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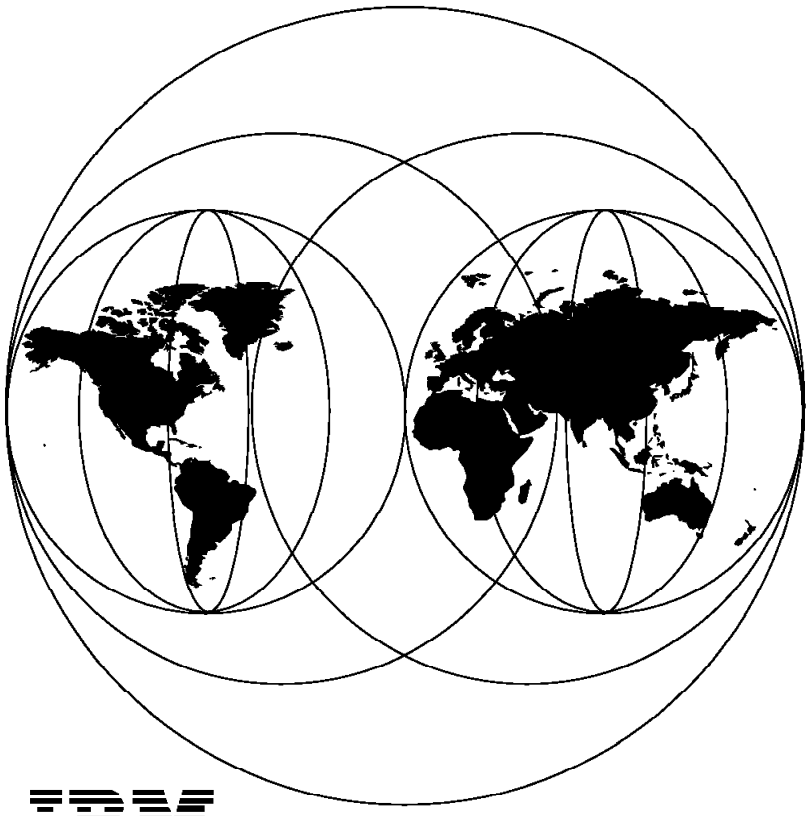
VTAM 4.2 Implementation and Usage for VM/ESA and VSE/ESA

July 1995



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Take Note!

Before using this information and the product it supports, be sure to read the general information under “Special Notices” on page xiii.

First Edition (July 1995)

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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Abstract

The aim of this document is to assist you in upgrading to VTAM V4R2 for VSE/ESA and/or VM/ESA with minimal effort and help you set up your first VTAM APPN connections.

This document is intended primarily for customer personnel and IBM technical professionals who want to install VTAM V4R2 under VM/ESA V1R2.2 and VSE/ESA V2.

The reader is assumed to have a basic working knowledge of VM/ESA, VSE/ESA and SNA networking in VM/ESE and VSE/ESA host environments. Some knowledge of APPN networking is also assumed.

(175 pages)

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Special Notices

This publication is intended to help system programmers to install ACF/VTAM V4R2 on a VSE/ESA and/or VM/ESA operating system. The information in this publication is not intended as the specification of any programming interfaces that are provided by ACF/VTAM V4R2. 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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Preface

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This document is intended primarily for customer personnel and IBM technical professionals who want to install VTAM V4R2 under VM/ESA V1R2.2 and VSE/ESA V2.

The reader is assumed to have a basic working knowledge of VM/ESA, VSE/ESA and SNA networking in VM/ESE and VSE/ESA host environments. Some knowledge of APPN networking is also assumed.

How This Document is Organized

The document is organized as follows:

- Chapter 1, “VTAM V4R2 Introduction”

  Summarizes new functions and packaging.

- Chapter 2, “ACF/VTAM Installation in a VSE/ESA System”

  Guides you up to the point of starting your new VTAM under VSE/ESA.

- Chapter 3, “Planning and Installation under VM”

  Guides you up to the point of starting your new VTAM under VM/ESA.

- Chapter 4, “Implementing Subarea Networking with VTAM V4R2”

  Describes the most essential changes in VTAM V4R2 that you should be aware of, a tutorial on how independent LUs now are handled by VTAM and how you enable VTAM to use compression.

- Chapter 5, “Implementing APPN Networking with AHHC and DLUS”

  This chapter describes what you should consider when enabling VTAM′s APPN support, how you set up an APPN Host-to-Host channel connection and how to get Dependent LU Server/Requester running.

- Chapter 6, “Operator Interface Enhancements”

  Gives you information about some new and enhanced operator commands.

- Appendix A, “Subarea Definition Examples”

  Provides detailed examples of subarea definitions.

- Appendix B, “APPN Definition Examples”

  Shows the essential APPN definitions.

- Appendix C, “VSE MODETAB and USSTAB”

  Some detailed jobstreams are provided.

- Appendix D, “Some ACF/VTAM V4R2 Installation Examples for VM/ESA”

  Provides some installation examples from the VTAM V4R2 Program Directory for VM/ESA.

Related Publications

The publications listed in this section are considered particularly suitable for a more detailed discussion of the topics covered in this document.

- *VTAM V4R2 Release Guide for VM/ESA*, GC31-8089
- *VTAM V4R2 Release Guide for VSE/ESA*, GC31-8090
- *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 Network Implementation Guide*, SC31-6494
- *VTAM V4R2 Resource Definition Reference*, SC31-6498
- *VTAM V4R2 Operation*, SC31-6495
- *VTAM V4R2 Messages and Codes*, SC31-6493

International Technical Support Organization Publications

- *Cross Domain Networking In VM/ESA 2.0 and VSE/ESA 1.3 Environments Implementation Guide*, GG24-4174
- *VTAM Version 4 Release 1 for MVS/ESA Implementation Guide*, GG24-4011

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Acknowledgments

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Chapter 1. VTAM V4R2 Introduction

1.1 VTAM V4R2 Naming

There was no VTAM V4 R1 for VM or VSE, but because this VTAM is on the same functional level as VTAM V4R2 for MVS it has been given the same release number. This numbering ensures consistency of function for any release of VTAM for MVS, VM and VSE.

1.2 VTAM Version 4 Release 2 Overview

VTAM Version 4 Release 2 is the first VTAM version for VSE and VM with Advanced Peer to Peer Networking (APPN) support. SNA Subarea (SA) support is enhanced to take advantage of the new capabilities provided by APPN networking.

All the subarea functions of previous VTAM releases are available in VTAM Version 4.2, so the implementation of APPN in your network can be done at whatever pace you desire.

For most modern environments, where the mainframes are no longer the only provider of computing services, but are connected to a variety of PCs and other computing facilities through LANs, the enhancements to VTAM and especially the APPN networking facilities come at the right time.

APPN′s connection network support can reduce drastically the definition requirements in your LAN environment, improving at the same time the routing performance for your sessions. With the Dependent Logical Units Requester/Server (DLUR/S) functions of VTAM, you can eliminate completely the pre-definition of some 3270 devices, because the definitions can be dynamically generated as the devices connect to the network.

In a more traditional subarea network (SA), you can benefit too in migrating to VTAM 4.2. By using the Interchange Node function (ICN), you can provide a seamless integration of APPN and subarea networks. Your subarea network applications are able to find the APPN applications and vice-versa. At the same time, you can eliminate completely some network definitions such as the Cross Domain Resources Definitions (CDRSCs), the ADJSSCP tables, the Cross Domain Resources Manager (CDRM) and even LU definitions.

VTAM Version 4.2 for VSE/ESA and VM/ESA, recognizes that not all installations are the same, that a majority of users does not need the full functions that VTAM provides, especially in the high end network interconnection. Therefore, beginning with this version of VTAM, besides the *machine group* pricing structure, there is also the *functionality* pricing. You select the functional package that best fits your networking requirements.

When ordering ACF/VTAM Version 4.2 for VSE/ESA or VM/ESA, you choose one of the three functional packages that are now available, You can even upgrade or downgrade between the packages if you are an MLC (monthly license charge) user, and a user that has both VM/ESA and VSE/ESA running in the same

system can order VM/VTAM as a feature of the VSE/VTAM product. This saves some license fee when compared to ordering both products separately.

Following are the functional levels you can choose:

- VTAM Client/Server
- VTAM MultiDomain
- VTAM InterEnterprise

VTAM Client/Server has basic APPN and subarea support. It can not own an NCP. At first most customers will need to install at least the VTAM MultiDomain package, but may eventually, after migrating to APPN, be able to downgrade to the VTAM Client/Server and save license costs.

VTAM MultiDomain has all capabilities except for SNI, APPN Border node, APPN Central directory server and APPN search enhancements. The Dependent LU server is included, and support for software data compression. Hardware data compression is supported in VSE only.

VTAM InterEnterprise is the full function set, but you should note that SNA Network Interconnection (SNI) is included for VM only!

It is important to stress that VTAM V4R2 retains all previous subarea functions. Therefore you can upgrade to VTAM V4R2 with minimal changes to your existing network definitions and later migrate parts of your network to APPN step by step at your own pace and convenience.

1.3 Summary of the New Functions

- APPN networking for VM and VSE
- Dependent LU Server/Dependent LU Requester
- APPN Multiple Network Connectivity
- APPN Host-to-Host Channel
- Cost effective choices for functional levels of support
- New specially priced VM feature on VSE
- VSE 31-bit addressing capability
- Hardware data compression for VSE
- VM installation and maintenance improvements
- VSCS enhancements for VM
- Capturing of diagnostic information with First Failure Support Technology (FFST) for VM

1.3.1 Dynamic Reconfiguration Enhancement

In VTAM V4R2 you can dynamically reconfigure your network by making changes in the definition file and issuing a VARY ACT command with the new UPDATE operand. VTAM updates the current configuration to match the new configuration in the definition file. The major node can stay active; only the subordinate resources that you are changing must be inactive. Because the definition file is modified, the updated configuration is restored when VTAM or NCP is restarted.

In pre-V4R2 releases, you can only use the VARY DRDS command, the MODIFY DR command and implicit dynamic reconfiguration to dynamically reconfigure your network. Because these methods do not modify the definition file, the changes can be lost when VTAM is restarted or when NCP is reloaded.

1.4 Description of VTAM Functional Levels

VTAM V4R2 for VSE and VM is available in three levels or sets of functional capabilities: Client/Server, MultiDomain, and InterEnterprise. This packaging is designed to give you choices of networking options that make sense for your VM and VSE environments, which are priced according to the level of function delivered.

When VTAM V4R2 for VM or VSE is ordered and installed, all of the functional capabilities of Client/Server, MultiDomain, and InterEnterprise are included. However, access to the functional levels requires a password. After installation, you can activate different functional levels of support without having to re-install the products.

If you currently have VTAM for VSE and VM on a single processor or would like to have this combination, IBM will offer, at a special lower price, the VTAM V4R2 for VM/ESA product as an optional feature of VTAM V4R2 VSE/ESA. Both products may be ordered at the same time or you may choose to order and install the feature at your convenience. Either way, you will be able to take advantage of this excellent value. The only requirement is that you currently have VTAM V4R2 for VSE/ESA either installed or on order.

The functional contents of VTAM Client/Server, MultiDomain, and InterEnterprise are provided below.

1.4.1 VTAM Client/Server

The VTAM Client/Server functional level includes all of the following capabilities and functions for APPN and SNA subarea that were not available in previous versions. In general, Client/Server is suited to an entry-level networking environment. This environment is typically smaller and does not require the communications connectivity options of larger networks. Therefore, it does not have NCP ownership or many of the networking functions normally needed by larger networks. With Client/Server you get Advanced Program-to-Program (APPC) and APPN connectivity. These functions allow your host to be a server in peer networking environments. Clients can be on any number of different line types and receive the full support of VTAM.

The new, unique VM and VSE functions added in VTAM Version 4 Release 2 are:

- **APPN over ICA Connections**

  VTAM implementation of the APPN architecture provides a migration path for subarea nodes to APPN. ES/9000 hosts and communications controllers must be able to be defined and connected as APPN nodes to permit APPN LU-LU sessions through and into a Token-ring LAN, X.25 network, and SDLC/X.21 network. The ICA APPN connection management function in VTAM 4.2 provides the APPN connection for switched and non-switched T2.1 nodes as APPN nodes in a Token-ring LAN environment, an X.25, and an SDLC/X.21 network.

- **Capturing of Diagnostic Information with First Failure Support Technology Capture (FFST) - VM only**

  FFST is a diagnostic feature that diagnoses software problems. It captures information in situations where a problem can occur. FFST replaces the function First Failure Data Capture (FFDC).

- **Installing VTAM Using the VMSES/E Tool - VM only**

  The VMSES/E component in VM/ESA provides a simplified installation and service methodology for all VM software deliverables. Using the capabilities of VMSES/E, you have a powerful tool that is common to all VM software products. This tool allows you the flexibility and ease of having only one centralized tool for your installation and service needs.

- **VSCS Enhancements - VM only**

  Some of the VSCS enhancements include:

  – Support for network-qualified names when identifying resources across the IUCV for messages, commands, and session support.

  – Support for dynamic Status Area change on VSCS controlled display LUs. This support is equivalent to the support currently provided by VM/ESA 1.2.0 for locally attached display LUs.

  – Logoff and disconnect improvements that prevent terminals from hanging in “holding” state during Logoff, Disconnect, Logon Here, or CP Force processing, which prevents the terminal or user ID from being reused.

- **VSE/ESA 31-bit Addressing Capability**

  Constraints on virtual storage have been relieved through the use of 31-bit addressing and storage management. By expanding the storage available to VTAM and customer programs, the number of defined users and concurrent sessions has been significantly increased.

- **Connectivity**

  The VTAM Client/Server functional level supports connections in one APPN network and/or in one single domain subarea network.

  APPN host-to-host channel connections are supported.

  For a subarea network the activation (ownership) of NCPs and its resources is not supported.

  The VM virtual channel connection is supported by this VTAM version. It is a software-only feature.

- **Installation-wide exit routine enhancements**

  – Session accounting exit routine
  – Session authorization exit routine

- **LU 6.2 Application Program Interface (API) Enhancements**

  – Conversation status
  – Deallocate request processing
  – Full-duplex
  – LU 6.2 programming macroinstructions (APPCCMDs)
  – Receive immediate

- **Record Application Program Interface (API) Enhancements**

  – VTAM record application programming macroinstructions

- **Network Dynamics**

  – APPN
    - Class-of-service table
    - Connection network (including APPN over ICA connections)
    - End node (including APPN over ICA connections)

    - Network node (including APPN over ICA connections)
  - Controlling the use of logon mode table entry, ISTCOSDF
  - Dynamic configuration of channel-attached devices
  - Dynamic definition of a switched or token-ring connection
  - Dynamic definition of independent LUs
  - Dynamic modification of DLOGMOD operand for a resource
  - Dynamic replacement of logmode tables
  - Dynamic replacement of class-of-service (COS) tables
  - Dynamic reconfiguration
  - Expanded dial information

- **Operator Interface Enhancements**
  - Centralized support for modifiable start options (MODIFY VTAMOPTS)
  - DISPLAY command enhancements
  - Display of VTAM start options (DISPLAY VTAMOPTS)
  - Inactivating LUs in a pending-notify state
  - Verification of VTAMLST syntax
  - On-line message facility (VM only)
  - Support for message level
  - Support for program operators
  - User-defined message flooding prevention table
  - VTAM support for IBM Command Tree/2 (VM only)

- **Performance Enhancements**
  - Authorized transmission priority for LEN connections
  - Automatic termination of sessions using too much of IO buffer pool (HOTIOTRM)
  - Session limits for switched resources

- **Problem Diagnosis**
  - Analysis tools for an externally recorded VTAM Internal Trace (VIT) - VM only
  - Buffer contents trace enhancements (more than 256 bytes!)
  - Communication network management (CNM) trace (VM only)
  - Display of active traces
  - Saved trace command (starts when resource becomes known to VTAM)
  - VIT enhancements

- **Security**
  - Call security verification for switched subareas

- **SNA Subarea**
  - Non-native network connection
  - Logon interpret table and logon interpret routine

- **System and Configuration Management**
  - Expanded addressing pool
  - Network-qualified names
  - Specifying search order for locating switched PUs

1.4.2 VTAM MultiDomain

The VTAM MultiDomain functional level contains all of the above plus the addition of NCP ownership and more APPN and SNA subarea capabilities. Those capabilities are provided for larger networks and improved performance. In addition the following new VSE function has been added for the MultiDomain functional level:

- **Data Compression:**

  VTAM Version 4 Release 2 for VSE has implemented both hardware and software compression.

  VTAM Version 4 Release 2 for VM has implemented software compression.

  There are two types of compression which comprise four different levels. The first is SCB compression (Level 1) and the second is the Lempel-Ziv algorithms (Levels 2-4).

- **Connectivity**

  In addition to the connections available in the VTAM Client/Server functional level, the following connections are supported:

  – NCP Activation
    For subarea networks, NCPs and its resources can be activated (owned).
  – VTAM Channel-to-Channel Connections
    Subarea channel to channel connection including Multipath Channel connection is supported in addition to the APPN host-to-host channel connection already available in the Client/Server functional level.
  – Cross-Domain Connections
    The subarea cross-domain resource manager is supported.
  – Dependent LU Server
    The dependent LU requester code for OS/2 will be provided by VTAM.
  – Support of frame-relay networks over Token-ring connections

- **Installation-Wide Exit Routines**

  – Session management exit routine
  – Virtual route selection exit routine
  – Virtual route pacing window size calculation exit routine
  – Configuration services exchange identification (XID) exit routine
  – Selection of definitions for dependent LUs (SDDLU) exit routine
  – Command verification exit routine
  – USERVAR exit routine
  – Directory services management exit routine

- **Network Dynamics**

  – APPN
    - Composite network node routing
    - Interchange node
    - Migration data host node
  – Definition of spare SDLC lines
  – Dynamic adjacent SSCP tables
  – Dynamic definition of dependent LUs
  – Dynamic switched definition facility
  – User variables (USERVAR)

- **Performance Enhancements**

  – Automatic logon
  – Automatic recovery from an outstanding session request

  - Delayed disconnection
  - Software data compression
  - Non-disruptive deactivation of cross-domain resource managers
- **Problem Diagnosis**
  - Saving the TRACE command for future use
- **System and Configuration Management**
  - Adjacent SSCP lists for cross-domain resources
  - Virtual-route-based transmission groups

These MultiDomain capabilities work together to add networking value to:

- Asset protection
- Enhanced connectivity
- Performance
- Continuous availability
- Dynamics
- Productivity.

1.4.3 VTAM InterEnterprise

The VTAM InterEnterprise functional level is designed for inter-enterprise network support of large and interconnected network providers. It contains all of the MultiDomain and Client/Server capabilities plus additional APPN and SNA subarea functions. These capabilities are necessary to ensure the kind of connectivity that is needed in the large, interconnected network environments.

The following functions are APPN and SNA subarea capabilities added (previously announced and available) in VTAM Version 4 for MVS/ESA that are now supported on the VTAM VM and VSE (unless otherwise noted) InterEnterprise functional level.

- **Connectivity**

  In addition to the connections available in the VTAM Client/Server, and VTAM MultiDomain functional levels, the following connections are supported:

  - APPN Border Node
  - SNA Network Interconnection (SNI) (VM only)
- **Network Dynamics**
  - APPN central directory server
    Eliminating and reducing searches for resources
    Multiple network connectivity (border node)
- **Record Application Program Interface (API) Enhancements**
  - Persistent LU-LU sessions (VSE only)

These InterEnterprise functions contribute significant value to the enterprise network by improving and enhancing:

- Asset protection
- Connectivity
- Continuous availability
- Productivity.

1.4.4 APPC Application Suite for VM/ESA (5654-025)

The program product APPC Application Suite for VM/ESA is compatible with VTAM V4R2 for VM/ESA Client/Server, MultiDomain, or InterEnterprise. It includes the following capabilities:

- APPC file transfer protocol (AFTP) - the TCP/IP like file transfer protocol program for native APPC
- APPC 3270 server (A3270) - a quick and easy 3270 emulator program
- APPC connectivity tester (APING) - a real value item for APPC application environments to verify connections
- APPC name server (ANAME) - converts a nickname to a fully qualified SNA LU (logical unit) name

For more detailed information and ordering instructions concerning the APPC Application Suite for VM/ESA please see IBM Programming Announcement ZP94-0384 dated October 4, 1994.

Open Enterprise: VTAM Version 4 Release 2 for VM/ESA and VSE/ESA supports all standards and architectures, with the exception of MPTN, implemented by VTAM Version 4 Release 1 and VTAM Version 4 Release 2 for MVS/ESA.

1.5 APPN Networking

APPN networking allows any computer to talk to another as a peer, instead of as a subordinate, disregarding their size or importance in the network structure.

The SNA architecture was announced in the early ′70s and from then, it has evolved together with the advances in communications and computing technology, supporting and taking advantage of the different technologies as it does so.

From these early stages of the computing evolution, the SNA architecture was designed to exploit at a maximum the most scarce and expensive computing resource of the installation, that is the host or *mainframe* with its peripheral I/Os.

From this purely *hierarchical* structure of the VTAM SNA architecture, it has evolved through several enhancements, up to the present products, which support the APPN networking. It takes advantage of the lowering cost of current technology by allowing the distribution of functions and applications where it is most adequate. It has established an architecture platform where the customer can construct their information systems in a reliable and proven way, without throwing away their current investments in technology, human resources and application systems.

This is not to say that APPN is a completely new architecture, because, since 1986 APPN has been applying the Client/Server principle of flexible application design, and the ability to distribute parts of an application across different platforms based on functional requirements. Also, since the early ′80s, IBM has been laying the base of APPN, by introducing the Low Entry Network (LEN) function.

APPN is fully implemented in VTAM Version 4.2 with support and enhancements to various early implementations of the peer-to-peer concept such as LEN (Low Entry Networking) and APPC (Advanced Program to Program Communication).

1.6 APPN Overview

A network can be as simple as two personal computers connected by a telephone line, though which their *end users* can exchange information. These end users can be a person working in a terminal, a program running on the system, or a printer controlled by the system.

In SNA APPN terms, these two PCs establish a Low Entry Networking (LEN) connection between them, and each PC is a **LEN end node**. The relations between them are truly **peer-to-peer**, either side can activate the connection and establish a session.

The functions of LEN nodes are limited because, for example, they are not able to exchange topology and configuration data.

In a large network, additional capabilities are required to reduce the number of definitions and the maintenance effort. For this purpose, the APPN architecture has been developed, which has been announced and published as the latest extension to the SNA architecture.

In the APPN architecture, there are two basic node types:

1. **APPN End Node (EN)**

   The APPN End Node is similar to an LEN end node, except that there is a Control Point (CP) function (which is responsible for managing the node and its resources) at each end node that exchanges information with the CP in the adjacent network node. This communication between the CPs, called a CP-CP session, reduces the requirements for network definitions, thus making the installation and maintenance of the network easier.

2. **APPN Network Node (NN)**

   The APPN Network Node has intermediate routing functions and provides network services to either APPN or LEN nodes which attach to the network nodes. An APPN network node establishes CP-CP sessions with its adjacent APPN network nodes to exchange network topology and directory information. The CP-CP sessions to adjacent APPN end nodes (EN) are optional, and are only required for APPN end nodes for which the APPN network node (NN) provides network services.

1.6.1 APPN Terms

At this point, it is worth introducing some terms for a better understanding of the architecture.

APPN

Or Advanced Peer-to-Peer Networking refers to the **base set** and **option set** of functions that a computer (or group of computers) must implement to communicate in a peer to peer manner. Also referred to as a group of interconnected APPN nodes.

APPC

Or Advanced Program-to-Program Communication refers to the set of protocol and facilities that allows a program in one node to communicate with a program in another node.

Figuratively speaking APPN can be seen as the telephone company, while APPC are the users of the telephone company services.

APPN NN

Or Network Node, refers to an APPN node that supports CP-CP sessions, but does not support SSCP-SSCP sessions. It has no subarea number assigned, and cannot own NCP. It provides topology and directory services for its served end nodes. It is also capable of routing LU-LU sessions between its nodes from one adjacent node to another adjacent node through the function called intermediate session routing (ISR).

APPN EN

Or End Node, refers to an APPN node that appears as an NN without the topology and directory capabilities. It only provides services to its own local APPN resources. It requires the services of a network node server for directory and routing services to communicate with other nodes.

LEN End Node

A LEN end node provides peer-to-peer connectivity to other LEN end nodes, APPN end node, or APPN network node. But it requires that all resources (own and foreign) be defined at the LEN end node, because it cannot register its resources to a network node server, nor can it request its network server to search for a resource.

ICN Node

Or Interchange Node, refers to an APPN Network Node also defined with subarea number. The ICN translates APPN session setup flows to the subarea network and subarea session setup flows to the APPN network. The ICN node can also act as Network Node Server (NNS) for attached End Nodes (EN).

MDH

Or Migration Data Host, is an End Node (EN) with subarea capability.

Data Host

Refers to a subarea VTAM that owns application LUs and their data, but no responsibility for the LUs (terminals) of the network.

CMC Host

Or Communications Management Configuration Host, refers to a subarea VTAM that owns NCPs and has session establishment and error recovery responsibility for one or more data host.

APPN border node

An APPN network node that interconnects APPN networks having independent topology databases in order to support LU-LU sessions between these networks.

connection network

A representation within an APPN network of a shared-access transport facility (SATF), such as a Token-ring, that allows nodes identifying their connectivity to the SATF by a common virtual routing node to communicate without having individually defined connections to one another.

Independent LU

Is a network end user resource that does not require an ACTLU to activate it. It can send BIND requests to the network without having an SSCP-LU session. LU 6.2 is the only LU type that can be an independent LU.

Dependent LU

Is a network end user resource. The term is applied to an application LU and/or a peripheral LU. In both cases it requires an SSCP-LU session, and in the case of the peripheral LU, it cannot act as a primary LU (PLU).

1.6.2 The APPN Advantage

VTAM 4.2 is the first implementation of APPN networking in VM/ESA and VSE/ESA. As its name implies, APPN uses a peer-to-peer approach of networking as opposed to the hierarchical approach used in traditional subarea networking.

This peer-to-peer approach offers some advantages over the subarea network, such as the following:

- Better performance during session initiation, because APPN uses fewer line flows per LU-LU session.
- Better performance during network activation. Some control sessions such as the SSCP-PU and SSCP-LU can be eliminated in an APPN network, so the activation process is quicker.

  Reduced system definitions. Because APPN learns about the network dynamically, some definitions such as the path table, the CDRSCS, CDRM and even some LU definitions can be eliminated.

  Increased availability. As the topology is recognized dynamically, there is no need to shut down parts of the network to add another node.

Described below are some very important features implemented in VTAM 4.2 APPN networking that allow you to get immediate benefits from going to VTAM 4.2.

1.6.2.1 The VR-based Transmission Group (VR-TG)

In VTAM 4.2, a new type of connection can be defined between any two VTAM V4.2 ICNs or Data Hosts. This VR-based transmission group **(VR-TG)**, represents all the predefined virtual routes between two VTAM 4.2 domains, so there is only one VR-TG between any two VTAM 4.2 nodes.

This function allows a customer to retain Virtual Route (VR) definition statements for subarea connection, yet fully utilize APPN functions across these connections. **APPN** and **subarea** messages can flow over the same VR-TG.

A VR-TG can carry CP-CP sessions between the VTAM Control Points. Unlike subarea logic, which requires fully meshed CDRM-CDRM sessions between all VTAMs in a net-id to achieve any-to-any session connectivity, APPN requires only CP-CP connectivity. That means that any two CPs can communicate across a sequence of CP-CP sessions, without having established a CP-CP session directly between themselves.

1.6.2.2 The APPN Connection Network

A **Shared-Access Transport Facility (SATF)** such as Token-ring and ethernet, allows direct connectivity between any pair of stations attached to the facility. Direct connectivity avoids session traffic to be routed through intermediate network nodes, but requires link definitions at a node for any node to which connectivity is desired. This could grow exponentially with the number of nodes.

To alleviate these problems, APPN allows nodes to define a **Virtual Routing Node (VRN)** to represent their attachment to the SATF. Session traffic between two nodes that have defined the VRN can be routed ″through″ the VRN, without passing through a real network node.

This type of definition is called a **Connection Network**, and it can reduce drastically the amount of system definition requirements for your LAN environment, but that is not all: The routing performance for your sessions can improve greatly.

1.6.2.3 The Dependent LU Server/Requester (DLUS/R)

The Dependent LU Server/Requester (DLUS/R) support of APPN allows dependent LUs to use the APPN network for LU-LU sessions. This function removes the restriction that a PU T2.0, APPN node, or a LEN node supporting dependent LUs must be adjacent to a subarea boundary node.

This function creates a *virtual pipe* between the DLUS (SSCP) and the DLUR, through which SNA commands are sent to the dependent LUs. As far as both the SSCP and dependent LU are concerned, they are directly attached through an SSCP-LU session, as would normally be the case.

Chapter 2. ACF/VTAM Installation in a VSE/ESA System

This chapter describes the steps required to install and set up ACF/VTAM in a VSE/ESA system. Since most VSE/ESA users would have VTAM installed together with their VSE operating system as a package, this chapter can be used as a guide for the VTAM initial customization and implementation.

We will address the following processes in this chapter:

1. ACF/VTAM 4.2 for VSE/ESA system requirements
2. Ordering your ACF/VTAM 4.2 for VSE/ESA
3. Preparing your VSE/ESA operating environment
4. Running VSE/ESA under VM/ESA
5. Loading VTAM in your system
6. Tailoring VTAM
7. Starting VTAM

2.1 VSE/VTAM 4.2 System Requirements

VSE/VTAM 4.2 is designed to run in a virtual storage environment that supports Version 2.1 of the VSE/ESA operating system. Please note that some additional and specific requirements are necessary for the support of some functions of VTAM 4.2 as noted below, also some specific levels of NCP and VTAM are required to establish communication with VTAM Version 4.2.

2.1.1 Hardware Requirements

2.1.1.1 CPU

Any CPU (or CPU complex) that supports version 2.1 or later of the VSE/ESA operating system and is ESA capable, such as the following:

- IBM 4381 models 90E, 91E and 92E
- All IBM ES/9000 models
- All IBM ES/3090 models E/J/S
- All IBM S/390 models R11 thru R61

2.1.1.2 APPN Host-to-Host Channel (MPC)

For an APPN host-to-host connection with the multi-path channel support or MPC, the minimum requirements are the following:

- Two channel-to-channel adapters (CTCA), or
- IBM 3088 Multisystem Channel Communication Unit, or
- IBM Enterprise System Connection (ESCON) Channel

For a traditional subarea network, one CTCA is sufficient. But for the APPN MPC connection there is a requirement for separate READ and WRITE paths.

If you are running in a VM/ESA environment, two virtual CTCAs can be defined to connect the VM/VTAM and VSE/ESA virtual machines.

2.1.1.3 Dependent LU Server (DLUS) Function

Several IBM controllers support the dependent LU requester function. Also this function is implemented in several SW products and operating systems such as:

- 3174 Establishment Controller Configuration support C Release 5
- OS/2 Communication Manager 1.11 with ServicePak WR06150

2.1.1.4 Hardware-assisted Data Compression

For the hardware-assisted data compression function to be activated, VSE/VTAM must reside in one of the following IBM CPU models:

- IBM 9221 211-based processor
- IBM 9121 511-based processor
- IBM 9021 711-based processor

2.1.2 Virtual Storage Requirements

2.1.2.1 Virtual Storage Constraint Relief (VSCR)

VSE/VTAM 4.2 takes advantage of the 31-bit addressing capability of VSE/ESA 2.1. This support provides virtual storage constraint relief by allowing VSE/VTAM to put most of its code and control block storage in 31-bit addressing space. This includes VTAM private storage and System GETVIS storage. This results in more storage below the 16MB line which can be used by 24-bit addressing applications.

VSE/VTAM can reside in a shared or a private partition. If you choose a private partition, you must allocate this partition in a private address space with sufficient allocated storage to accommodate VTAM.

2.1.2.2 Shared Virtual Area (SVA)

Other parts of VTAM reside in the VSE/ESA Shared Virtual Area (SVA) which is built and loaded during Initial Program Load.

2.1.2.3 System GETVIS Area (SGA)

When VTAM resides in a private partition, it allocates control blocks and storage areas in the SGA to initialize user applications, to schedule VTAM deferred processes, and to process application requests.

You can use the SGALIMIT start option to specify the maximum amount of SGA that VTAM can use. You can also use the MODIFY SGALIMIT command to change the SGA limit while VTAM is running.

SGA storage can be allocated from above or below the line depending on where the allocating procedure resides.

Use the SGA24 start option to limit the amount of 24-bit addressable storage explicitly requested by VTAM.

2.1.2.4 VSE Data Space Support

VSE Data Space Support was implemented in VTAM to support the queuing of user application data that is received by VTAM, and for the storing of patterns and tables for software and hardware compression.

A recommended size of 8MB (controlled by the DSIZE operand of the SYSDEF system control statement), is adequate for starting VTAM since it requires only

1MB for initialization. There is an additional parameter in the VTAM start EXEC JCL that controls the amount of data space that VTAM is permitted to use. Since VTAM only would allocate that storage when it needs it, you do not affect the total available virtual storage by coding a maximum data space (DSPACE) larger than what is actually needed. We found that coding DSPACE=4M is a good starting point, since we received message IST1020I warning us of the Data Space full condition with the default of DSPACE=2M coded in the VTAM startup job in our testing environment.

2.1.2.5 Other Recommendations for VTAM

Following are some recommendations for running VTAM:

- Use SIZE=AUTO
- Try to reduce the VTAM buffer sizes

  To find out the buffers′ sizes, use the command D NET,BFRUSE after a peak hour of operation. The size of the buffer areas can be reduced as long as MAX USED is lower than the values allocated during VTAM startup.

For a better understanding of the storage requirements of ACF/VTAM V4.2, there is an *Estimating Storage for VTAM* diskette available that runs on an OS/2 workstation.

Figure 1 on page 16 shows a sample storage layout of a VSE/ESA system with four address spaces. Although there are no restrictions, it is good practice to keep the standard distribution in partition assignments, that is:

F1=POWER
F2=CICS
F3=VTAM

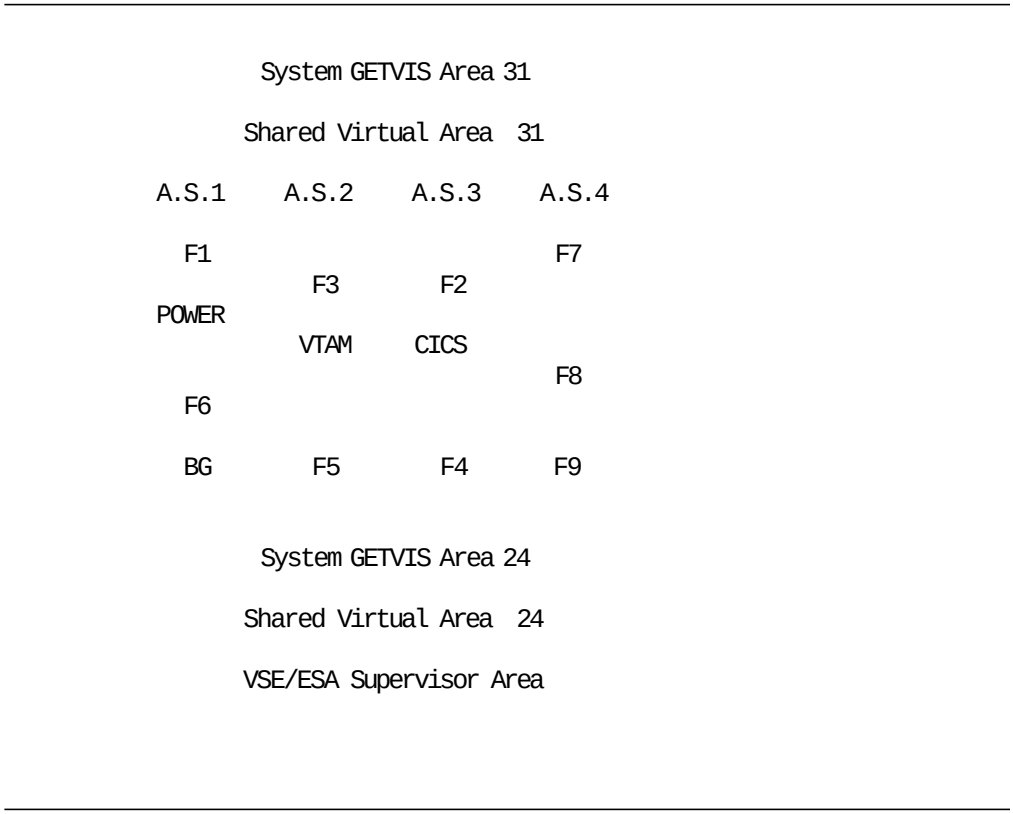

Figure 1. VSE/ESA Storage Layout

2.1.3 Software Requirements

ACF/VTAM Version 4 Release 2 for VSE/ESA requires operating system VSE/ESA Version 2 Release 1 (5690-VSE).

Unless otherwise stated, this level of ACF/VTAM could also operate with later versions, releases and modifications of this operating system. Earlier versions, releases and modifications are not supported.

Certain VTAM functions require the use of the appropriate level of associated IBM licensed programs.

The following VTAM functions have these minimum programming requirements.

APPN Multiple Network Connectivity

- NCP Version 7 Release 1 (5648-063), in configurations where NCP provides the boundary function support for the APPN connection between two APPN subnetworks.
- Communications Manager/2 Version 1.11 ServicePak WR06150 for attachment of this product to a VTAM APPN border node.
- AIX SNA Server/6000 Version 2.1

Connection Network

- NCP Version 7 Release 1 (5648-063), in configurations where NCP provides the boundary function attachment to the connection network.

Dependent LU Server (DLUS)

VTAM provides a dependent LU requester (DLUR) that requires the following:

- OS/2 Version 2 or later
- Communications Manager/2 Version 1.11 with ServicePak WR06150.

Hardware-assisted Data Compression

- VSE/ESA Version 2 Release 1 (5690-VSE)

Expanded Dial Information

- NCP Version 7 Release 1 (5648-063), for token-ring and frame-relay communication.
- X.25 NCP Packet Switching Interface (NPSI) Version 3 Release 7 (5688-035), for NPSI resources

Session Limits for Switched Resources

- NCP Version 7 Release 1 (5648-063) or later, when the switched devices are attached to VTAM through an NCP.

VSE/ESA 31-bit Support

If using some of the following VSE/ESA products, APARs must be installed to add 31-bit support, which is required by VTAM V4R2 for VSE/ESA:

- NetView Version 2 Release 3 for VSE (5686-055) with:
  APAR DY43233 and
  APAR DY43313
- SSP Version 3 Release 6 (5666-322) with APAR IR27306 or
- SSP Version 4 Release 1 (5686-064)

Full Buffer Trace

- SSP Version 3 Release 6 (5666-322) with APAR IR27306 or
- SSP Version 4 Release 1 (5686-064)

Spare SDLC Lines

- NCP Version 7 Release 2 (5648-063)

2.1.4 Compatibility with Other Products

ACF/VTAM V4R2 for VSE/ESA provides simultaneous support for APPN and SNA subarea networks.

Supported Products

The new ACF/VTAM for VSE/ESA, is upwardly compatible with the APIs for the Version 3 VTAM products.

VTAM Version 4 Release 2 supports all releases and modifications of the associated licensed programs listed below:

- VTAM Version 4 Release 1 for MVS/ESA (5695-117)
- VTAM Version 3 releases for:
  - MVS/ESA (5685-085)
  - VM/ESA (5684-095)

  - VM/SP (5664-280)
  - VM/9370 (5684-052)
  - VSE/SP (5666-313)
  - VSE/ESA (5666-363)
- NCP
  - Version 7 for the IBM 3745 Communication Controller (5648-063)
  - Version 6 for the IBM 3745 Communication Controller (5688-231) (VM only)
  - Version 5 for the IBM 3720 or 3745 Communication Controllers (5668-738)
  - Version 4 for the IBM 3720 or 3745 Communication Controllers (5668-854)
- NetView
  - Version 2 for VM/ESA (5756-051)
  - Version 2 for VSE (5686-055)

APPN Compatibility

For APPN compatibility with other APPN capable products and programs, the appropriate minimum releases listed below are required.

- IBM 3174 Establishment Controller Configuration Support C Release 4.

  To exploit a VTAM acting as a central directory server requires the APPN-capable 3174 to be Configuration Support C Release 5
- AS/400 Version 2 Release 1 with the appropriate PTFs
- Communications Manager/2 Version 1.0
- Extended Services Version 1 with the appropriate PTFs
- Networking Services/2 Version 1 Release 1 with the appropriate PTFs
- AIX SNA Server/6000 Version 2.1
- System/36 Release 5.1 with the appropriate PTFs
- DPPX Release 3 with the appropriate PTFs
- IBM 6611 Network Processor with Multiprotocol Networking Program Version 1 Release 2
- IBM 8250 Multiprotocol Intelligent Hub with the Workstation Networking Module.

2.2 Ordering your ACF/VTAM 4.2 for VSE/ESA

2.2.1 VSE/ESA System Package or Stand-alone Product Tape?

ACF/VTAM 4.2 for VSE/ESA should be ordered as part of the VSE/ESA Version 2.1 System Package, for which the ordering process has been enhanced and streamlined.

The basic functions of VSE/ESA, such as VSE/Advanced Functions and VSE/POWER, are integrated in one single program called VSE Central Functions. Others products such as ACF/VTAM and CICS/VSE, form part of the VSE/ESA Version 2.1 base programs.

Ordering ACF/VTAM with your System Package has the additional advantage of product integration, compatibility and reduced complexity in the implementation of your network, because the product will be installed automatically and basic setup is done in the installation process. Therefore, you have a system up and running in a very short time.

You can order ACF/VTAM 4.2 as a separate product too, if required. This case is mostly unlikely, because the minimal support level of VSE/ESA is Version 2.1. One of the probable causes can be a customer who migrates from VSE/ESA Version 1.3 and decides to keep VTAM 3.4 as the production environment. In this case you receive the product documentation along with the tape and a program directory that tell you how to integrate the product in your working system.

The IBM product-id assigned to ACF/VTAM Version 4.2 for VSE/ESA is **5686-065** whether it is ordered as part of the System Package or on a stand-alone product tape.

2.2.2 Flavors of ACF/VTAM 4.2 for VSE/ESA

Beginning with this level of ACF/VTAM and to best suit the real requirements of the different levels of customers in terms of machine and function use of the product, IBM offers in addition to the graduated and MOSP charges, prices based on the functional support of the customer environment.

In all cases, you will receive the full function product, but you can only use the functional level to which you are entitled by your contract, because the product is password protected.

MLC (Monthly License Charge) Customers can upgrade or downgrade their license charge. OTC (One Time Charge) customers can only upgrade.

There is also a version-to-version migration credit that can help you to migrate your older version of VTAM to Version 4.2. Please check with your IBM representative for availability of this option for your present VTAM level.

Following are the functional levels offered for ACF/VTAM V4.2:

- VTAM Client/Server
- VTAM MultiDomain
- VTAM InterEnterprise

2.2.2.1 VTAM Client/Server

This functional level of VTAM is more suited to entry level customers in a pure APPN network or subarea network who do not need the ownership of NCP or cross-domain communication through the channel-to-channel adapter.

2.2.2.2 VTAM MultiDomain

VTAM MultiDomain functional level contains all the functions listed in the Client/Server level plus the addition of NCP ownership and more APPN and subarea network capabilities.

This functional level is the best for the majority of VSE/ESA users who normally have one or more CPUs interconnected through CTCAs and one or more 37x5 communication controllers loaded with NCPs.

2.2.2.3 VTAM InterEnterprise

The VTAM InterEnterprise functional level is designed for inter-enterprise network support of large and interconnected networks.

It contains all of the MultiDomain and Client/Server capabilities plus additional APPN and SNA subarea functions. These capabilities are necessary to ensure the kind of connectivity that is needed in the large, interconnected network environments.

2.2.3 Acquiring and Using Access Passwords

Beginning with ACF/VTAM Version 4.2, access to the different functional levels of support requires a password.

This access password is included in the shipment of your initial order together with the other program material you ordered.

You must enter this password in the VSE VTAM start JCL as the VTAMPW parameter together with your assigned customer number in the CUSTNO parameter.

Since MLC customers can upgrade or downgrade their VTAM functional level, they must contact their IBM Marketing Representative to place the order for the new functional level to obtain the new password. OTC customer can only upgrade.

2.2.4 VM/VTAM 4.2 as a Feature of ACF/VTAM for VSE/ESA

If you currently have VTAM for VSE and VM on a single processor, or would like to have this combination but thought it was too expensive, IBM has the answer. Beginning with VTAM Version 4 Release 2 for VSE, IBM will offer the VTAM Version 4 Release 2 for VM product as an optional feature of VSE/VTAM at a special lower price.

This VM/ESA Optional Feature for VSE/ESA is only orderable for VTAM VSE/ESA (5686-065), all functional levels are included in the basic material and require a password in order to be able to use them.

2.3 Preparing your VSE/ESA Operating Environment

In preparing the VSE environment to support VTAM, it is necessary to:

- Define the VTAM required files
- Define VTAM and supported devices to VSE

In most VSE installations, VTAM is installed jointly with the rest of the operating system central functions and base products. Also VTAM is the networking option of choice and necessary to complete the VSE installation process.

