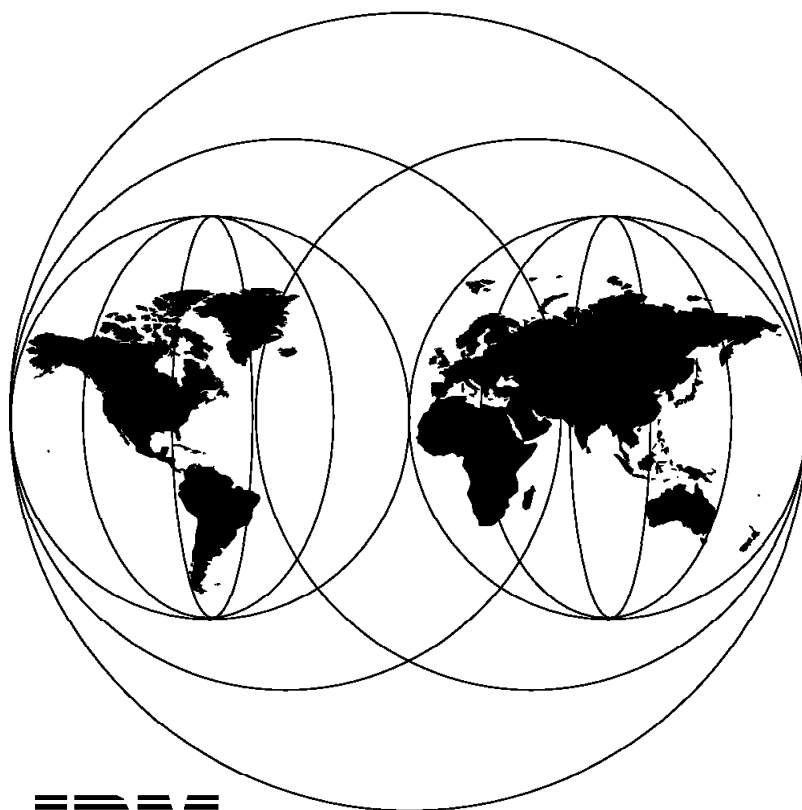


Migrating from VTAM 3.4 to VTAM 4.2 with APPN Support for VSE/ESA and VM/ESA

July 1996



IBM

**International Technical Support Organization
Boeblingen Center**



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**Migrating from VTAM 3.4 to VTAM 4.2 with APPN
Support for VSE/ESA and VM/ESA**

July 1996

Take Note!

Before using this information and the product it supports, be sure to read the general information in Appendix C, "Special Notices" on page 147.

First Edition (July 1996)

This edition applies to Version 4, Release 2 of ACF/VTAM, Program Number 5686-065 for use with the VSE/ESA Operating System and ACF/VTAM, Program Number 5654-010 for use with the VM/ESA Operating System.

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Preface

VTAM V4R2 brings to the VSE/ESA and VM/ESA customers the ability to implement APPN networking for the first time. In order to make use of this exciting facility the customer first has to migrate his network from VTAM V3R4 to this new release. Our migration experiences, described in this redbook, prove that it is a much easier task than is assumed.

This redbook describes VTAM V4R2 and its functions in all three of the new package offerings (Client Server, MultiDomain and InterEnterprise). We then show the user how to go from their existing VTAM V3R4 to VTAM V4R2 using subarea definitions and also explain some excellent new tools such as the VIT analysis tool under VM/ESA. Following this we demonstrate the implementation of APPN Networking and of APPN Multiple Network Connectivity Support. We also supply the reader with definition examples for both subarea connections and APPN connections.

This redbook addresses customers and IBM Personnel who intend to install and implement VTAM V4R2 under VM/ESA and VSE/ESA. The reader is assumed to have a basic working knowledge of VM/ESA and/or VSE/ESA SNA Networking and some knowledge of APPN concepts.

How This Redbook Is Organized

The redbook is organized as follows:

- Chapter 1, "Introduction to VTAM V4R2"
Summarizes new functions, packaging, and the environment under which we tested.
- Chapter 2, "Migrating VSE/VTAM V3R4 to V4R2 Subarea Networking"
Covers our experiences of migrating VSE/VTAM to V4.2 subarea only functions and the restrictions that exist at the different package levels.
- Chapter 3, "Migrating VM/VTAM V3R4M1 to V4R2 Subarea Networking"
Covers our experiences of migrating VM/VTAM to V4.2 subarea only functions and the restrictions that exist at the different package levels.
- Chapter 4, "Implementing APPN Networking"
This chapter takes VSE/VTAM V4.2 and VM/VTAM V4.2 and implements APPN functions for an Interchange Node. It also covers restrictions with APPN functions at the different package levels.
- Chapter 5, "Implementing APPN Multiple Network Connectivity Support"
This chapter expands on Chapter 4 and implements Border Node support for multiple network connectivity in our VSE/VTAM V4.2 and VM/VTAM V4.2 systems.
- Appendix A, "Subarea Definition Examples"
Provides detailed examples of the subarea definitions we used in our testing.
- Appendix B, "APPN Definition Examples"
Provides detailed examples of the APPN definitions we used in our testing.

The Team that Wrote this Redbook

This redbook was produced by a team of specialists from around the world working at the International Technical Support Organization Böblingen Center.

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Comments Welcome

We want our redbooks to be as helpful as possible. Should you have any comments about this or other redbooks, please send us a note at the following address:

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Your comments are important to us!

Chapter 1. Introduction to VTAM V4R2

In this chapter we briefly review some of the major functions that are now available in VM/ESA and VSE/ESA with the availability of VTAM V4R2. We also describe the general system environment within which the migration testing was done.

The main purpose of this book is to document the experience we had migrating VSE and VM hosts from VTAM V3R4 to V4R2. We also describe the results of implementing APPN for these systems as that is a key direction that many of our customers should be implementing in the near future. You will see that the implementation of APPN is not difficult and indeed simplifies and shortens the number of VTAM definitions that are necessary in multihost domains.

First we remind the customer that VTAM V4R2 comes as three separate packages. The contents of each package supports **all** of the functions contained in the prior level package and then additional ones. They are priced accordingly. A brief description is given below:

Client/Server	provides basic functionality for simple subarea support and APPN. It cannot own an NCP.
MultiDomain	has additional APPN and subarea functions as well as the capability of owning an NCP. Support is provided for Dependent LU server and software data compression. Only VSE supports hardware data compression.
InterEnterprise	has full APPN and subarea support including SNA Network Interconnection (SNI) for VM (only!).

1.1 Key Concepts, Terms and Definitions

For the sake of completeness we will now briefly summarize the key concepts and terms used in this manual. They are the standard definitions that should be familiar to the reader who has worked with the main IBM product line over the years.

Systems Network Architecture (SNA) encompasses more than just the traditional subarea structures. It describes also the extended wide area network (WAN) constructs such as Advanced Peer-to-Peer Networking (APPN), as well as other local area network (LAN) protocols.

Traditional SNA protocols permit networks to be defined with central host control in a hierarchical fashion.

1.1.1 Hierarchical Subarea SNA Networks

Subarea networks are defined by the protocols describing the roles played by basic node types: type 5 (T5), type 4 (T4), type 2.0 (T2) and type 2.1 (T2.1).

Subarea nodes control and provide services for peripheral nodes. Type 5 and type 4 nodes are subarea nodes.

VTAM, running in a host, is an example of a T5 node. It is also called a **host node**. T5 subarea nodes provide for the SNA functions necessary to control network resources, support transaction programs and provide end user services including operator interfaces.

NCP, running in a communication controller, is an example of a T4 node. It is also called a **Communication controller node**. These nodes are responsible for data flow control and routing in the subarea network.

Peripheral nodes are type 2 and type 2.1 devices. They attach to T4 or T5 nodes. Note that a T2 node needs the help of a T5 node to communicate with any other node. A **subarea** consists of a subarea node and the peripheral nodes attached to it. In this case it is sometimes referred to as a **boundary node** since it provides **boundary functions** for its attached T2 and T2.1 devices.

PU Type 2.1 nodes are programmable devices that support a protocol suite that enable resources, logical units (LUs), in them to communicate with other LUs in other subarea nodes without the need for VTAM to manage the session.

1.1.2 Advanced Peer-to-Peer Networking (APPN)

APPN is just part of the larger SNA Architecture. It is defined by a protocol suite that consists of a **base set** and **option set** of functions. These are functions that a computer must implement in order to communicate on a "Peer-to-Peer" basis. Two interacting PCs may provide a simple example of Peer-to-Peer communication. There are many types of APPN nodes defined by the protocol stack that they support. Each has a different level of functionality. A brief list follows:

- **Low Entry Networking Node (LEN)**

This is the simplest of all the APPN node types. It can be attached to both APPN networks as well as subarea networks. It has limited **control point (CP)** function. All resources must be defined to it as it cannot request a search for resources from other APPN nodes. It is also unable to register its resources with other nodes.

- **VTAM End Node (EN)**

This VTAM host is able to support sessions between its CP and the CP in other VTAMs. It needs a **network node server** to find resources and to select session routes. It can only have a CP-CP session with its network node server.

- **Migration Data Host (MDH)**

This is a VTAM end node with subarea capability. It cannot own NCPs nor does it support intermediate APPN routing.

- **APPN Network Node (NN)**

This is a node that offers a broad range of end user services. It supports CP-CP sessions but not necessarily SSCP-SSCP sessions. It can register its resources with a central directory as well as find resources and select session paths. It can perform intermediate session routing.

- **Composite Network Node (CNN)**

This is a VTAM together with one or more NCPs that provide the appearance of an APPN network node. It can own and activate NCPs.

- **Interchange Node (ICN)**

This is a network node that provides full support for both APPN and subarea networks to which it is attached. It "translates" between them.

- **Border Node (BN)**

This is an APPN network node that enables the connection of other APPN network nodes while permitting them to maintain their own distinct network and topology database and helps these networks avoid topology exchanges.

1.2 New Functions for VTAM V4R2 for VM and VSE

VTAM V4R2 for VSE and VM provides new functions in four basic areas: APPN, connectivity, operations, and management. In functionality it is comparable to V4R2 of VTAM for MVS. Since VTAM V4R2 is packaged at three levels, care must be taken to select the correct package for the desired level of functionality.

All the functions of the Client/Server package will be found in the MultiDomain offering and all those of MultiDomain are included in the InterEnterprise package. We will highlight some of those new functions below. A table then follows that gives a list of functions that are NOT supported in the lower level packages.

1.2.1 Highlights of New Functions in the Client/Server Package

We remind the reader that the Client/Server package was designed to provide support for a simple entry level networking location. Included in this VTAM package is limited APPN and APPC support. There is enough power to permit the Client/Server Host to participate as a server in a peer network. What follows is a brief list of functions that will be new to customers currently running VTAM V3R4 or V3R4.1. Further details and the next level of description can be found in the VTAM Migration Guides GC31-8071 for VM or GC31-8072 for VSE.

- APPN

Support is included for end node and network node (also over ICA) as well as both switched and non-switched T2.1 devices. Class-of-service tables are supported. APPN Host-to-Host Channel (AHHC) is also an important part of this support.

- Connectivity and Dynamics

VM virtual channel to channel is supported. Dynamic configuration of channel attached devices as well as dynamic definition of switched and Token-Ring connections and independent LUs are supported. Dynamic replacement of class-of-service and logmode tables is now permitted as well as the dynamic replacement of the DLOGMODE operand itself.

- LU6.2 and API (Application Program Interface)

Enhancements have been made in the area of macro-instructions (APPCCMDs). RESETST can now be avoided. Full duplex connections are now possible.

- Operator Interface

Additional display commands have been introduced including some for VTAM start options (DISPLAY VTAMOPTS). There is (VM only) support for IBM Command Tree/2 and an on-line message facility. LUs in a pending-notify state can now be inactivated. VTAMLST syntax can now also be checked.

- Performance Enhancements

Authorized transmission priority for LEN connections is provided. Sessions using too much IOBUFFER pool can be automatically terminated. Session limits can be set for independent LUs and switched resources.

- Security

Call security verification is now possible for switched subareas.

- Problem Diagnosis

VM now provides an analysis tool for externally recorded VTAM Internal Trace (VIT). It is also now possible to specify that all data in a buffer is to be traced. First Failure Support Technology (FFST) has been added for VM. Trace commands can now be saved for future use. Active traces can be displayed.

- System and Configuration Management

Expanded addressing is provided for VTAM for up to 16,384K elements. Search order can now be defined for switched PUs. VSE/ESA now also has 31-bit addressing.

- VSCS and VMSES/E Tool

VSCS has been enhanced to provide better logoff and disconnects so that terminals are no longer left in a "holding" state. Better control is also provided to limit pending requests from a single LU.

The VMSES/E component of VM is available now for all VM software. It is an easy to use, centralized tool for software installation and service.

Please remember that this is a highlighted list and by no means exhaustive.

1.2.2 Highlights of New Functions in the MultiDomain Package

Remember that the MultiDomain Package contains all of the Client/Server functions above. Once again, the list below is not meant to be exhaustive.

- Connectivity

VTAM can now own NCPs, support multipath channels and subarea channel-to-channel. The IBM 3088 Channel Multiplexor is also supported as well as multilink transmission groups between NCPs. CDRMs are supported as is Frame Relay over Token-Ring. Dependent LU server support is provided. In addition there is support now for dynamic adjacent SSCP tables and dependent LUs.

- APPN

Full support is provided for Interchange and Migration Data Host nodes. Composite network node routing is also supported.

- Installation Wide Exits

More flexibility is provided for various exits including virtual route selection, session management, load modules, command verification, USERVAR and directory services.

- Performance

VTAM now provides a timer to redrive failed auto-logon LU requests. Delayed disconnection is provided for switched resources. There is now software data compression as well as hardware data compression for VSE. In addition there is now non-destructive deactivation of CDRMs.

1.2.3 Highlight of New Functions in the InterEnterprise Package

Once again, please remember that the InterEnterprise package includes all of the capabilities of both of the preceding packages. Again, the list below is not exhaustive.

- Connectivity

VTAM and its NCPs can now be gateways. There is support for SNA Network Interconnection (SNI)--VM only.

- APPN

Support is provided for APPN Border Nodes. InterEnterprise VTAMs can serve as Central Directory Servers.

- Application Program Interface (API)

Support is provided for persistent LU-LU sessions in VSE.

1.2.4 Non-supported Functions of VTAM V4R2

As we mentioned above we will try to highlight those functions of VTAM V4R2 that are not available in the non-inclusive packages. This should provide yet another way to help you determine which level of VTAM is appropriate for a given system.

Table 1. Functions not Supported in a Given VTAM V4 Package

Function	MultiDomain	Client/Server
stmt def	---	NCP, CDRM, LUGROUP
startopt	SNVC, GWSSCP, SRCHRED, SRCOUNT, SRTIMER	+ AUTOTI, AUTORTRY, IOPURGE, DISCNTIM, CMPVTAM, CMPMIPS ¹
APPN related	BN, BNDYN, BNORD, CDSERVER, SNVC	+VRTG, VRTGCPCP
keywords	SRCOUNT, SRTIMER	+LOGAPPL, VRTG, VRTGCPCP, DLURNAME, CMPAPPLI, CMPAPPLO
MODIFY RESOURCE	SRCLEAR, SRCOUNT, SRTIMER	+ DISCNTIM
VARY ACT	---	LOGON, VRTGCPCP
Operands	---	DISCNT=DELAY, SAVE=YES (on MODIFY TRACE)
Commands	---	MODIFY USERVAR, VARY LOGON, MODIFY COMPRESS

Note:

- 1 CMPMIPS is applicable to VSE only.

For a given row, the + in the Client/Server column indicates that these functions/keywords are not supported in addition to the ones in the MultiDomain column.

1.3 Compatibilities between VTAM V4R2 and VTAM V3R4

In this section we will highlight some of the changes that the customer should be aware of when migrating from VTAM V3R4. In general, it is recommended to migrate at your current functional level before implementing any of the new functions, including APPN, that are available in V4.

1.3.1 Starting VTAM

The VTAM tape that is sent to every V4 customer contains all the code regardless of the package ordered. Access to the proper level (package) is obtained using the password obtained from IBM. This password must be included with the appropriate customer number in the VTAM startup EXEC. It is recommended that you edit this EXEC or your own startup EXEC with the password and its corresponding customer number. (The default level of VTAM that will come up is the Client/Server package but even this will not work without a valid password.)

In V3R4 or V3R4.1 of VTAM, when VTAM could not find the start option list ATCSTR00, it issued a warning message and then continued to process as far as possible taking internal defaults. Now with V4R2, VTAM will halt processing and issue a prompt message. A response is necessary for continuing the startup. For this reason it is suggested that customers define an ATCSTR00 member, even if only with comments.

Errors in the start list are also treated differently. In earlier versions of VTAM prompts were made to permit corrections at the console. In Version 4 of VTAM you can continue the startup process and then enter the corrected values at the end. Alternatively, you can now cancel the current start list and point to a different one. (You can still HALT VTAM and edit the original start list and then try again.)

1.3.2 Upward Compatibilities

With minor exceptions all functions and user interfaces from V3R4 and V3R4.1 of VTAM will be found in V4R2 of VTAM. However the replaceable constants module of ISTRACON is no longer part of VTAM V4R2. Constants can be defined as part of the start options. Also note that the Open Systems Interconnect (OSI) Remote Programming Interface Feature is no longer part of VTAM V4R2.

There are a few statements in which default values have either changed, have different meanings or ranges or yield different results. Session flow across APPN nodes should be reviewed for possible changes. Some messages have been modified and a few have been deleted.

A full discussion of these changes will be found in the respective Migration Guides, GC31-8071 or GC31-8072.

1.3.3 Downward Compatibilities

Downward compatibility refers to the ability of VTAM V4R2 to work and communicate with prior versions and releases of software. At times PTFs (program temporary fixes) may have to be applied to these programs to insure continued interoperability. The customer should refer to the VTAM *Program Directory* that comes with the tape as well as obtaining the *PSP (preventive service planning)* bucket to see what PTFs may be relevant. Customers can obtain PSP buckets in one of the following manners:

- IBMLink (ServiceLink)
- SoftwareXcel Extended
- Information Access

Customers who do not have access to any of the sources may contact the IBM Support Center and ask for their assistance in this process.

1.3.4 Storage Requirements

These have in general increased for both the installation as well as the running of VTAM V4R2 regardless of the package being implemented. These storage requirements can be estimated running the *Estimating Storage for VTAM* diskette on an OS/2 2.0 workstation.

The **conversation ID (CID) table** size will be approximately twice the size of the one in V3R4. This is now specified on the CINDXSIZ in the start option. Previously it was found on the RACCITSZ constant in the ISTRACON module.

1.4 Test Configuration, Software and Conditions

1.4.1 Network Diagram

Below you will find the network diagram that was used throughout our testing. Whenever changes are made, the reader will be informed at that point in the respective chapter.

	WCVSE13		
	SA=03		
	VSE/VTAM V3R4	(1)	
	SSCP03		
B			
		(2)	
O	WCVSE21	(9)	
	SA=01	(3)	
E	VSE/VTAM V4R2		3174
	SSCP01	(5)	
V			
		(6)	
M			
	WCVML22		
	SA=04	(4)	
I	VM/VTAM V4R2		
	SSCP04	(7)	
S			
		(8)	
2	VCVMSNI		
	SA=27		
	VM/VTAM V3R4		
	SSCP27		

Figure 1. Network Diagram

The following are the address couple used in examples.

The next four connections were used for CTC connections.

1. WCVSE13: 600 coupled with WCVSE21: 600. 1
2. WCVSE21: 600 coupled with WCVSE13: 600. 2
3. WCVSE21: 500 coupled with WCVML22: 500. 2
4. WCVML22: 500 coupled with WCVSE21: 500. 3

The next two connections were used for the AHHC connection.

5. WCVSE21: 720 coupled with WCVML22: 705 4
WCVSE21: 700 coupled with WCVML22: 700
WCVSE21: 710 coupled with WCVML22: 710
6. WCVML22: 705 coupled with WCVSE21: 720 5
WCVML22: 700 coupled with WCVSE21: 700
WCVML22: 710 coupled with WCVSE21: 710

The next two connections were used for CTC connections.

7. WCVML22: 750 coupled with WCVMSNI: 750 3
8. WCVMSNI: 750 coupled with WCVML22: 750 6
9. cuaddr=300 for the 3174

Notes:

- 1 see Figure 115 on page 117 and Figure 123 on page 121
- 2 see Figure 127 on page 122 and Figure 136 on page 128
- 3 see Figure 103 on page 110 and Figure 113 on page 116
- 4 see Figure 153 on page 142 and Figure 157 on page 145
- 5 see Figure 144 on page 135 and Figure 151 on page 141
- 6 see Figure 90 on page 103 and Figure 102 on page 110

1.4.2 Description of the VSE and VM Operating Systems

All of our VSE and VM operating systems for testing purposes were second level VM virtual machines on the node BOEVMIS2, located at the ITSO center in Boeblingen, Germany. We did complete installs from PID shipped tapes of all our operating systems, which consisted of two VSE systems and two VM systems. We will list each of these individually below and their respective characteristics.

- WCVSE13

This was our VSE/VTAM V3R4 (Component 566636301, CLC J90) at VSE/ESA Refresh V136. We completely installed Version 1 of VSE/ESA at refresh level 1.3.6 which included the VSE/VTAM Version 3 Release 4.

- WCVSE21

This was our VSE/VTAM V4R2 (Component 568606501, CLC FE6) at VSE/ESA Refresh V211. We completely installed Version 2 of VSE/ESA at refresh level 2.1.1 which included the VSE/VTAM Version 4 Release 2.

- WCVMSNI

This was our VM/VTAM V3R4M1 (Component 568409501 Release 314) at VM/ESA V122. We completely installed Version 1 Release 2 Modification level 2 of VM/ESA at service level 9401, which included the VM/VTAM Version 3 Release 4 Modification level 1.

- WCVM122

This was our VM/VTAM V4R2 (Component 565401001, Release 420) at VM/ESA V122. Version 4 Release 2 of VM/VTAM was a separately orderable product that was installed on our VM/ESA V122 system. There was no service level associated with this tape. The *VTAM Program Directory for V4.2 for VM/ESA* dated March 1995 and shipped with our tape, indicates that no PTFs were incorporated.

1.5 General Observations

Up until the last few years networks usually experienced steady and consistent growth. "Dumb" terminals were added in a somewhat orderly fashion under central control. (We're idealizing, of course.) Occasionally departmental systems slipped in outside the glass house but since they did NOT ask for connectivity with the "glass house" --no problem. If networks were acquired there was always SNI to enable communications between the systems, albeit at the cost of a non-trivial amount of not uncomplicated coding.

But now-a-days with the explosive growth of LANs and with inexpensive intelligent workstations being installed and then reinstalled with uncontrolled rapidity, it may well be impossible to continue the old SNA subarea structure and still provide for the connectivity that end users are demanding. There just never seems to be enough time to do all the defining of paths, routes, CDRMs, PU/LUs and so on.

V4R2 of VTAM with its enhancements and APPN support go a long way to solve these problems. By implementing the VTAM host as an ICN you can support both the old subarea networks as well as the new APPN networks. The new APPN environment permits dynamic finding of APPN resources **AND** this is even over network boundaries (with the InterEnterprise package). For these APPN networks CDRSCs and their CDRMs, ADJSSCP tables, PATHs, and even some PU/LUs need never be defined. In Chapter 4 we describe our experiences in implementing interchange nodes (ICN) in a MultiDomain environment (same NETID). In the case where different network hosts are co-located the use of AHHC with either CTC or VCTC connections may well save a painful connection via a communication controller and SNI.

In Chapter 5 we will alter our configuration slightly by implementing VTAM Border Nodes (BN=YES) in a multiple network environment (different NETIDs). We describe our experiences there with the relevant coding.

1.5.1 Benefits from APPN

Hidden behind the various definitions of the APPN protocols are the implicit benefits that become available once they are implemented. Thus, for example, since APPN nodes can learn about resources dynamically one need not code path tables, CDRSCS, CDRMs and even some LUs. The fact that resources can be sensed alleviates the need to recycle the network to add addition devices or to recover downed resources.

Below we will describe yet three more functions which are available with VTAM V4R2.

- **VR-based Transmission Group (VRTG)**

This is a particular transmission group, VR-TG, that represents all the predefined virtual routes between two VTAM V4R2 ICNs or Data Hosts. In this way one need only deal with this one VR. This VR can be used for both APPN and subarea message flow. CP-CP traffic can also flow over this VR.

- **APPN Connection Network**

Multiple nodes can be connected on a **Shared-Access Transport Facility (SATF)** such as Token-Ring or Ethernet. In the past one would have to define either point-to-point routes or permit routing through intermediate nodes (and suffer the overhead). With APPN it is now possible to define a **Virtual Routing Node (VRN)** to represent each node's attachment to the SATF. Session traffic between any two nodes having this VRN definition can be "routed" through the VRN without having to pass through any real node. This type of definition is called a **Connection Network**.

- **Dependent LU Server/Requester (DLUS/R)**

This type of APPN support permits dependent LUs to make use of the APPN network for LU-LU sessions. It is no longer necessary to have the PU T2.0 (and its LU), or an APPN node, or a LEN node (with its dependent LUs) adjacent to a subarea boundary node. In effect a *virtual pipe* is created

between the DLUS, the SSCP, and the DLUR through which the usual SNA commands are sent. It appears as if they were attached in the normal SSCP-LU fashion.

Please see the ITSO Redbook, *VTAM 4.2 Implementation and Usage for VM/ESA and VSE/ESA SG24-4556*, Chapter 5, for a detailed description of this implementation.

The above provides just a short list of potential benefits that become available with VTAM V4R2. There are more functions that can be found in the various Migration Guides and Planning Guides found in the Bibliography.

1.6 VTAM Naming, Pricing, Packaging and Tool

Finally a few words about naming, pricing and packaging. Version 4 of VTAM for VM and VSE was introduced as R2 since this package has the same functional level as VTAM V4R2 for MVS. This maintains the functional consistency of release levels for the various platforms. Note that this is the first version/release of VTAM for both VM and VSE that provides support for APPN.

Users that are running both VM and VSE on the same machine have an additional option. VTAM V4R2 for VM can be ordered as a feature of the VSE VTAM V4R2 at a special price. This may be done as part of the initial order or at a later date.

Even though VTAM is ordered as one of three packages the tape that arrives contains all the code. You will receive with that package a customer number and access password. You will need this CUSTNO and VTAMPW to start VTAM. The migration chapters will go into details later in the book. Thus, customers can initially install and implement VTAM as a MultiDomain package and then later migrate to the InterEnterprise level; thereby saving on additional licensing fees without having to do an additional install. The new password is just a phone call away. To change levels, or if you experience problems with the password please use the following numbers in the USA. They were accurate at the time of publication.

IBM Key Registration Center

- 1-800-446-8989 (voice)
- 303-924-8989 (voice)
- 303-924-9644 (fax)
- userid: KEYREGS2, node: MAHVM1

Finally we point out that IBM provides a free tool on the Internet that is helpful in configuring APPN products. You may access it with the following URL:

<http://www.raleigh.ibm.com/aac/config/cfgtool.html>

Chapter 2. Migrating VSE/VTAM V3R4 to V4R2 Subarea Networking

2.1 Software Requirements

VTAM 4.2 requires, at a minimum, VSE/ESA V2.1. VTAM 4.2 will also operate with later versions, releases and modifications of this operating system unless otherwise stated.

2.2 Storage Requirements

2.2.1 VTAM Private and Shared Storage

The private partition and SVA storage required to install and operate VTAM 4.2 have increased. Use the *Estimating Storage for VTAM* diskette to determine the approximate private and SVA storage required for VTAM 4.2.

As shipped, VSE/ESA V2.1 supplies the following SVA size:

```
SVA PSIZE=(256K,2000K),SDL=300,GETVIS=768K
```

This value must be increased if private programs or OEM programs are loaded into the SVA. The above value covers all base products, including HLASM, REXX, CICS and VTAM.

Important!

VTAM 4.2 startup will fail if there is insufficient SVA storage to load the required VTAM modules.

In our tests, we decrease the SVA-31 size to 768KB via the SYS SVA statement:

```
SVA PSIZE=(256K,768K),SDL=300,GETVIS=768K
```

Because of the insufficient SVA-31 size, VTAM startup failed with the following message:

```
// JOB VTAMSTRT  START VTAM 4.2
IST001I  VTAM START REJECTED - CANNOT LOCATE ISTAPCKU IN SVA
OS12I MAIN TASK TERMINATION
OS00I SUB VTAMRP  CANCELED
OS07I PROBLEM PROGRAM  PSW = 070D0000 80420846
EOJ VTAMSTRT  MAX.RETURN CODE=0000
```

Figure 2. VTAM Error Message for Insufficient SVA-31 Storage

In addition, many VTAM 4.2 buffer pools have been moved into SVA-31. Table 2 on page 14 shows changes to some of the VTAM buffer pool locations.

<i>Table 2. Changes in VTAM Buffer Pool Location</i>		
BUFFER POOL	Pre-VTAM 4.2	VTAM 4.2
CRPLBUF	SVA-24	SVA-31
LPBUF	SVA-24	SVA-31
SFBUF	SVA-24	SVA-31
XDBUF	PS-24	SVA-31
LFBUF	PS-24	SVA-31
IOBUF	- 1	SVA-24
BSBUF	PS-24	SVA-31
SPBUF	PS-24	SVA-31
VFBUF	PS-24	- 2
VPBUF	PS-24	- 2

Notes:

- 1 Introduced in VTAM V4R2
- 2 No longer available in VTAM V4R2

PS: Private Storage

2.2.2 Data Space Requirements

VTAM 4.2 needs to use data space storage. Take note of the following points:

- VTAM 4.2 needs one 1MB of data space for initialization.
- VTAM 4.2 requires an additional one 1MB data space for every VTAM application program that runs in a partition, for example CICS or POWER/PNET.
- Each data space can expand to a maximum size, depending on storage needs.
- Data spaces required by VTAM expand in multiples of 1MB.
- To define a maximum data space size that can be acquired by VTAM to support a VTAM application program, use the DSPACE operand on the EXEC JCL statement for the application program. For example, if you specify DSPACE=2M on the EXEC JCL statement for a VTAM application program, VTAM is able to acquire up to a maximum of 2MB of data space storage to support this particular application program.

2.2.2.1 DSPACE for CICS Startup JCL

The IBM-supplied skeleton CICS startup jobs in ICCF library 59 (SKCICS, SKCICS2 and SKCICS3) contain the DSPACE operand on the JCL statement:

```
// EXEC DFHSIP,.....,DSPACE=2M
```

This operand tells VTAM to allow for a maximum size of 2MB for the data space VTAM creates to support CICS. A value of 2MB is sufficient in most cases.

2.2.2.2 DSPACE for POWER/PNET Startup

In addition, the skeleton POWER startup procedure in ICCF library 59 (SKPWSTRT) specifies a DSPACE value of 2MB. This tells VTAM to allow for a maximum size of 2MB for the data space VTAM creates to support PNET. The DSPACE operand is on the JCL statement:

```
// EXEC IPWPOWER,DSPACE=2M
```

2.2.2.3 DSPACE for VTAM Startup JCL

The skeleton VTAM startup job in ICCF library 59 (SKVTAM) specifies a DSPACE value of 2MB on the JCL statement:

```
// EXEC ISTINCVT,.....,DSPACE=2M
```

This DSPACE operand in the VTAM startup JCL only affects the size of VTAM's data space needed to support the VTAM Control Point application. This does not affect the maximum data space size that VTAM gets for support of other VTAM applications (specified on the EXEC JCL statement of the application itself, as described earlier).

We recommend that you increase this to a larger value. VTAM only uses the data space storage that it needs, so defining a larger data space size than what is actually needed does not affect the available virtual storage in the VSE system.

Important!

If you specify the DSIZE operand on the VSE SYSDEF DSPACE statement, you must take into consideration the data space storage required by VTAM for initialization and for support of VTAM application programs. (DSIZE specifies the total amount of virtual storage which may be allocated to data spaces.) In addition, you may need to review the VSIZE value of your system to reflect the increased use of virtual storage by data spaces.

For further details on VTAM's use of data spaces, please refer to Chapter 4 "Installing VTAM Under VSE" in the *VTAM Network Implementation Guide*. In addition, review APARs II08851 and II08903 for a discussion on VTAM's storage requirements.

In our test system with VSE/ESA 2.1, we set up two CICS partitions and also started PNET with another VSE/ESA 1.3 system. This brings the *MINIMUM* data space requirement by VTAM to 4MB. Table 3 shows the basic setup of the VSE/ESA 2.1 system.

Partition	Job Name	DSPACE specified	Remarks
F1	POWER	2MB	POWER with PNET
F2	VSE2ICCF	2MB	CICS with ICCF
F3	VTAMSTRT	8MB 1	VTAM 4.2
F4	CICSPROD	2MB	CICS without ICCF

Note:

- 1 We set DSPSPACE to a convenient value of 8MB.

Figure 3 shows the data space used in our VSE/ESA V2.1 system when running PNET and CICS. The QUERY DSPSPACE,ALL command displays information for all partitions which have created data spaces and/or have access to data spaces.

```
query dspace,all
AR 0015 AREA DSPNAME      SIZE  MAXSIZE  SCOPE  OWNER DU-AL PASN-AL
AR 0015 F1  IST47AE1      1024K  2048K  ALL    F3          X
AR 0015
AR 0015 F2  ISTD0E92      1024K  2048K  ALL    F3          X
AR 0015
AR 0015 F3  ISTB7A09      1024K  8192K  ALL    F3          X
AR 0015 F3  ISTD0E92      1024K  2048K  ALL    F3          X
AR 0015 F3  IST9E305      1024K  2048K  ALL    F3          X
AR 0015 F3  IST47AE1      1024K  2048K  ALL    F3          X
AR 0015
AR 0015 F4  IST9E305      1024K  2048K  ALL    F3          X
AR 0015
AR 0015 1I40I  READY
```

Figure 3. Screen Display from a Q DSPSPACE,ALL Command

Notes:

1. DSPNAME is the name of the data space assigned by VSE
2. SIZE is the currently allocated data space size
3. MAXSIZE is the maximum size of the data space as defined by the DSPSPACE operand on the // EXEC JCL statement

Table 4 shows the DSPNAME and its related application.

<i>Table 4. DSPNAME and its Related Application</i>	
DSPNAME	Application
IST47AE1	POWER with PNET
ISTD0E92	CICS with ICCF
ISTB7A09	VTAM
IST9E305	CICS without ICCF

Figure 4 on page 17 confirms that the data space storage in use is 4MB (1MB for VTAM initialization, 1MB for each CICS partition and 1MB for POWER/PNET).


```

map
AR 0015 SPACE AREA          V-SIZE  GETVIS  V-ADDR  UNUSED NAME
AR 0015   S   SUP           580K         0          $$$SUPX
AR 0015   S   SVA-24       1536K    1596K    91000     384K
AR 0015   0   BG V         2048K    1024K   400000    27648K
AR 0015   1   F1 V          768K     832K   400000      OK POWSTART
AR 0015   2   F2 V         3072K    27648K  400000      OK CICSICCF
AR 0015   3   F3 V          600K     5544K  400000      OK VTAMSTRT
AR 0015   4   F4 V         3072K    27648K  400000      OK CICSPROD
AR 0015   5   F5 V         1280K     768K   400000      OK
AR 0015   6   F6 V         1024K    1024K   400000      OK
AR 0015   7   F7 V         1024K    1024K   400000      OK
AR 0015   8   F8 V         3072K    2048K   400000      OK
AR 0015   9   F9 V          512K     512K   400000      OK
AR 0015   A   FA V          512K     512K   400000      OK
AR 0015   B   FB V          512K     512K   400000      OK
AR 0015   S   SVA-31       2844K    1252K  2200000
AR 0015           DYN-PA           0K
AR 0015           DSPACE       4096K  1
AR 0015           SYSTEM       512K
AR 0015           AVAIL       23872K
AR 0015           TOTAL       122880K  <----c
AR 0015 1I40I  READY

```

Figure 4. Screen Display from a MAP Command

Note:

- 1 The data space storage used is 4MB at this moment.

