



Title: VTAM V4R2 Release Guide
Document Number: GC31-6492-00
Build Date: 04/22/94 14:03:29 **Build Version:** 1.2
Book Path: C:\IBMZLIB\BOO\iste2100.boo

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VTAM(TM)

Release Guide

Version 4 Release 2 for MVS/ESA

Document Number GC31-6492-00

Program Number
5695-117 (MVS/ESA)

File Number S370/4300/30XX-50



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PREFACE About This Book

This book helps the system planner and the system programmer decide which functions of VTAM(*) V4R2 to plan for and to implement.

Warning: Information provided in this book is for planning purposes only. Because this book is printed before VTAM V4R2 becomes available, there might be slight differences between this information and the VTAM program. For example, a few of the messages listed in this book might change; therefore, it is not advisable to code or revise automated routines or CLISTs based on the text of the messages listed in this book. The VTAM V4R2 publications listed in the ["Bibliography"](#) include any updates to the information provided in this book.

Subtopics:

- [PREFACE.1 Who Should Use This Book](#)
- [PREFACE.2 How to Use This Book](#)
- [PREFACE.3 Where to Find Information about VTAM](#)



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PREFACE.1 Who Should Use This Book

This book is for current VTAM users who are familiar with the basic functions of VTAM and are planning to migrate to VTAM V4R2. You can use this book to evaluate the new functions and determine how they fit into your network.

Before using this book, you should be familiar with the basic concepts of telecommunication, Systems Network Architecture (SNA), Advanced Peer-to-Peer Networking(*) (APPN(*)), and VTAM. For information on SNA and APPN, refer to *Systems Network Architecture Concepts and Products* and *Systems Network Architecture Technical Overview*. For information on VTAM, see the VTAM publications listed in the ["Bibliography."](#)



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PREFACE.2 How to Use This Book

This book and the [VTAM Migration Guide](#) are companion books and can be used in the following order:

1. Before you install VTAM V4R2, use this book to learn about the benefits of the new functions and to estimate the changes each function requires.
2. As you install VTAM V4R2, if you are migrating from a previous release, use the [VTAM Migration Guide](#) to learn about changes required for VTAM V4R2, regardless of whether you plan to implement the new functions.
3. After you have installed VTAM V4R2, use this book to plan for implementing new functions over time.

Subtopics:

- [PREFACE.2.1 How This Book is Organized](#)
- [PREFACE.2.2 Terms Used in the VTAM Library](#)
- [PREFACE.2.3 Artwork Used in This Book](#)



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PREFACE.3 Where to Find Information about VTAM

["Bibliography"](#) describes the books in the VTAM V4R2 library, arranged according to related tasks. The bibliography also lists the titles and order numbers of books related to this book or cited by name in this book.

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1.0 Part 1. VTAM V4R2 Functions

Subtopics:

- [1.1 Chapter 1. API Enhancement](#)
 - [1.2 Chapter 2. LU 6.2 Application Program Interface \(API\) Enhancements](#)
 - [1.3 Chapter 3. Network Dynamics](#)
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1.1 Chapter 1. API Enhancement

The following function enhances the application program interface (API):

- Functional recovery routine (FRR) stack preservation.

Subtopics:

- [1.1.1 Functional Recovery Routine \(FRR\) Stack Preservation](#)



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1.1.1 Functional Recovery Routine (FRR) Stack Preservation

The KEEPFRM parameter was first introduced to the ACB macroinstruction in the VTAM V3R4 program. When PARM=(KEEPFRM=YES) is specified, VTAM maintains the functional recovery routine (FRR) stack for an application-dispatchable unit of work while VTAM processes the work. An FRR is called when a unit of work abnormally terminates; MVS/ESA(*) then passes control to a specified recovery routine for error handling and processing.

VTAM V4R2 extends this support to synchronous (OPTCD=SYN) operations that are issued under control of a service request block (SRB) running in same-memory mode.

Subtopics:

- [1.1.1.1 What This Function Enables You to Do](#)
- [1.1.1.2 Summary of Changes](#)
- [1.1.1.3 Programming Requirements](#)
- [1.1.1.4 Planning Considerations](#)



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1.2 Chapter 2. LU 6.2 Application Program Interface (API) Enhancements

The following functions enhance LU 6.2 processing:

- LU 6.2 conversation status
- LU 6.2 deallocate request processing
- LU 6.2 full-duplex
- LU 6.2 receive immediate.

Subtopics:

- [1.2.1 LU 6.2 Conversation Status](#)
- [1.2.2 LU 6.2 Deallocate Request Processing](#)
- [1.2.3 LU 6.2 Full-Duplex](#)
- [1.2.4 LU 6.2 Receive Immediate](#)



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1.2.1 LU 6.2 Conversation Status

This function enables an LU 6.2 application program to obtain notification when information is available for the application program to receive. A new APPCCMD macroinstruction, CONTROL=TESTSTAT, has been introduced to provide information about conversations including:

- An indication that the partner LU has issued a request to send (APPCCMD CONTROL=SEND,QUALIFY=RQSEND)
- Amount of expedited flow data that is currently outstanding for an identified conversation
- Amount of normal flow data that is currently outstanding for an identified conversation
- Notification of other kinds of information; for example, confirmation, error indication, or change-direction indicators.

Subtopics:

- [1.2.1.1 What This Function Enables You to Do](#)
- [1.2.1.2 Summary of Changes](#)
- [1.2.1.3 Planning Considerations](#)



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1.2.2 LU 6.2 Deallocate Request Processing

APPCCMD CONTROL=DEALLOCQ provides an alternative way for the VTAM program to handle abnormal deallocation requests. For a half-duplex conversation, VTAM queues the deallocation request if a negative response to the partner LU needs to be sent and a first-in-chain (FIC) or only-in-chain (OIC) RU has not been received. Until an FIC or OIC RU has been received, a negative response cannot be sent. If the request was queued, VTAM completes deallocation processing when data is received. This differs from the APPCCMD CONTROL=DEALLOC processing in that VTAM will reject the APPCCMD for the abnormal deallocation request.

APPCCMD CONTROL=DEALLOC is still valid; VTAM can use either DEALLOC or DEALLOCQ to issue abnormal deallocation requests. APPCCMD CONTROL=DEALLOCQ performs exactly like an APPCCMD CONTROL=DEALLOC on full-duplex conversations.

Subtopics:

- [1.2.2.1 What This Function Enables You to Do](#)
- [1.2.2.2 Summary of Changes](#)
- [1.2.2.3 Planning Considerations](#)



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1.2.3 LU 6.2 Full-Duplex

This function provides full-duplex LU 6.2 protocol support that :

- Enables VTAM to establish and manage full-duplex LU 6.2 conversations.
- Enables an LU 6.2 application program to support full-duplex as well as half-duplex LU 6.2 protocols. Any session that is capable of supporting full-duplex conversations continues to be capable of supporting half-duplex conversations.
- Enables expedited flow data transmission on LU 6.2 sessions.
- Allows an LU 6.2 application program to issue multiple concurrent requests for processing on a full-duplex as well as a half-duplex conversation.

[VTAM Programming for LU 6.2](#) provides more information about how many macroinstructions can remain outstanding and about which macroinstructions can override outstanding requests.

Subtopics:

- [1.2.3.1 What This Function Enables You to Do](#)
- [1.2.3.2 Summary of Changes](#)
- [1.2.3.3 Planning Considerations](#)



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1.2.4 LU 6.2 Receive Immediate

The APPCCMD CONTROL=RECEIVE macroinstruction has been enhanced to support the RECEIVE_IMMEDIATE verb of the LU 6.2 boundary function. APPCCMD CONTROL=RECEIVE now allows normal information that is immediately available to be returned to the application, even though the application's buffer is not filled or, in the case of FILL=LL, a complete logical record has not been received.

Subtopics:

- [1.2.4.1 What This Function Enables You to Do](#)
- [1.2.4.2 Summary of Changes](#)
- [1.2.4.3 Planning Considerations](#)



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1.3 Chapter 3. Network Dynamics

The following functions enable dynamic access to the network. These functions can eliminate or reduce the need to predefine resources in your network. In addition, these functions provide increased end-user availability and automatic backup.

- Expanded dial information
- Generic resources.

Subtopics:

- [1.3.1 Expanded Dial Information](#)
- [1.3.2 Generic Resources](#)



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1.3.1 Expanded Dial Information

Prior to V4R2, signalling information for switched connections was provided by the DIALNO operand on the PATH definition statement. The value for the DIALNO operand is a 32-character string divided into subfields that represent different kinds of information. The information provided by this value varies depending on the data link control (DLC) characteristics of the connection.

For V4R2, expanded dial information enables a user to specify up to 250 bytes of signal information on the PATH definition statement of a switched major node. This function also enables a VTAM application program to supply up to 250 bytes of signal data.

VTAM can translate the signal information coded on the PATH definition statement from a variety of input data formats, including:

- Binary code decimal
- Compressed alphanumeric
- Decimal
- EBCDIC
- Hexadecimal.