2.3.1 Define the VTAM Required Files

2.3.1.1 VTAM Related Files

When VTAM 4.2 is installed in your system, whether during the VSE installation process or after a migration, VTAM resides together with the Central Function and other base products mostly in the **PRD1.BASE** system library.

In the VSE environment, there is another set of libraries for the ICCF interactive environment that contains the basic definitions and setup of VTAM during the VSE/ESA installation process.

Following are the system and ICCF libraries where you can find VTAM modules and files.

VTAM definition library members

The VSE sublibrary **PRD2.CONFIG** contains the **.B books** for the start options, list and network definition and configuration files.

Libraries 51 and 59 of ICCF contain the JCL skeletons and initial startup definitions of VTAM which were created during the VSE installation process.

VTAM phase library members

These are the executable programs of VTAM and reside in the **PRD1.BASE** sublibrary. Also in this library are the tables and exit routines. You can identify the VTAM phases in this library because they start with the **IST** prefix and their suffix is **PHASE**. ISTACC00.PHASE and ISTAICAR.PHASE are examples.

VTAM object library members

These are the object-code library of VTAM, to be used when you want to re-linkedit VTAM, exit routines, or tables.

These object modules also reside in the **PRD1.BASE** sublibrary. You can identify the VTAM object modules in this library because they start with the **IST** prefix and their suffix is **OBJ**. ISTACCAJ.OBJ is an example.

VTAM macro library members

Also residing in the **PRD1.BASE** sublibrary, are the VTAM macro instruction definitions. These macros have a **.A** suffix, but you can not easily identify them because there is not a standard prefix assigned.

Some examples are:

- ISTRPL.A
- MODETAB.A
- RESETSR.A

Libraries 51 and 59 of ICCF

Library 59 of ICCF contains some JCL skeletons, such as the:

- JCL to load and catalog the VTAM STARTUP JCL.
- JCL to assemble and linkedit the MODETAB, USSTAB.

Library 51 of ICCF contains the initial startup definitions of VTAM, these files were created during the VSE installation process. Some of them are:

- ATCSTR00
- VTMMDL
- VTMSNA, VTMNSNA

VTAM samples definition and tables

Also residing in the **PRD1.BASE** sublibrary, are several VTAM and NCP definition and table samples. They have a **.Z** suffix.

Some examples are:

- COSAPPN.Z
- GENDECK.Z
- ISTEXCSD.Z
- SAMP327L.Z

2.3.1.2 APPN Topology Database (TDB) Files

The APPN topology database is used to maintain a view of the network configuration. It contains details of the network, and shows the state of the transmission groups (TG) between the nodes. The Topology and Routing Services (TRS) component of VTAM uses these databases for route selection.

When VTAM is defined as a network node (NN) or interchange node (ICN) the following files are necessary for VTAM to keep the directory and topology information. An end node (EN) has a topology database in memory only.

- DSDB1
- DSDB2
- TRSDB
- DSDBCTL

These topology database files are VSAM ESDS files in the VSE/ESA environment.

DSDB1, DSDB2 and TRSDB files

These files hold the APPN directory information and topology database (TDB) that is used to initialize the VTAM directory and topology database when it is restarted. It contains information about the local end nodes (EN), the Transmission Groups (TG) information and the location of other NNs in the network.

Interconnected Network Nodes will update each other at specific times to keep the network topology updated.

The DSDB1 and DSDB2 databases are used in flip-flop mode for storing the directory and TDB information and they will be updated each time that one of the following commands is issued:

Z NET
Z NET,QUICK
F NET,CHKPT,TYPE=ALL
F NET,CHKPT,TYPE=TOPO

The DSDBCTL file

The DSDBCTL file contains the current status of DSDB1 and DSDB2. During initialization, VTAM reads it to determine whether to use DSDB1 or DSDB2 to initialize the APPN directory database.

These files should be created before VTAM initialization. Figure 2 on page 24 shows a sample JCL to create and add the label definitions to the VSE Standard Labels. It is, therefore, not necessary to include those DLBL statements in the VTAM start JCL.

```
* $$ JOB JNM=APPNVSM,CLASS=0,DISP=D,NTFY=YES
// JOB  APPNVSM  DEFINE VSAM FILE
// EXEC IDCAMS,SIZE=AUTO
 DEFINE CLUSTER ( -
        NAME (VSAM.DSDB1              ) -
        RECORDS  (1        1          ) -
        SHAREOPTIONS (2,3)              -
        RECORDSIZE (1000   1000       ) -
        VOLUMES (SYSWK1 )               -
        REUSE -
        NONINDEXED -
        FREESPACE (20 10) -
        NOCOMPRESSED -
        TO (99366)) -
        DATA (NAME (VSAM.DSDB1.@D@  ) ) -
        CATALOG (VSAM.MASTER.CATALOG  )
 DEFINE CLUSTER ( -
        NAME (VSAM.DSDB2              ) -
        RECORDS  (1        1          ) -
        SHAREOPTIONS (2,3)              -
        RECORDSIZE (1000   1000       ) -
        VOLUMES (SYSWK1 )               -
        REUSE -
        NONINDEXED -
        FREESPACE (20 10) -
        NOCOMPRESSED -
        TO (99366)) -
        DATA (NAME (VSAM.DSDB2.@D@  ) ) -
        CATALOG (VSAM.MASTER.CATALOG  )
 DEFINE CLUSTER ( -
        NAME (VSAM.TRSDB              ) -
        RECORDS  (1        1          ) -
        SHAREOPTIONS (2,3)              -
        RECORDSIZE (1000   1000       ) -
        VOLUMES (SYSWK1 )               -
        REUSE -
        NONINDEXED -
        FREESPACE (20 10) -
        NOCOMPRESSED -
        TO (99366)) -
        DATA (NAME (VSAM.TRSDB.@D@  ) ) -
        CATALOG (VSAM.MASTER.CATALOG  )
```

Figure 2 (Part 1 of 2). Sample JCL to Define and Catalog APPN Required Files

```
 DEFINE CLUSTER ( -
        NAME (VSAM.DSDBCTL            ) -
        RECORDS  (2        2          ) -
        SHAREOPTIONS (2,3)              -
        RECORDSIZE (20     20         ) -
        VOLUMES (SYSWK1 )               -
        REUSE -
        NONINDEXED -
        FREESPACE (20 10) -
        NOCOMPRESSED -
        TO (99366)) -
        DATA (NAME (VSAM.DSDBCTL.@D@  ) ) -
        CATALOG (VSAM.MASTER.CATALOG  )
   IF LASTCC NE 0 THEN CANCEL JOB
/*
// OPTION STDLABEL=ADD
// DLBL DSDB1,¢VSAM.DSDB1¢,,VSAM,                                    C
               CAT=IJSYSCT
// DLBL DSDB2,¢VSAM.DSDB2¢,,VSAM,                                    C
               CAT=IJSYSCT
// DLBL TRSDB,¢VSAM.TRSDB¢,,VSAM,                                    C
               CAT=IJSYSCT
// DLBL TRSDB,¢VSAM.DSDBCTL¢,,VSAM,                                  C
               CAT=IJSYSCT
/*
// EXEC IESVCLUP,SIZE=AUTO
A VSAM.DSDB1                                DSDB1   IJSYSCT
A VSAM.DSDB2                                DSDB2   IJSYSCT
A VSAM.TRSDB                                TRSDB   IJSYSCT
A VSAM.DSDBCTL                              TRSDB   IJSYSCT
/*
/&
* $$ EOJ
```

Figure 2 (Part 2 of 2). Sample JCL to Define and Catalog APPN Required Files

Following are some recommendations regarding these APPN files.

- You must use the file names given, you must not change them
- Use RECORDSIZE(1000,1000) for DSDB1, DSDB2 and TRSDB
- Use RECORDSIZE(20,20) for DSDBCTL
- These files must not be modified manually
- Do not copy these files for a different node

  VTAM acquires the information dynamically through Topology Database Updates (TDU) if the initial load of the database fails.

2.3.1.3 Configuration Restart Files

If you have a large network, you can save time during VTAM restart if you have a Configuration Restart data set.

Figure 3 on page 26 shows a sample JCL to define the VTAM Configuration Restart file; the following rules apply:

- Each major node is associated with a different file.
- Each time you change a major node source definitions, you must delete and re-define the associated configuration restart data set.

- The file name you code must be the same as the one coded in the CONFGDS operand of the NCP PCCU definition statement, or the one coded on the VBUILD or LBUILD definition statements.
- The file must be INDEXED.
- Code KEYS(4 0), a key length of 4 and an offset of 0 bytes is required
- Code RECORDSIZE(24 136), the average record size must be 24, and a maximum record size of 136 bytes must be coded.
- Make sure that you allocate enough space so the number of records in the file equals or surpasses the number of minor nodes in your major node. A secondary allocation of one-tenth of the primary allocation is advised.

```
* $$ JOB JNM=VTMRST,CLASS=0,DISP=D,NTFY=YES
// JOB  VTMRST  DEFINE RESTART FILES
// EXEC IDCAMS,SIZE=AUTO
 DELETE (ARNCKPT) PURGE CLUSTER
 DEFINE CLUSTER ( -
        NAME (ARNCKPT                ) -
        RECORDSIZE (24     136       ) -
        VOLUMES (SYSWK1 )              -
        KEYS(4  0 )                    -
        TO (99366))                    -
        DATA (NAME (ARNCKPT.DATA)      -
        TRACKS(1))                     -
        INDEX (NAME (ARNCKPT.INDEX)    -
        TRACKS(1))                     -
        CATALOG (VSAM.MASTER.CATALOG  )
/*
/&
* $$ EOJ
```

Figure 3. Sample JCL to Delete/Define a VTAM Configuration Restart File

2.3.1.4 NCP Related Files

If your VTAM owns a communication controller, then you may need to define the following necessary files for the NCP and related modules:

- A library where the NCP load module is in VSE executable form (.PHASE).
- A sequential file where the NCP load module is in card-image format.
- A library which contains the initial test routines for the 3705 controller loader.
- A file to receive the NCP dump output.

NCP Load File

In the generation process of an NCP, the NCP modules are link-edited in the sublibrary you supply in the NCP generation JCL. If you do not specify any, then the generation process will put it in the system **PRD2.CONFIG** sublibrary.

The name of the NCP load module (.PHASE) is the one specified in the **NEWNAME** operand of the BUILD definition statement.

Then you should punch this load module (.PHASE) to the sequential file you previously created in card-image format for the use of the VTAM loader or the

SSP load utility. The name of this file must match the name of the NCP specified in the NEWNAME operand.

Figure 4 is a sample JCL to create this sequential library and load it with the NCP module.

```
* $$ JOB JNM=NCPFILE,CLASS=0,DISP=D
* $$ LST CLASS=Q,DISP=D
// JOB NCPFILE     CREATE NCP LOAD MODULE FILE
* ********************************************************************
* *                                                                  *
* *  - - - - - - - CREATE NCP LOAD MODULE FILE - - - - - - - -       *
* *                                                                  *
* *  THIS JOB IS FOR CREATING A SEQUENTIAL FILE CONTAINING AN        *
* *  NCP LOAD MODULE THAT IS TO BE LOADED INTO A 37xx COMMUNI-       *
* *  CATION CONTROLLER.                                              *
* *                                                                  *
* *                                                                  *
* *  THE FOLLOWING VARIABLES ARE USED AND HAVE TO BE CHANGED :       *
* *                                                                  *
* *    --V001-- STARTING ADDRESS OF EXTENT                           *
* *    --V002-- EXTENT ALLOCATION (NUMBER OF BLOCKS/TRACKS)          *
* *    --V003-- NAME OF NCP LOAD MODULE (PHASE 1)                    *
* *    --V004-- NAME OF NCP LOAD MODULE (PHASE 2)                    *
* *    ....                                                          *
* *    --V010-- NAME OF NCP LOAD MODULE (PHASE 8)                    *
* *                                                                  *
* *  THE NUMBER OF PHASES DEPENDS ON THE RELEASE LEVEL OF NCP        *
* *  AND ALSO ON THE KIND OF NCP DEFINITIONS.                        *
* *  FOR MORE INFORMATION SEE NCP, SSP AND EP GENERATION             *
* *  AND LOADING GUIDE.                                              *
* *                                                                  *
* ********************************************************************
*
ASSGN SYS000,SYSPCH
// ON $CANCEL OR $ABEND GOTO RESET
// DLBL   IJSYSPH,¢CU37XX.LOAD.FILE¢,99/365,SD
// EXTENT SYSPCH,,,,--V001--,--V002--
ASSGN SYSPCH,DISK,VOL=SYSWK1,SHR
// EXEC LIBR
ACCESS SUBLIB=PRD2.COMM2
PUNCH --V003--.PHASE --V004--.PHASE --V005--.PHASE --V006--.PHASE     -
      --V007--.PHASE --V008--.PHASE --V009--.PHASE --V010--.PHASE
/*
/. RESET
CLOSE SYSPCH,IGN
ASSGN SYSPCH,SYS000
/&
* $$ EOJ
```

Figure 4. Sample JCL to Create the NCP LOAD Sequential Data File

During the NCP loading process, VTAM will look for the load module in the following library search sequence:

- The sublibrary you specify in the VTAM start JCL.
- The PRD2.CONFIG sublibrary (if it is specified after the other sublibrary in the LIBDEF definition).

- The sequential data file you specified.

  This copy is used if there is not enough storage in the VTAM partition to hold the size of the NCP load modules (PHASE).

When defining and using the NCP load modules, be aware of the relationship between the coding of the NCP and the file names you will use. VTAM will check this in the loading process.

- The name of the NCP module is the one specified in the NEWNAME operand of the BUILD definition statement of the NCP generation deck.
- This name is the name of the NCP load module (PHASE).
- The file name in the DLBL statement for the NCP load module sequential file must match that specified in the NEWNAME operand.
- The symbolic device name in the EXTENT and ASSGN statements must match that specified in the NCPLUB operand of the PCCU definition statement.
- VTAM assigns SYS000 to the address of the communication controller being loaded, which is specified in the CUADDR operand of the PCCU definition statement.

NCP Dump

In case of an NCP dump, whether because of an abend dump or instructed to do so, the NCP dump utility writes the contents of the communication controller memory (NCP) into a pre-defined direct access storage.

Following are some considerations when defining and using this function:

- The dump utilities must reside in one of the sub-libraries concatenated in the LIBDEF statement.
- The dump is written in 512-byte records.
- The DLBL file name must be NCPDUMP.
- The symbolic device name in the ASSGN statement must match that specified in the DUMPDS operand of the PCCU definition statement.
- The dump file must be big enough to accommodate at least one NCP dump, including the NCP and the buffers. This size depends on the communication controller model.

Initial Test Routine (IBM 3705 only)

For the 3705 communication controller, there is the option to test the machine before loading the NCP in the communication controller. If you wish to do this, then you should code the DLBL and EXTENT statement specifying the library where the initial test routines were loaded during the NCP installation process.

The name of the file in the DLBL statement must be DIAGFLE and the logical unit assigned (LUB) must be SYS008.

2.3.1.5 VTAM Trace Files

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

For a disk trace file, the name of the DLBL statement must be TRFILE and the logical unit assignment must be SYS001.

For output of the trace file to a tape, the logical unit SYS001 must be assigned to an unlabeled tape.

To print the trace file using TPRINT in a batch process, then you must include the logical unit SYS004.

The trace records are written to TRFILE in 2048-byte blocks, and are overwritten when the disk space allocated is full. Therefore, the space allocation for this file depends on how many records you want to save.

The trace print utility (TPRINT) runs as a subtask of VTAM or can be run as a job step under VSE. To run TPRINT as a subtask of VTAM, the operator initiates the printing with the MODIFY SUBTASK command while VTAM is active. When TPRINT is run as a separate job step, printing can be done whether VTAM is active or not.

Figure 5 is a sample JCL to print the trace file in a separate partition, it assumes that the trace file is on disk *cua*.

```
* $$ JOB JNM=TPRINT,CLASS=0,DISP=D,NTFY=YES
// JOB  TPRINT  DEFINE RESTART FILES
// LIBDEF *.SEARCH=(PRD2.CONFIG,PRD1.BASE)
// DLBL TRFILE,¢VTAM.TRACE.FILE¢
// EXTENT SYS001
// ASSGN  SYS001,CUA
// ASSGN  SYS004,CUA
// ASSGN  SYSLST,CUA
// EXEC TPRINT,SIZE=AUTO
/*
/&
* $$ EOJ
```

Figure 5. Sample JCL to Print the Trace File using TPRINT

2.3.2 Define VTAM for VSE

2.3.2.1 VSE/ESA Support for VTAM Partition

After you installed your VSE/ESA, the support for VTAM is already included in the IBM supplied supervisor **$$A$SUPX**.

Since VSE/ESA Version 2 Release 1, $$A$SUPX is the only supplied supervisor, and it only supports **ESA mode**. The other previously supported supervisor modes (370, VM, and VM/ESA) have been dropped.

The predefined partition for VTAM use is F3. If you change the partition allocation, priority, or the number of partitions through the NPARTS operand of the SUPVR macro instruction, take care to verify that the partition assigned to

VTAM has a higher priority than the partitions that it is serving (application program partitions), otherwise the application program may not be able to communicate with VTAM.

For VSE/ESA 2.1 there are three predefined environments which you can select for your installation; Table 1 shows the characteristics of these environments. Figure 6 on page 31 shows the allocation procedure for environment B.

Table 1. VSE/ESA 2.1 Predefined Environments

Characteristics	**Env. A**	**Env. B**	**Env. C**
Number of Addr. Spaces	11	12	10
VSIZE (MB)	40	120	40
Number of Dynamic Partitions	12	32	-
Page Data Set Extents (1)	PDSxxxx4	PDSxxxx4	PDSxxxx4
Skeletons for Partition ALLOCs (2)	SKALLOCA	SKALLOCB	SKALLOCC
POWER Autostart (3)	POWSTRTA	POWSTRTB	POWSTRTC
BG Startup (4)	$0JCL SKJCL0	$0JCL SKJCL0	SKJCL0NT BGSTRT
F1 Startup (3)	$1JCL	$1JCL	SKJCL1NT
F2 Startup (5)	$2JCL SKINITNN/F2	$2JCL SKINITNN/F3	SKINITNT
F3 Startup (6)	$3JCL SKINITNN/F3	$3JCL SKINITNN/F3	SKJCL3NT
F4 Startup (4)	$4JCL SKINITNN/F4	$4JCL SKINITNN/F4	SKJCL4NT (OCCF)
F5 Startup (4)	$5JCL SKINITNN/F5	$5JCL SKINITNN/F5	SKJCL5NT (NETVIEW)
Dynamic Partitions Startup	STDPROF SKJCLDYN	STDPROF SKJCLDYN	STDPROF SKJCLDYN

Notes:

1. The last page data set extent as large as needed for VSIZE
2. The appropriate procedure should be renamed to a logical name for your installation
3. Use SKPWSTRT skeleton to tailor your POWER autostart
4. Separate JCL procedures provided for environment **C**
5. Use SKCICS skeleton to tailor your CICS/ICCF startup
6. Use SKVTAM skeleton to tailor your VTAM startup for environments **A** and **B**
   Use SKJCL3NT skeleton to tailor your VTAM start for environment **C**

```
  CATALOG ALLOC.PROC   DATA=YES        REPLACE=YES
ALLOC BG=1536K
SIZE BG=1280K
ALLOC F1=1600K
SIZE F1=768K
ALLOC F2=30M
SIZE F2=3M
ALLOC F3=6144K
SIZE F3=600K
ALLOC F4=30M
SIZE F4=3M
ALLOC F5=1024K
SIZE F5=768K
ALLOC F6=512K
SIZE F6=256K
ALLOC F7=512K
SIZE F7=256K
ALLOC F8=12M
SIZE F8=2M
ALLOC F9=512K
SIZE F9=256K
ALLOC FA=512K
SIZE FA=256K
ALLOC FB=512K
SIZE FB=256K
SYSDEF DSPACE,DSIZE=8M
NPGR BG=100,F2=255,F3=100,F4=100,F5=50,F6=50,F7=50,F8=200
NPGR F9=50,FA=50,FB=50
/+
CONN S=IJSYSRS.SYSLIB:PRD2.SAVE
COPY ALLOC.PROC          REPLACE=YES
```

Figure 6. VSE/ESA 2.1 Allocation Procedure for Environment B

2.3.2.2 Devices for VTAM

During the initial installation of VSE/ESA, you completed the basic hardware configuration after signing on with the POST user ID. (This is used only once to complete the initial installation of VSE/ESA.)

Later on, you can add, change or delete devices on your system at any time. You can use the *Configure Hardware* dialog to add or delete hardware addresses and specify the device characteristics. If it is necessary, you can make changes directly to the definitions created by the Interactive Interface and catalog the jobs so created also using the Interactive Interface.

Some of these devices defined are used for VTAM, such as the following:

- Local SNA 3270
- Local non-SNA 3270
- Communications Controllers

  3705
  3720
  3725
  3745

- Token-Ring ports
- Channel-to-channel
- Integrated communication adapters.

VSE uses the information provided in the Interactive Interface to create the job to update the IPL procedure. The job is filed in your primary ICCF library, the definitions are filed in library 51 of ICCF.

An example of the definitions produced by the Interactive Interface is in Figure 7 on page 33.

```
 /* CATALOGING IPL PROCEDURE    $IPLESA.PROC                      */
   DELETE SIPLESA.PROC
   RENAME $IPLESA.PROC:SIPLESA.PROC
   CATALOG $IPLESA.PROC REPLACE=YES
009,$$A$SUPX,VSIZE=120M,VIO=512K,VPOOL=64K,LOG
ADD 009,3277
ADD 00C,2540R
ADD 00D,3525P
ADD 00E,PRT1
ADD 02C,2540R
ADD 02D,3525P
ADD 02E,PRT1
ADD 081:087,3277
ADD 444:447,ECKD
ADD 500:502,CTCA,EML
ADD 560,3745,01
ADD 870:873,3480,00
ADD 874,3480
ADD 890,3791L
ADD FEC,3505            POWER DUMMY READER, DO NOT DELETE
ADD FED,2520B2          POWER DUMMY PUNCH, DO NOT DELETE
ADD FEE,PRT1            POWER DUMMY PRINTER, DO NOT DELETE
ADD FEF,PRT1            POWER DUMMY PRINTER, DO NOT DELETE
ADD FFA,3505            ICCF INTERNAL READER, DO NOT DELETE
ADD FFC,3505            ICCF DUMMY READER, DO NOT DELETE
ADD FFD,2520B2          ICCF DUMMY PUNCH,  DO NOT DELETE
ADD FFE,PRT1            ICCF DUMMY PRINTER, DO NOT DELETE
ADD FFF,CONS            DUMMY CONSOLE, DO NOT DELETE
SET ZONE=WEST/00/00
DEF SYSCAT=DOSRES
DEF SYSREC=SYSWK1
SYS JA=YES
SYS BUFSIZE=1500
SYS NPARTS=44
SYS SEC=NO
SYS PASIZE=30M
SYS SPSIZE=0K
SYS BUFLD=YES
DPD VOLID=DOSRES,CYL=209,NCYL=12,TYPE=N,DSF=N
DPD VOLID=SYSWK1,CYL=422,NCYL=12,TYPE=N,DSF=N
DPD VOLID=DOSRES,CYL=398,NCYL=12,TYPE=N,DSF=N
DPD VOLID=DOSRES,CYL=410,TYPE=N,DSF=N
DLA NAME=AREA1,VOLID=DOSRES,CYL=60,NCYL=3,DSF=N
SVA SDL=300,GETVIS=768K,PSIZE=(256K,2000K)
/+
```

Figure 7. Sample IPL Statements Created by the Interactive Interface

2.3.2.3 Defining Data Space Virtual Storage

Define the data space virtual storage as follows:

- Define the total amount of virtual storage that can be allocated for data space for your system through the **DSIZE** operand of the **SYSDEF** System Control Statement in your VSE/ESA STARTUP allocation procedure (Figure 6 on page 31).

When determining the value for the DSIZE operand, remember that VTAM requires at least a 1MB data space for proper initialization. Additionally, for each partition running VTAM application programs, VTAM requires an additional 1MB data space.

As an example, if you have only one CICS/ESA partition and VTAM running in your system, then the minimum data space required for VTAM is 2MB.

The DSIZE value is taken from the total amount of virtual storage defined in the **VSIZE** parameter of your IPL procedure, so increasing it, means that you will have less virtual storage for partition creation.

A recommended size of 8MB is adequate for starting VTAM and CICS/ESA.

- Define the maximum size of each data space for VTAM, and for VTAM application programs.

  Data spaces required by VTAM expand in 1MB increments, up to whatever you have defined as the maximum size in the following definitions:

  1. The DSPACE operand of the EXEC JCL statement for VTAM or VTAM application program.
  2. The DFSIZE operand of the SYSDEF VSE System Control Statement.

  The DFSIZE operand specifies the maximum amount of virtual storage that a particular application can use as data space, if there is not an overwrite specified through the DSPACE operand of the EXEC JCL statement for the application.

  Since VTAM makes allocations of data space in 1MB increments, the value you specify either in DFSIZE or DSPACE must be in 1MB increments.

  VTAM further divides the data space allocation in blocks of .25 MB for request/response units (RUs) processing whose size falls into a certain range. This means that if in your systems, the application programs send many RU different sizes, VTAM would need to have more allocation blocks increasing the possibility of more data space allocation.

- VTAM uses only the data space storage it needs. If you define more data space for VTAM than is actually needed, and if VTAM does not need to expand it, it will stay with the minimum allocation. So there is no waste of virtual storage.

  We found that coding DSPACE=4M is a good starting point, since we received message IST1020I warning us of the Data Space full condition with the default of DSPACE=2M coded in the VTAM startup job in our testing environment.

2.4 Running VSE/ESA under VM/ESA

VSE/ESA 2.1 can run as a guest operating system under one of the following VM/ESA systems:

- VM/ESA Version 1, Release 2.0, 2.1 and 2.2
- VM/ESA Version 2, Release 1.0

When running as a guest operating system, VSE/ESA 2.1 runs in ESA supervisor mode only. There is only one pre-generated supervisor ($$A$SUPX) in the system, and it only runs in ESA mode.

In an environment where VSE/ESA runs under the control of VM, you can do the following:

- Have several VSE/ESA guest machines, for backup, security or performance reasons.
- After logging on the VM user ID for the VSE/ESA virtual machine, you can use the terminal as the VSE/ESA console.
- Dial into the VSE/ESA system and use the functions provided by the Interactive Interface. Also you can switch quickly between CMS sessions and the ICCF sessions through the VM/PASSTHRU licensed program.
- Log on to CMS and interact with VSE/ESA through the VM/VSE interface to:
  - Submit jobs from CMS to VSE/ESA
  - Use specific commands for cross-system communication

When running VSE/ESA as a guest of VM/ESA, you can have their respective VTAMs communicate through the virtual channel-to-channel communication adapter (VCTCA), whether in a SNA subarea cross domain communication or through an APPN MPC interconnection.

Also if you have several VSE/ESA guest machines, you can make them communicate through the VCTCAs.

VTAM/VM Version 4.2 offering for VSE/ESA 2.1 users

This offering makes it easier for those customers that are running their VSE systems under VM/ESA or would like to migrate their system to this environment.

VTAM/VM 4.2 is offered as a feature of the VSE/ESA 2.1 System Package at a lower price than it would be if buying it as a separate VM/ESA product.

2.5 Loading VTAM in your System

ACF/VTAM V4.2 for VSE/ESA is installed together with the VSE/ESA Version 2.1 System Package, **unless** you selected during the VSE/ESA 2.1 installation to process another Telecommunications Access Method.

During the second part of the VSE/ESA installation process, and after you selected your running environment and system security, the installation process will prompt you:

BG-0000 IESI0051D ENTER YOUR TP ACCESS METHOD: BTAM or VTAM

You must reply:

0 VTAM

in order to install VTAM in your system. Note that you should be very careful in selecting your response, because after the system is installed, you cannot easily change your access method.

After the selection of VTAM, the installation process will prompt you for your terminals definition (SNA or non-SNA) and other information regarding your

system. This information is used to create the basic VTAM start books to bring up the system.

At the end of the installation process, all the VTAM libraries, samples, VTAM startup JCL, and basic VTAM definitions are loaded in your system as described in 2.3.1.1, “VTAM Related Files” on page 21.

2.6 Tailoring VTAM

VTAM starts up and controls all the communications resources of your system. It activates and inactivates:

- Your application program major nodes
- Your application program minor nodes
- SNA and non-SNA major nodes
- SNA and non-SNA minor nodes
- The paths between subareas
- The CPCP connections between APPN nodes
- Loads/activates the communications controller NCP

But before you can actually start up VTAM, you may need to customize the tables and definitions list supplied by IBM.

Following are some definition tables you may want to change:

- VTAM startup options
- Configuration List
- Path definitions
- Application program major nodes
- USS tables
- Logon mode tables

2.6.1 VTAM Startup Options

Under VSE/ESA the VTAM startup options are taken from several sources:

- VTAM defaults
- Values entered through the Interactive Interface dialog
- Values created by the system
- Values entered in a special member
- Values entered by the operator

2.6.1.1 Default ATCSTR00

The default ATCSTR00 startup options stored in the PRD2.CONFIG sublibrary contain some of the defaults for VTAM, as shown in Figure 8 on page 37.

```
SSCPID=1,
HOSTSA=1,
SSCPNAME=SSCP0001,
HOSTPU=NODE0001,
NOPROMPT,
NETID=VTAM1,
MAXSUBA=255,
CONFIG=00,
IOINT=0,
SGALIMIT=0,
BSBUF=(28,,,,1),
CRPLBUF=(60,,,,1),
LFBUF=(70,,,,11),
IOBUF=(70,288,,,11),
LPBUF=(12,,,,6),
SFBUF=(20,,,,20),
SPBUF=(210,,,,32),
XDBUF=(6,,,,1)
```

Figure 8. Default ATCSTR00.B in PRD2.CONFIG Supplied by VSE/ESA

2.6.1.2 Values Entered through the Interactive Interface Dialog

Through the *Maintain VTAM Startup Option* of the ICCF Interactive Interface, you can build or change the following startup options:

- HOSTSA
- PROMPT
- NETID
- SSCPID
- SSCPNAME
- HOSTPU

This values are stored in ICCF sublibrary 51 in member ATCSTR00. Additionally, the dialog will create a job that will catalog this member in sublibrary PRD2.CONFIG. This job can be submitted automatically or stored in your primary ICCF library.

When changing the HOSTSA, you will be prompted for automatic renaming of VTAM resources. This renaming will **change all your resource names**, so be careful when you answer this prompt.

2.6.1.3 Values Entered in Member E$$VTMST

You can modify the VTAM startup options other than those described above, by editing the special member E$$VTMST in ICCF library 2 before running the VTAM startup option dialog.

You can change the existing entries or add new ones according to your requirements. When you run the dialog it will 'append' the definitions in member E$$VTMST to the options built from the dialog, and integrate it in the ATCSTR00 member of ICCF library 51.

2.6.1.4 Values Entered by the Operator

If the PROMPT option is entered in the ATCSTR00.B start list, then, during VTAM startup the operator can do the following:

- Enter the startup options at the console
- Enter 'LIST=XX', so VTAM reads a different list.

Also, you can supply the LIST=XX value in the PARM list of the EXEC statement that starts VTAM.

2.6.2 Configuration List

When starting up VTAM, you must tell VTAM what resources to start. This resource configuration list identifies to VTAM the list of major nodes to be activated automatically during initialization.

These major nodes are the names of the .B books in the PRD2.CONFIG sublibrary that contains the system and user provided definitions for the VTAM resource.

The default configuration list is stored in the PRD2.CONFIG sublibrary as ATCCON00.B (see Figure 9).

```
MEMBER=ATCCON00.B       SUBLIBRARY=PRD2.CONFIG       DATE: 95-04-04
                                                     TIME: 18:04
------------------------------------------------------------------------
        VTMAPPL,                                                      C
        VTMSNA,                                                       C
        VTMNSNA,                                                      C
        VTMCTCA,                                                      C
        VTMPATH,                                                      C
        VTMCA1,                                                       C
        VTMCA2,                                                       C
        VTMCA3,                                                       C
        VTMCDRM,                                                      C
        VTMCDRS,                                                      C
        VTMSw1
```

Figure 9. Default ATCCON00.B in PRD2.CONFIG Supplied by VSE/ESA

When you add your own major nodes, you can copy the source book to your primary library, make your changes and re-catalog it with a different name, so you preserve the original copy in your library.

By default, VTAM searches the ATCCON00.B configuration list. If you have changed the CONFIG=00 to CONFIG=02 in your startup option list ATCSTRxx, then you would have to define a source book with the name ATCCON02.B which VTAM would search first.

The activation of the major nodes, is always in the sequence in which the major nodes are listed in the ATCCONxx file. So be careful to put those major nodes that give services to other major nodes first in the list.

2.6.3 PATH Definitions

Communications between two addressable nodes, for example, VTAM and NCP, take place via a path called a route. You must define one or more routes whenever your system has at least two subareas.

These routes are defined through the PATH macro, which defines the physical route called Explicit Route (ER), and the associated logical route called Virtual Route (VR).

An example of a PATH table definition is in Figure 10.

```
*********************************************************************
*  PATH33 FOR VSE/ESA 2.1 SA=33 to SA=10
*********************************************************************
         PATH  DESTSA=10,                                              C
               ER0=(10,1),ER1=(10,1),ER2=(10,1),ER3=(10,1),            C
               ER4=(10,1),ER5=(10,1),ER6=(10,1),ER7=(10,1),            C
               VR0=0,VR1=1,VR2=2,VR3=3,VR4=4,VR5=5,VR6=6,VR7=7
```

Figure 10. Example of a PATH Definition Table

2.6.4 Application Major Node

All the application programs that need the services of VTAM must be defined for VTAM in an application major node through the APPL statement.

VSE/ESA provides a default definition which is stored as member VTMAPPL.B in the PRD2.CONFIG sublibrary. Figure 11 shows a sample job to catalog the VTMAPPL.B member in the PRD2.CONFIG, after saving the old copy.

```
* $$ JOB JNM=CATAPPL,DISP=D,PRI=3,                                    C
* $$ NTFY=YES,                                                        C
* $$ LDEST=*,                                                         C
* $$ CLASS=0
// JOB CATAPPL  CATALOG VTAM APPLICATION MAJOR NODE
// EXEC LIBR,PARM=¢MSHP¢
ACCESS SUBLIB=PRD2.CONFIG
DELETE VTMAPPL.SAVE
RENAME VTMAPPL.B:VTMAPPL.SAVE
CATALOG VTMAPPL.B REPLACE=YES
VTMAPPL  VBUILD TYPE=APPL
DBDCCICS APPL  AUTH=(PASS,ACQ),MODETAB=IESINCLM,PARSESS=YES
PRODCICS APPL  AUTH=(PASS,ACQ),MODETAB=IESINCLM,PARSESS=YES
POWER    APPL  AUTH=(ACQ)
PNET     APPL  AUTH=(PASS,ACQ),VPACING=3,MODETAB=VTMLOGTB,DLOGMOD=PNET
IESWAITT APPL  AUTH=(NOACQ)
/+
/*
/&
* $$ EOJ
```

Figure 11. Catalog VTAM Application Major Node

The *Maintain VTAM Application Names* dialog of the ICCF Interactive Interface, helps you to define the following application types:

- CICS/VSE
- VSE/POWER RJE
- VSE/POWER PNET
- Print Support Facility (PSF)
- VSE/OFFICE
- Self-defined

2.6.5 USS Table Definition

The Unformatted System Services Table (USSTAB), is used by the Unformatted System Services (USS) component of VTAM to establish the sign-on procedure between a terminal and an application program. Also this table provides the messages that are sent to the terminals to provide certain information to the user about the logon procedure.

You can modify this table to your requirements if the one provided by VTAM does not fill your needs. You may want to change:

- The sign-on panel to give more information to the user
- The application program list
- The format of the messages sent to the terminal
- The format of the logon commands
- The logon defaults
- The character translation table

VSE/ESA provides two tables:

- VTMUSSTB for non-SNA displays
- VTMUSSTR for SNA displays

Library 59 of ICCF contains jobstream SKVTMUSS, which you can use to create these or other tables of your own. It contains several steps to catalog, assemble and linkedit these tables in the VTAM libraries. Figure 12 on page 41 shows this jobstream. We have edited the jobstream to include only the comments and JCL, the full sample is in Appendix C, “VSE MODETAB and USSTAB” on page 137.

You specify the table you want to use by coding the USSTAB parameter on the LU, LOCAL or TERMINAL macro definition of the terminals. If you do not code this parameter, then VTAM uses the default USSTAB with the phase name of ISTINCDT.

```
* $$ JOB JNM=VTMUSS,CLASS=0,DISP=D
// JOB VTMUSS        CREATE ACF/VTAM USS TABLE
* ********************************************************************
* *                                                                  *
* *  - - - - - - - - CREATE ACF/VTAM USS TABLE - - - - - - - -       *
* *                                                                  *
* *  THIS JOB IS FOR CREATING ACF/VTAM USS DEFINITION TABLES.        *
* *  ACF/VTAM USES THESE TABLES FOR SENDING MESSAGES TO, AND         *
* *  RECEIVING COMMANDS FROM, SNA AND NON-SNA DISPLAY TERMINALS.     *
* *                                                                  *
* *  THIS JOB HAS 7 STEPS                                            *
* *                                                                  *
* *    1. CATALOG LIBRARY MEMBER CONTAINING USS COMMAND              *
* *       DEFINITIONS                                                *
* *    2. CATALOG LIBRARY MEMBER CONTAINING MESSAGES SENT TO SNA     *
* *       DISPLAY TERMINALS                                          *
* *    3. CATALOG LIBRARY MEMBER CONTAINING MESSAGES SENT TO         *
* *       NON-SNA DISPLAY TERMINALS                                  *
* *    4. ASSEMBLE USS TABLE FOR SNA (VTMUSSTR)                      *
* *    5. LINKEDIT VTMUSSTR                                          *
* *    6. ASSEMBLE USS TABLE FOR NON-SNA (VTMUSSTB)                  *
* *    7. LINKEDIT VTMUSSTB                                          *
* *                                                                  *
* ********************************************************************
*
* ********************************************************************
* *                                                                  *
* *  JOBSTEP 1                                                       *
* *                                                                  *
* *    IF THERE IS NO APPLICATION NAME CORRESPONDING TO A            *
* *    PARTICULAR VARIABLE, DELETE THE USSPARM STATEMENT             *
* *    CONTAINING THE VARIABLE; ALSO, DELETE THE USSCMD STATEMENT    *
* *    PRECEEDING IT AND THE USSPARM STATEMENT FOLLOWING IT.         *
* *                                                                  *
* ********************************************************************
// EXEC LIBR,PARM=¢MSHP¢
ACCESS SUBLIB=PRD2.CONFIG
CATALOG  VTMUSSCD.A   REPLACE=YES
*
A        USSCMD  CMD=A,REP=LOGON,FORMAT=BAL
         USSPARM PARM=P1,REP=APPLID,DEFAULT=--V001--
         USSPARM PARM=P2,REP=DATA
*
B        USSCMD ...........
         .......
/+
/*
```

Figure 12 (Part 1 of 3). VSE/ESA SKVTMUSS Jobstream to Create a USSTAB

```
* ****************************************************************
* *                                                              *
* *  JOBSTEP 2                                                   *
* *                                                              *
* *    IF THERE IS NO APPLICATION NAME CORRESPONDING TO A        *
* *    PARTICULAR VARIABLE, REPLACE IT WITH ________ TO INDICATE *
* *    THAT THERE IS NO NAME.                                    *
* *                                                              *
* ****************************************************************
// EXEC LIBR,PARM=¢MSHP¢
ACCESS SUBLIB=PRD2.CONFIG
CATALOG  VTMUSSTZ.A   REPLACE=YES
*
* THE FOLLOWING MENU WILL BE DISPLAYED ON SNA TERMINALS ONLY
*
*
*        DC    .......
/+
/*
* ****************************************************************
* *                                                              *
* *  JOBSTEP 3                                                   *
* *                                                              *
* *    IF THERE IS NO APPLICATION NAME CORRESPONDING TO A        *
* *    PARTICULAR VARIABLE, REPLACE IT WITH ________ TO INDICATE *
* *    THAT THERE IS NO NAME.                                    *
* *                                                              *
* ****************************************************************
// EXEC LIBR,PARM=¢MSHP¢
ACCESS SUBLIB=PRD2.CONFIG
CATALOG VTMUSSTX.A REPLACE=YES
*
* THE FOLLOWING MENU WILL BE DISPLAYED ON NON-SNA TERMINALS ONLY
*
*
         DC    .......
/+
/*
// LIBDEF *,SEARCH=(PRD1.BASE,PRD2.CONFIG),TEMP
// LIBDEF PHASE,CATALOG=PRD2.CONFIG
// OPTION CATAL
   PHASE VTMUSSTR,*
// EXEC ASMA90,SIZE=(ASMA90,50K),PARM=¢EXIT(LIBEXIT(EDECKXIT))¢
         PRINT   NOGEN
VTMUSSTR USSTAB  TABLE=STDTRANS,FORMAT=DYNAMIC
*
         COPY    VTMUSSCD
*
         USSCMD  ........
         .......
         END
/*
```

Figure 12 (Part 2 of 3). VSE/ESA SKVTMUSS Jobstream to Create a USSTAB

```
// EXEC LNKEDT
// OPTION CATAL
   PHASE VTMUSSTB,*
// EXEC ASMA90,SIZE=(ASMA90,50K),PARM=¢EXIT(LIBEXIT(EDECKXIT))¢
         PRINT   NOGEN
VTMUSSTB USSTAB  TABLE=STDTRANS,FORMAT=DYNAMIC
*
         COPY    VTMUSSCD
*
TEST     USSCMD  ...........
         .......
         END
/*
// EXEC LNKEDT
/&
* $$ EOJ
```

Figure 12 (Part 3 of 3). VSE/ESA SKVTMUSS Jobstream to Create a USSTAB

2.6.6 Logon Mode Table

The logon mode table is another table that you may want to change for your installation specific needs. This table provides VTAM the proper session parameters for the specific type of terminals (SLU) and the application program (PLU) when both establish an LU-LU session.

For the VSE/ESA environment, and if you do not have another type of application other than CICS, the default IESINCLM modetab provided by VSE/ESA and the ISTINCLM provided by VTAM are adequate.

Logon mode tables consist of mode entries. The tables must be assembled and link-edited into phases in the VTAM phases library. The MODETAB macro defines the table, the MODEENT defines the entry and the MODEEND ends the table.

When coding your major node resources to use a particular mode table entry, you must code these parameters:

- MODETAB=*tname* (for the name of the table)
- DLOGMOD=*mname* (for the name of the entry)

in the following VTAM definition statements:

- APPL
- LU
- TERMINAL

VSE/ESA provides the IESINCLM job stream in ICCF library 59. In case you want to create your own MODETAB, you can copy this member to your primary library and modify it to meet your needs.

Also in library 59 of ICCF is the member SKVTMMOD, which is another sample provided.