2.3 Assembler Requirements

The High Level Assembler (HLASM) must be used to assemble user-defined tables, user-modified modules or user-written VTAM application programs.

2.4 VSE/VTAM Subarea Migration

VSE/VTAM 4.2 integrates both APPN and subarea SNA. In this chapter, we will show the ease of migrating from VSE/VTAM 3.4 subarea networking to VSE/VTAM 4.2. In the chapter on APPN, we will show how VTAM 4.2 supports the flow of APPN sessions over a traditional subarea network and vice versa.

2.4.1 Base Environment

In our migration tests, we set up one VSE/ESA 1.3 system (with VTAM 3.4) and another VSE/ESA 2.1 system (with VTAM 4.2). Both VSE systems run as guest machines under VM/ESA 1.2.2. The VSE/ESA 1.3 guest system is known as WCVSE13 while the VSE/ESA 2.1 guest system is known as WCVSE21. The configuration is shown in Figure 5 on page 18.

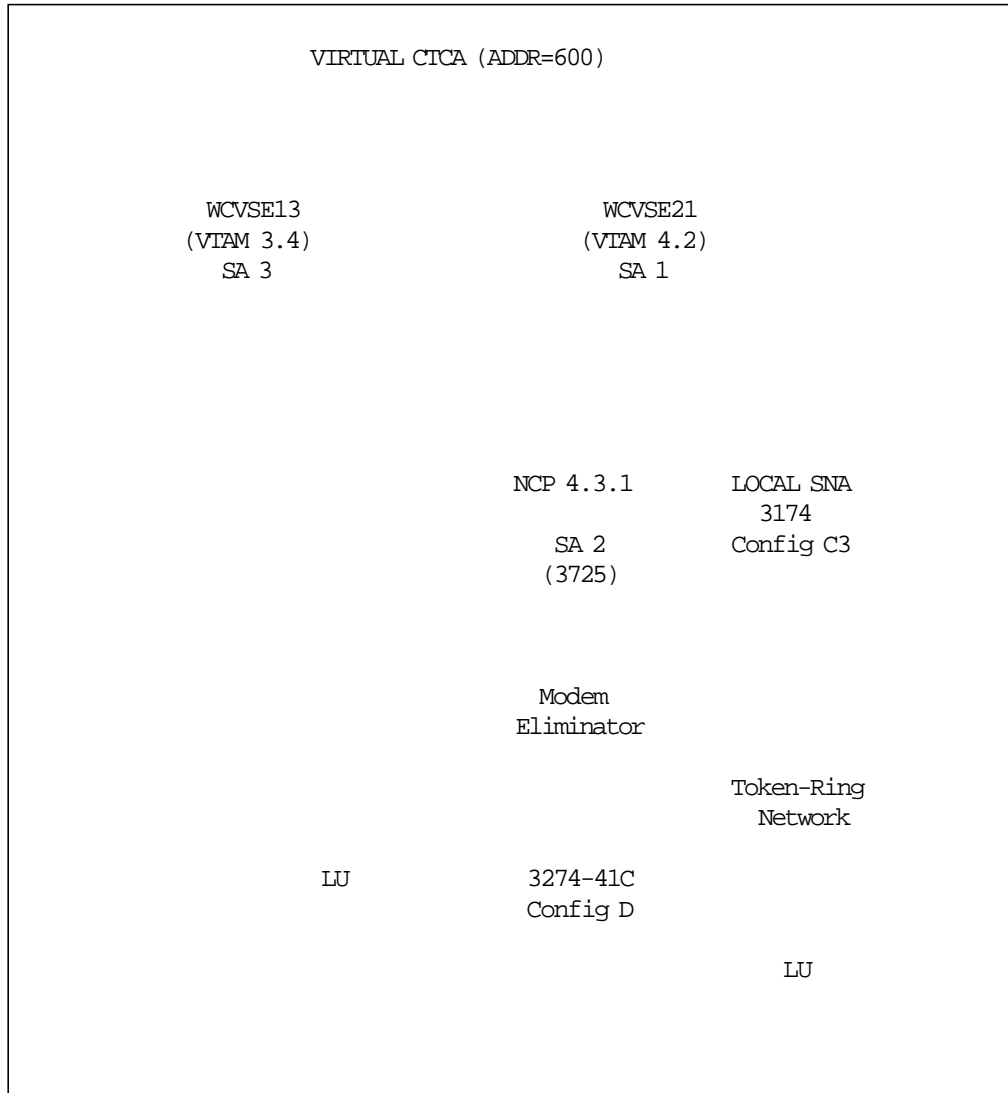


Figure 5. The Base Environment

Note: For purposes of clarity, the figure has been simplified. The Virtual Channel-To-Channel Adapter (VCTCA) is implemented via VM. We connected the two VSE systems via a VCTCA in order to test the coexistence of VTAM 3.4 and VTAM 4.2.

2.4.2 VTAM Startup JCL Changes

2.4.2.1 CUSTNO and VTAMPW Parameters

Based on the VTAM 4.2 package that you have ordered (for example Client/Server), a customer number (CUSTNO) and an access password (VTAMPW) are provided. These new parameters which you provide on the EXEC JCL for VTAM's startup, are needed to start the correct functional level.

```
// EXEC ISTINCVT,SIZE=ISTINCVT,PARM=¢CUSTNO=xxxx-yyy-zzzz,VTAMPW=pppp-qC
qqq-rrrr-ssss-tttt¢,DSPACE=8M
```

Figure 6. CUSTNO and VTAMPW as New Parameters in the VTAM Startup JCL

Notes:

- xxxx-yyy-zzzz is the supplied customer number
- pppp-qqqq-rrrrr-ssss-tttt is the access password
- You must specify a value for DSPACE. This was discussed at the beginning of the chapter.

When you start VTAM, the following message confirms which VTAM package you are running:

```
IST1497I VTAM FUNCTIONAL SUPPORT LEVEL IS package_name
```

Figure 7. VTAM 4.2 Message Indicating the Functional Support Level

Note: *package_name* will be CLIENT/SERVER if you ordered the Client/Server package

If you entered a customer number and a password that are not valid, the following message is issued:

```
IST001I VTAM START REJECTED _ INVALID CUSTNO AND VTAMPW
```

Figure 8. VTAM 4.2 Error Message for Incorrect CUSTNO or VTAMPW

For explanations of these messages, see the *VTAM Messages and Codes* manual.

Figure 9 shows the VTAM 3.4 startup JCL.

```
* $$ JOB JNM=VTAMSTRT,DISP=L,CLASS=3,PRI=3
// JOB VTAMSTRT START VTAM 3.4
// OPTION DUMP,SADUMP=5
// SETPARM XNCPU=çç
// EXEC PROC=$COMVAR,XNCPU
// EXEC DTRSETP,PARM=çCPUVAR&XNCPU; ;SET XSTATF3=ACTIVEç
/*
// SETPFIX LIMIT=640K
// ASSGN SYS000,UA
// ASSGN SYS001,DISK,VOL=SYSWK1,SHR TRACE FILE ASSIGNMENT
// ASSGN SYS004,DISK,VOL=SYSWK1,SHR TRACE FILE ASSIGNMENT
// ASSGN SYS005,DISK,VOL=SYSWK1,SHR NCP LOAD/DIAG FILE ASSGN
// LIBDEF *,SEARCH=(PRD2.CONFIG, PRD2.COMM,PRD2.COMM2,PRD1.BASE),PERM C
// LIBDEF DUMP,CATALOG=SYSDUMP.F3,PERM
// EXEC ISTINCVT,SIZE=2236K
// EXEC DTRSETP,PARM=çCPUVAR&XNCPU; ;SET XSTATF3=INACTIVEç
/*
/&
* $$ EOJ
```

Figure 9. VTAM 3.4 Startup JCL

Figure 10 on page 20 shows the new VTAM 4.2 startup JCL.

```

* $$ JOB JNM=VTAMSTRT,DISP=L,CLASS=3,PRI=3
// JOB VTAMSTRT  START VTAM 4.2
// OPTION DUMP,SADUMP=5
// SETPARM XNCPU=çç
// EXEC PROC=$COMVAR,XNCPU
// EXEC DTRSETP,PARM=çCPUVAR&XNCPU; ;SET XSTATF3=ACTIVEç
/*
// SETPFIX LIMIT=640K
// ASSGN SYS000,UA
// ASSGN SYS001,DISK,VOL=SYSWK1,SHR      TRACE FILE ASSIGNMENT
// ASSGN SYS004,DISK,VOL=SYSWK1,SHR      TRACE FILE ASSIGNMENT
// ASSGN SYS005,DISK,VOL=SYSWK1,SHR      NCP LOAD/DIAG FILE ASSGN
// LIBDEF  *,SEARCH=(PRD2.CONFIG,PRD2.COMM,PRD2.COMM2,          C
                PRD1.BASE),PERM
// LIBDEF  DUMP,CATALOG=SYSDUMP.F3,PERM
// EXEC ISTINCVT,SIZE=ISTINCVT,PARM=çCUSTNO=xxxx-yyy-zzzz,VTAMPW=pppp-qç
                ççq-rrrr-ssss-ttttç,DSPACE=8M
// EXEC DTRSETP,PARM=çCPUVAR&XNCPU; ;SET XSTATF3=INACTIVEç
/*
/&
* $$ EOJ

```

Figure 10. VTAM 4.2 Startup JCL with CUSTNO and VTAMPW Parameters

2.4.2.2 Problems with // SETPFIX LIMIT Statement

In the VTAM startup JCL, if you code the following // SETPFIX statement in conjunction with an ALLOC value of 6MB for the VTAM partition, that is:

```
// SETPFIX LIMIT=(640K,1024K)
```

You may receive the following error messages:

```

IST017I UNABLE TO LOAD PHASE ISTTSCRX
IST794I VTAM START REJECTED - CANNOT LOAD ISTTSCRX
IST133I VTAM TERMINATION IN PROGRESS
IST102I VTAM IS NOW INACTIVE

```

Figure 11. Error Message Received for SETPFIX Problem

Please install the corresponding PTF for APAR DY43755 to resolve this problem.

2.4.3 ATCSTRyy.B Changes

As this chapter only discusses VTAM migration in the context of subarea networking, we will not cover APPN start options introduced in VTAM 4.2. These are covered in Chapter 4.

There are many new start options introduced in VTAM 4.2 and it would be impossible to cover all these in this chapter. We will introduce some new options here which we found useful in our tests. Please refer to the manual *VTAM Resource Definition Reference* for details of all the new options.

2.4.3.1 Start Options (subarea networking only)

VSE/VTAM 3.4 ATCSTR00.B		VSE/VTAM 4.2 ATCSTR00.B	
SSCPID=3,	*	SSCPID=1,	*
SSCPNAME=SSCP03,	*	SSCPNAME=SSCP01,	*
NETID=DEIBMIPF,	*	NETID=DEIBMIPF,	*
HOSTSA=3,	*	HOSTSA=1,	*
HOSTPU=NODE03,	*	HOSTPU=NODE01,	*
MAXSUBA=255,	*	MAXSUBA=255,	*
CONFIG=00,	*	CONFIG=00,	*
NOPROMPT,	*	NOPROMPT,	*
IOINI=0,	*	IOINI=0,	*
SGALIMIT=0,	*	SGALIMIT=0,	*
BSEUF=(28,,1),	*	BS=(28,,,1),	*
CRPLBUF=(60,,1),	*	CR=(60,,,1),	*
LFBUF=(70,288,,11),	*	LF=(70,,,11),	*
LPBUF=(12,,6),	*	LP=(12,,,6),	*
SFBUF=(20,,20),	*	SF=(20,,,20),	*
SPBUF=(210,,32),	*	SP=(210,,,32),	*
VFBUF=102400,	*	XD=(6,,,1)	*
VPBUF=446464,	*	IO=(70,424,,,1),	*(1)
XDBUF=(6,,1)		DYNLU=YES,	*(2)
		IOPURGE=5M,	*(3)
		MAINTLVL=ESA211,	*(4)
		DISCNTIM=30,	*(5)
		SRCHRED=ON,	*(6)
		SRCOUNT=10,	*(7)
		SRTIMER=60,	*(8)
		SGA24=0	(9)

Figure 12. VTAM Start Options with VTAM 3.4 and VTAM 4.2

Notes:

1. IOBUF is introduced in VTAM 4.2. It is used for input/output data. Every PIU that enters or leaves VTAM resides in an I/O buffer.
2. DYNLU allows you to dynamically allocate cross-domain resource definitions for resources being treated as independent LUs by this VTAM.
3. IOPURGE specifies the time interval after which outstanding I/O requests are purged. By setting an IOPURGE value, you can cancel session requests that fail to complete in a certain amount of time. Note that the IOPURGE option is not supported when running VTAM in Client/Server mode.
4. MAINTLVL specifies which maintenance level is running on a host. Up to eight user-defined characters can be coded. In our VTAM 4.2 system, we coded MAINTLVL=E211 to indicate that VTAM is running on a VSE/ESA 2.1.1 system. You can use the VTAM command D NET,VTAMOPTS to display this option.
5. DISCNTIM
Specifies the amount of time that VTAM delays deactivation of the SSCP-PU session when there are no outstanding LU-LU session requests. DISCNTIM

is valid only for Type 2.0 and Type 2.1 PUs with DISCNT=DELAY specified on the PU definition statement.

6. SRCHRED

Specifies whether this node can reduce searches for resources which are found to be unreachable. Refer to "Improving VTAM Performance Using Start Options" in the *VTAM Network Implementation Guide* for information about using the search reduction facility.

7. SRCOUNT

Specifies how many search requests can be limited before VTAM performs another resource discovery search. Meaningful only if SRCHRED=ON.

8. SRTIMER

Specifies the number of seconds during which VTAM does not conduct searches for an unreachable resource. Once the time limit has expired, VTAM will conduct a search. Meaningful only when SRCHRED=ON.

9. SGA24 specifies the maximum amount of 24-bit addressable System GETVIS Area (SGA) that can be used by VTAM. SGA24=0 indicates that no limit is enforced on the amount of 24-bit SGA used by VTAM.

2.4.3.2 Problems Encountered with IOBUF

APAR DY43841 documents a problem with the I/O Buffer Pool. Please install the corresponding PTF for this APAR before starting VTAM 4.2.

2.4.3.3 Problems Encountered with SGALIMIT

According to the manual *VTAM V4R2 Resource Definition Reference*, the value of SAGLIMIT specified includes both SGA24 and SGA31. It is the maximum amount of System Getvis Area (SGA) that can be used by VTAM. However, at the time of printing this redbook, the SGALIMIT applies only to SGA31 and is therefore not functioning correctly. APAR DY44101 addresses this code problem. Please install the corresponding PTF when it is available.

2.4.4 Restrictions of Different VTAM Packages

Some keywords, definition statements, start options are not supported in the Client/Server package and MultiDomain package. On the other hand, VTAM InterEnterprise gives you the functions required for cross-network communication. In this section, we will list some of the restrictions, but this list is by no means exhaustive. Please refer to the flyer *VTAM Overview* for a complete list.

2.4.4.1 Client/Server Restrictions

We started VTAM 4.2 in Client/Server mode for this part of our tests. In our VTMNSNA.B member, we coded the keyword LOGAPPL as shown in Figure 13 on page 23.

```

VTMNSNA  LBUILD
D08001   LOCAL CUADDR=080,TERM=3277,           C
          USSTAB=VIMUSSTB,                     C
          DLOGMOD=SP32702N,                   C
          MODETAB=IESINCLM,                   C
          MDLTAB=VIMMDL,                      C
          MDLENT=VSE32782,                    C
          LOGAPPL=VSE2ICCF,                   C
          FEATUR2=(MODEL2)

```

Figure 13. Keyword LOGAPPL Coded on VTMNSNA Major Node

Since the LOGAPPL keyword is not supported in Client/Server mode, the following error message is received when VTAM activates this VTMNSNA major node:

```

IST322I CONFIGURATION VTMNSNA ERROR IGNORED - INVALID PARAMETER
IST323I LABEL = D08001 - MACRO TYPE = LOCAL - KEYWORD = LOGAPPL
IST314I END

```

Figure 14. Error Message Received for LOGAPPL Keyword

2.4.4.2 Cross-Domain Logon

In addition, we had a cross-domain definition in order to allow users to log on to applications residing in the adjacent host. Figure 15 shows the CDRM definition in VTAM 4.2.

```

CDRM definition in VIMCDRM.B
VIMCDRM  VBUILD TYPE=CDRM
SSCP01   CDRM  SUBAREA=01,CDRDYN=YES,ISTATUS=ACTIVE
SSCP03   CDRM  SUBAREA=03,CDRSC=OPT,ISTATUS=ACTIVE

```

Figure 15. CDRM Definition

However, in Client/Server mode, the CDRM definition statement is not supported and the following error message is received:

```

IST1330I CDRM CANNOT BE ACTIVATED FROM THIS NODE
IST072I VARY ACT FOR ID = VIMCDRM FAILED DURING NETWORK DEFINITION

```

Figure 16. Error Message Received for CDRM Definition Statement

If the command 'D NET,CDRMS' is issued, the following messages will be received:

```

d net,cdrms
AR 0015 1C39I COMMAND PASSED TO ACF/VTAM
F3 0003 IST097I DISPLAY ACCEPTED
F3 0003 IST350I DISPLAY TYPE = CDRMS
F3 0003 IST1358I NO QUALIFYING MATCHES FOR *
F3 0003 IST314I END

```

Figure 17. Messages Received for a 'D NET,CDRMS' Command

Consequently, an attempt to start a PNET connection from both VSE systems will fail because VTAM could not locate the cross-domain information. Figure 18 shows the error messages received on the VSE/ESA 1.3 system while Figure 19 shows the error messages received on the VSE/ESA 2.1 system.

```

S PNET,VSE21PWR,600
AR 015 1C39I COMMAND PASSED TO VSE/POWER
F3 053 IST663I INIT OTHER REQUEST FAILED, SENSE=087D0002
F3 053 IST664I REAL OLU=DEIBMIPF.VSE13PWR ALIAS DLU=DEIBMIPF.VSE21PWR
F3 053 IST889I SID = FF7F6FFCF28621DE
F3 053 IST264I REQUIRED ADJSSCP TABLE UNDEFINED
F3 053 IST314I END
F1 001 1RC6I CONNECTION PENDING FOR NODE VSE21PWR, TIME=14:17:52 RC=087D

```

Figure 18. Error Messages Received for PNET Activation from VSE/ESA 1.3

VSE21PWR is the VTAM applid for POWER running in the adjacent VSE/ESA 2.1 system. The VCTCA address is 600.

```

S PNET,VSE13PWR,600
AR 0015 1C39I COMMAND PASSED TO VSE/POWER
F3 0003 IST663I INIT OTHER REQUEST FAILED, SENSE=087D0002
F3 0003 IST664I REAL OLU=DEIBMIPF.VSE21PWR ALIAS DLU=DEIBMIPF.VSE13PWR
F3 0003 IST889I SID = FF876FFCF2AEE7D3
F3 0003 IST264I REQUIRED ADJSSCP TABLE UNDEFINED
F3 0003 IST314I END

```

Figure 19. Error Messages Received for PNET Activation from VSE/ESA 2.1

VSE13PWR is the VTAM applid for POWER running in the adjacent VSE/ESA 1.3 system. The VCTCA address is 600.

2.4.4.3 NCP Activation

We also coded an NCP major node RESNCP1 for our 3725 communications controller. As VTAM (Client/Server mode) cannot own an NCP, the following error message is received on activation of the major node:

```

IST1330I NCP CANNOT BE ACTIVATED FROM THIS NODE
IST072I VARY ACT FOR ID = RESNCP1 FAILED DURING NETWORK DEFINITION

```

Figure 20. Error Message Received for NCP Definition Statement

We also coded the following start options on the ATCSTR00 start list:

1. DISCNTIM
2. IOPURGE

3. SRCHRED
4. SRCOUNT
5. SRTIMER

Notes:

- DISCNTIM specifies the amount of time that VTAM delays deactivation of the SSCP-PU session when there are no outstanding LU-LU session requests.
- IOPURGE specifies the time interval after which outstanding I/O requests are purged.
- SRCHRED specifies whether this node can reduce searches for resources which are found to be unreachable.
- SRCOUNT specifies how many search requests can be limited before VTAM performs another resource discovery search. Meaningful only if SRCHRED=ON.
- SRTIMER specifies the number of seconds during which VTAM does not conduct searches for an unreachable resource. Meaningful only if SRCHRED=ON.

As these start options are not supported in Client/Server, the following messages are received:

```

IST448I DISCNTIM OPTION IGNORED - NO LONGER SUPPORTED
IST448I IOPURGE OPTION IGNORED - NO LONGER SUPPORTED
IST448I SRCHRED OPTION IGNORED - NO LONGER SUPPORTED
IST448I SRCOUNT OPTION IGNORED - NO LONGER SUPPORTED
IST448I SRTIMER OPTION IGNORED - NO LONGER SUPPORTED

```

Figure 21. Messages Received for Unsupported Start Options

2.4.4.4 MultiDomain Restrictions

We started VTAM in MultiDomain mode. The LOGAPPL keyword is supported. In addition, we could also activate our cross-domain major node. Figure 22 shows the response to a 'D NET,CDRMS' command.

```

D NET,CDRMS
AR 0015 1C39I COMMAND PASSED TO ACF/VTAM
F3 0003 IST097I DISPLAY ACCEPTED
F3 0003 IST350I DISPLAY TYPE = CDRMS
F3 0003 IST089I VTMCDRM TYPE = CDRM SEGMENT , ACTIV
F3 0003 IST482I SSCP01 ACTIV, SA 1, EL 1, NETID = DEIBMIPF
F3 0003 IST482I SSCP03 ACTIV, SA 3, EL 1, NETID = DEIBMIPF
F3 0003 IST314I END

```

Figure 22. Display of VTMCDRM Major Node

With the cross-domain major node activated, we could start PNET from both VSE systems successfully as shown in Figure 23 on page 26 and Figure 24 on page 26.

```
S PNET,VSE21PWR,600
AR 015 1C39I COMMAND PASSED TO VSE/POWER
F1 001 1RB3I  NODE VSE21PWR SIGNED-ON ON LINE SNA, BSIZE=00400,
      TIME=14:25:48
```

Figure 23. Successful Start of PNET from VSE/ESA 1.3 System

```
S PNET,VSE13PWR,600
AR 0015 1C39I COMMAND PASSED TO VSE/POWER
F1 0001 1RC6I  CONNECTION PENDING FOR NODE VSE13PWR, TIME=14:25:23 RC=0857
F1 0001 1RB3I  NODE VSE13PWR SIGNED-ON ON LINE SNA, BSIZE=00400, TIME=14:25:48
```

Figure 24. Successful Start of PNET from VSE/ESA 2.1 System

The start options DISCNTIM and IOPURGE are supported in MultiDomain mode. However, the options SRCHRED, SRCOUNT and SRTIMER are not. The following messages are received for these unsupported options:

```
IST1497I VTAM FUNCTIONAL SUPPORT LEVEL IS MULTIDOMAIN
IST448I SRCHRED OPTION IGNORED - NO LONGER SUPPORTED
IST448I SRCOUNT OPTION IGNORED - NO LONGER SUPPORTED
IST448I SRTIMER OPTION IGNORED - NO LONGER SUPPORTED
```

Figure 25. Messages Received for Unsupported Start Options in MultiDomain

2.4.4.5 VTAM InterEnterprise

VTAM InterEnterprise includes all of the functions for Client/Server and MultiDomain. VTAM InterEnterprise is the package of choice if you desire to connect to other networks. The functions provided help you to manage and control interconnected networks.

2.5 Conclusion

From our tests, we have found that it is easy to migrate from VTAM 3.4 to VTAM 4.2 (subarea networking). We encourage you to migrate to VTAM 4.2 to take advantage of new functions and capabilities. Just select the appropriate VTAM package based on the functions you need!

Chapter 3. Migrating VM/VTAM V3R4M1 to V4R2 Subarea Networking

3.1 Installation of VM/VTAM

3.1.1 Installation Overview

One of the major differences between VM/VTAM V4.2 and V3.4 is the method of installing and servicing VTAM. VM/VTAM V4.2 is now installed and serviced using the **VMSES/E** component in VM/ESA. VMSES/E provides a common tool in the installation and service of all VM software products. An installation aid **VMFINS** is provided by VMSES/E to make the installation of VM and its licensed program products consistent. To install VM/VTAM V4R2 the following documents are needed:

- PSP bucket: Upgrade - ACFVTAM420, Subset - VM420
- Program Directory for ACF/VTAM V4R2 for VM/ESA
- VTAM V4R2 Network Implementation Guide, SC31-6494

In this chapter we will reference sections within each of these crucial documents. Before we proceed to the actual migration we will point out those problems we encountered during the installation process and where additional clarification is needed with these documents. We will begin with the VM/VTAM PSP bucket. Reference the PSP bucket for any changes to the VTAM *Program Directory*, published documentation, general information and service recommendations. With the PSP bucket in-hand, proceed to chapter 6, "Installation Instructions" in the *Program Directory*. From there we reference chapter 3, "Installing VTAM under VM" in the *VTAM Network Implementation Guide*.

3.1.2 PSP Bucket for ACF/VTAM V4R2 for VM/ESA

Before installing VM/VTAM V4R2 it is recommended you review the Preventive Service Planning (PSP) bucket for the product. Please contact your IBM Support Center or use Service Link and request the **Upgrade: ACFVTAM420, Subset: VM420**

3.1.3 Program Directory for ACF/VTAM V4R2 for VM/ESA

This section will document those problems we encountered in the installation of VTAM V4R2 for VM/ESA using VMSES/E. We will also point out those sections in chapter 6 "Installation Instructions" in the *Program Directory* needing additional clarification.

3.1.3.1 Allocate Resources for Installing VTAM V4R2 for VM/ESA

This is section 6.2.2 in the *Program Directory*. Item No. 4 suggests placing the new directories online using DIRMAINT or an equivalent CP directory maintenance method. An alternative to DIRMAINT is the CP command **DIRECTXA USER**.

3.1.3.2 Install VTAM V4R2 for VM/ESA

Figure 47, "Sample console output - Install VTAM V4R2 for VM/ESA" in section 6.2.3 of the *Program Directory* contains the number of parts loaded to the different minidisks. We found the following discrepancies in the number of parts loaded for certain minidisks from that which was documented.

- Loaded 3423 parts to BASE1 2B2 (M) instead of 3339 parts.
- Loaded 26 parts to LOCALSAM 2C2 (E) instead of 18 parts.
- Loaded 9 parts to BUILD0 49A (J) instead of 5 parts.

3.1.3.3 Activate the Program

In section 6.3.2 of the *Program Directory*, item number 1 refers to the *VTAM Network Implementation Guide* to prepare your operating system prior to activating VTAM. This statement is specifically referring to section "Preparing your Operating System" in chapter 3 of the *VTAM Network Implementation Guide*.

3.1.4 VTAM V4R2 Network Implementation Guide

This section will document those sections in chapter 3 "Installing VTAM under VM" in the *VTAM Network Implementation Guide* that require additional clarification or where modifications were needed. We refer specifically to profile requirements for automatic logon (AUTOLOG).

3.1.4.1 Profile for the AUTOLOG1 Virtual Machine

The following PROFILE EXEC for the AUTOLOG1 virtual machine is documented in the *VTAM V4R2 Network Implementation Guide*:

```
/* */
CP AUTOLOG userid password
CP LOGOFF
```

The following PROFILE EXEC for the AUTOLOG1 virtual machine is provided with the VTAM V4R2 package:

```
/* */
CP XAUTOLOG userid password
CP LOGOFF
```

Both the CP XAUTOLOG and AUTOLOG commands are acceptable for VM/ESA. We also discovered that *password* is not needed for class A or B privileged user IDs.

3.1.4.2 Profile for the GCS Recovery Virtual Machine

The following PROFILE GCS for the GCS Recovery virtual machine is documented in the *VTAM V4R2 Network Implementation Guide*:

```
/* */
CP AUTOLOG VTAM password
CP SET SHARE RELATIVE 10000
CP SET QUICKDSP
CP LOGOFF
```

The correct format for the CP SET commands requires that a **user ID** be supplied. We entered the supplied GCS Recovery virtual machine **GCSXA** for *userid*.

```
/* */
CP AUTOLOG VTAM password
CP SET SHARE userid RELATIVE 10000
CP SET QUICKDSP userid
CP LOGOFF
```

3.1.4.3 Profile for the VTAM Virtual Machine

The following PROFILE GCS for the VTAM virtual machine is documented in the *VTAM V4R2 Network Implementation Guide*:

```
CP SET SHARE RELATIVE 10000
CP SET QUICKDSP
CP SET TIMER REAL
FILEDEF NCPLOAD DISK NCP LOADLIB A
VMVTAM
```

There are several errors here. A screen with the correct entries will follow after a brief discussion.

The correct format for the CP SET commands requires that a **user ID** be supplied. We entered **VTAM** for *userid* here, which is the virtual machine we created.

The **CP SET TIMER REAL** command is only valid for 370 mode. The VTAM directory suggests MACHINE XA mode. The recommendation is to **remove the CP SET TIMER REAL command**.

The **FILEDEF NCPLOAD DISK NCP LOADLIB A** statement does not take into account that the VTAM 'A' disk does not have write capability. The VTAM user ID on disk 191 is 5654010A user ID on disk 2C2. We therefore did the following:

1. Create a new minidisk for the VTAM user ID (that is, 200) with MR capability.
2. Update PROFILE GCS with commands:
 - **CP ACC 200 E**
 - **FILEDEF NCPLOAD DISK NCP LOADLIB E**

A recommended PROFILE GCS for the VTAM virtual machine follows:

```
CP ACC mdisk_addr E
CP SET SHARE userid RELATIVE 10000
CP SET QUICKDSP userid
FILEDEF NCPLOAD DISK NCP LOADLIB E
VMVTAM
```

3.1.4.4 Loading VTAM - Overview

We found the title "Loading VTAM - Overview" in the *VTAM Network Implementation Guide* to be misleading in respect of the information found in that section. It actually is related more to the downloading of the installation tape and the installation instructions of VM/VTAM V4R2. The section "Loading VTAM - Overview" duplicates the installation instructions in the *VTAM Program Directory*. Note, however that the *VTAM Program Directory* might contain more accurate information than that available when the *VTAM Network Implementation Guide* was published.

3.1.4.5 Generating Group Control System (GCS)

This section in the *VTAM Network Implementation Guide* references the **GROUP exec** to configure GCS. We did not find a GROUP exec. The correct exec provided by user ID GCSXA to configure GCS is **NSSGCS XA exec**.

3.1.5 Installing the VTAM VIT Analysis Tool

VM/VTAM V4R2 provides a serviceability tool to assist in the diagnosing of VTAM problems. The VIT Analysis Tool was developed to obtain information about a VTAM internal trace (VIT) that is recorded on or transferred to an external device. The tool provides the following functions:

- Storage analysis
- Request and response unit (RU) counting
- VIT extraction

You can choose to process only the VIT records that fall within a given time range in the trace record. By default, the entire VIT is processed. All time values, including time stamps, are local (LOC) time.

The VTAM VIT Analysis Tool requires ISPF under VM. We had V3R2.0 of ISPF installed. There are various ISPF execs and panels that need updating for the VTAM VIT Analysis Tool to function properly.

This section will document those problems we encountered in the installation of the VIT Analysis Tool. We will also point out where additional clarification is needed in the installation and tailoring of this tool under ISPF.

You will find instructions for installing the VTAM VIT Analysis Tool in Appendix B of the *Program Directory* and also in Chapter 3 of the *VTAM Network Implementation Guide*. This redbook will reference sections within those publications where we encountered problems or where further clarification was needed.

The VIT Analysis Tool requires target data sets for the external trace to have been created. For information on required target data sets for the tool, see "Installing the VTAM Dump Analysis Enhancements and the VIT Analysis Tool" in the *VTAM Network Implementation Guide*.

3.1.5.1 Accessing the Appropriate Disks

Table 5 indicates those loadlibs or maclibs needed to set up the VIT Analysis Tool. By default, the 5654010A user ID owns the minidisks 493/193, 49A/29A and 2B2 referenced in this section. All three of these MDISKS must be accessed for the VIT Analysis panels to display.

Table 5. VTAM VIT Analysis Tool Loadlibs and Maclibs

Target Loadlib or Maclib	Action	Mini Disk	Comment
N/A	Accessed as A	493 Test 193 Prod	Contains REXX EXECs
ISTPLIB	Accessed as A	493 Test 193 Prod	Contains compiled panels
ISTMLIB	Accessed as A	493 Test 193 Prod	Contains compiled ISPF messages
user-defined maclib	Accessed as A	493 Test 193 Prod	This maclib can be a new or existing one and needs to be the same maclib used for ISPTABL.
ISTTLIB (same as used for ISPTLIB)	Accessed as A	493 Test 193 Prod	Because ISPTABL can only point to one maclib, this maclib needs to replace any previous maclib set up for ISPTLIB.
ISTDEBUG	Accessed as B	49A Test 29A Prod	Contains ISTRIFT1 load module
N/A	Accessed as C	2B2 BASE1	Contains input GML files

3.1.5.2 Updating and Running the ISPF EXEC

In the corresponding sections of the *Program Directory* and *VTAM Network Implementation Guide* are examples of the ISPF EXEC that need updating with the appropriate maclibs for the VIT Analysis Tool. We found that the exec shipped with ISPF for VM V3R2.0 that needed updating was NOT called ISPF EXEC but instead **ISPF ORIGEXEC**. ISPF ORIGEXEC was found on ISPF user ID ISPVM, MDISK 192.

The contents of this exec were different from that documented in the *Program Directory* and *VTAM Network Implementation Guide*. Keep in mind that the execs in these IBM publications are only examples and may not match what you received. Remember, to properly install the VTAM VIT Analysis Tool, just add the

highlighted FILEDEF statements for ISPPLIB, ISPMLIB and ISPTLIB in the example exec provided. These need to be placed after the existing ISRNULL FILEDEF statements as illustrated in the example. It is recommended not to remove any existing statements from the exec as unpredictable results may occur.

We've included in Figure 26 a partial ISPF ORIGEXEC modified to include the IST maclibs to install the VIT Analysis Tool.

```

        ÇFILEDEF ISPPLIB DISK ISRNULL PANEL Y(PERM CONCATÇ
        ÇFILEDEF ISPPLIB DISK ISTPLIB MACLIB A(PERM CONCATÇ

        ÇFILEDEF ISPMLIB DISK ISRNULL MESSAGE Y(PERM CONCATÇ
        ÇFILEDEF ISPMLIB DISK ISTMLIB MACLIB A(PERM CONCATÇ

        ÇFILEDEF ISPTLIB DISK ISRNULL TABLE A(PERM CONCATÇ
        ÇFILEDEF ISPTLIB DISK ISTTLIB MACLIB A(PERM CONCATÇ

```

Figure 26. Partial ISPF ORIGEXEC Modified for IST Maclibs

The FILEDEF statements in Figure 26 have the existing ISRNULL FILEDEF statements in ISPF ORIGEXEC. The FILEDEF statements that we had to add/change for the VTAM VIT Analysis Tool are highlighted.

After adding the appropriate statements to ISPF ORIGEXEC, rename this file to ISPF EXEC. It will be invoked in the next section so the ISPF tables can be installed.

3.1.5.3 Installing the ISPF Trace Tables

From the 5654010A user ID, you will now invoke the newly renamed and modified ISPF EXEC and install the ISPF trace tables. To do this you must first access the mini disk where the ISPF EXEC resides. From the 5654010A user ID enter the following:

1. LINK ISPVM 192 192 RR
ISPVM was our ISPF user ID. Alter as appropriate for your installation.
2. ACC 192 fm
Replace 'fm' with an available filemode.
3. ISPF
Invoke ISPF to install the trace tables. Ensure you have renamed the ISPF ORIGEXEC to ISPF EXEC prior to this step.
4. Select option 7 from the ISPF/PDF PRIMARY OPTION MENU
5. Select option 1 from the Dialog Test menu to go to the ISPF INVOKE DIALOG FUNCTION/SELECTION PANEL.
6. From this point on it is possible to follow the instructions in the *Program Directory or VTAM Network Implementation Guide* for "Installing the ISPF Trace Tables".