In V4R2, expanded dial information builds on the application-supplied operands for the dial or token-ring connection function that was introduced in V3R4. That function enables a VTAM application program to supply up to 32 bytes of dial-out information in a parameter list named in the node initialization block (NIB). The V4R2 enhancements enable more detailed data to be specified for dial connections.

The application program specifies the dial information in hexadecimal format.

Subtopics:

- [1.3.1.1 What This Function Enables You to Do](#)
- [1.3.1.2 Summary of Changes](#)
- [1.3.1.3 Programming Requirements](#)
- [1.3.1.4 Planning Considerations](#)



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1.3.2 Generic Resources

Using generic resources, a VTAM application program can now be known by the following names:

- The application program network name, specified on the name field of the APPL definition statement
- The generic resource name, specified on the GNAME operand of the NIB macroinstruction and used when the application program issues OPTCD=SETLOGON GNAMEADD.

Generic resource names are used to balance application workloads among two or more active resources. Whereas the existing USERVAR function is assigned to only one resource at a time, generic resource names are assigned to several active application programs simultaneously. VTAM distributes sessions among a number of available resources rather than just a single resource, and thus balances session workloads in the network. Each active application program that uses a given generic resource name is called a generic resource member.

Subtopics:

- [1.3.2.1 What This Function Enables You to Do](#)
- [1.3.2.2 How Generic Resources Works](#)
- [1.3.2.3 Summary of Changes](#)
- [1.3.2.4 Programming Requirements](#)
- [1.3.2.5 Planning Considerations](#)



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1.4 Chapter 4. Operator Interface Enhancements

The following functions enhance the VTAM operator interface:

- DISPLAY enhancements
- Inactivating LUs in a pending notify state
- User-defined message-flooding prevention table.

Subtopics:

- [1.4.1 Display Enhancements](#)
- [1.4.2 Inactivating LUs in a Pending Notify State](#)
- [1.4.3 User-Defined Message-Flooding Prevention Table](#)



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1.4.1 Display Enhancements

VTAM V4R2 offers the following enhancements to the DISPLAY command:

- Wildcard values, designated by an asterisk (*) or a question mark (?), can be specified on the ID operand to expand the number of resources displayed. See [Table 19](#) to see which DISPLAY commands are affected.
- The number of resources in the output of some DISPLAY commands can be limited by a new start option, DSPLYMAX. You can also override the value for DSPLYMAX by using the new MAX operand. See [Table 19](#) to see which DISPLAY commands are affected.
- A new DISPLAY command, DISPLAY RSCLIST, enables you to display a list of resources whose names match a particular pattern.
- Three new values for the SCOPE operand allow you to limit a display to only those resources in an active, connectable, or reset state. See [Table 19](#) to see which DISPLAY commands are affected.
- The DISPLAY STORUSE command now enables you to specify multiple values for certain operands.
- The DISPLAY STATS command now enables you to get information about storage requirements, V4R2 functions, and AnyNet(*) features.

Subtopics:

- [1.4.1.1 What These Enhancements Enable You to Do](#)
- [1.4.1.2 Summary of Changes](#)
- [1.4.1.3 Planning Considerations](#)



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1.4.2 Inactivating LUs in a Pending Notify State

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

Subtopics:

- [1.4.2.1 What This Function Allows You To Do](#)
 - [1.4.2.2 Summary of Changes](#)
 - [1.4.2.3 Planning Considerations](#)
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1.4.3 User-Defined Message-Flooding Prevention Table

The message-flooding prevention facility, shipped under object-code-only (OCO) protection since VTAM V3R1, identifies and suppresses duplicate messages that are issued in rapid succession. This reduces the possibility of duplicate messages flooding the operator console and concealing critical information.

VTAM V4R2 provides a message-flooding prevention table. The table identifies a list of messages that are candidates for flooding suppression. For each candidate message, the table identifies the criteria that must be met before VTAM suppresses duplicate messages. The suppression criteria include:

- The amount of time between the original and subsequent message
- An indication of which variable text fields are to be compared
- Whether a message is suppressed from the system hardcopy log.

If the message is reissued within the specified time interval and the variable text fields contain the same information, VTAM suppresses the message.

Subtopics:

- [1.4.3.1 What This Function Enables You to Do](#)
- [1.4.3.2 Summary of Changes](#)
- [1.4.3.3 Planning Considerations](#)



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1.5 Chapter 5. Performance Enhancements

The following functions provide enhancements to VTAM performance:

- Authorized transmission priority for LEN connections
- Automatic logon enhancements
- Composite network node routing
- Data compression enhancements
- Delayed disconnection
- Eliminating and reducing searches for unavailable resources
- Session limits for switched resources.

Subtopics:

- [1.5.1 Authorized Transmission Priority for LEN Connections](#)
- [1.5.2 Automatic Logon Enhancements](#)
- [1.5.3 Composite Network Node Routing](#)
- [1.5.4 Data Compression Enhancements](#)
- [1.5.5 Delayed Disconnection](#)
- [1.5.6 Eliminating and Reducing Searches for Unavailable Resources](#)
- [1.5.7 Session Limits for Switched Resources](#)



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1.5.1 Authorized Transmission Priority for LEN Connections

In previous releases, when VTAM forwarded a BIND from a LEN-attached node into a subarea network, it set the transmission priority field to medium priority (B'01') regardless of the value specified on a BIND received from a LEN-attached node. With this function enabled, VTAM now copies a transmission priority field from the received BIND onto the BIND sent into the network.

Subtopics:

- [1.5.1.1 What This Function Enables You to Do](#)
- [1.5.1.2 Summary of Changes](#)
- [1.5.1.3 Planning Considerations](#)



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1.5.2 Automatic Logon Enhancements

Automatic logon is an existing function in VTAM that allows an LU to establish a session with an application program (also known as a controlling primary logical unit or controlling PLU) as soon as the LU is activated. For V4R2, this function has been enhanced to allow the user more control over how VTAM retries automatic logon requests when the controlling PLU is initially unavailable.

By using the LOGAPPL operand on the definition statement for an LU, you can specify a controlling PLU for an automatic logon session. Whenever the SLU is activated, VTAM attempts to establish a session between the SLU and the controlling PLU. If the controlling PLU is not available, the session request fails, indicating that the controlling PLU notify the SLU when it becomes available.

Before V4R2, VTAM could not guarantee the automatic retry for outstanding logon requests in the following circumstances:

- The route between the SLU and the controlling PLU is dependent on an active CP-CP session.
- The controlling PLU is in a nonadjacent domain or nonnative network.
- The controlling PLU is a USERVAR whose value is not known to VTAM.
- The controlling PLU issues a CLSDST PASS to an inactive application program.

Under these circumstances, the user had to redrive the session using the VARY LOGON command.

The automatic logon enhancement for V4R2 provides a timer mechanism that redrives all outstanding logon requests after a user-defined period of time. Furthermore, this enhancement allows retries of outstanding automatic logon requests based on the type of adjacent node activation, including adjacent CP activation.

Subtopics:

- [1.5.2.1 What This Function Enables You to Do](#)
- [1.5.2.2 Summary of Changes](#)
- [1.5.2.3 Planning Considerations](#)



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1.5.3 Composite Network Node Routing

VTAM introduced the composite network node (CNN) in V4R1 as a network node and any NCPs that it owns. Composite network nodes reduce complexity and topology database sizes in the network by appearing as a single node. Since the VTAM-NCP and NCP-NCP interconnections within the CNN are hidden from the APPN routing scheme, non-optimal routes through the CNN may result. VTAM V4R2 improves routing through the CNN using enhanced route computation and BIND rerouting.

Route computation is performed by a V4R2 network node serving the origin logical unit (OLU). When computing a route and choosing among transmission groups (TGs) of equal weight, VTAM searches for matching subarea numbers for the entry and exit TGs to a CNN. If matching subarea numbers are found, VTAM selects that route. In situations where no match is found (that is, the route must take at least one hop within the CNN), non-optimal routes may still result because the topology of the CNN is not known by the APPN topology and route selection process.

BIND rerouting is performed by a V4R2 CNN. When a BIND arrives at a V4R2 CNN and the entry and exit TGs use two different subareas, VTAM searches for an alternate exit TG which:

- Originates at the same subarea as the entry TG
- Terminates at the same CP as the original exit TG
- Has the same characteristics as the original exit TG.

If these criteria are met, VTAM reroutes the BIND to the alternate exit TG. By rerouting a BIND to a TG with the same subarea as the entry TG, VTAM prevents unnecessary hops within the CNN. The BIND path preceding the CNN cannot be altered because VTAM reroutes the BIND only after it enters the CNN.

Subtopics:

- [1.5.3.1 Summary of Changes](#)
- [1.5.3.2 Planning Considerations](#)



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1.5.4 Data Compression Enhancements

This function enhances the data compression on selected LU-LU sessions that was introduced in VTAM V3R4.1 for MVS/ESA. Data compression enables you to reduce the amount of data being exchanged between LUs in multiple-domain environments, thus improving response time for LU-LU sessions and reducing traffic over the lines.