Figure 13 on page 44 is the IESINCLM sample, and Figure 14 on page 45 is the SKVTMMOD sample. We have retained here only the comments and JCL, the full sample is in Appendix C, “VSE MODETAB and USSTAB” on page 137.

```
* $$ JOB JNM=IESINCLM,CLASS=A,DISP=D,NTFY=YES
* $$ LST CLASS=Q,DISP=H
// JOB IESINCLM ASSEMBLE
// LIBDEF *,CATALOG=PRD2.CONFIG
// OPTION CATAL,LIST
// EXEC ASMA90,SIZE=(ASMA90,50K),PARM=¢EXIT(LIBEXIT(EDECKXIT))¢
*************************************************
*                                               *
*   5686-028 (C) COPYRIGHT IBM CORP. 1984, 1990 *
*                                               *
*************************************************
         PUNCH   ¢ CATALOG  IESINCLM.OBJ    REPLACE=YES¢
         PUNCH   ¢ PHASE    IESINCLM,*¢
         PRINT   NOGEN
* /* START OF SPECIFICATIONS ****
*
*01*  MODULE-NAME = IESINCLM
*01*  DESCRIPTIVE-NAME = DEFAULT LOGON MODE TABLE SUPPLIED FOR VSE/ESA
*01*  COPYRIGHT =  SEE ABOVE
*01*  STATUS = VERSION VSE/ESA 1.1.0
*01*  FUNCTION = THE PURPOSE OF THIS TABLE IS TO PROVIDE THE USER WITH
*     A DEFAULT TABLE PROVIDING SUPPORT FOR THE DEVICES LISTED BELOW:
*
*     3820 SNA PRINTER - REMOTELY ATTACHED
*     3820 SNA PRINTER - S/370 CHANNEL ATTACHED
*     3812/16 SNA PRINTER - REMOTELY ATTACHED
*     3812/16 SNA PRINTER - LOCALLY ATTACHED
*
*     3270 LOCAL NON-SNA DEVICES
*     3270 SNA DEVICES
      .........
**** END OF SPECIFICATIONS ***/
         EJECT
IESINCLM MODETAB
         EJECT
  TITLE ¢SP3820¢
*********************************************************************
*            3820 LOGICAL UNIT - REMOTELY ATTACHED                  *
*********************************************************************
SP3820   MODEENT LOGMODE=SP3820,FMPROF=X¢13¢,TSPROF=X¢07¢,            C
               PRIPROT=X¢B0¢,SECPROT=X¢B0¢,COMPROT=X¢D0B1¢,           C
               RUSIZES=X¢8585¢,PSERVIC=X¢060200000000000000002000¢,   C
               PSNDPAC=X¢03¢,SRCVPAC=X¢03¢,SSNDPAC=X¢00¢
  TITLE ¢SP3820C¢
          MODEENT entries
          .......
*
         MODEEND
         END                          , END OF IESINCLM
/*
// EXEC LNKEDT
/*
/&
* $$ EOJ
```

Figure 13. IESINCLM MODETAB Jobstream Provided by VSE/ESA

```
* $$ JOB JNM=MODETAB,CLASS=0,DISP=D
* $$ LST CLASS=Q,DISP=D
// JOB MODETAB     CREATE VTAM LOGON MODE TABLE
* ********************************************************************   C
* *                                                                  *   C
* *  - - - - - - - CREATE VTAM LOGON MODE TABLE  - - - - - - -       *   C
* *                                                                  *   C
* *  THIS JOB IS FOR CREATING A LOGON MODE TABLE USED BY VTAM        *   C
* *  TO HAVE ACCESS TO A SET OF SESSION PARAMETERS WHICH WILL        *   C
* *  GOVERN AN LU-LU SESSION.                                        *   C
* *  THE TABLE NAME --V001-- AND TABLE ENTRIES --V002-- CAN          *   C
* *  BE SPECIFIED IN THE ¢MODETAB¢ AND ¢DLOGMOD¢ PARAMETERS          *   C
* *  FOR AN LU. USE THE VTAM PARAMETER TABLES OF THE                 *   C
* *  ¢HARDWARE CONFIGURATION¢ DIALOGS TO SELECT A LOGON MODE         *   C
* *  ENTRY FOR THE TERMINAL CONCERNED.                               *   C
* *                                                                  *   C
* *                                                                  *   C
* *                                                                  *   C
* *  THE FOLLOWING VARIABLES ARE USED AND HAVE TO BE CHANGED         *   C
* *                                                                  *   C
* *    --V001-- LOGON MODE TABLE NAME                                *   C
* *    --V002-- NAME OF A SECOND TABLE ENTRY                         *   C
* *    --V003-- PARAMETER VALUES (SEE VTAM PUBLICATIONS FOR          *   C
* *                               SPECIFIC INFORMATION)              *   C
* *    --V004-- COS (CLASS OF SERVICE) TABLE NAME                    *   C
* *                                                                  *   C
* ********************************************************************   C
*                                                                        C
// LIBDEF PHASE,CATALOG=PRD2.CONFIG
// OPTION CATAL
   PHASE --V001--,*
// EXEC ASMA90,SIZE=(ASMA90,50K),PARM=¢EXIT(LIBEXIT(EDECKXIT))¢
         PRINT   NOGEN
--V001-- MODETAB
  TITLE ¢SP3820R¢
**********************************************************************   C
*                                                                    *   C
*  MODE TABEL ENTRY FOR ¢SP3820R¢                                    *   C
*      SAMPLE LOGON-MODE TABLE ENTRY FOR RPM DEVICES                 *   C
*      RPM = REMOTE PRINT MANAGER  USING PSF/VSE                     *   C
*                                                                    *   C
*      APPROPRIATE VALUES FOR †RUSIZES†, †PSNDPAC†, and †SRCVPAC†   *   C
*      DEPEND UPON THE CONFIGURATION USED. RECOMMENDED VALUES ARE    *   C
*      LISTED IN THE FOLLOWING PARAMETER DESCRIPTIONS.               *   C
*                                                                    *   C
*      A) RUSIZES=X¢8787¢  PSNDPAC=X¢10¢  SRCVPAC=X¢10¢              *   C
*       a. LOCAL-ATTACHED THROUGH A CONTROL UNIT TOKEN RING GATEWAY* C
*       b. COMMUNICATION-ATTACHED THROUGH A LOCAL OR REMOTE          *   C
*            COMMUNICATION CONTROLLER TOKEN-RING SUBSYSTEM           *   C
*                                                                    *   C
*      B) RUSIZES=X¢8686¢  PSNDPAC=X¢10¢  SRCVPAC=X¢10¢              *   C
*       a. COMMUNICATION-ATTACHED THROUGH A REMOTE CONTROL UNIT      *   C
*            TOKEN-RING GATEWAY                                      *   C
```

Figure 14 (Part 1 of 2). SKVTMMOD MODETAB Jobstream Provided by VSE/ESA

```
*********************************************************************  C
*                                                                   *  C
*      C) RUSIZES=X¢B7B7¢  PSNDPAC=X¢03¢  SRCVPAC=X¢03¢             *  C
*       a. COMMUNICATION-ATTACHED BY MEANS OF AN SDLC LINK          *  C
*                                                                   *  C
*       IN RPM CONFIGURATIONS, THE RUSIZES VALUE YOU SPECIFY        *  C
*       DICTATES APPROPRIATE SETTINGS FOR SEVERAL NCP DEFINITIONS   *  C
*       AND CONTROL UNIT PARAMETERS USED FOR CUSTOMIZATION.         *  C
*                                                                   *  C
*********************************************************************  C
SP3820R  MODEENT LOGMODE=SP3820R,
               COMPROT=X¢D0B1¢,
               FMPROF=X¢13¢,
               PRIPROT=X¢B0¢,
               PSERVIC=X¢060200000000000000002000¢,
               PSNDPAC=X¢--V003--¢,
               RUSIZES=X¢--V003--¢,
               SECPROT=X¢B0¢,
               SRCVPAC=X¢--V003--¢,
               SSNDPAC=X¢00¢,
               TSPROF=X¢07¢
  TITLE ¢--V002--¢
               more entries .....
         MODEEND
         END
/*
// EXEC LNKEDT
/&
* $$ EOJ
```

Figure 14 (Part 2 of 2). SKVTMMOD MODETAB Jobstream Provided by VSE/ESA

2.7 Starting VTAM

Following the installation of your VSE/ESA operating system, and after completing the customization process of VTAM, you can finally start VTAM to manage your telecommunication resources.

To start VTAM, you can issue the **EXEC ISTINCVT** (the VTAM start phase) in one of the following ways:

- You can create a procedure to start VTAM (start procedure)
- You can submit a jobstream containing the JCL to start VTAM to the VSE/POWER spool.

After you installed VSE/ESA in your system, a default VTAM startup job stream is used by the system to bring up VTAM, that is based on the skeleton SKVTAM that resides in library 59 of ICCF.

You can make a copy of this skeleton in your primary library and make the required changes according to your needs. The skeleton itself has some instructions on how to change it. It is preferable to change the name of the JOB and of the procedure in the jobstream to preserve the original one.

Figure 15 on page 47 shows the SKVTAM VTAM startup sample.

```
                                                                      C
        AFTER YOU HAVE MODIFIED THE SKELETON ENTER ¢@DTRSEXIT¢        C
        FROM THE EDITOR¢S COMMAND LINE.                               C
        THIS MACRO WILL DELETE ALL DESCRIPTIVE TEXT FROM THIS FILE,   C
        BY DELETING ALL LINES WHICH ARE MARKED WITH THE CHARACTER C   C
        IN COLUMN 71.                                                 C
                                                                      C
                                                                      C
* ************************************************************      C
*                                                                     C
*           VTAM STARTUP JOB FOR PARTITION F3                         C
*           --------------------------------                          C
*                                                                     C
*   IT ASSUMES, THAT VTAM WILL BE STARTED IN A POWER CONTROLLED       C
*   PARTITION.                                                        C
*                                                                     C
* ************************************************************      C
* THIS SKELETON PROVIDES A JOB WHICH                                  C
*                                                                     C
* 1. CATALOGS THE VTAM STARTUP JOB AS VTAMSTRT.Z INTO IJSYSRS.SYSLIB  C
* 2. CATALOGS THE PROCEDURE LDVTAM WHICH LOADS VTAMSTRT.Z INTO THE    C
*    POWER RDR QUEUE VIA DTRIINIT.                                    C
* 3. EXECUTES LDVTAM.PROC                                             C
*    IF YOU DO NOT WANT TO LOAD IT IMMEDIATELY INTO THE ACTIVE RDR    C
*    QUEUE, DELETE FOLLOWING LINE:                                    C
*    // EXEC PROC=LDVTAM                                            C
*                                                                     C
*                                                                     C
* NOTE: ADDITIONAL ¢$$¢ SIGNS ARE NEEDED IN THE JOB TO BE CATALOGED.  C
*       THESE SIGNS MASK THE POWER JECL STATEMENTS SO THAT THEY ARE    C
*       NOT EXECUTED. THE DTRIINIT PROGRAM CHANGES THE ¢$$¢ SIGNS     C
*       INTO THE APPROPRIATE JECL STATEMENTS.                         C
*                                                                     C
* ************************************************************      C
* FILL IN MISSING PARAMETERS IN VTAMSTRT                              C
* ------------------------------------                              C
*                                                                     C
* FILL IN THE MISSING PARAMETERS SHOWN HERE BY A STRING OF Y¢S. THE    C
* NUMBER OF Y¢S INDICATES THE MAXIMUM OF CHARACTERS EXPECTED.         C
*                                                                     C
* CHANGE,DELETE OR ADD ANY STATEMENT OR PARAMETER NEEDED TO MEET YOUR C
* REQUIREMENTS.                                                       C
*                                                                     C
* CHANGE THE DEFAULT CUSTOMER NUMBER AND THE RELATED PASSWORD IN THE  C
* // EXEC ISTINCVT STATEMENT TO YOUR INDIVIDUAL VALUES.              C
*                                                                     C
* ************************************************************      C
* CHANGING THE NAME ¢VTAMSTRT.Z¢                                      C
* ------------------------------                                    C
*                                                                     C
* DO NOT FORGET TO UPDATE:                                            C
*    - PROCEDURE USERBG (SKUSERBG)                                    C
*    - PROCEDURE COLDJOBS (SKCOLD)                                    C
*                                                                     C
* ************************************************************      C
```

Figure 15 (Part 1 of 3). SKVTAM VTAM Startup Jobstream Provided by VSE/ESA

```
* $$ JOB JNM=CATVTAM,DISP=D,CLASS=0
// JOB CATVTAM            CATALOG VTAMSTRT AND LDVTAM, LOAD VTAMSTRT
// EXEC LIBR,PARM=¢MSHP¢
ACC S=IJSYSRS.SYSLIB
CATALOG  VTAMSTRT.Z        REPLACE=YES
$$$$ JOB JNM=VTAMSTRT,DISP=L,CLASS=3
// JOB VTAMSTRT  START VTAM
// OPTION DUMP,SADUMP=5
// SETPARM XNCPU=¢¢
// EXEC PROC=$COMVAR,XNCPU
// EXEC DTRSETP,PARM=¢CPUVAR&XNCPU;;SET XSTATF3=ACTIVE¢
$$/*
// SETPFIX LIMIT=424K
// 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
                                                                    C
                  SPECIFY THE IDENTIFIERS OF THE VOLUMES WHERE THE  C
                  INDICATED FILES RESIDE. SYS000 MUST REMAIN UN-    C
                  ASSIGNED IT IS INTERNALLY USED BY VTAM.           C
                  THE TRACE FILE IS ADDRESSED AS SYS001 BY THE TRACE C
                  PROGRAM AND AS SYS004 BY THE TPRINT PROGRAM.      C
                  THIS JOB ASSUMES, THAT THE APPROPRIATE            C
                  LABELS HAVE BEEN LOADED PREVIOUSLY AS SYSTEM OR   C
                  PARTITION STANDARD LABELS.                        C
                                                                    C
                                                                    C
// LIBDEF  PHASE,SEARCH=(YYYYYYY.YYYYYYYY,                          C
              YYYYYYY.YYYYYYYY,YYYYYYY.YYYYYYYY,YYYYYYY.YYYYYYYY,   C
              PRD2.COMM,PRD2.COMM2,PRD2.CONFIG,                     C
              PRD1.BASED,PRD1.BASE),PERM
                                                                    C
                  DEFINE THE PERMANENT LIBRARY SEARCH CHAIN FOR THE C
                  TYPE PHASE MEMBERS.                               C
                  DON¢T EXCLUDE THE SYSTEM USED SUBLIBRARIES OR     C
                  CHANCES ARE, THAT SOME FUNCTIONS WHICH ARE CREATED C
                  BY DIALOGS DON¢T WORK ANYMORE.                    C
                                                                    C
// LIBDEF    OBJ,SEARCH=(YYYYYYY.YYYYYYYY,                          C
              YYYYYYY.YYYYYYYY,YYYYYYY.YYYYYYYY,YYYYYYY.YYYYYYYY,   C
              PRD2.COMM,PRD2.COMM2,PRD2.CONFIG,                     C
              PRD1.BASED,PRD1.BASE),PERM
                                                                    C
                  DEFINE THE PERMANENT LIBRARY SEARCH CHAIN FOR THE C
                  TYPE OBJ MEMBERS.                                 C
                  DON¢T EXCLUDE THE SYSTEM USED SUBLIBRARIES OR     C
                  CHANCES ARE, THAT SOME FUNCTIONS WHICH ARE CREATED C
                  BY DIALOGS DON¢T WORK ANYMORE.                    C
                                                                    C
```

Figure 15 (Part 2 of 3). SKVTAM VTAM Startup Jobstream Provided by VSE/ESA

```
// LIBDEF SOURCE,SEARCH=(YYYYYYY.YYYYYYYY,                              C
               YYYYYYY.YYYYYYYY,YYYYYYY.YYYYYYYY,YYYYYYY.YYYYYYYY,    C
               PRD2.COMM,PRD2.COMM2,PRD2.CONFIG,                      C
               PRD1.BASED,PRD1.BASE),PERM
                                                                      C
                   DEFINE THE PERMANENT LIBRARY SEARCH CHAIN FOR THE  C
                   TYPE SOURCE MEMBERS.                               C
                   DO NOT PUT  IJSYSRS.SYSLIB IN THIS SEARCH CHAIN.   C
                   DON¢T EXCLUDE THE SYSTEM USED SUBLIBRARIES OR      C
                   CHANCES ARE, THAT SOME FUNCTIONS WHICH ARE CREATED C
                   BY DIALOGS DON¢T WORK ANYMORE.                     C
                                                                      C
                                                                      C
// LIBDEF    DUMP,CATALOG=SYSDUMP.F3,PERM
                                                                      C
                   DEFINE THE PERMANENT SUBLIBRARY FOR THE            C
                   TYPE DUMP MEMBERS.                                 C
                                                                      C
                                                                      C
// EXEC ISTINCVT,SIZE=ISTINCVT,PARM=¢CUSTNO=C555-555-5555,VTAMPW=4394-0C
               080-1454-3481-8008¢,DSPACE=4M
// EXEC DTRSETP,PARM=¢CPUVAR&XNCPU;;SET XSTATF3=INACTIVE¢
$$/*
$$/&
$$$$ EOJ
/+
CATALOG  LDVTAM.PROC     REPLACE=YES DATA=YES
// EXEC DTRIINIT
   LOAD VTAMSTRT.Z
/*
/+
/*
// EXEC PROC=LDVTAM        TO LOAD  VTAM STARTUP  INTO RDR QUEUE
/&
* $$ EOJ
```

Figure 15 (Part 3 of 3). SKVTAM VTAM Startup Jobstream Provided by VSE/ESA

Following are some observations when modifying this job:

- SYS000 is temporarily unassigned so VTAM can use the symbolic name SYS000 or the communication controller when loading an NCP.
- VTAM and NCP phases, macros, and modules along with user defined VTAM and NCP definitions must reside in the libraries specified in the LIBDEF statements. The system will search it from left to right when loading is required. So you must code your user libraries first (if any) in case you want to use your own tables, exits or definitions but keeping the same names as the system ones.

  The system library IJSYSRS.SYSLIB is the default library, and it is always searched after your LIBDEF definitions.
- SYS001 and SYS004, are assigned to the Trace File; if you need to print the trace while VTAM is active, you must also assign SYSLST.

  A customer number **(CUSTNO)** and VTAM password **(VTAMPW)** must be included in the order shown as the first parameter on the EXEC statement.

This password is provided with the tapes and documentation you received with your order.

Chapter 3. Planning and Installation under VM

Before you install VTAM under VM we recommend to read the **Program Directory for ACF/VTAM Version 4 Release 2** carefully. It contains step-by-step instructions on how to do the installation. In this section we have copied the actual installation part of the Program Directory and added comments whenever applicable.

One major difference to the former versions is that VTAM is now being installed and serviced using VMSES/E. For the installation you use **VMFINS** which is an installation aid provided by VMSES/E to make the installation of VM and the Licensed Program Products consistent. For complete information on the use and syntax of these commands refer to *VMSES/E Introduction and Reference.*

3.1 Storage Considerations

One of the first things to consider is whether you want to run VSCS in a separate virtual machine or in the VTAM virtual machine. If you intend to run it in its own virtual machine, you will have to create the user by adding a directory entry, authorize the user to GCS, create a Profile GCS and calculate the size of the virtual machine.

3.1.1 Calculate the Storage Size

GCS Common Storage (CSA) contains GCS supervisor code, the GCS trace table, and control blocks for each virtual machine in the group.

GCS Private Storage contains control blocks and work areas accessed by the GCS supervisor.

To calculate GCS Private and Common Storage refer to *VM/ESA Planning Guide and Reference* or *VM/ESA GCS Reference*.

To calculate storage for VTAM and VSCS use the *Estimating Storage for VTAM* diskette. You will need a workstation with at least OS/2 Extended Edition Version 2.0 to run this.

3.2 Prepare your System

To run and install VTAM you must set up at least three virtual machines. One of the concepts of VMSES is to have a separate virtual machine for each product to do the installation and all necessary maintenance as opposed to only one user (such as, SNAMAINT).

The default installation and maintenance user ID for VTAM is 5654010A which is referred to as the installation ID. A sample directory entry for this user ID along with those for all other required users and minidisk requirements is included in the 5654010A PLANINFO file.

You may change any of these default entries by creating PPF overrides. It is recommended to make these changes *during* the installation process rather than afterwards. However, if you choose to do that you will have to use those changed values throughout the entire installation process as well as in the

instructions provided when servicing VTAM V4R2 wherever applicable. If you are not familiar with creating PPF overrides but would like to use them, refer to Chapter 3 in the *VMSES/E Introduction and Reference* for detailed information.

VTAM and GCS are the other two user IDs supplied with the PLANINFO file which you may have to modify in case you are already running a VTAM and GCS recovery machine with those names.

3.2.1 Allocating the Resources

Before you can install VTAM you need to allocate and format the required minidisks. Their addresses and sizes are listed in Table 2 on page 53.

Note: You may want to allocate more than five cylinders for the 2C2 disk, since it holds all of the customization files.

Use the **DISKMAP** command to find out where you have free space to allocate the required disks. This command will create a file named USER DISKMAP which contains the list of all disks currently allocated along with free space available.

Table 2 (Page 1 of 2). DASD Storage Requirements for Target Minidisks

Minidisk owner (user ID)	Default Address	Storage in Cylinders		1K Blocks	4K Blocks	Disk Name Description
		DASD	CYLS			
5654010A	2B2	3380 3390 9345	75 70 83	34500	11200	**BASE1 disk** Contains all the base code shipped with VTAM. Old name: BASE disk
5654010A	2C2	3380 3390 9345	5 5 5	2000	750	**LOCALSAM disk** Contains customization files. This disk may also be used for local modifications. Old name: VTM191 disk
5654010A	2D2	3380 3390 9345	20 19 22	9000	3000	**DELTA disk** Contains serviced files. Old name: DELTA disk
5654010A	2C4	3380 3390 9345	2 2 2	800	300	**LOCALMOD disk** Contains customization files. This disk can also be used for local customer modifications. Old name: ZAP disk
5654010A	2A6	3380 3390 9345	10 10 11	4500	1500	**APPLY TEST/ALTERNATE disk** Contains AUX files and software inventory tables that represent the test service level of VTAM. After testing, copy to the 2A2 disk. Old Name: MERGE disk
5654010A	2A2	3380 3390 9345	10 10 11	4500	1500	**APPLY PRODUCTION disk** Contains AUX files and software inventory tables that represent the service level of VTAM that is currently in production. Old name: MERGE disk
5654010A	49A	3380 3390 9345	40 37 44	18200	6000	**BUILD0 TEST/ALTERNATE disk** Test build disk for VTAM server. Contains load libraries and execs. After testing, copy to the 29A disk. Old name: RUN disk.
5654010A	29A	3380 3390 9345	40 37 44	18200	6000	**BUILD0 PRODUCTION disk** Production build disk for VTAM server. Old name: RUN disk
5654010A	402	3380 3390 9345	3 3 3	1000	400	**BUILD4 TEST/ALTERNATE disk** Test build disk for Online OS/2 tools files. After testing, copy to the 401 disk. Old name: Files were on RUN disk
5654010A	401	3380 3390 9345	3 3 3	1000	400	**BUILD4 PRODUCTION disk** Production build disk for Online OS/2 tools files. Old name: Files were on RUN disk
5654010A	493	3380 3390 9345	4 4 4	1500	500	**BUILD2 TEST/ALTERNATE disk** Test build disk for DVF, Tracered, and Formatted Trace. After testing, copy to the 193 disk. Old name: TRACERED/DVF disk

Note: Cylinder values defined in this table are based on a 1K block size. Block values are derived from the 3380 cylinder values in this table.

Table 2 (Page 2 of 2). DASD Storage Requirements for Target Minidisks

Minidisk owner (user ID)	Default Address	Storage in Cylinders		1K Blocks	4K Blocks	Disk Name
		DASD	CYLS			Description
MAINT	193	3380 3390 9345	4 4 4	1500	500	**BUILD2 PRODUCTION disk** Production build disk for DVF, Tracered, and Formatted Trace. Old name: TRACERED/DVF disk
5654010A	191	3380 3390 9345	20 19 22	9000	3000	5654010A user ID′s 191 minidisk.
VTAM						The VTAM user ID will link to the 5654010A user ID′s 2C2 disk as its 191 disk.

Note: Cylinder values defined in this table are based on a 1K block size. Block values are derived from the 3380 cylinder values in this table.

Notes:

1. Though the cylinder values in the chart above are based on a 1K blocksize, you may allocate your DASD with any optimal blocksize you prefer.
2. In the chart above, all minidisks owned by the installation user ID (5654010A) should be linked with write access. All other minidisks only require read access.
3. The space requirements for the APPLY, DELTA, and LOCALMOD disks are initial recommended sizes. You may need to increase the disk space according to your service needs.
4. The space allocation for the MAINT 193 disk is necessary only for installing VTAM V4R2 for VM/ESA. This allocation should not be used as the maximum minidisk size because other products might also require space on the same minidisk.
5. The 193 disk is used for TRACERED/DVF files. The PLANINFO file created during the installation process lists the 193 disk as being owned by user ID 5654010A. If you have multiple products that use a common disk for TRACERED/DVF files, then you may want to use that common disk (a 193 disk owned by user ID MAINT as shown in the chart above) rather than using a 193 disk owned by user ID 5654010A.

3.2.2 Storage Layout

When you consider the storage layout for the VTAM virtual machine you can use the segment mapping tool, **VMFSGMAP**, to decide where to place the VTAM DCSS and the GCS shared segment. You will need at least 1M of contiguous space for the VTAM segment. A sample storage layout is given in the *Network Implementation Guide*.

3.2.2.1 VTAM and GCS Virtual Machines

The ES/9000 Token-Ring adapter must be defined to VM (in HCPRIO) with a device type of ICA and adapter ILAN. Four channel addresses must be defined and attached to the VTAM virtual machine or sense code 081C 0008 or 081C 000C will result when an attempt is made to activate the LAN Major node.

Warning: GCS is capable of supporting only one VTAM segment. While you can save more than one segment for a single GCS, it is not recommended because you cannot activate more than one and you cannot specify which one is loaded.

The virtual machine in the GCS group assigned as the dump receiver must be an authorized machine. Following is the recommended CP command to dump a virtual machine without changing the machine's running environment:

#CP VMDUMP 0-END DSS FORMAT GCS TO userid

3.2.2.2 Initialization

If VTAM V4R2 for VM/ESA is started with the wrong Discontiguous Shared Segment (DCSS), VTAM initialization will fail.

To define your VTAM DCSS, you will need to find enough contiguous space for it. At least 1M is required and the segment range of X'600 - X'6FF' is recommended.

VTAM V4R2 for VM/ESA is available in three separate packages, each offering different levels of function at different prices:

- Client/Server
- MultiDomain
- InterEnterprise

For complete information about these packages, refer to the *Overview of VTAM V4R2 for VM/ESA and VSE/ESA*.

If you start VTAM with your own user-written startup EXEC, you must supply the following information before you start VTAM:

- Your IBM customer number
- The VTAM password for the package you have installed.

If you start VTAM with the IBM-supplied sample startup EXEC (found on the samples disk), VTAM is initialized as Client/Server. If you have ordered MultiDomain or InterEnterprise, before you start VTAM, you must edit the sample startup EXEC and replace the default customer number and VTAM password (specified on the VTAM START command) with your customer number and VTAM password obtained separately from IBM. If you have ordered Client/Server, IBM recommends that you follow this same procedure so that your unique customer number and VTAM password are contained in your startup EXEC.

For complete information about what to include in your startup EXEC, refer to the *VTAM Network Implementation Guide*.

Note: Throughout the installation you will use the **VMFVIEW** command to review the miscellaneous logs. Don't be surprised about what you see or rather don't see. For example you issue the command **VMFVIEW INSTALL** to view the installation message log ($VMFINS $MSGLOG). If no error occurred during the installation process you will not see any messages until you press the PF2 key. Then it will display the complete console log output. Note, that all message logs are cumulative. The most recent entry is at the top of the file.

3.3 Installation Instructions

This subchapter describes the installation methods and the step-by-step procedures to install and activate VTAM V4R2 for VM/ESA.

Each step of the installation instructions must be followed. Do not skip any step unless directed otherwise.

Throughout these instructions, the use of IBM-supplied default minidisk addresses and installation user ID **5654010A** is assumed. If you use a different user ID or minidisk addresses to install VTAM V4R2 for VM/ESA, adapt these instructions as needed for your environment.

Note:

The sample console output presented throughout these instructions was produced on a VM/ESA Version 1 Release 2.2 system. If you are installing VTAM V4R2 for VM/ESA on a different VM/ESA system, the results obtained for some commands might differ from those depicted here.

3.4 Installation of VTAM V4R2 for VM/ESA with VMSES/E (VMFINS)

You use VMFINS to install VTAM V4R2 for VM/ESA. VMFINS is an installation aid supplied as part of VMSES/E to make installation of VM and Licensed Program Products (LPs) consistent.

For a complete description of all VMFINS installation options refer to *VMSES/E Introduction and Reference* (SC24-5444).

3.4.1 Plan your Installation

You use the VMFINS command to plan the installation. This is a two step process that:

- Loads the first tape file, containing installation files
- Generates a “PLANINFO” file listing containing:
  - All user ID and minidisk requirements
  - All the required products

To obtain planning information for your environment:

1. Log on as the installer/planner.

   This user ID can be **any** ID that has read access to MAINT’s 5E5 minidisk and write access to MAINT’s 51D minidisk.

2. Mount the VTAM V4R2 for VM/ESA installation tape and attach it to the user ID at virtual address 181. The VMFINS EXEC requires this tape address.

3. Establish read access to the VMSES/E code.

   link maint 5e5 5e5 rr VMSES/E resides on the 5E5 disk
   access 5e5 b

4. Establish write access to the Software Inventory disk.

   link maint 51d 51d mr
   access 51d d
   The VMSES/E system-level Software Inventory and other dependent files reside on MAINT's 51D disk.

   Note: If another user is currently linked to MAINT's 51D minidisk in write mode (R/W), you will obtain only read access (R/O). If this occurs, you need to have that other user re-link to the 51D in read-only mode (RR), and then re-issue the above LINK and ACCESS commands. Do not continue with these procedures until you establish a R/W link to the 51D minidisk.

5. Load the VTAM V4R2 for VM/ESA product control files to the 51D minidisk.

   vmfins install info (nomemo
   The NOMEMO option loads the memo from the tape but does not issue a prompt to send the memo to the system printer. Specify the MEMO option if you want to be prompted to print the memo.

   The INSTALL INFO command performs the following:

   - Loads the Memo-to-Users (contains a pointer to this Program Directory and the *VTAM Network Implementation Guide*)
   - Loads various product control files, including the Product Parameter File (PPF) and the PRODPART files
   - Creates VMFINS PRODLIST on your A-disk. The VMFINS PRODLIST contains a list of products on the installation tape.

   When complete, VMFINS returns the following:

```
vmfins install info (nomemo
VMFINS2767I Reading VMFINS DEFAULTS B for additional options
VMFINS2760I VMFINS processing started
VMFINS1909I VMFINS PRODLIST created on your A-disk
VMFINS2760I VMFINS processing completed successfully
Ready;
```

Figure 16. Sample Console Output - Load Product Control Files

   Note: The Memo-to-Users file will not contain any information besides a comment referring you to the Program Directory and the *Network Implementation Guide*.

6. Obtain resource planning information for VTAM V4R2 for VM/ESA.

   vmfins install ppf 5654010A VTAM (plan nomemo
   The PLAN option specifies that VMFINS performs requisite checking, plans system resources, and provides an opportunity to override the defaults in the Product Parameter File (PPF). VTAM will **not** be loaded at this time using this form of the VMFINS command.

You can override any of the following:

- The name of the Product Parameter File (PPF)
- The default user IDs
- The minidisk/directory definitions

Note: If you change the PPF name, a default user ID, or any other parameters via a PPF override, you need to use your changed values instead of those indicated (when appropriate), throughout the rest of these installation instructions, as well as the instructions provided for servicing VTAM V4R2 for VM/ESA. For example, you will need to specify your PPF override file name instead of 5654010A for certain VMSES/E commands.

```
vmfins install ppf 5654010a vtam (plan nomemo
VMFINS2767I Reading VMFINS DEFAULTS B for additional options
VMFINS2760I VMFINS processing started
VMFINS2601R Do you want to create an override for :PPF 5654010A
            VTAM :PRODID 5654010A%VTAM?
            Enter 0 (No), 1 (Yes) or 2 (Exit)
0
VMFINS2603I Processing product :PPF 5654010A VTAM :PRODID
            5654010A%VTAM
VMFREQ2805I Product :PPF 5654010A VTAM :PRODID 5654010A%VTAM
            has passed requisite checking
VMFINT2603I Planning for the installation of product :PPF
            5654010A VTAM :PRODID 5654010A%VTAM
VMFRMT2760I VMFRMT processing started
VMFRMT2760I VMFRMT processing completed successfully
VMFINS2760I VMFINS processing completed successfully
Ready;
```

Figure 17. Sample Console Output - Obtain Resource Planning Information

7. Review the install message log ($VMFINS $MSGLOG). All install message logs are written to the installation user ID′s A-disk. If necessary, correct any problems before going on. For information about handling specific error messages, see *VM/ESA: System Messages and Codes*, or use online HELP.

vmfview install

3.4.2 Allocate Resources for Installing VTAM V4R2 for VM/ESA

Use the planning information in the 5654010A PLANINFO file, created in the **PLAN** step (section 3.4.1, “Plan your Installation” on page 56) to create the 5654010A user directory for minidisk install.

1. Obtain the user directory from the 5654010A PLANINFO file.

Notes:

a. The **5654010A** user directory entry is located at the bottom of the PLANINFO file of the resource section; these entries will contain all of the links and privilege classes necessary for the 5654010A user ID. Use the directory entry found in PLANINFO as a model input to your system directory.

b. Add the following statements to the **VTAM** user directory entry (in addition to the statements already in the PLANINFO file for the VTAM user directory entry):

NAMESAVE *gcssystem*
IPL *gcssystem*

Replace *gcssystem* with the name of your GCS system.

c. The PLANINFO file shows the 193 disk as being owned by user ID 5654010A. The 193 disk is used for TRACERED/DVF files. If you have multiple products that use a common disk for TRACERED/DVF files, then you may want to use that common disk (a 193 disk owned by user ID MAINT) rather than using a 193 disk owned by user ID 5654010A.

2. Add the MDISK statements to the directory entry for 5654010A. Use Table 2 on page 53 to obtain the minidisk requirements.

3. Add the 5654010A directory to the system directory. Change the passwords for 5654010A from XXXXX to a valid password, in accordance with your security guidelines.

4. Place the new directories online using VM/Directory Maintenance (DIRMAINT) or an equivalent CP directory maintenance method.

Note

All minidisks for the 5654010A user ID must be formatted before installing VTAM V4R2 for VM/ESA.

3.4.3 Install VTAM V4R2 for VM/ESA

1. Log on to the installation user ID **5654010A**.

2. Create a PROFILE EXEC that contains the ACCESS commands for MAINT's 5E5 and 51D minidisks.

```
xedit profile exec a
===> input /**/
===> input 'access 5e5 b'
===> input 'access 51d d'
===> file
```

3. Execute the profile to access MAINT's minidisks.

```
profile
```

4. Establish write access to the Software Inventory disk, if it is not already linked R/W.

Note: If the MAINT 51D minidisk was accessed R/O, you need to have the user who has it linked R/W re-access the disk as R/O. You then can issue the following commands to establish R/W access.

```
link maint 51d 51d mr
access 51d d
```

5. Have the VTAM V4R2 for VM/ESA installation tape mounted and attached to 5654010A at virtual address 181. The VMFINS EXEC requires this tape address.

6. Install VTAM V4R2 for VM/ESA.

Note: If you have already created a PPF override file, you should specify its file name after the **ppf** keyword for the following VMFINS command.

You might be prompted for additional information during VMFINS INSTALL processing depending on your installation environment. If you are unsure how to respond to a prompt, refer to the “Installing Products with VMFINS” and “Install Scenarios” chapters in the *VMSES/E Introduction and Reference* to decide how to proceed.

vmfins install ppf 5654010A VTAM (nomemo nolink

The NOLINK option indicates that VMFINS is not to link to the appropriate minidisks, only access them if not accessed.

```
vmfins install ppf 5654010a vtam (nomemo nolink
VMFINS2767I Reading VMFINS DEFAULTS B for additional options
VMFINS2760I VMFINS processing started
VMFINS2601R Do you want to create an override for :PPF 5654010A
            VTAM :PRODID 5654010A%VTAM?
            Enter 0 (No), 1 (Yes) or 2 (Exit)
0
VMFINS2603I Processing product :PPF 5654010A VTAM :PRODID
            5654010A%VTAM
VMFREQ2805I Product :PPF 5654010A VTAM :PRODID 5654010A%VTAM
            has passed requisite checking
VMFINT2603I Installing product :PPF 5654010A VTAM :PRODID
            5654010A%VTAM
VMFSET2760I VMFSETUP processing started for 5654010A VTAM
VMFUTL2205I Minidisk|Directory Assignments:
            String    Mode  Stat  Vdev  Label/Directory
VMFUTL2205I LOCALSAM  E      R/W  2C2   DMR2C2
VMFUTL2205I LOCALMOD  F      R/W  2C4   DMR2C4
VMFUTL2205I APPLY     G      R/W  2A6   DMR2A6
VMFUTL2205I           H      R/W  2A2   DMR2A2
VMFUTL2205I DELTA     I      R/W  2D2   DMR2D2
VMFUTL2205I BUILD0    J      R/W  49A   DMR49A
VMFUTL2205I BUILD2    K      R/W  493   DMR493
VMFUTL2205I BUILD4    L      R/W  402   DMR402
VMFUTL2205I BASE1     M      R/W  2B2   DMR2B2
VMFUTL2205I -------- A      R/W  191   USR191
VMFUTL2205I -------- B      R/O  5E5   MNT5E5
VMFUTL2205I -------- C      R/O  292   ISP192
VMFUTL2205I -------- D      R/W  51D   MNT51D
VMFUTL2205I -------- S      R/O  190   MNT190
VMFUTL2205I -------- Y/S    R/O  19E   MNT19E
VMFSET2760I VMFSETUP processing completed successfully
VMFREC2760I VMFREC processing started
VMFREC1852I Volume 1 of 1 of INS TAPE 9500
VMFREC1851I (1 of 9) VMFRCAXL processing AXLIST
VMFRCX2159I Loading 0 part(s) to DELTA 2D2 (I)
VMFREC1851I (2 of 9) VMFRCPTF processing PARTLST
VMFRCP2159I Loading 0 part(s) to DELTA 2D2 (I)
VMFREC1851I (3 of 9) VMFRCCOM processing DELTA
VMFRCC2159I Loading 0 part(s) to DELTA 2D2 (I)
VMFREC1851I (4 of 9) VMFRCALL processing APPLY
VMFRCA2159I Loading part(s) to APPLY 2A6 (G)
VMFRCA2159I Loaded 1 part(s) to APPLY 2A6 (G)
VMFREC1851I (5 of 9) VMFRCALL processing BASE
VMFRCA2159I Loading part(s) to BASE1 2B2 (M)
VMFRCA2159I Loaded 3339 part(s) to BASE1 2B2 (M)
```

Figure 18 (Part 1 of 2). Sample Console Output - Install VTAM V4R2 for VM/ESA

```
VMFREC1851I (6 of 9) VMFRCALL processing SAMPLE
VMFRCA2159I Loading part(s) to LOCALSAM 2C2 (E)
VMFRCA2159I Loaded 18 part(s) to LOCALSAM 2C2 (E)
VMFREC1851I (7 of 9) VMFRCALL processing BUILD
VMFRCA2159I Loading part(s) to BUILD0 49A (J)
VMFRCA2159I Loaded 5 part(s) to BUILD0 49A (J)
VMFREC1851I (8 of 9) VMFRCALL processing TRACE
VMFRCA2159I Loading part(s) to BUILD2 493 (K)
VMFRCA2159I Loaded 26 part(s) to BUILD2 493 (K)
VMFREC1851I (9 of 9) VMFRCALL processing WSCODE
VMFRCA2159I Loading part(s) to BUILD4 402 (L)
VMFRCA2159I Loaded 4 part(s) to BUILD4 402 (L)
VMFREC2760I VMFREC processing completed successfully
VMFINT2603I Product installed
VMFINS2760I VMFINS processing completed successfully
Ready;
```

Figure 18 (Part 2 of 2). Sample Console Output - Install VTAM V4R2 for VM/ESA

7. Review the install message log ($VMFINS $MSGLOG). All install message logs are written to the installation user ID's A-disk. Remember, that you will not see any messages unless an error has occurred during the installation process. This will help you to find errors easier than having to go through the whole console output in search of any problems. For a complete listing of all messages displayed on the console press PF2. If necessary, correct any problems before going on. For information about handling specific error messages, refer to *VM/ESA: System Messages and Codes*, or use online HELP.

vmfview install

3.4.4 Update Build Status Table for VTAM V4R2 for VM/ESA

1. Update the VM SYSBLDS software inventory file for VTAM V4R2 for VM/ESA.

vmfins build ppf 5654010A VTAM (serviced nolink

The SERVICED option builds any parts that were not built on the installation tape (if any) and updates the Software Inventory build status table showing that the product 5654010A has been built.

```
vmfins build ppf 5654010a vtam (serviced nolink
VMFINS2767I Reading VMFINS DEFAULTS B for additional options
VMFINS2760I VMFINS processing started
VMFINS2603I Processing product :PPF 5654010A VTAM :PRODID
            5654010A%VTAM
VMFREQ2805I Product :PPF 5654010A VTAM :PRODID 5654010A%VTAM
            has passed requisite checking
VMFINB2603I Building product :PPF 5654010A VTAM :PRODID
            5654010A%VTAM
VMFSET2760I VMFSETUP processing started for 5654010A VTAM
VMFUTL2205I Minidisk|Directory Assignments:
            String    Mode  Stat  Vdev  Label/Directory
VMFUTL2205I LOCALSAM  E      R/W  2C2   DMR2C2
VMFUTL2205I LOCALMOD  F      R/W  2C4   DMR2C4
VMFUTL2205I APPLY     G      R/W  2A6   DMR2A6
VMFUTL2205I           H      R/W  2A2   DMR2A2
VMFUTL2205I DELTA     I      R/W  2D2   DMR2D2
VMFUTL2205I BUILD0    J      R/W  49A   DMR49A
VMFUTL2205I BUILD2    K      R/W  493   DMR493
VMFUTL2205I BUILD4    L      R/W  402   DMR402
VMFUTL2205I BASE1     M      R/W  2B2   DMR2B2
VMFUTL2205I --------  A      R/W  191   USR191
VMFUTL2205I --------  B      R/O  5E5   MNT5E5
VMFUTL2205I --------  C      R/O  292   ISP192
VMFUTL2205I --------  D      R/W  51D   MNT51D
VMFUTL2205I --------  S      R/O  190   MNT190
VMFUTL2205I --------  Y/S    R/O  19E   MNT19E
VMFSET2760I VMFSETUP processing completed successfully
VMFBLD2760I VMFBLD processing started
VMFBLD1851I Reading build lists
VMFBLD2182I Identifying new build requirements
VMFBLD2182I No new build requirements identified
VMFBLD2179I There are no build requirements matching your request
            at this time.
            No objects will be built
VMFBLD2180I There are 0 build requirements remaining
VMFBLD2760I VMFBLD processing completed successfully
VMFINB2603I Product built
VMFINB2173I No verification exec found for this product
VMFINS2760I VMFINS processing completed successfully
Ready;
```

Figure 19. Sample Console Output - Update Software Inventory File

2. Review the install message log ($VMFINS $MSGLOG). If necessary, correct any problems before going on. For information about handling specific error messages, refer to *VM/ESA: System Messages and Codes*, or use online HELP.

   vmfview install

3.5 Place VTAM into Production

3.5.1 Define/Build VTAM V4R2 for VM/ESA Saved Segments using VMSES/E

You should build segments for VTAM V4R2 for VM/ESA. First, you define the segments to the system using the segment mapping tool VMFSGMAP. Once the segments are defined, use VMFBLD to build them.

For more information on using VMSES/E for saved segments, review the chapter, "Using VMSES/E to Define, Build, and Manage Saved Segments" in *VM/ESA Planning and Administration*.

Notes:

- The defining and building of the VTAM V4R2 for VM/ESA saved segments should be performed from the installation user ID. If you move any segments that are currently defined on your system, you must ensure that they are rebuilt from the user ID that maintains them.
- To define your VTAM DCSS, you will need to find enough contiguous space for it. At least 1M is required and the segment range of X′600 - X′6FF′ is recommended. However, you may change that in the Segment Definition Panel when adding the segment.

1. Log on to the installation user ID **5654010A**.
2. Establish write access to the Software Inventory disk.

   link maint 51d 51d mr
   access 51d d

3. Add VTAM V4R2 for VM/ESA segment object definitions to the SEGBLIST EXC00000 build list.

   vmfsgmap segbld esasegs segblist

   This command displays a panel for making segment updates. See Figure 20 on page 65 for an example of the Segment Map panel.

```
                          VMFSGMAP - Segment Map                 More: -
                                                                Lines nn to


Meg              004-MB          005-MB          006-MB          007-MB
St Name     Typ 0123456789ABCDEF0123456789ABCDEF0123456789ABCDEF0123456789ABCDEF
M GROUP1    SPA 4.............5.............6.............=============
M NETVSG00 MEM 4.............5.............6.............7RRRRRRRRRRRRRRR
M NPM       MEM 4.............5.............6.............R..............
M ISRDCSS   DCS 4.............5.............6.............RRRRRRRRRRRRRRRR
M GCS       SYS RRRRRRNNNNNNNNNNNNNNNNNNNNNN6.............7..............
M GCSXA     SYS RRRRRRNNNNNNNNNNNNNNNNNNNNNN6.............7..............
M GCSXA1    SYS RRRRRRNNNNNNNNNNNNNNNNNNNNNN6.............7..............
M GCSXA2    SYS RRRRRRNNNNNNNNNNNNNNNNNNNNNN6.............7..............
M GCSXA3    SYS RRRRRRNNNNNNNNNNNNNNNNNNNNNN6.............7..............
M GCSXA4    SYS RRRRRRNNNNNNNNNNNNNNNNNNNNNN6.............7..............

Meg              008-MB          009-MB          00A-MB          00B-MB
St Name     Typ 0123456789ABCDEF0123456789ABCDEF0123456789ABCDEF0123456789ABCDEF
M DOSBAM    SPA 8.............9.............====-----------=============
M CMSDOS    MEM 8.............9.............A.............R..............
M CMSBAM    MEM 8.............9.............A.............BRRR...........
M CMSAMS    MEM 8.............9.............WWW...........B...RRRRRR......
M CMSVSAM   MEM 8.............9.............A..W..........B.........RRRRRR
M ISPDCSS   DCS 8.............9.............RRRRRRRRRRRRRRRB..............
M CMSVMLIB DCS RRRRRRRRRRRRRRRR9.............A.............B..............
M CMSPIPES DCS 8.............RRRRRRRRRRRRRRRRA.............B..............
M DOSINST   DCS 8.............R--------------A.............B..............

Meg              00C-MB          00D-MB          00E-MB          00F-MB
St Name     Typ 0123456789ABCDEF0123456789ABCDEF0123456789ABCDEF0123456789ABCDEF
M HELPINST DCS RRRRRRRRRRRRRRRRD.............E.............F..............
M CMS       SYS C.............D.............RRRRRRRRRRRRRRRRRRRRRRRRRRRRRRR>

================================ 16-MB Line ================================
F1=Help     F2=Chk Obj   F3=Exit      F4=Chg Obj   F5=File      F6=Save
F7=Bkwd     F8=Fwd       F9=Retrieve  F10=Add Obj  F11=Del Obj  F12=Class
```

Figure 20. Segment Map Panel Example

4. Select the Add Object panel by pressing PF10.

F10 takes you from the Segment Map panel to the Add Segment Definition panel as shown in Figure 21 on page 66.

```
                          Add Segment Definition
                                                          Lines 1 to nn

 OBJNAME....:  VTAM
 DEFPARMS...:
 SPACE......:
 TYPE.......:  SEG
 OBJDESC....:
 OBJINFO....:
 GT_16MB....:  NO
 DISKS......:
 SEGREQ.....:
 PRODID.....:  5654010A
 BLDPARMS...:  UNKNOWN









 F1=Help     F2=Get Obj   F3=Exit      F4=Add Line  F5=Map        F6=Chk MEM
 F7=Bkwd     F8=Fwd       F9=Retrieve  F10=Seginfo  F11=Adj MEM  F12=Cancel
===>
```

Figure 21. Add Segment Definition Panel Example

5. Obtain the VTAM V4R2 for VM/ESA segment definitions from the 5654010A PRODPART file by pressing F10.

If you have created your own PPF override, then use your PPF name instead of 5654010A in the BLDPARMS field.