3.1.5.4 Invoking the ISPF Dialog Tag Language Utility

No adjustments or additional hints are needed. It is well documented in the *Program Directory* and *VTAM Network Implementation Guide*.

3.1.5.5 Compiling the Help Panels, Keylists, and Commands

The screen display for updating the panel "ISPF Dialog Tag Language Conversion Utility" indicates for the line:

```
Output Panel MACLIB fn . . 'ISTPLIB'
```

The correct response is:

```
Output Panel MACLIB fn . . ISTPLIB
```

Note: The difference in the two lines is that the single quotes are not acceptable input for that field, and thus removed.

Update the remaining fields on that panel as indicated in the instructions and screen display.

When compiling the help panels you may see warning messages of **ISPC850W** with **KEYLIST=ISTTK008** and **KEYLIST=ISTTK009**. These can be ignored. They do not affect the installation and execution of the VTAM VIT Analysis Tool.

3.1.5.6 Verifying the Trace Formatter Panels

No adjustments or additional hints are needed for this topic as it is adequately documented in the *Program Directory* and *VTAM Network Implementation Guide*.

3.1.5.7 Customizing the ISPF Interface

To add the new OPTION **V VTAM - VTAM trace analysis commands** on the ISPF/PDF PRIMARY OPTION MENU, additional customizing is needed in ISPF. Providing this interface on the ISPF/PDF Primary Option Menu is optional but it is then easier to invoke the VIT trace analysis commands. It is recommended that you add OPTION V to the ISPF/PDF Primary Option Menu.

To accomplish the customizing of the ISPF interface please do the following from the **ISPVM user ID** (or your ISPF user ID):

1. From the 192 disk, XEDIT file: **ISR@PRIM PANEL**
2. ADD: % **V +VTAM - VTAM trace analysis commands**

This statement is to be positioned after "OPTION C +CHANGES ..." in the body of SAMPLE ISPF/PDF PRIMARY OPTION MENU.

3. ADD: **V,'CMD(%ISTTE01) NEWAPPL(ISTT)'**

This statement is to be positioned after "C,'PGM(ISPTUTOR) PARM(ISR00005)' " within the ISR@PRIM PANEL file.

4. Reference the topic "Customizing the ISPF Interface" in the *Program Directory* or *VTAM Network Implementation Guide* for an example of the ISR@PRIM PANEL. The necessary statements to add are highlighted. The resulting ISPF/PDF Primary Option Menu after these changes is also documented.

3.1.5.8 Example Screens of VIT Analysis Tool

Now that you have the VIT Analysis Tool installed, let's go through a sample scenario on when you may use it. We've provided screen images of some of the panels you'll encounter when invoking this tool.

To invoke the VIT Analysis Tool, you must first access the ISPF panels. We invoked ISPF from the **user ID 5654010A** with the following commands:

```
LINK ISPVM 192 192 RR
```

```
ACC 192 fm
```

```
ISPF
```

The resulting panel displayed is in Figure 27.

```
----- ISPF/PDF PRIMARY OPTION PANEL -----
                                USERID -
0  ISPF PARS - Specify terminal and user parameters  TIME -
1  BROWSE   - Display source data or output listings  TERMINAL -
2  EDIT     - Create or change source data           PF KEYS -
3  UTILITIES - Perform utility functions
4  FOREGROUND - Invoke language processors in foreground
5  BATCH    - Submit to batch for language processing
6  COMMAND  - Enter CMS command or EXEC
7  DIALOG TEST - Perform dialog testing
8  LM UTILITIES- Perform library management utility functions
9  IBM PRODUCTS- Additional IBM program development 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
X  EXIT     - Terminate using console, log, and list defaults

Enter END command to terminate ISPF.

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OPTION ===> V
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 27. ISPF/PDF Primary Option Panel

In Figure 27 we selected **OPTION V - VTAM Trace Analysis Commands**, which is the result of customizing ISPF earlier.

```
VTAM Internal Trace Analysis

Select one of the following. Then press Enter.

3_ 1. Storage Analysis
    2. Request/response unit counting
    3. VIT extraction
    4. Input complete

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Command ==> _____
```

Figure 28. VTAM Internal Trace Analysis Panel

The first panel as a result of selecting "V" is in Figure 28. You will generally be asked to perform **VIT extraction** against your trace data set. The remaining panels we display are a result of selecting **Option 3**.

VIT Extraction Boolean Expression

Type a Boolean expression or press the template key (F4).

(PIU|API)

Operands	Description	Operators
CCcc or EφCCccφ	Option or entry name	() Delimiters
AφxxxxxxxxXφ:mn	Address:offset	Not
CφCcccc...φ:mn	Char String:offset	- Thrg
XφXXxxx...φ:mn	Hex String:offset	& An
Oφxxxx...φ or Dφxxxx...φ	Origin or Destination	Or

Command ==>

F1=Help	F2=Split	F3=Exit	F4=Template	F5=Reset	F9=Swap
F10=Save	F11=Retrieve	F12=Cancel			

Figure 29. VIT Extraction Boolean Expression Panel

The first time you receive panel **VIT Extraction Boolean Expression** you will be given the opportunity to enter a boolean expression yourself, or use a template. Figure 29 shows how you would enter a request for only a select set of VIT entries. If you are not familiar with the format in entering your request, we suggest you press **PF4 TEMPLATE**. The resulting panel after selecting PF4 is in Figure 30 on page 37.

VIT Extraction Template

Type information in one or more fields, then press Enter. This information will be appended to the full expression.

VIT options/entries _____ +

Address _____ (Hexadecimal)
 Offset _____ (Decimal or Hexadecimal)

Character string . IST259I _____
 Offset _____ (Decimal or Hexadecimal)

Hexadecimal string _____
 Offset _____ (Decimal or Hexadecimal)

Command ==> _____
 F1=Help F2=Split F3=Exit F4=Prompt F5=Reset F9=Swap
 F11=Retrieve F12=Cancel

Figure 30. VIT Extraction Template Panel

On the panel **VIT Extraction Template** in Figure 30 we wanted to expand our output to include the message "IST259I", which we entered as a character string. This will be appended to the options entered previously on the "VIT Extraction Boolean" panel in Figure 29 on page 36. The resulting panel of both expressions is in Figure 31 on page 38.

VIT Extraction Boolean Expression

Type a Boolean expression or press the template key (F4).

(PIU|API)|Cist259i

Operands	Description	Operators
CCcc or ECCcc	Option or entry name	() Delimiters
AxxxxxxxX:m	Address:offset	Not
CcCccc...:m	Char String:offset	- Thrg
XxXxxx...:m	Hex String:offset	& An
Oxxxx... or Dxxxx...	Origin or Destination	Or

Command ==>

F1=Help	F2=Split	F3=Exit	F4=Template	F5=Reset	F9=Swap
F10=Save	F11=Retrieve	F12=Cancel			

Figure 31. VIT Extraction Boolean Expression Panel

After entering all the expressions you want to extract, the next panel to display is **TIMING OPTIONS** in Figure 32 on page 39. It is here that you can indicate if a particular time interval is desired. This can be extremely helpful if your trace data set covers many options and for a significant amount of time. You should use the console log to determine an appropriate time interval to limit your search for the desired expressions entered in the previous panels.

```

                                     TIMING OPTIONS

SELECT AND TYPE. THEN PRESS ENTER.

START 1  1.  BEGINNING OF TRACE
          2.  AT TIMESTAMP (HEX TOD CLOCK + TIMEZONE)
          3.  AT TIME AND DATE

STOP  1  1.  END OF TRACE
          2.  AT TIMESTAMP (HEX TOD CLOCK + TIMEZONE)
          3.  AT TIME AND DATE

REPORT INTERVAL _____ (MM:SS) (STORAGE ANALYSIS AND RU COUNTING ONLY)

COMMAND ==> _____
          F1=HELP   F2=SPLIT   F3=EXIT   F5=RESET   F9=SWAP   F10=SA
          F11=RETRIEVE F12=CANCEL

```

Figure 32. Timing Options Panel

Particular time intervals can be entered in two different ways; Figure 33 on page 40 shows both panel selections.

Resulting screen when selecting option 2. AT TIMESTAMP ...
on the TIMING OPTIONS screen.

2. AT TIMESTAMP (HEX TOD CLOCK + TIMEZONE)
START AND STOP TIMESTAMPS

TYPE. THEN PRESS ENTER.

START TIMESTAMP _____ (REQ)

STOP TIMESTAMP _____ (REQ)

COMMAND ===> _____

F1=HELP F3=EXIT F5=RESET
F9=SWAP F10=SAVE F11=RETRIEVE

Resulting screen when selecting option 3. AT TIME and DATE
on the TIMING OPTIONS screen.

START, STOP TIME AND DATE

TYPE. THEN PRESS ENTER.

START TIME _____ (HH:MM:SS.DDD)
START DATE _____ (MM/DD/YY OR YY.DDD)

STOP TIME _____ (HH:MM:SS.DDD)
STOP DATE _____ (MM/DD/YY OR YY.DDD)

COMMAND ===> _____

F1=HELP F3=EXIT F5=RESET
F9=SWAP F10=SAVE F11=RETRIEVE

Figure 33. Panels for Start/Stop Times

The **INPUT/OUTPUT OPTIONS** panel in Figure 34 on page 41 gives you flexibility on how you want your output formatted.


```

INPUT/OUTPUT OPTIONS

TYPE, THEN PRESS ENTER.

TRACE WRAPPED? 2  1. TRACE WRAPPED
                  2. TRACE DID NOT WRAP

FORMAT OUTPUT? 1  1. FORMAT THE VIT ENTRIES
                  2. DO NOT FORMAT
                  3. CREATE TRACE DATA SET

TITLE . . . . . TRACE ANALYSIS

DESCRIPTION

_____  

_____  

_____  

_____

COMMAND ==> _____
F1=HELP    F2=SPLIT  F3=EXIT    F5=RESET  F9=SWAP   F10=SA

```

Figure 34. Panel for Input/Output Options

At this point if you have requested all the VIT expressions you are interested in, than select '4. **Input complete**', as displayed in Figure 35.

```

VTAM Internal Trace Analysis

Select one of the following. Then press Enter.

4_ 1. Storage Analysis
    2. Request/response unit counting
    3. VIT extraction
    4. Input complete

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Command ==> _____

```

Figure 35. VTAM Internal Trace Analysis Panel

The next ISPF panel for the VIT Analysis Tool is in Figure 36 on page 42, where you need to supply a CMS filename to save your parameters. The resulting file we created with our parameters is **VIT SUMMARY A** in Figure 37 on page 42.

```

                                     SAVE PARAMETERS

TYPE THE CMS FILENAME FILETYPE FILEMODE IN WHICH YOU WANT TO SAVE THE
PARAMETERS, THEN PRESS ENTER. THE CMS FILE WILL BE OVERWRITTEN IF IT ALRE
EXISTS.

CMS FILE . . . VIT SUMMARY A_____ (REQ)

COMMAND ===> _____
F1=HELP      F2=SPLIT      F3=EXIT      F9=SWAP      F10=SAVE     F11=RETR
F12=CANCEL

```

Figure 36. Save Parameters Panel

```

VIT      SUMMARY A1 F 80 TRUNC=80 SIZE=5 LINE=0 COL=1 ALT=0

===== * * * TOP OF FILE * * *
===== * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
* * *
===== TITLE TRACE ANALYSIS
===== NOWRAP FORMAT
===== VITEXT (PIU|API)|Cist259i
===== * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
* * *
===== * * * END OF FILE * * *

```

Figure 37. CMS File of Save Parameters

At this point the VIT SUMMARY A file can be used against a VIT that was recorded on or transferred to an external device. For information on required target data sets for the tool, see “Installing the VTAM Dump Analysis Enhancements and the VIT Analysis Tool” in the *VTAM Network Implementation Guide*.

3.2 MIGRATION to V4.2 VM/VTAM

3.2.1 Sample Startup Sequence of VM/VTAM V3.4.1

1. To start up VM/VTAM, you first IPL the GCS Recovery Virtual Machine
I GCSXA
2. This invokes the PROFILE GCS file on user ID VTAMESA disk 191, which can be found in Figure 38.
3. One of the statements in PROFILE GCS identifies our VMVTAM GCS file and VTAM ATCSTR99 to be used to start up VTAM. These files can be found on the VTAMESA 298 disk, which only has R/O authority.
4. The VMVTAM GCS file is VTAM's startup exec.
5. Figure 39 on page 44 and Figure 40 on page 45 show the VM/VTAM 3.4.1 VMVTAM GCS member. We've highlighted those statements that were either deleted or changed in VM/VTAM 4.2.
6. First, Figure 41 on page 46 shows the result of IPLing GCS, based on the values in PROFILE GCS in Figure 38. Then Figure 42 on page 46 shows a successful VTAM startup based on the values in the VTAM V3.4.1 VMVTAM GCS, ATCSTR99, and ATCCON99. The contents of each of these are provided below.
7. VTAM is initialized at this point and our major nodes are activated.

3.2.1.1 PROFILE GCS - VTAM V3.4.1

```
/* PROFILE GCS FOR VTAM - SSMC SAMPLE */
çACC 298 Bç /* Access VTAMLST disk as B */
çLINK MAINT 643 643 RRç
çACC 643 Cç
çCP ENA SNAç /* Enable SNA/CCS */
çCP ATTACH 750 VTAMESA 750ç
çVMVTAM 99ç /* Use ATCSTR99 */ if rc = 0 then do
say çERROR|ç ; exit rc ; end
```

Figure 38. VTAM 3.4.1 PROFILE GCS File

3.2.1.2 VTAM V3.4.1 VMVTAM GCS Member

```
/**
*** Title-
***     VMVTAM
***
*** Function-
***     Initialize VM/VTAM and VSCS for use.
***
*** Parameters-
***     list_value
***
*** Returns-
***     00 (VTAM has been successfully activated)
***     0 (VTAM activation failed)
**/

parse source . . exec_name
arg list_value ¢, ¢ options
if list_value = ¢ ¢ then
    list_value= ¢00 ¢
else if length(list_value) =2 then
    do
        say ¢** ERROR ** Invalid VMVTAM parameters. Valid syntax is: ¢
        say ¢ ¢
        say ¢ VMVTAM sscpname ¢, ¢ options ¢
        say ¢ where sscpname is 2 characters (ex. 1A) ¢
        say ¢ ¢
        say ¢ EXAMPLE: VMVTAM 1A,IOBUF=(3,1024,1,,3,2,20),XNETALS=YES ¢
        say ¢ ¢
        exit 4
    end

/**
*** Set CP options to improve performance of VTAM virt machine 1
**/
/** ¢CP SET QDROP VTAM OFF ¢ /* don't flush pages when idle */
*** ¢CP SET FAVORED VTAM ¢ /* VTAM always dispatchable */
*** ¢CP SET PRIORITY VTAM ? ¢ /* give priority to VTAM */
**/
```

Figure 39. VTAM 3.4.1 VMVTAM GCS Member - Part 1 of 2

```

/**
*** VTAM initialization
**/
¢FILEDEF NCPLOAD DISK RES3745 LOADLIB C¢           2
¢FILEDEF LDRIOTAB DISK TRACEF LDRIOTAB a¢
  ¢ACC 129A F/F¢
¢GLOBAL LOADLIB VTAM VSCS SSPGCS SSMCLIB RSCSTAB RES3745¢ 3
  ¢LOADCMD VTAM ISTINV0¢
  ¢LOADCMD VSCS DTISLCMD¢
  if options=¢¢ then
    ¢VTAM START LIST=¢list_value                    4
  else
    ¢VTAM START LIST=¢list_value¢,¢options
  rcode=rc
  if rcode =0 then                                /* If VTAM start failure */
    do                                           /* Error, VTAM startup failed */
      say ¢**ERROR** VTAM initialization failed¢
      exit rcode
    end                                           /* Error, VTAM startup failed */

/**
*** VSCS initialization
**/
  ¢VSCS START¢/* Initialize VSCS */
  rcode=rc                                       /* Save startup return code */
  if rcode =0 then                               /* If VTAM start failure */
    do                                           /* Error, VTAM startup failed */
      say ¢**ERROR** VSCS initialization failed¢
      exit rcode
    end                                           /* Error, VTAM startup failed */
  exit 0

```

Figure 40. VTAM 3.4.1 VMVTAM GCS Member - Part 2 of 2

Notes:

- 1 The CP options to improve performance of a VTAM virtual machine are different in V3.4.1 VMVTAM GCS from those found in the V4.2 VMVTAM GCS.
- 2 The FILEDEFs for NCPLOAD and LDRIOTAB have been moved to the PROFILE GCS for the VTAM virtual machine in VTAM V4.2. Reference the *VTAM Network Implementation Guide* under topic "PROFILE for the VTAM Virtual Machine" for the implementation of these.
- 3 The GLOBAL LOADLIB statement identifies different load libraries, as expected.
- 4 The VTAM START now includes two new operands for VTAM V4.2, CUSTNO and VTAMPW.

3.2.1.3 IPL of GCS - VM/VTAM V3.4.1

```
i gcsxa
GCSXA SSMC SystemPac 28/02/95
Generated at 02/28/95 11:55:30
GCTACC423I A (0191) R/W
Command complete
HCPATR122E CTCA 0750 already attached to VTAMESA
GCTACC423I B (0298) R/O
GCTACC423I C (0643) R/O
GCTACC423I F (129A) R/O
```

Figure 41. IPL of GCSXA for VM/VTAM V3.4.1

3.3 Console Log of VTAM 3.4.1 Startup

```
IST093I ISTCDRDY ACTIVE
IST315I VTAM INTERNAL TRACE ACTIVE - MODE = INT, SIZE = 050
IST199I OPTIONS = API APPC CIO ESC LCS LOCK MSG NRM PIU PSS SMS SSCP
IST199I OPTIONS = VCNS
IST314I END
IST093I ISTDSWMN ACTIVE
IST093I ISTAPPLS ACTIVE
IST093I ISTCTCA ACTIVE
IST093I ISTPATH ACTIVE
IST093I ISTCDRM ACTIVE
IST093I SSCP27 ACTIVE
IST521I GBIND QUEUED FOR COS ISTVICOS FROM SSCP27 TO SSCP04
IST528I VIRTUAL ROUTE NUMBER 0 1 2 3 4 5 6 7
IST523I REASON = NO ROUTES OPERATIVE
IST521I GBIND QUEUED FOR COS ISTVICOS FROM SSCP27 TO IPFV2
IST528I VIRTUAL ROUTE NUMBER 0 1 2 3 4 5 6 7
IST523I REASON = NO ROUTES OPERATIVE
IST093I ISTCDRS ACTIVE
IST984I USER EXIT ISTEXCSD IS ACTIVE
IST093I AVSAPPL ACTIVE
IST093I A01M700 ACTIVE
IST093I RSCSNET ACTIVE
IST020I VTAM INITIALIZATION COMPLETE FOR V3R4.1
DTII10I DEFAULT INITIALIZATION PARAMETERS BEING USED
DTIC01I DTICINIT VSCS IUCV INITIALIZATION IS IN PROGRESS
DTIS74I TRACE TABLE STARTS AT 015E6020 END 015EDD5F,CURRENT 015E6040,SIZE 1000

DTIC02I DTICINIT VSCS IUCV INITIALIZATION COMPLETE
Ready;
DTIV04I DTIVINIT VSCS VTAM SERVICES INITIALIZATION COMPLETED
```

Figure 42. Startup of VM/VTAM V3.4.1

3.3.1 Sample Startup Sequence of VM/VTAM V4.2

The startup sequence for VM/VTAM V4.2 differs from that in V3.4.1. Changes must be made to the following files:

- PROFILE GCS
- VMVTAM GCS

We will highlight those statements that were added or changed in these files for VM/VTAM V4.2, which are illustrated in Figure 43, Figure 44 on page 48 and Figure 45 on page 49.

1. To start up VM/VTAM, you first IPL the GCS Recovery Virtual Machine

I GCSXA

2. This invokes the PROFILE GCS file on user ID 5654010A disk 2C2, which is in Figure 43.
3. The last statement within GCSXA's PROFILE GCS identifies our VMVTAM GCS file and VTAM ATCSTR00 list on user ID 5654010A, to start up VTAM.
4. The VMVTAM GCS file is VTAM's startup exec. Figure 44 on page 48 and Figure 45 on page 49 show the VM/VTAM 4.2 VMVTAM GCS member. We've highlighted those additions that were made to this member in VM/VTAM 4.2 and where changes are necessary.
5. First, Figure 52 on page 58 shows the result of IPLing GCS, based on the values in PROFILE GCS in Figure 43. Then Figure 53 on page 59 shows a successful VTAM startup based on the values in the VTAM V4.2 VMVTAM GCS, ATCSTR00, and ATCCON00. The contents of each of these are provided below.
6. VTAM is initialized at this point and our major nodes are activated.

3.3.1.1 PROFILE GCS - VTAM V4.2

```
/* PROFILE FOR VTAM MACHINE */
¢LINK MAINT 19E 19E RR¢
¢ACC 19E Y¢
¢ACC 200 E¢
¢DET 29A¢
¢LINK 5654010A 49A 29A RR R5654010¢
¢LINK MAINT 643 643 RR RMAINT¢
¢ACC 643 B¢
¢ACC 29A F/F¢
¢CP SET SHARE VTAM RELATIVE 10000¢
¢CP SET QUICKDSP VTAM¢
¢CP SET RUN ON¢
¢CP SET PF12 RETRIEVE¢
¢FILEDEF NCPLOAD DISK RES3725 LOADLIB F¢
¢FILEDEF LDRIOTAB DISK TRACEF LDRIOTAB E¢
¢CP ATTACH 700 VTAM 700¢
¢CP ATTACH 710 VTAM 710¢
¢CP ATTACH 750 VTAM 750¢
¢CP ATTACH 600 VTAM 600¢
¢CP ATTACH 260 VTAM 260¢
¢VMVTAM 00¢
```

Figure 43. VTAM 4.2 PROFILE GCS File

3.3.1.2 VTAM V4.2 VMVTAM GCS Member

```
/**
*** Title-
***     VMVTAM
***
*** Function-
***     Initialize VM/VTAM and VSCS for use.
***
*** Parameters-
***     list_value
***
*** Returns-
***     00 (VTAM has been successfully activated)
***     0 (VTAM activation failed)
**/

parse source . . exec_name
arg list_value ¢, ¢ options
if list_value = ¢ ¢ then
    list_value= ¢00 ¢
else if length(list_value) =2 then
    do
        say ¢** ERROR ** Invalid VMVTAM parameters. Valid syntax is: ¢
        say ¢ ¢
        say ¢ VMVTAM sscpname †, † options ¢
        say ¢ where sscpname is 2 characters (e.g. 1A) ¢
        say ¢ ¢
        say ¢ EXAMPLE: VMVTAM 1A,IOBUF=(3,1024,1,,3,2,20),XNETALS=YES ¢
        say ¢ ¢
        exit 4
    end
SAY ¢THE STARTUP LIST IS : ¢ LIST_VALUE 1
/**
*** Set CP options to improve performance of VTAM virtual machine 2
**/
/** ¢CP SET QUICKDSP VTAM ¢ /* VTAM always dispatchable */
*** ¢CP SET SHARE † /* give priority to VTAM */
*** ¢CP SET SRM ¢ /* Tuning */
**/
/**
***
*** NOTE: This section contains the FILEDEFs for the QSAM (TOPO) 3
*** support. Please note that all lines are commented out
*** and if you want to incorporate them into your startup
*** exec, the comment lines should be removed.
***
***
**/

¢FILEDEF DSDBCTRL DISK DSDBCTRL DATA E (LRECL 00020 RECFM FB ¢,
¢ BLOCK 00020 DSORG PS ¢
¢FILEDEF DSDB1 DISK DSDB1 DATA E (LRECL 01000 RECFM FB BLOCK 01000 ¢,
¢ DSORG PS ¢
¢FILEDEF DSDB2 DISK DSDB2 DATA E (LRECL 01000 RECFM FB BLOCK 01000 ¢,
¢ DSORG PS ¢
¢FILEDEF TRSDB DISK TRSDB DATA E (LRECL 01000 RECFM FB BLOCK 01000 ¢,
¢ DSORG PS ¢
```

Figure 44. VTAM 4.2 VMVTAM GCS Member - Part 1 of 2


```

/**
***
*** NOTE: This section contains the FILEDEFs for the TUNING EXEC 4
*** support. Please note that all lines are commented out
*** and if you want to incorporate this function into your
*** startup exec, the comment lines should be removed.
***
**/

/**
*** FILEDEF TUNSTATS DISK FILE TUNSTATS * (LRECL 00128 RECFM VB ,
***   DSORG PS
***
**/

/**
*** VTAM initialization
**/
/* ACC 29A F/F */
GLOBAL LOADLIB VTAM VSCS RSCSTAB SSPLIB SSPGCS RES3725 5
LOADCMD VTAM ISTINV0
LOADCMD VSCS DTISLCMD
NUM=xxxx-yyy-zzzz 6
PW=pppp-qqq-rrr-ssss-ttt.
if options=c then
do
VTAM START CUSTNO=cnum,VIAMPW=cpw,LIST=clist_value
end
else
do
VTAM START CUSTNO=cnum,VIAMPW=cpw,LIST=clist_value,coptions
end
rcode=rc
if rcode =0 then /* If VTAM start failure */
do /* Error, VTAM startup failed */
say **ERROR** VTAM initialization failed
exit rcode
end /* Error, VTAM startup failed */

/**
*** VSCS initialization
**/
VSCS START/* Initialize VSCS */
rcode=rc /* Save startup return code */
if rcode =0 then /* If VTAM start failure */
do /* Error, VTAM startup failed */
say **ERROR** VSCS initialization failed
exit rcode
end /* Error, VTAM startup failed */
exit 0

```

Figure 45. VTAM 4.2 VMVTAM GCS Member - Part 2 of 2

Notes:

- 1 The LIST_VALUE representing the ATCSTRxx start list is now displayed on the VTAM console during startup.
- 2 The CP options to improve performance of a VTAM virtual machine are different in the V4.2 VMVTAM GCS from those in the V3.4.1 VMVTAM GCS.

- 3 The following FILEDEF statements are new with V4.2. They provide support for the topology and routing disks. The comment lines need to be removed to incorporate them into your startup exec. Our example shows the comment lines removed. Reference chapter 10, topic "Network Routing and Resource Location for APPN Nodes" in the *VTAM Network Implementation Guide* for more details relating to topology and routing services (TRS) and directory services (DS).
- 4 FILEDEF statement for the TUNSTATS disk. It gathers tuning statistics by using either the TNSTAT start option or the MODIFY TNSTAT command. Reference chapter 11, topic "Gathering Tuning Statistics" in the *VTAM Network Implementation Guide* for more details. The comment lines need to be removed to incorporate this function into your startup exec. Our example shows the comment lines removed.
- 5 The GLOBAL LOADLIB statement identifies different load libraries from the V3.4.1 VTAM, as expected.
- 6 The VTAM START now includes two new operands with VTAM V4.2, CUSTNO and VTAMPW. See the next section for more information related to updating these new operands.

3.3.1.3 CUSTNO and VTAMPW Parameters

Based on the VTAM 4.2 package that you have ordered (for example, Client/Server), a customer number (CUSTNO) and an access password (VTAMPW) will be provided. These are needed to start VTAM at the correct functional level. You enter them in the VMVTAM GCS file on user ID 5654010A. In Figure 46 you will find the statements relating to CUSTNO and VTAMPW that were added to the VMVTAM GCS file.

Note: VMVTAM GCS is a file name which is part of the VM/VTAM program product.

```

NUM=¢xxxx-yyy-zzzz¢
PW=¢pppp-qqqq-rrrr-ssss-tttt¢
if options=¢¢ then
  do
    ¢VTAM START CUSTNO=¢num¢,VTAMPW=¢pw¢,LIST=¢list_value
  end
else
  do
    ¢VTAM START CUSTNO=¢num¢,VTAMPW=¢pw¢,LIST=¢list_value¢,¢options
  end

```

Figure 46. CUSTNO and VTAMPW as New Parameters in the VTAM Startup

Notes:

- xxxx-yyy-zzzz is the supplied customer number
- pppp-qqqq-rrrr-ssss-tttt is the access password

When you start VTAM, the following message confirms which VTAM package you are running:

```
IST1497I VTAM FUNCTIONAL SUPPORT LEVEL IS package_name
```

Figure 47. VTAM 4.2 Message Indicating the Functional Support Level

Note: *package_name* will be one of the three available packages (Client/Server, MultiDomain, or InterEnterprise), based on the customer number and password specified.

If you enter a customer number and password that are not valid, this message is issued:

```
IST001I VTAM START REJECTED _ INVALID CUSTNO AND VTAMPW
```

Figure 48. VTAM 4.2 Error Message for Incorrect CUSTNO or VTAMPW

For further explanations of these messages, see the *VTAM Messages and Codes* manual.

3.3.2 VM/VTAM V4R2 Start Options with Subarea Only Functions

In this section we will compare those start options we used in our VM/VTAM V3.4.1 and those implemented in VM/VTAM V4.2 for subarea only functions. Figure 13 contains both sets of start options for comparison purposes. We implemented the V4.2 start options in InterEnterprise mode. Those start options not supported in Client/Server or MultiDomain mode are listed later in this chapter. You will see that some pre-V4.2 start options are no longer supported in Client/Server and MultiDomain mode. The start options that define APPN characteristics are included in Chapter 4 - "Implementing APPN Networking".

A brief description of the new start options introduced in V4R2 (non-APPN support) and those that changed will follow Figure 49. *** NOTE * We are taking the default values of some start options new to VTAM V4.2.**

VM/VTAM V3.4 ATCSTR00	VM/VTAM V4.2 ATCSTR00
	SUBAREA ONLY FUNCTIONS
SSCPID=27, *	SSCPID=4, *
SSCPNAME=SSCP27, *	SSCPNAME=SSCP04, *
NETID=NETB, *	NETID=DEIEMIPF, *
HOSTSA=27, *	HOSTSA=4, *
HOSTPU=SA27VTAM, *	HOSTPU=NODE04, *
MAXSUBA=30, *	MAXSUBA=255, *
CONFIG=99, *	CONFIG=00, *
NOPROMPT, *	NOPROMPT, *
IOINT=0, *	IOINT=0, *
CSALIMIT=0, *	CSALIMIT=0, *
IOPURGE=5M, *	IOPURGE=5M, *
DYNLU=NO, *	DYNLU=YES, *
CDRSCTI=240, *	MAINTLVL=ESA211, * (1)
TNSTAT, TIME=60, *	CPCDRSC=YES, * (2)
IOBUF=(300,288,5,,6,20)	DISCNTIM=30, * (3)
	SRCHRED=ON, * (4)
	SRCOUNT=10, * (5)
	SRTIMER=60, * (6)
	BS=(28,,,1), *
	LF=(70,,,1), *
	LP=(12,,,6), *
	SF=(20,,,20), *
	SP=(210,,,32), *
	XD=(6,,,1), *
	CR=(60,,,1), *
	IO=(300,288,5,,6,20)

Figure 49. VM/VTAM V3R4 & V4R2 Start Options - Subarea Only Functions

Note: *New/Changed Start Options with VM/VTAM V4R2 (non-APPN support)*

1. **MAINTLVL**

Introduced in V4.2 VTAM, it specifies which maintenance level is running on a host. If you do not specify anything, MAINTLVL=*blanks* is indicated on a D NET,VTAMOPTS display.

2. **CPCDRSC**

In pre-V4.2 releases, a dynamic LEN CP (independent logical unit (ILU)) node is not represented as a cross-domain resource until it initiates a session. Consequently, if another resource attempts to initiate a session with this node before this node initiates a session, the other resource's session request fails.

In VTAM V4.2, the new CPCDRSC start option permits other resources to initiate sessions with dynamic LEN CP nodes before these nodes initiate sessions. A dynamic LEN CP ILU is an ILU with a resource name that is the same as its adjacent link station CPNAME.

3. **DISCNTIM**

Specifies the amount of time that VTAM delays deactivation of the SSCP-PU session when there are no outstanding LU-LU session requests. DISCNTIM is valid only for Type 2.0 and Type 2.1 PUs with DISCNT=DELAY specified on the PU definition statement.

4. **SRCHRED**

Specifies whether this node can reduce searches for resources which are found to be unreachable. Refer to "Improving VTAM Performance Using Start Options" in the *VTAM Network Implementation Guide* for information about using the search reduction facility.

5. **SRCOUNT**

Specifies how many search requests can be limited before VTAM performs another resource discovery search. Meaningful only if SRCHRED=ON.

6. **SRTIMER**

Specifies the number of seconds during which VTAM does not conduct searches for an unreachable resource. Once the time limit has expired, VTAM will conduct a search. Meaningful only when SRCHRED=ON.

Some other useful start options include:

- **ISTCOSDF**

A new entry, ISTCOSDF, has been added to the IBM-supplied default logon mode table for unknown logon modes. The ISTCOSDF start option indicates which resource types are to use the ISTCOSDF logmode entry. This entry is used when the logmode name specified for the session is not found. The default value is INDLU, which indicates that ISTCOSDF is restricted to use by independent LUs.

- **CDRDYN**

Specifies whether a host is authorized to dynamically define CDRSC representations of cross-domain, cross-network, or APPN resources when a session request is received from or sent to an adjacent SSCP or CP. CDRDYN=YES is the default, which is what we are implementing.

Later in this chapter is a sample implementation of dynamic cross-domain logon in a VM/VTAM environment.

- **LISTBKUP**

A new start option in VTAM V4.2 to specify how you want VTAM to react if it encounters an error while processing a start option list. The three possible values include:

<i>start_option_list_id</i>	two-letter start list identifier (ATCSTRyy) of another start file to process in place of the file in error.
DEFAULTS	causes the options in the start file in error to be set to the values they had before the file was processed. VTAM then continues.
PROMPT	causes all valid options in the start file to be set. The operator is prompted to enter overrides to the options that are not valid.

- **NOTRACE/TRACE**

Introduced in VTAM V4.2 is a forced internal VIT (Vtam Internal Trace) trace. Data is now always automatically recorded for the following VIT options: API, MSG, PIU, SSCP, NRM. Data is recorded for these options internally or externally, depending on how the trace is started. **You cannot turn off tracing for the above options.** If you specify OPTION=NONE on either the MODIFY NOTRACE command or have no TRACE command in the VTAM startup, internal tracing (MODE=INT) will always take place for the above VIT options. We are taking the default value which is the forced internal VIT option, MODE=INT.

For VM/VTAM you can record trace data internally and externally simultaneously. If desired, you can have different sets of trace options active for internal and external recording.

- **Replaceable Constants**

In pre-V4.2 VTAM releases, to change most of the values in the replaceable constants module, ISTRACON, you have to "zap" the ISTRACON module and then restart VTAM so that the new values take effect.

With V4.2 VTAM, the ISTRACON module is no longer part of VTAM. All replaceable constants must be set with start options. In addition, you can reset some of the values with the MODIFY VTAMOPTS command while VTAM is running.

- **SSCPORD**

Specifies whether VTAM searches an adjacent SSCP table in priority order (the default) or in the order in which the table is defined.

Further Documentation to Refer to for these New Start Options

- VTAM Resource Definition Reference:

Refer to Chapter 4, "Start Options" for complete information about all the changed and new start options. You can find the IBM-supplied default logon mode table in Appendix A of this publication.

- VTAM Operation:

Refer to this book for information about changes to the MODIFY VTAMOPTS command and those start options that can be dynamically changed with this command.

- VTAM Network Implementation Guide:
Refer to this book for information about dynamic definition of cross-domain resources.
- VTAM V4R2 for VM/ESA Migration Guide:
Refer to this book for a summary of the new and changed start options with VM/VTAM V4R2.

3.3.3 VTAM Start Options Not Supported in Client/Server Mode

AUTOTI	Specifies how often pending automatic logon requests owned by this host are retried.
AUTORTRY	Specifies which adjacent node activation will cause a retry of pending automatic logon requests.
SNVC	Is the maximum number of networks searched for a resource by this border node. Meaningful only if the BN=YES start option is used.
GWSSCP	Defines whether this VTAM is a gateway SSCP.
IOPURGE	Specifies a time interval after which outstanding I/O requests are purged and VTAM continues as if it had received negative responses from those requests. The types of outstanding I/O that are checked are CDINIT requests, direct search list requests and APPN search requests. The default value is 0 which states outstanding session requests could remain outstanding indefinitely.
SRCHRED	Specifies whether this node can reduce searches for resources which are found to be unreachable.
SRCOUNT	Specifies how many search requests can be limited before VTAM performs another resource discovery search. This is meaningful only if SRCHRED=ON start option is used.
SRTIMER	Specifies the number of seconds during which VTAM does not conduct searches for an unreachable resource. This is meaningful only if SRCHRED=ON start option is used.
CMPVTAM	Specifies the maximum compression level allowed for sessions involving the host's application programs. The default value is 0 indicating no compression.
DISCNTIM	Specifies the amount of time that VTAM delays deactivation of the SSCP-PU session when there are no outstanding LU-LU session requests. DISCNTIM is valid only for PU T2.0 and T2.1 that have DISCNT=DELAY specified on the PU definition statement.

VTAM start options implementing APPN functions (**BN**, **BNDYN**, **BNORD**, **CDSERVR**, **VRTG**, **VRTGCPCP**) that are not supported in Client/Server mode are discussed in more detail in Chapter 5.

For each unsupported VTAM start option in Client/Server mode the following message will be issued:

```
IST448I option OPTION IGNORED - NO LONGER SUPPORTED
```

3.3.4 VTAM Start Options Not Supported in MultiDomain Mode

SNVC	Maximum number of networks searched for a resource by this border node. Meaningful only if the BN=YES start option is used.
GWSSCP	Whether VTAM is a gateway SSCP.
SRCHRED	Specifies whether this node can reduce searches for resources which are found to be unreachable.
SRCOUNT	Specifies how many search requests can be limited before VTAM performs another resource discovery search. Meaningful only if SRCHRED=ON start option is used.
SRTIMER	Specifies the number of seconds during which VTAM does not conduct searches for an unreachable resource. Meaningful only if SRCHRED=ON start option is used.

VTAM start options implementing APPN functions (**BN**, **BNDYN**, **BNORD**, **CDSEVR**) that are not supported in MultiDomain mode are discussed in more detail in Chapter 5.

For each unsupported VTAM start option in MultiDomain mode the following message will be issued:

```
IST448I option OPTION IGNORED - NO LONGER SUPPORTED
```

3.3.5 Definition Statements Not Supported in Client/Server Mode

3.3.5.1 Definition Statements

Unsupported **definition statements** in Client/Server mode include CDRM, NCP and LUGROUP. When we attempted to activate a CDRM in Client/Server mode the resulting error messages are issued:

```
IST1330I CDRM CANNOT BE ACTIVATED FROM THIS NODE  
IST072I VARY ACT FOR ID = ISTD CRM FAILED DURING NETWORK DEFINITION
```

3.3.5.2 Keywords

Figure 50 on page 57 contains those **keywords** not supported in Client/Server mode and the respective definition statements on which those keywords can be specified.

LOGAPPL CDRSC. LOCAL, LU, TERMINAL, NCP
VRTG CDRM
VRTGCPCP CDRM
DLURNAME PU
SRCOUNT CDRSC
SRTIMER CDRSC
CMPAPPLI APPL
CMPAPPLO APPL

Figure 50. Unsupported Keywords on Definition Statements - Client/Server

If you use these unsupported keywords on definition statements, the resulting error messages are issued:

```

IST322I CONFIGURATION configname ERROR IGNORED - INVALID PARAMETER
IST323I LABEL = labelname - MACRO TYPE = macrotype - KEYWORD = keyword
IST314I END
  
```

3.3.5.3 DISCNT=DELAY

If you use the **DISCNT=DELAY** keyword on a PU definition statement, the resulting error messages are issued:

```

IST322I CONFIGURATION configname ERROR IGNORED - INVALID VALUE
IST323I LABEL = labelname - MACRO TYPE = macrotype - KEYWORD = DISCNT
IST314I END
  
```

3.3.6 Definition Statements Not Supported in MultiDomain Mode

3.3.6.1 Keywords

Figure 51 contains those **keywords** not supported in MultiDomain mode and the respective definition statements on which those keywords can be specified.

SRCOUNT CDRSC
SRTIMER CDRSC

Figure 51. Unsupported Keywords on Definition Statements - MultiDomain

If you use these unsupported keywords on definition statements, the resulting error messages are issued:

```

IST322I CONFIGURATION configname ERROR IGNORED - INVALID PARAMETER
IST323I LABEL = labelname - MACRO TYPE = macrotype - KEYWORD = keyword
IST314I END
  
```

3.3.7 Sample Console Logs of VM/VTAM V4.2 Startup

In this section we take the start options in Figure 49 on page 52 and bring them up at each package-level and then show you the resulting console log. We begin by showing you a successful startup in InterEnterprise mode where all functions are supported. We then will attempt the same functions in Client/Server and MultiDomain mode and show you the console log with the errors you can expect to receive for unsupported functions.

3.3.8 IPL of GCS

We begin by showing you the console log when IPLing GCS. This precedes the VTAM startup, regardless of the VTAM package (Client/Server, MultiDomain, InterEnterprise).

```
i gcsxa
GCSXA SSMC SystemPac 28/02/95
Generated at 04/04/96 09:56:12
GCTACC423I A (0191) R/O
DASD 029A DETACHED
USER VTAM      : RELATIVE SHARE = 10000
                  MAXIMUM SHARE = NOLIMIT
USER VTAM      : QUICKDSP = ON
HCPATR122E CTCA 0700 already attached to VTAM
HCPATR122E CTCA 0710 already attached to VTAM
HCPATR122E CTCA 0750 already attached to VTAM
HCPATR122E CTCA 0600 already attached to VTAM
HCPATR040E Device 0260 does not exist
GCTACC423I Y (019E) R/O
GCTACC423I E (0200) R/W
GCTACC423I B (0643) R/O
GCTACC423I F (029A) R/O
```

Figure 52. IPL of GCSXA for VM/VTAM V4.2

3.3.9 Startup of VTAM in InterEnterprise Mode

```
THE STARTUP LIST IS : 00
IST1497I VTAM FUNCTIONAL SUPPORT LEVEL IS INTERENTERPRISE
IST093I ISTCDRDY ACTIVE
IST495I SIZE HAS BEEN SET TO 050
IST315I VTAM INTERNAL TRACE ACTIVE - MODE = INT, SIZE = 050
IST199I OPTIONS = NONE
IST314I END
IST093I ISTDSWMN ACTIVE
IST093I ISTTRL ACTIVE
IST093I ISTAPPLS ACTIVE
IST093I ISTPATH ACTIVE
IST093I ISTCTCA ACTIVE
IST093I ISTCDRM ACTIVE
IST093I SSCP04 ACTIVE
IST521I GBIND QUEUED FOR COS ISTVTCOS FROM SSCP04 TO IPFV2
IST528I VIRTUAL ROUTE NUMBER 0 1 2 3 4 5 6 7
IST523I REASON = NO ROUTES OPERATIVE
IST521I GBIND QUEUED FOR COS ISTVTCOS FROM SSCP04 TO SSCP27
IST528I VIRTUAL ROUTE NUMBER 0 1 2 3 4 5 6 7
IST523I REASON = NO ROUTES OPERATIVE
IST093I ISTCDRS ACTIVE
IST984I USER EXIT ISTEEXCSD IS ACTIVE
IST093I ISTINSNA ACTIVE
IST464I LINK STATION CA750P HAS CONTACTED SA 27
IST093I CA750P ACTIVE
IST363I CONFIG ISTAHC NODES AND SUBNODES SET UNAVAILABLE - PARAMETER CON
IST323I LABEL = VMAHHPU - MACRO TYPE = PU - KEYWORD = CONNTYPE
IST093I ISTAHC ACTIVE
IST020I VTAM INITIALIZATION COMPLETE FOR V4R2
IST1349I COMPONENT ID IS 5654-01001-420
IST1348I VTAM STARTED AS SUBAREA NODE
IST1214I FFST SUBSYSTEM IS NOT INSTALLED
DTII10I DEFAULT INITIALIZATION PARAMETERS BEING USED
DTIC01I DTICINIT VSCS IUCV INITIALIZATION IS IN PROGRESS
DTIC17I DTICINIT ENABLE SNA ISSUED
DTIS74I TRACE TABLE STARTS AT 016EF020 END 016FEA5F , CURRENT 016EF040 ,
00
DTIC02I DTICINIT VSCS IUCV INITIALIZATION COMPLETE
Ready;
DTIV04I DTIVINIT VSCS VTAM SERVICES INITIALIZATION COMPLETED
IST727I COMMUNICATION WITH CDRM SSCP27 LOST - REASON = X0E0
IST105I SSCP27 NODE NOW INACTIVE
```

Figure 53. VTAM Startup in InterEnterprise Mode

3.3.10 Startup of VTAM in Client/Server Mode

Figure 54 on page 60 is a sample startup of VM/VTAM in Client/Server mode with unsupported functions in effect. We included in the ATCSTR00 VTAMLST, start options that are not supported in the Client/Server mode. We also included in the ATCCON00 VTAMLST, CDRM and NCP major node definitions to be activated which are not supported in client server mode. We highlighted the error messages resulting. You can see in Figure 54 on page 60 that despite the error messages indicating those options being ignored, VTAM continues to initialize.

```

IST1497I VTAM FUNCTIONAL SUPPORT LEVEL IS CLIENT/SERVER
IST448I IOPURGE OPTION IGNORED - NO LONGER SUPPORTED
IST448I GWSSCP OPTION IGNORED - NO LONGER SUPPORTED
IST448I DISCNTIM OPTION IGNORED - NO LONGER SUPPORTED
IST448I SRCHRED OPTION IGNORED - NO LONGER SUPPORTED
IST448I SRCOUNT OPTION IGNORED - NO LONGER SUPPORTED
IST448I SRTIMER OPTION IGNORED - NO LONGER SUPPORTED
IST448I IOPURGE OPTION IGNORED - NO LONGER SUPPORTED
IST093I ISTCDRDY ACTIVE
IST495I SIZE HAS BEEN SET TO 050
IST315I VTAM INTERNAL TRACE ACTIVE - MODE = INT, SIZE = 050
IST199I OPTIONS = NONE
IST314I END
IST093I COSAPPN ACTIVE
IST093I ISDSSWMN ACTIVE
IST093I ISTTRL ACTIVE
IST093I ISTAPPLS ACTIVE
IST093I LSTPATH ACTIVE
IST093I ISTCTCA ACTIVE
IST1330I CDRM CANNOT BE ACTIVATED FROM THIS NODE
IST072I VARY ACT FOR ID = ISTCDRM FAILED DURING NETWORK DEFINITION
IST322I CONFIGURATION ISTCDRS ERROR IGNORED - INVALID PARAMETER
IST323I LABEL = WCVMSNI - MACRO TYPE = CDRSC - KEYWORD = SRCOUNT
IST314I END
IST322I CONFIGURATION ISTCDRS ERROR IGNORED - INVALID PARAMETER
IST323I LABEL = WCVMSNI - MACRO TYPE = CDRSC - KEYWORD = SRTIMER
IST314I END
IST322I CONFIGURATION ISTNSNA ERROR IGNORED - INVALID PARAMETER
IST323I LABEL = VMNS70 - MACRO TYPE = LOCAL - KEYWORD = LOGAPPL
IST314I END
IST093I ISTNSNA ACTIVE
IST093I ISTAHC ACTIVE
IST020I VTAM INITIALIZATION COMPLETE FOR V4R2
IST1349I COMPONENT ID IS 5654-01001-420
IST1348I VTAM STARTED AS INTERCHANGE NODE
IST1214I FFST SUBSYSTEM IS NOT INSTALLED
DTII10I DEFAULT INITIALIZATION PARAMETERS BEING USED
DTIC01I DTICINIT VSCS IUCV INITIALIZATION IS IN PROGRESS
DTIC17I DTICINIT ENABLE SNA ISSUED
DTIS74I TRACE TABLE STARTS AT 01822020 END 01831A5F,CURRENT 01822040,SIZE=2000
DTIC02I DTICINIT VSCS IUCV INITIALIZATION COMPLETE
Ready;
DTIV04I DTIVINIT VSCS VTAM SERVICES INITIALIZATION COMPLETED

```

Figure 54. VTAM Startup in Client/Server Mode with Unsupported Functions

3.3.11 Startup of VTAM in MultiDomain Mode

Figure 55 on page 61 is a sample startup of VM/VTAM in MultiDomain mode with unsupported functions in effect. We included in the ATCSTR00 VTAMLST, start options that are not supported in MultiDomain mode. We also included unsupported keywords in the CDRSC major node definition that are not supported in MultiDomain mode. We highlighted the resulting error messages. You can see in Figure 55 on page 61 that despite the error messages indicating those options being ignored, VTAM continues to initialize.

```

IST1497I VTAM FUNCTIONAL SUPPORT LEVEL IS MULTIDOMAIN
IST448I GWSSCP OPTION IGNORED - NO LONGER SUPPORTED
IST448I SRCHRED OPTION IGNORED - NO LONGER SUPPORTED
IST448I SRCOUNT OPTION IGNORED - NO LONGER SUPPORTED
IST448I SRTIMER OPTION IGNORED - NO LONGER SUPPORTED
IST093I ISTCDRDY ACTIVE
IST495I SIZE HAS BEEN SET TO 050
IST315I VTAM INTERNAL TRACE ACTIVE - MODE = INT, SIZE = 050
IST199I OPTIONS = NONE
IST314I END
IST093I COSAPPN ACTIVE
IST093I ISTDSWMN ACTIVE
IST093I ISTIRL ACTIVE
IST093I ISTAPPLS ACTIVE
IST093I ISTPATH ACTIVE
IST093I ISTCTCA ACTIVE
IST093I ISTCDRM ACTIVE
IST093I SSCP04 ACTIVE
IST521I GBIND QUEUED FOR COS ISTVICOS FROM SSCP04 TO IPFV2
IST528I VIRTUAL ROUTE NUMBER 0 1 2 3 4 5 6 7
IST523I REASON = NO ROUTES OPERATIVE
IST521I GBIND QUEUED FOR COS ISTVICOS FROM SSCP04 TO SSCP27
IST528I VIRTUAL ROUTE NUMBER 0 1 2 3 4 5 6 7
IST523I REASON = NO ROUTES OPERATIVE
IST322I CONFIGURATION ISTCDRS ERROR IGNORED - INVALID PARAMETER
IST323I LABEL = WCVMSNI - MACRO TYPE = CDRSC - KEYWORD = SRCOUNT
IST314I END
IST322I CONFIGURATION ISTCDRS ERROR IGNORED - INVALID PARAMETER
IST323I LABEL = WCVMSNI - MACRO TYPE = CDRSC - KEYWORD = SRTIMER
IST314I END
IST093I ISTCDRS ACTIVE
IST984I USER EXIT ISTEXCSD IS ACTIVE
IST093I ISTINSNA ACTIVE
IST093I ISTAHC ACTIVE
IST020I VTAM INITIALIZATION COMPLETE FOR V4R2
IST1349I COMPONENT ID IS 5654-01001-420
IST1348I VTAM STARTED AS SUBAREA NODE
IST1214I FFST SUBSYSTEM IS NOT INSTALLED
DTI110I DEFAULT INITIALIZATION PARAMETERS BEING USED
DTIC01I DTICINIT VSCS IUCV INITIALIZATION IS IN PROGRESS
DTIC17I DTICINIT ENABLE SNA ISSUED
DTIS74I TRACE TABLE STARTS AT 01822020 END 01831A5F,CURRENT 01822040,SIZE=2000
DTIC02I DTICINIT VSCS IUCV INITIALIZATION COMPLETE
Ready;
DTIV04I DTIVINIT VSCS VTAM SERVICES INITIALIZATION COMPLETED

```

Figure 55. VTAM Startup in MultiDomain Mode with Unsupported Functions

3.3.12 Other Errors in ATCSTRxx List

Figure 57 on page 63 is the console log of a sample startup of VM/VTAM when syntax errors exist in the ATCSTRxx VTAMLST. The error in our ATCSTR00 file was caused when a continuation character was missing in column 72 for one of the start options. The IST118I pointed to the statement that followed the one with the missing continuation mark.

The message IST1311A provides an opportunity to continue bringing up VTAM either by entering additional start options, or taking standard default values. IST1311A can also be responded to with HALT, to discontinue the startup of VTAM. The correct format in responding to IST1311A as shown in Figure 57 on page 63 is to preface any response with **R 00**. We choose to respond to

IST1311A in Figure 57 on page 63 with a null response by just entering R 00. The standard default values for the remaining start options that have not been read would be used. Three examples in responding to IST1311A follow:

- **R 00**

This indicates to VTAM to continue the startup but take the standard defaults.

- **R 00 start_option1,start_option2,etc...**

This indicates to VTAM to continue the startup but use the start option values specified for those keywords.

- **R 00 HALT**

This indicates to VTAM to discontinue the startup and to halt VTAM.

Figure 56 provides a sample output for this response.

```
IST1497I VTAM FUNCTIONAL SUPPORT LEVEL IS MULTIDOMAIN
IST118I ANOMALY FOUND NEAR RECORD 10 IN MEMBER ATCSTR00 - CODE 02
00 IST1311A ENTER START OPTION OVERRIDES OR ENTER HALT TO EXIT VTAM
r 00 halt
Ready;
IST001I VTAM START REJECTED - OPERATOR REQUESTED TERMINATION
IST133I VTAM TERMINATION IN PROGRESS
IST102I VTAM IS NOW INACTIVE
IST004I VTAM MAIN TASK ABEND - START REJECTED
**ERROR** VTAM initialization failed
Ready;
```

Figure 56. Reply with HALT to VTAM Startup

```

IST1497I VTAM FUNCTIONAL SUPPORT LEVEL IS MULTIDOMAIN
IST118I ANOMALY FOUND NEAR RECORD 10 IN MEMBER ATCSTR00 - CODE 02
00 IST1311A ENTER START OPTION OVERRIDES OR ENTER HALT TO EXIT VTAM
R 00
READY;

IST093I ISTCDRDY ACTIVE
IST495I SIZE HAS BEEN SET TO 050
IST315I VTAM INTERNAL TRACE ACTIVE - MODE = INT, SIZE = 050
IST199I OPTIONS = NONE
IST314I END
IST093I COSAPPN ACTIVE
IST093I ISTD SWM ACTIVE
IST093I ISTDTRL ACTIVE
IST093I ISTDAPPLS ACTIVE
IST093I ISTDPATH ACTIVE
IST093I ISTDCTCA ACTIVE
IST093I ISTDCLRM ACTIVE
IST093I ISTDSCP04 ACTIVE
IST521I GBIND QUEUED FOR COS ISTDVTCOS FROM ISTDSCP04 TO ISTDIPV2
IST528I VIRTUAL ROUTE NUMBER 0 1 2 3 4 5 6 7
IST523I REASON = NO ROUTES OPERATIVE
IST521I GBIND QUEUED FOR COS ISTDVTCOS FROM ISTDSCP04 TO ISTDSCP27
IST528I VIRTUAL ROUTE NUMBER 0 1 2 3 4 5 6 7
IST523I REASON = NO ROUTES OPERATIVE
IST093I ISTDCLRS ACTIVE
IST093I ISTDINSNA ACTIVE
IST093I ISTDHHC ACTIVE
IST020I VTAM INITIALIZATION COMPLETE FOR V4R2
IST1349I COMPONENT ID IS 5654-01001-420
IST1348I VTAM STARTED AS SUBAREA NODE
IST1214I FFST SUBSYSTEM IS NOT INSTALLED
DTII10I DEFAULT INITIALIZATION PARAMETERS BEING USED
DTIC01I DTICINIT VSCS IUCV INITIALIZATION IS IN PROGRESS
DTIC17I DTICINIT ENABLE SNA ISSUED
DTIS74I TRACE TABLE STARTS AT 0182A020 END 01839A5F,CURRENT 0182A040,SIZE=2000
IST1086I APPN CONNECTION FOR DEIBMIPF.SSCP01 IS ACTIVE - TGN = 21
IST093I VMAHPU ACTIVE
IST1096I CP-CP SESSIONS WITH DEIBMIPF.SSCP01 ACTIVATED
DTIC02I DTICINIT VSCS IUCV INITIALIZATION COMPLETE
Ready;
DTIV04I DTIVINIT VSCS VTAM SERVICES INITIALIZATION COMPLETED

```

Figure 57. VTAM Startup with Errors in ATCSTRxx List

3.3.13 VM/VTAM Dynamic Cross-Domain Logon

Keep in mind that a local non-SNA VTAMLST is not supplied when installing VM/VTAM. Without a non-SNA major node we were unable to do dynamic cross-domain session setups. In the absence of the necessary definitions the resulting error when attempting a dynamic cross-domain session logon will follow.

From **VM/VTAM V4R2 - WCVM122**

1. D NET,VTAMOPTS - this indicates **CDRDYN=YES**

The CDRDYN=YES start option allows dynamic cross-domain logons. YES is the default value.

2. DIAL WCVM122
3. DIAL VTAM
4. LOGON APPLID(PRODCICS)

Where PRODCICS is a VTAM application defined on the VSE/VTAM (WCVSE21) system. With this command we are attempting to use a dynamic CDRSC to establish a session with the PRODCICS resource.

5. The LOGON fails with **HCPLON020E USERID MISSING OR INVALID.**

It appears it is looking for applid PRODCICS in WCVM122 only.

SOLUTION - to resolve the dynamic cross-domain session logon failure we needed to do the following:

1. Create SPECIAL statements for non-SNA terminals in the USER VTAM directory entry.
2. Create a non-SNA major node (ISTNSNA VTAMLST) for those 3270 type devices just added with SPECIAL statements for the VTAM directory entry. The ISTNSNA VTAMLST file was created on user ID 5654010A, disk 2C2 (which is user ID VTAM's 'A' disk).
3. Update ATCCONxx VTAMLST on user ID 5654010A, disk 2C2 with the newly created ISTNSNA, to have this major node activated at VTAM startup.

An example of a VM CP directory entry for the VTAM user ID, VTAM non-SNA major node and ATCCON00 file, with all the necessary updates follows in Figure 58 on page 65.

USER VTAM directory entry

```
USER VTAM password 32M 32M ABCEFG
. . . . .
SPECIAL 070 3270
SPECIAL 071 3270
SPECIAL 072 3270
. . . . .
SPECIAL 07n 3270
. . . . .
```

ISTINSNA VTAMLST file

```
ISTINSNA  LBUILD
VMNS70  LOCAL CUADDR=070,TERM=3277,          C
        DLOGMOD=NSX32702,                   C
        MODETAB=ISTINCLM,                   C
        FEATUR2=(MODEL2)
VMNS71  LOCAL CUADDR=071,TERM=3277,          C
        DLOGMOD=NSX32702,                   C
        MODETAB=ISTINCLM,                   C
        FEATUR2=(MODEL2)
VMNS72  LOCAL CUADDR=072,TERM=3277,          C
        DLOGMOD=NSX32702,                   C
        MODETAB=ISTINCLM,                   C
        FEATUR2=(MODEL2)
. . . . .
VMNS7n  LOCAL CUADDR=07n,TERM=3277,          C
        DLOGMOD=NSX32702,                   C
        MODETAB=ISTINCLM,                   C
        FEATUR2=(MODEL2)
```

ATCCON00 VTAMLST file

```
ISTAPPLS,          C
ISTPATH,           C
ISTCTCA,           C
ISTCDRM,           C
ISTCDRS,           C
ISTINSNA,
```

Figure 58. Definitions for Dynamic Cross-Domain Logon

Chapter 4. Implementing APPN Networking

VTAM V4R2 for VM and VSE now supports **Advanced Peer-to-Peer Networking (APPN)**. APPN uses a peer-to-peer structure to networking as opposed to the hierarchical approach used in traditional subarea networking. Peer-to-peer means either side can activate the connection and establish a session. This peer-to-peer approach offers some advantages over subarea networking:

- New functions that enable dynamic access to a network. These new functions can eliminate or reduce the pre-definition required for resources in your network. In addition, these functions provide increased end user availability and automatic backup.

Some network definitions that can be eliminated with APPN support include Cross Domain Resource Definition (CDRSC), the ADJSSCP tables, the Cross Domain Resource Manager (CDRM) and even LU definitions.

- VTAM's implementation of APPN includes support for the following APPN node types: end node, network node, composite network node, border node, interchange node, migration data host, low entry networking node.
- There is also support for central directory server, host-to-host channel, connection network, dependent LU server and virtual-route-based transmission group.

4.1 Implementing APPN Networking Interchange Node

In this chapter we will explore migrating our VTAM 4.2 from pure subarea support to an APPN Interchange Node (ICN). By migrating to an ICN both APPN and subarea connections are supported. As an ICN, your subarea network applications are able to locate the APPN applications and vice-versa. VTAM as an interchange node (ICN) functions as a Network Node (NN) in the APPN network and as an SSCP in the subarea network. It can be connected to APPN nodes, LEN nodes, subarea nodes, PU 2.0 nodes, and PU 2.1 nodes.

As was described in Chapter 1, "Introduction to VTAM V4.2", VTAM V4R2 for VM/ESA and VSE/ESA can be ordered with three different levels of capability: **Client/Server package, MultiDomain package, InterEnterprise package.**

VTAM started in MultiDomain or InterEnterprise mode, and activated as an interchange node (ICN) can own and activate NCPs. VTAM started in InterEnterprise mode lets you connect to other networks with border nodes. For VM, SNA Network Interconnection (SNI) can be implemented in InterEnterprise mode only. InterEnterprise also provides support for the APPN Central directory server (CDSERVR start option) when NODETYPE=NN is used.

In what follows, we introduce the required start options to implement APPN and also those optional start options to consider for additional function. We cover what restrictions exist on the Client/Server and MultiDomain modes in respect to implementing APPN functions and the expected errors you will receive if you try to use those APPN functions not supported.

The previous chapters that discussed the migration of VTAM V3R4 to V4R2 subarea functions covered those functions that existed in pre-V4R2 that now have restrictions with Client/Server and MultiDomain modes. The earlier

chapters also covered those new functions introduced with V4R2 that do not define APPN characteristics and any restrictions these functions may have in Client/Server and MultiDomain modes.

VTAM 4.2 can provide the APPN functions as a standalone node or in conjunction with an NCP. If you are using an NCP, then the communications controller must be a 3745 with a minimal level of V6R2. NCP V7.1 or later is required for full connection network support and Extended Border Node support.

APPN nodes can be connected by links, which are called transmission groups (TGs). The characteristics of these TGs are used in determining the TG to select for a session route. These TGs may be links defined to and from NCPs, 3172s, and VTAM channel attachments.

VTAM V4.2 introduced a new feature called **APPN Host-to-Host Channel (AHHC)** which connects two VTAMs via Multi Path Channels (MPC) using APPN protocols. It requires at least one read and one write subchannel. Each subchannel provides unidirectional flow. This chapter will give examples of implementing an AHHC connection and some problems we encountered in that implementation.

Connections with APPN PUs (type 2.1) can be established as a LEN connection or attempted as an APPN connection. The type of connection attempted is determined by the new CONNTYPE start option unless you explicitly override using the CONNTYPE=LEN|APPN operand on the GROUP, LINE, or PU definition statement for that resource. This chapter discusses problems encountered converting APPN PUs from LEN connections to APPN connections and how to avoid these problems.

4.2 Starting VTAM with APPN Support

Support for APPN is implemented by defining the **NODETYPE** start option. The two possible values for NODETYPE are NN (network node) and EN (end node). If the NODETYPE start option is not specified, VTAM operates only as a subarea node. **NODETYPE** and **HOSTSA** determine the node configuration (subarea node, interchange node, migration data host, network node, or end node). See Table 6 for a summary of the node type combinations and their functions.

Table 6. Node Type Functional Summary

Node Type	NODETYPE	HOSTSA	CP-CP Sessions	SSCP-SSCP Sessions	NCP Ownership	Interchange Function
Subarea Node	(not coded)	n (1)	no	yes	yes	no
Interchange Node	NN	n (1)	yes	yes	yes	yes
Migration Data Host	EN	n (1)	yes	yes	no (2)	no
Network Node	NN	(not coded)	yes	no	no (2)	no
End Node	EN	(not coded)	yes	no	no (2)	no

Note: (1) n represents a subarea host number.
 (2) Activation of an NCP is not allowed.

4.2.1 VTAM Start Options with APPN Parameters

We took the start options used in Chapter 2 for V4.2 VSE/VTAM subarea only functions and Chapter 3 for V4.2 VM/VTAM subarea only functions and then implemented APPN interchange node functions in a single network. These were implemented in InterEnterprise mode. The comparison of subarea only functions and APPN functions for both operating systems can be found in Figure 59 and Figure 60 on page 70. Following Figure 60 on page 70 we discuss in more detail those new APPN start options we implemented for an interchange node. The meaning and functionality of the APPN start options are the same for VSE/VTAM and VM/VTAM. Those functions needed to implement border node support in a multiple network environment are discussed in Chapter 5.

4.2.1.1 VM/VTAM Start Options with APPN Parameters

VM/VTAM V4.2 ATCSIR00		VM/VTAM V4.2 ATCSIR00	
WITHOUT APPN PARAMETERS		WITH APPN PARAMETERS	
SSCPID=4,	*	SSCPID=4,	*
SSCPNAME=SSCP04,	*	SSCPNAME=SSCP04,	*
NETID=DEIBMIPF,	*	NETID=DEIBMIPF,	*
HOSTSA=4,	*	HOSTSA=4,	* (1)
HOSTPU=NODE04,	*	HOSTPU=NODE04,	*
MAXSUBA=255,	*	MAXSUBA=255,	*
CONFIG=00,	*	CONFIG=00,	*
NOPROMPT,	*	NOPROMPT,	*
IOINT=0,	*	IOINT=0,	*
CSALIMIT=0,	*	CSALIMIT=0,	*
IOPURGE=5M,	*	IOPURGE=5M,	*
DYNLU=YES,	*	DYNLU=YES,	*
MAINTLVL=ESA122,	*	MAINTLVL=ESA122,	*
CPDRSC=YES,	*	CPDRSC=YES,	*
SRCHRED=ON,	*	SRCHRED=ON,	*
SRCOUNT=10,	*	SRCOUNT=10,	*
SRTIMER=60,	*	SRTIMER=60,	*
BS=(28,,,1),	*	NODETYPE=NN,	* (2)
LF=(70,,,11),	*	APPNCOS=NONE,	* (3)
LP=(12,,,6),	*	CONNTYPE=LEN,	* (4)
SF=(20,,,20),	*	CPCP=YES,	* (5)
SP=(210,,,32),	*	INITDB=ALL,	* (6)
XD=(6,,,1),	*	SORDER=APPN,	* (7)
CR=(60,,,1),	*	VRTG=YES,	* (8)
IO=(300,288,5,,6,20)		VRTGCPCP=YES,	* (9)
		BS=(28,,,1),	*
		LF=(70,,,11),	*
		LP=(12,,,6),	*
		SF=(20,,,20),	*
		SP=(210,,,32),	*
		XD=(6,,,1),	*
		CR=(60,,,1),	*
		IO=(300,288,5,,6,20)	

Figure 59. VM/VTAM Start Options without/with APPN Parameters

4.2.1.2 VSE/VTAM Start Options with APPN Parameters

VSE/VTAM V4.2 ATCSTR00		VSE/VTAM V4.2 ATCSTR00	
WITHOUT APPN PARAMETERS		WITH APPN PARAMETERS	
SSCPID=1,	*	SSCPID=1,	*
SSCPNAME=SSCP01,	*	SSCPNAME=SSCP01,	*
NETID=DEIBMIPF,	*	NETID=DEIBMIPF,	*
HOSTSA=1,	*	HOSTSA=1,	* (1)
HOSTPU=NODE01,	*	HOSTPU=NODE01,	*
MAXSUBA=255,	*	MAXSUBA=255,	*
CONFIG=00,	*	CONFIG=00,	*
NOPROMPT,	*	NOPROMPT,	*
IOINT=0,	*	IOINT=0,	*
SGALIMIT=0,	*	SGALIMIT=0,	*
IOPURGE=4M,	*	IOPURGE=4M,	*
DYNLU=YES,	*	DYNLU=YES,	*
MAINTLVL=ESA211,	*	MAINTLVL=ESA211,	*
DISCNTIM=30,	*	DISCNTIM=30,	*
SRCHRED=ON,	*	SRCHRED=ON,	*
SRCOUNT=10,	*	SRCOUNT=10,	*
SRTIMER=60,	*	SRTIMER=60,	*
BS=(28,,,1),	*	NODETYPE=NN,	* (2)
LF=(70,,,11),	*	APPNCOS=NONE,	* (3)
LP=(12,,,6),	*	CONNTYPE=LEN,	* (4)
SF=(20,,,20),	*	CPCP=YES,	* (5)
SP=(210,,,32),	*	INITDB=ALL,	* (6)
XD=(6,,,1),	*	SORDER=APPN,	* (7)
CR=(60,,,1),	*	VRIG=YES,	* (8)
IO=(70,424,,,1)		VRIGCPCP=YES,	* (9)
		BS=(28,,,1),	*
		LF=(70,,,11),	*
		LP=(12,,,6),	*
		SF=(20,,,20),	*
		SP=(210,,,32),	*
		XD=(6,,,1),	*
		CR=(60,,,1),	*
		IO=(70,424,,,1)	

Figure 60. VSE/VTAM Start Options without/with APPN Parameters

Note: APPN Start Options we implemented

1. **HOSTSA** - This in itself is not an APPN start option, but when specified in combination with NODETYPE the node becomes either a migration data host or interchange node. See Table 6 on page 68 for the potential combinations of NODETYPE and HOSTSA start options.
2. **NODETYPE** - Required to implement APPN. Selectable values include NN or EN.
3. **APPNCOS** - We specified NONE so the IBM-supplied default COS table will be used.

4. **CONNTYPE** - Indicates whether a LEN connection or an APPN connection is established with type 2.1 PUs. We specified LEN and then on specific T2.1 PU definition statements we override this with CONNTYPE=APPN. The default value is CONNTYPE=APPN.
5. **CPCP** - We specified YES so that CP-CP sessions on all connections are supported. LEASED is the default.
6. **INITDB** - Loads both the topology and routing services databases when VTAM is started. ALL is the default.
7. **SORDER** - Controls the order in which the APPN and subarea networks are searched. APPN is the default.
8. **VRTG** - Indicates whether VR-based TG connections are to be requested when the SSCP-SSCP session is established for this route. NO is the default. VRTG is meaningful only if NODETYPE and HOSTSA start options are also used. It is not supported in Client/Server mode.
9. **VRTGCPCP** - Specifies whether CP-CP sessions are supported over the VR-based TG. The default value is YES and is dependent on VRTG=YES being coded. VRTG is meaningful only if NODETYPE and HOSTSA start options are also used. It is not supported in Client/Server mode.

4.2.1.3 APPN Start Options Not Supported in Client/Server Mode

BN	Defines whether this node will provide extended border node function.
BNDYN	Indicates how nodes are added dynamically to adjacent cluster routing lists.
BNORD	Indicates the order in which VTAM performs cross-subnet searches.
CDSERVR	Determines whether this node is a central directory server.
VRTG	Indicates whether virtual-route-based transmission group connections are requested when an SSCP-SSCP session is established.
VRTGCPCP	Determines whether CP-CP sessions are supported over the virtual-route-based transmission group.

Figure 61. Restricted Start Options in Client/Server Mode

If you define these start options in Client/Server mode the message issued is:
IST448I option **OPTION IGNORED - NO LONGER SUPPORTED**

4.2.1.4 APPN Start Options Not Supported in MultiDomain Mode

BN	Defines whether this node is to provide extended border node function.
BNDYN	Indicates how nodes are added dynamically to adjacent cluster routing lists.
BNORD	Indicates the order in which VTAM performs cross-subnet searches.
CDSERVR	Determines whether this node is a central directory server.

Figure 62. Restricted Start Options in MultiDomain Mode

If you define these start options in MultiDomain mode the message issued is: **IST448I** option **OPTION IGNORED - NO LONGER SUPPORTED**

4.2.1.5 VM/VTAM Config List with APPN Major Nodes

VM/VTAM V4.2	ATCCON00	VM/VTAM V4.2	ATCCON00
	WITHOUT APPN MAJOR NODES		WITH APPN MAJOR NODES
ISTAPPLS,	*	ISTTRL,	* (1)
ISTPATH,	*	ISTAPPLS,	*
ISTCTCA,	*	ISTPATH,	*
ISTCDRM,	*	ISTCTCA,	*
ISTCDRS,	*	ISTAHHC,	* (2)
ISTINSNA		ISTCDRM,	* (3)
		ISTCDRS,	* (4)
		ISTINSNA	

Figure 63. VM/VTAM Config List with APPN Major Nodes Defined

Note: APPN Major Nodes in VM/VTAM

1. **ISTTRL: Transport Resource List major node (TRL)**

The Transport Resource List (TRL) major node defines AHHC connections between hosts. There is only one TRLE major node per host and dynamic updating of this major node is supported using the VTAM Dynamic Change function (**V NET,ACT,SCOPE=UPDATE**) technique.

The TRL major node contains one transport resource list element (**TRLE**) definition statement for each multipath channel connection (**MPC**) that provides APPN host-to-host connectivity. It is in the TRLE definition statement that the READ and WRITE channel addresses are specified for the MPC.

The TRLE is not a resource; therefore, it is not activated and inactivated itself. The local SNA major node (ISTAHHC) in ATCCON00 contains the TRLE operand on the PU definition statement identifying which TRLE definition statement VTAM will use to route data over the channel.

Examples of the TRL and local SNA major nodes we used to establish an AHHC/MPC connection are described in Figure 71 on page 80.

2. **ISTAHHC: Local SNA Major Node**

This is used in conjunction with the TRL major node (ISTTRL) in activating an MPC connection between two VTAMs. The PU definition statement in the local SNA major node (ISTAHHC) points to the TRLE for the transport characteristics of the PU. Each TRLE definition statement can be used by only one PU.

3. **ISTCDRM: Cross Domain Resource Manager (CDRM)**

A CDRM major node is no longer needed for APPN cross-domain sessions. The CDRM major node (ISTCDRM) remains in ATCCONxx for subarea cross-domain sessions, since we implemented our V4.2 VTAMs as ICNs.

4. **ISTCDRS: Cross Domain Resource (CDRSC)**

Defining APPN cross-domain resources is optional and it is recommended that you not define them to save time. There may be cases where it is necessary though. In an APPN network, you can define APPN cross-domain resources only in network nodes (NN). To define an APPN CDRSC, code the CPNAME operand on the CDRSC definition statement. We've kept the CDRSC major node (ISTCDRS) in ATCCONxx for subarea cross-domain resources, since we implemented our V4.2 VTAMs as ICNs.

4.2.1.6 VSE/VTAM Config List with APPN Major Nodes

VSE/VTAM V4.2	ATCCON00	VSE/VTAM V4.2	ATCCON00
	WITHOUT APPN MAJOR NODES		WITH APPN MAJOR NODES
VIMAPPL,	*	VIMTRL,	* (1)
VIMSNA,	*	VIMAPPL,	*
VIMNSNA,	*	VIMSNA,	*
VIMCTCA,	*	VIMNSNA,	*
VIMPATH,	*	VIMAHHC,	* (2)
VIMCDRM,	*	VIMCTCA,	*
VIMCDRS		VIMPATH,	*
		VIMCDRM,	* (3)
		VIMCDRS	(4)

Figure 64. VSE/VTAM Config List with APPN Major Nodes Defined

Note: APPN Major Nodes in VSE/VTAM

1. **VTMTRL: Transport Resource List major node (TRL)**

The Transport Resource List (TRL) major node defines AHHC connections between hosts. There is only one TRLE major node per host and dynamic updating of this major node is supported using the VTAM Dynamic Change function (**V NET,ACT,SCOPE=UPDATE**) technique.

The TRL major node contains one transport resource list element (**TRLE**) definition statement for each multipath channel connection (**MPC**) that provides APPN host-to-host connectivity. It is in the TRLE definition

statement that the READ and WRITE channel addresses are specified for the MPC.

The TRLE is not a resource; therefore, it is not activated and inactivated itself. The local SNA major node (VTMAHHC) in ATCCON00 contains the TRLE operand on the PU definition statement identifying which TRLE definition statement VTAM will use to route data over the channel.

Examples of the TRL and local SNA major nodes we used to establish an AHHC/MPC connection are described in Figure 71 on page 80.

2. **VTMAHHC: Local SNA Major Node**

This is used in conjunction with the TRL major node (VTMTRL) in activating an MPC connection between two VTAMs. The PU definition statement in the local SNA major node (VTMAHHC) points to the TRLE for the transport characteristics of the PU. Each TRLE definition statement can be used by only one PU.

3. **VTMCDRM: Cross Domain Resource Manager (CDRM)**

A CDRM major node is no longer needed for APPN cross-domain sessions. The CDRM major node (VTMCDRM) remains in ATCCONxx for subarea cross-domain sessions, since we implemented our V4.2 VTAMs as ICNs.

4. **VTMCDRS: Cross Domain Resource (CDRSC)**

Defining APPN cross-domain resources is optional and it is recommended that you not define them to save time. There may be cases where it is necessary though. In an APPN network, you can define APPN cross-domain resources only in network nodes (NN). To define an APPN CDRSC, code the CPNAME operand on the CDRSC definition statement. We've kept the CDRSC major node (VTMCDRS) in ATCCONxx for subarea cross-domain resources, since we implemented our V4.2 VTAMs as ICNs.

4.2.1.7 Vary Act and Inact TRL Major Node