VTAM supports two different compression algorithms:

Run length encoding (RLE)

replaces strings of identical bytes with 1-byte or 2-byte sequences

Adaptive compression (similar to Lempel-Ziv)

uses tables that are dynamically updated to match the data being sent or received. The original data string is replaced with a set of compression codes.

In V4R2, adaptive compression for outgoing data is enhanced for improved performance through the use of a new hardware instruction available when VTAM is running in certain IBM ES/9000(*) series processors. The new adaptive compression algorithm can also provide a significant performance improvement on any supporting processor which does not have the new compression instruction.

The new CMPMIPS start option directs the new algorithm to either spend more CPU cycles for better compression effectiveness or to save more CPU cycles with some reduction in compression effectiveness.

The only change to RLE compression for V4R2 is that it can be turned on and off by the CMPMIPS start option.

Subtopics:

- [1.5.4.1 Overview of Adaptive Data Compression from V3R4.1](#)
- [1.5.4.2 Compression Enhancements in V4R2](#)
- [1.5.4.3 What This Function Enables You to Do](#)
- [1.5.4.4 Summary of Changes](#)
- [1.5.4.5 Programming Requirements](#)
- [1.5.4.6 Planning Considerations](#)



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1.5.5 Delayed Disconnection

In previous releases, you could specify that a dial connection disconnect after the LU-LU sessions are terminated (DISCNT=YES) or that the connection remain indefinitely (DISCNT=NO). In V4R2, the delayed disconnection function allows an operator or system programmer to delay disconnection of switched resources to provide sufficient time for another LU-LU session to be started.

Subtopics:

- [1.5.5.1 What This Function Enables You to Do](#)
- [1.5.5.2 Summary of Changes](#)
- [1.5.5.3 Planning Considerations](#)



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1.5.6 Eliminating and Reducing Searches for Unavailable Resources

By eliminating or reducing searches for unavailable resources, VTAM can reduce the frequency of searches within a network for an unknown or unreachable resource.

In pre-V4R2 releases, if a network outage occurs and a target resource is unavailable or unreachable, repetitive searches can occur within the network. These unnecessary searches may impact network performance.

This function enables you to:

- Specify a threshold for the number of searches that are failed before VTAM performs a resource discovery search to determine whether the resource is unreachable.
- Specify the amount of time during which VTAM does not conduct searches for an unavailable resource.
- Determine whether the resource is still unavailable after a specified number of searches have been requested or after a specified time period has passed.

Subtopics:

- [1.5.6.1 What This Function Enables You to Do](#)
- [1.5.6.2 Summary of Changes](#)
- [1.5.6.3 Planning Considerations](#)



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1.5.7 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
- Switched
- Model
- Cross-domain resource
- Dynamic reconfiguration (DR).

Subtopics:

- [1.5.7.1 What This Function Enables You to Do](#)
- [1.5.7.2 Summary of Changes](#)
- [1.5.7.3 Planning Considerations](#)



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1.6 Chapter 6. Problem Diagnosis

The following function is an enhancement to the VTAM program's problem determination and isolation capabilities:

- VIT and Dump Analysis Tools Enhancements

Subtopics:

- [1.6.1 VIT and Dump Analysis Tools Enhancements](#)



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1.6.1 VIT and Dump Analysis Tools Enhancements

In VTAM V4R1, most of the functions previously available from interactive problem control system (IPCS) CLISTS were provided through the following methods:

- Using a new interactive panel interface to issue the VERBEXIT VTAMMAP subcommands
- Issuing VERBEXIT VTAMMAP subcommands from the IPCS command line
- Creating a batch job to issue the VERBEXIT VTAMMAP subcommands.

VTAM V4R2 further enhances the VTAM dump analysis tools by adding new functions as subcommands of the VTAMMAP verb exit routine or through the IPCS interface. The following functions are now available:

FNDCOS	Formats mode tables, mode table entries, and COS tables
FNDDECB	Formats a directory entry and its parent directory entries
FNDNODE	Formats one or more APPN node entries (formats ISTAENCB and ISTANNCB)
FNDREREC	Formats one or more routing node entries including siblings and children
FNDSCCB	Formats all ISTLCBs for a specific search concentration control block

In addition, the following CLIST functions have been added as options available from the IPCS interactive panel interface:

- ISTVABND
- ISTVDUMP
- ISTVMAP
- ISTVSAVE
- ISTVSLIP.

For more information about the IPCS interactive panel interface, see [VTAM Diagnosis](#).

Subtopics:

- [1.6.1.1 What This Function Enables You to Do](#)
-



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1.7 Chapter 7. System and Configuration Management

The following functions enhance your ability to set up, manage, and control resources in your network using the VTAM program:

- Adjacent SSCP lists for CDRSCs
- APPN host-to-host channel
- APPN multiple network connectivity
- Connection network
- Dependent LU server
- Expanded addressing pool
- Four-digit device addressing
- Virtual-route-based transmission groups
- VTAM AnyNet Feature for V4R2.

Subtopics:

- [1.7.1 Adjacent SSCP Lists for CDRSCs](#)
- [1.7.2 APPN Host-to-Host Channel](#)
- [1.7.3 APPN Multiple Network Connectivity](#)
- [1.7.4 Connection Network](#)
- [1.7.5 Dependent LU Server](#)
- [1.7.6 Expanded Addressing Pool](#)
- [1.7.7 Four-Digit Device Addressing](#)
- [1.7.8 Virtual-Route-Based Transmission Groups](#)
- [1.7.9 VTAM AnyNet Feature for V4R2](#)



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1.7.1 Adjacent SSCP Lists for CDRSCs

In pre-V4R2 releases, selection of adjacent SSCPs for routing by cross-domain resources was determined by one of the following:

- Value of the CDRM operand on the CDRSC definition statement
- Predefined adjacent SSCP tables
- Network defaults.

You could also write a session management exit routine (ISTEXCAA) to override the CDRM value defined for the cross-domain resource (CDRSC).

In VTAM V4R2, you can also assign a list of adjacent SSCPs to a CDRSC as the route to use for cross-domain and cross-network session requests. The list defines the only route available when establishing a session with this resource. If this route is not available, the session fails. This function should be used when close control of route selection is desirable.

Subtopics:

- [1.7.1.1 What This Function Enables You to Do](#)
- [1.7.1.2 Summary of Changes](#)
- [1.7.1.3 Planning Considerations](#)



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1.7.2 APPN Host-to-Host Channel

The APPN host-to-host channel function allows a VTAM node to attach to a second VTAM node with a multipath channel connection using APPN protocols. The function enables two adjacent APPN host nodes to be connected by a channel interface.

Subtopics:

- [1.7.2.1 What This Function Enables You to Do](#)
 - [1.7.2.2 Summary of Changes](#)
 - [1.7.2.3 Programming Requirements](#)
 - [1.7.2.4 Planning Considerations](#)
-



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1.7.3 APPN Multiple Network Connectivity

APPN multiple network connectivity provides:

- Communication between networks with different network IDs via APPN. Although APPN protocols are allowed between different networks, topology information is not shared. APPN searches can extend over more than one network.
- Division, or clustering, of an APPN network into two or more subnetworks with the same network ID. Clustering may be most desirable when you have a large APPN network and want to shield smaller subnetworks from the large volume of topology information and unnecessary directory search requests.

Subtopics:

- [1.7.3.1 VTAM V4R1's Implementation](#)
- [1.7.3.2 VTAM V4R2's Implementation](#)
- [1.7.3.3 What This Function Enables You to Do](#)
- [1.7.3.4 Summary of Changes](#)
- [1.7.3.5 Programming Requirements](#)
- [1.7.3.6 Planning Considerations](#)



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1.7.4 Connection Network

A connection network is a representation within an APPN network of a shared-access transport facility (SATF), such as a local area network (LAN), that allows attached APPN nodes to:

- communicate without having individually defined connections to one another
- establish sessions without routing through a network node server.

The connection across the LAN is defined as a connection to a virtual node. By defining a single virtual node, each node is adjacent to every other node attached to the LAN.

Supported SATFs for this function include:

- Token-ring LAN
- Fiber distributed data interface (FDDI)
- Carrier sense multiple access with collision detection (CSMA/CD).

Subtopics:

- [1.7.4.1 Overview of V4R1 Support of Connection Networks](#)
- [1.7.4.2 V4R2 Support of Connection Networks](#)
- [1.7.4.3 What This Function Enables You to Do](#)
- [1.7.4.4 Summary of Changes](#)
- [1.7.4.5 Programming Requirements](#)
- [1.7.4.6 Planning Considerations](#)



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1.7.5 Dependent LU Server

The dependent LU server function enables a VTAM network node to act as a dependent LU server (DLUS) that can provide SSCP services for dependent LUs located on remote end nodes or network nodes. The end node or network node can be in the same APPN network as the DLUS or in another APPN network. The DLUS provides SSCP services through standard SSCP-PU and SSCP-LU session flows that have been encapsulated and sent over an LU 6.2 session (CPSVRMGR) to a dependent requester (DLUR). A DLUR is an APPN end node or network node that owns dependent LUs but obtains SSCP services from a VTAM DLUS node.