See Figure 22 on page 67 for the refreshed Add Segment definition panel that will be displayed.

If you want to use another address for the VTAM segment you can modify the address range in the DEFPARMS field of this panel.

```
                              Add Segment Definition                More: +
                                                                 Lines 1 to nn



 OBJNAME....:  VTAM
 DEFPARMS...:  600-6FF SR
 SPACE......:
 TYPE.......:  SEG
 OBJDESC....:  VTAM TEST SEGMENT
 OBJINFO....:  MUST BE BELOW 16M LINE....
 GT_16MB....:  NO
 DISKS......:
 SEGREQ.....:
 PRODID.....:  5654010A VTAM
 BLDPARMS...:  PPF(5654010A VTAM ISTSBSEG)



VMFSMD2760I SEGINFO processing completed SUCCESSFULLY
 F1=Help     F2=Get Obj   F3=Exit      F4=Add Line  F5=Map        F6=Chk MEM
 F7=Bkwd     F8=Fwd       F9=Retrieve F10=Seginfo   F11=Adj MEM   F12=Cancel
===>
```

Figure 22. Add Segment Definition Panel Showing the Segments

6. Return to the Segment Map panel by pressing F5.

See Figure 23 on page 68 for an example of the refreshed Segment Map panel.

```
                          VMFSGMAP - Segment Map                 More: -
                                                               Lines nn to


Meg             004-MB          005-MB          006-MB          007-MB
St Name    Typ 0123456789ABCDEF0123456789ABCDEF0123456789ABCDEF0123456789ABCDEF
M GROUP1   SPA 4.............5.............6.............================
M NETVSG00 MEM 4.............5.............6.............7RRRRRRRRRRRRRRR
M NPM      MEM 4.............5.............6.............R.............
P VTAM     DCS 4.............5.............RRRRRRRRRRRRRRR7.............
M ISRDCSS  DCS 4.............5.............6.............RRRRRRRRRRRRRRR
M GCS      SYS RRRRRRNNNNNNNNNNNNNNNNNNNNNNNN6.............7.............
M GCSXA    SYS RRRRRRNNNNNNNNNNNNNNNNNNNNNNNN6.............7.............
M GCSXA1   SYS RRRRRRNNNNNNNNNNNNNNNNNNNNNNNN6.............7.............
M GCSXA2   SYS RRRRRRNNNNNNNNNNNNNNNNNNNNNNNN6.............7.............
M GCSXA3   SYS RRRRRRNNNNNNNNNNNNNNNNNNNNNNNN6.............7.............
M GCSXA4   SYS RRRRRRNNNNNNNNNNNNNNNNNNNNNNNN6.............7.............

Meg             008-MB          009-MB          00A-MB          00B-MB
St Name    Typ 0123456789ABCDEF0123456789ABCDEF0123456789ABCDEF0123456789ABCDEF
M DOSBAM   SPA 8.............9.............====------------================
M CMSDOS   MEM 8.............9.............A.............R.............
M CMSBAM   MEM 8.............9.............A.............BRRR............
M CMSAMS   MEM 8.............9.............WWW...........B...RRRRRR......
M CMSVSAM  MEM 8.............9.............A..W..........B.........RRRRRR
M ISPDCSS  DCS 8.............9.............RRRRRRRRRRRRRRRB.............
M CMSVMLIB DCS RRRRRRRRRRRRRRR9.............A.............B.............
M CMSPIPES DCS 8.............RRRRRRRRRRRRRRRA.............B.............
M DOSINST  DCS 8.............R--------------A.............B.............

Meg             00C-MB          00D-MB          00E-MB          00F-MB
St Name    Typ 0123456789ABCDEF0123456789ABCDEF0123456789ABCDEF0123456789ABCDEF
M HELPINST DCS RRRRRRRRRRRRRRRD.............E.............F.............
M CMS      SYS C.............D.............RRRRRRRRRRRRRRRRRRRRRRRRRRRRRR>

============================== 16-MB Line ==============================
F1=Help     F2=Chk Obj   F3=Exit      F4=Chg Obj   F5=File      F6=Save
F7=Bkwd     F8=Fwd       F9=Retrieve  F10=Add Obj  F11=Del Obj  F12=Class
```

Figure 23. Refreshed Segment Map Panel

7. Save the new information and exit from the Segment Map panel by pressing F5.

8. Prepare to build the segments. This is a three step process.

   a. IPL CMS to clear the virtual storage

      ipl cms parm clear nosprof instseg no
      This command allows you to bypass the execution of the system profile (SYSPROF EXEC) without loading the installation saved segment (CMSINST).

      access (noprof
      Bypass the execution of the PROFILE EXEC.

   b. Access the VMSES/E code

      access 5e5 b

   c. Establish write access to the Software Inventory disk

      link maint 51d 51d mr
      access 51d d

9. Issue the VMFBLD command to build the VTAM V4R2 for VM/ESA segments.

vmfbld ppf segbld esasegs segblist VTAM (all

```
VMFBLD PPF SEGBLD ESASEGS SEGBLIST VTAM (ALL
VMFBLD2760I VMFBLD processing started
VMFBLD1851I Reading build lists
VMFBLD2182I Identifying new build requirements
VMFBLD2182I New build requirements identified
VMFBLD1851I (1 of 1) VMFBDSEG processing SEGBLIST EXC00000,
            target is BUILD 51D (D)
VMFBDS2115I Validating segment VTAM
VMFBDS2002I A DEFSEG command will be issued for 1 segment(s).
VMFBDS2219I Processing object VTAM.SEGMENT
DMSNXM941I Nucleus extension VTAMDCSS is not loaded
HCPNSS440I Saved segment VTAM was successfully saved in fileid
           0100.
VTAM904I The VTAM SEGMENT, VTAM  has been successfully saved
VMFBLD1851I (1 of 1) VMFBDSEG completed with return code 0
VMFBLD2180I There are 1 build requirements remaining
VMFBLD2760I VMFBLD processing completed successfully
Ready;
```

Figure 24. Sample Console Output - Build the VTAM V4R2 for VM/ESA Segment

You may want to review the message log from the build process. To do this issue:

vmfview build

3.5.2 Activate the Program

Perform the following steps to ensure that VTAM V4R2 for VM/ESA was installed properly:

1. Prepare your operating system.

   Refer to the *VTAM Network Implementation Guide* to prepare your operating system prior to activating VTAM.

2. Modify the startup EXEC you will be using, if necessary.

3. Log on to your VTAM user ID **VTAM**.

4. Detach the PRODUCTION (29A) disk and link to the installation user ID's RUN TEST/ALTERNATE (49A) disk.

detach 29a **link 5654010a 49a 29a rr**	User ID 5654010A's 2C2 disk should be automatically linked as **VTAM's** 191 disk. The LINK statement to do this was defined in the VTAM user directory entry in the 5654010A PLANINFO file created in the **PLAN** step (section 3.4.1, "Plan your Installation" on page 56).

5. IPL GCSXA. If your GCS system is not named 'gcsxa', then IPL using your GCS system name.

   i gcsxa

6. Bring up VTAM using the sample VMVTAM startup EXEC.

vmvtam	Message IST020I tells you that VTAM is operational.

7. To end VTAM, enter VTAM HALT.

   vtam halt

3.5.3 Copy VTAM Files into Production

1. Log on to the installation user ID **5654010A**.
2. Access the BUILD0 TEST/ALTERNATE (49A) disk and the BUILD0 PRODUCTION (29A) disk.

   access 49a e
   access 29a f

3. Issue the VMFCOPY command to copy all the files from the BUILD0 TEST/ALTERNATE (49A) disk to the BUILD0 PRODUCTION (29A) disk. Note that message VMFCOP2866I will be received indicating that file VMSES PARTCAT will not be copied.

   vmfcopy * * e = = f (prodid 5654010AVTAM olddate replace

4. Access the BUILD4 TEST/ALTERNATE (402) disk and the BUILD4 PRODUCTION (401) disk.

   access 402 e
   access 401 g

5. Issue the VMFCOPY command to copy all the files from the BUILD4 TEST/ALTERNATE (402) disk to the BUILD4 PRODUCTION (401) disk.

   vmfcopy * * e = = g (prodid 5654010AVTAM olddate replace

6. Access the BUILD2 TEST/ALTERNATE (493) disk and MAINT′s 193 disk.

   link maint 193 193 mr
   access 493 e
   access 193 h

7. Issue the VMFCOPY command to copy all the files from the BUILD2 TEST/ALTERNATE (493) disk to MAINT′s 193 disk.

   vmfcopy * * e = = h (prodid 5654010AVTAM olddate replace

8. Now that you have copied the contents of the test/alternate disks to their corresponding production disks you will need to have the VTAM user ID link to the 5654010A user ID′s BUILD0 PRODUCTION (29A) disk that contains the production-level VTAM load libraries and EXECs.

   If you logged off the VTAM user ID after completing the steps in 3.5.2, “Activate the Program” on page 69, then when you log that ID back on it will automatically link to the 5654010A user ID′s 29A disk.

   If you have not logged off the VTAM user ID after completing the steps in 3.5.2, “Activate the Program” on page 69, then from the VTAM user ID issue the following commands to link to the 5654010A user ID′s 29A disk.

   detach 29a
   link 5654010a 29a 29a rr

VTAM V4R2 for VM/ESA is now installed and built on your system.

3.6 VMSES/E Installation Process Overview

The following is a brief description of the main steps in installing VTAM V4R2 for VM/ESA using VMSES/E:

- Plan your Installation for VTAM V4R2 for VM/ESA

  Use the VMFINS command to load several VMSES/E files from the product tape to obtain VTAM V4R2 for VM/ESA resource requirements. For more information, see 3.4.1, “Plan your Installation” on page 56.

- Allocate Resources for Installing VTAM V4R2 for VM/ESA

  Use the information obtained from the previous step to allocate the appropriate minidisks and user IDs needed to install and use VTAM V4R2 for VM/ESA. For more information, see 3.4.2, “Allocate Resources for Installing VTAM V4R2 for VM/ESA” on page 58.

- Install the VTAM V4R2 for VM/ESA Product

  Use the VMFINS command to load the VTAM V4R2 for VM/ESA product files from tape to the test BUILD and BASE minidisks/directories. For more information, see 3.4.3, “Install VTAM V4R2 for VM/ESA” on page 59.

- Update the Build Status Table

  Use VMFINS to update the VM SYSBLDS file used by VMSES/E for software inventory management. For more information, see 3.4.4, “Update Build Status Table for VTAM V4R2 for VM/ESA” on page 62.

- Activate VTAM V4R2 for VM/ESA

  For information about initial activation of VTAM V4R2 for VM/ESA, see 3.5.2, “Activate the Program” on page 69.

- Copy VTAM V4R2 for VM/ESA Files into Production

  Once the product files have been tailored and the operation of VTAM V4R2 for VM/ESA is satisfactory, the product files are copied from the test BUILD disk(s) to production BUILD. For more information, see 3.5.3, “Copy VTAM Files into Production” on page 70.

- Install VTAM VIT Analysis Tool

  If you will be using the VTAM VIT Analysis Tool, see D.1, “Installing the VTAM VIT Analysis Tool” on page 157 for the steps to complete the installation of this tool.

- Install OS/2 Code provided by VTAM

  Once VTAM V4R2 for VM/ESA has been installed, you need to download and unpack the VTAM-provided OS/2 DLUR and the VTAM Command Set Library. For more information, see D.2, “Installing the VTAM-provided OS/2 DLUR” on page 165 and D.3, “Installing the VTAM Command Set Library” on page 168, respectively.

- Install Tables and Local/User Modules

  When making local modifications to your system, use VMSES/E commands and execs in place of VMFLKED as in prior releases.

For a complete description of all VMSES/E installation options refer to *VMSES/E Introduction and Reference* (SC24-5444).

Chapter 4. Implementing Subarea Networking with VTAM V4R2

VTAM V4R2 retains all the subarea networking capabilities of VTAM V3. However, some of the parameter defaults have changed since earlier versions, both for start options and other definitions. We will point out those that we consider most important.

4.1 Changes to Start Options

CDRDYN=YES is new as a start option and overrides the CDRDYN operand value coded on the CDRM definition statement. If you for some reason don't want dynamically defined CDRSCs, change this to CDRDYN=NO. This will however prevent the use of many of the new dynamic functions.

LFBUF VSE only - no longer contains input/output buffers. See IOBUF below. The LFBUF buffer pool now contains buffers to store information about application programs with an estimated active session (EAS) value less than 30. This information used to be stored in the SFBUF buffer pool.

IOBUF New for VSE only - used for input/output data.

SFBUF VSE only - now used to contain buffers to store information about application programs with an estimated active session (EAS) value greater than or equal to 30.

VFBUF VSE only - no longer valid. VFBUF buffer pool has been deleted.

VPBUF VSE only - no longer valid. VPBUF buffer pool has been deleted.

WPBUF VSE only - no longer valid. WPBUF buffer pool has been deleted.

NOTRACE,TYPE=VTAM Will not turn off internal tracing for the following options: API, MSG, PIU, SSCP and NRM.

4.2 Changes to Definition Statements

LUDR VTAM no longer ignores this operand. If you are using sifting for LUDR and use VARY ACT,UPDATE=ALL to move an LU, make sure the sifted value is the same before and after any moves. If LUDR gets sifted differently as the result of a move and its value is no longer the same, VTAM and NCP will have mismatching LUDR values on the next activation of the NCP.

PUDR The same considerations as for LUDR apply.

CDRDYN on the CDRM statement is now overridden by the VTAM start option that has YES as the default. CDRDYN=NO is still the default on CDRM statements but has no meaning

unless you code CDRDYN=NO as a start option. Then the host cross-domain resource manager will not be authorized to dynamically define CDRSC representations of cross-domain or cross-network subarea or APPN resources. This would however prevent you from enabling most of the VTAM APPN support.

4.2.1 Delayed Disconnection

In previous releases you could specify that a dial connection disconnects after the LU-LU sessions are terminated (DISCNT=YES) or that the connection remains indefinitely (DISCNT=NO). For a switched PU you may now specify DISCNT=DELAY to provide sufficient time for another LU-LU session to be started. The DISCNTIM start option defines the amount of time, from 1 to 255 seconds, that VTAM delays deactivation of the physical connection. The default value is 15 seconds. For lines where each connection establishment is charged you may make some savings by tuning this parameter (it can be changed dynamically).

4.2.2 Session Limits for Switched Resources

The MAXSESS keyword has been used by NCP to specify the maximum number of concurrent LU-LU sessions that any single NCP boundary LU can establish. This function prevents a particular LU from using all the unreserved session control blocks.

In VTAM V4R2, the MAXSESS keyword can be specified on VTAM definition statements for independent LUs that are attached to VTAM through an NCP and are coded in one of the following major nodes:

- NCP (on GROUP, LINE, PU or LU)
- Switched (on PU or LU)
- Model (on GROUP, LINE or PU)
- Cross-domain resource (on GROUP or CDRSC)
- Dynamic reconfiguration (on PU or LU)

By specifying limits for switched resources on VTAM definition statements you can limit the number of concurrent LU-LU sessions that an independent LU can establish through a single PU. Note that an independent LU can have simultaneous sessions through more than one PU. For example, if MAXSESS=2 was specified for LUA and LUA appears on three PUs, LUA can have sessions with each of the three PUs for a total of six sessions.

If VTAM specifies MAXSESS for a VTAM resource, in NCP the value from VTAM will override what is specified in the NCP itself.

4.2.3 Network Qualified Names - (NQNMODE)

In VTAM V4R2 you can use network-qualified names to ensure that resources that are LU-LU session-capable within SNA interconnected networks have unique names. If you change the new VTAM start option NQNMODE=NAME (default) to NQNMODE=NQNAME cross-network resources will be defined to this host by its network qualified name *netid.resource_name* only, and not also by the *resource_name* (the default). This start option can be changed dynamically.

Dynamic CDRSCs and independent LUs which are defined using LOCADDR=0 are defined with the NQNMODE start option. For predefined CDRSCs NQNMODE can be specified on GROUP or CDRSC statements and overrides what is defined as the start option. You will probably have some definitions that reference cross-network resources by resource-name only, that will fail if you change the start option without changing them. For a controlled migration we suggest that you first keep NQNMODE=NAME as the start option, and test coding NQNMODE=NQNAME on some CDRSC where you have a name conflict that you currently resolve by one of the previously available methods:

- Session management exit routine
- USERVAR
- NetView alias name translation facility
- Predefined cross-domain resources and adjacent SSCP tables to avoid routing.

Here we only want to hint at this new possibility of using network-qualified names. If you have a complex environment you will need to read more about NQNMODE in the *VTAM Resource Definition Reference*.

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

If you have modified any IBM-supplied default user-definable tables or user-modifiable modules in your previous VTAM version that you have not renamed, those tables and modules will be deleted and replaced when you install VTAM V4R2 (this will not happen in VM if you define new disks for the new code). To keep your modified tables or modules:

1. Make copies of them before you install VTAM V4R2.
2. Merge your modifications back into the appropriate tables and modules after you install VTAM V4R2.
3. Reassemble the tables into which you have merged your modifications.

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

1. Compare your modified tables and modules to those shipped with VTAM V4R2 after you install VTAM V4R2.
2. Merge any differences into your modified tables and modules.
3. Reassemble your modified tables and modules.

4.3.1 Changes to IBM-Supplied Default User-Definable Tables

The following IBM-supplied default user-definable tables have changed since VTAM V3R4:

- Logon mode table, ISTINCLM
- Operation-level USS table, ISTINCNO
- Session-level USS table, ISTINCDT

4.3.1.1 Logon Mode Table

To support session activation for independent LUs with an unknown logon mode name a new entry, ISTCOSDF, has been added to ISTINCLM. If you don't want VTAM to use this logon mode entry, you must specify ISTCOSDF=NONE in your start list before you start VTAM V4R2. Refer to the *VTAM Resource Definition Reference*, chapter 4, "Start Options" for more information. In the *VTAM Resource Definition Reference*, appendix A "IBM-Supplied Tables" you can find more information about changes to this and the other tables.

4.3.2 Changes to User-Modifiable Modules

The messages module ISTCFCWM has been deleted. Also the replaceable constants module ISTRACON has been deleted. All constants are now defined with start options. If you have ZAPped the ISTRACON module in your previous VTAM version consult Appendix H, "Migrating from Use of VTAM Constant Values to V4R2 Start Options" in the *VTAM Customization* manual.

4.4 Changes to Independent LU Handling

VTAM V4R2 treats independent LUs as cross-domain resources (CDRSCs), even when the independent LUs reside in the same domain. In your VTAM V3 system definitions, you might have independent LUs defined in NCP, local SNA or switched major nodes with LU LOCADDR=0 statements. You don't **have** to change those definitions. VTAM's new treatment of independent LUs as CDRSCs was introduced in VTAM V3R4, but because of the previous statement many installations did not change their definitions. Now it is time to take care of those LU LOCADDR=0 statements. Keep on reading, and you will realize why!

When a major node with LU LOCADDR=0 is activated the LUs will be treated as cross domain resources and will be placed in a new major node called ISTPDILU.

4.4.1 Characteristics of Independent LUs

Before going into the detail of defining independent LUs we will describe some independent LU characteristics as seen from VTAM. When reading documentation from AS/400, CM/2 or other platforms describing independent LUs it is seldom clear what happens in VTAM.

4.4.1.1 Adjacent Link Stations

Adjacent link stations are type 2.1 physical units (or type 4 or 5 PUs that appear as type 2.1 PUs) through which independent logical units can access the network. There is no hierarchical relationship between an adjacent link station (PU) and an independent LU.

4.4.1.2 Session Capabilities

The session capabilities of an independent logical unit are significantly greater than those of dependent logical units. Independent logical units do not require SSCP-PU or SSCP-LU sessions. An independent logical unit can act as a primary logical unit and can both initiate and respond to session requests.

4.4.1.3 Extended BIND

Independent logical units support the extended BIND, which contains information necessary to activate a session, to make use of features such as adaptive session pacing, and to identify a particular session. Extended BINDs always contain a fully qualified procedure-correlation identifier (a PCID qualified by the name and network identifier of the PCID generator). A BIND without this information is a non-extended BIND. Extended BINDs can contain network-qualified names if the subarea components in the session establishment path support them. An extended BIND is sent only if the boundary function (VTAM or VTAM+NCP if applicable) and the destination logical unit support extended BIND.

4.4.1.4 Multiple Sessions

An independent logical unit can also have multiple sessions with a single logical unit (parallel sessions) or with several different logical units. The independent logical unit can assume the role of primary or secondary for any one or all of the sessions.

If one or more sessions are required between logical units for application transaction program communication, the independent logical unit establishes the necessary session connections on behalf of those application transaction programs.

The BSBUF buffer pool is used to provide common storage for boundary type 2.1, type 2, and type 1 peripheral node session control blocks. Depending on how you code the buffer pool start option, the BSBUF buffer pool can expand to support more sessions and contract as less session control blocks are needed. Because independent logical units can have multiple sessions (including parallel sessions), you should determine the average and maximum number of sessions associated with independent logical units that are directly attached to that VTAM subarea node. You can then specify a value that prevents excessive buffer expansion and contraction.

4.4.1.5 Addressing

An independent logical unit in a type 2.1 peripheral node does not have a predefined address. Although VTAM definition statements or an NCP generation associates an independent LU with a network accessible unit, the address of that unit does not have to be coordinated with VTAM or NCP coding. For information on how NCP handles address assignments, see 4.4.3, “Connecting Independent LUs through NCPs” on page 82.

4.4.1.6 Alias Name Translation and Independent LUs

Following are certain restrictions that apply to alias name translation and the independent LUs:

- If the PLU name received in the BIND from the LU is network-qualified, the SLU name must also be network-qualified.
- If the names are network-qualified, they must be the real names (unless they are USERVAR names), or the session setup fails.
- Concurrent sessions to destination resources with the same name in different networks cannot be established when using alias name translation. Concurrent sessions to destination resources with the same name in different networks can be established if the independent LU′s host is using NQNMODE=NQNAME to define the destination resources. For more

information on NQNMODE=NQNAME, see ″NQNMODE″ in the *VTAM Resource Definition Reference*.

- If the SLU name received in the BIND is network-qualified, and the SLU is from a different network than the PLU, the SLU′s alias name in the PLU′s network will be the same as the SLU′s real name.

4.4.1.7 Dynamic Reconfiguration and Independent LUs

You can create and alter CDRSC major nodes as needed to effect the same level of support as dynamic reconfiguration provides. Because dynamic reconfiguration has meaning only if the independent LUs are predefined using LU definitions, it is no longer needed once you convert your independent LU definitions to CDRSCs.
You cannot use the MODIFY DR command for independent logical units.

4.4.2 Defining Independent LUs

You can define independent logical units in the following ways:

- You can have your independent logical units defined dynamically by VTAM during session establishment. See 4.4.2.1, “Dynamic Definition of Independent LUs” on page 79.
- You can define CDRSC definition statements to represent your independent logical units. See 4.4.2.2, “Using CDRSC Definition Statements for Independent LUs” on page 80.
- You can use standard LU definition statements with LOCADDR=0 coded. These LU definitions are converted into CDRSC definitions by VTAM when the major node is activated. This method is not recommended other than as a migration tool. Using this method, you cannot warm start VTAM and have your independent logical units return to a before-failure condition. Independent logical units that are defined this way are converted to CDRSCs by VTAM and placed in the ISTPDILU major node. If a new resource is detected that matches an existing CDRSC, then the new resource definition is integrated with the existing definition, and the resulting resource resides in the ISTPDILU major node. See 4.4.2.3, “Automatic Conversion of Independent LU Definition Statements” on page 81.

For information on how VTAM handles multiple definitions of one independent LU resource, see ″Rules for Multiple Definition of Resources″ in the *VTAM Resource Definition Reference*.

Migration: It is recommended that you remove pre-defined independent LU definitions from your device-type major nodes and either let VTAM dynamically define CDRSC definitions for the independent LUs on a session-request basis or create CDRSC major nodes. If you decide to code CDRSC major nodes for your independent LUs and you previously had them defined to the NCP, you should regenerate your NCP to avoid any address mismatch problems.

One of the advantages of removing existing LU definition statements for independent logical units (and using either dynamic definition of independent logical units or coding CDRSC definition statements) is that predefined, NCP generated addresses are not used by the independent logical unit. Addresses are requested as needed and are returned when no longer needed.

You can use multiple connections and the dynamic selection of session connections without dynamically defining your independent LUs as CDRSCs.

Note: If you have session takeover operations that rely on VTAM creating substitute LUs, these takeover operations can fail.

4.4.2.1 Dynamic Definition of Independent LUs

Independent LUs attaching to VTAM through a type 2.1 PU can be dynamically defined as cross-domain resources. No system definition of the independent LU is required.

If the independent logical unit initiates the session, the adjacent link station (ALS) through which the independent logical unit contacts the network does not have to be predefined to VTAM. For example, if the independent logical unit is attached through a token-ring network, then the adjacent link station would be specified in the form of the medium access control address (MACADDR) of the host. VTAM discovers the resource during session startup and dynamically creates a CDRSC to represent the logical unit.

For this to work start options DYNLU=YES and CDRDYN=YES need to be active and if connected via 3745 TIC DYNPU=YES must be coded on the NTRI logical group definition.

If the independent logical unit is the destination logical unit rather than the originating logical unit, and the destination logical unit is located on a LEN node, then you can dynamically define the independent logical unit using the adjacent link station (ALS) selection function of the session management exit routine. (An independent logical unit that is the destination logical unit on an APPN node has no such restriction.) Using this exit routine, you can provide VTAM with a method of contacting the independent logical unit. For information on the ALS selection function, see ″Dynamic Selection of Session Connections.″ For information on writing a session management exit routine, see ″Session Management Exit Routine″ in the *VTAM Customization* manual.

Note: The ALS selection function of the session management exit routine is not required if the destination logical unit is a LEN CP independent LU. Use the CPCDRSC=YES start option for this situation. If a session request is made to a LEN CP independent LU and CPCDRSC=YES is coded, VTAM builds a dynamic CDRSC to represent the LEN CP independent LU. As a result, other network resources will be able to establish sessions with the LEN CP independent LU before it has attempted to establish any sessions.

To have your independent logical units dynamically defined:

1. Code DYNLU=YES in the start list, or use it on the START command when starting VTAM; or code DYNLU=YES on all PU definition statements that represent the adjacent link stations that the independent logical units use to connect to the host. If you code DYNLU=YES when starting VTAM (either in the start list or on the START command), then you can restrict dynamically defined devices from using specific physical units by coding DYNLU=NO on the PU definition statements. If a PU has DYNLU=NO specified, VTAM does not select this PU as the adjacent link station.

   Coding DYNLU=YES enables VTAM to recognize the independent LU during session activation and dynamically define representations of the LU.

2. Set the CDRSCTI start option, if you want to change the amount of time that the dynamic definitions of independent LUs are retained after session termination (default = eight minutes).

3. The default for the CDRDYN start option is YES, enabling dynamic CDRSC definition. The CDRDYN start option overrides the CDRDYN operand on the host CDRM definition statement.
4. Code the CPCDRSC=YES start option in a host that is connected to a LEN CP to allow dynamic definition of the LEN CP independent LU when it is the destination LU. DYNLU still controls dynamic definition of all independent LUs (including LEN CPs) when they are the originating logical unit.

When an independent LU is dynamically created by VTAM, the following defaults are used:

- ENCR=NONE
- RESSCB=0
- EAS=256
- MODETAB=ISTINCLM (IBM-supplied logon mode table).

The PACING and VPACING operands specified on the PU definition statement associated with the session are sifted down to the CDRSC. The default logon mode table (MODETAB operand) is the IBM-supplied default table, ISTINCLM. The logon mode for each session is extracted from the BIND request which is passed to VTAM.

If the adjacent link station that the independent LU is using is being dynamically defined using dynamic switched definitions, you need to ensure that you have an entry for the mode you want to use in the default logon mode table, ISTINCLM. In this case, VTAM checks only ISTINCLM for the mode entry. If the mode entry is not in ISTINCLM, the session fails. After the session is started, you can change the logon mode table using the MODIFY TABLE command.

Dynamic CDRSCs are created and maintained in the ISTCDRDY major node. ISTCDRDY is activated automatically during VTAM initialization, and deactivated automatically during VTAM termination. The operator can deactivate ISTCDRDY with the VARY INACT command, in which case all dynamically defined CDRSCs are also deactivated and the dynamic CDRSC function is disabled. In addition, all sessions involving dynamically created CDRSCs (including CP-CP sessions with this host, if the partner CP was dynamically defined) are terminated.

For information on how VTAM handles multiple definitions of one independent LU resource, see ″Rules for Multiple Definition of Resources″ in the *VTAM Resource Definition Reference*.

You can use dynamic definition of independent logical units with other functions, such as multiple connections to a subarea, casual connection, or APPN.

4.4.2.2 Using CDRSC Definition Statements for Independent LUs

You can code CDRSC definition statements for your independent logical units, and specify the adjacent link stations (physical units) that VTAM uses to contact the independent logical unit. You can specify the adjacent link stations either by using the ALSLIST operand on the CDRSC definition statement, or by using the adjacent link station selection function of the session management exit routine. For more information on using the exit routine, see ″Dynamic Selection of Session Connections″ in the *VTAM V4R2 Network Implementation Guide*.

The following sample shows an independent logical unit defined using a CDRSC definition statement:

```
CDRSC    VBUILD TYPE=CDRSC
VRCDRSC  CDRSC ALSLIST=(SWPUAIO6,SWPUA107)   ADJACENT LINK STATION NAMES
               ALSREQ=YES,                   USE ALS LIST ONLY
               LOGAPPL=APPL1,                AUTOMATIC LOGON
               DLOGMOD=DSILGMOD,             LOGON MODE TABLE ENTRY
               RESSCB=3                      SESSION CONTROL BLOCKS
```

Figure 25. Defining ILU using CDRSC

ALSLIST=puname indicates to VTAM that this resource is an independent logical unit defined as a CDRSC. The ALSLIST operand can list one or more adjacent link stations that VTAM uses. The ALSLIST operand can also include an ISTAPNPU entry, a reserved keyword that represents any APPN capable PU. This entry can be used instead of listing each APPN adjacent link station. For information on controlling connection to independent LUs that are accessible over both LEN and APPN connections, see ″Establishing and Controlling Sessions″ in the *VTAM V4R2 Network Implementation Guide*.

You can add and delete adjacent link stations in the list of adjacent link stations using the MODIFY ALSLIST command. For more information on this command, see ″MODIFY ALSLIST Command″ in *VTAM V4R2 Operation*.

You can use the adjacent link station selection function of the session management exit routine to dynamically add other adjacent link stations to the list and to perform other adjacent link station selection functions. For details, see ″Session Management Exit Routine″ in *VTAM Customization*.

You can use the ALSREQ operand or start option to control which adjacent link stations can be used for session traffic to independent logical units. The ALSREQ operand indicates whether this independent logical unit can establish sessions with an adjacent link station that is not defined by the ALSLIST operand. ALSREQ=YES means that a predefined adjacent link station is required for session establishment. If you code ALSREQ=NO, any adjacent link station can receive a session request for this logical unit.

Notes

1. Even when ALSREQ=YES is specified, if any APPN adjacent link station name (or ISTAPNPU) exists in the ALS list for the CDRSC, any APPN adjacent link station can receive a session request for this logical unit.
2. Any operand normally coded on an LU definition statement can be coded on a CDRSC definition statement when defining an independent logical unit. These operands only have an effect when the CDRSC is an independent logical unit.

4.4.2.3 Automatic Conversion of Independent LU Definition Statements

The ISTPDILU major node contains CDRSC definitions for independent LUs that are converted by VTAM from LU definition statements. In converting the independent LU to a CDRSC, VTAM removes the implied hierarchy of the independent LU to a type 2.1 physical unit.

The converted CDRSCs can be used with multiple connections between a type 2.1 node and a subarea node. For this reason, the individual CDRSC minor nodes that are converted from LU definitions are not freed when the NCP (or other major node) in which they were originally defined is deactivated.

However, you can delete individual CDRSC minor nodes without deleting the entire major node. You can use the DELETE operand on the VARY INACT command on predefined CDRSC minor nodes.

When the LU definition statement is converted, the resource is represented as a CDRSC. This means that if the OWNER operand is specified on the LINE definition statement where the independent LU is predefined, it has no effect on the independent LU being converted to a CDRSC. The independent LU is converted to a CDRSC, but the PU under which it is predefined cannot be used as a session path until it is acquired by that host.

4.4.3 Connecting Independent LUs through NCPs

You should consider the following when connecting independent LUs through NCPs. For further information, refer to the *NCP, SSP, and EP Resource Definition Guide*.

LU Address Pool: NCP must generate a pool of network addresses to establish switched connections. The address pool is generated in NCP using the LUDRPOOL definition statement. The NUMILU operand on the LUDRPOOL definition statement specifies the number of independent logical unit switched connections. You need to know the maximum number of concurrent independent LU switched connections so that you can reserve the appropriate number of independent logical unit control blocks in the NCP.

Primary LU Address Pool: When an independent LU acts as the primary logical unit by initiating a session, VTAM and NCP must assign another network address to the PLU. The AUXADDR operand on the BUILD definition statement reserves this address pool. Because this is a predefined pool, you should know the maximum number of concurrent PLU sessions that can be established by all independent logical units that are attached to that NCP. Otherwise, session establishment for an independent LU, acting as the primary logical unit, fails when the pool is exhausted.

Session Information Pool: You need to know the maximum number of sessions associated with all of the type 2.1 peripheral nodes attached to the NCP subarea node. NCP reserves a pool of control blocks for maintaining information about these sessions. The pool of control blocks is established during the NCP generation process using the ADDSESS operand on the BUILD definition statement. If this pool is exhausted in the NCP, session establishment fails because the pool is fixed and cannot expand dynamically.

Reserving Session Control Blocks: You can also reserve session control blocks for each independent logical unit by specifying a value for the RESSCB operand on the LU definition statement.

Limiting Sessions: To limit the number of sessions a single independent LU can establish per link station, you can use the MAXSESS operand on the:

- LU definition statement in an NCP major node, switched major node, or dynamic reconfiguration file
- PU definition statement in a model major node
- CDRSC definition statement in a cross-domain resource major node.

This prevents a single independent LU from using all of the session control blocks generated in the NCP.

Improving Session Establishment Performance: Use of the EAS operand can improve the performance of VTAM in establishing independent logical unit sessions. The EAS operand on the LU or CDRSC definition statement estimates the number of concurrent sessions for the logical unit. For performance reasons, if you anticipate that a particular logical unit might have more than 256 concurrent sessions (the EAS default), increase this number to the nearest multiple of 256.

4.4.4 Authorized Transmission Priority for LEN Connections

Normally it is desirable for a session between two independent LUs through a subarea network to use the same transmission priority for both type 2.1 LEN connections (entry and exit). By default, when VTAM receives a BIND over a type 2.1 LEN connection, the transmission priority field received on the BFINIT is passed back on the BFCINIT and through the subarea network on the BIND. This allows this same transmission priority to be used for the session by the type 2.1 LEN connection on exit from the subarea network.

To have VTAM ignore the transmission priority specified on the BFINIT, use the AUTHLEN=NO start option or the AUTHLEN=NO operand on a particular PU definition statement (or on a GROUP or LINE statement to sift down to the PU). VTAM then sets the transmission priority field in the BFCINIT to B′01′ (medium priority), regardless of the transmission priority specified on the initial BFINIT.

4.4.5 Restrictions on Using Independent LUs

Following are some restrictions that apply to independent logical units:

- An independent LU cannot be the destination logical unit for an automatic logon session (for example, LOGAPPL).
- A dependent LU can have only one active LU-LU session at a time. Thus, there is no session with the controlling application program when the LU is in session with another application program. For independent LUs, this is not the case. VTAM initiates a session between an LU and its controlling application program, even though there are already active LU-LU sessions. Each time that a session with a PLU that is not the controlling application program ends, and the independent LU does not already have a session with the controlling application program, a session is established with the controlling application program.
- The name interpretation table function is not supported for independent LU sessions.
- The SSCP-PU session is optional and can be requested by the type 2.1 node during the XID exchange. However, the SSCP-PU session is one of the mechanisms that the type 2.1 node uses to transport network management device information (alerts) to the SSCP for delivery to the NetView program. An alternative mechanism used to report alerts is through a network management focal point function.

4.5 Compression

Compression is used to improve throughput and response time on low speed connections in a multiple-domain environment by reducing the size of the PIU, not the number of PIUs.

There is no benefit if both LUs reside in the same host or if the application programs are already doing data compression.

Data compression is negotiated on the session layer through the BIND process between the two LU partners. It is transparent to any intermediate host since it only concerns the two endpoints of the session. So if you want to use this feature you have to ensure that both endpoints support this function (VTAM V3.4.1 or higher, CM/2 V1.1, PC/3270 V3, and other platforms).

VTAM V4R2 has implemented both hardware and software compression for VSE. VM/VTAM does not support hardware compression or compression levels 2, 3, and 4.

An indication of compression is a special two-byte control sequence (for freezing/unfreezing/resetting the compression dictionaries and tables) which follows the three-byte compression header of the RU TH + RH + RU compression header + RU control sequence + user data.

There are different levels of compression:

0 No compression
1 RLE Run Length Encoding (strings of identical bytes will be replaced by shorter encoded strings)
2 LZ9 using adaptive small tables
3 LZ10 using adaptive medium tables
4 LZ12 using adaptive large tables

LZ stands for **Lempel-Ziv** algorithm.

Compression levels 2, 3, and 4 are only applicable to MVS and VSE since VM does not support the instructions used for this type of compression (RLE does not use tables).

The overall compression limit can be defined in the CMPVTAM start option or modified via the MODIFY COMPRESS command (does not affect active sessions).

To display the setting of the compression level use the DISPLAY VTAMOPTS command.

Specific compression limits for applications can be set via the CMPAPPLI and CMPAPPLO operands on the APPL statement. There you can specify the maximum compression limit used for the application′s input and output data if it is lower than that of CMPVTAM. However, this only applies to sessions where this application acts as the PLU. When compression is negotiated from the SLU side, the CMPAPPLI and CMPAPPLO operands are not used.

Note: If you specify a value larger than 1 for a VM application it will be overridden by the value of CMPVTAM.

COMPRES is an operand on the MODEENT macro instruction. It is used to modify the compression level setting for a specific logmode name. If it is set to allow negotiation (COMPRES=SYSTEM or REQD) then the compression levels will be negotiated through the BIND and BIND(RSP) RUs. Code REQD if your application will be the SLU and you want to do compression.

The data compression information is carried in CV X'66' with subvectors

X'80' passed in CDCINIT and CINIT

X'81' passed in the BIND

X'82' passed in the BIND(RSP)

4.5.1 How Compression Negotiation Works

VTAM on the PLU side compares its own values coded for CMPVTAM and APPLO. The lower of these values will be determined as the PLU-SLU level. The same is done for CMPVTAM and APPLI to determine the SLU-PLU level. Those values are then passed to the SLU in the BIND. VTAM on the SLU side will compare the values specified in CMPVTAM with the requested PLU-SLU and SLU-PLU compression levels and will use the lower of these values to include as the PLU-SLU and SLU-PLU level returned in the BIND(RSP).

4.5.2 VTAM Definitions

Start Options

CMPVTAM=compression level

CMPMIPS=compression ratio (0-100) only meaningful if CMPVTAM > 1

APPL statement

CMPAPPLI=compression level for inbound data

CMPAPPLO=compression level for outbound data

LOGMODE entry

COMPRES=REQD or SYSTEM

4.5.3 CM/2 Definitions

CM/2 supports two compression levels, RLE and LZ9.

These are specified in the Local Node Options panel for both 3270 and LU6.2 sessions.

4.5.4 Definitions for 3270 Sessions

Local node option : CM/2 must be capable of compression.

First you need to specify the maximum compression level for this node. To do this follow the path through these panels:

- Communications Manager Setup
- Communications Manager Configuration Definition
- APPC APIs.
  - Select: **Advanced**
- Communications Manager Profile List.
  - Select: **SNA Local Node Characteristics**
  - Select: **Options**

This will lead you to the Local Node Options panel where you can define the compression level.