```
==> VARY NET,ACT,ID=ISTTRL
IST101I VARY ACT FAILED _ UPDATE NOT SPECIFIED
==> VARY NET,ACT,ID=ISTTRL,UPDATE
IST453I UPDATE PARAMETER VALUE INVALID
==> VARY NET,INACT,ID=ISTTRL
IST607I VARY INACT FOR ISTTRL FAILED, INVALID NODE TYPE OR STATE
==> VARY NET,INACT,ID=VIMTRL
IST061I VARY INACT FOR VIMTRL FAILED, NODE UNKNOWN TO VTAM.
```

Figure 65. Failure Messages Activating/Inactivating TRL Major Node

The failure messages in Figure 65 were received on the activation of the TRL major node. The TRL major node is not a resource and therefore, cannot be activated or inactivated. The VARY ACT is issued to the local SNA major node that contains the TRLE operand on the PU definition statement to point to the appropriate TRL major node.

4.3 Startup of VTAM in Client/Server Mode

Figure 66 is a sample startup of VM/VTAM in Client/Server mode with unsupported functions in effect. We included in the ATCSTR00 VTAMLST both APPN and non-APPN start options that are not supported in the Client/Server mode. We also included in the ATCCON00 VTAMLST, CDRM and NCP major node definitions to be activated which are not supported in Client/Server mode. We highlighted the error messages resulting from those unsupported functions.

```
IST1497I VTAM FUNCTIONAL SUPPORT LEVEL IS CLIENT/SERVER
IST448I IOPURGE OPTION IGNORED - NO LONGER SUPPORTED
IST448I VRTG OPTION IGNORED - NO LONGER SUPPORTED
IST448I VRTGCPCP OPTION IGNORED - NO LONGER SUPPORTED
IST448I CDSERVR OPTION IGNORED - NO LONGER SUPPORTED
IST448I GWSSCP OPTION IGNORED - NO LONGER SUPPORTED
IST448I SRCHRED OPTION IGNORED - NO LONGER SUPPORTED
IST448I IOPURGE OPTION IGNORED - NO LONGER SUPPORTED
IST093I ISTDYDRDY ACTIVE
IST495I SIZE HAS BEEN SET TO 050
IST315I VTAM INTERNAL TRACE ACTIVE - MODE = INT, SIZE = 050
IST199I OPTIONS = NONE
IST314I END
IST093I COSAPPN ACTIVE
IST093I ISTDYDRDY ACTIVE
IST093I ISTDYDRDY ACTIVE
IST093I ISTDYDRDY ACTIVE
IST093I ISTDYDRDY ACTIVE
IST093I ISTDYDRDY ACTIVE
IST1330I CDRM CANNOT BE ACTIVATED FROM THIS NODE
IST072I VARY ACT FOR ID = ISTDYDRDY FAILED DURING NETWORK DEFINITION
IST322I CONFIGURATION ISTDYDRDY ERROR IGNORED - INVALID PARAMETER
IST323I LABEL = WCVMSNI - MACRO TYPE = CDRSC - KEYWORD = SRCOUNT
IST314I END
IST322I CONFIGURATION ISTDYDRDY ERROR IGNORED - INVALID PARAMETER
IST323I LABEL = WCVMSNI - MACRO TYPE = CDRSC - KEYWORD = SRTIMER
IST314I END
IST322I CONFIGURATION ISTDYDRDY ERROR IGNORED - INVALID PARAMETER
IST323I LABEL = VMNS70 - MACRO TYPE = LOCAL - KEYWORD = LOGAPPL
IST314I END
IST093I ISTDYDRDY ACTIVE
IST093I ISTDYDRDY ACTIVE
IST020I VTAM INITIALIZATION COMPLETE FOR V4R2
IST1349I COMPONENT ID IS 5654-01001-420
IST1348I VTAM STARTED AS INTERCHANGE NODE
IST1214I FFST SUBSYSTEM IS NOT INSTALLED
DTII10I DEFAULT INITIALIZATION PARAMETERS BEING USED
DTIC01I DTICINIT VSCS IUCV INITIALIZATION IS IN PROGRESS
DTIC17I DTICINIT ENABLE SNA ISSUED
DTIS74I TRACE TABLE STARTS AT 01822020 END 01831A5F,CURRENT 01822040,SIZE=2000
DTIC02I DTICINIT VSCS IUCV INITIALIZATION COMPLETE
Ready;
DTIV04I DTIVINIT VSCS VTAM SERVICES INITIALIZATION COMPLETED
```

Figure 66. VTAM Startup in Client/Server Mode with Unsupported Functions

4.4 Startup of VTAM in MultiDomain Mode

Figure 67 is a sample startup of VM/VTAM in MultiDomain mode with unsupported functions in effect. We included in the ATCSTR00 VTAMLST both APPN and non-APPN start options that are not supported in the MultiDomain mode. We also included unsupported keywords in the CDRSC major node definition. We highlighted the error messages resulting from those unsupported functions.

```
IST1497I VTAM FUNCTIONAL SUPPORT LEVEL IS MULTIDOMAIN
IST448I CDSERVR OPTION IGNORED - NO LONGER SUPPORTED
IST448I BN OPTION IGNORED - NO LONGER SUPPORTED
IST448I GWSSCP OPTION IGNORED - NO LONGER SUPPORTED
IST448I SRCHRED OPTION IGNORED - NO LONGER SUPPORTED
IST093I ISTCDRDY ACTIVE
IST495I SIZE HAS BEEN SET TO 050
IST315I VTAM INTERNAL TRACE ACTIVE - MODE = INT, SIZE = 050
IST199I OPTIONS = NONE
IST314I END
IST093I COSAPPN ACTIVE
IST093I ISTDSWMN ACTIVE
IST093I ISTIRL ACTIVE
IST093I ISTAPPLS ACTIVE
IST093I ISTPATH ACTIVE
IST984I USER EXIT ISTEXCSD IS ACTIVE
IST093I ISTCTCA ACTIVE
IST093I ISTCDRM ACTIVE
IST093I SSCP04 ACTIVE
IST521I GBIND QUEUED FOR COS ISTVICOS FROM SSCP04 TO IPFV2
IST528I VIRTUAL ROUTE NUMBER 0 1 2 3 4 5 6 7
IST523I REASON = NO ROUTES OPERATIVE
IST521I GBIND QUEUED FOR COS ISTVICOS FROM SSCP04 TO SSCP27
IST528I VIRTUAL ROUTE NUMBER 0 1 2 3 4 5 6 7
IST523I REASON = NO ROUTES OPERATIVE
IST322I CONFIGURATION ISTCDRS ERROR IGNORED - INVALID PARAMETER
IST323I LABEL = WCVMSNI - MACRO TYPE = CDRSC - KEYWORD = SRCOUNT
IST314I END
IST322I CONFIGURATION ISTCDRS ERROR IGNORED - INVALID PARAMETER
IST323I LABEL = WCVMSNI - MACRO TYPE = CDRSC - KEYWORD = SRTIMER
IST314I END
IST093I ISTCDRS ACTIVE
IST093I ISTINSNA ACTIVE
IST093I ISTAHC ACTIVE
IST020I VTAM INITIALIZATION COMPLETE FOR V4R2
IST1349I COMPONENT ID IS 5654-01001-420
IST1348I VTAM STARTED AS INTERCHANGE NODE
IST1214I FFST SUBSYSTEM IS NOT INSTALLED
DTII10I DEFAULT INITIALIZATION PARAMETERS BEING USED
DTIC01I DTICINIT VSCS IUCV INITIALIZATION IS IN PROGRESS
DTIC17I DTICINIT ENABLE SNA ISSUED
DTIS74I TRACE TABLE STARTS AT 01822020 END 01831A5F,CURRENT 01822040,SIZE=2000
DTIC02I DTICINIT VSCS IUCV INITIALIZATION COMPLETE
Ready;
DTIV04I DTIVINIT VSCS VTAM SERVICES INITIALIZATION COMPLETED
```

Figure 67. VTAM Startup in MultiDomain Mode with Unsupported Functions

4.5 APPN Host-to-Host Channel (AHHC)

Regardless of the mode in which VTAM V4R2 is started (Client/Server, MultiDomain or InterEnterprise), connectivity support by APPN Host-to-Host channel (AHHC) is supported. AHHC enables two VTAMs to communicate using APPN protocols over MPC connections. It can utilize a virtual channel-to-channel adapter (VCTCA) or a real CTCA.

The multipath channel (MPC) requires at least one read and one write subchannel. Each subchannel provides unidirectional flow. As long as one read and one write subchannel is operative, if there is a failure, data is non-disruptively retransmitted over alternate paths and sessions continue.

At a minimum, for an AHHC connection to exist one of the VTAMs must be a network node (NN). The adjacent VTAM must be either an end node (EN) or another NN. A subarea node and low-entry networking node (LEN) cannot participate in an AHHC connection.

4.5.1 Sample AHHC Definition

We will now present our implementation of an AHHC connection between two VM virtual machines.

AHHC Connection between VM/VTAM V4.2 and VSE/VTAM V4.2

In our example we define two VM virtual machines. WCVM122 is a VM/VTAM V4.2 machine and WCVSE21 is a VSE/VTAM V4.2 guest machine under VM/ESA. This example illustrates multiple READ channel addresses and one WRITE channel on WCVM122 and multiple WRITE channels and one READ channel on WCVSE21.

In the following example we will explicitly give the critical definitions. We will first review the necessary VM CP definitions, followed by the VSE definitions and finally the VTAM definitions.

4.5.1.1 VM CP Definitions

VM NODE: BOEVMIS2 (1st Level VM)

WCVML22 Userid:	WCVSE21 Userid:
PROFILE EXEC file (191 disk)	PROFILE EXEC file (191 disk)
CP COUPLE 705 WCVSE21 720	CP COUPLE 720 WCVML22 705
CP COUPLE 700 WCVSE21 700	CP COUPLE 700 WCVML22 700
CP COUPLE 710 WCVSE21 710	CP COUPLE 710 WCVML22 710
MAINT Userid:	MAINT Userid:
USER DIRECT file (191 disk)	USER DIRECT file (191 disk)
USER WCVML22 pwd 32M 32M BEG	USER WCVSE21 pwd 32M 32M BEG
SPECIAL 705 CTCA WCVSE21	SPECIAL 720 CTCA WCVML22
SPECIAL 700 CTCA WCVSE21	SPECIAL 700 CTCA WCVML22
SPECIAL 710 CTCA WCVSE21	SPECIAL 710 CTCA WCVML22

Figure 68. VM CP Definition: CP COUPLE Statements

Figure 68 illustrates connecting two virtual machines via real or virtual channel-to-channel adapters (CTCAs or VCTCAs) using the CP COUPLE statement. These are placed in the PROFILE EXEC of the virtual machines that need the connection. Remember the CP COUPLE statement indicates which two channel addresses are to communicate for a particular READ/WRITE CTC connection.

Figure 68 illustrates two different channel addresses in the following COUPLE statements. It is because of the CP COUPLE statement that two different channel addresses can be used.

CP COUPLE 705 WCVSE21 720	This statement connects the virtual CTCA of WCVML22 at 705 to the virtual CTCA at 720 on user ID WCVSE21.
CP COUPLE 720 WCVML22 705	This statement connects the virtual CTCA of WCVSE21 at 720 to the virtual CTCA at 705 on user ID WCVML22.

In addition to the CP COUPLE statement, the CTCA channel address must also be defined to CP by a DEF or SPECIAL statement. We choose to specify SPECIAL statements in the first level VM node (BOEVMIS2) under the user directory entries for WCVML22 and WCVSE21. Figure 68 represents how we implemented this.

VM NODE: BOEVMIS2 (1st Level VM)

WCVML22 Userid:

WCVSE21 Userid:

USER WCVML22 pwd 32M 32M BEG

PROFILE EXEC file (191 disk)

CP COUPLE 705 WCVSE21 720

CP COUPLE 720 WCVML22 705

CP COUPLE 700 WCVSE21 700

CP COUPLE 700 WCVML22 700

CP COUPLE 715 WCVSE21 710

CP COUPLE 710 WCVML22 710

VM NODE: BOEVMIS1 (2nd Level VM)

5654010A Userid:

5654010A Userid:

PROFILE GCS file (493 disk)

PROFILE GCS file (493 disk)

CP DEF CTCA 705

CP DEF CTCA 720

CP DEF CTCA 700

CP DEF CTCA 700

CP DEF CTCA 710

CP DEF CTCA 710

Figure 69. VM CP Definition: CTCA Statements

As an alternative to SPECIAL statements for the CTCA channel addresses, the **CP DEF CTCA cua** can be used to define those addresses. These statements are contained in the PROFILE GCS file on user ID 5654010A. Figure 69 shows this alternative coding solution.

Note: The CP COUPLE statements are required in both examples.

4.5.1.2 VSE Definitions

VM Userid: WCVSE21

VSE IPL PROCEDURE:

ADD 700,CTCA,EML

ADD 710,CTCA,EML

ADD 720,CTCA,EML

Figure 70. VSE IPL Procedures

Figure 70 illustrates a VSE guest under VM. In the VSE host, VSE ADD statements must also be coded for the CTC addresses.

4.5.1.3 VTAM Definitions

VM Userid: WCV122	VM Userid: WCVSE21
TRL Major Node:	TRL Major Node:
ISTTRL1 VBUILD TYPE=TRL	ISTTRL2 VBUILD TYPE=TRL
TRLE1 TRLE LNCTL=MPC, *	TRLE2 TRLE LNCTL=MPC, *
MAXBFRU=10, *	MAXBFRU=10, *
WRITE=(710), *	READ=(710), *
READ=(700,705)	WRITE=(700,720)
Local SNA Major Node:	Local SNA Major Node:
ISTAHHC1 VBUILD TYPE=LOCAL	ISTAHHC2 VBUILD TYPE=LOCAL
CAHHC1 PU PUTYPE=2, *	CAHHC2 PU PUTYPE=2, *
TRLE=TRLE1, *	TRLE=TRLE2, *
XID=YES, *	XID=YES, *
VPACING=0, *	VPACING=0, *
CONNTYPE=APPN, *	CONNTYPE=APPN, *
CPCP=YES	CPCP=YES

Figure 71. VTAM Definitions

The VTAM definitions in Figure 71 relate to the CP COUPLE. statements in Figure 68 on page 78 for channel addresses 705 on WCV122 and 720 on WCVSE21. VTAM identifies 705 as the READ channel address on WCV122 and its corresponding WRITE channel address 720 on WCVSE21.

The Transport Resource List (TRL) definitions in Figure 71 relate to the CP COUPLE statements in Figure 68 on page 78 for channel addresses 705 on WCV122 and 720 on WCVSE21. ISTTRL1 identifies 705 as the READ channel address on WCV122 and ISTTRL2 on WCVSE21 has the corresponding WRITE channel address 720.

Figure 71 shows the correct relationship when the same channel addresses are used. READ channel address 700 on WCV122 is WRITE channel address 700 on WCVSE21. Similarly, WRITE channel address 710 on WCV122 is READ channel address 710 on WCVSE21.

The local SNA major nodes, ISTAHHC1 on WCV122 and ISTAHHC2 on WCVSE21, are related to their respective TRL definition by the TRLE operand on the PU definition statements CAHHC1 on WCV122 and CAHHC2 on WCVSE21.

4.5.2 Problems Implementing AHHC/MPC

We will now review three problematic symptoms we encountered in our implementation of AHHC/MPC.

4.5.2.1 Problem 1 - ATCCONxx List

```
IST380I ERROR FOR ID=puname - REQUEST: ACTLINK, SENSE: 08170009
```

Figure 72. Activating AHHC Local SNA Major Node via ATCCONxx

PROBLEM: Figure 72 contains an error message received on the activation of the local SNA major node that points to the TRLE definition. This error is caused when we mistakenly put the local SNA major node definition before the TRL major node in the config list, ATCCONxx.

The sense code 08170009 (SNSRRTRL) is issued during activation of the AHHC PU if the TRLE cannot be found or is already in use.

SOLUTION: Alter the ATCCONxx, VTAM config list, so the TRL major node precedes the local SNA major node that points to it.

Further Documentation to Refer to for Problem 1

- VTAM Network Implementation Guide:
Pages 535-537, Using Type 2.1 Channel Connections between APPN Nodes, indicates the need to activate the TRL major node prior to the local SNA major node.
- Redbook: VTAM V4.2 Implementation and Usage for VM/ESA and VSE/ESA.
Page 93 indicates the TRL major node needs to be activated before the local SNA major node and its PU can be activated.

4.5.2.2 Problem 2 - READ/WRITE Channel Addresses

```
IST1222I READ|WRITE DEVICE cua IS INOPERATIVE, NAME IS trl_maj_node  
IST259I INOP FOR puname CODE 01  
IST619I ID nodename FAILED - RECOVERY IN PROGRESS
```

Figure 73. Activating AHHC Local SNA Major Node, Read/Write Address Mismatch

PROBLEM: Figure 73 contains those failure messages we received on the activation of the local SNA major node that points to the TRLE definition. They indicate a READ channel address was found without a corresponding WRITE with the same channel address in the adjacent VTAM or vice versa.

The IST1222I was not always followed by IST259I.

SOLUTION: Make the appropriate adjustments to the VTAM TRLE definition statements so a READ channel address corresponds with a WRITE channel address in the adjacent VTAM or vice versa.

Further Documentation to Refer to for Problem 2

- VTAM V4R2 Resource Definition Reference, SC31-6498
Pages 461-462, TRL major node definition indicates for the READ and WRITE operands to code the corresponding address on the opposite operand in the adjacent host to complete the path.

- Redbook: VTAM V4.2 Implementation and Usage for VM/ESA and VSE/ESA, SG24-4556.

Page 93 indicates that when defining the READ channel address in the first host be sure to code the corresponding WRITE channel address in the adjacent host to provide for a complete path.

4.5.2.3 Problem 3 - CP-CP Session over AHHC

```
IST1097I CP-CP SESSION WITH cpname TERMINATED
IST1280I SESSION TYPE = CONLOSER, SENSE=80020000
IST1097I CP-CP SESSION WITH cpname TERMINATED
IST1280I SESSION TYPE = CONWINNER, SENSE=08420001
```

Figure 74. Failure Messages Initiating CP-CP Session over AHHC

PROBLEM: The messages in Figure 74 are a result of the AHHC/MPC failure in Figure 73 on page 81. The CP-CP session in turn will fail. The presence of CPCP=YES in ATCSTRxx or on the local SNA PU definition for AHHC, causes this CP-CP session attempt.

SOLUTION: Examine any earlier error messages and take appropriate steps in correcting those problems. We resolved the problem in Figure 73 on page 81. On the reactivation of the AHHC major node, the CP-CP session was successfully established.

4.6 Type 2.1 Channel Connection between APPN Nodes

To establish full APPN function across a link, specify CONNTYPE=APPN on the GROUP, LINE or PU definition statement for a specific link or allow the CONNTYPE start option to default to the APPN value. You may want to consider specifying CONNTYPE=LEN in ATCSTRxx initially and then converting specific links to APPN in phases via the CONNTYPE=APPN operand in the resource definition.

4.6.1 3174 Customization Questions for T2.1 Connection

Below we list the 3174 customization questions that relate to APPN. Correct responses are necessary to define the 3174 as an APPN (PU T2.1) node. The *3174 Planning Guide Config C*, GA27-3918, was referenced for the meaning of specific customization questions for the 3174. APPN support was added to the 3174 with Config C, or by an RPQ to Config B. You need to reference the 3174 Planning Guide for Config C to find APPN ONLY customization questions; they are not available in earlier config level publications.

- Q242** Question 242 indicates link type. Default response is 0. 242=1 is required for T2.1 and PU2.0 traffic.
- Q510** Question 510 = 1 indicates APPN is active on this controller. 510=1 is required for T2.1 link.
- Q501** Question 501 specifies the NETID. Required if Q510=1. This must be the same as the NETID in the VTAM ATCSTRxx that is activating it.

- Q511** Question 511 specifies the CPNAME. It is required if Q510=1. CPNAME must be distinct from NETID (Q501) and VNODE (Q512). In addition it must be different from the SSCPNAME in the VTAM ATCSTRxx and "puname" in the VTAM definition for the 3174 node.
- Q512** Question 512 specifies the virtual node name (VNODE) for the LAN to which this NN is attached. It must be different from NETID and CPNAME for 3174 Q501 and Q511. It must be the same as VNNAME in the LAN major node, if specified. VNODE is not required.

4.6.2 VTAM V4.2 and Local 3174 APPN Node

Additional considerations for 3174 APPN Network Node (NN) and T2.1 support:

- The PU statement for the 3174 in VTAM requires XID=YES. This will ensure the host (the primarily logical unit PLU) will send an XID3 to the boundary attached 3174 NN indicating a T2.1 link request.
- To explicitly define an independent LU 6.2 to VTAM, specify LOCADDR=0 on the LU definition statement. To allow dynamic definition of an independent LU 6.2, thus eliminating the requirement to specify LU definitions, specify DYNLU=YES as a VTAM start option.
- For channel-attached 3174s, the HOST Read Channel Program size should be at least 1033 bytes. A value less than 1033 can impact overall performance.

Figure 75 is a sample definition for a local attached 3174 that we implemented in our VSE/VTAM environment.

VIMSNA B book (VSE)

```

CATALOG VIMSNA.B          REPLACE=YES
VIMSNA  VBUILD TYPE=LOCAL
WC31740P PU    CUADDR=300,CONNTYPE=APPN,CPCP=YES,          C
              DELAY=0.2,XID=YES,DYNLU=YES,                C
              PUTYPE=2,ISTATUS=ACTIVE,MAXBFRU=29
WC317402 LU    LOCADDR=2,                                  C
              DLOGMOD=SP32702S,                             C
              MODETAB=IESINCLM,                             C
              USSTAB=VIMUSSTR,                               C
              PACING=1,VPACING=2,                           C
              MDLTAB=VIMMDL,                                 C
              MDLENT=VSELU2A,                               C
              ISTATUS=ACTIVE,SSCPFM=USSSCS
WC317403 LU    LOCADDR=3,                                  C
              DLOGMOD=SP32702S,                             C
              MODETAB=IESINCLM,                             C
              USSTAB=VIMUSSTR,                               C
              PACING=1,VPACING=2,                           C
              MDLTAB=VIMMDL,                                 C
              MDLENT=VSELU2A,                               C
              ISTATUS=ACTIVE,SSCPFM=USSSCS

```

Figure 75. 3174 VTAM Definition

4.6.3 Problems Implementing 3174 APPN Connection

4.6.3.1 Problem 1 - NETIDs Different

```
IST1086I APPN CONNECTION FOR DEIBMIPF.IPFPCP200 IS ACTIVE - TGN = 21
IST663I BFINIT FAILURE FOR NODE01 - SENSE = 08770047
IST664I REAL OLU=DEIBMIPF.IPFPCP200 REAL DLU=VTAML.SSCP01
IST1110I ACTIVATION OF CP-CP SESSION WITH DEIBMIPF.IPFPCP200 FAILED
IST1280I SESSION TYPE = CONWINNER, SENSE = 08910006
```

Figure 76. Failure Messages when NETID Differs in 3174

The messages in Figure 76 were received when activating the LOCAL SNA major node when the NETID value in ATCSTRxx differed from that in the 3174. This problem did not develop until CONNTYPE=APPN was in effect for this link.

SOLUTION: The NETID for 3174 customization question 501 must be the same as the NETID in the VTAM ATCSTRxx that is activating it whenever CONNTYPE=APPN is in effect for that link.

4.6.3.2 Problem 2 - PUNAME=CPNAME

```
==>V NET,ACT,ID=VIMSNA,SCOPE=ALL
1C39I COMMAND PASSED TO ACF/VTAM
IST097I VARY ACCEPTED
IST489I VARY ACT FOR ID = VIMSNA CONTINUES - CANNOT DEFINE NODE: IPFCP200
IST489I VARY ACT FOR ID = VIMSNA CONTINUES - CANNOT DEFINE NODE: WC317402
IST489I VARY ACT FOR ID = VIMSNA CONTINUES - CANNOT DEFINE NODE: WC317403
IST489I VARY ACT FOR ID = VIMSNA CONTINUES - CANNOT DEFINE NODE: WC317404
IST489I VARY ACT FOR ID = VIMSNA CONTINUES - CANNOT DEFINE NODE: WC317405
IST489I VARY ACT FOR ID = VIMSNA CONTINUES - CANNOT DEFINE NODE: WC317406
IST489I VARY ACT FOR ID = VIMSNA CONTINUES - CANNOT DEFINE NODE: WC317407
IST489I VARY ACT FOR ID = VIMSNA CONTINUES - CANNOT DEFINE NODE: WC317408
IST093I VIMSNA ACTIVE
```

Figure 77. RESET Status for 3174 Logical Units

The messages in Figure 77 were received when activating the LOCAL SNA major node when the 'puname' in the VTAM definition for the 3174 node is the same as the CPNAME for 3174 question 511. These names must be unique. This occurs if CONNTYPE=LEN or CONNTYPE=APPN is in effect for that T2.1 link, that is, in both alternatives.

SOLUTION: We changed the 'puname' in the VTAM definition for the 3174 to be distinct from the CPNAME for 3174 question 511.

4.6.3.3 Problem 3 - RESET Status