Because a dependent LU server has both SSCP and APPN network node capabilities, it can provide both subarea and APPN session initiation flows for the served dependent LUs. The type of session flows used, APPN or subarea, depends on the location of the primary logical unit (PLU) in the network.

Subtopics:

- [1.7.5.1 What This Function Enables You to Do](#)
- [1.7.5.2 Summary of Changes](#)
- [1.7.5.3 Programming Requirements](#)
- [1.7.5.4 Planning Considerations](#)



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1.7.6 Expanded Addressing Pool

In pre-V4R2 releases, VTAM was limited to 65535 host network element addresses. VTAM V4R2 increases this limitation to 16776960 (16384K) element addresses assigned to LU-LU sessions or DLUR-supported SSCP-PU or SSCP-LU sessions.

Note that this extension to the number of addresses applies to host subarea element addresses. NCP is still limited to 32K element addresses from its subarea.

Subtopics:

- [1.7.6.1 Summary of Changes](#)
- [1.7.6.2 Programming Requirements](#)
- [1.7.6.3 Planning Considerations](#)



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1.7.7 Four-Digit Device Addressing

This function allows channel device addresses greater than X'FFF' by supporting 4-digit device addresses (up to X'FFFF').

The address specified by the CUADDR and ADDRESS operands is a 3- or 4-digit hexadecimal device address. For example, specify an address of X'1080' as follows (without quotation marks or apostrophes):

```
CUADDR=1080
```

This hexadecimal number must match the value assigned to the device during operating system I/O definition. If you specify only 3 digits, VTAM pads with zeros on the left.

Subtopics:

- [1.7.7.1 What This Function Enables You to Do](#)
- [1.7.7.2 Summary of Changes](#)



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1.7.8 Virtual-Route-Based Transmission Groups

A virtual-route-based transmission group (VR-based TG) is a logical mapping of an APPN transmission group (TG) over all of the subarea virtual routes between two V4R2 VTAM domains within the same APPN subnetwork.

The VR-based TG is reported to APPN topology like any other APPN TG, and can be assigned TG characteristics that allow topology and routing services to include the VR-based TG in APPN session routes. The VR-based TG can also be used to establish CP-CP sessions between two VTAM control points, which in turn allows topology exchange and directory services functions to be performed between the two VTAMs.

Although the VR-based TG is reported to topology, the underlying explicit routes (ERs) and virtual routes (VRs) remain as they are and are used to transport the actual LU-LU session traffic between the VTAM domains. Existing subarea VR selection logic is used to determine the appropriate route through the subarea network for any given LU-LU session.

In addition to the path information, an SSCP-SSCP session is required between the two VTAMs for use in obtaining subarea routing information. The VR-based TG will not be reported as being active until the SSCP-SSCP session is established.

Subtopics:

- [1.7.8.1 What This Function Enables You to Do](#)
- [1.7.8.2 Summary of Changes](#)
- [1.7.8.3 Planning Considerations](#)



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1.7.9 VTAM AnyNet Feature for V4R2

The AnyNet family of products is a group of workstation and host-based functions that implement the Multiprotocol Transport Networking (MPTN) architecture. MPTN architecture supports:

- Mixed protocol networking: running application programs that were designed to operate over one transport protocol—such as SNA or TCP/IP—over additional transport protocols.
- Network interconnection: connecting matching application program partners across networks of different types, for example, allowing a socket application running on TCP/IP to communicate with a socket application running on an SNA network.

The VTAM AnyNet feature for V4R2 makes it easier to add new application types which can communicate, without change, over different transport networks and across interconnected networks. With VTAM's AnyNet functions, it is also possible to reduce the number of transport networks, thus reducing operational complexity. These benefits are gained without changing existing application programs or modifying hardware.

Subtopics:

- [1.7.9.1 Overview of the VTAM V3R4.2 Multiprotocol Transport Feature](#)
- [1.7.9.2 Overview of the VTAM AnyNet Feature for V4R2](#)



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2.0 Part 2. Preliminary Planning Information

Subtopics:

- [2.1 Chapter 8. Preliminary Planning Information](#)



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2.1 Chapter 8. Preliminary Planning Information

This topic provides preliminary planning information on the machine, programming, and compatibility requirements for the VTAM V4R2 program for MVS/ESA. Additional requirements might appear in later phased announcements. Final machine, programming, and compatibility requirements will be documented in the *VTAM Licensed Program Specifications*, which is available at general availability. You should use that information to verify your networking environment for compatibility with VTAM V4R2.

Subtopics:

- [2.1.1 Machine Requirements](#)
- [2.1.2 Programming Requirements](#)
- [2.1.3 Compatibility Requirements](#)



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2.1.1 Machine Requirements

ACF/VTAM(*) Version 4 Release 2 for MVS/ESA is designed to run in a virtual storage environment in any IBM system configuration that supports the operating systems specified in the ["Programming Requirements."](#)

The following functions require one or more of the machines listed:

- Remote communication:
 - IBM 3720, 3725, or 3745 Communication Controller

- Channel-to-channel (CTC) communication:
 - Channel-to-channel adapter
 - IBM 3088 Multisystem Channel Communication Unit, or equivalent; for example, the IBM 3172 Interconnect Controller
 - IBM Enterprise System Connection (ESCON(*) channel

- Channel-to-channel (CTC) communication using multipath channels between host processors:
 - Channel-to-channel adapter
 - IBM 3088 Multisystem Channel Communication Unit
 - IBM Enterprise System Connection (ESCON) channel

- Local area network (LAN) communication:
 - Token ring
 - IBM 3720, 3725, or 3745 Communication Controller
 - IBM 3172 Interconnect Controller
 - Carrier Sense Multiple Access with Collision Detections (CSMA/CD) Institute of Electrical and Electronic Engineers (IEEE) 802.3

- IBM 3172 Interconnect Controller
- Fiber distributed data interface (FDDI)
- IBM 3172 Interconnect Controller

- Frame relay communication:
 - IBM 3745 Communication Controller

- APPN composite network node boundary function:
 - IBM 3745 Communication Controller

- SNA network interconnect (SNI):
 - IBM 3720, 3725, or 3745 Communication Controller

- Scheduled automatic reloading and renaming of communication controllers:
 - IBM 3745 Communication Controller, Models 210, 310, 410, or 610 with engineering change C37962
 - IBM 3745 Communication Controller, Models 130, 150, or 170 with engineering change C38002

- Cryptographic key modification:
 - IBM Enterprise System/9000(*) (ES/9000) with the Integrated Cryptographic Feature (ICRF)

- Dynamic definition of dependent LUs:
 - IBM 3174 Establishment Controller Configuration Support B Release 4.1
 - IBM 3174 Establishment Controller Configuration Support C Release 1.1 or later

- Hardware-assisted data compression:
 - IBM ES/9000 9021 711-based Model Processor

- IBM ES/9000 9121 511-based Model Processor

- Dependent LU server (DLUS) support:
 - IBM 3174 Establishment Controller Configuration Support C Release 5 or later

- APPN host-to-host channel support:
 - IBM 3088 Multisystem Channel Communication Unit, or equivalent; for example, the IBM 3172 Interconnect Controller

 - IBM Enterprise System Connection (ESCON) channel

- Online Message Facility enhancements:
 - A workstation capable of running, at a minimum, OS/2 Extended Edition Version 1.3 or OS/2 V2.x with either Extended Services(*) V1 or Communications Manager/2 Version 1.0 (program number 5621-254)

- *Estimating Storage for VTAM* diskette:
 - A workstation capable of running, at a minimum, OS/2 Extended Edition Version 2.0

- IBM Command Tree/2 to build VTAM commands:
 - A workstation capable of running, at a minimum, OS/2 Extended Edition Version 1.3 or OS/2 Version 2 with Extended Services Version 1

- AnyNet/2 Sockets over SNA Gateway:
 - A workstation with the following characteristics:
 - 386-SX(**) or higher, or compatible processor

 - Minimum 8MB system memory, 12MB recommended

 - Fixed disk drive

 - 3.5-inch diskette drive

 - Network adapters supported by the release levels of the OS/2, Communications Manager, and TCP/IP that you are using



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2.1.2 Programming Requirements

The minimum operating system requirement for ACF/VTAM Version 4 Release 2 for MVS/ESA is MVS/ESA System Product (MVS/ESA SP) Version 3 Release 1.3 (program number 5685-001 or 5685-002). Subsequent versions, releases, and modification levels are supported, unless otherwise stated. Prior versions, releases, and modification levels are not supported.