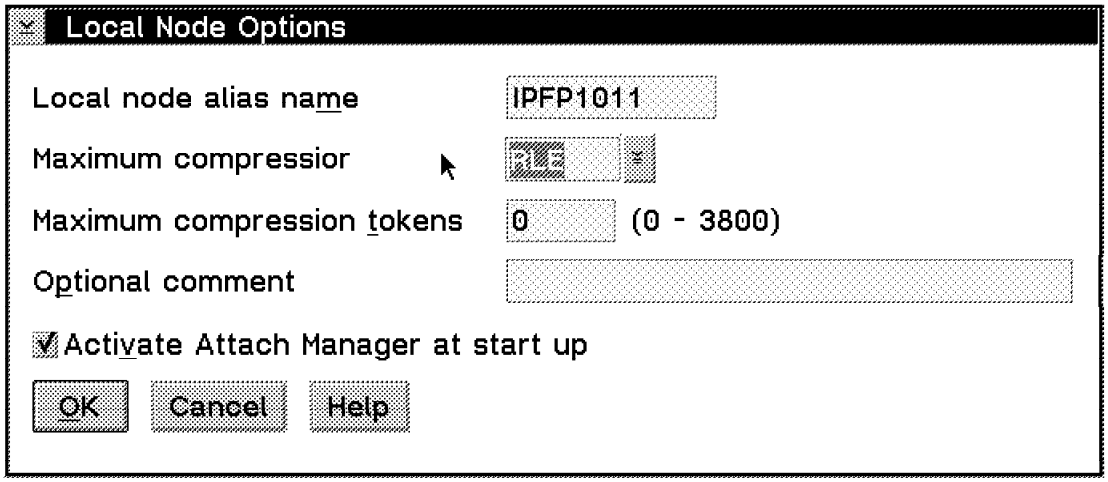

Figure 26. Local Node Options. Define the maximum compression level for this node

Next you need to enable compression for each 3270 session. This is done via the SNA Data Compression panel. To get there you need to follow this path:

- Communications Manager Setup
- Communications Manager Configuration Definition
- 3270 Emulation
- Communications Manager Profile List
- 3270 Emulation. Select the respective session
- 3270 Logical Terminal
- Options
- SNA Data Compression

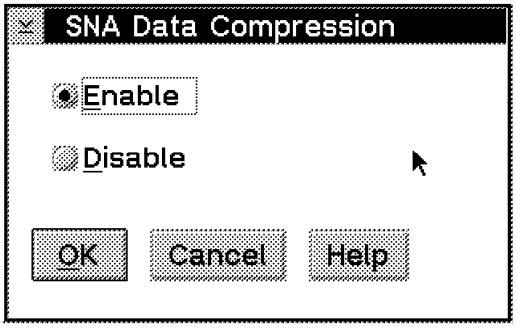

Figure 27. SNA Data Compression. Enable compression for this 3270 session

4.5.5 Definitions for LU6.2 Sessions

Modes for LU6.2 sessions must specify compression. This is done in the Mode Definition panel. To get there follow this path:

- Communications Manager Setup
- Communications Manager Configuration Definition
- APPC APIs. Select: **Advanced**
- Communications Manager Profile List.
  - Select: **SNA Features**
  - Select: **MODES** from the **SNA Features List**

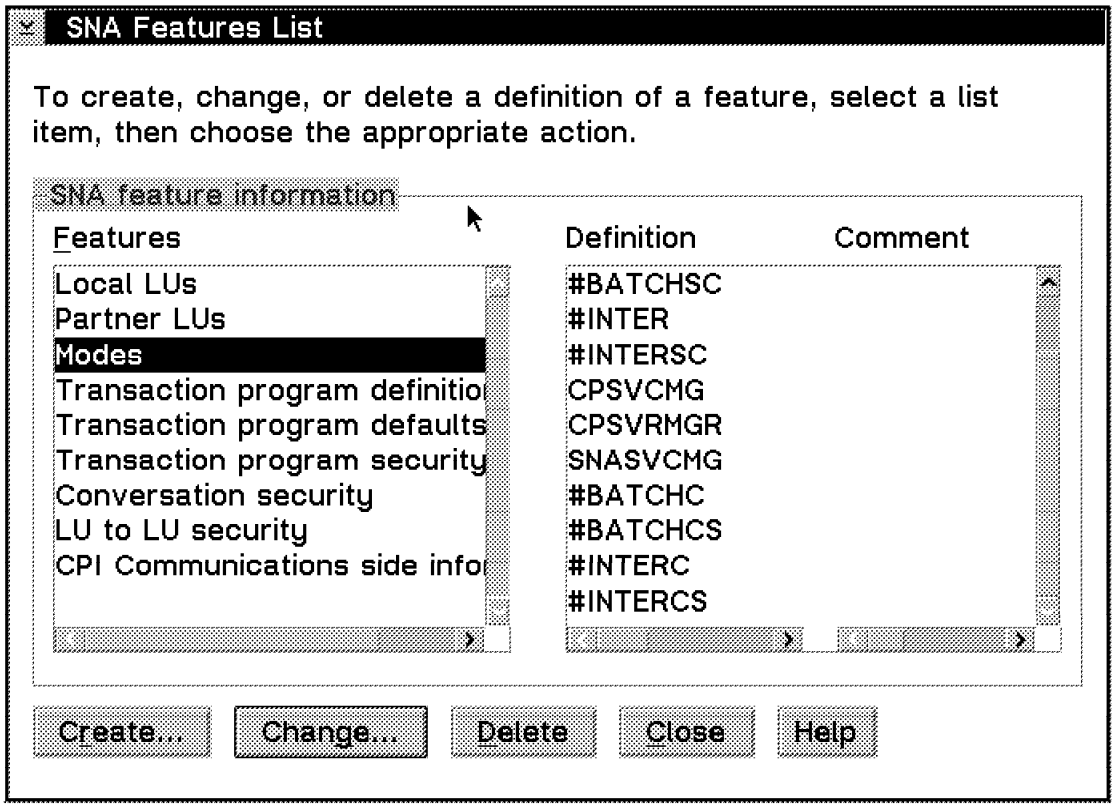

Figure 28. SNA Features List. The last four modes are applicable for compression

Select any of the last four modes. This will give you the final panel:

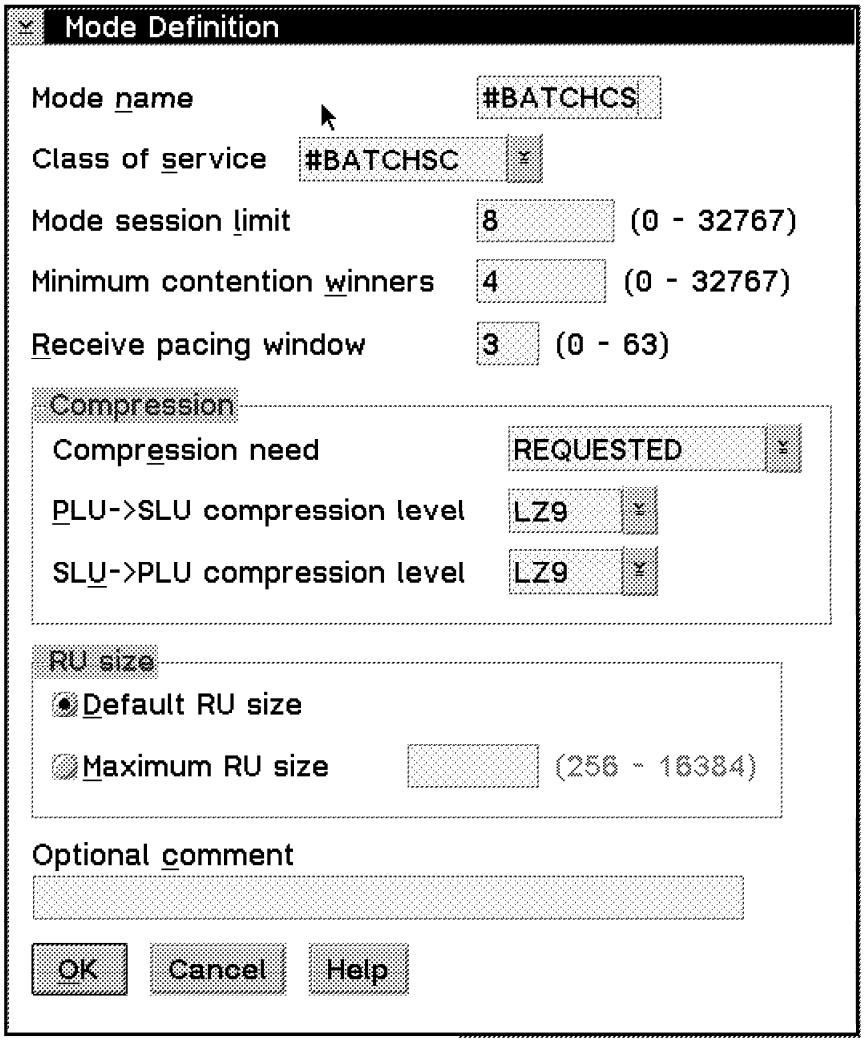

Figure 29. Mode Definition. This panel will be filled in by the selection of the mode in the previous panel

Chapter 5. Implementing APPN Networking with AHHC and DLUS

5.1 Implementing APPN Networking

So you are convinced of the advantage and beauties of APPN and that APPN networking is the way to go for your company networking infrastructure.

Since VTAM 4.2 supports all the subarea functions enhanced with the APPN architecture, you do not need to do a wholesale change of your networking system in order to go to APPN and take advantage of it. Another of the benefits of VTAM′s implementation of APPN is the migration path provision that allows you to migrate at whatever pace you desire.

The first thing you should consider in migrating to APPN is getting VTAM 4.2, either the VSE/ESA or VM/ESA version, or both if you are running VSE/ESA under VM/ESA.

VTAM 4.2 can provide the APPN functions as a stand-alone node or in conjunction with NCP. If you are using NCP, then the communications controller must be a 3745 with a minimal release level of 6.2. But if you are looking for the full connection network support and the Extended Border Node, then you must have NCP Version 7.1 or later.

After installing VTAM 4.2 and the correct version of NCP in your Communications Management Configuration (CMC) you have the APPN capability in your system. You do not need to migrate to APPN right away, you can migrate to an Interchange Node (ICN) and continue to run in subarea configuration while adding or converting part of the node to APPN mode.

For installations with a single VTAM domain, the conversion to an Interchange Node is the most appropriate move, because it can own and activate an NCP. Also most VTAM installations have connections to external subarea networks, and by implementing the interchange network, those connections won′t be affected.

Figure 30 on page 90 shows a sample CMC configuration which already has the APPN capability, after installing VTAM 4.2 in both CPUs and NCP V6.2 in the 3745 communication controller. You start your VTAM 4.2 with your *old* VTAM definitions, so it runs as a pure subarea network.

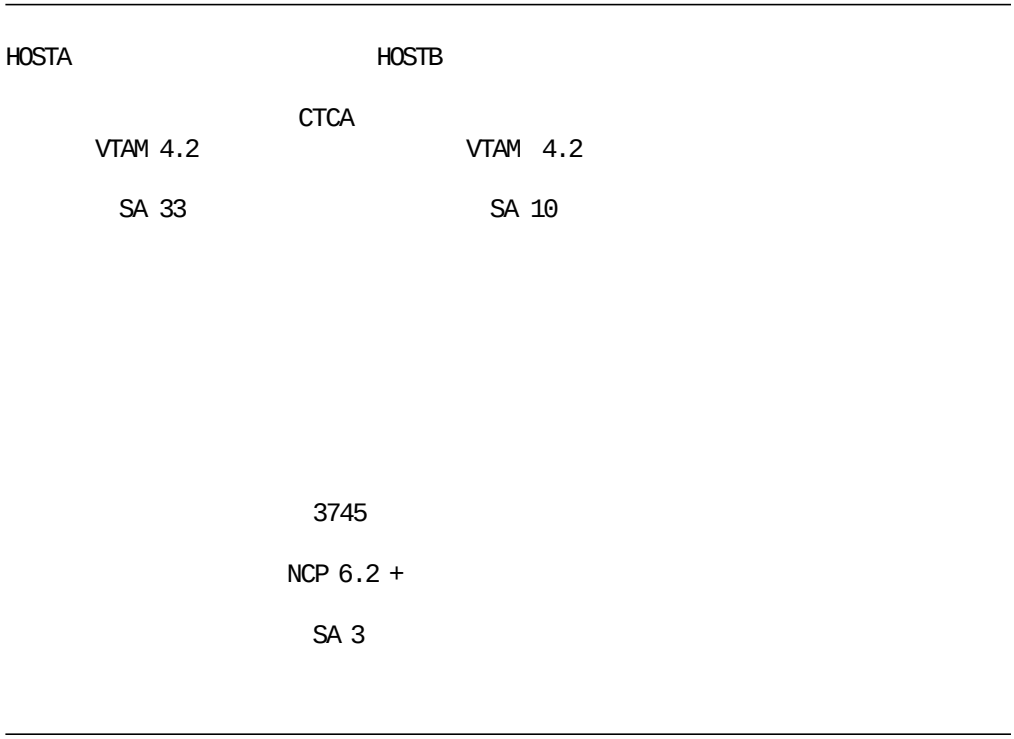

Figure 30. A CMC Configuration Example

The first step in converting your subarea network to an APPN network is implementing an Interchange Node (ICN) through the addition of the NODETYPE=NN keyword in the VTAM startup options member ATCSTRxx. This start option specifies APPN support, and since you still have the HOSTSA keyword, this means it also supports subarea networking. This Interchange Node (ICN) is capable of transforming subarea protocols to APPN protocol and vice-versa. To APPN, the CMC host and its owned NCP, become a Composite Network Node (CNN).

Adding the NODETYPE=NN keyword to HOSTA and HOSTB, makes them both ICN/NN nodes, the host that **owns** the NCP is a CNN node, the other becomes an NN node. Let us assume that HOSTA is the CMC host.

At this point, the name coded in the SSCPNAME keyword becomes also the Control Point name (CPNAME). The SSCPNAME is used for the subarea function, the CPNAME is used for the APPN function.

The next step in your migration is to convert your CTCA and channel adapter definitions to a multipath channel definition (MPC), through the definition of an APPN Host-to-Host channel connection, as explained later in this chapter.

All connections between the NCP and type 2.1 nodes are automatically tried as APPN connections when APPN support is specified, unless you explicitly designate them as LEN connections using the CONNTYPE=LEN start option or the CONNTYPE=LEN operand of the GROUP, LINE or PU definition statement. By specifying CONNTYPE=LEN initially, connections can later be converted to APPN in phases, by coding CONNTYPE=APPN on the GROUP, LINE or PU definition statement.

Code the NODETYPE=NN start option in HOSTB. The connection between HOSTB and the NCP should be coded with a local SNA major node (VBUILD

TYPE=LOCAL) to define the type 2.1 channel attachment between HOSTB and the NCP.

At this stage, the following definitions are no longer required and can be removed if you wish to do so.

- The PATH definitions
- The CDRM definitions
- The CDRSC definitions
- The CTCA definitions
- The ADJSSCP definitions

Following are some other activities and definitions you should check, when migrating your network to APPN:

- Activate the COSAPPN file.

  There is one supplied in the installation, you can copy it to your startup books library.

- CPSVCMG logon mode is required for CP-CP sessions.

  If you supply your own table, remember to include it.

- Check the CPCP start option parameter.

  This specifies if an APPN node supports CP-CP sessions with an adjacent node. CPCP=YES means all connections are supported.

- Check DYNADJCP and DYNASSCP start options.

  The default is YES. DYNADJCP specifies whether adjacent control point minor nodes are allowed to be created dynamically. DYNASSCP specifies whether VTAM dynamically routes session establishment requests to all active adjacent SSCPs if no SSCP table is defined.

- Check DYNLU start option.

  Allows you to dynamically allocate cross-domain resource definitions for resources being treated as independent LUs by this VTAM.

- Check the CPNAME for LEN nodes.

  CPNAME duplication in your PU definitions must be resolved.

- Check SORDER and SSEARCH start options.

  SORDER establishes the order in which APPN and subarea networks are searched for a search request arriving at the Interchange Node (ICN). SSEARCH determines if the subarea network is searched when a search request from the APPN network arrive at the ICN.

Remember that the **HOSTSA** and **NODETYPE** start options in your ATCSTRxx file, establish the type of network you would have.

- Coding HOSTSA only, means a subarea (SA) network.
- Coding HOSTSA and NODETYPE=NN, means an Interchange (ICN) network with support for subarea (SA) **and** APPN networking.
- Coding NODETYPE and taking out HOSTSA, means you are running **pure APPN** networking, no subarea support is included.

5.2 APPN Host-to-Host Channel (AHHC)

5.2.1 Overview

VTAM Version 4 introduced a new feature called APPN Host-to-Host Channel which connects two VTAMs via Multi Path Channels (MPC) using APPN protocols.

One major difference between the traditional Channel-to-Channel connection and MPC is that the latter supports segmentation.

Other features are:

- Supports both parallel and ESCON channels under one group definition
- Full duplex CTC protocol
- Each subchannel provides unidirectional flow
- Non-disruptive retransmission over alternate write path. MPC supports retransmission at block level. It is transparent to higher levels. If a WRITE channel program fails, then the block will be retransmitted by another available write device in that MPC group.
- Provide data integrity. Data integrity is provided by the so-called SWEEP processing. It will be invoked either if the threshold value of the resequence queue has been exceeded, thus indicating that we are losing data or if a sequence number wrap has been detected or initiated by a timer. The last block routed inbound will be compared to the last block sent by the other side. If a missing block is detected then a link inop will occur on the MPC group.
- Greater bandwidth and potentially greater throughput
- One path failure does not necessarily result in group failure. However, you cannot get it back into the group without stopping and restarting the whole group. Only if the last read or write path has failed will the complete MPC group be taken down.

5.2.2 Characteristics

MPC provides better performance as each MPC WRITE subchannel is scheduled in the order in which it has been defined in the MPC Major Node. So, for performance reasons it is recommended to define ESCON WRITE paths before the parallel WRITE paths.

For reasons of consistency you should also define the ESCON READ paths before the parallel channel READ paths, even though it is not significant.

MPC does not use DELAY. The data will be sent as soon as it is received if a WRITE path is available.

There will be no prioritization and no resequencing of PIUs according to transmission priority.

REPLYTO is used during activation and deactivation, MIH value is used during normal data flow.

MAXBFRU is used much in the same way as it is for CTC, except that MPC puts no limitations on the size of the PIU at the DLC layer.

The WRITE and the READ keywords in the line statement define the subchannel addresses to be used for writing and reading data.

There can only be one WRITE and one READ keyword per line statement.

5.2.3 How does AHHC fit in this Picture

As mentioned before MPC provides the APPN Host-to-Host connectivity. MPC is a term used in VTAM and not a hardware description. To characterize a connection as an AHHC connection you need to define a **Transport Resource List Major Node (TRL)**. There you define a **Transport Resource List Element** (TRLE) which is not a resource, but rather a description of the connectivity characteristics for a specific PU. In the Local SNA Major Node definition the PU will be defined as an APPN PU that refers to this TRLE. Upon activation of the adjacent link station VTAM uses this information to distinguish how the data is to be routed over the channel.

To bring up the AHHC connection for the first time you need to activate the TRL Major Node you have just defined. This will add the definitions to ISTTRL which is the one main TRL major node holding **all** TRLE definitions. You will not be able to do a display of the TRL major node you have defined. You will find the definitions (TRLE) by displaying the ISTTRL major node. Then activate the Local SNA Major Node which will in turn activate the PU as an APPN PU.

When defining the READ channel address in the first host, remember to code the corresponding WRITE channel address in the adjacent host to provide a complete path. Otherwise the whole group will be deactivated. In VM you can use Virtual Channel-to-Channel connections for this.

You also have to define the addresses to your system. If you forget to do this the entire group will not be activated.

You may also define not only a single address, but an address range. An address range is defined by the first and the last address separated by a hyphen.

5.2.4 Definitions

Following are the sample definitions for an AHHC connection between Host A and Host B.

TRANSPORT RESOURCE LIST MAJOR NODE HOST A

```
IPFATRLT VBUILD TYPE=TRL
IPFATRLE TRLE  LNCTL=MPC,                                    C
               MAXBFRU=16,                                   C
               READ=(502),                                   C
               WRITE=(501)
```

LOCAL SNA MAJOR NODE HOST A

```
IPFATRLL VBUILD TYPE=LOCAL
IPFALCL  PU    TRLE=IPFATRLE,                                C
               ISTATUS=ACTIVE,VPACING=0,                     C
               SSCPFM=USSSCS,                                C
               CONNTYPE=APPN,CPCP=YES
```

TRANSPORT RESOURCE LIST MAJOR NODE HOST B

```
VTMTRL   VBUILD TYPE=TRL
VTRLE500 TRLE  LNCTL=MPC,MAXBFRU=16,                         C
               READ=(501),WRITE=(502)
```

LOCAL SNA MAJOR NODE HOST B

```
VTMTRLP  VBUILD TYPE=LOCAL
VTRLP500 PU    TRLE=VTRLE500,ISTATUS=ACTIVE,                 C
               VPACING=0,SSCPFM=USSSCS,                      C
               CONNTYPE=APPN,CPCP=YES
```

5.3 Dependent LU Server and Requester

The dependent LU server (DLUS) is included in VTAM MultiDomain and InterEnterprise but not in the Client/Server package, and is available in both the VSE and VM versions. It lets remote nodes connected via an APPN network supporting only LU6.2 sessions request dependent (LU1, LU2 or LU3) sessions. They will run encapsulated over a pair of LU6.2 sessions (one inbound and one outbound). These two sessions are established between a DLUS and a dependent LU requester (DLUR) and are collectively called a CPSVRMGR pipe. A DLUR is an APPN end node or an APPN network node that owns dependent LUs, but requests that a DLUS provide the SSCP services for those dependent LUs. SSCP-PU and SSCP-LU session flows use the CPSVRMGR pipe. An SSCP-PU session is established between a VTAM network node and the dependent LU's owning PU, and an SSCP-LU session is established between VTAM and the dependent LU. Session initiation flows for the dependent LU are sent over the SSCP-LU session and VTAM can use subarea or APPN flows to initiate a session with the PLU. BIND and session data are then routed directly between the PLU and the dependent LU.

For DLUR initiated PU activation, no system definition is necessary. The dynamic switched definition facility can be used to dynamically define the PU. DYNPU=YES can be used on the group statement for other switched connections as well. In the VTAM start options you have to change two defaults to

CPCP=YES (from CPCP=LEASED)
DYNLU=YES (from DYNLU=NO)

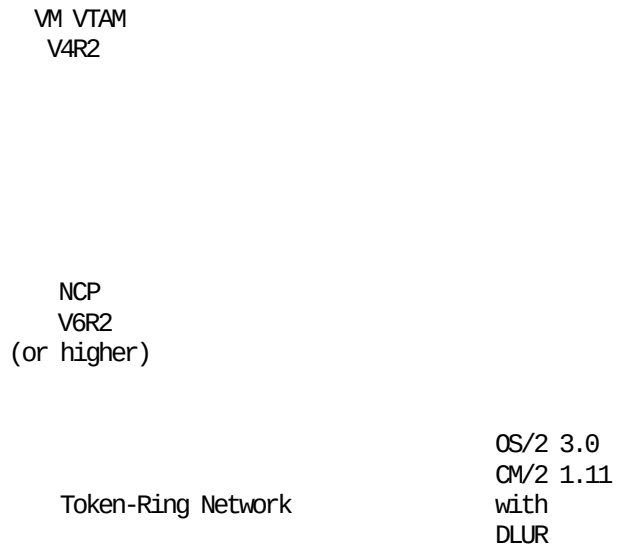

Figure 31. DLUS-DLUR Scenario

Here the DLUS-DLUR function was verified with a very simple setup with minimal changes from the samples supplied with VTAM V4R2. The DLUS was running on a VM VTAM.

It is not really meaningful to use DLUS/DLUR in the small setup illustrated above, but suppose you have a network of AS/400s or at least a single AS/400 in place of the Token-Ring network in the figure. If you have a lot of PCs behind the AS/400(s) running 3270 passthru to the VTAM host you have a lot of manual definitions in the AS/400 to maintain. Also if you currently have VTAM V3, the connection between AS/400 and VTAM will be LEN. All the dependent LUs in, or behind the AS/400(s) have to be defined under the same PU. You might run out of location addresses (254 maximum). If you upgrade to VTAM V4R2 and bring up an APPN connection between VTAM and AS/400 you can start using DLUR on the PCs attached to the AS/400(s). For those 3270 sessions you will need no manual definitions in the AS/400. In VTAM the LUs will be defined in separate switch major nodes for DLUS and not under the AS/400 PU, relieving you from the maximum of 254 dependent LUs under a PU.

5.3.1 DLUS Definitions in VTAM

In our case we coded DYNPU=YES on the NCP logical group for NTRI TIC. NCP V6R2 or higher is required. The ISTEXCCS exit is automatically brought up by VTAM V4R2 with default settings. When running unchanged the dynamic PUs will be named CN000001 and upwards and be put in the ISTDSWMN dynamic switched major node. Then we coded a Switched Major Node for a Dependent LU Server that corresponds to the sample .NDF file inside the README file which is included in the OS/2 Dependent LU requester code shipped with VTAM V4R2.

```
*** IPFASWI1 VTAMLST ************************************************

IPFASWI1 VBUILD TYPE=SWNET,                                          C
               MAXDLUR=4
*
PU4      PU    ADDR=01,                                              C
               IDBLK=05D,                                            C
               IDNUM=00001,                                          C
               MAXDATA=1920,   1                                     C
               MODETAB=AMODETAB,                                     C
               MAXPATH=3,                                            C
               ISTATUS=ACTIVE,                                       C
               USSTAB=ISTSNA
PATHU4   PATH  PID=1,                                                C
               DLURNAME=DLUR2,                                       C
               DLCADDR=(1,C,INTPU),                                  C
               DLCADDR=(2,X,05D00001)
LU4      LU    LOCADDR=01,                                           C
               PACING=(1,1),                                         C
               DLOGMOD=D4A32793,   2                                 C
               VPACING=2
*
PU5      PU    ADDR=02,                                              C
               IDBLK=05D,                                            C
               IDNUM=00002,                                          C
               MODETAB=AMODETAB,                                     C
               MAXPATH=1,                                            C
               ISTATUS=ACTIVE,                                       C
               USSTAB=ISTSNA
PATHU5   PATH  PID=1,                                                C
               DLURNAME=DLUR2,                                       C
               DLCADDR=(1,C,INTPU),                                  C
               DLCADDR=(2,X,05D00002)
LU5      LU    LOCADDR=01,                                           C
               PACING=(1,1),                                         C
               DLOGMOD=D4A32793,   2                                 C
               VPACING=2
LU6      LU    LOCADDR=02,         3                                 C
               PACING=(1,1),                                         C
               DLOGMOD=D4A32793,   2                                 C
               VPACING=2
```

Figure 32. DLUS Switch Major Node

Notes:

1 Unless you code MAXDATA=1920 the default is still 265.

2 You must add the desired logmode to the LU definitions above, we used DLOGMOD=D4A32793.

3 It seems the sample supplied with VTAM was set up to prove the point that one DLUR can be in session with two DLUS (PU4 and PU5) at the same time. We then added LU6 to prove that one DLUS can have more than one LU.

5.3.2 Installing Communication Manager/2′s DLUR Support

The VTAM-provided OS/2 DLUR for CM/2 provides full DLUR support with the following exceptions:

- Downstream PUs
- SSCP takeover/giveback (ANS=CONT)
- DLUR/DLUS cross-subnetwork support
- SDDLU (Selection of Definitions for Dependent LU - a VTAM exit)
- XRF and XRF/Crypto

To use it, ensure that your CM/2 is V1.11 at WR06150 or higher.

In the future, IBM intends to provide the OS/2 DLUR function as a part of CM/2.

First you have to download the DLUR code from VTAM to the PC. Normally you need to establish an ordinary 3270 session to do this, but if you have VM with TCP/IP and OS/2 with TCP/IP you can use FTP. We will describe how to do it from VM, using CM/2 with some remarks about differences when downloading from VSE.

Start your 3270 session on the PC, log on to user ID **5654010A** and access the 402 (BUILD4 TEST/ALTERNATE) disk as C. Open an OS/2 window, create a directory called DLUR, and make it your current directory. Then issue the following commands:

```
receive istipdlr.ram a: istipdlr aistdat1 c
receive loadram2.exe a: istldrm2 aistdat1 c
receive readme.dlr a: istiprdm aistdat1 c (ascii crlf
```

Note that we here used the **a:** session in CM/2.

In VSE you need to have access to the VTAM production library from your 3270 session and then issue:

```
receive istipdlr.ram a: istipdlr w (FILE=LIB L=vtamlib S=vtamsub BINARY
receive loadram2.exe a: istldrm2 w (FILE=LIB L=vtamlib S=vtamsub BINARY
receive readme.dlr a: istiprdm w (FILE=LIB L=vtamlib S=vtamsub ASCII
```

To avoid any access conflict during the following steps you should stop CM/2 now and then unpack the files by issuing:

```
loadram2 istipdlr.ram
```

to let LOADRAM2 explode the ISTIPDLR.RAM into three individual files in your DLUR directory. You should have the following three files, DLUR.DLL, DLR.MSG and DLRH.MSG that you manually copy to the following directories:

```
c:\cmlib\dll\dlur.dll
c:\cmlib\dlr.msg
c:\cmlib\dlrh.msg
```

The file README.DLR contains, among other things, a sample .NDF file for DLUR, so make a copy of this file to \CMLIB and name it DLUR.NDF. Then edit it, delete all lines preceding and following the sample so that only the following remains:

```
DEFINE_LOCAL_CP  FQ_CP_NAME(DEIBMIPF.DLUR2   ) 1
                 CP_ALIAS(DLUR2   )
                 NAU_ADDRESS(INDEPENDENT_LU)
                 NODE_TYPE(EN)
                 NODE_ID(X¢05DA2222¢) 2
                 NW_FP_SUPPORT(NONE)
                 HOST_FP_SUPPORT(YES)
                 HOST_FP_LINK_NAME(HOST0001)
                 MAX_COMP_LEVEL(NONE)
                 MAX_COMP_TOKENS(0);

DEFINE_LOGICAL_LINK  LINK_NAME(HOST0001) 3
                     DESCRIPTION(3745 TIC2 as NN not LEARN)
                     ADJACENT_NODE_TYPE(NN)
                     PREFERRED_NN_SERVER(YES)
                     DLC_NAME(IBMTRNET)
                     ADAPTER_NUMBER(0)
                     DESTINATION_ADDRESS(X¢400010301002O4¢) 4
                     ETHERNET_FORMAT(NO)
                     CP_CP_SESSION_SUPPORT(YES)
                     SOLICIT_SSCP_SESSION(YES)
                     NODE_ID(X¢05DA2222¢)
                     ACTIVATE_AT_STARTUP(YES)
                     USE_PUNAME_AS_CPNAME(NO)
                     LIMITED_RESOURCE(NO)
                     LINK_STATION_ROLE(USE_ADAPTER_DEFINITION)
                     MAX_ACTIVATION_ATTEMPTS(USE_ADAPTER_DEFINITION)
                     EFFECTIVE_CAPACITY(USE_ADAPTER_DEFINITION)
                     COST_PER_CONNECT_TIME(USE_ADAPTER_DEFINITION)
                     COST_PER_BYTE(USE_ADAPTER_DEFINITION)
                     SECURITY(USE_ADAPTER_DEFINITION)
                     PROPAGATION_DELAY(USE_ADAPTER_DEFINITION)
                     USER_DEFINED_1(USE_ADAPTER_DEFINITION)
                     USER_DEFINED_2(USE_ADAPTER_DEFINITION)
                     USER_DEFINED_3(USE_ADAPTER_DEFINITION);

DEFINE_DEPENDENT_LU_SERVER  LINK_NAME(VLINK1  )
                            FQ_ADJACENT_CP_NAME(DEIBMIPF.IPFVA   )
                            PU_NAME(PU4     )
                            NODE_ID(X¢05D00001¢)
                            ACTIVATE_AT_STARTUP(NO);

DEFINE_DEPENDENT_LU_SERVER  LINK_NAME(VLINK2  )
                            FQ_ADJACENT_CP_NAME(DEIBMIPF.IPFVA   )
                            PU_NAME(PU5     )
                            NODE_ID(X¢05D00002¢)
                            ACTIVATE_AT_STARTUP(NO); 5

DEFINE_MODE  MODE_NAME(BATCH   )
             DESCRIPTION(single session mode)
             COS_NAME(#CONNECT)
             DEFAULT_RU_SIZE(YES)
             MAX_RU_SIZE_UPPER_BOUND(4096)
             RECEIVE_PACING_WINDOW(7)
             MAX_NEGOTIABLE_SESSION_LIMIT(1)
             PLU_MODE_SESSION_LIMIT(1)
             MIN_CONWINNERS_SOURCE(0)
             COMPRESSION_NEED(PROHIBITED)
             PLU_SLU_COMPRESSION(NONE)
```

```
                SLU_PLU_COMPRESSION(NONE);

 DEFINE_DEFAULTS  IMPLICIT_INBOUND_PLU_SUPPORT(YES)
                  DEFAULT_MODE_NAME(BLANK)
                  MAX_MC_LL_SEND_SIZE(32767)
                  DIRECTORY_FOR_INBOUND_ATTACHES(*)
                  DEFAULT_TP_OPERATION(NONQUEUED_AM_STARTED)
                  DEFAULT_TP_PROGRAM_TYPE(BACKGROUND)
                  DEFAULT_TP_CONV_SECURITY_RQD(NO)
                  MAX_HELD_ALERTS(10);

 START_ATTACH_MANAGER;
```

1 Change DEIBMIPF to your NETID and DLUR2 if you prefer another CPname,

2 NODE_ID(X'05DA2222') under DEFINE_LOCAL_CP must be unique and not equal to the NODE_ID of VLINK2 further down in the file as it is in the sample supplied with VTAM.

3 In DEFINE_LOGICAL_LINK LINK_NAME(LINK0001) you have to change LINK0001 to HOST0001, otherwise the verification process fails.

4 DESTINATION_ADDRESS(X'40000777711604') must be changed to the address of your 3745 TIC.

5 In the sample supplied by VTAM there is a completely unnecessary definition:

```
 DEFINE_PARTNER_LU  FQ_PARTNER_LU_NAME(NETA.APPCAP06     )
                    DESCRIPTION(King Tut)
                    PARTNER_LU_ALIAS(KINGTUT)
                    PARTNER_LU_UNINTERPRETED_NAME(KINGTUT )
                    MAX_MC_LL_SEND_SIZE(4096)
                    CONV_SECURITY_VERIFICATION(NO)
                    PARALLEL_SESSION_SUPPORT(NO);
```

It is not used, and caused us a lot of confusion trying to figure out what corresponding definition is needed in VTAM. Our recommendation is that you delete these lines from your NDF file. Now save this file.

Open the CM/2 folder, open CM/2 setup, fill in DLUR as the profile name.

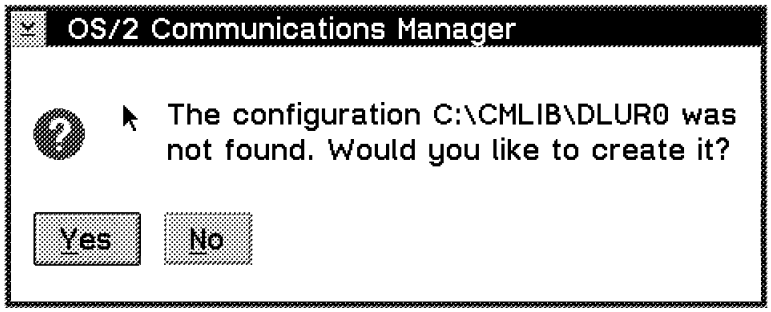

Figure 33. New Profile. Click on yes to create new profile

This will cause CM/2 to use your DLUR.NDF file and create new DLUR.CFG, DLUR.CF2 and DLUR.SEC files as you proceed. Continue as for a normal 3270 configuration.

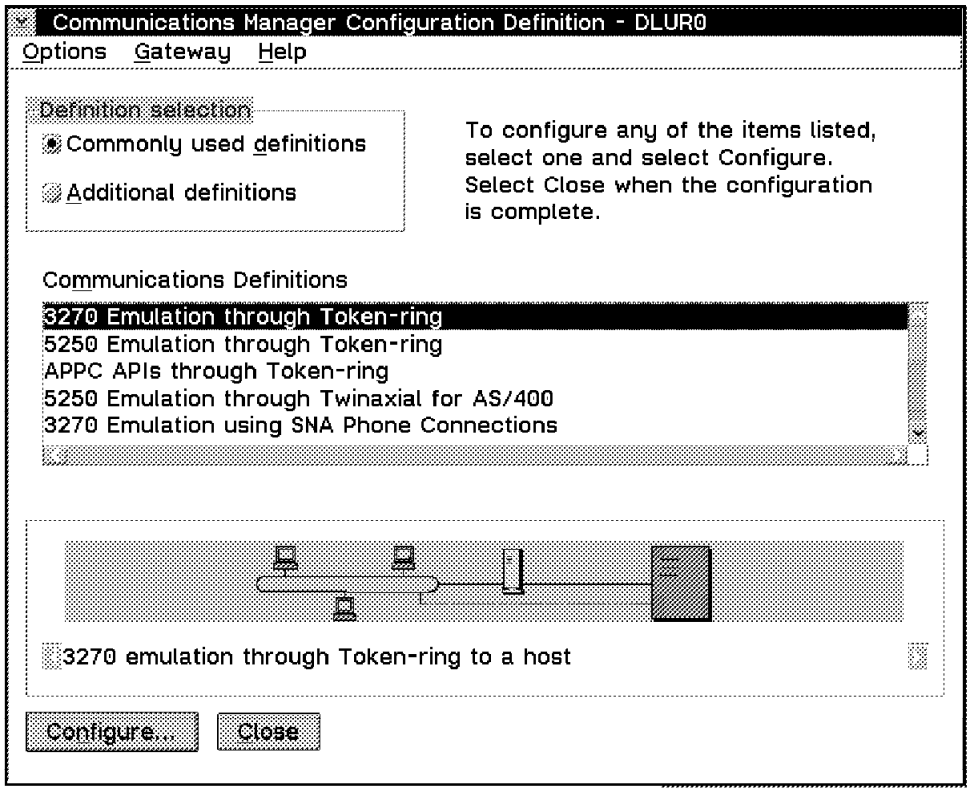

Figure 34. 3270 T/R. Normal 3270 configuration

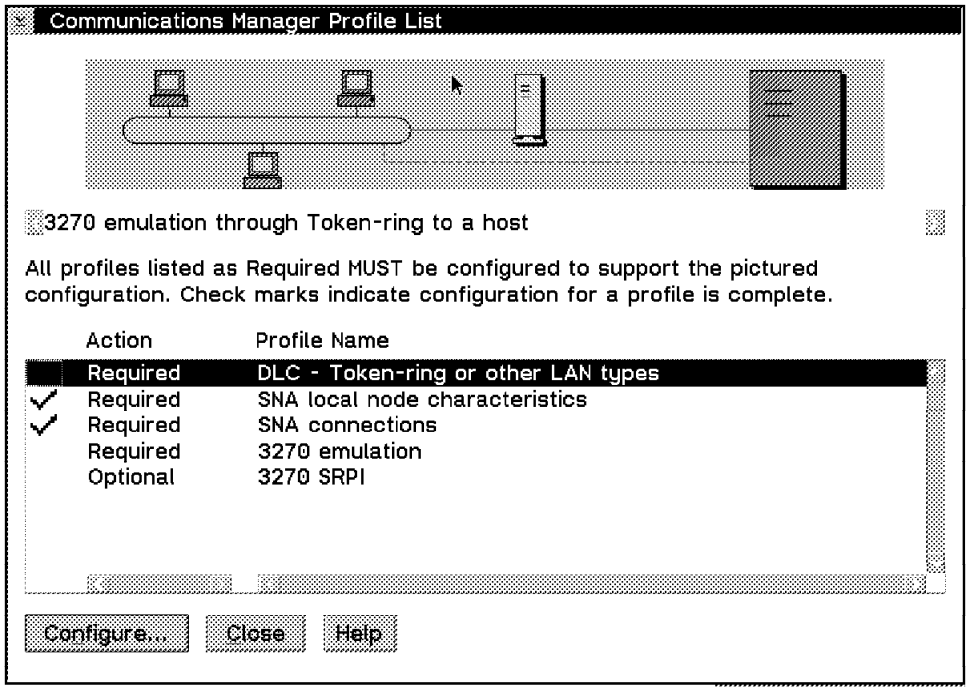

Figure 35. DLC. Select configure

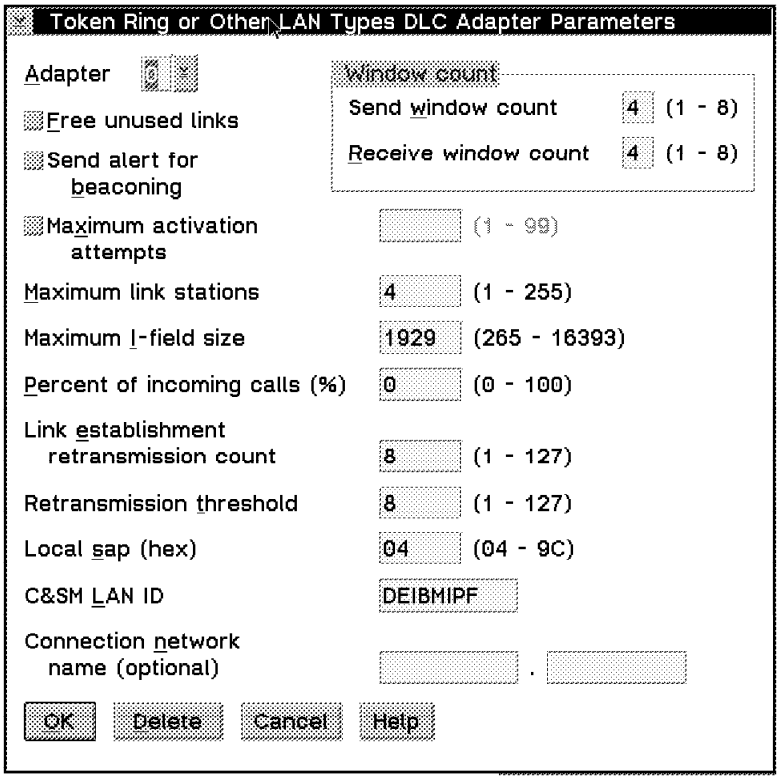

Figure 36. DLC Parameters. Just click on OK to accept the defaults

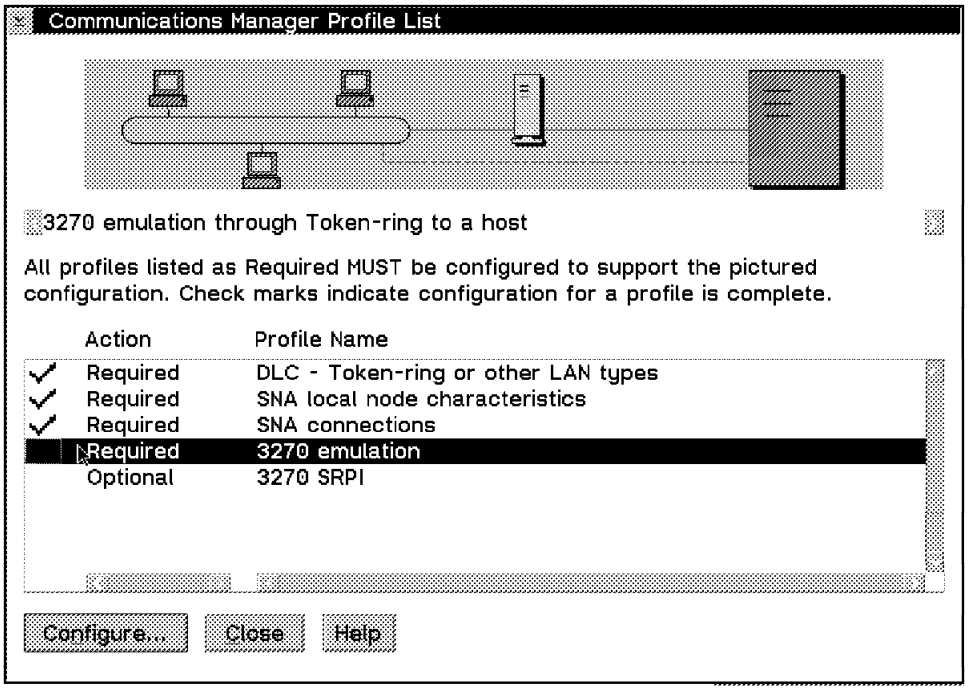

Figure 37. 3270 Emulation. Define the sessions

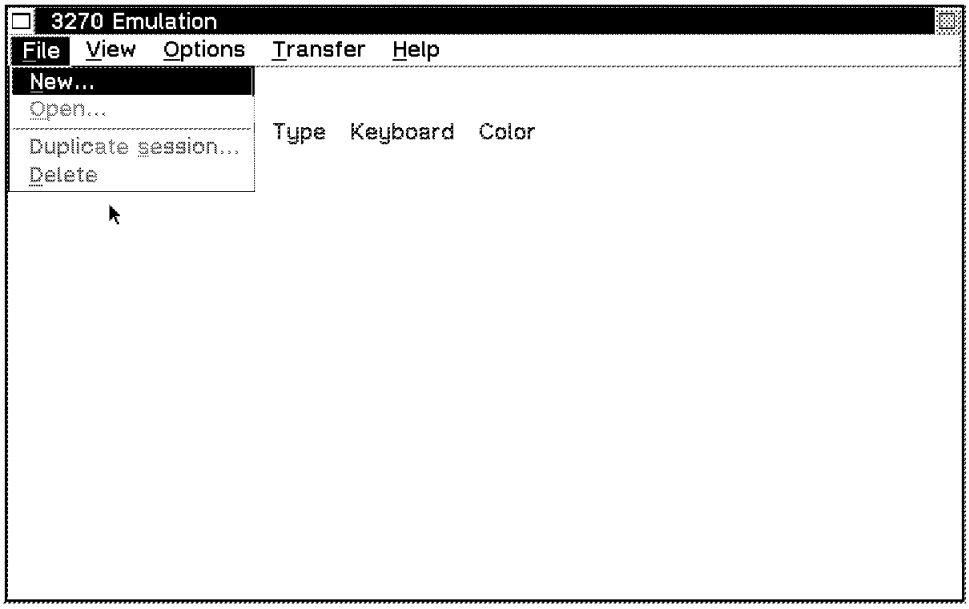

Figure 38. 3270 Session. Click on File, select New

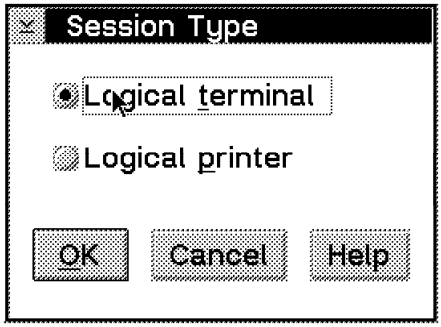

Figure 39. Session Type. Select logical terminal

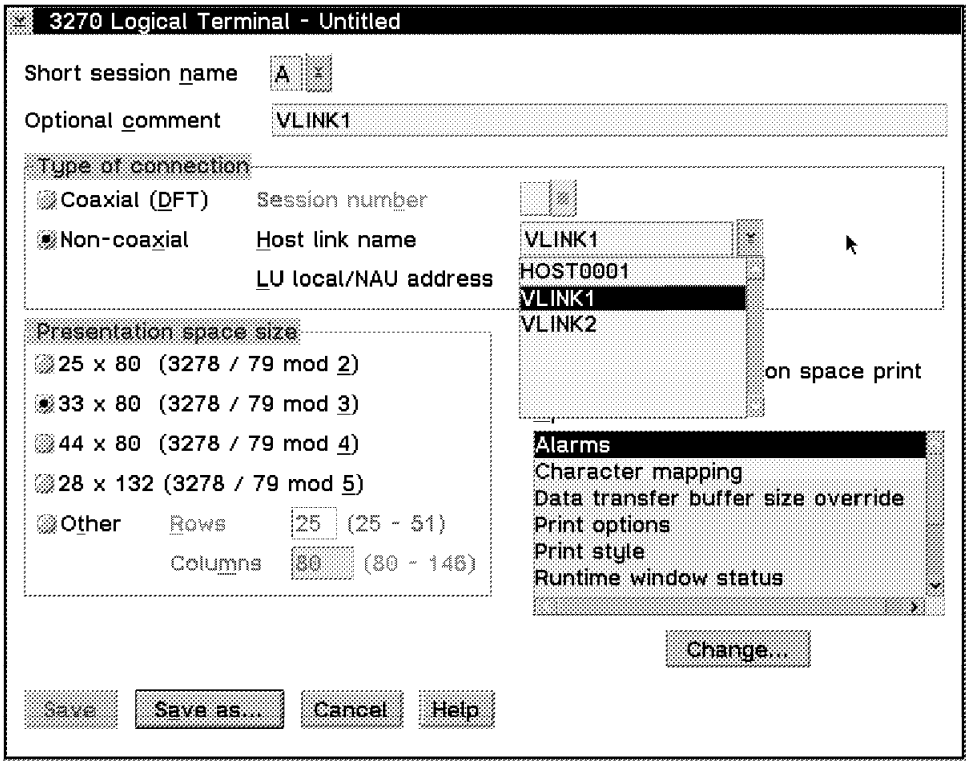

Figure 40. 3270 Logical Terminal. Click on Host link name and select VLINK1

Don't forget to change Presentation space size if you use DLOGMOD=D4A32793.

