESA:

OS/390 MVS Setting Up a Sysplex (GC28-1779)

OS/390 MVS Initialization and Tuning Reference

OS/390 MVS Diagnosis: Tools and Service Aids

OS/390 SMP/E User's Guide

TSO/E CLISTS

OS/390 ISPF Dialog Tag Language Guide and Reference

NCP Publications

Following are selected publications for NCP:

NCP, SSP, and EP Generation and Loading Guide (SC31-6221)

NCP, SSP, and EP Diagnosis Guide (LY43-0033)

Bibliography

NCP, SSP, and EP Resource Definition Reference
(SC31-6224)

IBM 3745 Communication Controller Publications

Following are selected publications for the IBM 3745
Communication Controller:

Guide to Timed IPL and Rename Load Module
(SA33-0178)

First Failure Support Technology (FFST) Publications

Following are selected publications for FFST:

*First Failure Support Technology VM & MVS Operator's
Guide* (LC33-1016)

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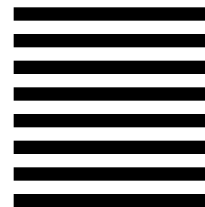
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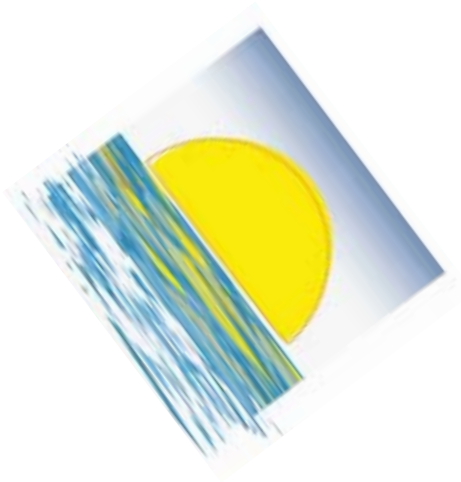
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