Many ACF/VTAM functions require the use of the appropriate level of associated IBM licensed programs. Functions provided in ACF/VTAM Version 4 Release 2 that are also provided by previous versions of ACF/VTAM have the same programming requirements as previously announced. The following new functions provided in ACF/VTAM Version 4 Release 2 have minimum programming requirements as shown:

- Composite network node boundary support in an APPN network:
 - NCP Version 6 Release 2 (program number 5688-231)
- Dynamic reconfiguration of PUs on a frame relay line:
 - NCP Version 6 Release 2 (program number 5688-231)
- Multipath channels between host processors:
 - MVS/ESA Version 4 Release 3 (program number 5695-047 or 5695-048)
- Buffer contents trace enhancements:
 - MVS/ESA Version 4 Release 1 (program number 5695-047 or 5695-048)
- Capturing of diagnosis information with First Failure Support Technology(*) (FFST(*)):
 - First Failure Support Technology/MVS(*) Release 2 (program number 5695-044)
- Use of the interactive panel interface to support analysis tools for an externally recorded VIT and VTAM dump analysis enhancements:
 - The Interactive System Productivity Facility (ISPF) Version 3

Release 2 (program number 5685-054)

- The dynamic reconfiguration enhancement:
 - NCP Version 6 Release 2 (program number 5688-321), for:
 - Moving resources from and back to the same location
 - Deleting resources from and adding them back to the same location

- Formatting of trace records through ACF/TAP:
 - SSP Version 3 Release 8 (program number 5665-338)

- Connection network support:
 - NCP Version 7 Release 1 (program number 5648-063)

- Expanded addressing pool:
 - NetView Version 2 Release 4 for MVS/ESA (program number 5685-111) with appropriate PTF
 - One of the following:
 - NPM Version 1 Release 6 (program number 5665-333) with appropriate PTF
 - NPM Version 2 Release 1 (program number 5655-043)

- Expanded dial information:
 - NCP Version 7 Release 1 (program number 5648-063)
 - X.25 NCP Packet Switching Interface (NPSI) Version 3 Release 7 (program number 5688-035)

- Border nodes:
 - NCP Version 7 Release 1 (program number 5648-063)

- Hardware-assisted data compression:
 - MVS/ESA Version 4 Release 3 (program number 5695-047 or 5695-048) with Compression and Expansion Services PTF UY91011

- APPN host-to-host channel support:
 - MVS/ESA Version 4 Release 3 (program number 5695-047 or 5695-048)

- Generic resources:
 - MVS/ESA future enhancement
 - A sysplex-capable application, such as CICS/ESA(*) Version 4 Release 1 (program number 5655-018)

- Dependent LU server (DLUS) support:
 - Communications Manager/2 Version 1.1 (program number 5622-078)

- VTAM-provided OS/2 dependent LU requester (DLUR) support:
 - OS/2 2.0 or higher with the most current release of Communications Manager/2 at general availability of VTAM V4R2

- DISPLAY enhancements:
 - NetView Version 2 Release 4 for MVS/ESA (program number 5685-111)

- Session limits for switched resources (MAXSESS):
 - NCP Version 7 Release 1 (program number 5648-063)

- Online Message Facility enhancements:
 - One of the following operating systems:
 - OS/2 Extended Edition Version 1.3
 - OS/2 V2.0 or V2.1 with either Extended Services V1 or Communications Manager/2 Version 1.0 (program number 5621-254)
 - One of the following BookManager(*) releases:

- BookManager READ/2 V1.2.1b (program number 5601-454)
- IBM Library Reader/2(*) (available on the *IBM Networking Systems Softcopy Collection Kit* CD-ROM and *VTAM V4R2 for MVS/ESA Softcopy Library* CD-ROM)

◦ Displayable softcopy publication enhancements:

- One of the following BookManager releases:
 - BookManager READ/VM Release 2 (program number 5684-062)
 - BookManager READ/MVS Release 2 (program number 5695-046)
 - BookManager READ/DOS V1.2 (program number 5601-453)
 - BookManager READ/2 V1.2.1 (program number 5601-454)
 - IBM Library Reader/2 (available on the *IBM Networking Systems Softcopy Collection Kit* CD-ROM and *VTAM V4R2 for MVS/ESA Softcopy Library* CD-ROM)

◦ VTAM AnyNet Feature for V4R2:

- AnyNet/MVS and AnyNet/2 SNA over TCP/IP:
 - VTAM V4R2
 - VTAM V4R2 AnyNet/MVS feature
 - IBM C/370 Library V2 at PUT level 9107 or higher
 - VTAM V4R2 AnyNet/2 feature if the OS/2 platform is used
 - TCP/IP for MVS V2R2.1
 - TCP/IP for OS/2 V1R2.1 if the OS/2 platform is used
 - Communications Manager/2 V1.1 if the OS/2 platform is used
 - OS/2 V2.0 or higher if the OS/2 platform is used
- AnyNet/MVS and AnyNet/2 sockets over SNA:
 - VTAM V4R2
 - VTAM V4R2 AnyNet/MVS feature
 - IBM C/370 Library V2 at PUT level 9107 or higher
 - OS/2 2.0 or higher
 - VTAM V4R2 AnyNet/2 feature if the OS/2 platform is used
 - One of the following OS/2 communications managers if the OS/2 platform is used:
 - Extended Services 1.3
 - Standard Edition 1.3
 - Extended Edition 1.3
 - Communications Manager/2 V1.0

Note: AnyNet/2 full-duplex conversation support requires Communications Manager/2 V1.1 or higher

- AnyNet/2 sockets over SNA gateway:

- OS/2 2.0 or higher
 - One of the following TCP/IP systems:
 - TCP/IP for OS/2 V1.2.1 with CSD UN34109
 - TCP/IP for OS/2 V2.0
 - One of the following Communication Managers:
 - Extended Services
 - Communications Manager/2 V1.0
-



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2.1.3 Compatibility Requirements

VTAM Version 4 Release 2 supports all releases and modifications of the associated licensed programs listed below for which program services are provided by IBM.

Note: You might need to apply program temporary fixes (PTFs) to ensure compatibility for certain functions. Also, compatibility with certain programs is limited. For information about the PTFs you might need to apply, refer to the following sources:

- *VTAM Program Directory* for VTAM Version 4 Release 2
- Information Access
- SoftwareXcel Extended
- IBMLink(*) (ServiceLink)
- IBM Support Center

For information about compatibility limitations between VTAM Version 4 Release 2 and the following programs, see *docid=&istpln0.Planning for NetView, NCP, and VTAM*.

- Other VTAM Version 4 releases for:
 - MVS/ESA (program number 5695-117)
- Other VTAM Version 3 releases for:
 - MVS/ESA (program number 5685-085)
 - MVS/XA(*) (program number 5665-289)
 - MVS/370 (program number 5665-313)
 - VM/ESA (program number 5684-095)
 - VM/SP (program number 5664-280)
 - VM/9370 (program number 5684-052)
 - VSE (program number 5666-313)
 - VSE/ESA (program number 5666-363)
- NCP
 - Version 6 for the IBM 3745 Communication Controller (program number 5688-231)
 - Version 5 for the IBM 3720 or 3745 Communication Controllers (program number 5668-738)

- Version 4 for the IBM 3720 or 3745 Communication Controllers (program number (5668-854)

 - NetView(*)
 - Version 2 for MVS/ESA (program number 5685-111)
 - Version 2 for MVS/XA(*) (program number 5685-138)
 - Version 1 for MVS/ESA (program number 5685-152)
 - Version 1 for MVS/XA (program number 5665-362)

 - OSI/Communications Subsystem (program number 5685-014)

 - TCAM
 - Version 3 (program number 5665-314)
 - Version 2 (program number 5735-RC3)

 - Transaction Processing Facility (TPF) Version 3 (program number 5748-T13).
-



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BACK_1 Part 3. Glossary, Bibliography, and Index

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Glossary

This glossary includes terms and definitions from:

- The *American National Standard Dictionary for Information Systems*, ANSI X3.172-1990, copyright 1990 by the American National Standards Institute (ANSI). Copies may be purchased from the American National Standards Institute, 11 West 42nd Street, New York, New York 10036. Definitions are identified by the symbol (A) after the definition.
- The ANSI/EIA Standard -- 440-A, *Fiber Optic Terminology*. Copies may be purchased from the Electronic Industries Association, 2001 Pennsylvania Avenue, N.W., Washington, DC 20006. Definitions are identified by the symbol (E) after the definition.
- The *Information Technology Vocabulary*, developed by Subcommittee 1, Joint Technical Committee 1, of the International Organization for Standardization and the International Electrotechnical Commission (ISO/IEC JTC1/SC1). Definitions of published parts of this vocabulary are identified by the symbol (I) after the definition; definitions taken from draft international standards, committee drafts, and working papers being developed by ISO/IEC JTC1/SC1 are identified by the symbol (T) after the definition, indicating that final agreement has not yet been reached among the participating National Bodies of SC1.
- The Network Working Group Request for Comments: 1208.

For a more inclusive list of computer terms and definitions, refer to the *IBM Dictionary of Computing* (SC20-1699).

The following cross-references are used in this glossary:

Contrast with: This refers to a term that has an opposed or substantively different meaning.

Synonym for: This indicates that the term has the same meaning as a preferred term, which is defined in its proper place in the glossary.

Synonymous with: This is a backward reference from a defined term to all other terms that have the same meaning.

See: This refers the reader to multiple-word terms that have the same last word.

See also: This refers the reader to terms that have a related, but not synonymous, meaning.