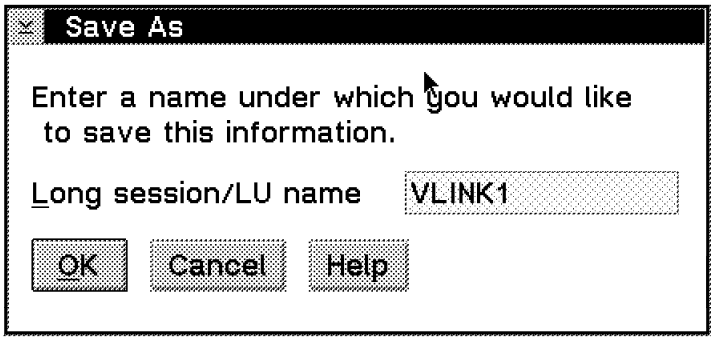

Figure 41. Save As. Add a useful session name and click on OK

When you return to the 3270 Emulation panel, click on File and select Duplicate Session.

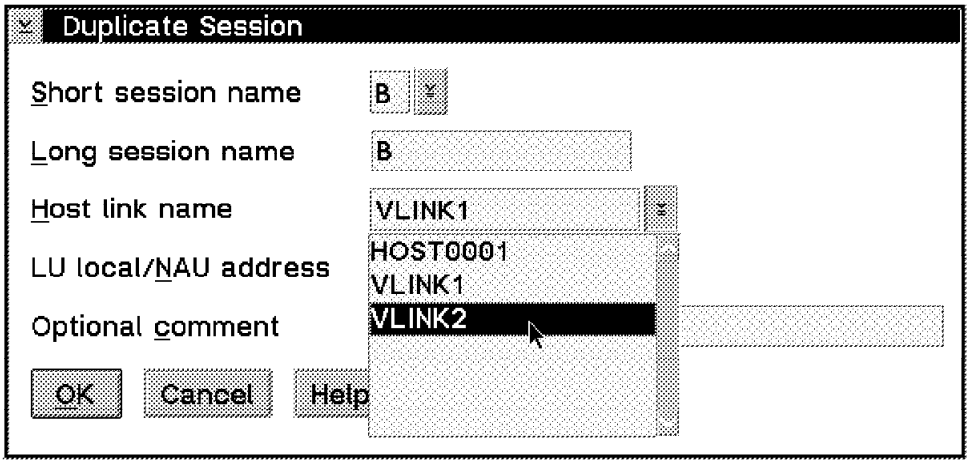

Figure 42. Duplicate Session. Select VLINK2 for this one

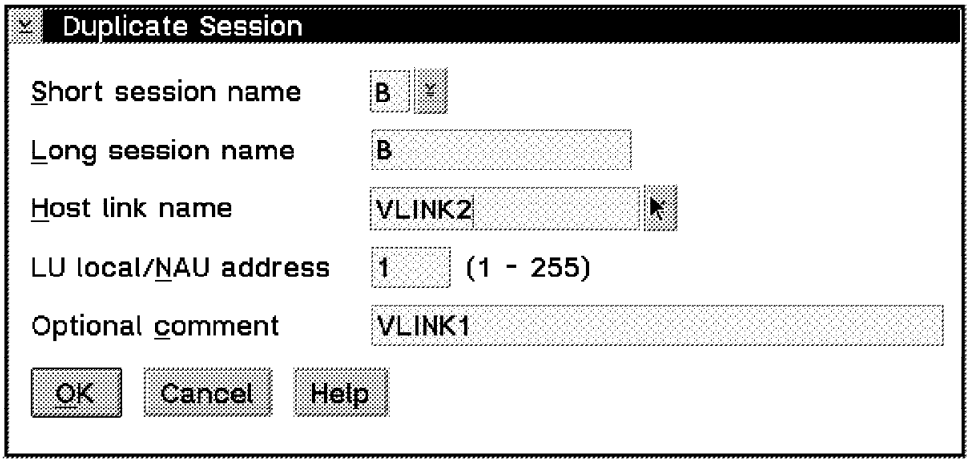

Figure 43. Duplicate Session LOCADDR=1

Warning: The LU local/NAU address has automatically incremented to 2, change it to 1. LOCADDR=01 is defined for LU5 in the VTAM switch major node IPFASWI1.

If you desire, repeat the last steps to create session 3, tied to VLINK2 with LU local/NAU address 2. Then close the window and click on Close on the following windows to let CM/2 verify the profile.

5.3.3 Verifying DLUR Operation

Before starting DLUR we did some display commands on the VTAM console:

```
SEND VTAMESA VTAM D NET,ID=ISTDSWMN,E
 Ready;
 IST097I DISPLAY ACCEPTED
 IST075I NAME = ISTDSWMN, TYPE = SW SNA MAJ NODE
 IST486I STATUS= ACTIV, DESIRED STATE= ACTIV
 IST172I NO NETWORK NODES EXIST
 IST314I END
```

```
SEND VTAMESA VTAM D NET,ID=ISTCDRDY,E
 Ready;
 IST097I DISPLAY ACCEPTED
 IST075I NAME = ISTCDRDY, TYPE = CDRSC SEGMENT
 IST486I STATUS= ACTIV, DESIRED STATE= ACTIV
 IST172I NO CDRSCS EXIST
 IST314I END
```

```
SEND VTAMESA VTAM D NET,ID=J000309F,E
 Ready;
 IST097I DISPLAY ACCEPTED
 IST075I NAME = J000309F, TYPE = LINE
 IST486I STATUS= ACTIV, DESIRED STATE= ACTIV
 IST087I TYPE = SWITCHED DIAL-INOUT, CONTROL = SDLC
 IST936I ANSWER MODE = ENABLED
 IST1440I USE = NCP, DEFINED RESOURCE, CANNOT BE REDEFINED
 IST134I GROUP = IPFG3L89, MAJOR NODE = IPFNV3
 IST172I NO NETWORK NODES EXIST
 IST314I END
```

```
SEND VTAMESA VTAM D NET,ID=IPFASWI1,E
 Ready;
 IST097I DISPLAY ACCEPTED
 IST075I NAME = IPFASWI1, TYPE = SW SNA MAJ NODE
 IST486I STATUS= ACTIV, DESIRED STATE= ACTIV
 IST084I NETWORK NODES:
 IST089I PU4      TYPE = PHYSICAL UNIT    , CONCT
 IST089I LU4      TYPE = LOGICAL UNIT     , CONCT
 IST089I PU5      TYPE = PHYSICAL UNIT    , CONCT
 IST089I LU5      TYPE = LOGICAL UNIT     , CONCT
 IST089I LU6      TYPE = LOGICAL UNIT     , CONCT
 IST314I END
```

Then we started DLUR on the PS/2, logged on to VM on the A and C windows and checked some more displays.

This is the DLUS (predefined):

```
SEND VTAMESA VTAM D NET,ID=IPFASWI1,E
 Ready;
 IST097I DISPLAY ACCEPTED
 IST075I NAME = IPFASWI1, TYPE = SW SNA MAJ NODE
 IST486I STATUS= ACTIV, DESIRED STATE= ACTIV
 IST084I NETWORK NODES:
 IST089I PU4      TYPE = PHYSICAL UNIT    , ACTIV
 IST089I LU4      TYPE = LOGICAL UNIT     , ACT/S
 IST089I PU5      TYPE = PHYSICAL UNIT    , ACTIV
 IST089I LU5      TYPE = LOGICAL UNIT     , ACTIV
 IST089I LU6      TYPE = LOGICAL UNIT     , ACT/S
 IST314I END
```

Here is the NTRI logical line. Note that LU5 is not displayed.

```
SEND VTAMESA VTAM D NET,ID=J000309F,E
 Ready;
 IST097I DISPLAY ACCEPTED
 IST075I NAME = J000309F, TYPE = LINE
 IST486I STATUS= ACTIV, DESIRED STATE= ACTIV
 IST087I TYPE = SWITCHED DIAL-INOUT, CONTROL = SDLC
 IST936I ANSWER MODE = ENABLED
 IST1440I USE = NCP, DEFINED RESOURCE, CANNOT BE REDEFINED
```

```
IST134I GROUP = IPFG3L89, MAJOR NODE = IPFNV3
IST084I NETWORK NODES:
IST089I CN000001 TYPE = PHYSICAL UNIT    , ACTIV--LX-
IST089I DLUR2    TYPE = LOGICAL UNIT     , ACT/S----Y
IST089I LU4      TYPE = LOGICAL UNIT     , ACT/S
IST089I LU6      TYPE = LOGICAL UNIT     , ACT/S
IST314I END
```

CN000001 was dynamically created when DLUR2 was started on the PS/2. It does not work unless DYNPU=YES is specified on the GROUP statement preceding the NTRI logical line definitions in the NCP deck. We added this to the VTAMLST member without regenerating the NCP and just reactivated it (before starting DLUR2).

```
SEND VTAMESA VTAM D NET,ID=CN000001,E
 Ready;
 IST097I DISPLAY ACCEPTED
 IST075I NAME = CN000001, TYPE = PU_T2.1
 IST486I STATUS= ACTIV--LX-, DESIRED STATE= ACTIV
 IST1043I CP NAME = DLUR2, CP NETID = DEIBMIPF, DYNAMIC LU = YES
 IST1105I RESOURCE STATUS TGN CP-CP TG CHARACTERISTICS
 IST1106I CN000001 AC/R    21 YES   982D000000000000000017100808080
 IST956I PU SAP= 4 MAC=400010101011 MAXDATA= 265
 IST136I SWITCHED SNA MAJOR NODE = ISTDSWMN
 IST081I LINE NAME = J000309F, LINE GROUP = IPFG3L89, MAJNOD = IPFNV3
 IST654I I/O TRACE = OFF, BUFFER TRACE = OFF
 IST355I LOGICAL UNITS:
 IST080I DLUR2    ACT/S----Y LU4      ACT/S      LU6      ACT/S
 IST314I END
```

The link station PU is put in the ISTDSWMN dynamic switch major node:

```
SEND VTAMESA VTAM D NET,ID=ISTDSWMN,E
 Ready;
 IST097I DISPLAY ACCEPTED
 IST075I NAME = ISTDSWMN, TYPE = SW SNA MAJ NODE
 IST486I STATUS= ACTIV, DESIRED STATE= ACTIV
 IST084I NETWORK NODES:
 IST089I CN000001 TYPE = PHYSICAL UNIT    , ACTIV--LX-
 IST314I END
```

DLUR2 is the independent LU for the Dependent LU Requester that is dynamically defined in VTAM during BIND. It is the endpoint of the CPSVRMGR pipe through which the SSCP-PU sessions run to PU4 and PU5.

```
SEND VTAMESA VTAM D NET,ID=DLUR2,E
 Ready;
 IST097I DISPLAY ACCEPTED
 IST075I NAME = DEIBMIPF.DLUR2, TYPE = ADJACENT CP
 IST486I STATUS= ACT/S----Y, DESIRED STATE= ACTIV
 IST977I MDLTAB=***NA*** ASLTAB=***NA***
 IST1333I ADJLIST = ***NA***
 IST861I MODETAB=***NA*** USSTAB=***NA*** LOGTAB=***NA***
 IST934I DLOGMOD=CPSVCMG USS LANGTAB=***NA***
 IST597I CAPABILITY-PLU ENABLED  ,SLU ENABLED  ,SESSION LIMIT NONE
 IST231I CDRSC MAJOR NODE = ISTCDRDY
 IST1184I CPNAME = DEIBMIPF.DLUR2 - NETSRVR = ***NA***
 IST1044I ALSLIST = ISTAPNPU
 IST082I DEVTYPE = INDEPENDENT LU / CDRSC
 IST654I I/O TRACE = OFF, BUFFER TRACE = OFF
```

```
IST171I ACTIVE SESSIONS = 0000000004, SESSION REQUESTS = 0000000000
IST206I SESSIONS:
IST1081I ADJACENT LINK STATION = CN000001
IST634I NAME     STATUS         SID          SEND RECV VR TP NETID
IST635I IPFVA    ACTIV/DL-S E1C7731480C5FEE5 0010 0000  0  1 DEIBMIPF
IST635I IPFVA    ACTIV/CP-S E1C773147EC5FEE5 0003 0001  0  1 DEIBMIPF
IST635I IPFVA    ACTIV/DL-P C65BD989654D642B 0000 0011  0  1 DEIBMIPF
IST635I IPFVA    ACTIV/CP-P C65BD989654D642A 0001 0002  0  1 DEIBMIPF
IST1355I PHYSICAL UNITS SUPPORTED BY DLUR DEIBMIPF.DLUR2
IST089I PU4      TYPE = PHYSICAL UNIT    , ACTIV
IST089I PU5      TYPE = PHYSICAL UNIT    , ACTIV
IST924I -------------------------------------------------------------
IST075I NAME = DEIBMIPF.DLUR2, TYPE = DIRECTORY ENTRY
IST1186I DIRECTORY ENTRY = REGISTERED EN
IST1184I CPNAME = DEIBMIPF.DLUR2 - NETSRVR = DEIBMIPF.IPFVA
IST314I END
```

DLUR2 is put in the ISTCDRDY dynamic CDRSC major node:

```
SEND VTAMESA VTAM D NET,ID=ISTCDRDY,E
 Ready;
 IST097I DISPLAY ACCEPTED
 IST075I NAME = ISTCDRDY, TYPE = CDRSC SEGMENT
 IST486I STATUS= ACTIV, DESIRED STATE= ACTIV
 IST478I CDRSCS:
 IST483I DLUR2    ACT/S----Y, CDRM = ***NA***, NETID = DEIBMIPF
 IST314I END
```

PU4 is one of the predefined Dependent LU Servers, note that it shows its partner DLUR2.

```
SEND VTAMESA VTAM D NET,ID=PU4,E
 Ready;
 IST097I DISPLAY ACCEPTED
 IST075I NAME = PU4, TYPE = PU_T2
 IST486I STATUS= ACTIV, DESIRED STATE= ACTIV
 IST1043I CP NAME = ***NA***, CP NETID = DEIBMIPF, DYNAMIC LU = YES
 IST1354I DLUR NAME = DLUR2              MAJNODE = IPFASWI1
 IST136I SWITCHED SNA MAJOR NODE = IPFASWI1
 IST654I I/O TRACE = OFF, BUFFER TRACE = OFF
 IST355I LOGICAL UNITS:
 IST080I LU4      ACT/S
 IST314I END
```

LU4 displays as any ordinary dependent LU.

```
SEND VTAMESA VTAM D NET,ID=LU4,E
 Ready;
 IST097I DISPLAY ACCEPTED
 IST075I NAME = DEIBMIPF.LU4, TYPE = LOGICAL UNIT
 IST486I STATUS= ACT/S, DESIRED STATE= ACTIV
 IST977I MDLTAB=***NA*** ASLTAB=***NA***
 IST861I MODETAB=AMODETAB USSTAB=ISTSNA LOGTAB=***NA***
 IST934I DLOGMOD=D4A32793 USS LANGTAB=***NA***
 IST597I CAPABILITY-PLU INHIBITED,SLU ENABLED  ,SESSION LIMIT 00000001
 IST136I SWITCHED SNA MAJOR NODE = IPFASWI1
 IST135I PHYSICAL UNIT = PU4
 IST082I DEVTYPE = LU
 IST654I I/O TRACE = OFF, BUFFER TRACE = OFF
 IST171I ACTIVE SESSIONS = 0000000001, SESSION REQUESTS = 0000000000
 IST206I SESSIONS:
```

```
 IST634I NAME     STATUS         SID           SEND RECV VR TP NETID
 IST635I IPFAAVSC ACTIV-P    C65BD989654D6440 0004 0006  0  1 DEIBMIPF
 IST314I END
```

PU5 is the other predefined Dependent LU Server, which has two LUs.

```
SEND VTAMESA VTAM D NET,ID=PU5,E
 Ready;
 IST097I DISPLAY ACCEPTED
 IST075I NAME = PU5, TYPE = PU_T2
 IST486I STATUS= ACTIV, DESIRED STATE= ACTIV
 IST1043I CP NAME = ***NA***, CP NETID = DEIBMIPF, DYNAMIC LU = YES
 IST1354I DLUR NAME = DLUR2              MAJNODE = IPFASWI1
 IST136I SWITCHED SNA MAJOR NODE = IPFASWI1
 IST654I I/O TRACE = OFF, BUFFER TRACE = OFF
 IST355I LOGICAL UNITS:
 IST080I LU5      ACTIV      LU6      ACT/S
 IST314I END
```

LU5 only shows USSMSG10 in the CM/2 emulator window.

```
SEND VTAMESA VTAM D NET,ID=LU5,E
 Ready;
 IST097I DISPLAY ACCEPTED
 IST075I NAME = DEIBMIPF.LU5, TYPE = LOGICAL UNIT
 IST486I STATUS= ACTIV, DESIRED STATE= ACTIV
 IST977I MDLTAB=***NA*** ASLTAB=***NA***
 IST861I MODETAB=AMODETAB USSTAB=ISTSNA LOGTAB=***NA***
 IST934I DLOGMOD=D4A32793 USS LANGTAB=***NA***
 IST597I CAPABILITY-PLU INHIBITED,SLU ENABLED  ,SESSION LIMIT 00000001
 IST136I SWITCHED SNA MAJOR NODE = IPFASWI1
 IST135I PHYSICAL UNIT = PU5
 IST082I DEVTYPE = LU
 IST654I I/O TRACE = OFF, BUFFER TRACE = OFF
 IST171I ACTIVE SESSIONS = 0000000000, SESSION REQUESTS = 0000000000
 IST172I NO SESSIONS EXIST
 IST314I END
```

LU6 is in session.

```
SEND VTAMESA VTAM D NET,ID=LU6,E
 Ready;
 IST097I DISPLAY ACCEPTED
 IST075I NAME = DEIBMIPF.LU6, TYPE = LOGICAL UNIT
 IST486I STATUS= ACT/S, DESIRED STATE= ACTIV
 IST977I MDLTAB=***NA*** ASLTAB=***NA***
 IST861I MODETAB=AMODETAB USSTAB=ISTSNA LOGTAB=***NA***
 IST934I DLOGMOD=D4A32793 USS LANGTAB=***NA***
 IST597I CAPABILITY-PLU INHIBITED,SLU ENABLED  ,SESSION LIMIT 00000001
 IST136I SWITCHED SNA MAJOR NODE = IPFASWI1
 IST135I PHYSICAL UNIT = PU5
 IST082I DEVTYPE = LU
 IST654I I/O TRACE = OFF, BUFFER TRACE = OFF
 IST171I ACTIVE SESSIONS = 0000000001, SESSION REQUESTS = 0000000000
 IST206I SESSIONS:
 IST634I NAME     STATUS         SID           SEND RECV VR TP NETID
 IST635I IPFAAVSC ACTIV-P    C65BD989654D6441 0001 0003  0  1 DEIBMIPF
 IST314I END
```

If a DLUR session window does not recover after ending a session by VMEXIT, select from CM/2 the following:

- Subsystem management
- SNA subsystem
- Logical link
- **VLINK1** (or whatever your name is)
- Click on Link (on action bar)
- Deactivate normal (check that it becomes inactive)
- Activate

Chapter 6. Operator Interface Enhancements

The following sections give a short summary of new or changed commands.

6.1 VARY ACT,UPDATE

In VTAM V4R2, you can dynamically reconfigure your network by making changes in the definition file and issuing a VARY ACT command with the new UPDATE operand. VTAM updates the current configuration to match the new configuration in the definition file. The major node can stay active; only the subordinate resources that you are changing must be inactive. Because the definition file is modified, the updated configuration is restored when VTAM or NCP is restarted.

This enhancement to dynamic reconfiguration allows VTAM and NCP to be synchronized even when a resource is deleted from and added back to the same location or moved from and moved back to the same location.

In addition, VTAM V4R2 enables you to change certain operand values on PU and LU definitions in NCP, local SNA, switched and transport resource list (TRLE) major nodes. You do this by making changes in the definition file and using the new UPDATE operand on the VARY ACT command for the major node. You do not need to deactivate the entire major node to change the operand values, only the affected resouces must be inactive.

Examples of what you can do without regenerating the NCP are:

- Move an LU from one PU to another.
- Change the value on the LOCADDR operand on an LU.

6.1.1 Practical Usage

For a Token-Ring attached PC with a PU and some LUs defined in a switched major node we changed the DLOGMOD on an LU, and issued **send vtam ac 2C2** for VTAM to re-access the disk (in VSE you would recatalog the book instead). Then we inactivated the LU where the change was made (**v net,inact,id=ipfta221**) and finally activated the switched major node (**v net,act,id=ipfaswi2,update=all**) to verify from the PC that the change had taken effect.

6.1.2 Programming Requirements

Releases of NCP that support dynamic reconfiguration in pre-V4R2 releases of VTAM also support this new method of reconfiguration.

6.2 Inactivating LUs in a Pending Notify State

If you experience that sessions in your network sometimes are hung in a PNFY state you may want to try the new LOSTERM operand for APPL statements. We were not able to verify its usefulness in our lab environment but recommend that you check the LOSTERM keyword in the *VTAM Resource Definition Reference* and *Release Guide*. Brief background information follows.

An application program that has a LOSTERM exit routine but no NSEXIT must issue a CLSDST macro instruction when the LOSTERM exit is driven to terminate

a session. Some applications do not do this and the session hangs. If a VARY INACT command is issued against the LU in a hung session, the LU will hang in a pending-notify (PNFY) state. The only recovery is to recycle the application to clean up the hung session or halt the VTAM program.

6.3 Display RSCLIST and DSPLYMAX Start Option

A new DISPLAY command, DISPLAY RSCLIST, enables you to display a list of resources whose names match a particular pattern. It is very flexible and enables you to:

- Obtain a subset of the information provided by the DISPLAY ID command
- Request only the output you want to see by customizing the command in the following ways:
  - Specifying wildcard values
  - Specifying multiple values
  - Excluding certain resources from being displayed
  - Limiting the scope, number or type of resources that can be displayed.

There is a new start option with default DSPLYMAX=100 that limits the number of messages displayed when a DISPLAY RSCLIST or DISPLAY STORUSE command is issued. It can be overridden by the MAX operand when issuing the command.

Check the *VTAM Operation* manual and play around with the DISPLAY RSCLIST command on your VTAM V4R2 console to become familiar with it.

Note: Consider that specifying a wildcard value for IDTYPE causes VTAM to check every resource in the network and can adversely affect performance.

6.4 Wildcard Network Identifier

You can now specify an asterisk (*) as the network identifier in the names of resources for which you want to display information using the DISPLAY ID command and the DISPLAY ADJCP command. By using an * as the network identifier, you can display information that shows you the network in which a resource resides.

6.5 Wildcard Resource Names

Use this function to broaden the scope of a display or to find the name of a resource. The following symbols can be used as part of the ID operand value:

Asterisk (*) Represents a string of unspecified characters

Question mark (?) Represents a single unspecified character.

Wildcards can be placed anywhere in the value of the ID operand and are allowed for DISPLAY APPLS, CDRMS, CDRSCS, CLSTRS, GROUPS, LINES, RSCLIST, TERMS, TGPS and TRACES. The function is enabled by DSPLYWLD=FULLWILD which is the default start option.

6.6 Limiting of Display Output by Specifying Individual Nodes

Now the ID operand is supported on the following commands: DISPLAY APPLS, CDRMS, CDRSCS, CLSTRS, GROUPS, LINES, PENDING and TERMS so that you can narrow the scope of your display, but combine with wildcards if you desire.

6.7 Modification of VTAM Start Options, Enhancements

A lot of the VTAM start options may now be changed dynamically by the MODIFY VTAMOPTS command. For the complete list see *VTAM Operation*. You will probably need to study the chapter on start options in the *VTAM Resource Definition Reference* before you dare to use them.

Appendix A. Subarea Definition Examples

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 Definitions for VM

A.1.1 ATCSTR0A

```
CRPLBUF=(400,,15,,01,50),                                      C
IOBUF=(300,384,40,,01,50),                                     C
SFBUF=(200,,,,,),                                              C
CONFIG=0A,                                                     C
DYNASSCP=NO,                                                   C
GWSSCP=NO,                                                     C
HOSTPU=IPFVMA,                                                 C
HOSTSA=10,                                                     C
MAXSUBA=255,                                                   C
NETID=DEIBMIPF,                                                C
NMVTLOG=NEVER,                                                 C
PPOLOG=YES,                                                    C
SDLCMDRS=NO,                                                   C
SSCPDYN=NO,                                                    C
SSCPID=10,                                                     C
SSCPNAME=IPFVA,                                                C
USSTAB=ISTINCNO
```

Figure 44. ATCSTR0A

A.1.2 ATCCON0A

```
        IPFAPATH,                                              C
        IPFNV3,                                                C
        IPFASNA,                                               C
        IPFAVSCS,                                              C
        IPFARSCS,                                              C
        IPFACDRM,                                              C
        IPFACDRS,                                              C
        ISTAPPLS,                                              C
        IPFALOC,                                               C
        IPCCTCA,                                               C
        PVMG
```

Figure 45. ATCCON0A

A.1.3 IPFAPATH

```
IPFHAT1  PATH  DESTSA=01,ER0=(03,1),ER1=(03,1),ER2=(03,1),ER3=(03,1),  C
               ER4=(03,1),ER5=(03,1),ER6=(03,1),ER7=(03,1),            C
               VR0=0,VR1=1,VR2=2,VR3=3,VR4=4,VR5=5,VR6=6,VR7=7
IPFHAT2  PATH  DESTSA=02,ER0=(02,1),ER1=(02,1),ER2=(02,1),ER3=(02,1),  C
               ER4=(05,1),ER5=(05,1),ER6=(05,1),ER7=(05,1),            C
               VR0=0,VR1=1,VR2=2,VR3=3,VR4=4,VR5=5,VR6=6,VR7=7
IPFHAT3  PATH  DESTSA=03,ER0=(03,1),ER1=(03,1),ER2=(03,1),ER3=(03,1),  C
               ER4=(03,1),ER5=(03,1),ER6=(03,1),ER7=(03,1),            C
               VR0=0,VR1=1,VR2=2,VR3=3,VR4=4,VR5=5,VR6=6,VR7=7
IPFHAT5  PATH  DESTSA=05,ER0=(05,1),ER1=(05,1),ER2=(05,1),ER3=(05,1),  C
               ER4=(05,1),ER5=(05,1),ER6=(05,1),ER7=(5,1),             C
               VR0=0,VR1=1,VR2=2,VR3=3,VR4=4,VR5=5,VR6=6,VR7=7
IPFHATB  PATH  DESTSA=11,ER0=(11,1),ER1=(11,1),ER2=(11,1),ER3=(11,1),  C
               ER4=(11,1),ER5=(11,1),ER6=(11,1),ER7=(11,1),            C
               VR0=0,VR1=1,VR2=2,VR3=3,VR4=4,VR5=5,VR6=6,VR7=7
IPFHATC  PATH  DESTSA=12,ER0=(12,1),ER1=(12,1),ER2=(12,1),ER3=(12,1),  C
               ER4=(12,1),ER5=(12,1),ER6=(12,1),ER7=(12,1),            C
               VR0=0,VR1=1,VR2=2,VR3=3,VR4=4,VR5=5,VR6=6,VR7=7
IPFHAT33 PATH  DESTSA=33,ER0=(33,1),ER1=(33,1),ER2=(33,1),ER3=(33,1),  C
               ER4=(33,1),ER5=(33,1),ER6=(33,1),ER7=(33,1),            C
               VR0=0,VR1=1,VR2=2,VR3=3,VR4=4,VR5=5,VR6=6,VR7=7
```

Figure 46. IPFAPATH

A.1.4 IPFANV3

```
*************************************************************************
*        LOGICAL  GROUP FOR NTRI TIC 2 (LINE 1089)                      *
*************************************************************************
IPFG3L89 GROUP ECLTYPE=LOGICAL,       LOGICAL GROUP                     *
               LNCTL=SDLC,                                              *
               DIAL=YES,                                                *
               CALL=INOUT,            ALLOW DIAL IN AND DIAL OUT        *
               AUTOGEN=40,            AUTOGEN 20 LOGICAL LINES/PUS      *
               TYPE=NCP,                                                *
               ISTATUS=INACTIVE,      INITIAL STATUS                    *
               PHYPORT=2,             POINTS TO TIC (PORTADD)           *
               LEVEL2=ECLNAVL2,                                         *
               LEVEL3=ECLNAVL3,                                         *
               LEVEL5=NCP,                                              *
               TIMER=(ECLNAVT1,,ECLNAVT2,ECLNAVT3),                     *
               XIO=(ECLNAVXL,ECLNAVXS,ECLNAVXI,ECLNAVXK),               *
               USERID=(5668854,ECLVBDT,NORECMS,,ECLNMVT),               *
               LINEADD=NONE,                                            *
               LINEAUT=YES,                                             *
               MAXPU=1,                                                 *
               NPACOLL=NO,                                              *
               PUTYPE=2,                                                *
               XMITDLY=NONE,                                            *
               COMPOWN=YES,                                             *
               RETRIES=(6,0,0,6)
         IGNORE     * LINES BETWEEN IGNORE/NOIGNORE WILL BE REGENERATED
* GENERATED BY ECL
J0003051 LINE UACB=X$L41A
* GENERATED BY ECL
J0003052 PU
*
*
* omitted lines
*
*
* GENERATED BY ECL
J000309D LINE UACB=X$L79A
* GENERATED BY ECL
J000309E PU
* GENERATED BY ECL
J000309F LINE UACB=X$L80A
* GENERATED BY ECL
J00030A0 PU
         NOIGNORE   * LINES BETWEEN IGNORE/NOIGNORE WILL BE REGENERATED
```

Figure 47. IPFANV3

A.1.5 IPFASNA

```
*********************************************************************
***** TRL LOCAL         3174 DEFINITION                          *****
*****                                                            *****
***** IPFPA120 : LOCAL 3174            LOCAL SNA TERM (X16)      *****
*********************************************************************
***********************************************************
***********************************************************
IPFASNA  VBUILD TYPE=LOCAL
IPFPA120 PU    CUADDR=120,USSTAB=ISTSNA,ISTATUS=ACTIVE,                C
               LOGAPPL=IPFAAVSC,MAXBFRU=10
IPFTAS00 LU    LOCADDR=02,DLOGMOD=D4A32793
IPFTAS01 LU    LOCADDR=03,DLOGMOD=D4A32793
IPFTAS02 LU    LOCADDR=04,DLOGMOD=D4A32793
IPFTAS03 LU    LOCADDR=05,DLOGMOD=D4A32793
IPFTAS04 LU    LOCADDR=06,DLOGMOD=D4A32793
IPFTAS05 LU    LOCADDR=07,DLOGMOD=D4A32793
IPFTAS06 LU    LOCADDR=08,DLOGMOD=D4A32793
IPFTAS07 LU    LOCADDR=09,DLOGMOD=D4A32793
IPFTAS08 LU    LOCADDR=10,DLOGMOD=D4A32793
IPFTAS09 LU    LOCADDR=11,DLOGMOD=D4A32793
IPFTAS10 LU    LOCADDR=12,DLOGMOD=D4A32793
IPFTAS11 LU    LOCADDR=13,DLOGMOD=D4A32793
IPFTAS12 LU    LOCADDR=14,DLOGMOD=D4A32793
IPFTAS13 LU    LOCADDR=15,DLOGMOD=D4A32793
IPFTAS14 LU    LOCADDR=16,DLOGMOD=D4A32793
IPFTAS15 LU    LOCADDR=17,DLOGMOD=D4A32793
```

Figure 48. IPFASNA

A.1.6 IPFAVSCS

```
         VBUILD TYPE=APPL
IPFAAVSC APPL  AUTH=(PASS,ACQ),PARSESS=YES,ACBNAME=VM,                 C
               PRTCT=VM,AUTHEXIT=YES
```

Figure 49. IPFAVSCS

A.1.7 IPFARSCS

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

Figure 50. IPFARSCS

A.1.8 IPFACDRM

```
         VBUILD TYPE=CDRM
IPFVA    CDRM   SUBAREA=10,CDRDYN=YES
IPFVA1   CDRM   SUBAREA=11,CDRSC=OPT,ISTATUS=INACTIVE
IPFVA2   CDRM   SUBAREA=12,CDRSC=OPT,ISTATUS=INACTIVE
IPFVA33  CDRM   SUBAREA=33,CDRSC=OPT
IPFV4    CDRM   SUBAREA=04,CDRSC=OPT
IPF      CDRM   SUBAREA=01,CDRSC=OPT
* VSEMCDRM CDRM   SUBAREA=01,CDRSC=OPT
IPFV2    CDRM   SUBAREA=02,CDRSC=OPT,istatus=inactive
IPFV9    CDRM   SUBAREA=09,CDRSC=OPT,ISTATUS=INACTIVE
```

Figure 51. IPFACDRM

A.1.9 IPFACDRS

```
         VBUILD TYPE=CDRSC
IPFA4RSC CDRSC  CDRM=IPFV4
IPFA4VSC CDRSC  CDRM=IPFV4
IPFF4    CDRSC  CDRM=IPFV4
CICST1   CDRSC  CDRM=IPFVA1
CICST2   CDRSC  CDRM=IPFVA1
CICS15   CDRSC  CDRM=IPFVA2
IPFA2RSC CDRSC  CDRM=IPFV2
IPFA2VSC CDRSC  CDRM=IPFV2
IPFA9RSC CDRSC  CDRM=IPFV9
IPFA9VSC CDRSC  CDRM=IPFV9
IPFA1VSC CDRSC  CDRM=IPF
IPFA1RSC CDRSC  CDRM=IPF
IPFF1    CDRSC  CDRM=IPF
IPFT1T1A CDRSC CDRM=IPF
IPFT1T1B CDRSC CDRM=IPF
IPFT1T1C CDRSC CDRM=IPF
IPFT1T1D CDRSC CDRM=IPF
IPFT1T2A CDRSC CDRM=IPF
IPFT1T2B CDRSC CDRM=IPF
IPFT1T2C CDRSC CDRM=IPF
IPFT1T2D CDRSC CDRM=IPF
IPFT1T3A CDRSC CDRM=IPF
IPFT1T3B CDRSC CDRM=IPF
IPFT1T3C CDRSC CDRM=IPF
IPFT1T3D CDRSC CDRM=IPF
```

Figure 52. IPFACDRS

A.1.10 ISTAPPLS

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

Figure 53. ISTAPPLS

A.1.11 IPFALOC

```
        LBUILD
IPFTAL20 LOCAL CUADDR=920,TERM=3277,DLOGMOD=D4B32793,USSTAB=ISTNSNA
IPFTAL21 LOCAL CUADDR=921,TERM=3277,DLOGMOD=D4B32793,USSTAB=ISTNSNA
IPFTAL22 LOCAL CUADDR=922,TERM=3277,DLOGMOD=D4B32793,USSTAB=ISTNSNA
IPFTAL23 LOCAL CUADDR=923,TERM=3277,DLOGMOD=D4B32793,USSTAB=ISTNSNA
IPFTAL24 LOCAL CUADDR=924,TERM=3277,DLOGMOD=D4B32793,USSTAB=ISTNSNA
IPFTAL25 LOCAL CUADDR=925,TERM=3277,DLOGMOD=D4B32793,USSTAB=ISTNSNA
IPFTAL26 LOCAL CUADDR=926,TERM=3277,DLOGMOD=D4B32793,USSTAB=ISTNSNA
IPFTAL27 LOCAL CUADDR=927,TERM=3277,DLOGMOD=D4B32793,USSTAB=ISTNSNA
IPFTAL28 LOCAL CUADDR=928,TERM=3277,DLOGMOD=D4B32793
IPFTAL29 LOCAL CUADDR=929,TERM=3277,DLOGMOD=D4B32793
IPFTAL2A LOCAL CUADDR=92A,TERM=3277,DLOGMOD=D4B32793
IPFTAL2B LOCAL CUADDR=92B,TERM=3277,DLOGMOD=D4B32793
IPFTAL2C LOCAL CUADDR=92C,TERM=3277,DLOGMOD=D4B32793
IPFTAL2D LOCAL CUADDR=92D,TERM=3277,DLOGMOD=D4B32793
IPFTAL2E LOCAL CUADDR=92E,TERM=3277,DLOGMOD=D4B32793
IPFTAL2F LOCAL CUADDR=92F,TERM=3277,DLOGMOD=D4B32793
IPFTAL30 LOCAL CUADDR=930,TERM=3277,DLOGMOD=D4B32793
IPFTAL31 LOCAL CUADDR=931,TERM=3277,DLOGMOD=D4B32793
IPFTAL32 LOCAL CUADDR=932,TERM=3277,DLOGMOD=D4B32793
IPFTAL33 LOCAL CUADDR=933,TERM=3277,DLOGMOD=D4B32793
IPFTAL34 LOCAL CUADDR=934,TERM=3277,DLOGMOD=D4B32793
IPFTAL35 LOCAL CUADDR=935,TERM=3277,DLOGMOD=D4B32793
IPFTAL36 LOCAL CUADDR=936,TERM=3277,DLOGMOD=D4B32793
IPFTAL37 LOCAL CUADDR=937,TERM=3277,DLOGMOD=D4B32793
IPFTAL38 LOCAL CUADDR=938,TERM=3277,DLOGMOD=D4B32793
IPFTAL39 LOCAL CUADDR=939,TERM=3277,DLOGMOD=D4B32793
IPFTAL3A LOCAL CUADDR=93A,TERM=3277,DLOGMOD=D4B32793
IPFTAL3B LOCAL CUADDR=93B,TERM=3277,DLOGMOD=D4B32793
IPFTAL3C LOCAL CUADDR=93C,TERM=3277,DLOGMOD=D4B32793
IPFTAL3D LOCAL CUADDR=93D,TERM=3277,DLOGMOD=D4B32793
IPFTAL3E LOCAL CUADDR=93E,TERM=3277,DLOGMOD=D4B32793
IPFTAL3F LOCAL CUADDR=93F,TERM=3277,DLOGMOD=D4B32793
```

Figure 54. IPFALOC

A.1.12 IPCCTCA

```
*************************************************************************
* CTCA to VSE (SA 33)                                                   *
*************************************************************************
        VBUILD TYPE=CA
G10555   GROUP LNCTL=CTCA,                                             C
               ISTATUS=ACTIVE
L10555   LINE  ADDRESS=500,                                            C
               MAXBFRU=10,                                             C
               ISTATUS=ACTIVE
P10555   PU
```

Figure 55. IPCCTCA

A.1.13 PVMG

```
*********************************************************************
**> Pass-Through 2.1 VTAMLST for PVMG component                   <**
*********************************************************************
PVMG     VBUILD TYPE=APPL
*
IPFAAMSA APPL  ACBNAME=IPFAAMSA,AUTH=(PASS,NVPACE),AUTHEXIT=YES,       C
               MODETAB=SNAMODET,PARSESS=YES,SONSCIP=YES,VPACING=0
*
IPFAAP01 APPL  ACBNAME=IPFAAP01,AUTH=(PASS,NVPACE),EAS=1,              C
               MODETAB=SNAMODET,VPACING=0,AUTHEXIT=YES
IPFAAP02 APPL  ACBNAME=IPFAAP02,AUTH=(PASS,NVPACE),EAS=1,              C
               MODETAB=SNAMODET,VPACING=0,AUTHEXIT=YES
IPFAAP03 APPL  ACBNAME=IPFAAP03,AUTH=(PASS,NVPACE),EAS=1,              C
               MODETAB=SNAMODET,VPACING=0,AUTHEXIT=YES
IPFAAP04 APPL  ACBNAME=IPFAAP04,AUTH=(PASS,NVPACE),EAS=1,              C
               MODETAB=SNAMODET,VPACING=0,AUTHEXIT=YES
IPFAAP05 APPL  ACBNAME=IPFAAP05,AUTH=(PASS,NVPACE),EAS=1,              C
               MODETAB=SNAMODET,VPACING=0,AUTHEXIT=YES
IPFAAP06 APPL  ACBNAME=IPFAAP06,AUTH=(PASS,NVPACE),EAS=1,              C
               MODETAB=SNAMODET,VPACING=0,AUTHEXIT=YES
IPFAAP07 APPL  ACBNAME=IPFAAP07,AUTH=(PASS,NVPACE),EAS=1,              C
               MODETAB=SNAMODET,VPACING=0,AUTHEXIT=YES
IPFAAP08 APPL  ACBNAME=IPFAAP08,AUTH=(PASS,NVPACE),EAS=1,              C
               MODETAB=SNAMODET,VPACING=0,AUTHEXIT=YES
IPFAAP09 APPL  ACBNAME=IPFAAP09,AUTH=(PASS,NVPACE),EAS=1,              C
               MODETAB=SNAMODET,VPACING=0,AUTHEXIT=YES
IPFAAP10 APPL  ACBNAME=IPFAAP10,AUTH=(PASS,NVPACE),EAS=1,              C
               MODETAB=SNAMODET,VPACING=0,AUTHEXIT=YES
IPFAAP11 APPL  ACBNAME=IPFAAP11,AUTH=(PASS,NVPACE),EAS=1,              C
               MODETAB=SNAMODET,VPACING=0,AUTHEXIT=YES
IPFAAP12 APPL  ACBNAME=IPFAAP12,AUTH=(PASS,NVPACE),EAS=1,              C
               MODETAB=SNAMODET,VPACING=0,AUTHEXIT=YES
IPFAAP13 APPL  ACBNAME=IPFAAP13,AUTH=(PASS,NVPACE),EAS=1,              C
               MODETAB=SNAMODET,VPACING=0,AUTHEXIT=YES
IPFAAP14 APPL  ACBNAME=IPFAAP14,AUTH=(PASS,NVPACE),EAS=1,              C
               MODETAB=SNAMODET,VPACING=0,AUTHEXIT=YES
IPFAAP15 APPL  ACBNAME=IPFAAP15,AUTH=(PASS,NVPACE),EAS=1,              C
               MODETAB=SNAMODET,VPACING=0,AUTHEXIT=YES
IPFAAP16 APPL  ACBNAME=IPFAAP16,AUTH=(PASS,NVPACE),EAS=1,              C
               MODETAB=SNAMODET,VPACING=0,AUTHEXIT=YES
IPFAAP17 APPL  ACBNAME=IPFAAP17,AUTH=(PASS,NVPACE),EAS=1,              C
               MODETAB=SNAMODET,VPACING=0,AUTHEXIT=YES
IPFAAP18 APPL  ACBNAME=IPFAAP18,AUTH=(PASS,NVPACE),EAS=1,              C
               MODETAB=SNAMODET,VPACING=0,AUTHEXIT=YES
IPFAAP19 APPL  ACBNAME=IPFAAP19,AUTH=(PASS,NVPACE),EAS=1,              C
               MODETAB=SNAMODET,VPACING=0,AUTHEXIT=YES
IPFAAP20 APPL  ACBNAME=IPFAAP20,AUTH=(PASS,NVPACE),EAS=1,              C
               MODETAB=SNAMODET,VPACING=0,AUTHEXIT=YES
*
********** E  N  D **************************************************
```

Figure 56. PVMG

A.2 Definitions for VSE Subarea Networking

A.2.1 ATCSTR33

```
************************************************************************
*  ATCSTR33 FOR VSE/ESA 2.1 SA=33
************************************************************************
SSCPID=33,                                                            C
SSCPNAME=IPFV33,                                                      C
NETID=DEIBMIPF,                                                       C
HOSTSA=33,                                                            C
HOSTPU=IPFVA33,                                                       C
MAXSUBA=255,                                                          C
CONFIG=33,                                                            C
NOPROMPT,                                                             C
IOINT=0,                                                              C
SGALIMIT=0,                                                           C
BSBUF=(28,,,,1),                                                      C
CRPLBUF=(60,,,,1),                                                    C
LFBUF=(70,,,,11),                                                     C
IOBUF=(70,288,,,11),                                                  C
LPBUF=(12,,,,6),                                                      C
SFBUF=(20,,,,20),                                                     C
SPBUF=(210,,,,32),                                                    C
XDBUF=(6,,,,1)
```

Figure 57. ATCSTR33

A.2.2 ATCCON33

```
************************************************************************
*  ATCCON33 FOR VSE/ESA 2.1 SA=33
************************************************************************
        VTMAPPL,                                                      C
        VTMSNA,                                                       C
        VTMNSNA,                                                      C
        VTCTCA33,                                                     C
        VTPATH33,                                                     C
        VTCDRM33,                                                     C
        VTCDRS33
```

Figure 58. ATCCON33

A.2.3 VTMAPPL

```
VTMAPPL  VBUILD TYPE=APPL
DBDCCICS APPL  AUTH=(PASS,ACQ),MODETAB=IESINCLM,PARSESS=YES
PRODCICS APPL  AUTH=(PASS,ACQ),MODETAB=IESINCLM,PARSESS=YES
POWER    APPL  AUTH=(ACQ)
PNET     APPL  AUTH=(PASS,ACQ),VPACING=3,MODETAB=VTMLOGTB,DLOGMOD=PNET
IESWAITT APPL  AUTH=(NOACQ)
```