```

==>D NET, ID=VIMSNA, E
1C39I COMMAND PASSED TO ACF/VTAM
IST097I DISPLAY ACCEPTED
IST075I NAME = VIMSNA, TYPE = LCL SNA MAJ NODE
IST486I STATUS= ACTIV, DESIRED STATE= ACTIV
IST084I NETWORK NODES:
IST089I IPFCP200 TYPE = PHYSICAL UNIT      , RESET      ,CUA=0300
IST089I WC317402 TYPE = LOGICAL UNIT      , RESET
IST089I WC317403 TYPE = LOGICAL UNIT      , RESET
IST089I WC317404 TYPE = LOGICAL UNIT      , RESET
IST089I WC317405 TYPE = LOGICAL UNIT      , RESET
IST089I WC317406 TYPE = LOGICAL UNIT      , RESET
IST089I WC316407 TYPE = LOGICAL UNIT      , RESET
IST089I WC317408 TYPE = LOGICAL UNIT      , RESET
IST314I END

```

Figure 78. VTAM Display after Failure Messages

After receiving the failure messages in Figure 77 on page 84 the VTAM display of the local SNA major node in Figure 78 shows the major node ACTIVE but the 3174 PU and its LUs are in RESET resource status. The RESET status indicates this resource is not usable by VTAM. In the *VTAM Messages and Codes* manual, message IST089I refers to “Resource Status Codes and Modifiers” on page 17-2 for a description of **status (RESET)**. The explanation for RESET resource status indicates you may have a duplicate resource name.

SOLUTION: Examine any earlier error messages and take appropriate steps in correcting those problems. Attempt to re-activate the major node after correcting all errors.

4.7 Virtual-Route-Based Transmission Groups (VRTGs)

VTAM V4R2 takes advantage of the benefits of both FID2 and FID4 connections through the implementation of **Virtual-Route-Based Transmission Groups (VRTGs)**. A VR-based TG is a logical mapping of an APPN TG over all of the subarea VRs between two V4R2 VTAM domains within the same subarea network. A VRTG is comprised of one or more FID4 routes through the network. Regardless of the number of active VRs, only one VRTG exists between two VTAM V4R2 domains. No NCP dependency exists.

The VR-based TG is reported to APPN topology as if it were an FID2 connection when the CDRM-CDRM session between two VTAM domains is established. It is assigned TG characteristics that are used for topology and routing services.

While CP-CP sessions may flow over a VRTG, the subarea network continues to use the underlying VR/ER constructs, thus preserving the investment in subarea networking. These FID4 links can be CTCs, FID4 MPCs, NCP links and so on.

The following list represents some considerations for coding VRTGs:

1. Any VTAMs taking advantage of VR-based Transmission Groups must be at VTAM V4R2 and configured as interchange nodes (ICNs) and/or Migration Data Hosts (MDHs). Thus these VTAMs contain both APPN as well as subarea capabilities.
2. The VRTG may not traverse an SNI boundary. A VRTG may also not traverse a subnet boundary between two APPN subnets.

3. VR-based TGs should be defined between adjacent VTAMs only. Meshed VRTGs that interconnect all possible SSCPs are not required in a VRTG implementation.
4. VRTG is implemented by either the VRTG start option or on the External CDRM definition (not the Host CDRM definition) by coding VRTG=YES. Additionally, the TGP operand on the External CDRM identifies a particular TG profile for the TG characteristics when activating the CDRM-CDRM session. There is a default TG profile if TGP is not specified.
5. Automatic recovery of a CDRM session automatically recovers the VRTG as well.
6. To permit CP-CP sessions across the VRTG, both ends of the connection must have VRTGCPCP=YES (default start option value). VRTGCPCP can also be coded on the External CDRM definition. VRTGCPCP=NO may be desirable if a CP-CP session is to traverse a different APPN TG.

Chapter 5. Implementing APPN Multiple Network Connectivity Support

Prior to VTAM V4.2 for VM/VTAM, when multiple VTAM/NCP networks with different NETIDs wanted to connect, the use of SNI (SNA Network Interconnection) was required. One or more gateway NCPs is needed for an SNI connection.

If you have APPN networks with different network IDs (NETID), connectivity between these APPN networks can be accomplished by adding the **BN=YES** start option to a VTAM network node (that is, NODETYPE=NN is already specified). BN=YES indicates that VTAM is capable of establishing subnetwork boundaries. With BN=YES in the ATCSTRxx list, this APPN node is an **extended border node** at the boundaries between APPN networks or subnetworks. There are other start options and definition statement operands that are available for customization. Refer to chapter 10, topic "Using APPN Multiple Network Connectivity Support" in the *VTAM V4R2 Network Implementation Guide, SC31-6494* for further hints regarding customization.

5.1 Border Node Types

- **Peripheral border node**

A border node that interconnects adjacent APPN networks having different network identifiers in order to support LU-LU sessions that have one partner LU in their native network. A peripheral border node is not capable of doing intermediate network routing. Only extended border nodes provide intermediate network routing.

- **Extended border node**

If your configuration requires intermediate nodes, that is, LU-LU sessions that do not terminate in their native network, then those intermediate nodes must be extended border nodes. Peripheral border nodes do not support intermediate network routing. VTAM becomes an extended border node when **BN=YES** is included in the start options.

Figure 80 on page 89 is our implementation of an extended subnetwork boundary. BN=YES is coded in both of our VTAMs and the NETIDs differ. It is this network configuration we tested.

- **Extended subnetwork boundaries**

An extended subnetwork boundary exists when an extended border node (BN=YES in VTAM) activates the link station on each side of the subnetwork boundary. When an extended subnetwork boundary connection becomes active, both VTAMs understand that their APPN partner is a network node with extended border node capability, rather than one side providing an end node appearance. Although the two network nodes bring up CP-CP sessions, they do not send each other the topology of their own APPN subnetwork.

Extended subnetwork boundaries between APPN subnetworks allow unlimited subnetwork hops and increased control over routing.

Notes:

1. Some border nodes do not support extended subnetwork boundaries; therefore, a peripheral subnetwork boundary is used.
2. NCP V7R1 or later is required for both extended and peripheral subnetwork boundaries through an NCP.

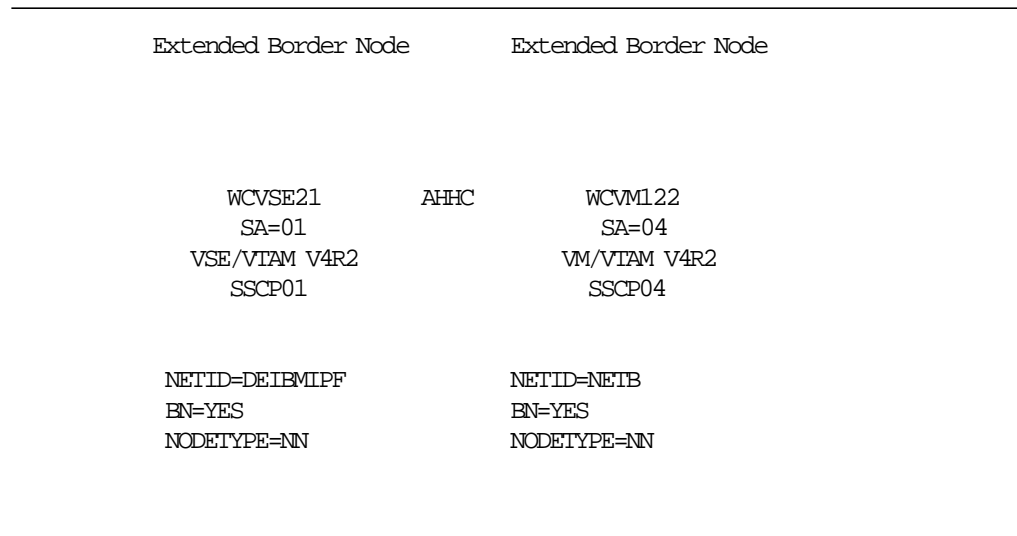


Figure 80. Implementation of Extended Subnetwork Boundary

5.3 Border Node Support in InterEnterprise Mode

An APPN border node is an APPN network node (NN) that interconnects APPN networks having independent topology databases in order to support LU-LU sessions between these networks. We implemented border node support between our VM/VTAM (WCV122) and VSE/VTAM (WCVSE21) to provide cross network communication.

You must start VTAM in InterEnterprise mode to receive border node support. We will identify those start options and VTAM definitions that we used to establish cross network communication. We provide a sample startup in InterEnterprise mode with border node support added. We also document the expected errors you will receive if you try to implement border node support and cross network communication in the Client/Server and MultiDomain modes.

Cross network communication is being attempted because the following conditions exist in the respective virtual machines:

Table 7. Implementing Multiple Network Communications

WCV122 User ID		WCVSE21 User ID	
BN=YES	1	BN=YES	1
NETID=NETB	1	NETID=DEIBMIPF	1
ISTTRL1	2	ISTTRL2	2
ISTAHHC1	2	ISTAHHC2	2
CPCP=YES	3	CPCP=YES	3
CONNTYPE=APPN	3	CONNTYPE=APPN	3

Notes:

- 1 in ATCSTR00 list in Figure 81 on page 91
- 2 major node names for AHHC connection in Figure 82 on page 92
- 3 operand in AHHC major node in Figure 82 on page 92

5.3.1 VTAM Start Options with BN Support Added

VM/VTAM 4.2 ATSTR00 VTAMLST (APPN support)		VSE/VTAM 4.2 ATCSIR00.B (APPN support)	
SSCPID=4,	*	SSCPID=1,	*
SSCPNAME=SSCP04,	*	SSCPNAME=SSCP01,	*
NETID=NETB,	* (1)	NETID=DEIBMIPF,	* (1)
HOSTSA=4,	*	HOSTSA=1,	*
HOSTPU=NODE04,	*	HOSTPU=NODE01,	*
MAXSUBA=255,	*	MAXSUBA=255,	*
CONFIG=00,	*	CONFIG=00,	*
BN=YES,	* (2)	BN=YES,	* (2)
IOINT=0,	*	IOINT=00,	*
NOPROMPT,	*	PROMPT,	*
CONNTYPE=LEN,	*	CONNTYPE=LEN,	*
CPCP=YES,	*	CPCP=YES,	*
APPNCOS=NONE,	*	APPNCOS=NONE,	*
NODETYPE=NN,	*	NODETYPE=NN,	*
INITDB=ALL,	*	INITDB=ALL,	*
IOPURGE=5M,	*	IOPURGE=4M,	*
SORDER=APPN,	*	SORDER=APPN,	*
VRTG=YES,	*	VRTG=YES,	*
VRTGCPCP=YES,	*	VRTGCPCP=YES,	*
MAINTLVL=ESA122,	*	MAINTLVL=ESA211,	*
USSTAB=ISTINCNO,	*	SGALIMIT=0,	*
DYNLU=YES,	*	DYNLU=YES,	*
CPCDRSC=YES,	*	DISCNTIM=30,	*
CSALIMIT=0,	*	SGALIMIT=0,	*
BS=(28,,,1),	*	BS=(28,,,1),	*
CR=(60,,,1),	*	CR=(60,,,1),	*
LF=(70,,,11),	*	LF=(70,,,1),	*
IO=(70,424,,,1),	*	IO=(70,424,,,1),	*
LP=(12,,,6),	*	LP=(12,,,6),	*
SF=(20,,,20),	*	SF=(20,,,20),	*
SP=(210,,,32),	*	SP=(210,,,32),	*
XD=(6,,,1),	*	XD=(6,,,1),	*
SRCHRED=ON,	*	SRCHRED=ON,	*
SRCOUNT=10,	*	SRCOUNT=10,	*
SRTIMER=60		SRTIMER=60	

Figure 81. VTAM Start Options with BN Support Added

Note: VTAM Start Options to Implement Border Node Support

1. **NETID**

Identifies the network name for this VTAM. NETID should be unique to each network within a set of SNA interconnected networks.

2. **BN=YES**

Indicates that this node provides extended border node function.

5.3.2 VTAM AHHC Definitions

VM Userid: WCVML22	VM Userid: WCVSE21
TRL Major Node:	TRL Major Node:
ISTTRL1 VBUILD TYPE=TRL	ISTTRL2 VBUILD TYPE=TRL
TRLE1 TRLE LNCTL=MPC, *	TRLE2 TRLE LNCTL=MPC, *
MAXBFRU=10, *	MAXBFRU=10, *
WRITE=(710), *	READ=(710), *
READ=(700,705)	WRITE=(700,720)
Local SNA Major Node:	Local SNA Major Node:
ISTAHHC1 VBUILD TYPE=LOCAL	ISTAHHC2 VBUILD TYPE=LOCAL
CAHHC1 PU PUTYPE=2, *	CAHHC2 PU PUTYPE=2, *
TRLE=TRLE1, *	TRLE=TRLE2, *
XID=YES, *	XID=YES, *
VPACING=0, *	VPACING=0, *
(1) CONNTYPE=APPN, *	(1) CONNTYPE=APPN, *
(2) CPCP=YES	(2) CPCP=YES

Figure 82. VTAM AHHC Definitions

Note: VTAM AHHC Options to Implement Cross Network Communication

We established cross network communication between WCVML22 and WCVSE21 via an AHHC connection. To do this the above major nodes in Figure 82 were defined.

1. **CONNTYPE=APPN**

Required for the CP-CP session to flow across the AHHC channel.

2. **CPCP=YES**

Indicates that CP-CP sessions are supported on this connection.

CONNTYPE and CPCP can also be specified as a start option. The value on the PU statement overrides the start option value.

5.4 Startup of VM/VTAM in InterEnterprise Mode with BN=YES

We modified our ATCSTR00 VTAMLST for user ID WCVM122 to include border node support, **BN=YES**, and to attempt cross network communication, **NETID=NETB**. We then started up our VM/VTAM in InterEnterprise mode as an interchange node. The resulting startup is in Figure 83. We highlighted the message **IST1096I CP-CP SESSIONS WITH DEIBMIPF.SSCP01 ACTIVATED** in the VTAM startup that indicates successful activation of a CP-CP session cross-net from NETB.SSCP04 (WCVM122) to DEIBMIPF.SSCP01 (WCVSE21).

```
IST1497I VTAM FUNCTIONAL SUPPORT LEVEL IS INTERENTERPRISE
IST093I ISTCDRDY ACTIVE
IST495I SIZE HAS BEEN SET TO 050
IST315I VTAM INTERNAL TRACE ACTIVE - MODE = INT, SIZE = 050
IST199I OPTIONS = NONE
IST314I END
IST093I COSAPPN ACTIVE
IST093I ISTD SWM N ACTIVE
IST093I I STTRL ACTIVE
IST093I I STAPPLS ACTIVE
IST093I I STPATH ACTIVE
IST984I USER EXIT I STEXCSD IS ACTIVE
IST093I I STCTCA ACTIVE
IST093I I STCDRM ACTIVE
IST093I SSCP04 ACTIVE
IST521I GBIND QUEUED FOR COS I STVICOS FROM SSCP04 TO IPFV2
IST528I VIRTUAL ROUTE NUMBER 0 1 2 3 4 5 6 7
IST523I REASON = NO ROUTES OPERATIVE
IST521I GBIND QUEUED FOR COS I STVICOS FROM SSCP04 TO SSCP27
IST528I VIRTUAL ROUTE NUMBER 0 1 2 3 4 5 6 7
IST523I REASON = NO ROUTES OPERATIVE
IST093I I STCDRS ACTIVE
IST093I I SINSNA ACTIVE
IST093I I STAHC ACTIVE
IST020I VTAM INITIALIZATION COMPLETE FOR V4R2
IST1086I APPN CONNECTION FOR DEIBMIPF.SSCP01 IS ACTIVE - TGN = 21
IST093I VMAHPU ACTIVE
IST1349I COMPONENT ID IS 5654-01001-420
IST1348I VTAM STARTED AS INTERCHANGE NODE
IST1214I FFST SUBSYSTEM IS NOT INSTALLED
IST1096I CP-CP SESSIONS WITH DEIBMIPF.SSCP01 ACTIVATED
DTII10I DEFAULT INITIALIZATION PARAMETERS BEING USED
DTIC01I DTICINIT VSCS IUCV INITIALIZATION IS IN PROGRESS
DTIC17I DTICINIT ENABLE SNA ISSUED
DTIS74I TRACE TABLE STARTS AT 0183F020 END 0184EA5F,CURRENT 0183F040,SIZE 2000
IST464I LINK STATION CA750P HAS CONTACTED SA 27
IST093I CA750P ACTIVE
DTIC02I DTICINIT VSCS IUCV INITIALIZATION COMPLETE
Ready;
DTIV04I DTIVINIT VSCS VTAM SERVICES INITIALIZATION COMPLETED
IST093I SSCP27 ACTIVE
```

Figure 83. VM/VTAM Startup in InterEnterprise Mode with BN=YES

With the CP-CP session successfully activated between WCVMI22 and WCVSE21, we now attempted a cross-network logon. The logon attempt was from a VM/VTAM terminal for an application in the VSE/VTAM. Figure 84 illustrates an example when the application is not active, from the perspective of the terminal user and the VM operator console. In Figure 85 on page 95 we show a successful logon attempt from a VM/VTAM terminal to a VSE/VTAM application.

```
-----  
TERMINAL USER:  
  
===>D WCVMI22 (BOEVMIS2)  
===>D VTAM      (BOEVMIS1)  
===>LOGON APPLID(PRODCICS)  
  
VMNS70 UNABLE TO ESTABLISH SESSION - IPS SRC FAILED WITH SENSE 08570002  
-----  
  
VM Operator Console:  
  
IST663I IPS SRQ REQUEST TO ISTAPNCP FAILED, SENSE=08570002  
IST664I REAL  OLU=NETB.VMNS70          REAL  DLU=DEIBMIPF.PRODCICS  
IST889I SID = EF831983EF60E1A1  
IST264I REQUIRED RESOURCE PRODCICS NOT ACTIVE  
IST891I DEIBMIPF.SSCP01 GENERATED FAILURE NOTIFICATION  
IST314I END  
-----
```

Figure 84. Cross-network Logon Attempt - Application not Available

```

TERMINAL USER:

===>D WCVM122 (BOEVMIS2)
===>D VTAM (BOEVMIS1)
===>LOGON APPLID(PRODCICS)

-----

IESADMSO1                                WCVSE21 ICCF
5686-066 AND OTHER MATERIALS (C) COPYRIGHT IBM CORP. 1995 AND OTHER DATES

VV  VV  SSSSS  EEEEEEE      ++
VV  VV  SSSSSS  EEEEEEE      ++
VV  VV  SS      EE          ++  EEEEEEE  SSSSS  AA
VV  VV  SSSSSS  EEEEEEE      ++  EEEEEEE  SSSSSS  AAAA
VV  VV  SSSSSS  EEEEEEE      ++  EE      SS      AA  AA
VV  VV      SS  EE          ++  EEEEEEE  SSSSSS  AA  AA
VVV  SSSSSS  EEEEEEE  ++  EEEEEEE  SSSSSS  AAAAAAA
VV  SSSSS  EEEEEEE  ++  EE      SS  AAAAAAA
                                ++  EEEEEEE  SSSSSS  AA  AA
                                ++  EEEEEEE  SSSSS  AA  AA

YOUR TERMINAL IS NS71 AND ITS NAME IN THE NETWORK IS VMNS71
TODAY IS 07/05/96 TO SIGN ON TO VSE2ICCF -- ENTER YOUR:

USER-ID..... _____ THE NAME BY WHICH THE SYSTEM KNOWS YOU.
PASSWORD..... YOUR PERSONAL ACCESS CODE.

PF1=HELP      2=TUTORIAL      4=REMOTE APPLICATIONS
                                10=NEW PASSWORD

```

Figure 85. Successful Cross-network Logon Attempt

5.5 Startup of VM/VTAM in Client/Server Mode with BN=YES

We modified our ATCSTR00 VTAMLST for user ID WCVM122 to include border node support, **BN=YES**, and to attempt cross network communication, **NETID=NETB**. We then started up our VM/VTAM in Client/Server mode as an interchange node. The resulting startup is in Figure 86 on page 96. We highlighted those error messages that resulted.

The highlighted message IST448I indicates BN=YES is an unsupported option in Client/Server mode and therefore is being ignored. Without border node support cross-network communication cannot take place. We consistently received IST1110I and IST1280I with sense 08910006 for both the conwinner and conloser CP-CP session attempts across the AHHC channel when border node support was not in effect and the NETIDs were different.

```

IST1497I VTAM FUNCTIONAL SUPPORT LEVEL IS CLIENT/SERVER
IST448I EN OPTION IGNORED - NO LONGER SUPPORTED
IST448I VRTGCPCP OPTION IGNORED - NO LONGER SUPPORTED
IST448I VRTG OPTION IGNORED - NO LONGER SUPPORTED
IST448I IOPURGE OPTION IGNORED - NO LONGER SUPPORTED
IST448I GWSSCP OPTION IGNORED - NO LONGER SUPPORTED
IST093I ISTCDRDY ACTIVE
IST495I SIZE HAS BEEN SET TO 050
IST315I VTAM INTERNAL TRACE ACTIVE - MODE = INT, SIZE = 050
IST199I OPTIONS = NONE
IST314I END
IST093I COSAPPN ACTIVE
IST093I ISTDSWMN ACTIVE
IST093I ISTTRL ACTIVE
IST093I ISTAPPLS ACTIVE
IST093I ISTPATH ACTIVE
IST093I ISTCTCA ACTIVE
IST1330I CDRM CANNOT BE ACTIVATED FROM THIS NODE
IST072I VARY ACT FOR ID = ISTCDRM FAILED DURING NETWORK DEFINITION
IST464I LINK STATION CA750P HAS CONTACTED SA 27
IST093I CA750P ACTIVE
IST322I CONFIGURATION ISTCDRS ERROR IGNORED - INVALID PARAMETER
IST323I LABEL = WCVMNSNI - MACRO TYPE = CDRSC - KEYWORD = SRCOUNT
IST314I END
IST322I CONFIGURATION ISTCDRS ERROR IGNORED - INVALID PARAMETER
IST323I LABEL = WCVMNSNI - MACRO TYPE = CDRSC - KEYWORD = SRTIMER
IST314I END
IST093I ISTCDRS ACTIVE
IST093I ISTNSNA ACTIVE
IST093I ISTAHC ACTIVE
IST1086I APPN CONNECTION FOR DEIBMIPF.SSCP01 IS ACTIVE - TGN = 21
IST093I VMAHPU ACTIVE
IST1110I ACTIVATION OF CP-CP SESSION WITH DEIBMIPF.SSCP01 FAILED
IST1280I SESSION TYPE = CONLOSER - SENSE = 08910006
IST314I END
IST020I VTAM INITIALIZATION COMPLETE FOR V4R2
IST1110I ACTIVATION OF CP-CP SESSION WITH DEIBMIPF.SSCP01 FAILED
IST1280I SESSION TYPE = CONWINNER - SENSE = 08910006
IST314I END
IST1349I COMPONENT ID IS 5654-01001-420
IST1348I VTAM STARTED AS INTERCHANGE NODE
IST1214I FFST SUBSYSTEM IS NOT INSTALLED
DTII10I DEFAULT INITIALIZATION PARAMETERS BEING USED
DTIC01I DTICINIT VSCS IUCV INITIALIZATION IS IN PROGRESS
DTIC17I DTICINIT ENABLE SNA ISSUED
DTIS74I TRACE TABLE STARTS AT 01837020 END 01846A5F,CURRENT 01837040,SIZE 2000
00
DTIC02I DTICINIT VSCS IUCV INITIALIZATION COMPLETE
Ready;
DTIV04I DTIVINIT VSCS VTAM SERVICES INITIALIZATION COMPLETED

```

Figure 86. VM/VTAM Startup in Client/Server Mode with BN=YES

5.6 Startup of VSE/VTAM in Client/Server Mode with BN=YES

In our VSE/VTAM (WCVSE21) we modified our ATCSTR00.B book to include border node support, **BN=YES**. The NETID was DEIBMIPF, which we left unchanged. We then started up our VSE/VTAM in Client/Server mode as an interchange node. The startup is in Figure 87 on page 98. We highlighted those error messages that resulted.

The highlighted message IST448I indicates BN=YES is an unsupported option in Client/Server mode and therefore is being ignored. Without border node support cross-network communication cannot take place. We consistently received IST1110I and IST1280I with sense 08910006 for both the conwinner and conloser CP-CP session attempts across the AHHC channel when border node support was not in effect and the NETIDs were different. IST1002I RCPRI=0048 RCSEC=0000 was only seen in the VSE/VTAM, and not the VM/VTAM.

```

// JOB VTAMSTR2  START VTAM 4.2 IN CLIENT/SERVER
DATE 03/05/96,CLOCK 10/58/46
IST1497I VTAM FUNCTIONAL SUPPORT LEVEL IS CLIENT/SERVER
IST448I BN OPTION IGNORED - NO LONGER SUPPORTED
IST448I IOPURGE OPTION IGNORED - NO LONGER SUPPORTED
IST448I VRTG OPTION IGNORED - NO LONGER SUPPORTED
IST448I VRTGCPCP OPTION IGNORED - NO LONGER SUPPORTED
IST093I LSTCDRDY ACTIVE
IST315I VTAM INTERNAL TRACE ACTIVE - MODE = INT, SIZE = 050
IST199I OPTIONS = NONE
IST314I END
IST093I COSAPPN ACTIVE
IST093I LSTDSWMN ACTIVE
IST093I LSTTRL ACTIVE
IST093I VIMAPPL ACTIVE
IST093I VIMSNA ACTIVE
IST1086I APPN CONNECTION FOR DEIBMIPF.IPFPCP200 IS ACTIVE - TGN = 21
IST093I WC31740P ACTIVE
IST1096I CP-CP SESSIONS WITH DEIBMIPF.IPFPCP200 ACTIVATED
IST322I CONFIGURATION VIMSNA ERROR IGNORED - INVALID PARAMETER
IST323I LABEL = D08001 - MACRO TYPE = LOCAL - KEYWORD = LOGAPPL
IST314I END
IST322I CONFIGURATION VIMSNA ERROR IGNORED - INVALID PARAMETER
IST323I LABEL = D08101 - MACRO TYPE = LOCAL - KEYWORD = LOGAPPL
IST314I END
IST093I VIMSNA ACTIVE
IST093I VIMAHHC ACTIVE
IST1086I APPN CONNECTION FOR NETB.SSCP04 IS ACTIVE - TGN = 21
IST093I VSEAHHPU ACTIVE
IST093I VIMPATH ACTIVE
IST1096I CP-CP SESSIONS WITH NETB.SSCP04 ACTIVATED
IST093I VIMCTCA ACTIVE
IST464I LINK STATION CA21P HAS CONTACTED SA 3
IST093I CA21P ACTIVE
IST093I VIMCA1 ACTIVE
IST093I VIMCA2 ACTIVE
IST093I VIMCA3 ACTIVE
IST1330I CDRM CANNOT BE ACTIVATED FROM THIS NODE
IST072I VARY ACT FOR ID = VIMCDRM FAILED DURING NETWORK DEFINITION
IST093I VIMCDRS ACTIVE
IST1330I NCP CANNOT BE ACTIVATED FROM THIS NODE
IST072I VARY ACT FOR ID = RESNCP1 FAILED DURING NETWORK DEFINITION
IST093I VIMSW1 ACTIVE
IST020I VTAM INITIALIZATION COMPLETE FOR V4R2
IST1349I COMPONENT ID IS 5686-06501-FE6
IST1348I VTAM STARTED AS INTERCHANGE NODE
IST1097I CP-CP SESSION WITH NETB.SSCP04 TERMINATED
IST1280I SESSION TYPE = CONLOSER - SENSE = 80200007
IST314I END
IST259I INOP RECEIVED FOR VSEAHHPU CODE = 01
IST619I ID = VSEAHHPU FAILED - RECOVERY IN PROGRESS
IST1196I APPN CONNECTION FOR NETB.SSCP04 INACTIVE - TGN = 21
IST1086I APPN CONNECTION FOR NETB.SSCP04 IS ACTIVE - TGN = 21
IST621I RECOVERY SUCCESSFUL FOR NETWORK NODE VSEAHHPU
IST1110I ACTIVATION OF CP-CP SESSION WITH NETB.SSCP04 FAILED
IST1280I SESSION TYPE = CONWINNER - SENSE = 08910006
IST1002I RCPRI=0048 RCSEC=0000
IST314I END

```

Figure 87. VSE/VTAM Startup in Client/Server Mode with BN=YES

5.7 Startup of VM/VTAM in MultiDomain Mode with BN=YES

We modified our ATCSTR00 VTAMLST for user ID WCV122 to include border node support, **BN=YES**, and to attempt cross network communication, **NETID=NETB**. We then started up our VM/VTAM in MultiDomain mode as an interchange node. The startup is in Figure 88 on page 100. We highlighted those error messages that resulted.

The highlighted message IST448I indicates BN=YES is an unsupported option in MultiDomain mode and therefore is being ignored. Without border node support, which BN=YES provides, cross-network communication cannot take place. We consistently received IST1110I and IST1280I with sense 08910006 for both the conwinner and conloser CP-CP session attempts across the AHHC channel when border node support was not in effect and the NETIDs were different.

This was the same error we received in Client/Server mode, as discussed earlier.

```

IST1497I VTAM FUNCTIONAL SUPPORT LEVEL IS MULTIDOMAIN
IST448I EN OPTION IGNORED - NO LONGER SUPPORTED
IST448I GWSSCP OPTION IGNORED - NO LONGER SUPPORTED
IST093I ISTCDRDY ACTIVE
IST495I SIZE HAS BEEN SET TO 050
IST315I VTAM INTERNAL TRACE ACTIVE - MODE = INT, SIZE = 050
IST199I OPTIONS = NONE
IST314I END
IST093I COSAPPN ACTIVE
IST093I ISTDWMMN ACTIVE
IST093I ISTTRL ACTIVE
IST093I ISTAPPLS ACTIVE
IST093I ISTPATH ACTIVE
IST984I USER EXIT ISTEXCSD IS ACTIVE
IST093I ISTCTCA ACTIVE
IST464I LINK STATION CA750P HAS CONTACTED SA 27
IST093I CA750P ACTIVE
IST446I I/O ERROR 750, DEVICE END/BUSY, ,1400,0000
IST259I INOP RECEIVED FOR CA750P CODE = 01
IST619I ID = CA750P FAILED - RECOVERY IN PROGRESS
IST093I ISTCDRM ACTIVE
IST093I SSCP04 ACTIVE
IST464I LINK STATION CA750P HAS CONTACTED SA 27
IST621I RECOVERY SUCCESSFUL FOR NETWORK NODE CA750P
IST521I GBIND QUEUED FOR COS ISTVICOS FROM SSCP04 TO IPFV2
IST528I VIRTUAL ROUTE NUMBER 0 1 2 3 4 5 6 7
IST523I REASON = NO ROUTES OPERATIVE
IST322I CONFIGURATION ISTCDRS ERROR IGNORED - INVALID PARAMETER
IST323I LABEL = WCVMSNI - MACRO TYPE = CDRSC - KEYWORD = SRCOUNT
IST314I END
IST322I CONFIGURATION ISTCDRS ERROR IGNORED - INVALID PARAMETER
IST323I LABEL = WCVMSNI - MACRO TYPE = CDRSC - KEYWORD = SRTIMER
IST314I END
IST093I SSCP27 ACTIVE
IST093I ISTCDRS ACTIVE
IST093I ISTNSNA ACTIVE
IST093I ISTAHC ACTIVE
IST020I VTAM INITIALIZATION COMPLETE FOR V4R2
IST1086I APPN CONNECTION FOR DEIBMIPF.SSCP01 IS ACTIVE - TGN = 21
IST093I VMAHPU ACTIVE
IST1110I ACTIVATION OF CP-CP SESSION WITH DEIBMIPF.SSCP01 FAILED
IST1280I SESSION TYPE = CONLOSER - SENSE = 08910006
IST314I END
IST1349I COMPONENT ID IS 5654-01001-420
IST1348I VTAM STARTED AS INTERCHANGE NODE
IST526I ROUTE FAILED FROM 4 TO 27 - DSA 27 - NETID NETB
IST1110I ACTIVATION OF CP-CP SESSION WITH DEIBMIPF.SSCP01 FAILED
IST1280I SESSION TYPE = CONWINNER - SENSE = 08910006
IST314I END
IST1214I FFST SUBSYSTEM IS NOT INSTALLED
DTII10I DEFAULT INITIALIZATION PARAMETERS BEING USED
DTIC01I DTICINIT VSCS IUCV INITIALIZATION IS IN PROGRESS
DTIC17I DTICINIT ENABLE SNA ISSUED
DTIS74I TRACE TABLE STARTS AT 01838020 END 01847A5F , CURRENT 01838040 , SIZE 2
00
DTIC02I DTICINIT VSCS IUCV INITIALIZATION COMPLETE

Ready;
DTIV04I DTIVINIT VSCS VTAM SERVICES INITIALIZATION COMPLETED

```

Figure 88. VM/VTAM Startup in MultiDomain Mode with BN=YES

5.8 Startup of VSE/VTAM in MultiDomain Mode with BN=YES

In our VSE/VTAM (WCVSE21) we modified our ATCSTR00.B book to include border node support, **BN=YES**. The NETID was DEIBMIPF, which we left unchanged. We then started up our VSE/VTAM in MultiDomain mode as an interchange node. The startup is in Figure 89 on page 102. We highlighted those error messages that resulted.

The highlighted message IST448I indicates BN=YES is an unsupported option in MultiDomain mode and therefore is being ignored. Without border node support, which BN=YES provides, cross-network communication cannot take place. We consistently received IST1110I and IST1280I with sense 08910006 for both the conwinner and conloser CP-CP session attempts across the AHHC channel when border node support was not in effect and the NETIDs were different. IST1002I RCPRI=0048 RCSEC=0000 was only seen in the VSE/VTAM, and not in the VM/VTAM.

We received these same messages for VSE/VTAM V4.2 in Client/Server mode.

```

// JOB VTAMMD   START VTAM IN MULTI-DOMAIN  MODE
DATE 03/05/96,CLOCK 13/31/11
IST1497I VTAM FUNCTIONAL SUPPORT LEVEL IS MULTIDOMAIN
IST448I BN OPTION IGNORED - NO LONGER SUPPORTED
IST093I ISTCDRDY ACTIVE
IST315I VTAM INTERNAL TRACE ACTIVE - MODE = INT, SIZE = 050
IST199I OPTIONS = NONE
IST314I END
IST093I COSAPPN ACTIVE
IST093I ISTDWMMN ACTIVE
IST984I USER EXIT ISTEXCSD IS ACTIVE
IST093I ISTTRL ACTIVE
IST093I VIMAPPL ACTIVE
IST093I VIMSNA ACTIVE
IST1086I APPN CONNECTION FOR DEIBMIPF.IPFPCP200 IS ACTIVE - TGN = 21
IST093I WC31740P ACTIVE
IST1096I CP-CP SESSIONS WITH DEIBMIPF.IPFPCP200 ACTIVATED
IST093I VIMNSNA ACTIVE
IST093I VIMAHHC ACTIVE
IST093I VIMPATH ACTIVE
IST093I VIMCTCA ACTIVE
IST464I LINK STATION CA21P HAS CONTACTED SA 3
IST093I CA21P ACTIVE
IST093I VIMCA1 ACTIVE
IST093I VIMCA2 ACTIVE
IST093I VIMCA3 ACTIVE
IST093I VIMCDRM ACTIVE
IST093I SSCP01 ACTIVE
IST093I SSCP03 ACTIVE
IST093I VIMCDRS ACTIVE
IST461I ACTIVATE FOR U/RNAME ENTRY ID = 0260-S STARTED
IST093I VIMSW1 ACTIVE
IST020I VTAM INITIALIZATION COMPLETE FOR V4R2
IST1349I COMPONENT ID IS 5686-06501-FE6
IST1348I VTAM STARTED AS INTERCHANGE NODE
IST881I UNABLE TO CONTACT LINK STATION 0260-S
IST882I WAITING FOR DEVICE END FROM DEVICE
IST1086I APPN CONNECTION FOR NETB.SSCP04 IS ACTIVE - TGN = 21
IST093I VSEAHHPU ACTIVE
IST1110I ACTIVATION OF CP-CP SESSION WITH NETB.SSCP04 FAILED
IST1280I SESSION TYPE = CONWINNER - SENSE = 08910006
IST1002I RCPRI=0048 RCSEC=0000
IST314I END

```

Figure 89. VSE/VTAM Startup in MultiDomain Mode with BN=YES

Appendix A. Subarea Definition Examples

The following definitions are those that we implemented for our migration of VM/VTAM V3.4.1 to V4.2 and VSE/VTAM V3.4 to V4.2 when migrating just the subarea functions. References in Chapters 2 and 3 refer to these definitions. We will provide the pertinent VM CP directory entries along with the VTAM definitions.

In the following definition samples we have tried to reduce the definitions as much as possible by omitting default values and showing only what you really **must** define.

A.1 VM CP Directory Entries for User ID WCVMSNI

A.1.1 USER WCVMSNI Directory Entry

```
USER WCVMSNI xxxxxx 32M 1024M BG
MACHINE ESA
ACCOUNT 123 7032-86
OPTION     MAINICCW
IPL CMS
CONSOLE 01F 3270
SPECIAL 750 CTCA WCVML22
SPECIAL 009 3270
SPECIAL 080 3270
SPECIAL 081 3270
SPECIAL 082 3270
SPECIAL 083 3270
SPECIAL 084 3270
SPECIAL 085 3270
SPECIAL 086 3270
SPECIAL 087 3270
SPECIAL 088 3270
SPOOL   00D 3525 A
SPOOL   00E 3211 A
* CMS DISKS
LINK MAINT 190 190 RR
LINK MAINT 19D 19D RR
LINK MAINT 19E 19E RR
* ESA22R AND ESA22W
DEDICATE 400 2D14
DEDICATE 401 2D15
MDISK 0191 9345 1991 10 LS45R7 MR
```

Figure 90. WCVMSNI Directory Entry (VM/VTAM 3.4.1)

A.1.2 USER VTAMESA Directory Entry

```
USER VTAMESA SSMC 32M 32M BCEG
*-----
* ACF/VTAM Vers 3 Rel 4.1 VM/ESA-VERSION
*-----
OPTION  MAXCONN 400
OPTION  QUICKDSP DIAG98
IUCV   *CCS P M 10
IUCV   ANY P M 0
MACH   ESA
NAMESAVE GCSXA
IPL    GCSXA PARM AUTOLOG
CONSOLE 009 3215 T SNAMAINI
SPOOL  00C 2540 READER A
SPOOL  00D 2540 PUNCH A
SPOOL  00E 1403 E
SPECIAL 700 3270
SPECIAL 701 3270
SPECIAL 702 3270
SPECIAL 703 3270
SPECIAL 704 3270
LINK MAINT      190 190 RR
LINK MAINT      193 193 RR
LINK MAINT      298 298 RR
LINK MAINT      129A 129A RR
LINK MAINT      643 643 RR
MDISK  191 9345 447 5 ESA22W MR READ WRITE MULTIPLE
```

Figure 91. VTAMESA Directory Entry (VM/VTAM 3.4.1)

A.1.3 USER MAINT Directory Entry

```
USER MAINT SSMC 48M 64M ABCDEFG
*-----
* VM/ESA ESA Feature Rel 2.2
*-----
AUTOLOG AUTOLOG1 OP1 MAINT
MACH XA
OPTION MAINICCW DEVMAINT
IPL 190
NAMESAVE GCS
NAMESAVE GCSXA
NAMESAVE HELP
NAMESAVE HELPINST
NAMESAVE CMSFILES
NAMESAVE CMSVMLIB
NAMESAVE DFSMSSEG
CONSOLE 009 3215 T
SPOOL 00C 2540 READER *
SPOOL 00D 2540 PUNCH A
SPOOL 00E 1403 A