Deprecated term for: This indicates that the term should not be used. It refers to a preferred term, which is defined in its proper place in the glossary.

A

abend. (1) Abnormal end of task. (2) Synonym for *abnormal termination*.

abnormal end. Synonym for *abnormal termination*.

abnormal end of task (abend). Termination of a task before its completion because of an error condition that cannot be resolved by recovery facilities while the task is executing.

abnormal termination. (1) The cessation of processing prior to planned termination. (T) (2) A system failure or operator action that causes a job to end unsuccessfully. (3) Synonymous with *abend* and *abnormal end*.

ACB. (1) In VTAM, access method control block. (2) In NCP, adapter control block. (3) Application control block.

ACB name. (1) The name of an ACB macroinstruction. (2) A name specified either on the VTAM APPL definition statement or on the VTAM application program's ACB macroinstruction. Contrast with *network name*.

accept. (1) In a VTAM application program, to establish a session with a logical unit (LU) in response to a CINIT request from a system services control point (SSCP). The session-initiation request may begin when a terminal user logs on, a VTAM application program issues a macroinstruction, or a VTAM operator issues a command. See also *acquire*. (2) An SMP process that moves distributed code and MVS-type programs to the distribution libraries.

ACCESS. In the Simple Network Management Protocol (SNMP), the clause in a Management Information Base (MIB) module that defines the minimum level of support that a managed node provides for an object.

access method. (1) A technique, implemented in software, that controls the flow of information through a network. (2) A technique for moving data between main storage and input/output devices.

access method control block (ACB). A control block that links an application program to VSAM or VTAM.

ACF. Advanced Communications Function.

ACF/TAP. Advanced Communications Function/Trace Analysis Program. Synonymous with *TAP*.

ACF/TCAM. Advanced Communications Function for the Telecommunications Access Method. Synonym for *TCAM*.

ACF/VTAM. Advanced Communications Function for the Virtual Telecommunications Access Method. Synonym for *VTAM*.

acquire. (1) In VTAM, to take over resources that were formerly controlled by an access method in another domain or to resume control of resources that were controlled by that domain but released. Contrast with *release*. See also *resource takeover*. (2) In a VTAM application program, to initiate and establish a session with another logical unit (LU). The acquire process begins when the application program issues a macroinstruction. See also *accept*.

action. In the AIX operating system, a defined task that an application performs. An application modifies the properties of an object or manipulates the object in some way.

activate. To make a resource ready to perform its function. Contrast with *deactivate*.

active. (1) Operational. (2) Pertaining to a node or device that is connected or is available for connection to another node or device. (3) The state of a resource when it has been activated and is operational. Contrast with *inactive* and *inoperative*. See also *pending active session*. (4) In the AIX operating system, pertaining to the window plane in which the text cursor is currently positioned. (5) In VTAM, pertaining to a major or minor node that has been activated by VTAM. Most resources are activated as part of VTAM start processing or as the result of a VARY ACT command. Contrast with *inactive*.

active application. The application subsystem currently in an extended recovery facility (XRF) session with a terminal user. See *alternate application*.

adapter. A part that electrically or physically connects a device to a computer or to another device.

adapter control block (ACB). In NCP, a control block that contains line control information and the states of I/O operations for BSC lines, SS lines, or SDLC links.

adaptive compression. A data compression algorithm that uses tables that can be dynamically updated as data flows on the LU-LU session. Contrast with *static compression*.

adaptive pacing. Synonym for *adaptive session-level pacing* and *virtual route pacing*.

adaptive session-level pacing. A form of session-level pacing in which session components exchange pacing windows that may vary in size during the course of a session. This allows transmission within a network to adapt dynamically to variations in availability and demand of buffers on a session-by-session basis. Session-level pacing occurs within independent stages along the session path according to local congestion at the intermediate and endpoint nodes. Synonymous with *adaptive pacing* and *adaptive session pacing*. See *pacing*, *session-level pacing*, and *virtual route pacing*.

adaptive session pacing. Synonym for *adaptive session-level pacing*.

address. In data communication, the unique code assigned to each device or workstation connected to a network.

address space. A set of addresses used to uniquely identify network accessible units, sessions, adjacent link stations, and links in a node for each network in which the node participates. An APPN node has one address space for intranode routing and one for each transmission group on which it can send message units.

addressing. In data communication, the way in which a station selects the station to which it is to send data.

adjacent link station (ALS). (1) In SNA, a link station directly connected to a given node by a link connection over which network traffic can be carried.

Note: Several secondary link stations that share a link connection do not exchange data with each other and therefore are not adjacent to each other. (2) With respect to a specific node, a link station partner in an adjacent node.

adjacent SSCP table. A table that contains lists of the system services control points (SSCPs) that VTAM can be in session with or can use to reach destination SSCP in the same network or in other networks. The table is filed in the VTAM definition library.

Advanced Communications Function (ACF). A group of IBM licensed programs, principally VTAM, TCAM, NCP, and SSP, that use the concepts of Systems Network Architecture (SNA), including distribution of function and resource sharing.

Advanced Communications Function/Trace Analysis Program (ACF/TAP). An SSP program service aid that assists in analyzing trace data produced by VTAM, TCAM, and NCP and provides network data traffic and network error reports. Synonymous with *Trace Analysis Program (TAP)*.

Advanced Peer-to-Peer Networking (APPN). An extension to SNA featuring (a) greater distributed network control that avoids critical hierarchical dependencies, thereby isolating the effects of single points of failure; (b) dynamic exchange of network topology information to foster ease of connection, reconfiguration, and adaptive route selection; (c) dynamic definition of network resources; and (d) automated resource registration and directory lookup. APPN extends the LU 6.2 peer orientation for end-user services to network control and supports multiple LU types, including LU 2, LU 3, and LU 6.2.

Advanced Peer-to-Peer Networking (APPN) end node. A node that provides a broad range of end-user services and supports sessions between its local control point (CP) and the CP in an adjacent network node. It uses these sessions to dynamically register its resources with the adjacent CP (its network node server), to send and receive directory search requests, and to obtain management services. An APPN end node can also attach to a subarea network as a peripheral node or to other end nodes.

Advanced Peer-to-Peer Networking (APPN) network. A collection of interconnected network nodes and their client end nodes.

Advanced Peer-to-Peer Networking (APPN) network node. A node that offers a broad range of end-user services and that can provide the following:

- Distributed directory services, including registration of its domain resources to a central directory server
- Topology database exchanges with other APPN network nodes, enabling network nodes throughout the network to select optimal routes for LU-LU sessions based on requested classes of service
- Session services for its local LUs and client end nodes
- Intermediate routing services within an APPN network

Advanced Peer-to-Peer Networking (APPN) node. An APPN network node or an APPN end node.

advanced program-to-program communication (APPC). (1) The general facility characterizing the LU 6.2 architecture and its various implementations in products. (2) Sometimes used to refer to the LU 6.2 architecture and its product implementations as a whole, or to an LU 6.2 product feature in particular, such as an APPC application program interface.

allocate. A logical unit (LU) 6.2 application program interface (API) verb used to assign a session to a conversation for the conversation's use. Contrast with *deallocate*.

alternate application. The subsystem that is prepared to take over a particular active application's extended recovery facility (XRF) sessions with terminal users in case the application fails. See *active application*.

any-mode. In VTAM: (1) The form of a RECEIVE request that obtains input from any one (unspecified) session. (2) The form of an ACCEPT request that completes the establishment of a session by accepting any one (unspecified) queued CINIT request. Contrast with *specific-mode*. See *continue-any mode*. See also *accept*.

APAR. Authorized program analysis report.

API. Application program interface.

APPC. Advanced program-to-program communication.

APPL. Application program.

application. A collection of software components used to perform specific types of user-oriented work on a computer.

application control block (ACB). The control blocks created from the output of DBDGEN and PSBGEN and placed in the ACB library for use during online and DBB region type execution of IMS/VS.

application program. (1) A program written for or by a user that applies to the user's work, such as a program that does inventory control or payroll. (2) A program used to connect and communicate with stations in a network, enabling users to perform application-oriented activities.

application program interface (API). (1) A functional interface supplied by the operating system or by a separately orderable licensed program that allows an application program written in a high-level language to use specific data or functions of the operating system or the licensed program. (2) The interface through which an application program interacts with an access method. In VTAM, it is the language structure used in control blocks so that application programs can reference them and be identified to VTAM.

apply. An SMP process that moves distributed code and MVS-type programs to the system libraries.

APPN. Advanced Peer-to-Peer Networking.

APPN end node. See *Advanced Peer-to-Peer Networking (APPN) end node*.

APPN network. See *Advanced Peer-to-Peer Networking (APPN) network*.

APPN network node. See *Advanced Peer-to-Peer Networking (APPN) network node*.

APPN node. See *Advanced Peer-to-Peer Networking (APPN) node*.

APPN subnetwork. A subnetwork that uses APPN protocols.