Figure 59. VTMAPPL

A.2.4 VTMSNA

```
VTMSNA   VBUILD TYPE=LOCAL
DPA89021 PU    CUADDR=890,                                          C
               PUTYPE=2,ISTATUS=ACTIVE,MAXBFRU=6
A0289021 LU    LOCADDR=2,                                           C
               DLOGMOD=SP3272QS,                                    C
               MODETAB=IESINCLM,                                    C
               USSTAB=VTMUSSTR,                                     C
               PACING=1,VPACING=2,                                  C
               MDLTAB=VTMMDL,                                       C
               MDLENT=VSELU2Q,                                      C
               ISTATUS=ACTIVE,SSCPFM=USSSCS
A0389021 LU    LOCADDR=3,                                           C
               DLOGMOD=SP3272QS,                                    C
               MODETAB=IESINCLM,                                    C
               USSTAB=VTMUSSTR,                                     C
               PACING=1,VPACING=2,                                  C
               MDLTAB=VTMMDL,                                       C
               MDLENT=VSELU2Q,                                      C
               ISTATUS=ACTIVE,SSCPFM=USSSCS
A0489021 LU    LOCADDR=4,                                           C
               DLOGMOD=SP3272QS,                                    C
               MODETAB=IESINCLM,                                    C
               USSTAB=VTMUSSTR,                                     C
               PACING=1,VPACING=2,                                  C
               MDLTAB=VTMMDL,                                       C
               MDLENT=VSELU2Q,                                      C
               ISTATUS=ACTIVE,SSCPFM=USSSCS
```

Figure 60. VTMSNA

A.2.5 VTMNSNA

```
VTMNSNA  LBUILD
D08101   LOCAL CUADDR=081,TERM=3277,                                  C
               USSTAB=VTMUSSTB,                                       C
               DLOGMOD=SP3272QN,                                      C
               MODETAB=IESINCLM,                                      C
               MDLTAB=VTMMDL,                                         C
               MDLENT=VSE3278Q,                                       C
               FEATUR2=(MODEL2)
D08201   LOCAL CUADDR=082,TERM=3277,                                  C
               USSTAB=VTMUSSTB,                                       C
               DLOGMOD=SP3272QN,                                      C
               MODETAB=IESINCLM,                                      C
               MDLTAB=VTMMDL,                                         C
               MDLENT=VSE3278Q,                                       C
               FEATUR2=(MODEL2)
D08301   LOCAL CUADDR=083,TERM=3277,                                  C
               USSTAB=VTMUSSTB,                                       C
               DLOGMOD=SP3272QN,                                      C
               MODETAB=IESINCLM,                                      C
               MDLTAB=VTMMDL,                                         C
               MDLENT=VSE3278Q,                                       C
               FEATUR2=(MODEL2)
D08401   LOCAL CUADDR=084,TERM=3277,                                  C
               USSTAB=VTMUSSTB,                                       C
               DLOGMOD=SP3272QN,                                      C
               MODETAB=IESINCLM,                                      C
               MDLTAB=VTMMDL,                                         C
               MDLENT=VSE3278Q,                                       C
               FEATUR2=(MODEL2)
D08501   LOCAL CUADDR=085,TERM=3277,                                  C
               USSTAB=VTMUSSTB,                                       C
               DLOGMOD=SP3272QN,                                      C
               MODETAB=IESINCLM,                                      C
               MDLTAB=VTMMDL,                                         C
               MDLENT=VSE3278Q,                                       C
               FEATUR2=(MODEL2)
D08601   LOCAL CUADDR=086,TERM=3277,                                  C
               USSTAB=VTMUSSTB,                                       C
               DLOGMOD=SP3272QN,                                      C
               MODETAB=IESINCLM,                                      C
               MDLTAB=VTMMDL,                                         C
               MDLENT=VSE3278Q,                                       C
               FEATUR2=(MODEL2)
D08701   LOCAL CUADDR=087,TERM=3277,                                  C
               USSTAB=VTMUSSTB,                                       C
               DLOGMOD=SP3272QN,                                      C
               MODETAB=IESINCLM,                                      C
               MDLTAB=VTMMDL,                                         C
               MDLENT=VSE3278Q,                                       C
               FEATUR2=(MODEL2)
```

Figure 61. VTMNSNA

A.2.6 VTCTCA33

```
*************************************************************************
*  CTCA TO SA 10 BOEVMIS1
*************************************************************************
VTMCTCA  VBUILD TYPE=CA
VCTCG500 GROUP LNCTL=CTCA,ISTATUS=ACTIVE
VCTCL500 LINE  ADDRESS=500
VCTCP500 PU    PUTYPE=4
```

Figure 62. VTCTCA33

A.2.7 VTPATH33

```
*************************************************************************
*  PATH33 FOR VSE/ESA 2.1 SA=33 TO SA=10
*************************************************************************
         PATH  DESTSA=10,                                                C
               ER0=(10,1),ER1=(10,1),ER2=(10,1),ER3=(10,1),              C
               ER4=(10,1),ER5=(10,1),ER6=(10,1),ER7=(10,1),              C
               VR0=0,VR1=1,VR2=2,VR3=3,VR4=4,VR5=5,VR6=6,VR7=7
```

Figure 63. VTPATH33

A.2.8 VTCDRM33

```
VTMCDRM  VBUILD TYPE=CDRM
IPFV33   CDRM  SUBAREA=33,CDRDYN=YES
IPFVA    CDRM  SUBAREA=10,CDRSC=OPT
```

Figure 64. VTCDRM33

A.2.9 VTCDRS33

```
VTMCDRS  VBUILD TYPE=CDRSC
IPFAARSC CDRSC  CDRM=IPFVA        ** SA=10 BOEVMIS1
IPFAAVSC CDRSC  CDRM=IPFVA        ** SA=10 BOEVMIS1
IPFTAL20 CDRSC  CDRM=IPFVA        ** SA=10 BOEVMIS1
IPFTAL21 CDRSC  CDRM=IPFVA        ** SA=10 BOEVMIS1
```

Figure 65. VTCDRS33

Appendix B. APPN Definition Examples

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

B.1 Definitions for VM

B.1.1 ATCSTR0A

```
*********************************************************************
*  ATCSTR0A FOR VM/ESA 1.2 SA=10
*********************************************************************
SSCPID=10,                                                          C
NODETYPE=NN,                          **** APPN  1                  C
CPCP=YES,                             **** APPN                     C
DYNLU=YES,                            **** APPN                     C
SSCPNAME=IPFVA,                                                     C
NETID=DEIBMIPF,                                                     C
HOSTSA=10,                                                          C
HOSTPU=IPFVMA,                                                      C
MAXSUBA=255,                                                        C
CONFIG=0A,                                                          C
NOPROMPT,                                                           C
IOINT=180,                                                          C
CRPLBUF=(400,,15,,01,50),                                           C
IOBUF=(300,384,40,,01,50),                                          C
SFBUF=(200,,,,,)
*********************************************************************
```

Figure 66. ATCSTR0A

Note 1 **:** Should be defined to enable APPN

B.1.2 ATCCON0A

```
        APPNPATH,                                                   C
        IPFATRLT,                                                   C
        IPFATRLL,                                                   C
        IPFAVSCS,                                                   C
        IPFACDRM,                                                   C
        APPNCDRS,                                                   C
        IPFNV3,                                                     C
        IPFALOC
```

Figure 67. ATCCON0A

B.1.3 APPNPATH

```
IPFHAT3  PATH  DESTSA=03,ER0=(03,1),ER1=(03,1),ER2=(03,1),ER3=(03,1),  C
               ER4=(03,1),ER5=(03,1),ER6=(03,1),ER7=(03,1),            C
               VR0=0,VR1=1,VR2=2,VR3=3,VR4=4,VR5=5,VR6=6,VR7=7
```

Figure 68. APPNPATH

B.1.4 IPFATRLT

```
*********************************************************************
*    NEWNAME = IPFATRLT                                             *
*    TRANSPORT RESOURCE LIST DEFINITION                             *
*********************************************************************
IPFATRLT VBUILD TYPE=TRL
IPFATRLE TRLE  LNCTL=MPC,                                           *
               MAXBFRU=16,                                          *
               READ=(502),                                          *
               WRITE=(501)
```

Figure 69. IPFATRLT

B.1.5 IPFATRLL

```
*********************************************************************
*    NEWNAME = IPFATRLL                                             *
*    TRANSPORT RESOURCE LIST DEFINITION (LOCAL SNA DEF.)            *
*********************************************************************
IPFATRLL VBUILD TYPE=LOCAL
IPFALCL  PU    TRLE=IPFATRLE,                                       *
               ISTATUS=ACTIVE,VPACING=0,                            *
               SSCPFM=USSSCS,                                       *
               CONNTYPE=APPN,CPCP=YES
```

Figure 70. IPFATRLL

B.1.6 IPFAVSCS

```
         VBUILD TYPE=APPL
IPFAAVSC APPL  AUTH=(PASS,ACQ),PARSESS=YES,ACBNAME=VM,              *
               PRTCT=VM,AUTHEXIT=YES
```

Figure 71. IPFAVSCS

B.1.7 IPFACDRM

```
         VBUILD TYPE=CDRM
IPFVA    CDRM   SUBAREA=10,CDRDYN=YES
IPFV33   CDRM   SUBAREA=33,CDRSC=OPT
```

Figure 72. IPFACDRM

B.1.8 APPNCDRS

```
         VBUILD TYPE=CDRSC
DBDCCICS CDRSC  CDRM=IPFV33
PRODCICS CDRSC  CDRM=IPFV33
D08101   CDRSC  CDRM=IPFV33
D08201   CDRSC  CDRM=IPFV33
D08301   CDRSC  CDRM=IPFV33
```

Figure 73. APPNCDRS

B.1.9 IPFANV3

```
*************************************************************************
*        LOGICAL  GROUP FOR NTRI TIC 2 (LINE 1089)                      *
*************************************************************************
IPFG3L89 GROUP ECLTYPE=LOGICAL,       LOGICAL GROUP                     C
               LNCTL=SDLC,DYNPU=YES, 1                                  C
               DIAL=YES,                                                C
               CALL=INOUT,            ALLOW DIAL IN AND DIAL OUT        C
               AUTOGEN=40,            AUTOGEN 20 LOGICAL LINES/PUS      C
               TYPE=NCP,                                                C
               ISTATUS=INACTIVE,      INITIAL STATUS                    C
               PHYPORT=2,             POINTS TO TIC (PORTADD)           C
               LEVEL2=ECLNAVL2,                                         C
               LEVEL3=ECLNAVL3,                                         C
               LEVEL5=NCP,                                              C
               TIMER=(ECLNAVT1,,ECLNAVT2,ECLNAVT3),                     C
               XIO=(ECLNAVXL,ECLNAVXS,ECLNAVXI,ECLNAVXK),               C
               USERID=(5668854,ECLVBDT,NORECMS,,ECLNMVT),               C
               LINEADD=NONE,                                            C
               LINEAUT=YES,                                             C
               MAXPU=1,                                                 C
               NPACOLL=NO,                                              C
               PUTYPE=2,                                                C
               XMITDLY=NONE,                                            C
               COMPOWN=YES,                                             C
               RETRIES=(6,0,0,6)
         IGNORE     * LINES BETWEEN IGNORE/NOIGNORE WILL BE REGENERATED
* GENERATED BY ECL
J0003051 LINE UACB=X$L41A
* GENERATED BY ECL
J0003052 PU
*
* omitted lines
*
*
* GENERATED BY ECL
J000309D LINE UACB=X$L79A
* GENERATED BY ECL
J000309E PU
* GENERATED BY ECL
J000309F LINE UACB=X$L80A
* GENERATED BY ECL
J00030A0 PU
         NOIGNORE   * LINES BETWEEN IGNORE/NOIGNORE WILL BE REGENERATED
```

Figure 74. IPFANV3

Note 1 : Here we inserted DYNPU=YES without adding a new line, re-accessed the 2C2 disk, inactivated, and then reactivated the NCP with SCOPE=ALL. This NCP was shared, TIC2 and a channel adapter were all that our VTAM had control of.

B.1.10 IPFALOC

```
         LBUILD
IPFTAL20 LOCAL CUADDR=920,TERM=3277,DLOGMOD=D4B32793,USSTAB=ISTNSNA
IPFTAL21 LOCAL CUADDR=921,TERM=3277,DLOGMOD=D4B32793,USSTAB=ISTNSNA
IPFTAL22 LOCAL CUADDR=922,TERM=3277,DLOGMOD=D4B32793,USSTAB=ISTNSNA
IPFTAL23 LOCAL CUADDR=923,TERM=3277,DLOGMOD=D4B32793,USSTAB=ISTNSNA
IPFTAL24 LOCAL CUADDR=924,TERM=3277,DLOGMOD=D4B32793,USSTAB=ISTNSNA
IPFTAL25 LOCAL CUADDR=925,TERM=3277,DLOGMOD=D4B32793,USSTAB=ISTNSNA
IPFTAL26 LOCAL CUADDR=926,TERM=3277,DLOGMOD=D4B32793,USSTAB=ISTNSNA
IPFTAL27 LOCAL CUADDR=927,TERM=3277,DLOGMOD=D4B32793,USSTAB=ISTNSNA
IPFTAL28 LOCAL CUADDR=928,TERM=3277,DLOGMOD=D4B32793
IPFTAL29 LOCAL CUADDR=929,TERM=3277,DLOGMOD=D4B32793
IPFTAL2A LOCAL CUADDR=92A,TERM=3277,DLOGMOD=D4B32793
IPFTAL2B LOCAL CUADDR=92B,TERM=3277,DLOGMOD=D4B32793
IPFTAL2C LOCAL CUADDR=92C,TERM=3277,DLOGMOD=D4B32793
IPFTAL2D LOCAL CUADDR=92D,TERM=3277,DLOGMOD=D4B32793
IPFTAL2E LOCAL CUADDR=92E,TERM=3277,DLOGMOD=D4B32793
IPFTAL2F LOCAL CUADDR=92F,TERM=3277,DLOGMOD=D4B32793
IPFTAL30 LOCAL CUADDR=930,TERM=3277,DLOGMOD=D4B32793
IPFTAL31 LOCAL CUADDR=931,TERM=3277,DLOGMOD=D4B32793
IPFTAL32 LOCAL CUADDR=932,TERM=3277,DLOGMOD=D4B32793
IPFTAL33 LOCAL CUADDR=933,TERM=3277,DLOGMOD=D4B32793
IPFTAL34 LOCAL CUADDR=934,TERM=3277,DLOGMOD=D4B32793
IPFTAL35 LOCAL CUADDR=935,TERM=3277,DLOGMOD=D4B32793
IPFTAL36 LOCAL CUADDR=936,TERM=3277,DLOGMOD=D4B32793
IPFTAL37 LOCAL CUADDR=937,TERM=3277,DLOGMOD=D4B32793
IPFTAL38 LOCAL CUADDR=938,TERM=3277,DLOGMOD=D4B32793
IPFTAL39 LOCAL CUADDR=939,TERM=3277,DLOGMOD=D4B32793
IPFTAL3A LOCAL CUADDR=93A,TERM=3277,DLOGMOD=D4B32793
IPFTAL3B LOCAL CUADDR=93B,TERM=3277,DLOGMOD=D4B32793
IPFTAL3C LOCAL CUADDR=93C,TERM=3277,DLOGMOD=D4B32793
IPFTAL3D LOCAL CUADDR=93D,TERM=3277,DLOGMOD=D4B32793
IPFTAL3E LOCAL CUADDR=93E,TERM=3277,DLOGMOD=D4B32793
IPFTAL3F LOCAL CUADDR=93F,TERM=3277,DLOGMOD=D4B32793
```

Figure 75. IPFALOC

B.1.11 IPFASWI1

```
*************************************************************************
***** TRL os/2 with dlur                                            *****
*************************************************************
IPFASWI1 VBUILD TYPE=SWNET,                                            C
               MAXDLUR=4
*
PU4      PU    ADDR=01,                                                C
               IDBLK=05D,                                              C
               IDNUM=00001,                                            C
               MAXDATA=1920,                                           C
               MODETAB=AMODETAB,                                       C
               MAXPATH=3,                                              C
               ISTATUS=ACTIVE,                                         C
               USSTAB=ISTSNA
PATHU4   PATH  PID=1,                                                  C
               DLURNAME=DLUR2,                                         C
               DLCADDR=(1,C,INTPU),                                    C
               DLCADDR=(2,X,05D00001)
LU4      LU    LOCADDR=01,                                             C
               PACING=(1,1),                                           C
               DLOGMOD=D4A32793,                                       C
               VPACING=2
*
PU5      PU    ADDR=02,                                                C
               IDBLK=05D,                                              C
               IDNUM=00002,                                            C
               MAXDATA=1920,                                           C
               MODETAB=AMODETAB,                                       C
               MAXPATH=1,                                              C
               ISTATUS=ACTIVE,                                         C
               USSTAB=ISTSNA
PATHU5   PATH  PID=1,                                                  C
               DLURNAME=DLUR2,                                         C
               DLCADDR=(1,C,INTPU),                                    C
               DLCADDR=(2,X,05D00002)
LU5      LU    LOCADDR=01,                                             C
               PACING=(1,1),                                           C
               DLOGMOD=D4A32793,                                       C
               VPACING=2
LU6      LU    LOCADDR=02,                                             C
               PACING=(1,1),                                           C
               DLOGMOD=D4A32793,                                       C
               VPACING=2
```

Figure 76. IPFASWI1

B.2 Definitions for VSE APPN Networking

B.2.1 ATCSTR44

```
************************************************************************
*  ATCSTR33 FOR VSE/ESA 2.1 SA=33
************************************************************************
SSCPID=33,                                                          C
NODETYPE=NN,                          **** APPN  1                  C
CPCP=YES,                             **** APPN                     C
DYNLU=YES,                            **** APPN                     C
SSCPNAME=IPFV33,                                                    C
NETID=DEIBMIPF,                                                     C
HOSTSA=33,                                                          C
HOSTPU=IPFVA33,                                                     C
MAXSUBA=255,                                                        C
CONFIG=44,                                                          C
NOPROMPT,                                                           C
IOINT=0,                                                            C
SGALIMIT=0,                                                         C
BSBUF=(28,,,,1),                                                    C
CRPLBUF=(60,,,,1),                                                  C
LFBUF=(70,,,,11),                                                   C
IOBUF=(70,288,,,11),                                                C
LPBUF=(12,,,,6),                                                    C
SFBUF=(20,,,,20),                                                   C
SPBUF=(210,,,,32),                                                  C
XDBUF=(6,,,,1)
```

Figure 77. ATCSTR44

Note 1 **:** Should be defined to enable APPN

B.2.2 ATCCON44

```
************************************************************************
*  ATCCON44 FOR VSE/ESA 2.1 SA=33
************************************************************************
        VTMAPPL,                                                    C
        VTMSNA,                                                     C
        VTMNSNA,                                                    C
        VTTRLE44,                                                   C
        VTTRLP44,                                                   C
        VTCDRM33,                                                   C
        VTCDRS33,                                                   C
        COSAPPN
```

Figure 78. ATCCON44

Note: For entries in ATCCON44 that are not listed below, refer to Appendix A, “Subarea Definition Examples” on page 115.

B.2.3 VTTRLE44

```
*********************************************************************
*  TRL  FOR NN 33 VSEESA 2.1
*********************************************************************
VTMTRL   VBUILD TYPE=TRL
VTRLE500 TRLE  LNCTL=MPC,MAXBFRU=16,                                  C
               READ=(501),WRITE=(502)
```

Figure 79. VTTRLE44

B.2.4 VTTRLP44

```
*********************************************************************
*  LOCAL FOR NN 33 VSEESA 2.1
*********************************************************************
VTMTRLP  VBUILD TYPE=LOCAL
VTRLP500 PU     TRLE=VTRLE500,ISTATUS=ACTIVE,                         C
               VPACING=0,SSCPFM=USSSCS,                               C
               CONNTYPE=APPN,CPCP=YES
```

Figure 80. VTTRLP44

B.2.5 COSAPPN

```
***** TOP OF FILE *****
*********************************************************************
*                                                                   *
* MEMBER NAME: COSAPPN                                              *
*                                                                   *
* Descriptive name: IBM-Supplied APPN Class of Service Definitions  *
*                                                                   *
* STATUS: ACF/VTAM VERSION 4 RELEASE 1                              *
*                                                                   *
* COPYRIGHT: LICENSED MATERIALS - PROPERTY OF IBM                   *
*                                                                   *
*              5695-117 (C) COPYRIGHT IBM CORP. 1992.               *
*              ALL RIGHTS RESERVED.                                 *
*                                                                   *
*              U.S. GOVERNMENT USERS RESTRICTED RIGHTS -            *
*              USE, DUPLICATION OR DISCLOSURE RESTRICTED BY         *
*              GSA ADP SCHEDULE CONTRACT WITH IBM CORP.             *
*                                                                   *
*              SEE COPYRIGHT INSTRUCTIONS.                          *
* $MAC(COSAPPN),COMP(TRS),PROD(VTAM):  APPN COS definitions         *
*********************************************************************
CPSVCMG  APPNCOS  PRIORITY=NETWORK          transmission priority
         LINEROW  WEIGHT=30,                line row weight          C
                  NUMBER=1,                 line row number          C
                  UPARM1=(0,255),           user defined char 1      C
                  UPARM2=(0,255),           user defined char 2      C
                  UPARM3=(0,255),           user defined char 3      C
                  CAPACITY=(4M,MAXIMUM),    line speed               C

*
*
* Truncated
```

Figure 81. COSAPPN

Note: COSAPPN is the unchanged default COS table for APPN communication supplied with VTAM V4R2. Note that it is not assembled and linked like previous COS tables, but catalogued in a B book. It is a rather large file that you normally don't touch, so we don't waste paper by showing it in print.

Appendix C. VSE MODETAB and USSTAB

C.1 VSE/ESA MODETAB Jobstream

```
* $$ JOB JNM=IESINCLM,CLASS=A,DISP=D,NTFY=YES
* $$ LST CLASS=Q,DISP=H
// JOB IESINCLM ASSEMBLE
// LIBDEF *,CATALOG=PRD2.CONFIG
// OPTION CATAL,LIST
// EXEC ASMA90,SIZE=(ASMA90,50K),PARM=¢EXIT(LIBEXIT(EDECKXIT))¢
*****************************************************
*                                                   *
*   5686-028 (C) COPYRIGHT IBM CORP. 1984, 1990     *
*                                                   *
*****************************************************
         PUNCH   ¢ CATALOG  IESINCLM.OBJ    REPLACE=YES¢
         PUNCH   ¢ PHASE    IESINCLM,*¢
         PRINT   NOGEN
* /* START OF SPECIFICATIONS ****
*
*01*  MODULE-NAME = IESINCLM
*
*01*  DESCRIPTIVE-NAME = DEFAULT LOGON MODE TABLE SUPPLIED FOR VSE/ESA
*
*01*  COPYRIGHT =  SEE ABOVE
*
*01*  STATUS = VERSION VSE/ESA 1.1.0
*
*01*  FUNCTION = THE PURPOSE OF THIS TABLE IS TO PROVIDE THE USER WITH
*     A DEFAULT TABLE PROVIDING SUPPORT FOR THE DEVICES LISTED BELOW:
*
*     3820 SNA PRINTER - REMOTELY ATTACHED
*     3820 SNA PRINTER - S/370 CHANNEL ATTACHED
*     3812/16 SNA PRINTER - REMOTELY ATTACHED
*     3812/16 SNA PRINTER - LOCALLY ATTACHED
*
*     3270 LOCAL NON-SNA DEVICES
*     3270 SNA DEVICES
*
*01*  NOTES = NONE
*
*02*    CHARACTER-CODE-DEPENDENCIES = NONE
*
*02*    DEPENDENCIES = NONE
*
*02*    RESTRICTIONS = NONE
*
*02*    REGISTER-CONVENTIONS = NONE
*
```

Figure 82 (Part 1 of 12). VSE/ESA Provided IESINCLM MODETAB Jobstream

```
*02*    PATCH-LABEL = NONE
*
*01*  MODULE-TYPE = MODULE, NON EXECUTABLE
*
*02*    PROCESSOR = ASSEMBLER
*
*02*    MODULE-SIZE = RES: CHOOSE: (9) BYTES,
*                     COMMENTS: ENTER SIZE CONSTRAINTS IF KNOWN,
*                               OTHERWISE LEAVE;
*
*02*    ATTRIBUTES = REFRESHABLE, NO EXECUTABLE CODE
*
*03*      RELOCATE = PAGEABLE
*
*03*      MODE = PROBLEM-PROGRAM
*
*03*      PROTECTION = USER-KEY
*
*03*      SPECIAL-PSW-SETTING = NONE
*
*01*  ENTRY = IESINCLM
*
*02*    PURPOSE = SEE FUNCTION
*
*02*    LINKAGE = NOT APPLICABLE
*
*02*    INPUT = NONE
*
*03*      REGISTERS-SAVED-AND-RESTORED = NOT APPLICABLE
*
*
*03*      REGISTERS-INPUT = NOT APPLICABLE
*
*02*    OUTPUT = NONE
*
*03*      REGISTERS-OUTPUT = NOT APPLICABLE
*
*03*      REGISTERS-NOT-CORRUPTED = ALL
*
*01*  EXIT-NORMAL = NOT APPLICABLE
*
*01*  EXIT-ERROR = NOT APPLICABLE
*
*01*  EXTERNAL-REFERENCES = NONE
*
```

Figure 82 (Part 2 of 12). VSE/ESA Provided IESINCLM MODETAB Jobstream

```
*02*    ROUTINES = NONE
*
*03*      LINKAGE = NOT APPLICABLE
*
*03*      REGISTERS-PASSED = NOT APPLICABLE
*
*03*      REGISTERS-RETURNED = NOT APPLICABLE
*
*02*    DATA-SETS = NONE
*
*02*    DATA-AREA = NONE
*
*02*    CONTROL-BLOCKS-SYSTEM = NONE
*
*02*    CONTROL-BLOCKS-VTAM = NONE
*
*01*  TABLES = NONE
*
*01*  MACROS = MODETAB,MODEENT,MODEEND
*
*01*  CHANGE-ACTIVITY =
*     11/19/90 SP3272ES,SP3273ES,SP3290ES,SP3272EN,SP3273EN,SP3290EN
*     CHANGED TO FIT WITH CORRESPONDING CICS TYPETERMS
*
**** END OF SPECIFICATIONS ***/
         EJECT
IESINCLM MODETAB
         EJECT
```

Figure 82 (Part 3 of 12). VSE/ESA Provided IESINCLM MODETAB Jobstream

```
  TITLE ¢SP3820¢
*********************************************************************
*                                                                   *
*            3820 LOGICAL UNIT - REMOTELY ATTACHED                  *
*                                                                   *
*********************************************************************
SP3820   MODEENT LOGMODE=SP3820,FMPROF=X¢13¢,TSPROF=X¢07¢,            *
               PRIPROT=X¢B0¢,SECPROT=X¢B0¢,COMPROT=X¢D0B1¢,          *
               RUSIZES=X¢8585¢,PSERVIC=X¢060200000000000000002000¢,  *
               PSNDPAC=X¢03¢,SRCVPAC=X¢03¢,SSNDPAC=X¢00¢
  TITLE ¢SP3820C¢
*********************************************************************
*                                                                   *
*            3820 LOGICAL UNIT - S/370 CHANNEL ATTACHED             *
*                                                                   *
*********************************************************************
SP3820C  MODEENT LOGMODE=SP3820C,FMPROF=X¢13¢,TSPROF=X¢07¢,           *
               PRIPROT=X¢B0¢,SECPROT=X¢B0¢,COMPROT=X¢D0B1¢,          *
               RUSIZES=X¢85C7¢,PSERVIC=X¢060200000000000000002000¢,  *
               PSNDPAC=X¢03¢,SRCVPAC=X¢03¢,SSNDPAC=X¢00¢
```

Figure 82 (Part 4 of 12). VSE/ESA Provided IESINCLM MODETAB Jobstream

```
  TITLE ¢SP3812¢
*********************************************************************
*                                                                   *
*            3812/16 LOGICAL UNIT - REMOTELY ATTACHED               *
*                                                                   *
*********************************************************************
SP3812   MODEENT LOGMODE=SP3812,FMPROF=X¢03¢,TSPROF=X¢03¢,            *
               PRIPROT=X¢B1¢,SECPROT=X¢B0¢,COMPROT=X¢7080¢,           *
               RUSIZES=X¢8585¢,PSERVIC=X¢01400001000000000001000000¢, *
               PSNDPAC=X¢03¢,SRCVPAC=X¢03¢,SSNDPAC=X¢00¢
  TITLE ¢SP3812C¢
*********************************************************************
*                                                                   *
*            3812/16 LOGICAL UNIT - LOCALLY ATTACHED                *
*                                                                   *
*********************************************************************
SP3812C  MODEENT LOGMODE=SP3812C,FMPROF=X¢03¢,TSPROF=X¢03¢,           *
               PRIPROT=X¢B1¢,SECPROT=X¢B0¢,COMPROT=X¢7080¢,           *
               RUSIZES=X¢85C7¢,PSERVIC=X¢01400001000000000001000000¢, *
               PSNDPAC=X¢02¢,SRCVPAC=X¢02¢,SSNDPAC=X¢00¢
   TITLE ¢SP32702N¢
*********************************************************************
*                                                                   *
*             LOGMODE TABLE ENTRY FOR NON-SNA 3270 DEVICES          *
*             WITH PRIMARY SCREEN SIZE 24 X 80 (1920)               *
*             NO ALTERNATE SCREEN SIZE DEFINED                      *
*                                                                   *
*********************************************************************
SP32702N MODEENT LOGMODE=SP32702N,FMPROF=X¢02¢,TSPROF=X¢02¢,PRIPROT=X¢7*
               1¢,SECPROT=X¢40¢,COMPROT=X¢2000¢,RUSIZES=X¢0000¢,PSERVIC*
               =X¢00000000000000185000007E00¢
         TITLE ¢SP32703N¢
*********************************************************************
*                                                                   *
*             LOGMODE TABLE ENTRY FOR NON-SNA 3270 DEVICES          *
*             WITH PRIMARY SCREEN SIZE 24 X 80 (1920)               *
*             AND ALTERNATE SCREEN SIZE 32 X 80 (2560)              *
*                                                                   *
*********************************************************************
SP32703N MODEENT LOGMODE=SP32703N,FMPROF=X¢02¢,TSPROF=X¢02¢,PRIPROT=X¢7*
               1¢,SECPROT=X¢40¢,COMPROT=X¢2000¢,RUSIZES=X¢0000¢,PSERVIC*
               =X¢00000000000000185020507F00¢
```

Figure 82 (Part 5 of 12). VSE/ESA Provided IESINCLM MODETAB Jobstream

```
         TITLE ¢SP32704N¢
*********************************************************************
*                                                                   *
*             LOGMODE TABLE ENTRY FOR NON-SNA 3270 DEVICES          *
*             WITH PRIMARY SCREEN SIZE 24 X 80 (1920)               *
*             AND ALTERNATE SCREEN SIZE 43 X 80 (3440)              *
*                                                                   *
*********************************************************************
SP32704N MODEENT LOGMODE=SP32704N,FMPROF=X¢02¢,TSPROF=X¢02¢,PRIPROT=X¢7*
               1¢,SECPROT=X¢40¢,COMPROT=X¢2000¢,RUSIZES=X¢0000¢,PSERVIC*
               =X¢000000000000018502B507F00¢
         TITLE ¢SP32705N¢
*********************************************************************
*                                                                   *
*             LOGMODE TABLE ENTRY FOR NON-SNA 3270 DEVICES          *
*             WITH PRIMARY SCREEN SIZE 24 X 80 (1920)               *
*             AND ALTERNATE SCREEN SIZE 27 X 132 (3564)             *
*                                                                   *
*********************************************************************
SP32705N MODEENT LOGMODE=SP32705N,FMPROF=X¢02¢,TSPROF=X¢02¢,PRIPROT=X¢7*
               1¢,SECPROT=X¢40¢,COMPROT=X¢2000¢,RUSIZES=X¢0000¢,PSERVIC*
               =X¢000000000000018501B847F00¢
         TITLE ¢SP3272QN¢
*********************************************************************
*                                                                   *
*             LOGMODE TABLE ENTRY FOR NON-SNA 3270 DEVICES          *
*             WITH PRIMARY SCREEN SIZE 24 X 80 (1920)               *
*             ALTERNATE SCREEN SIZE WILL BE QUERIED                 *
*             WITH EXTENDED DATA STREAM                             *
*                                                                   *
*********************************************************************
SP3272QN MODEENT LOGMODE=SP3272QN,FMPROF=X¢02¢,TSPROF=X¢02¢,PRIPROT=X¢7*
               1¢,SECPROT=X¢40¢,COMPROT=X¢2000¢,RUSIZES=X¢0000¢,PSERVIC*
               =X¢008000000000018500000300¢
         TITLE ¢SP3272EN¢
*********************************************************************
*                                                                   *
*             LOGMODE TABLE ENTRY FOR NON-SNA 3270 DEVICES          *
*             WITH PRIMARY SCREEN SIZE 24 X 80 (1920)               *
*             NO ALTERNATE SCREEN SIZE DEFINED                      *
*             WITH EXTENDED DATA STREAM                             *
*                                                                   *
*********************************************************************
SP3272EN MODEENT LOGMODE=SP3272EN,FMPROF=X¢02¢,TSPROF=X¢02¢,PRIPROT=X¢7*
               1¢,SECPROT=X¢40¢,COMPROT=X¢2000¢,RUSIZES=X¢0000¢,PSERVIC*
               =X¢008000000000018501B507F00¢
```

Figure 82 (Part 6 of 12). VSE/ESA Provided IESINCLM MODETAB Jobstream

```
         TITLE ¢SP3273EN¢
*********************************************************************
*                                                                   *
*             LOGMODE TABLE ENTRY FOR NON-SNA 3270 DEVICES          *
*             WITH PRIMARY SCREEN SIZE 24 X 80 (1920)               *
*             AND ALTERNATE SCREEN SIZE 32 X 80 (2560)              *
*             WITH EXTENDED DATA STREAM                             *
*                                                                   *
*********************************************************************
SP3273EN MODEENT LOGMODE=SP3273EN,FMPROF=X¢02¢,TSPROF=X¢02¢,PRIPROT=X¢7*
               1¢,SECPROT=X¢40¢,COMPROT=X¢2000¢,RUSIZES=X¢0000¢,PSERVIC*
               =X¢008000000000185020507F00¢
         TITLE ¢SP3290EN¢
*********************************************************************
*                                                                   *
*             LOGMODE TABLE ENTRY FOR NON-SNA 3270 DEVICES          *
*             WITH PRIMARY SCREEN SIZE 24 X 80 (1920)               *
*             AND ALTERNATE SCREEN SIZE 62 X 160 (9920)             *
*             WITH EXTENDED DATA STREAM                             *
*                                                                   *
*********************************************************************
SP3290EN MODEENT LOGMODE=SP3290EN,FMPROF=X¢02¢,TSPROF=X¢02¢,PRIPROT=X¢7*
               1¢,SECPROT=X¢40¢,COMPROT=X¢2000¢,RUSIZES=X¢0000¢,PSERVIC*
               =X¢008000000000018503EA07F00¢
         TITLE ¢SPDSCPRT¢
*********************************************************************
*                                                                   *
*             LOGMODE TABLE ENTRY FOR NON-SNA 3270                  *
*             TERMINAL PRINTERS                                     *
*                                                                   *
*********************************************************************
SPDSCPRT MODEENT LOGMODE=SPDSCPRT,FMPROF=X¢02¢,TSPROF=X¢02¢,PRIPROT=X¢7*
               1¢,SECPROT=X¢40¢,COMPROT=X¢2000¢,RUSIZES=X¢0000¢,PSERVIC*
               =X¢000000000000185018500200¢
         TITLE ¢SP32702S¢
*********************************************************************
*                                                                   *
*             LOGMODE TABLE ENTRY FOR SNA 3270 DEVICES              *
*             WITH PRIMARY SCREEN SIZE 24 X 80 (1920)               *
*             NO ALTERNATE SCREEN SIZE DEFINED                      *
*                                                                   *
*********************************************************************
SP32702S MODEENT LOGMODE=SP32702S,FMPROF=X¢03¢,TSPROF=X¢03¢,PRIPROT=X¢B*
               1¢,SECPROT=X¢90¢,COMPROT=X¢3080¢,RUSIZES=X¢85C7¢,PSERVIC*
               =X¢020000000000185000007E00¢
```

Figure 82 (Part 7 of 12). VSE/ESA Provided IESINCLM MODETAB Jobstream

```
         TITLE ¢SP32703S¢
*********************************************************************
*                                                                   *
*             LOGMODE TABLE ENTRY FOR SNA 3270 DEVICES              *
*             WITH PRIMARY SCREEN SIZE 24 X 80 (1920)               *
*             AND ALTERNATE SCREEN SIZE 32 X 80 (2560)              *
*                                                                   *
*********************************************************************
SP32703S MODEENT LOGMODE=SP32703S,FMPROF=X¢03¢,TSPROF=X¢03¢,PRIPROT=X¢B*
               1¢,SECPROT=X¢90¢,COMPROT=X¢3080¢,RUSIZES=X¢85C7¢,PSERVIC*
               =X¢02000000000018502050 7F00¢
         TITLE ¢SP32704S¢
*********************************************************************
*                                                                   *
*             LOGMODE TABLE ENTRY FOR SNA 3270 DEVICES              *
*             WITH PRIMARY SCREEN SIZE 24 X 80 (1920)               *
*             AND ALTERNATE SCREEN SIZE 43 X 80 (3440)              *
*                                                                   *
*********************************************************************
SP32704S MODEENT LOGMODE=SP32704S,FMPROF=X¢03¢,TSPROF=X¢03¢,PRIPROT=X¢B*
               1¢,SECPROT=X¢90¢,COMPROT=X¢3080¢,RUSIZES=X¢85C7¢,PSERVIC*
               =X¢02000000000018502B507F00¢
         TITLE ¢SP32705S¢
*********************************************************************
*                                                                   *
*             LOGMODE TABLE ENTRY FOR SNA 3270 DEVICES              *
*             WITH PRIMARY SCREEN SIZE 24 X 80 (1920)               *
*             AND ALTERNATE SCREEN SIZE 27 X 132 (3564)             *
*                                                                   *
*********************************************************************
SP32705S MODEENT LOGMODE=SP32705S,FMPROF=X¢03¢,TSPROF=X¢03¢,PRIPROT=X¢B*
               1¢,SECPROT=X¢90¢,COMPROT=X¢3080¢,RUSIZES=X¢85C7¢,PSERVIC*
               =X¢02000000000018501B847F00¢
         TITLE ¢SP3272QS¢
*********************************************************************
*                                                                   *
*             LOGMODE TABLE ENTRY FOR SNA 3270 DEVICES              *
*             WITH PRIMARY SCREEN SIZE 24 X 80 (1920)               *
*             ALTERNATE SCREEN SIZE WILL BE QUERIED                 *
*             WITH EXTENDED DATA STREAM                             *
*                                                                   *
*********************************************************************
SP3272QS MODEENT LOGMODE=SP3272QS,FMPROF=X¢03¢,TSPROF=X¢03¢,PRIPROT=X¢B*
               1¢,SECPROT=X¢90¢,COMPROT=X¢3080¢,RUSIZES=X¢88F7¢,PSERVIC*
               =X¢02800000000018500000 0300¢
```

Figure 82 (Part 8 of 12). VSE/ESA Provided IESINCLM MODETAB Jobstream

```
         TITLE ¢SP3272ES¢
*********************************************************************
*                                                                   *
*              LOGMODE TABLE ENTRY FOR SNA 3270 DEVICES             *
*              WITH PRIMARY SCREEN SIZE 24 X 80 (1920)              *
*              NO ALTERNATE SCREEN SIZE DEFINED                     *
*              WITH EXTENDED DATA STREAM                            *
*                                                                   *
*********************************************************************
SP3272ES MODEENT LOGMODE=SP3272ES,FMPROF=X¢03¢,TSPROF=X¢03¢,PRIPROT=X¢B*
               1¢,SECPROT=X¢90¢,COMPROT=X¢3080¢,RUSIZES=X¢85C7¢,PSERVIC*
               =X¢028000000000185018507F00¢
```

Figure 82 (Part 9 of 12). VSE/ESA Provided IESINCLM MODETAB Jobstream

```
         TITLE ¢SP3273ES¢
*********************************************************************
*                                                                   *
*             LOGMODE TABLE ENTRY FOR SNA 3270 DEVICES              *
*             WITH PRIMARY SCREEN SIZE 24 X 80 (1920)               *
*             AND ALTERNATE SCREEN SIZE 32 X 80 (2560)              *
*             WITH EXTENDED DATA STREAM                             *
*                                                                   *
*********************************************************************
SP3273ES MODEENT LOGMODE=SP3273ES,FMPROF=X¢03¢,TSPROF=X¢03¢,PRIPROT=X¢B*
               1¢,SECPROT=X¢90¢,COMPROT=X¢3080¢,RUSIZES=X¢85C7¢,PSERVIC*
               =X¢028000000000185020507F00¢
         TITLE ¢SP3290ES¢
*********************************************************************
*                                                                   *
*             LOGMODE TABLE ENTRY FOR SNA 3270 DEVICES              *
*             WITH PRIMARY SCREEN SIZE 24 X 80 (1920)               *
*             AND ALTERNATE SCREEN SIZE 62 X 160 (9920)             *
*             WITH EXTENDED DATA STREAM                             *
*                                                                   *
*********************************************************************
SP3290ES MODEENT LOGMODE=SP3290ES,FMPROF=X¢03¢,TSPROF=X¢03¢,PRIPROT=X¢B*
               1¢,SECPROT=X¢90¢,COMPROT=X¢3080¢,RUSIZES=X¢85C7¢,PSERVIC*
               =X¢028000000000018503EA07F00¢
         TITLE ¢SPSCSPRT¢
*********************************************************************
*                                                                   *
*             LOGMODE TABLE ENTRY FOR SNA 3270                      *
*             TERMINAL PRINTERS IN SCS-MODE                         *
*                                                                   *
*********************************************************************
SPSCSPRT MODEENT LOGMODE=SPSCSPRT,FMPROF=X¢03¢,TSPROF=X¢03¢,PRIPROT=X¢B*
               1¢,SECPROT=X¢90¢,COMPROT=X¢3080¢,RUSIZES=X¢8585¢,PSERVIC*
               =X¢01000000E100000000000000¢,                          *
               PSNDPAC=X¢01¢,SRCVPAC=X¢01¢
         TITLE ¢SPSCSPRQ¢
*********************************************************************
*                                                                   *
*             LOGMODE TABLE ENTRY FOR SNA 3270                      *
*             TERMINAL PRINTERS IN SCS-MODE                         *
*             WITH QUERY SUPPORT                                    *
*                                                                   *
*********************************************************************
SPSCSPRQ MODEENT LOGMODE=SPSCSPRQ,FMPROF=X¢03¢,TSPROF=X¢03¢,PRIPROT=X¢B*
               1¢,SECPROT=X¢90¢,COMPROT=X¢3080¢,RUSIZES=X¢8585¢,PSERVIC*
               =X¢01000001E100000000000000¢,                          *
               PSNDPAC=X¢01¢,SRCVPAC=X¢01¢
```

Figure 82 (Part 10 of 12). VSE/ESA Provided IESINCLM MODETAB Jobstream

```
         TITLE ¢SPLU3PRT¢
*************************************************************************
*                                                                       *
*              LOGMODE TABLE ENTRY FOR SNA 3270                         *
*              TERMINAL PRINTERS IN LU3-MODE                            *
*                                                                       *
*************************************************************************
SPLU3PRT MODEENT LOGMODE=SPLU3PRT,FMPROF=X¢03¢,TSPROF=X¢03¢,PRIPROT=X¢B*
               1¢,SECPROT=X¢90¢,COMPROT=X¢3080¢,RUSIZES=X¢8585¢,PSERVIC*
               =X¢03000000000018502B507F00¢
         TITLE ¢SPLU3PRQ¢
*************************************************************************
*                                                                       *
*              LOGMODE TABLE ENTRY FOR SNA 3270                         *
*              TERMINAL PRINTERS IN LU3-MODE                            *
*              WITH QUERY SUPPORT                                       *
*                                                                       *
*************************************************************************
SPLU3PRQ MODEENT LOGMODE=SPLU3PRQ,FMPROF=X¢03¢,TSPROF=X¢03¢,PRIPROT=X¢B*
               1¢,SECPROT=X¢90¢,COMPROT=X¢3080¢,RUSIZES=X¢8585¢,PSERVIC*
               =X¢03800000000018502B500000¢
         TITLE ¢SNASVCMG¢
*************************************************************************
*                                                                       *
*              LOGMODE TABLE ENTRY FOR CICS ISC                         *
*              FOR LUTYPE 6.2 LINKS                                     *
*                                                                       *
*************************************************************************
SNASVCMG MODEENT LOGMODE=SNASVCMG
         TITLE ¢SNALU62¢
*************************************************************************
*                                                                       *
*              LOGMODE TABLE ENTRY FOR CICS ISC                         *
*              FOR LUTYPE 6.2 LINKS                                     *
*              THE 2ND MODE-ENTRY HAS TO BE DEFINED IN MODESET RESP     *
*              THE SESSION DEFINITION FOR RDO (PARAMETER MODENAME=      *
*              SNALU62)                                                 *
*                                                                       *
*************************************************************************
```