* VTAMLST files
MDISK 298 9345 192 16 ESA22W RR RMAINT WMAINT MMAINT 1

* SNA Products VMFPARM disk
MDISK 348 9345 335 1 ESA22W RR RMAINT WMAINT MMAINT

* VTAM/ESA Rel 3.4.1 disks
MDISK 1298 9345 336 1 ESA22W RR RMAINT WMAINT MMAINT
MDISK 1299 9345 337 35 ESA22W RR RMAINT WMAINT MMAINT
MDISK 129A 9345 372 30 ESA22W RR RMAINT WMAINT MMAINT
MDISK 129B 9345 402 12 ESA22W RR RMAINT WMAINT MMAINT
MDISK 129C 9345 414 3 ESA22W RR RMAINT WMAINT MMAINT
MDISK 129D 9345 417 30 ESA22W RR RMAINT WMAINT MMAINT
```

Figure 92. MAINT Directory Entry (VM/VTAM 3.4.1)

Note:

- 1 We only include those minidisk statements that were related to the VTAMESA virtual machine, within the MAINT directory entry.

A.2 Definitions for VM/VTAM 3.4.1

A.2.1 ATCSTR99 Start List

NETID=DEIBMIPF,		C
SSCPID=27,		C
SSCPNAME=SSCP27,		C
CDRSCTI=240,	* DEFAULT 480	* C
CONFIG=99,	* ATCCON99 USED	* C
CSALIMIT=0,	* DEFAULT	* C
DYNLU=NO,	* DEFAULT	* C
MAXSUBA=30,	* DEFAULT 15	* C
HOSTPU=SA27VTAM,	* DEFAULT ISTEPUS	* C
HOSTSA=27,		* C
IOBUF=(300,288,5,,6,20),		C
IOPURGE=5M,	* NEW IN VTAM 3.4.1 DEFAULT 0	* C
NOPROMPT,	* ONLY ATCSTR00	* C
TINSTAT,TIME=60,	* DEFAULT NOTINSTAT	* C

Figure 93. ATCSTR99 (VM/VTAM 3.4.1)

A.2.2 ATCCON99 Config List

*** SSMC SAMPLE ATCCON ATCCON99		
A01M700,	* LOCAL NON SNA TERMINALS	* C
AVSAPPL,	* AVS APPC	* C
RSCSNET,	* RSCS	* C
V34APPLS,	* MORE APPLICATIONS	* C
ISTCDRM,	* CROSS DOMAIN RESOURCE MGR	* C
ISTCDRS,	* CROSS DOMAIN RESOURCES	* C
ISTPATH,	* PATH TABLE	* C
ISTCTCA	* CHANNEL-TO-CHANNEL	*

Figure 94. ATCCON99 (VM/VTAM 3.4.1)

A.2.3 A01M700

```

*****
* SAMPLE DEFINITIONS FOR LOCAL, NON SNA TERMINALS
*
*                               SSMC DUESSELDORF
*
*****
                LBUILD
A01TL700 LOCAL CUADDR=700,          ** CHANNEL-ATTACHED TERM ADDR ** C
                TERM=3277,          ** NON-SNA TERMINAL TYPE      ** C
                FEATUR2=(NOEDATS,   ** DEFAULT                     ** C
                MODEL2),            ** TERMINAL MODEL NUMBER      ** C
                DLOGMOD=D4B32792,
                MODETAB=ISTINCLM,
                USSTAB=NSNAUSS,
                ISTATUS=ACTIVE
*                               LOGAPPL=VM *
*
A01TL701 LOCAL CUADDR=701,          ** CHANNEL-ATTACHED TERM ADDR ** C
                TERM=3277,          ** NON-SNA TERMINAL TYPE      ** C
                FEATUR2=(NOEDATS,   ** DEFAULT                     ** C
                MODEL2),            ** TERMINAL MODEL NUMBER      ** C
                DLOGMOD=D4B32792,
                MODETAB=ISTINCLM,
                USSTAB=NSNAUSS,
                ISTATUS=ACTIVE
*                               LOGAPPL=VM *
*
A01TL702 LOCAL CUADDR=702,          ** CHANNEL-ATTACHED TERM ADDR ** C
                TERM=3277,          ** NON-SNA TERMINAL TYPE      ** C
                FEATUR2=(NOEDATS,   ** DEFAULT                     ** C
                MODEL2),            ** TERMINAL MODEL NUMBER      ** C
                DLOGMOD=D4B32792,
                MODETAB=ISTINCLM,
                USSTAB=NSNAUSS,
                ISTATUS=ACTIVE
*                               LOGAPPL=VM *
*
A01TL703 LOCAL CUADDR=703,          ** CHANNEL-ATTACHED TERM ADDR ** C
                TERM=3277,          ** NON-SNA TERMINAL TYPE      ** C
                FEATUR2=(NOEDATS,   ** DEFAULT                     ** C
                MODEL2),            ** TERMINAL MODEL NUMBER      ** C
                DLOGMOD=D4B32792,
                MODETAB=ISTINCLM,
                USSTAB=NSNAUSS,
                ISTATUS=ACTIVE
*                               LOGAPPL=VM *
*
A01TL704 LOCAL CUADDR=704,          ** CHANNEL-ATTACHED TERM ADDR ** C
                TERM=3277,          ** NON-SNA TERMINAL TYPE      ** C
                FEATUR2=(NOEDATS,   ** DEFAULT                     ** C
                MODEL2),            ** TERMINAL MODEL NUMBER      ** C
                DLOGMOD=D4B32792,
                MODETAB=ISTINCLM,
                USSTAB=NSNAUSS,
                ISTATUS=ACTIVE
*                               LOGAPPL=VM *
*

```

Figure 95. A01M700 (VM/VTAM 3.4.1)

A.2.4 AVSAPPL

```
*****  
*   SAMPLE AVS APPC VTAMLST SNA APPLICATION NAME   *  
*                                           CREATED BY SSMC *  
*****  
AVSAPPL  VBUILD TYPE=APPL  
* AVS GATEWAY  
A01AVS  APPL  AUTH=(ACQ,NVPACE),                C  
          AUTHEXIT=YES,                        C  
          APPC=YES,                            C  
          SECACPT=ALREADYV,                   C  
          MODETAB=APPCTAB,                   C  
          VPACING=3,                          C  
          PARSESS=YES,                        C  
          SYNCLVL=SYNCPT,                    C  
          DSESLIM=500,                       C  
          DMINWNL=250,                       C  
          DMINWNR=250,                       C  
          AUTOSES=20
```

Figure 96. AVSAPPL (VM/VTAM 3.4.1)

A.2.5 RSCSNET

```
RSCSNET  VBUILD TYPE=APPL  
RSCS     APPL  ACBNAME=RSCS,                    C  
          MODETAB=RSCSTAB,                    C  
          DLOGMOD=RSCSNJE0,                   C  
          AUTHEXIT=YES,                       C  
          AUTH=(ACQ),                          C  
          VPACING=3
```

Figure 97. RSCSNET (VM/VTAM 3.4.1)

A.2.6 V34APPLS

```
VM       APPL  AUTH=(PASS,ACQ),ACBNAME=VM,PRCT=VM,AUTHEXIT=YES,  C  
          SONSCIP=YES
```

Figure 98. V34APPLS (VM/VTAM 3.4.1)

A.2.7 ISTCDRM

```
* MEMBER FOR CROSS DOMAIN RESOURCE MANAGERS
ISTCDRM  VBUILD TYPE=CDRM
SSCP27  CDRM  SUBAREA=27,CDRDYN=YES, ISTATUS=ACTIVE
SSCP04  CDRM  SUBAREA=04,CDRSC=OPT, ISTATUS=ACTIVE
IPFV2   CDRM  SUBAREA=02,CDRSC=OPT, ISTATUS=ACTIVE
```

Figure 99. ISTCDRM (VM/VTAM 3.4.1)

A.2.8 ISTCDRS

```
* MEMBER FOR CROSS DOMAIN RESOURCES
ISTCDRS  VBUILD TYPE=CDRSC
IPFA2VSC CDRSC  CDRM=IPFV2, ISTATUS=ACTIVE
IPFA2RSC CDRSC  CDRM=IPFV2, ISTATUS=ACTIVE
WCVMI22  CDRSC  CDRM=SSCP04, ISTATUS=ACTIVE
```

Figure 100. ISTCDRS (VM/VTAM 3.4.1)

A.2.9 ISTPATH

```
* MEMBER FOR PATH
WCVMI22  PATH  DESTSA=04,                                     C
              ER0=(04,1),ER1=(04,1),ER2=(04,1),ER3=(04,1),   C
              ER4=(04,1),ER5=(04,1),ER6=(04,1),ER7=(04,1),   C
              VR0=0,VR1=1,VR2=2,VR3=3,VR4=4,VR5=5,VR6=6,VR7=7
IPFA2VSC  PATH  DESTSA=02,                                     C
              ER0=(02,1),ER1=(02,1),ER2=(02,1),ER3=(02,1),   C
              ER4=(02,1),ER5=(02,1),ER6=(02,1),ER7=(02,1),   C
              VR0=0,VR1=1,VR2=2,VR3=3,VR4=4,VR5=5,VR6=6,VR7=7
RES3745  PATH  DESTSA=13,                                     C
              ER0=(13,1),ER1=(13,1),ER2=(13,1),ER3=(13,1),   C
              ER4=(13,1),ER5=(13,1),ER6=(13,1),ER7=(13,1),   C
              VR0=0,VR1=1,VR2=2,VR3=3,VR4=4,VR5=5,VR6=6,VR7=7
```

Figure 101. ISTPATH (VM/VTAM 3.4.1)

A.2.10 ISTCTCA

```
* MEMBER FOR CTCA CONNECTIONS
*
* CTC DEFN TO WCVML22
*
CTCVMSNI VBUILD TYPE=CA
*
SNI750G GROUP LNCIL=CTCA,                                C
              REPLYTO=3.0
*
SNI750L LINE ADDRESS=750,                                C
              MAXBFPU=5,                                  C
              MIH=YES,                                    C
              ISTATUS=ACTIVE
*
SNI750P PU   PUTYPE=4,                                    C
              DELAY=0.0
```

Figure 102. ISTCTCA (VM/VTAM 3.4.1)

A.3 VM CP Directory Entries for User ID WCVML22

A.3.1 USER WCVML22 Directory Entry (subarea only)

```
USER WCVML22 XXXXXXXX 32M 1024M BG
MACHINE ESA
ACCOUNT 123 7032-86
OPTION   MAINTCW
IPL CMS
CONSOLE 01F 3270
SPECIAL 750 CTCA WCVMSNI
SPECIAL 500 CTCA WCVSE21
SPECIAL 009 3270
SPECIAL 080 3270
SPECIAL 081 3270
SPECIAL 082 3270
SPECIAL 083 3270
SPECIAL 084 3270
SPECIAL 085 3270
SPECIAL 086 3270
SPECIAL 087 3270
SPECIAL 088 3270
SPOOL   00C 2540 R A
SPOOL   00D 3525 A
SPOOL   00E 3211 A
* CMS DISKS
LINK MAINT 190 190 RR
LINK MAINT 19D 19D RR
LINK MAINT 19E 19E RR
* ESA22R AND ESA22W
DEDICATE 400 2DOC
DEDICATE 401 2DOD
MDISK 0191 9345 6 10 LS45R5 MR
```

Figure 103. WCVML22 Directory Entry (VM/VTAM 4.2)

A.3.2 USER VTAM Directory Entry

```
USER VTAM passwd 32M 32M ABCEFG
*-----
* VTAM/VM Version 4 Rel 2.0 AS REQUIRED
*-----
OPTION DIAG98 MAXCONN 400
MACH XA
IUCV *CCS P M 10
IUCV ANY P M 0
NAMESAVE GCSXA
IPL GCSXA PARM AUTOLOG
CONSOLE 01F 3215 T OPERATOR
SPOOL 00C 2540 READER A
SPOOL 00D 2540 PUNCH A
SPOOL 00E 1403
SPECIAL 070 3270
SPECIAL 071 3270
SPECIAL 072 3270
SPECIAL 073 3270
SPECIAL 074 3270
LINK MAINT 190 190 RR
LINK MAINT 193 193 RR
LINK MAINT 298 298 RR
LINK 5654010A 2C2 191 RR
LINK 5654010a 29A 29A RR
MDISK 200 9345 1982 10 ESA22W MR RVTAM420 WVTAM420 MVTAM420
```

Figure 104. VTAM Directory Entry (VM/VTAM 4.2)

A.3.3 USER 5654010A Directory Entry

```
USER 5654010A passwd 16M 32M BEG
*-----
* VTAM/VM Version 4 Rel 2.0
*-----
MACH XA
IPL CMS
CONSOLE 01F 3215
SPOOL 00C 2540 READER A
SPOOL 00D 2540 PUNCH A
SPOOL 00E 1403
LINK MAINT 190 190 RR
LINK MAINT 51D 51D MR
LINK MAINT 5E5 5E5 RR
LINK MAINT 193 193 MR
LINK MAINT 19E 19E MR
MDISK 2B2 9345 1728 83 ESA22W MR R5654010 W5654010 M5654010
MDISK 2C2 9345 1811 5 ESA22W MR R5654010 W5654010 M5654010
MDISK 2D2 9345 1816 22 ESA22W MR
MDISK 2C4 9345 1838 2 ESA22W MR
MDISK 2A6 9345 1840 11 ESA22W MR
MDISK 2A2 9345 1851 11 ESA22W MR
MDISK 49A 9345 1862 44 ESA22W MR R5654010 W5654010 M5654010
MDISK 29A 9345 1906 44 ESA22W MR R5654010 W5654010 M5654010
MDISK 402 9345 1950 3 ESA22W MR
MDISK 401 9345 1953 3 ESA22W MR
MDISK 493 9345 1956 4 ESA22W MR
MDISK 191 9345 1960 22 ESA22W MR
```

Figure 105. 5654010A Directory Entry (VM/VTAM 4.2)

A.3.4 USER MAINT Directory Entry

```
USER MAINT passwd 48M 64M ABCDEFG
*-----
* VM/ESA ESA Feature Rel 2.2
*-----
AUTOLOG AUTOLOG1 OP1 MAINT
MACH XA
OPTION MAINICCW DEVMAINT
IPL 190
NAMESAVE GCS
NAMESAVE GCSXA
NAMESAVE HELP
NAMESAVE HELPINST
NAMESAVE CMSFILES
NAMESAVE CMSVMLIB
NAMESAVE DFSMSSEG
CONSOLE 009 3215 T
SPOOL 00C 2540 READER *
SPOOL 00D 2540 PUNCH A
SPOOL 00E 1403 A

* VTAMLST files
MDISK 298 9345 192 16 ESA22W RR RMAINT WMAINT MMAINT 1

* SNA Products VMFPARM disk
MDISK 348 9345 335 1 ESA22W RR RMAINT WMAINT MMAINT

* VTAM/ESA Rel 3.4.1 disks
MDISK 1298 9345 336 1 ESA22W RR RMAINT WMAINT MMAINT
MDISK 1299 9345 337 35 ESA22W RR RMAINT WMAINT MMAINT
MDISK 129A 9345 372 30 ESA22W RR RMAINT WMAINT MMAINT
MDISK 129B 9345 402 12 ESA22W RR RMAINT WMAINT MMAINT
MDISK 129C 9345 414 3 ESA22W RR RMAINT WMAINT MMAINT
MDISK 129D 9345 417 30 ESA22W RR RMAINT WMAINT MMAINT
```

Figure 106. MAINT Directory Entry (VM/VTAM 4.2)

Note:

- 1 We only include those minidisk statements that were related to the VTAM virtual machine, within the MAINT directory entry.

A.4 Definitions for VM/VTAM 4.2 (subarea functions only)

A.4.1 ATCSTR00 Start List

SSCPID=4,	C
SSCPNAME=SSCP04,	C
NETID=DEIBMI PF,	C
HOSTSA=4,	C
HOSTPU=NODE04,	C
MAXSUBA=255,	C
CONFIG=00,	C
NOPROMPT,	C
IOINT=0,	C
CSALIMIT=0,	C
IOPURGE=5M,	C
DYNLU=YES,	C
MAINLVL=ESA122,	C
CPDRSC=YES,	C
DISCNTIM=30,	C
SRCHRED=ON,	C
SRCOUNT=10,	C
SRTIMER=60,	C
BS=(28,,,1),	C
LF=(70,,,11),	C
LP=(12,,,6),	C
SF=(20,,,20),	C
SP=(210,,,32),	C
XD=(6,,,1),	C
CR=(60,,,1),	C
IO=(300,288,5,,6,20)	C

Figure 107. ATCSTR00 (VM/VTAM 4.2)

A.4.2 ATCCON00 Config List

ISTAPPLS,	C
ISTCDRM,	C
ISTCDRS,	C
ISTPATH,	C
ISTCTCA,	C
ISTNSNA	

Figure 108. ATCCON00 (VM/VTAM 4.2)

A.4.3 ISTAPPLS

VM	APPL	AUTH=(PASS,ACQ),ACBNAME=VM,PRCT=VM,AUTHEXIT=YES, SONSCIP=YES	C
----	------	---	---

Figure 109. ISTAPPLS (VM/VTAM 4.2)

A.4.4 ISTCDRM

```

* MEMBER FOR CROSS DOMAIN RESOURCE MANAGERS
ISTCDRM  VBUILD TYPE=CDRM
SSCP04  CDRM  SUBAREA=04,CDRDYN=YES, ISTATUS=ACTIVE
IPFV2   CDRM  SUBAREA=02,CDRSC=OPT, ISTATUS=ACTIVE
SSCP27  CDRM  SUBAREA=27,CDRSC=OPT, ISTATUS=ACTIVE

```

Figure 110. ISTCDRM (VM/VTAM 4.2)

A.4.5 ISTCDRS

```

* MEMBER FOR CROSS DOMAIN RESOURCES
ISTCDRS  VBUILD TYPE=CDRSC
IPFA2VSC CDRSC  CDRM=IPFV2, ISTATUS=ACTIVE
IPFA2RSC CDRSC  CDRM=IPFV2, ISTATUS=ACTIVE
WCVMSNI  CDRSC  CDRM=SSCP27, ISTATUS=ACTIVE, SRCOUNT=10, SRTIMER=300

```

Figure 111. ISTCDRS (VM/VTAM 4.2)

A.4.6 ISTPATH

```

* MEMBER FOR PATH TABLE
WCVSE21  PATH  DESTSA=1,                                     C
              ER0=(1,1),ER1=(1,1),ER2=(1,1),ER3=(1,1),    C
              ER4=(1,1),ER5=(1,1),ER6=(1,1),ER7=(1,1),    C
              VR0=0,VR1=1,VR2=2,VR3=3,VR4=4,VR5=5,VR6=6,VR7=7
WCVSE13  PATH  DESTSA=3,                                     C
              ER0=(3,1),ER1=(3,1),ER2=(3,1),ER3=(3,1),    C
              ER4=(3,1),ER5=(3,1),ER6=(3,1),ER7=(3,1),    C
              VR0=0,VR1=1,VR2=2,VR3=3,VR4=4,VR5=5,VR6=6,VR7=7
IPFA2VSC PATH  DESTSA=2,                                     C
              ER0=(2,1),ER1=(2,1),ER2=(2,1),ER3=(2,1),    C
              ER4=(2,1),ER5=(2,1),ER6=(2,1),ER7=(2,1),    C
              VR0=0,VR1=1,VR2=2,VR3=3,VR4=4,VR5=5,VR6=6,VR7=7
RES3725  PATH  DESTSA=29,                                    C
              ER0=(29,1),ER1=(29,1),ER2=(29,1),ER3=(29,1), C
              ER4=(29,1),ER5=(29,1),ER6=(29,1),ER7=(29,1), C
              VR0=0,VR1=1,VR2=2,VR3=3,VR4=4,VR5=5,VR6=6,VR7=7
WCVMSNI  PATH  DESTSA=27,                                    C
              ER0=(27,1),ER1=(27,1),ER2=(27,1),ER3=(27,1), C
              ER4=(27,1),ER5=(27,1),ER6=(27,1),ER7=(27,1), C
              VR0=0,VR1=1,VR2=2,VR3=3,VR4=4,VR5=5,VR6=6,VR7=7

```

Figure 112. ISTPATH (VM/VTAM 4.2)

A.4.7 ISTCTCA

```

* MEMBER FOR CTCA CONNECTIONS
CTCVML22 VBUILD TYPE=CA
*
* CTC DEFN TO WCVSE21
*
CA500G  GROUP LNCTL=CTCA,                C
          REPLYTO=3.0
*
CA500L  LINE  ADDRESS=500,                C
          MAXBFRU=7,                       C
          MIH=YES,                          C
          ISTATUS=ACTIVE
*
CA500P  PU    PUTYPE=4,                   C
          DELAY=0.0
*
* CTC DEFN TO WCVMSNI
*
CA750G  GROUP LNCTL=CTCA,                C
          REPLYTO=3.0
*
CA750L  LINE  ADDRESS=750,                C
          MAXBFRU=5,                       C
          MIH=YES,                          C
          ISTATUS=ACTIVE
*
CA750P  PU    PUTYPE=4,                   C
          DELAY=0.0

```

Figure 113. ISTCTCA (VM/VTAM 4.2)

A.4.8 ISTNSNA

```

ISTNSNA  LBUILD
VMNS70  LOCAL CUADDR=070,TERM=3277,      C
          DLOGMOD=NSX32702,               C
          MODETAB=ISTINCLM,               C
          FEATUR2=(MODEL2)
VMNS71  LOCAL CUADDR=071,TERM=3277,      C
          DLOGMOD=NSX32702,               C
          MODETAB=ISTINCLM,               C
          FEATUR2=(MODEL2)
VMNS72  LOCAL CUADDR=072,TERM=3277,      C
          DLOGMOD=NSX32702,               C
          MODETAB=ISTINCLM,               C
          FEATUR2=(MODEL2)
VMNS73  LOCAL CUADDR=073,TERM=3277,      C
          DLOGMOD=NSX32702,               C
          MODETAB=ISTINCLM,               C
          FEATUR2=(MODEL2)
VMNS74  LOCAL CUADDR=074,TERM=3277,      C
          DLOGMOD=NSX32702,               C
          MODETAB=ISTINCLM,               C
          FEATUR2=(MODEL2)

```

Figure 114. ISTNSNA (VM/VTAM 4.2)

A.5 VM CP Directory Entries for User ID WCVSE13

A.5.1 USER WCVSE13 Directory Entry

```
USER WCVSE13 passwd 32M 64M BFG
MACHINE ESA
OPTION MAINICCW DEVMAINT
*OPTION V=R CPUID 222222
OPTION CPUID 222222
IPL CMS
DEDICATE 400 2600
DEDICATE 401 2601
DEDICATE 402 2602
CONSOLE 009 3215 T
SPECIAL 600 CTCA WCVSE21
SPECIAL 090 3270
SPECIAL 091 3270
SPECIAL 092 3270
SPECIAL 093 3270
SPECIAL 094 3270
SPECIAL 095 3270
SPECIAL 096 3270
SPECIAL 097 3270
SPECIAL 098 3270
SPOOL 00C 2540 R A
SPOOL 00D 3525 A
SPOOL 00E 3211 A
SPOOL 0AC 2540 R A
SPOOL 0AD 3525 A
SPOOL 0AE 3211 A
LINK MAINT 190 190 RR
LINK MAINT 19D 19D RR
LINK MAINT 19E 19E RR
MDISK 0191 9345 2001 10 LS45R6 MR
```

Figure 115. WCVSE13 Directory Entry (VSE/VTAM 3.4)

A.6 Definitions for VSE/VTAM 3.4

A.6.1 ATCSTR00 start list

SSCPID=3,	C
SSCPNAME=SSCP03,	C
NETID=DEIBMI PF,	C
HOSTSA=3,	C
HOSTPU=NODE03,	C
MAXSUBA=255,	C
CONFIG=00,	C
NOPROMPT,	C
IOINT=0,	C
SGALIMIT=0,	C
BSBUF=(28,,1),	C
CRPLBUF=(60,,1),	C
LFBUF=(70,288,,11),	C
LPBUF=(12,,6),	C
SFBUF=(20,,20),	C
SPBUF=(210,,32),	C
VFBUF=102400,	C
VPBUF=446464,	C
XDBUF=(6,,1)	C

Figure 116. ATCSTR00 (VSE/VTAM 3.4)

A.6.2 ATCCON00 Config List

VIMAPPL,	C
VIMNSNA,	C
VIMCTCA,	C
VIMPATH,	C
VIMCDRM,	C
VIMCDRS	

Figure 117. ATCCON00 (VSE/VTAM 3.4)

A.6.3 VTMAPPL Major Node

VIMAPPL	VBUILD	TYPE=APPL
DBDCCICS	APPL	AUTH=(PASS,ACQ)
CTCS13	APPL	AUTH=(PASS,ACQ)
VSE13PWR	APPL	AUTH=(ACQ)
PNET	APPL	AUTH=(PASS,ACQ),VPACING=3,MODETAB=VIMLOGTB,DLOGMOD=PNET
PSFAPPL	APPL	AUTH=ACQ,EAS=1,SONSCIP=YES
IESWAITT	APPL	AUTH=(NOACQ)

Figure 118. VTMAPPL (VSE/VTAM 3.4)

A.6.4 VTMMDL Major Node

```
VTMMDL MDLTAB  
VSE32782 MDLENT MODEL=VSE32782
```

Figure 119. VTMMDL (VSE/VTAM 3.4)

A.6.5 PNET Definition

```
VSE13NDT PNODE NODE=VSE13PWR,APPLID=VSE13PWR,LOCAL=YES  
PNODE NODE=VSE21PWR,APPLID=VSE21PWR,AUTH=JOB
```

Figure 120. PNET Definition (VSE/VTAM 3.4)

A.6.6 POWER Macro

```
IPWPOWER POWER C  
ACCOUNT=YES, C  
CLRPRP=YES, C  
COPYSEP=YES, C  
DBLKGP=10, C  
DBLK=0, C  
FEED=NO, C  
JLOG=YES, C  
JSEP=(0,0), C  
LTAB=(10,00,05,10,15,20,25,30,35,40,45,50,56), C  
MEMTYPE=P, C  
MRKFRM=YES, C  
MULT12=NO, C  
NIFYMSG=100, C  
PAUSE=NO, C  
PNET=VSE13NDT, C  
PRI=3, C  
RBS=(0,0), C  
SECNODE=AAAA, C  
SHARED=NO, C  
STD CARD=(0,0), C  
STDLIN=(0,0), C  
SPLIM=90, C  
SPOOL=YES
```

Figure 121. POWER Macro (VSE/VTAM 3.4)

A.6.7 VTMNSNA Major Node

VIMNSNA	LBUILD		
D09001	LOCAL	CUADDR=090,TERM=3277, USSTAB=VIMUSSTB, DLOGMOD=SP32702N, MODETAB=IESINCLM, MDLTAB=VIMMDL, MDLENT=VSE32782, FEATUR2=(MODEL2)	C C C C C C
D09101	LOCAL	CUADDR=091,TERM=3277, USSTAB=VIMUSSTB, DLOGMOD=SP32702N, MODETAB=IESINCLM, MDLTAB=VIMMDL, MDLENT=VSE32782, FEATUR2=(MODEL2)	C C C C C C
D09201	LOCAL	CUADDR=092,TERM=3277, USSTAB=VIMUSSTB, DLOGMOD=SP32702N, MODETAB=IESINCLM, MDLTAB=VIMMDL, MDLENT=VSE32782, FEATUR2=(MODEL2)	C C C C C C
D09301	LOCAL	CUADDR=093,TERM=3277, USSTAB=VIMUSSTB, DLOGMOD=SP32702N, MODETAB=IESINCLM, MDLTAB=VIMMDL, MDLENT=VSE32782, FEATUR2=(MODEL2)	C C C C C C
D09401	LOCAL	CUADDR=094,TERM=3277, USSTAB=VIMUSSTB, DLOGMOD=SP32702N, MODETAB=IESINCLM, MDLTAB=VIMMDL, MDLENT=VSE32782, FEATUR2=(MODEL2)	C C C C C C
D09501	LOCAL	CUADDR=095,TERM=3277, USSTAB=VIMUSSTB, DLOGMOD=SP32702N, MODETAB=IESINCLM, MDLTAB=VIMMDL, MDLENT=VSE32782, FEATUR2=(MODEL2)	C C C C C C
D09601	LOCAL	CUADDR=096,TERM=3277, USSTAB=VIMUSSTB, DLOGMOD=SP32702N, MODETAB=IESINCLM, MDLTAB=VIMMDL, MDLENT=VSE32782, FEATUR2=(MODEL2)	C C C C C C
D09701	LOCAL	CUADDR=097,TERM=3277, USSTAB=VIMUSSTB, DLOGMOD=SP32702N, MODETAB=IESINCLM, MDLTAB=VIMMDL, MDLENT=VSE32782, FEATUR2=(MODEL2)	C C C C C C

Figure 122. VTMNSNA (VSE/VTAM 3.4)

A.6.8 VTMCTCA Major Node

```
*
* CTC DEFN TO WCVSE21
*
CTCA13  VBUILD TYPE=CA
*
CA13G   GROUP LNCTL=CTCA,                C
        REPLYTO=3.0
*
CA13L   LINE  ADDRESS=600,              C
        MAXBFRU=5,                      C
        MIH=YES,                        C
        ISTATUS=ACTIVE
*
CA13P   PU    PUTYPE=4,                  C
        DELAY=0.0
```

Figure 123. VTMCTCA (VSE/VTAM 3.4)

A.6.9 VTMPATH Major Node

```
WCVSE21 PATH DESTSA=1,                  C
        ER0=(1,1),ER1=(1,1),ER2=(1,1),ER3=(1,1),
        ER4=(3,1),ER5=(3,1),ER6=(3,1),ER7=(3,1),
        VR0=0,VR1=1,VR2=2,VR3=3,VR4=4,VR5=5,VR6=6,VR7=7
```

Figure 124. VTMPATH (VSE/VTAM 3.4)

A.6.10 VTMCDRM Major Node

```
VTMCDRM VBUILD TYPE=CDRM
SSCP03  CDRM  SUBAREA=03,CDRDYN=YES,ISTATUS=ACTIVE
SSCP01  CDRM  SUBAREA=01,CDRSC=OPT,ISTATUS=ACTIVE
```

Figure 125. VTMCDRM (VSE/VTAM 3.4)

A.6.11 VTMCDRS Major Node

```
VIMCDRS VBUILD TYPE=CDRSC
PRODCICS CDRSC  CDRM=SSCP01,ISTATUS=ACTIVE
```

Figure 126. VTMCDRS (VSE/VTAM 3.4)

A.7 VM CP Directory Entries for User ID WCVSE21

A.7.1 USER WCVSE21 Directory Entry (subarea only)

```
USER WCVSE21 passwd 32M 64M BFG
MACHINE ESA
OPTION MAINFCW DEVMAINT
*OPTION V=R CPUID 222222
OPTION CPUID 222222
IPL CMS
DEDICATE 400 2620
DEDICATE 401 2621
CONSOLE 009 3215 T
SPECIAL 500 CTCA WCVM122
SPECIAL 600 CTCA WCVSE13
SPECIAL 080 3270
SPECIAL 081 3270
SPECIAL 082 3270
SPECIAL 083 3270
SPECIAL 084 3270
SPECIAL 085 3270
SPECIAL 086 3270
SPECIAL 087 3270
SPECIAL 088 3270
SPECIAL 9A0 3270
SPECIAL 9A1 3270
SPECIAL 9A2 3270
SPECIAL 9A3 3270
SPECIAL 9A4 3270
SPECIAL 9A5 3270
SPECIAL 9A6 3270
SPECIAL 9A7 3270
SPOOL 00C 2540 R A
SPOOL 00D 3525 A
SPOOL 00E 3211 A
SPOOL 0AC 2540 R A
SPOOL 0AD 3525 A
SPOOL 0AE 3211 A
LINK MAINT 190 190 RR
LINK MAINT 19D 19D RR
LINK MAINT 19E 19E RR
MDISK 0191 9345 1981 10 LS45R7 MR
```

Figure 127. WCVSE21 Directory Entry (VSE/VTAM 4.2)

A.8 Definitions for VSE/VTAM 4.2 (subarea functions only)

A.8.1 ATCSTR00 Start List

SSCPID=1,	C
SSCPNAME=SSCP01,	C
NETID=DEIBMI PF,	C
HOSTSA=1,	C
HOSTPU=NODE01,	C
MAXSUBA=255,	C
CONFIG=00,	C
NOPROMPT,	C
IOINT=0,	C
SGALIMIT=0,	C
IOPURGE=4M,	C
DYNLU=YES,	C
MAINTLVL=ESA211,	C
SGA24=0,	C
DISCNTIM=30,	C
SRCHRED=ON,	C
SRCOUNT=10,	C
SRTIMER=60,	C
BS=(28,,,1),	C
LF=(70,,,11),	C
LP=(12,,,6),	C
SF=(20,,,20),	C
SP=(210,,,32),	C
XD=(6,,,1),	C
CR=(60,,,1),	C
IO=(70,424,,,1)	C

Figure 128. ATCSTR00 (VSE/VTAM 4.2)

A.8.2 ATCCON00 Config List

VIMAPPL,	C
VIMSNA,	C
VIMNSNA,	C
VIMPATH,	C
VIMCTCA,	C
VIMCA1,	C
VIMCA2,	C
VIMCA3,	C
VIMCDRM,	C
VIMCDRS,	C
RESNCP1,	C
VIMSW1	C

Figure 129. ATCCON00 (VSE/VTAM 4.2)

A.8.3 VTMAPPL Major Node

```
VIMAPPL  VBUILD TYPE=APPL
VSE2ICCF APPL  AUTH=(PASS,ACQ) ,MODETAB=IESINCLM,PARSESS=YES
PRODCICS APPL  AUTH=(PASS,ACQ) ,MODETAB=IESINCLM,PARSESS=YES
VSE21PWR APPL  AUTH=(ACQ)
PNET     APPL  AUTH=(PASS,ACQ) ,VPACING=3 ,MODETAB=VTIMLOGTB,DLOGMOD=PNET
PSFAPPL  APPL  AUTH=ACQ,EAS=1,SONSCIP=YES
IESWAITT APPL  AUTH=(NOACQ)
```

Figure 130. VTMAPPL (VSE/VTAM 4.2)

A.8.4 VTMMDL Major Node

```
VIMMDL  MDLTAB
VSE32782 MDLENT MODEL=VSE32782
VSELU2A  MDLENT MODEL=VSELU2A
```

Figure 131. VTMMDL (VSE/VTAM 4.2)

A.8.5 PNET Definition

```
VSE21NDT PNODE NODE=VSE21PWR,APPLID=VSE21PWR,LOCAL=YES
          PNODE NODE=VSE13PWR,APPLID=VSE13PWR,AUTH=JOB
```

Figure 132. PNET Definition (VSE/VTAM 4.2)

A.8.6 POWER Macro