APPN transmission group. A transmission group connecting any two APPN nodes.

area. In Internet and DECnet routing protocols, a subset of a network or gateway grouped together by definition of the network administrator. Each area is self-contained; knowledge of an area's topology remains hidden from other areas.

asynchronous (ASYNC). Pertaining to two or more processes that do not depend upon the occurrence of specific events such as common timing signals. (T)

authorized program analysis report (APAR). A report of a problem caused by a suspected defect in a current unaltered release of a program.

autologon. Synonym for *automatic logon*.

automatic activation. In VTAM, the activation of links and link stations in adjacent subarea nodes as a result of channel device name or RNAME specifications related to an activation command that names a subarea node. See also *direct activation*.

automatic logon. (1) A process by which VTAM automatically creates a session-initiation request to establish a session between two logical units (LUs). The session is between a designated primary logical unit (PLU) and a secondary logical unit (SLU) that is neither queued for nor in session with another PLU. Synonymous with *autologon*. See also *controlling application program* and *controlling logical unit*. (2) In VM, a process by which a virtual machine is initiated by other than the user of that virtual machine; for example, the primary VM operator's virtual machine is activated automatically during VM initialization.

autotask. An unattended NetView operator station task that does not require a terminal or a logged-on user. Autotasks

can run independently of VTAM and are typically used for automated console operations. Contrast with *logged-on operator*.

available. In VTAM, pertaining to a logical unit that is active, connected, enabled, and not at its session limit.

B

base set. The set of functions, including verbs, parameters, return codes, and what-received indications that is supported by all products that implement a particular architecture. See also *option set*.

BF. Boundary function.

BIND. In SNA, a request to activate a session between two logical units (LUs). See also *session activation request*. Contrast with *UNBIND*.

BIOS (Basic Input/Output System). In an IBM personal computer, microcode that controls basic hardware operations such as interactions with diskette drives, hard disk drives, and the keyboard. See also *NetBIOS*.

block. A string of data elements recorded or transmitted as a unit. The elements may be characters, words, or physical records. (T)

BN. Boundary node.

border node. An APPN network node that interconnects APPN networks having independent topology databases in order to support LU-LU sessions between these networks. See *extended border node* and *peripheral border node*.

boundary function. (1) In SNA, a capability of a subarea node to provide protocol support for attached peripheral nodes, such as: (a) interconnecting subarea path control and peripheral path control elements, (b) performing session sequence numbering for low-function peripheral nodes, and (c) providing session-level pacing support. (2) In SNA, the component that provides these capabilities.

boundary node (BN). In SNA, a subarea node with boundary function.

Note: A subarea node may be a boundary node, an intermediate routing node, both, or neither, depending on how it is used in the network.

bracket protocol. In SNA, a data flow control protocol in which exchanges between two session partners are achieved through the use of brackets, with one partner designated at session activation as the first speaker and the other as the bidder. The bracket protocol involves bracket initiation and termination rules.

buffer. A portion of storage used to hold input or output data temporarily.

bypass. To eliminate a station or an access unit from a ring network by allowing the data to flow in a path around it.

C

call. (1) The action of bringing a computer program, a routine, or a subroutine into effect, usually by specifying the entry conditions and jumping to an entry point. (I) (A) (2) In data communication, the actions necessary to make a connection between two stations on a switched line. (3) In communications, a conversation between two users. (4) To transfer control to a procedure, program, routine, or subroutine. (5) To attempt to contact a user, regardless of whether the attempt is successful.

call-accepted packet. A call supervision packet that a called data terminal equipment (DTE) transmits to indicate to the data circuit-terminating equipment (DCE) that it accepts the incoming call.

call connected packet. A call supervision packet that a data circuit-terminating equipment (DCE) transmits to indicate to a calling data terminal equipment (DTE) that the connection for the call has been completely established.

call request packet. (1) A call supervision packet that a data terminal equipment (DTE) transmits to ask that a connection for a call be established throughout the network. (2) In X.25 communications, a call supervision packet transmitted by a DTE to ask for a call establishment through the network.

CALLOUT. The logical channel type on which the data terminal equipment (DTE) can send a call, but cannot receive one.

carrier. (1) An electric or electromagnetic wave or pulse train that may be varied by a signal bearing information to be transmitted over a communication system. (T) (2) In data communication, a continuous frequency that can be modulated or impressed with an information carrying signal.

carrier sense. In a local area network, an ongoing activity of a data station to detect whether another station is transmitting. (T)

carrier sense multiple access with collision detection (CSMA/CD). A protocol that requires carrier sense and in which a transmitting data station that detects another signal while transmitting, stops sending, sends a jam signal, and then waits for a variable time before trying again. (T) (A)

CCITT. Comité Consultatif International Télégraphique et Téléphonique. The International Telegraph and Telephone Consultative Committee.

CDRM. Cross-domain resource manager.

CDRSC. Cross-domain resource.

CDS. (1) Control data set. (2) Configuration data set. (3) Central directory server.

central directory. (1) A repository for storing resource location information centrally registered by network nodes or cached as the result of network searches.

central directory server (CDS). A network node that provides a repository for information on network resource locations; it also reduces the number of network searches by providing a focal point for queries and broadcast searches and by caching the results of network searches to avoid later broadcasts for the same information.

central processing unit (CPU). The part of a computer that includes the circuits that control the interpretation and execution of instructions.

Note: A CPU is the circuitry and storage that executes instructions. Traditionally, the complete processing unit was often regarded as the CPU, whereas today the CPU is often a microchip. In either case, the centrality of a processor or processing unit depends on the configuration of the system or network in which it is used.

chain. (1) A group of logically linked user data records processed by LU 6.2. (2) A group of request units delimited by begin-chain and end-chain. Responses are always single-unit chains. See *RU chain*.

channel. (1) A path along which signals can be sent, for example, data channel, output channel. (A) (2) A functional unit, controlled by the processor, that handles the transfer of data between processor storage and local peripheral equipment. See *input/output channel*.

channel adapter. A communication controller hardware unit that is used to attach the communication controller to a host channel.

channel-attached. (1) Pertaining to the attachment of devices directly by input/output channels to a host processor. (2) Pertaining to devices attached to a controlling unit by cables, rather than by telecommunication lines. Contrast with *link-attached*. Synonymous with *local*.

channel-attachment major node. (1) A major node that includes an NCP that is channel-attached to a data host. (2) A major node that may include minor nodes that are the line groups and lines that represent a channel attachment to an adjacent (channel-attached) host. (3) In VM or VSE operating systems, a major node that may include minor nodes that are resources (host processors, NCPs, line groups, lines, SNA physical units and logical units, cluster controllers, and terminals) attached through a communication adapter.

checkpoint. (1) A sequence of instructions in a computer program for recording the status of execution for restarting. (T) (2) A point at which information about the status of a job and the system can be recorded so that the job step can be later restarted. (3) To record such information.

CICS. Customer Information Control System.

circuit. A logic device. See *data circuit*.

circuit switching. (1) A process that, on demand, connects two or more data terminal equipment (DTEs) and permits the exclusive use of a data circuit between them until the connection is released. (I) (A) (2) Synonymous with *line switching*. (3) See also *message switching* and *packet switching*.

class. In object-oriented design or programming, a group of objects that share a common definition and that therefore share common properties, operations, and behavior. Members of the group are called instances of the class.

class of service (COS). A set of characteristics (such as route security, transmission priority, and bandwidth) used to construct a route between session partners. The class of service is derived from a mode name specified by the initiator of a session.

cleanup. In SNA products, a network services request, sent by a system services control point (SSCP) to a logical unit (LU), that causes a particular LU-LU session with that LU to be ended immediately without requiring the participation of either the other LU or its SSCP.

clear indication packet. A call supervision packet that a data circuit-terminating equipment (DCE) transmits to inform a data terminal equipment (DTE) that a call has been cleared.

clear request packet. A call supervision packet transmitted by a data terminal equipment (DTE) to ask that a call be cleared.

CLSDST. Close destination.

cluster. (1) A station that consists of a control unit (a cluster controller) and the terminals attached to it. (2) A group of APPN nodes that have the same network ID and the same topology database. A cluster is a subset of a NETID subnetwork.

CNOS. Change number of sessions.

collision. An unwanted condition that results from concurrent transmissions on a channel. (T)

collision detection. In carrier sense multiple access with collision detection (CSMA/CD), a signal indicating that two or more stations are transmitting simultaneously.

command. (1) A request from a terminal for the performance of an operation or the execution of a particular program. (2) In SNA, any field set in the transmission header (TH), request header (RH), and sometimes portions of a request unit (RU), that initiates an action or that begins a protocol; for example: (a) Bind Session (session-control request unit), a command that activates an LU-LU session, (b) the change-direction indicator in the RH of the last RU of a chain, (c) the virtual route reset window indicator in an FID4 transmission header. See also *VTAM operator command*.

command area. In SAA Basic Common User Access architecture, the area on a panel that contains the command entry field. See also *command entry field*.

command entry field. In SAA Basic Common User Access architecture, an entry field in which a user types commands. See also *command area*.

command line. (1) On a display screen, a display line usually at the bottom of the screen, in which only commands can be entered. (2) In SAA usage, deprecated term for *command area*.

common operations services (COS). The portion of SNA management services that pertains to the major vectors for limited remote operations control.

communication adapter. (1) A circuit card with associated software that enables a processor, controller, or other device to be connected to a network. (2) A mechanism that enables communication facilities to be attached to host processors.

communication controller. A type of communication control unit whose operations are controlled by one or more programs stored and executed in the unit. It manages the details of line control and the routing of data through a network.

communication management configuration host node. The type 5 host processor in a communication management configuration that does all network-control functions in the network except for the control of devices channel-attached to data hosts. Synonymous with *communication management host*. Contrast with *data host node*.

communication management host. Synonym for *communication management configuration host node*. Contrast with *data host*.