Figure 82 (Part 11 of 12). VSE/ESA Provided IESINCLM MODETAB Jobstream

```
SNALU62  MODEENT LOGMODE=SNALU62
         TITLE ¢RDTSLU62¢
*********************************************************************
*                                                                   *
*             LOGMODE TABLE ENTRIES FOR RDTS                        *
*             FOR LUTYPE 6.2 LINKS                                  *
*                                                                   *
*********************************************************************
#BATCH   EQU *
    MODEENT LOGMODE=#BATCH,FMPROF=X¢13¢,TSPROF=X¢07¢,PRIPROT=X¢B0¢,    *
                SECPROT=X¢B0¢,COMPROT=X¢D0B1¢,RUSIZES=X¢8787¢,         *
                SSNDPAC=X¢00¢,SRCVPAC=X¢00¢,PSNDPAC=X¢00¢,             *
                TYPE=0,                                               *
                PSERVIC=X¢060200000000000000002F00¢
#INTER   EQU *
    MODEENT LOGMODE=#INTER,FMPROF=X¢13¢,TSPROF=X¢07¢,PRIPROT=X¢B0¢,    *
                SECPROT=X¢B0¢,COMPROT=X¢D0B1¢,RUSIZES=X¢8787¢,         *
                SSNDPAC=X¢00¢,SRCVPAC=X¢00¢,PSNDPAC=X¢00¢,             *
                TYPE=0,                                               *
                PSERVIC=X¢060200000000000000002F00¢
*
         MODEEND
         END                          , END OF IESINCLM
/*
// EXEC LNKEDT
/*
/&
* $$ EOJ
```

Figure 82 (Part 12 of 12). VSE/ESA Provided IESINCLM MODETAB Jobstream

C.2 VSE/ESA USSTAB Jobstream

```
* $$ JOB JNM=VTMUSS,CLASS=0,DISP=D
// JOB VTMUSS        CREATE ACF/VTAM USS TABLE
* ********************************************************************
* *                                                                  *
* *  - - - - - - - - CREATE ACF/VTAM USS TABLE - - - - - - - -       *
* *                                                                  *
* *  THIS JOB IS FOR CREATING ACF/VTAM USS DEFINITION TABLES.        *
* *  ACF/VTAM USES THESE TABLES FOR SENDING MESSAGES TO, AND         *
* *  RECEIVING COMMANDS FROM, SNA AND NON-SNA DISPLAY TERMINALS.     *
* *                                                                  *
* *  THIS JOB HAS 7 STEPS                                            *
* *                                                                  *
* *    1. CATALOG LIBRARY MEMBER CONTAINING USS COMMAND              *
* *       DEFINITIONS                                                *
* *    2. CATALOG LIBRARY MEMBER CONTAINING MESSAGES SENT TO SNA     *
* *       DISPLAY TERMINALS                                          *
* *    3. CATALOG LIBRARY MEMBER CONTAINING MESSAGES SENT TO         *
* *       NON-SNA DISPLAY TERMINALS                                  *
* *    4. ASSEMBLE USS TABLE FOR SNA (VTMUSSTR)                      *
* *    5. LINKEDIT VTMUSSTR                                          *
* *    6. ASSEMBLE USS TABLE FOR NON-SNA (VTMUSSTB)                  *
* *    7. LINKEDIT VTMUSSTB                                          *
* *                                                                  *
* *  THE FOLLOWING VARIABLES ARE USED IN THE FIRST THREE             *
* *  JOBSTEPS AND HAVE TO BE CHANGED.  (EACH VARIABLE IS             *
* *  THE NAME OF AN APPLICATION PROGRAM AND MUST BE NO MORE          *
* *  THAN 8 CHARACTERS.  EACH VARIABLE IS ASSOCIATED WITH A          *
* *  CORRESPONDING, ABBREVIATED ACF/VTAM LOGON COMMAND.              *
* *                                                                  *
* *    VARIABLE      CORRESPONDS TO NAME                             *
* *                  ASSOCIATED WITH COMMAND                         *
* *                                                                  *
* *    --V001--           A                                         *
* *    --V002--           B                                         *
* *    --V003--           C                                         *
* *    --V004--           D                                         *
* *    --V005--           E                                         *
* *    --V006--           F                                         *
* *                                                                  *
* ********************************************************************
*
* ********************************************************************
* *                                                                  *
* *  JOBSTEP 1                                                       *
* *                                                                  *
* *    IF THERE IS NO APPLICATION NAME CORRESPONDING TO A            *
* *    PARTICULAR VARIABLE, DELETE THE USSPARM STATEMENT             *
* *    CONTAINING THE VARIABLE; ALSO, DELETE THE USSCMD STATEMENT    *
* *    PRECEEDING IT AND THE USSPARM STATEMENT FOLLOWING IT.         *
* *                                                                  *
* ********************************************************************
```

Figure 83 (Part 1 of 8). VSE/ESA SKVTMUSS Jobstream to Create a USSTAB

```
// EXEC LIBR,PARM=¢MSHP¢
ACCESS SUBLIB=PRD2.CONFIG
CATALOG  VTMUSSCD.A   REPLACE=YES
*
A        USSCMD  CMD=A,REP=LOGON,FORMAT=BAL
         USSPARM PARM=P1,REP=APPLID,DEFAULT=--V001--
         USSPARM PARM=P2,REP=DATA
*
B        USSCMD  CMD=B,REP=LOGON,FORMAT=BAL
         USSPARM PARM=P1,REP=APPLID,DEFAULT=--V002--
         USSPARM PARM=P2,REP=DATA
*
C        USSCMD  CMD=C,REP=LOGON,FORMAT=BAL
         USSPARM PARM=P1,REP=APPLID,DEFAULT=--V003--
         USSPARM PARM=P2,REP=DATA
*
D        USSCMD  CMD=D,REP=LOGON,FORMAT=BAL
         USSPARM PARM=P1,REP=APPLID,DEFAULT=--V004--
         USSPARM PARM=P2,REP=DATA
*
E        USSCMD  CMD=E,REP=LOGON,FORMAT=BAL
         USSPARM PARM=P1,REP=APPLID,DEFAULT=--V005--
         USSPARM PARM=P2,REP=DATA
*
F        USSCMD  CMD=F,REP=LOGON,FORMAT=BAL
         USSPARM PARM=P1,REP=APPLID,DEFAULT=--V006--
         USSPARM PARM=P2,REP=DATA
*
/+
/*
* ********************************************************************
* *                                                                  *
* *  JOBSTEP 2                                                       *
* *                                                                  *
* *    IF THERE IS NO APPLICATION NAME CORRESPONDING TO A            *
* *    PARTICULAR VARIABLE, REPLACE IT WITH ________ TO INDICATE     *
* *    THAT THERE IS NO NAME.                                        *
* *                                                                  *
* ********************************************************************
// EXEC LIBR,PARM=¢MSHP¢
ACCESS SUBLIB=PRD2.CONFIG
CATALOG  VTMUSSTZ.A   REPLACE=YES
*
* THE FOLLOWING MENU WILL BE DISPLAYED ON SNA TERMINALS ONLY
*
*
         DC    X¢15¢                NEW LINE (ROW 5)
         DC    CL9¢ ¢
         DC    CL2¢A ¢
         DC    CL8¢--V001--¢
```

Figure 83 (Part 2 of 8). VSE/ESA SKVTMUSS Jobstream to Create a USSTAB

```
*
         DC    X¢15¢                NEW LINE (ROW 6)
         DC    CL9¢ ¢
         DC    CL2¢B ¢
         DC    CL8¢--V002--¢
*
         DC    X¢15¢                NEW LINE (ROW 7)
         DC    CL9¢ ¢
         DC    CL2¢C ¢
         DC    CL8¢--V003--¢
*
         DC    X¢15¢                NEW LINE (ROW 8)
         DC    CL9¢ ¢
         DC    CL2¢D ¢
         DC    CL8¢--V004--¢
*
         DC    X¢15¢                NEW LINE (ROW 9)
         DC    CL9¢ ¢
         DC    CL2¢E ¢
         DC    CL8¢--V005--¢
*
         DC    X¢15¢                NEW LINE (ROW 10)
         DC    CL9¢ ¢
         DC    CL2¢F ¢
         DC    CL8¢--V006--¢
*
/+
/*
* ****************************************************************
* *                                                              *
* *  JOBSTEP 3                                                   *
* *                                                              *
* *    IF THERE IS NO APPLICATION NAME CORRESPONDING TO A        *
* *    PARTICULAR VARIABLE, REPLACE IT WITH ________ TO INDICATE *
* *    THAT THERE IS NO NAME.                                    *
* *                                                              *
* ****************************************************************
// EXEC LIBR,PARM=¢MSHP¢
ACCESS SUBLIB=PRD2.CONFIG
CATALOG VTMUSSTX.A REPLACE=YES
*
* THE FOLLOWING MENU WILL BE DISPLAYED ON NON-SNA TERMINALS ONLY
*
*
         DC    X¢11¢                SET BUFFER ADDRESS ORDER
         DC    X¢C5C9¢              ROW 5 COLUMN 10
         DC    X¢1D¢                START FIELD ORDER
         DC    X¢F8¢                PROTECT SKIP INTENSIFIED ATTRIBUTE
         DC    CL2¢A ¢
         DC    X¢1D¢                START FIELD
         DC    X¢F0¢                PROTECT SKIP NORMAL
         DC    CL8¢--V001--¢
```

Figure 83 (Part 3 of 8). VSE/ESA SKVTMUSS Jobstream to Create a USSTAB

```
*
         DC    X¢11¢                SET BUFFER ADDRESS ORDER
         DC    X¢C6D9¢              ROW 6 COLUMN 10
         DC    X¢1D¢                START FIELD ORDER
         DC    X¢F8¢                PROTECT SKIP INTENSIFIED ATTRIBUTE
         DC    CL2¢B ¢
         DC    X¢1D¢                START FIELD
         DC    X¢F0¢                PROTECT SKIP NORMAL
         DC    CL8¢--V002--¢
*
         DC    X¢11¢                SET BUFFER ADDRESS ORDER
         DC    X¢C7E9¢              ROW 7 COLUMN 10
         DC    X¢1D¢                START FIELD ORDER
         DC    X¢F8¢                PROTECT SKIP INTENSIFIED ATTRIBUTE
         DC    CL2¢C ¢
         DC    X¢1D¢                START FIELD
         DC    X¢F0¢                PROTECT SKIP NORMAL
         DC    CL8¢--V003--¢
*
         DC    X¢11¢                SET BUFFER ADDRESS ORDER
         DC    X¢C8F9¢              ROW 8 COLUMN 10
         DC    X¢1D¢                START FIELD ORDER
         DC    X¢F8¢                PROTECT SKIP INTENSIFIED ATTRIBUTE
         DC    CL2¢D ¢
         DC    X¢1D¢                START FIELD
         DC    X¢F0¢                PROTECT SKIP NORMAL
         DC    CL8¢--V004--¢
*
         DC    X¢11¢                SET BUFFER ADDRESS ORDER
         DC    X¢4AC9¢              ROW 9 COLUMN 10
         DC    X¢1D¢                START FIELD ORDER
         DC    X¢F8¢                PROTECT SKIP INTENSIFIED ATTRIBUTE
         DC    CL2¢E ¢
         DC    X¢1D¢                START FIELD
         DC    X¢F0¢                PROTECT SKIP NORMAL
         DC    CL8¢--V005--¢
*
         DC    X¢11¢                SET BUFFER ADDRESS ORDER
         DC    X¢4BD9¢              ROW 10 COLUMN 10
         DC    X¢1D¢                START FIELD ORDER
         DC    X¢F8¢                PROTECT SKIP INTENSIFIED ATTRIBUTE
         DC    CL2¢F ¢
         DC    X¢1D¢                START FIELD
         DC    X¢F0¢                PROTECT SKIP NORMAL
         DC    CL8¢--V006--¢
*
/+
/*
```

Figure 83 (Part 4 of 8). VSE/ESA SKVTMUSS Jobstream to Create a USSTAB

```
// LIBDEF *,SEARCH=(PRD1.BASE,PRD2.CONFIG),TEMP
// LIBDEF PHASE,CATALOG=PRD2.CONFIG
// OPTION CATAL
   PHASE VTMUSSTR,*
// EXEC ASMA90,SIZE=(ASMA90,50K),PARM=¢EXIT(LIBEXIT(EDECKXIT))¢
         PRINT   NOGEN
VTMUSSTR USSTAB  TABLE=STDTRANS,FORMAT=DYNAMIC
*
         COPY    VTMUSSCD
*
TEST     USSCMD  CMD=TEST,REP=IBMTEST,FORMAT=BAL
         USSPARM PARM=P1,DEFAULT=10
         USSPARM PARM=P2,DEFAULT=OK
*
MESSAGES USSMSG  MSG=0,TEXT=¢COMMAND ACCEPTED¢
         USSMSG  MSG=1,BUFFER=M1
         USSMSG  MSG=2,BUFFER=M1
         USSMSG  MSG=3,TEXT=¢ERROR IN VTMUSSTR. PRESS ENTER¢
         USSMSG  MSG=4,TEXT=¢APPLICATION NOT ACTIVATED. PRESS ENTER¢
         USSMSG  MSG=5,BUFFER=M1
         USSMSG  MSG=6,TEXT=¢LOGON ALREADY PENDING¢
         USSMSG  MSG=7,TEXT=¢%(1) UNABLE TO ESTABLISH SESSION - %(2)  F*
               AILED WITH SENSE %(3)¢
         USSMSG  MSG=8,TEXT=¢INSUFFICIENT STORAGE¢
         USSMSG  MSG=9,TEXT=¢MAGNETIC CARD DATA ERROR¢
         USSMSG  MSG=10,BUFFER=M1
         USSMSG  MSG=12,TEXT=¢REQUIRED PARAMETER OMITTED¢
         USSMSG  MSG=13,TEXT=¢IBMECHO%¢
*
STDTRANS DC      128AL1(*-STDTRANS)
         DC      X¢80C1C2C3C4C5C6C7C8C98A8B8C8D8E8F¢
         DC      X¢90D1D2D3D4D5D6D7D8D99A9B9C9D9E9F¢
         DC      X¢A0A1E2E3E4E5E6E7E8E9AAABACADAEAF¢
         DC      X¢B0B1B2B3B4B5B6B7B8B9BABBBCBDBEBF¢
         DC      X¢C0C1C2C3C4C5C6C7C8C9CACBCCCDCECF¢
         DC      X¢D0D1D2D3D4D5D6D7D8D9DADBDCDDDEDF¢
         DC      X¢E0E1E2E3E4E5E6E7E8E9EAEBECEDEEEF¢
         DC      X¢F0F1F2F3F4F5F6F7F8F9FAFBFCFDFEFF¢
END      USSEND
*
M1       DC    AL2(M1E-M1S)
M1S      DC    X¢15¢                  NEW LINE (ROW 1)
*
* VTMUSSTR       VTAM APPLICATION SELECTION MENU
*
         DC    CL1¢ ¢
         DC    CL8¢VTMUSSTR¢
         DC    CL12¢ ¢
         DC    C¢VTAM APPLICATION SELECTION MENU¢
*
```

Figure 83 (Part 5 of 8). VSE/ESA SKVTMUSS Jobstream to Create a USSTAB

```
* ENTER THE CHARACTER OF YOUR SELECTION AND PRESS THE ENTER KEY:
* (MIXED-CASE)
*
         DC    X¢15¢                  NEW LINE (ROW 2)
         DC    X¢15¢                  NEW LINE (ROW 3)
         DC    CL3¢ ¢
         DC    X¢C595A3859940A38885408388819981 83A3859940968640¢
         DC    X¢A896A49940A285938583A3899695408195844097998 5A2A240¢
         DC    X¢A3888540C5D5E3C5D9409285A87A¢
*
         DC    X¢15¢                  NEW LINE (ROW 4)
*
         COPY  VTMUSSTZ
*
         DC    9X¢15¢                SKIP 9 LINES (ROW 19)
         DC    C¢ ==> ¢
M1E      EQU   *
         END
/*
// EXEC LNKEDT
// OPTION CATAL
   PHASE VTMUSSTB,*
// EXEC ASMA90,SIZE=(ASMA90,50K),PARM=¢EXIT(LIBEXIT(EDECKXIT))¢
         PRINT   NOGEN
VTMUSSTB USSTAB  TABLE=STDTRANS,FORMAT=DYNAMIC
*
         COPY    VTMUSSCD
*
TEST     USSCMD  CMD=TEST,REP=IBMTEST,FORMAT=BAL
         USSPARM PARM=P1,DEFAULT=10
         USSPARM PARM=P2,DEFAULT=OK
*
MESSAGES USSMSG  MSG=0,TEXT=¢COMMAND ACCEPTED¢
         USSMSG  MSG=1,BUFFER=M1
         USSMSG  MSG=2,BUFFER=M1
         USSMSG  MSG=3,TEXT=¢ERROR IN VTMUSSTB. PRESS ENTER¢
         USSMSG  MSG=4,TEXT=¢APPLICATION NOT ACTIVATED. PRESS ENTER¢
         USSMSG  MSG=5,BUFFER=M1
         USSMSG  MSG=6,TEXT=¢LOGON ALREADY PENDING¢
         USSMSG  MSG=7,TEXT=¢%(1) UNABLE TO ESTABLISH SESSION - %(2)  F*
               AILED WITH SENSE %(3)¢
         USSMSG  MSG=8,TEXT=¢INSUFFICIENT STORAGE¢
         USSMSG  MSG=9,TEXT=¢MAGNETIC CARD DATA ERROR¢
         USSMSG  MSG=10,BUFFER=M1
         USSMSG  MSG=12,TEXT=¢REQUIRED PARAMETER OMITTED¢
         USSMSG  MSG=13,TEXT=¢IBMECHO%¢
*
```

Figure 83 (Part 6 of 8). VSE/ESA SKVTMUSS Jobstream to Create a USSTAB

```
STDTRANS DC      128AL1(*-STDTRANS)
         DC      X¢80C1C2C3C4C5C6C7C8C98A8B8C8D8E8F¢
         DC      X¢90D1D2D3D4D5D6D7D8D99A9B9C9D9E9F¢
         DC      X¢A0A1E2E3E4E5E6E7E8E9AAABACADAEAF¢
         DC      X¢B0B1B2B3B4B5B6B7B8B9BABBBCBDBEBF¢
         DC      X¢C0C1C2C3C4C5C6C7C8C9CACBCCCDCECF¢
         DC      X¢D0D1D2D3D4D5D6D7D8D9DADBDCDDDEDF¢
         DC      X¢E0E1E2E3E4E5E6E7E8E9EAEBECEDEEEF¢
         DC      X¢F0F1F2F3F4F5F6F7F8F9FAFBFCFDFEFF¢
END      USSEND
*
M1       DC    AL2(M1E-M1S)
M1S      DC    X¢F5¢                  ERASE WRITE COMMAND
         DC    X¢C7¢                  WCC ALARM
*
* VTMUSSTB       VTAM APPLICATION SELECTION MENU
*
         DC    X¢11¢                  SET BUFFER ADDRESS ORDER
         DC    X¢40C1¢                ROW 1 COLUMN 2
         DC    X¢1D¢                  START FIELD
         DC    X¢F0¢                  PROTECT SKIP NORMAL
         DC    CL8¢VTMUSSTB¢
         DC    X¢11¢                  SET BUFFER ADDRESS ORDER
         DC    X¢40D7¢                ROW 1 COLUMN 24
         DC    X¢1D¢                  START FIELD ORDER
         DC    X¢F8¢                  PROTECT SKIP INTENSIFIED ATTRIBUTE
         DC    C¢VTAM APPLICATION SELECTION MENU¢
*
* ENTER THE CHARACTER OF YOUR SELECTION AND PRESS THE ENTER KEY:
* (MIXED-CASE)
*
         DC    X¢11¢                  SET BUFFER ADDRESS ORDER
         DC    X¢C2E3¢                ROW 3 COLUMN 4
         DC    X¢1D¢                  START FIELD
         DC    X¢F0¢                  PROTECT SKIP NORMAL
         DC    X¢C595A3859940A3888540838881998183A3859940968640¢
         DC    X¢A896A49940A285938583A3899695408195844097985A2A240¢
         DC    X¢A3888540C5D5E3C5D9409285A87A¢
```

Figure 83 (Part 7 of 8). VSE/ESA SKVTMUSS Jobstream to Create a USSTAB

```
*
         COPY  VTMUSSTX
*
         DC    X¢11¢                SET BUFFER ADDRESS ORDER
         DC    X¢D661¢              ROW 19 COLUMN 2
         DC    X¢1D¢                START FIELD
         DC    X¢F8¢                PROTECT SKIP INTENSIFIED ATTRIBUTE
         DC    C¢==> ¢
         DC    X¢1D¢                START FIELD ORDER
         DC    X¢40¢                UNPROTECTED NORMAL ATTRIBUTE
         DC    X¢13¢                INSERT CURSOR ORDER
         DC    X¢3C¢                REPEAT TO ADDRESS ORDER
         DC    X¢D7F0¢              ROW 20 COLUMN 1
         DC    C¢ ¢
         DC    X¢1D¢                START FIELD ORDER
         DC    X¢F0¢                PROTECT SKIP NORMAL ATTRIBUTE
M1E      EQU   *
         END
/*
// EXEC LNKEDT
/&
* $$ EOJ
```

Figure 83 (Part 8 of 8). VSE/ESA SKVTMUSS Jobstream to Create a USSTAB

Appendix D. Some ACF/VTAM V4R2 Installation Examples for VM/ESA

This is an extract from the **Program Directory for ACF/VTAM Version 4 Release 2**. We recommend to read it carefully before doing any installation.

D.1 Installing the VTAM VIT Analysis Tool

To install the VTAM VIT analysis tool, complete the following steps as described in this section (ISPF V3R2 is required to install this tool):

1. Access the appropriate disks
2. Update and run the ISPF EXEC
3. Install the ISPF trace tables
4. Invoke the ISPF Dialog Tag Language Utility
5. Compile the help panels, creating multiple help panels
6. Verify that the trace formatter panels have been set up correctly
7. Optionally customize the ISPF interface.

If problems are encountered, see ″VTAM Internal Trace (VIT) Analysis Tool Problems (VM)″ in *VTAM Diagnosis* for further information.

D.1.1 Accessing the Appropriate Disks

The following loadlibs or maclibs contain the necessary data to set up the VTAM VIT Analysis Tool. You need to concatenate the maclibs into the ISPF EXEC, as shown below.

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 ISTRAFT1 load module
N/A	Accessed as C	2B2 BASE1	Contains input GML files

D.1.2 Updating and Running the ISPF EXEC

Update the ISPF EXEC with the appropriate maclib names and then run it. See Figure 84 for an example. Note that the highlighted FILEDEF statements in Figure 84 are required, and they must be placed after the ISRNULL FILEDEF statements.

```
/*********************************************************************/
/* PERFORM FILEDEFS                                                  */
/* NOTE: PRIVATE PANELS, MSGS, SKELS, TABLES AND PROFILE FILES       */
/*       SHOULD BE PLACED AHEAD OF THE PDF AND ISPF SUPPLIED FILES.  */
/*       THE FILEMODE MAY NEED TO BE CHANGED DEPENDING ON HOW DISK   */
/*       WAS ACCESSED.                                               */
/*********************************************************************/
'SET CMSTYPE HT'                    /*              VM29458*/
'FILEDEF ISPPROF CLEAR'
'FILEDEF ISPPLIB CLEAR'
'FILEDEF ISPMLIB CLEAR'
'FILEDEF ISPSLIB CLEAR'
'FILEDEF ISPLLIB CLEAR'                  /* @P2A */
'FILEDEF ISPTLIB CLEAR'
'FILEDEF ISPXLIB CLEAR'
'FILEDEF ISPTABL CLEAR'
'SET CMSTYPE RT'                    /*              VM29458*/

'FILEDEF ISPPROF DISK TABLES MACLIB A (PERM '

/* Filemode 'T' has been replaced by 'A'        */

'FILEDEF ISPPLIB DISK INSPECT MACLIB Y (PERM CONCAT'
'FILEDEF ISPPLIB DISK SERRLIB MACLIB Y (PERM CONCAT'
'FILEDEF ISPPLIB DISK ISRNULL PANEL  Y (PERM CONCAT'
'FILEDEF ISPPLIB DISK ISTPLIB MACLIB A (PERM CONCAT'
'FILEDEF ISPPLIB DISK VSF2PLIB MACLIB Y (PERM CONCAT'
'FILEDEF ISPPLIB DISK ISRPLIB MACLIB Y (PERM CONCAT'
'FILEDEF ISPPLIB DISK ISPPLIB MACLIB Y (PERM CONCAT'

'FILEDEF ISPMLIB DISK ISRNULL MESSAGE Y (PERM CONCAT'
'FILEDEF ISPMLIB DISK ISTMLIB MACLIB A (PERM CONCAT'
'FILEDEF ISPMLIB DISK ISRMLIB MACLIB Y (PERM CONCAT'
'FILEDEF ISPMLIB DISK ISPMLIB MACLIB Y (PERM CONCAT'

'FILEDEF ISPSLIB DISK ISRNULL SKELETON Y (PERM CONCAT'
'FILEDEF ISPSLIB DISK ISRSLIB MACLIB Y (PERM CONCAT'
'FILEDEF ISPTLIB DISK ISRNULL TABLE A (PERM CONCAT'
'FILEDEF ISPTLIB DISK ISTTLIB MACLIB A (PERM CONCAT'
'FILEDEF ISPTLIB DISK TABLES MACLIB A (PERM CONCAT'
'FILEDEF ISPTLIB DISK ISRTLIB MACLIB Y (PERM CONCAT'
'FILEDEF ISPTLIB DISK ISPTLIB MACLIB Y (PERM CONCAT'

'FILEDEF ISPTABL DISK ISTTLIB MACLIB A (PERM'

'FILEDEF ISPXLIB DISK IBMLIB TXTLIB Y (PERM CONCAT'
'FILEDEF ISPXLIB DISK VSC2LTXT TXTLIB Y (PERM CONCAT'
```

Figure 84. Sample ISPF EXEC Modified for IST Maclibs

D.1.3 Installing the ISPF Trace Tables

After the installation maclibs have been concatenated and the minidisk for the table EXEC is accessed, you can install the ISPF tables. To do this, select option 7 from the ISPF/PDF PRIMARY OPTION MENU, and then option 1 from the Dialog Test menu to go to the ISPF INVOKE DIALOG FUNCTION/SELECTION PANEL shown in Figure 85.

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


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

INVOKE COMMAND:
          CMD    ===> ISTTTABL

          LANG   ===>                       (APL or blank)

INVOKE PROGRAM/SHARED SEGMENT:
          PGM    ===>                       DCSS  ===>

          PARM   ===>
                                            EXTENDED PLIST ===> NO

NEWAPPL          ===> NO                    ID    ===>

NEWPOOL          ===> NO                    PASSLIB  ===> NO

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

Figure 85. ISPF Panel Used to Run the Table EXECs

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

The individual table EXECs for formatted trace are:

- ISTTT007
- ISTTT012
- ISTTT017
- ISTTT024

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

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

D.1.4 Invoking the ISPF Dialog Tag Language Utility

To complete the panel setup, you must compile all of the help panels that expand into multiple panels. All other panels, help panels, keylists, and commands have been compiled and placed in the appropriate maclib. The ISPF Dialog Tag Language Utility, ISPDTLC, is used for the compile. ISPDTLC is a REXX EXEC provided by ISPF that generates panels, help panels, messages, keylists and commands from Dialog Tag Language source files. For more information about the Dialog Tag Language Utility, see the *ISPF Dialog Tag*

Language and Reference Guide. You can enter ISPDTLC from the COMMAND ===> line or from the COMMAND AND EXEC PROCESSING panel, shown in Figure 86 on page 160.

```
ISRCMS----------------  COMMAND AND EXEC PROCESSING  -------------------------
COMMAND ===>

ENTER CMS OR CP COMMAND BELOW:
===> ISPDTLC



Any one of the following may be entered:

- A CMS command
- A CP command
- An EXEC specification
- SUBSET (to enter CMS subset mode: use RETURN command
          to terminate subset mode.)









 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 86. ISPF Panel Used to Invoke the Dialog Tag Language Utility

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

D.1.5 Compiling the Help Panels, Keylists, and Commands

The following section describes how to compile the help panels, keylists, and commands using the ISPF Dialog Tag Language Conversion Utility.

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

- The GML source file. ISTTTWO contains a compile list of all the help panels that expand into multiple help panels.
- The output panel maclib for the panels.
- The output log for the messages.
- The four-character prefix of the trace application to be used as the keylist application ID. For formatted trace, enter ISTT.
- Whether old files are replaced with the new compiled output. Enter YES.
- Whether you want the ISPDTLC compiler messages displayed on the screen or written to a file.

  If you indicate that you want the messages written to an output file, you can specify a filename in the OUTPUT LOG field. Otherwise, the output is written to the ISPF log.

Writing the messages to the ISPF log will not cause any messages to be overwritten. It is recommended that you have the messages written to a file.

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

To compile the help panels, keylists, and commands for formatted trace, enter the information as provided on the screen shown in Figure 87.

```
                ISPF Dialog Tag Language Conversion Utility

Enter requested information:
   GML source file  . . . . . ISTTTWO
   Output Panel MACLIB fn . . ¢ISTPLIB¢
       (Leave blank for sequential panel file)
   Output Log fn  . . . . . ________                                  _
       (Leave blank to use ISPF log file)

   Keylist Application Id . . ISTT  Up to four characters

   Replace old files  . . . . YES   No or Yes
   ISPDTLC messages to disk . YES   No or Yes
   Allow DBCS . . . . . . . . NO    No or Yes
   Specify KANA . . . . . . . ___   No or Yes or blank
   Suppress messages (ISPF) . NO    No or Yes
   National Language  . . . . ENGLISH

Command ===> ____________________________________________________________
```

Figure 87. Compiling the Help Panels, Keylists, and Commands for Formatted Trace

After compiling the help panels and tables have been generated and/or moved to the correct maclibs, the VTAM VIT analysis tool is ready for use or testing. No additional steps are necessary.

D.1.6 Verifying the Trace Formatter Panels

To verify that the Trace Formatter panels are set up correctly, return to the ISPF 7.1 function ″INVOKE DIALOG FUNCTION/SELECTION PANEL″ and enter the REXX EXEC as shown in Figure 88 on page 162.

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


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

INVOKE COMMAND:
          CMD    ===> ISTTE01

          LANG   ===>                          (APL or blank)

INVOKE PROGRAM/SHARED SEGMENT:
          PGM    ===>                          DCSS  ===>

          PARM   ===>
                                               EXTENDED PLIST ===> NO

NEWAPPL           ===> YES                     ID    ===> ISTT

NEWPOOL           ===> NO                      PASSLIB  ===> NO

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

Figure 88. Verifying the Trace Formatter Panels

The first ISPF panel you should see is shown in Figure 89.

```
                        VTAM Internal Trace Analysis

Select one of the following. Then press Enter.

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









(C) Copyright IBM Corporation 1992. All rights reserved.
Command ===> ____________________________________________________________
 F1=Help      F2=Split     F3=Exit      F9=Swap      F11=Retrieve F12=Cancel
```

Figure 89. Main Menu for Selecting Trace Parameters

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

Note: It is recommended that you position the command line at the bottom of the screen using ISPF PARMS option DISPLAY and changing the

'COMMAND LINE PLACEMENT ===> ASIS' to BOTTOM to improve readability.

D.1.7 Customizing the ISPF Interface

If you want a customized interface to be active to select the VTAM trace analysis commands, customize the ISPF panel ISR@PRIM by adding the highlighted lines shown in Figure 90 on page 164 to create and activate option V on the ISPF/PDF Primary Option Menu as shown in Figure 91 on page 165. When this option is selected, control is passed to the ISTTE01 EXEC. This EXEC controls the ISPF panels for the trace formatter.

```
)ATTR
+ TYPE(TEXT) COLOR(GREEN) INTENS(LOW)
)BODY
%------------------------ SAMPLE ISPF/PDF PRIMARY OPTION MENU -----------------
%OPTION  ===>_ZCMD                                                            +
%
%                                                          +USERID   - &ZUSER
%   0 +ISPF PARMS  - Specify terminal and user parameters   +TIME     - &ZTIME
%   1 +BROWSE      - Display source data or output listings +TERMINAL - &ZTERM
%   2 +EDIT        - Create or change source data           +PF KEYS  - &ZKEYS
%   3 +UTILITIES   - Perform utility functions
%   4 +FOREGROUND  - Invoke language processors in foreground
%   5 +BATCH       - Submit to batch for language processing
%   6 +COMMAND     - Enter CMS command or EXEC
%   7 +DIALOG TEST - Perform dialog testing
%   8 +LM UTILITIES- Perform library administrator 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.
%
)INIT
  .HELP = ISR00003
  &ZPRIM = YES        /* ALWAYS A PRIMARY OPTION MENU      */
  &ZHTOP = ISR00003   /* TUTORIAL TABLE OF CONTENTS        */
  &ZHINDEX = ISR91000 /* TUTORIAL INDEX - 1ST PAGE         */
  &ZSCLMPRJ = &Z
  VPUT (ZHTOP,ZHINDEX,ZSCLMPRJ) PROFILE
)PROC
&ZQ = &Z
  IF (&ZCMD  = ¢ ¢)
    &ZQ = TRUNC(&ZCMD,¢.¢)
    IF (&ZQ = ¢ ¢)
      .MSG = ISRU000
  &ZSEL = TRANS( &ZQ
                0,¢PANEL(ISPOPTA)¢
                1,¢PGM(ISRBRO) PARM(ISRBRO01)¢
                2,¢PGM(ISREDIT) PARM(P,ISREDM01)¢
                3,¢PANEL(ISRUTIL)¢
                4,¢PANEL(ISRFPA)¢
                5,¢PGM(ISRJB1) PARM(ISRJPA) NOCHECK¢
                6,¢PGM(ISRPTC)¢
                7,¢PGM(ISPYXDR) PARM(ISR) NOCHECK¢
                8,¢PANEL(ISRLPRIM)¢
                9,¢PANEL(ISRDIIS)¢
               10,¢PGM(ISRSCLM) NOCHECK¢
                C,¢PGM(ISPTUTOR) PARM(ISR00005)¢
                V,¢CMD(%ISTTE01) NEWAPPL(ISTT)¢
                T,¢PGM(ISPTUTOR) PARM(ISR00000)¢
              ¢ ¢,¢ ¢
                X,¢EXIT¢
                *,¢?¢ )
  &ZTRAIL = .TRAIL
)END
```

Figure 90. Sample ISPF Panel ISR@PRIM Customization

```
----------------------  ISPF/PDF PRIMARY OPTION MENU  -----------------
OPTION  ===>
                                                              USERID   - USERID
   0  ISPF PARMS  - Specify terminal and user parameters      TIME     - 9:29
   1  BROWSE      - Display source data or output listings    TERMINAL - 3278
   2  EDIT        - Create or change source data              PF KEYS  - 12
   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 administrator 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.
```

Figure 91. Addition of Option V on the ISPF/PDF Primary Option Menu

D.2 Installing the VTAM-provided OS/2 DLUR

The dependent LU server function provides dependent secondary logical unit (SLU) support by establishing an LU6.2 session pipe between a dependent LU requester node (DLUR) and a dependent LU server node (DLUS). A DLUR is an APPN end node or an APPN network node that owns dependent LUs, but requests that a DLUS provide the SSCP services for those dependent LUs.

The VTAM-provided OS/2 DLUR for Communications Manager/2 provides full DLUR support, with the following exceptions:

- Downstream PUs
- SSCP takeover/giveback (ANS=CONT)
- DLUR/DLUS cross-subnetwork support
- DDDLU
- XRF and XRF/Crypto.

This section describes downloading and unpacking the DLUR files.

D.2.1 Downloading the DLUR Files

Install the DLUR files by downloading the following files from the host to the root directory of the drive where Communications Manager/2 is installed.

1. Download files ISTIPDLR AISTDAT1 and ISTLDRM2 AISTDAT1 from the 401 disk on the host.
2. Download file ISTIPRDM AISTDAT1 from the 401 disk on the host. This is a README file containing DLUR installation and configuration information.

You can use any installed communication facility that enables you to transfer files from a VM/ESA host to OS/2. Following are two examples of how you can download these files:

- Use the receive function of a Communications Manager/2 3270 emulation session. For example:

```
RECEIVE ISTIPDLR.RAM id:ISTIPDLR AISTDAT1 fm
RECEIVE LOADRAM2.EXE id:ISTLDRM2 AISTDAT1 fm
RECEIVE README.DLR id:ISTIPRDM AISTDAT1 fm (ASCII CRLF
```

  where *id* is the emulator session and *fm* is the filemode from which you are downloading.

  For information on transferring files using 3270 sessions, refer to your *IBM Communications Manager/2 User's Guide*.

- If TCP/IP is installed on the VM/ESA host and on your workstation, you can use FTP to download ISTIPDLR, ISTLDRM2, and ISTIPRDM. For information on setting up and using FTP on OS/2, refer to your *IBM TCP/IP for OS/2: User's Guide*.

Do the following when you download the DLUR files:

- Make sure you specify that files ISTIPDLR and ISTLDRM2 are in binary format before you run the download command. The README file, ISTIPRDM, is in EBCDIC format, not binary.
- Rename the following files after they are downloaded to OS/2:
  - Rename ISTIPDLR to ISTIPDLR.RAM.
  - Rename ISTLDRM2 to LOADRAM2.EXE.
  - Rename ISTIPRDM to README.DLR.

The following section refers to the DLUR files by their OS/2 names: ISTIPDLR.RAM and LOADRAM2.EXE. README.DLR is the DLUR information file and is not exploded.

D.2.2 Unpacking the DLUR Files into Communications Manager/2 Subdirectories

Make sure FFST and Communications Manager/2 and all associated processes are not active.

The following procedure explains how to use LOADRAM2.EXE to unpack ISTIPDLR.RAM into individual DLUR files.

1. Back up and store both files. If any of the files are lost or damaged, you can restore them by running LOADRAM2 against ISTIPDLR again.
2. Make sure you are on the drive and in the subdirectory (if applicable) where LOADRAM2.EXE and ISTIPDLR.RAM reside.
3. Unpack ISTIPDLR.RAM into individual files using the following command:

   ```
   LOADRAM2 ISTIPDLR.RAM target [/d]
   ```

   where:

   LOADRAM2 name of the command that explodes ISTIPDLR.RAM into individual files.

   ISTIPDLR.RAM name of the file containing all packed files associated with DLUR Communications Manager/2.

   target drive where the individual DLUR files are stored when they are unpacked from ISTIPDLR.RAM.

/d instructs LOADRAM2 to display files as they are unloaded. This parameter is optional.

4. Verify the following file names are on the same drive as *target* drive:

   DLUR.DLL
   DLR.MSG
   DLRH.MSG

   If LOADRAM2 ran successfully, a return code of 0 should be displayed on your terminal. If a problem occurred while LOADRAM2 was exploding ISTIPDLR into individual files, one of the following error codes might be displayed on your terminal:

   2 No files were found.

   8 Insufficient memory.

   15 An invalid drive was specified.

   87 An invalid parameter was specified or incorrect syntax was used.

   112 The target disk is full.

   220 The present DOS version is not supported.

   221 No files were found in the list file.

   222 The macro file has the wrong format.

   224 The macro file is too short.

   225 Generally successful but no files were found to match at least one specification.

   The following errors can also occur:

   An error occurred while opening *xxx*
   A file could not be transferred to the target directory. This error causes OS/2 to report *Path not found*. Ensure that the correct drive was specified.

   Not transferred
   A file could not be transferred to the target directory. This error can occur when reinstalling DLUR Communications Manager/2 if Communications Manager/2 is active. Stop Communications Manager/2 and all associated processes, for example, subsystem management and message log formatters, and repeat the installation procedure.

   Destination conflict
   The target drive might not be specified correctly in the LOADRAM2 command.

5. Copy the following exploded files into the associated directory or subdirectories:

   - DLUR.DLL into C:\CMLIB\DLL\
   - DLR.MSG into C:\CMLIB\DLR.MSG
   - DLRH.MSG into C:\CMLIB\DLRH.MSG

   Note: C: is the same directory in which Communications Manager/2 has been installed.

6. Restart Communications Manager/2 and all associated processes.

For more information on using Communication Manager/2's DLUR, see the *VTAM Network Implementation Guide*.

D.3 Installing the VTAM Command Set Library

This section describes the installation method and step-by-step procedures to install VTAM V4R2 for VM/ESA Command Set Library.

The IBM Command Tree/2 program is an IBM OS/2 application program that guides you through the process of building a command. After you select the command options that you want, the IBM Command Tree/2 program generates a command string that you can send to a specified destination. You need not remember details such as option names, the order of options, or punctuation to build a command. VTAM V4R2 for VM/ESA Command Set Library supplies a command set library for IBM Command Tree/2.

D.3.1 Downloading the VTAM Command Set Library

To download the VTAM command set library for IBM Command Tree/2 and install it on a workstation, follow these steps:

- Log on to the installation user ID 5654010A or any other id that has read access to the Online OS/2 Files (401) disk. Make sure you have the 401 disk accessed in read mode. The command set library (ISTC420V) and the ISTLDRM2 unpacking utility reside on the Online OS/2 Files (401) disk.
- Download the VTAM command set library files to your workstation.

  Use the OS/2 RECEIVE command to download the files from the host. Enter the following commands on an OS/2 command line (where *id* is the emulator session and *fm* is the filemode from which you are downloading):

  ```
  RECEIVE ISTC420V.RAM id:ISTC420V AISTDAT1 fm
  RECEIVE ISTLDRM2.EXE id:ISTLDRM2 AISTDAT1 fm
  ```

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

  For example, if you are downloading from your A emulator session, the 401 disk is accessed as filemode G, and you want to store the VTAM V4R2 for VM/ESA command set library for IBM Command Tree/2 on your D: drive in directory IBMFKB\RUNTIME\ISTC420V for VM/ESA enter the RECEIVE command show below. This RECEIVE command is shown split across two lines, but the command should be entered as a single line command.

  ```
  RECEIVE D:IBMFKB\RUNTIME\ISTC420V\ISTC420V.RAM
          A:ISTC420V AISTDAT1 G
  ```

  IBMFKB is the directory that contains the IBM Command Tree/2 program files. It is recommended (but not required) that you install each command set library in a separate subdirectory of IBMFKB\RUNTIME to avoid overlaying any existing files. For example, you could store the VTAM V4R2 for VM/ESA command set library in IBMFKB\RUNTIME\ISTC420V, and a user-written command set library in IBMFKB\RUNTIME\MYCMDS.

- Unpack the VTAM command set library files.

  After the packed command set library is on your workstation, you need to unpack the files before you can build VTAM commands. To unpack the files,

go to an OS/2 command line and be sure the prompt is set for the directory to which you downloaded the command set library (for example, D:\IBMFKB\RUNTIME\ISTC420V for VM/ESA). Now enter:

```
ISTLDRM2 ISTC420V.RAM /D
```

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

D.3.2 For More Information

For more information on the IBM Command Tree/2 program, including how to create user profiles to start the program with the VTAM command set library, see *Using IBM Command Tree/2*. This book is also available on the *IBM Networking Softcopy Collection Kit* CD-ROM.

D.3.3 Installation Considerations

When upgrading from a previous release of VTAM, and you are using the same disks for your current release, ensure all old text decks are removed from disks.

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July 1995

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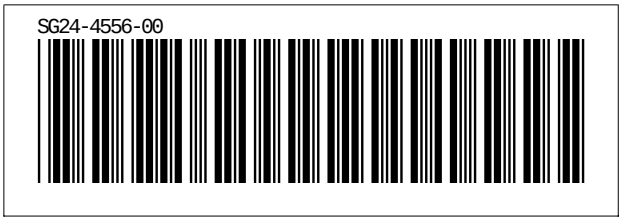

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VTMSNA	VT42AX1	123	60	
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VCDRM33	VT42AX1	125	64	
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Runtime values:

Document fileid	SG244556 SCRIPT
Document type	USERDOC
Document style	IBMXAGD
Profile	EDFPRF30
Service Level	0029
SCRIPT/VS Release	4.0.0
Date	95.07.12
Time	05:12:28
Device	3820A
Number of Passes	4
Index	YES
SYSVAR D	YES
SYSVAR G	INLINE
SYSVAR V	ITSCEVAL

Formatting values used:

Annotation	NO
Cross reference listing	YES
Cross reference head prefix only	NO
Dialog	LABEL
Duplex	YES
DVCF conditions file	(none)
DVCF value 1	(none)
DVCF value 2	(none)
DVCF value 3	(none)
DVCF value 4	(none)
DVCF value 5	(none)

DVCF value 6	(none)
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
Language	ENGL
Layout	OFF
Leader dots	YES
Master index	(none)
Partial TOC (maximum level)	4
Partial TOC (new page after)	INLINE
Print example id's	NO
Print cross reference page numbers	YES
Process value	(none)
Punctuation move characters	.,
Read cross-reference file	(none)
Running heading/footing rule	NONE
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