```
IPWPOWER POWER C
ACCOUNT=YES, C
CLRPRT=YES, C
COPYSEP=YES, C
DBLKGP=10, C
DBLK=0, C
FEED=NO, C
JLOG=YES, C
JSEP=(0,0), C
LTAB=(10,00,05,10,15,20,25,30,35,40,45,50,56), C
MEMTYPE=P, C
MRKFRM=YES, C
MULT12=NO, C
NIFYMSG=100, C
PAUSE=NO, C
PNET=VSE21NDT, C
PRI=3, C
RBS=(0,0), C
SECNODE=AAAA, C
SHARED=NO, C
STD CARD=(0,0), C
STDLIN=(0,0), C
SPLIM=90, C
SPOOL=YES C
```

Figure 133. POWER Macro (VSE/VTAM 4.2)

A.8.7 VTMSNA Major Node

VIMSNA	VBUILD	TYPE=LOCAL	
WC31740P	PU	CUADDR=300,	C
		DELAY=0.2,XID=YES,DYNLU=YES,DISCNT=DELAY,	C
		PUTYPE=2,ISTATUS=ACTIVE,MAXBFPU=29	
WC317402	LU	LOCADDR=2,	C
		DLOGMOD=SP32702S,	C
		MODETAB=IESINCLM,	C
		USSTAB=VIMUSSTR,	C
		PACING=1,VPACING=2,	C
		MDLTAB=VIMMDL,	C
		MDLENT=VSELU2A,	C
		ISTATUS=ACTIVE,SSCPFM=USSSCS	
WC317403	LU	LOCADDR=3,	C
		DLOGMOD=SP32702S,	C
		MODETAB=IESINCLM,	C
		USSTAB=VIMUSSTR,	C
		PACING=1,VPACING=2,	C
		MDLTAB=VIMMDL,	C
		MDLENT=VSELU2A,	C
		ISTATUS=ACTIVE,SSCPFM=USSSCS	
WC317404	LU	LOCADDR=4,	C
		DLOGMOD=SP32702S,	C
		MODETAB=IESINCLM,	C
		USSTAB=VIMUSSTR,	C
		PACING=1,VPACING=2,	C
		MDLTAB=VIMMDL,	C
		MDLENT=VSELU2A,	C
		ISTATUS=ACTIVE,SSCPFM=USSSCS	
WC317405	LU	LOCADDR=5,	C
		DLOGMOD=SP32702S,	C
		MODETAB=IESINCLM,	C
		USSTAB=VIMUSSTR,	C
		PACING=1,VPACING=2,	C
		MDLTAB=VIMMDL,	C
		MDLENT=VSELU2A,	C
		ISTATUS=ACTIVE,SSCPFM=USSSCS	
WC317406	LU	LOCADDR=6,	C
		DLOGMOD=SP32702S,	C
		MODETAB=IESINCLM,	C
		USSTAB=VIMUSSTR,	C
		PACING=1,VPACING=2,	C
		MDLTAB=VIMMDL,	C
		MDLENT=VSELU2A,	C
		ISTATUS=ACTIVE,SSCPFM=USSSCS	
WC317407	LU	LOCADDR=7,	C
		DLOGMOD=SP32702S,	C
		MODETAB=IESINCLM,	C
		USSTAB=VIMUSSTR,	C
		PACING=1,VPACING=2,	C
		MDLTAB=VIMMDL,	C
		MDLENT=VSELU2A,	C
		ISTATUS=ACTIVE,SSCPFM=USSSCS	

Figure 134. VTMSNA (VSE/VTAM 4.2)

A.8.8 VTMNSNA Major Node

VTMNSNA	LBUILD		
D08001	LOCAL	CUADDR=080,TERM=3277, USSTAB=VIMUSSTB, DLOGMOD=SP32702N, MODETAB=IESINCLM, MDLTAB=VIMMDL, MDLENT=VSE32782, LOGAPPL=VSE2ICCF, FEATUR2=(MODEL2)	C C C C C C C
D08101	LOCAL	CUADDR=081,TERM=3277, USSTAB=VIMUSSTB, DLOGMOD=SP32702N, MODETAB=IESINCLM, MDLTAB=VIMMDL, MDLENT=VSE32782, FEATUR2=(MODEL2)	C C C C C
D08201	LOCAL	CUADDR=082,TERM=3277, USSTAB=VIMUSSTB, DLOGMOD=SP32702N, MODETAB=IESINCLM, MDLTAB=VIMMDL, MDLENT=VSE32782, FEATUR2=(MODEL2)	C C C C C
D08301	LOCAL	CUADDR=083,TERM=3277, USSTAB=VIMUSSTB, DLOGMOD=SP32702N, MODETAB=IESINCLM, MDLTAB=VIMMDL, MDLENT=VSE32782, FEATUR2=(MODEL2)	C C C C C
D08401	LOCAL	CUADDR=084,TERM=3277, USSTAB=VIMUSSTB, DLOGMOD=SP32702N, MODETAB=IESINCLM, MDLTAB=VIMMDL, MDLENT=VSE32782, FEATUR2=(MODEL2)	C C C C C
D08501	LOCAL	CUADDR=085,TERM=3277, USSTAB=VIMUSSTB, DLOGMOD=SP32702N, MODETAB=IESINCLM, MDLTAB=VIMMDL, MDLENT=VSE32782, FEATUR2=(MODEL2)	C C C C C
D08601	LOCAL	CUADDR=086,TERM=3277, USSTAB=VIMUSSTB, DLOGMOD=SP32702N, MODETAB=IESINCLM, MDLTAB=VIMMDL, MDLENT=VSE32782, FEATUR2=(MODEL2)	C C C C C
D08701	LOCAL	CUADDR=087,TERM=3277, USSTAB=VIMUSSTB, DLOGMOD=SP32702N, MODETAB=IESINCLM, MDLTAB=VIMMDL, MDLENT=VSE32782, FEATUR2=(MODEL2)	C C C C C

Figure 135. VTMNSNA (VSE/VTAM 4.2)

A.8.9 VTMCTCA Major Node

*			
*	CTC	DEFN TO WCVSE13	
*			
CTCA21	VBUILD	TYPE=CA	
*			
CA600G	GROUP	LNCTL=CTCA, REPLYTO=3.0	C
*			
CA600L	LINE	ADDRESS=600, MAXBFPU=5, MIH=YES, ISTATUS=ACTIVE	C C C
*			
CA600P	PU	PUTYPE=4, DELAY=0.0	C
*			
*	CTC	DEFN TO WCVML22	
*			
CA500G	GROUP	LNCTL=CTCA, REPLYTO=3.0	C
*			
CA500L	LINE	ADDRESS=500, MAXBFPU=5, MIH=YES, ISTATUS=ACTIVE	C C C
*			
CA500P	PU	PUTYPE=4, DELAY=0.0	C

Figure 136. VTMCTCA (VSE/VTAM 4.2)

A.8.10 VTMPATH Major Node

WCVSE13	PATH	DESTSA=3, ER0=(3,1),ER1=(3,1),ER2=(3,1),ER3=(3,1), ER4=(1,1),ER5=(1,1),ER6=(1,1),ER7=(1,1), VR0=0,VR1=1,VR2=2,VR3=3,VR4=4,VR5=5,VR6=6,VR7=7	C C C
RESNCP1	PATH	DESTSA=2, ER0=(2,1),ER1=(2,1),ER2=(2,1),ER3=(2,1), ER4=(2,1),ER5=(2,1),ER6=(2,1),ER7=(2,1), VR0=0,VR1=1,VR2=2,VR3=3,VR4=4,VR5=5,VR6=6,VR7=7	C C C
WCVML22	PATH	DESTSA=4, ER0=(4,1),ER1=(4,1),ER2=(4,1),ER3=(4,1), ER4=(4,1),ER5=(4,1),ER6=(4,1),ER7=(4,1), VR0=0,VR1=1,VR2=2,VR3=3,VR4=4,VR5=5,VR6=6,VR7=7	C C C

Figure 137. VTMPATH (VSE/VTAM 4.2)

A.8.11 VTMCDRM Major Node

```
VTMCDRM  VBUILD TYPE=CDRM  
SSCP01   CDRM  SUBAREA=01,CDRDYN=YES, ISTATUS=ACTIVE  
SSCP03   CDRM  SUBAREA=03,CDRSC=OPT, ISTATUS=ACTIVE
```

Figure 138. VTMCDRM (VSE/VTAM 4.2)

A.8.12 VTMCDRS Major Node

```
VTMCDRS  VBUILD TYPE=CDRSC  
CICS13   CDRSC CDRM=SSCP03, ISTATUS=ACTIVE
```

Figure 139. VTMCDRS (VSE/VTAM 4.2)

A.8.13 RESNCP1 Major Node

```

*****
*
*          PCCU MACRO SPECIFICATION
*
*****
*
*          PCCU  CUADDR=260,          3725-1 CONTROL UNIT ADDRESS          C
*                MAXDATA=4000,        MAXIMUM DATA TRANSFER TO NCP          C
*                AUTOIPL=NO,          DO NOT AUTOIPL AND RESTART          C
*                SUBAREA=1,           SAME AS ACF/VTAM HOSTSA OPERAND      C
*                NCPCLUB=SYS005       UNIT CONTAINING NCP LOAD MODULE
*          EJECT
*****
*
*          BUILD MACRO SPECIFICATION
*
*****
*
*          BUILD BFRS=128,            NCP BUFFER SIZE                      C
*                BRANCH=500,          BRANCH TRACE ENTRIES                 C
*                CWALL=26,             MIN. BUFFERS BEFORE SLOWDOWN         C
*                DR3270=YES,           DYNAMIC RECONFIG FOR SDLC 3270      C
*                DSABLTO=11.5,         DISABLE TIMEOUT FOR DATA SET READY  C
*                ENABLTO=11.5,         ENABLE TIMEOUT FOR DATA SET READY   C
*                LTRACE=2,             ALLOW LINE TRACE                     C
*                MAXSSCP=8,            MAXIMUM CONCURRENT SSCP-NCP SESSIONS C
*                MAXSUBA=255,          THE MAXIMUM FOR SA NUMBERS (PRE-ENA) C
*                SALIMIT=255,          THE MAXIMUM FOR SA NUMBERS (ESA)    C
*                MODEL=3725,           MODEL FOR 3725-1                    C
*                NEWNAME=RESNCP1,
*                OLT=YES,              ONLINE TEST AVAILABLE                C
*                PRTGEN=NOGEN,         SUPPRESS PRINTING OF MACRO GEN STIMIS C
*                SLOWDOWN=12,          SLOWDOWN WHEN 12% OF BUFFERS AVAIL  C
*                SUBAREA=2,
*                TRACE=(YES,64),        64 ADDRESS TRACE ENTRIES           C
*                TRANSFR=,             MAX NCP BUFFER TRANSFER TO HOST      C
*                TYPGEN=NCP,           CONTROLLER OPERATES CHANNEL ATTACHED C
*                TYP SYS=DOS,          VSE/ESA IS A DOS BASED SYSTEM       C
*                NETID=DEIBMIPF,       NAME OF THE NETWORK                 C
*                VERSION=V4R3.1        ACF/NCP VERSION V4R3.1 IS USED
*          EJECT
*****
*
*          SYSCNTRL MACRO SPECIFICATION
*
*****
*
*          SYSCNTRL OPTIONS=(BHSASSC,ENDCALL,MODE,RCNTRL,RCOND,RECMD,      C
*                RIMM,NAKLIM,SESSION,SSPAUSE,XMTLMT,STORDSP,DLRID,RDEVQ)
*
*          EJECT

```

Figure 140. RESNCP1 (VSE/VTAM 4.2) - Part 1 of 4

```

*****
*
*          HOST MACRO SPECIFICATION
*
*****
*
*          HOST  BFRPAD=15,          15 REQUIRED BY VSE VTAM          C
*                INBFRS=3,          MINIMUM NCP BUFFER ALLOCATION  C
*                MAXBFRU=15,        VTAM BUFFER UNIT ALLOCATION    C
*                SUBAREA=(1),        ACF/VTAM SUBAREA ADDRESS      C
*                UNITSZ=288          ACF/VTAM IO BUFFER SIZE (LFBUF)
*          EJECT
*****
*
*          DYNAMIC RECONFIGURATION POOL SPACE
*          LUDRPOOL AND PUDRPOOL MACRO SPECIFICATIONS
*
*****
*
*          LUDRPOOL NUMTYP1=1,        ALLOW 1 LU ON PU.T1 PU        C
*                NUMTYP2=2          ALLOW 2 LUS ON PU.T2 PU
*
*          PUDRPOOL NUMBER=2          CAN ADD 2 PUS
*          EJECT
*****
*
*          PATH MACRO SPECIFICATION
*
*****
*
*          PATH  DESTSA=(1),          C
*                ER0=(1,1)
*          EJECT
*****
*
*          GROUP MACRO SPECIFICATION FOR SDLC LEASED LINES
*
*****
*
*          G02SDLC GROUP LNCTL=SDLC,DIAL=NO,TYPE=NCP LEASED, NCP ONLY
*          EJECT
*****
*
*          LINE MACRO SPECIFICATION
*
*****
*
*          WCRES00L LINE ADDRESS=000,    TRANSMIT AND RECEIVE ADDRESS    C
*                CLOCKNG=EXT,          DEFINE TIMING AND ATTACHMENT    C
*                DATRATE=HIGH,         C
*                DUPLEX=FULL,          MODEM STRAPPING IS (FULL) DUPLEX  C
*                ISTATUS=ACTIVE,       INITIAL STATUS IS ACTIVE        C
*                NEWSYNC=NO,           CAN MODEM HANDLE NEW SYNC SIGNAL? C
*                NRZI=YES,             MODEM OPERATES IN NRZI MODE      C
*                SPEED=9600,           DATA RATE FOR THIS LINE        C
*                RETRIES=(5)           5 RETRIES PER RECOVERY SEQUENCE
*
*          SERVICE MACRO SPECIFICATION
*          SERVICE ORDER=(WCRES00P)
*          EJECT

```

Figure 141. RESNCP1 (VSE/VTAM 4.2) - Part 2 of 4

```

*****
*
*   3274-31C PU AND LU SPECIFICATIONS
*
*****
*
WCRES00P PU   ADDR=C1,           PHYSICAL UNIT ADDRESS           C
              ANS=CONT,         CONTINUE POLLING AFTER LOSING SSCP C
              DISCNT=(NO),      KEEP SSCP-PU AND SSCP-LU SESSIONS C
              IRETRY=NO,        NO REPOLL AFTER IDLE DETECT TIMEOUT C
              ISTATUS=ACTIVE,   ACTIVATE WHEN MAJOR NODE ACTIVATED C
              MAXDATA=265,      MAXIMUM DATA TRANSFER PU CAN ACCEPT C
              MAXOUT=7,         MAX PIU TRANSFER BEFORE RESPONSE C
              PASSLIM=4,        MAX CONSECUTIVE DATA TRANSFERS C
              PUTYPE=2,         PU TYPE 2 C
              RETRIES=( , 1, 4), PACING=1, VPACING=2
*
WCRES002 LU   LOCADDR=2,DLOGMOD=SP32702S,           C
              ISTATUS=ACTIVE,MODETAB=IESINCLM,      C
              MDLTAB=VIMMDL,                        C
              MDLENT=VSELU2A,                       C
              SSCPFM=USSSCS,USSTAB=VIMUSSTR
WCRES003 LU   LOCADDR=3,DLOGMOD=SP32702S,           C
              ISTATUS=ACTIVE,MODETAB=IESINCLM,      C
              MDLTAB=VIMMDL,                        C
              MDLENT=VSELU2A,                       C
              SSCPFM=USSSCS,USSTAB=VIMUSSTR
WCRES004 LU   LOCADDR=4,DLOGMOD=SP32702S,           C
              ISTATUS=ACTIVE,MODETAB=IESINCLM,      C
              MDLTAB=VIMMDL,                        C
              MDLENT=VSELU2A,                       C
              SSCPFM=USSSCS,USSTAB=VIMUSSTR
WCRES005 LU   LOCADDR=5,DLOGMOD=SP32702S,           C
              ISTATUS=ACTIVE,MODETAB=IESINCLM,      C
              MDLTAB=VIMMDL,                        C
              MDLENT=VSELU2A,                       C
              SSCPFM=USSSCS,USSTAB=VIMUSSTR
WCRES006 LU   LOCADDR=6,DLOGMOD=SP32702S,           C
              ISTATUS=ACTIVE,MODETAB=IESINCLM,      C
              MDLTAB=VIMMDL,                        C
              MDLENT=VSELU2A,                       C
              SSCPFM=USSSCS,USSTAB=VIMUSSTR
EJECT

```

Figure 142. RESNCP1 (VSE/VTAM 4.2) - Part 3 of 4

```

*
*      GROUP MACRO SPECIFICATION FOR CAs (NEW STYLE GENs)
*
CAGROUP GROUP LNCTL=CA,          THE FOLLOWING VALUES ARE FOR ALL CAS C
        DELAY=0.2,              CA ATT. DELAY                      C
        TIMEOUT=(120),          TIME, NCP WAITS FOR A RESPONSE      C
        NCPCA=ACTIVE,           STATUS OF THE CHANNEL ADAPTER      C
        CASDL=0,                INFINITE CA SLOW DOWN TIME      C
        ISTATUS=INACTIVE
CA0260  LINE ADDRESS=0,          C
        CA=TYPE5
CP0260  PU  PUTYPE=5
CA1260  LINE ADDRESS=1,          C
        CA=TYPE5
CP1260  PU  PUTYPE=5
*
*****
*      GENEND DELIMITER                      *
*****
*
        GENEND
*?
        END

```

Figure 143. RESNCP1 (VSE/VTAM 4.2) - Part 4 of 4

Appendix B. APPN Definition Examples

The following definitions are those that we implemented for APPN support on our VSE/VTAM V4.2 and VM/VTAM V4.2 in InterEnterprise mode. References in Chapters 4 and 5 refer to these definitions. We will provide the pertinent VM definitions that changed along with the VTAM definitions. We will highlight those changes we made to implement APPN in our VTAM nodes.

Those VTAM definitions that did not change for our implementation of APPN Interchange Node support (that is ISTCDRM, ISTPATH, ISTCDRS, ISTCTCA) are not repeated. Please refer to Appendix A for subarea definitions.

B.1 VM CP Directory Entries for User ID WCV122 (APPN)

B.1.1 USER WCV122 Directory Entry

```
USER WCV122 passwd 32M 1024M BG
MACHINE ESA
ACCOUNT 123 7032-86
OPTION     MAINICCW
IPL CMS
CONSOLE 01F 3270
SPECIAL 750 CTCA WCVMSNI
SPECIAL 705 CTCA WCVSE21
SPECIAL 700 CTCA WCVSE21
SPECIAL 710 CTCA WCVSE21
SPECIAL 009 3270
SPECIAL 080 3270
SPECIAL 081 3270
SPECIAL 082 3270
SPECIAL 083 3270
SPECIAL 084 3270
SPECIAL 085 3270
SPECIAL 086 3270
SPECIAL 087 3270
SPECIAL 088 3270
SPOOL   00C 2540 R A
SPOOL   00D 3525 A
SPOOL   00E 3211 A
* CMS DISKS
LINK MAINT 190 190 RR
LINK MAINT 19D 19D RR
LINK MAINT 19E 19E RR
* ESA22R AND ESA22W
DEDICATE 400 2DOC
DEDICATE 401 2DOD
MDISK 0191 9345 6 10 LS45R5 MR
```

Figure 144. WCV122 Directory Entry (VM/VTAM 4.2)

B.1.2 USER VTAM Directory Entry

```
USER VTAM passwd 32M 32M ABCEFG
*-----
* VTAM/VM Version 4 Rel 2.0 AS REQUIRED
*-----
OPTION DIAG98 MAXCONN 400
MACH XA
IUCV *CCS P M 10
IUCV ANY P M 0
NAMESAVE GCSXA
IPL GCSXA PARM AUTOLOG
CONSOLE 01F 3215 T OPERATOR
SPOOL 00C 2540 READER A
SPOOL 00D 2540 PUNCH A
SPOOL 00E 1403
SPECIAL 070 3270
SPECIAL 071 3270
SPECIAL 072 3270
SPECIAL 073 3270
SPECIAL 074 3270
LINK MAINT 190 190 RR
LINK MAINT 193 193 RR
LINK MAINT 298 298 RR
LINK 5654010A 2C2 191 RR
LINK 5654010a 29A 29A RR
MDISK 200 9345 1982 10 ESA22W MR RVTAM420 WVTAM420 MVTAM420
```

Figure 145. VTAM Directory Entry (VM/VTAM 4.2)

B.1.3 USER 5654010A Directory Entry

```
USER 5654010A passwd 16M 32M BEG
*-----
* VTAM/VM Version 4 Rel 2.0
*-----
MACH XA
IPL CMS
CONSOLE 01F 3215
SPOOL 00C 2540 READER A
SPOOL 00D 2540 PUNCH A
SPOOL 00E 1403
LINK MAINT 190 190 RR
LINK MAINT 51D 51D MR
LINK MAINT 5E5 5E5 RR
LINK MAINT 193 193 MR
LINK MAINT 19E 19E MR
MDISK 2B2 9345 1728 83 ESA22W MR R5654010 W5654010 M5654010
MDISK 2C2 9345 1811 5 ESA22W MR R5654010 W5654010 M5654010
MDISK 2D2 9345 1816 22 ESA22W MR
MDISK 2C4 9345 1838 2 ESA22W MR
MDISK 2A6 9345 1840 11 ESA22W MR
MDISK 2A2 9345 1851 11 ESA22W MR
MDISK 49A 9345 1862 44 ESA22W MR R5654010 W5654010 M5654010
MDISK 29A 9345 1906 44 ESA22W MR R5654010 W5654010 M5654010
MDISK 402 9345 1950 3 ESA22W MR
MDISK 401 9345 1953 3 ESA22W MR
MDISK 493 9345 1956 4 ESA22W MR
MDISK 191 9345 1960 22 ESA22W MR
```

Figure 146. 5654010A Directory Entry (VM/VTAM 4.2)

B.1.4 USER MAINT Directory Entry

```
USER MAINT passwd 48M 64M ABCDEFG
*-----
* VM/ESA ESA Feature Rel 2.2
*-----
AUTOLOG AUTOLOG1 OP1 MAINT
MACH XA
OPTION MAINICCW DEVMAINT
IPL 190
NAMESAVE GCS
NAMESAVE GCSXA
NAMESAVE HELP
NAMESAVE HELPINST
NAMESAVE CMSFILES
NAMESAVE CMSVMLIB
NAMESAVE DFSMSSEG
CONSOLE 009 3215 T
SPOOL 00C 2540 READER *
SPOOL 00D 2540 PUNCH A
SPOOL 00E 1403 A

* VTAMLST files
MDISK 298 9345 192 16 ESA22W RR RMAINT WMAINT MMAINT 1

* SNA Products VMFPARM disk
MDISK 348 9345 335 1 ESA22W RR RMAINT WMAINT MMAINT
```

Figure 147. MAINT Directory Entry (VM/VTAM 4.2)

Note:

- 1 We only include those minidisk statements that were related to the VTAMESA virtual machine, within the MAINT directory entry.

B.2 Definitions for VM/VTAM 4.2 (includes APPN functions)

B.2.1 ATCSTR00 (Interchange Node)

SSCPID=4,	C
SSCPNAME=SSCP04,	C
NETID=DEIBMI PF,	C
HOSTSA=4,	C
HOSTPU=NODE04,	C
MAXSUBA=255,	C
CONFIG=00,	C
NOPROMPT,	C
IOINT=0,	C
DYNLU=YES,	C
IOPURGE=5M,	C
MAINLVL=ESAL22,	C
CPDRSC=YES,	C
DISCNTIM=30,	C
SRCHRED=ON,	C
SRCOUNT=1.0,	C
SRTIMER=60,	C
NODETYPE=NN,	C
APPNCOS=NONE,	C
CONNTYPE=APPN,	C
CPCP=YES,	C
INITDB=ALL,	C
SORDER=APPN,	C
VRTG=YES,	C
VRTGCPCP=YES,	C
BS=(28,,,1),	C
LF=(70,,,11),	C
LP=(12,,,6),	C
SF=(20,,,20),	C
SP=(210,,,32),	C
XD=(6,,,1),	C
CR=(60,,,1),	C
IO=(300,288,5,,6,20)	C

Figure 148. ATCSTR00 with ICN Support (VM/VTAM 4.2)

B.2.2 ATCSTR00 (Border Node)

SSCPID=4,	C
SSCPNAME=SSCP04,	C
NETID=NETB,	C
HOSTSA=4,	C
HOSTPU=NODE04,	C
MAXSUBA=255,	C
CONFIG=00,	C
NOPROMPT,	C
IOINT=0,	C
DYNLU=YES,	C
IOPURGE=5M,	C
MAINTLVL=ESA122,	C
CPDRSC=YES,	C
DISCNTIM=30,	C
SRCHRED=ON,	C
SRCOUNT=10,	C
SRTIMER=60,	C
EN=YES,	C
APPNCOS=NONE,	C
NODETYPE=NN,	C
CONNTYPE=APPN,	C
CPCP=YES,	C
INITDB=ALL,	C
SORDER=APPN,	C
VRTG=YES,	C
VRTGCPCP=YES,	C
BS=(28,,,1),	C
LF=(70,,,,11),	C
LP=(12,,,6),	C
SF=(20,,,20),	C
SP=(210,,,,32),	C
XD=(6,,,1),	C
CR=(60,,,1),	C
IO=(300,288,5,,6,20)	C

Figure 149. ATCSTR00 with BN Support (VM/VTAM 4.2)

B.2.3 ATCCON00

ISTIRL,	C
ISTAPPLS,	C
ISTPATH,	C
ISTCTCA,	C
ISTCDRM,	C
ISTCDRS,	C
ISTNSNA,	C
ISTAHHC	C

Figure 150. ATCCON00 with APPN (VM/VTAM 4.2)

B.2.4 ISTTRL

```
ISTTRL1 VBUILD TYPE=TRL
*
TRLE1   TRLE  INCTL=MPC,MAXBFRU=5,
          READ=(700,705),WRITE=(710),REPLYTO=0.5      C
```

Figure 151. ISTTRL (VM/VTAM 4.2)

B.2.5 ISTAHC

```
ISTAHC1 VBUILD TYPE=LOCAL
*
CAHC1   PU  PUTYPE=2,TRLE=TRLE1,XID=YES,CONNITYPE=APPN,
          CPCP=YES,VPACING=0,ISTATUS=ACTIVE      C
```

Figure 152. ISTAHC (VM/VTAM 4.2)

B.3 VM CP Directory Entries for User ID WCVSE21 (APPN)

B.3.1 USER WCVSE21 Directory Entry

```
USER WCVSE21 passwd 32M 64M BFG
MACHINE ESA
OPTION MAINFCCW DEVMAINT
*OPTION V=R CPUID 222222
OPTION CPUID 222222
IPL CMS
DEDICATE 400 2620
DEDICATE 401 2621
CONSOLE 009 3215 T
SPECIAL 500 CTCA VTAM
SPECIAL 600 CTCA WCVSE13
SPECIAL 700 CTCA WCV122
SPECIAL 710 CTCA WCV122
SPECIAL 720 CTCA WCV122
SPECIAL 080 3270
SPECIAL 081 3270
SPECIAL 082 3270
SPECIAL 083 3270
SPECIAL 084 3270
SPECIAL 085 3270
SPECIAL 086 3270
SPECIAL 087 3270
SPECIAL 088 3270
SPECIAL 9A0 3270
SPECIAL 9A1 3270
SPECIAL 9A2 3270
SPECIAL 9A3 3270
SPECIAL 9A4 3270
SPECIAL 9A5 3270
SPECIAL 9A6 3270
SPECIAL 9A7 3270
SPECIAL 9A8 3270
SPOOL 00C 2540 R A
SPOOL 00D 3525 A
SPOOL 00E 3211 A
SPOOL 0AC 2540 R A
SPOOL 0AD 3525 A
SPOOL 0AE 3211 A
LINK MAINT 190 190 RR
LINK MAINT 19D 19D RR
LINK MAINT 19E 19E RR
MDISK 0191 9345 1981 10 LS45R7 MR
```

Figure 153. WCVSE21 directory entry (VSE/VTAM 4.2)

B.4 Definitions for VSE/VTAM 4.2 (APPN functions)

B.4.1 ATCSTR00 Start List

SSCPID=1,	C
SSCPNAME=SSCP01,	C
NETID=DEIBMI PF,	C
HOSTSA=1,	C
HOSTPU=NODE01,	C
MAXSUBA=255,	C
CONFIG=00,	C
NOPROMPT,	C
IOINT=0,	C
SGALIMIT=0,	C
IOPURGE=4M,	C
DYNLU=YES,	C
MAINLVL=ESA211,	C
DISCNTIM=30,	C
SRCHRED=ON,	C
SRCOUNT=1.0,	C
SRTIMER=60,	C
CPCDRSC=YES,	C
NODETYPE=NN,	C
APPNCOS=NONE,	C
CONNTYPE=APPN,	C
CPCP=YES,	C
INITDB=ALL,	C
SORDER=APPN,	C
VRTG=YES,	C
VRTGCPCP=YES,	C
BS=(28,,,1),	C
LF=(70,,,11),	C
LP=(12,,,6),	C
SF=(20,,,20),	C
SP=(210,,,32),	C
XD=(6,,,1),	C
CR=(60,,,1),	C
IO=(70,424,,,1)	C

Figure 154. ATCSTR00 with ICN Support (VSE/VTAM 4.2)

B.4.2 ATCSTR00 (Border Node)

SSCPID=1,	C
SSCPNAME=SSCP01,	C
NETID=DEIBMIPF,	C
HOSTSA=1,	C
HOSTPU=NODE01,	C
MAXSUBA=255,	C
CONFIG=00,	C
EN=YES,	C
IOINT=0,	C
PROMPT,	C
SGALIMIT=0,	C
IOPURGE=4M,	C
DYNLU=YES,	C
MAINLVL=ESA211,	C
DISCNTIM=30,	C
SRCHRED=ON,	C
SRCOUNT=10,	C
SRTIMER=60,	C
CPCDRSC=YES,	C
APPNCOS=NONE,	C
NODETYPE=NN,	C
CONNITYPE=APPN,	C
CPCP=YES,	C
INITDB=ALL,	C
SORDER=APPN,	C
VRTG=YES,	C
VRTGCPCP=YES,	C
BS=(28,,,1),	C
LF=(70,,,11),	C
LP=(12,,,6),	C
SF=(20,,,20),	C
SP=(210,,,32),	C
XD=(6,,,1),	C
CR=(60,,,1),	C
IO=(70,424,,,1)	C

Figure 155. ATCSTR00 with BN Support (VSE/VTAM 4.2)

B.4.3 ATCCON00 Config List

VIMIRL,	C
VIMAPPL,	C
VIMSNA,	C
VIMNSNA,	C
VIMAHHC,	C
VIMPATH,	C
VIMCTCA,	C
VIMCDRM,	C
VIMCDRS,	C
RESNCP1	C

Figure 156. ATCCON00 with APPN (VSE/VTAM 4.2)

B.4.4 VTMTL.B Book

```
CATALOG VIMTRL.B                                REPLACE=YES
* MEMBER FOR MPC CONNECTIONS
ISTTRL2 VBUILD TYPE=TRL
*
TRLE2    TRLE  LNCTL=MPC,MAXBFRU=5,              C
          READ=(710),WRITE=(700,720),REPLYTO=0.5
/+
/*
```

Figure 157. VTMTL.B Book (VSE/VTAM 4.2)

B.4.5 VTMAHHC.B Book

```
CATALOG VIMAHHC.B                                REPLACE=YES
* MEMBER FOR MPC CONNECTIONS
ISTAHHC2 VBUILD TYPE=LOCAL
*
CAHHC2   PU  PUTYPE=2,TRLE=TRLE2,XID=YES,CONNTYPE=APPN,  C
          CPCP=YES,VPACING=0,ISTATUS=ACTIVE
/+
/*
```

Figure 158. VTMAHHC.B Book (VSE/VTAM 4.2)

Appendix C. Special Notices

This publication is intended to help System programmers to migrate their existing ACF/VTAM V3.4 systems on VSE/ESA and VM/ESA operating systems to ACF/VTAM V4R2, and to also help them to optionally migrate their subarea definitions to the new APPN function which is now available with this new Version of VTAM.

The information in this publication is not intended as a specification of any programming interfaces that are provided by ACF/VTAM Version 4 Release 2. See the PUBLICATIONS section of the IBM Programming Announcement for ACF/VTAM V4R2 for VM/ESA and VSE/ESA for more information about what publications are considered to be product documentation.

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For information on ordering these ITSO publications see "How to Get ITSO Redbooks" on page 151.

A complete list of International Technical Support Organization publications, known as redbooks, with a brief description of each, may be found in:

International Technical Support Organization Bibliography of Redbooks, GG24-3070.

D.2 Other Publications

These publications are also relevant as further information sources.

- *VTAM V4R2 Migration Guide for VM/ESA*, GC31-8071
- *VTAM V4R2 Migration Guide for VSE/ESA*, GC31-8072
- *VTAM V4R2 Overview for VM/ESA and VSE/ESA*, GC31-8114
- *VTAM V4R2 Glossary*, GC31-6558
- *VTAM V4R2 Operation*, SC31-6495
- *VTAM V4R2 Network Implementation Guide*, SC31-6494
- *VTAM V4R2 Resource Definition Reference*, SC31-6498
- *VTAM V4R2 Messages and Codes*, SC31-6493
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- *Bibliography and Master Index for NetView, NCP and VTAM*, GC31-7017
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- *Planning for NetView, NCP, and VTAM*, SC31-7122
- *Planning for Integrated Networks*, SC31-7123
- *IBM Network Product Examples*, GG24-3649
- *A Technical Overview: VTAM V4R2, NCP V6R3, V7R1, & V7R2, SSP V3R9, V4R1, & V4R2*, GG66-3256

D.3 International Technical Support Organization Publications

- *VTAM 4.2 Implementation and Usage for VM/ESA and VSE/ESA*, SG24-4556
- *3746 Nways Controller M 950 and M 900 APPN Implementation Guide*, GG24-2536
- *3174 APPN Implementation Guide Update*, SG24-4171

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Glossary

Systems Network Architecture (SNA). Systems Network Architecture encompasses more than just the traditional subarea structures. It describes also the extended wide area network (WAN) constructs such as Advanced Peer-to-Peer Networking (APPN), as well as other local area network (LAN) protocols.

Low Entry Networking Node (LEN). This is the simplest of all the APPN node types. It can be attached to both APPN networks as well as subarea networks. It has limited *control point (CP)* function. All resources must be defined to it as it can not request a search for resources from other APPN nodes. It is also unable to register its resources with other nodes.

VTAM End Node (EN). This VTAM host is able to support sessions between its CP and the CP in other VTAMS. It needs a *network node server* to find resources and to select session routes. It can only have a CP-CP session with its network node server.

Migration Data Host (MDH). This is a VTAM end node with subarea capability. It can not own NCPs nor does it support intermediate APPN routing.

APPN Network Node (NN). Is a node that offers a broad range of end user services. It supports CP-CP sessions but not necessarily SSCP-SSCP sessions. It can register its resources with a central directory as well as find resources and select session paths. It can perform intermediate session routing.

Composite Network Node (CNN). This is a VTAM together with one or more NCPs that provide the appearance of an APPN network node. It can own and activate NCPs.

Interchange Node (ICN). This is a network node that provides full support for both APPN and subarea networks to which it is attached. It "translates" between them.

Border Node (BN). This is an APPN network node that enables the connection of other APPN network nodes while permitting them to maintain their own distinct network and topology database and helps these networks avoid topology exchanges.

List of Abbreviations

AHHC	APPN Host-to-Host Channel	LEN	Low Entry Networking
APA	all points addressable	LU	Logical Unit
APPN	Advanced Peer-to-Peer Networking	MDH	Migration Data Host
BN	Border Node	NCP	Network Control Program
CDRM	Cross Domain Resource Manager	NN	Network Node
CNN	Composite Network Node	PROFS	Professional Office System
CP	Control Point	PU	Physical Unit
EN	End Node	PSP	Preventative Service Planning
ESA	Enterprise Systems Architecture	PTF	Program Temporary Fix
IBM	International Business Machines Corporation	SNI	SNA Network Interconnect
ICN	Interchange Network Node	VSE	Virtual Storage Extended
ITSO	International Technical Support Organization	VM	Virtual Machine
		VTAM	Virtual Terminal Access Method
		WAN	Wide Area Network

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Processing Options

Runtime values:

Document fileid	SG244830 SCRIPT
Document type	USERDOC
Document style	REDBOOK
Profile	EDFPRF30
Service Level	0029
SCRIPT/VS Release	4.0.0
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Number of Passes	4
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SYSVAR G	INLINE
SYSVAR S	OFFSET
SYSVAR X	YES

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Cross reference head prefix only	NO
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Duplex	YES
DVCF conditions file	(none)
DVCF value 1	(none)
DVCF value 2	(none)
DVCF value 3	(none)
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DVCF value 7	(none)
DVCF value 8	(none)
DVCF value 9	(none)
Explode	NO
Figure list on new page	YES
Figure/table number separation	YES
Folio-by-chapter	NO
Head 0 body text	Part
Head 1 body text	Chapter
Head 1 appendix text	Appendix
Hyphenation	NO
Justification	NO
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Leader dots	YES
Master index	(none)
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Process value	(none)
Punctuation move characters	,
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Running heading/footing rule	NONE
Show index entries	NO
Table of Contents (maximum level)	3
Table list on new page	YES
Title page (draft) alignment	RIGHT
Write cross-reference file	(none)

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