Communications Manager. A function of the OS/2 Extended Edition program that lets a workstation connect to a host computer and use the host resources as well as the resources of other personal computers to which the workstation is attached, either directly or through a host system. Communications Manager provides application programming interfaces (APIs) so that users can develop their own applications.

composite network node. A type 5 node and its subordinate type 4 nodes that support APPN network node protocols and appear to an attached APPN or LEN node as a single network node.

composite node. A composite LEN node or a composite network node.

configuration. (1) The manner in which the hardware and software of an information processing system are organized and interconnected. (T) (2) The devices and programs that make up a system, subsystem, or network. (3) In CCP, the arrangement of controllers, lines, and terminals attached to an IBM 3710 Network Controller. Also, the collective set of item definitions that describe such a configuration.

configuration management. The control of information necessary to identify both physical and logical information system resources and their relationship to one another.

configuration services. One of the types of network services in a control point (SSCP, NNCP, ENCP, or PUCP).

Configuration services activates, deactivates, and records the status of physical units, links, and link stations.

congestion. See *network congestion*.

connected. In VTAM, the state of a physical unit (PU) or a logical unit (LU) that has an active physical path to the host processor containing the system services control point (SSCP) that controls the respective PU or LU.

connection. (1) In data communication, an association established between functional units for conveying information. (I) (A) (2) In Open Systems Interconnection architecture, an association established by a given layer between two or more entities of the next higher layer for the purpose of data transfer. (T) (3) In VTAM, synonym for *physical connection*. (4) In SNA, the network path that links together two logical units (LUs) in different nodes to enable them to establish communications. (5) In X.25 communication, a virtual circuit between two data terminal equipments (DTEs). A switched virtual circuit (SVC) connection lasts for the duration of a call; a permanent virtual circuit (PVC) is a permanent connection between the DTEs. (6) In TCP/IP, the path between two protocol applications that provides reliable data stream delivery service. In Internet, a connection extends from a TCP application on one system to a TCP application on another system.

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.

connectivity. (1) The capability of a system or device to be attached to other systems or devices without modification. (T) (2) The capability to attach a variety of functional units without modifying them.

continue-any mode. In VTAM, the state of a session or conversation that allows its input to satisfy a RECEIVE request issued in any-mode. While this state exists, input on the session or conversation can also satisfy RECEIVE requests issued in specific-mode. For conversations, continue-any mode is further qualified as either buffer continue-any or logical record continue-any. This specifies whether VTAM is to receive the data in terms of logical records or buffers. Contrast with *continue-specific mode*.

continue-specific mode. In VTAM, the state of a session or conversation that allows its input to satisfy only RECEIVE requests issued in specific-mode. Contrast with *continue-any mode*.

control block. (1) A storage area used by a computer program to hold control information. (I) (2) In the IBM Token-Ring Network, a specifically formatted block of information provided from the application program to the Adapter Support Interface to request an operation.

control data set (CDS). In NPM, an SMP data set used in the NPM installation process.

control point (CP). (1) A component of an APPN or LEN node that manages the resources of that node. In an APPN node, the CP is capable of engaging in CP-CP sessions with other APPN nodes. In an APPN network node, the CP also provides services to adjacent end nodes in the APPN network. (2) A component of a node that manages resources of that node and optionally provides services to other nodes in the network. Examples are a system services control point (SSCP) in a type 5 subarea node, a physical unit control point (PUCP) in a type 4 subarea node, a network node control point (NNCP) in an APPN network node, and an end node control point (ENCP) in an APPN or LEN end node. An SSCP and an NNCP can provide services to other nodes.

controller. A device that coordinates and controls the operation of one or more input/output devices, such as workstations, and synchronizes the operation of such devices with the operation of the system as a whole.

controlling application program. In VTAM, an application program with which a secondary logical unit (other than an application program) is automatically put in session whenever the secondary logical unit is available. See also *automatic logon* and *controlling logical unit*.

controlling logical unit. In VTAM, a logical unit with which a secondary logical unit (other than an application

program) is automatically put in session whenever the secondary logical unit is available. A controlling logical unit can be either an application program or a device-type logical unit. See also *automatic logon* and *controlling application program*.

conversation. A logical connection between two transaction programs using an LU 6.2 session. Conversations are delimited by brackets to gain exclusive use of a session.

COS. (1) Class of service. (2) Common operations services.

coupling facility. In MVS, the hardware element that provides high-speed caching, list processing, and locking functions in a sysplex.

CP. (1) VM/370 control program. (2) Control point.

CP-CP sessions. The parallel sessions between two control points, using LU 6.2 protocols and a mode name of CPSVCMG, on which network services requests and replies are exchanged. Each CP of a given pair has one contention-winner session and one contention-loser session with the other.

CP name. A network-qualified name of a control point (CP), consisting of a network ID qualifier identifying the network (or name space) to which the CP's node belongs, and a unique name within the scope of that network ID identifying the CP. Each APPN or LEN node has one CP name, assigned to it at system-definition time.

CPU. Central processing unit.

cross-domain. In SNA, pertaining to control or resources involving more than one domain.

cross-domain keys. In SNA, a pair of cryptographic keys used by a system services control point (SSCP) to encipher the session cryptography key that is sent to another SSCP and to decipher the session cryptography key that is received from the other SSCP during initiation of cross-domain LU-LU sessions that use session-level cryptography. Synonymous with *cross keys*.

cross-domain resource (CDRSC). In VTAM, synonym for *other-domain resource*.

cross-domain resource manager (CDRM). In VTAM, the function in the system services control point (SSCP) that controls initiation and termination of cross-domain sessions.

cross keys. Synonym for *cross-domain keys*.

cross-memory mode. A VTAM execution environment in which the current home address space and the current primary address space are different address spaces.

cross-network. In SNA, pertaining to control or resources involving more than one network.

cross-network session. An LU-LU or SSCP-SSCP session whose path traverses more than one SNA network.

cryptographic. Pertaining to the transformation of data to conceal its meaning. See also *decipher* and *encipher*.

cryptographic key. A parameter that determines cryptographic transformations between plaintext and ciphertext. See also *cross-domain keys*, *host master key*, *secondary logical unit key*, and *session cryptography key*.

CSMA/CD. Carrier sense multiple access with collision detection.

CT. Control terminal.

Customer Information Control System (CICS). An IBM licensed program that enables transactions entered at remote terminals to be processed concurrently by user-written application programs. It includes facilities for building, using,

and maintaining databases.

D

DACTLINK. Deactivate link.

DACTPU. Deactivate physical unit.

data. (1) A re-interpretable representation of information in a formalized manner suitable for communication, interpretation, or processing. Operations can be performed upon data by humans or by automatic means. (T) (2) Any representations such as characters or analog quantities to which meaning is or might be assigned. (A) (3) A representation of facts or instructions in a form suitable for communication, interpretation, or processing by human or automatic means. Data include constants, variables, arrays, and character strings.

Note: Programmers make a distinction between instructions and the data they operate on; however, in the usual sense of the word, data includes programs and program instructions.

data channel. Synonym for *input/output channel*.

data circuit. (1) A pair of associated transmit and receive channels that provide a means of two-way data communication. (I) (2) In SNA, synonym for *link connection*. (3) See also *physical circuit* and *virtual circuit*.

Notes:

1. Between data switching exchanges, the data circuit may include data circuit-terminating equipment (DCE), depending on the type of interface used at the data switching exchange.
2. Between a data station and a data switching exchange or data concentrator, the data circuit includes the data circuit-terminating equipment at the data station end, and may include equipment similar to a DCE at the data switching exchange or data concentrator location.

data host. Synonym for *data host node*. Contrast with *communication management configuration host*.

data host node. In a communication management configuration, a type 5 host node that is dedicated to processing applications and does not control network resources, except for its channel-attached or communication adapter-attached devices. Synonymous with *data host*. Contrast with *communication management configuration host node*.

data link. In SNA, synonym for *link*.

data link control (DLC). A set of rules used by nodes on a data link (such as an SDLC link or a token ring) to accomplish an orderly exchange of information.

data link control (DLC) layer. In SNA, the layer that consists of the link stations that schedule data transfer over a link between two nodes and perform error control for the link. Examples of data link control are SDLC for serial-by-bit link connection and data link control for the System/370 channel.

Note: The DLC layer is usually independent of the physical transport mechanism and ensures the integrity of data that reaches the higher layers.

data link level. (1) In the hierarchical structure of a data station, the conceptual level of control or processing logic

between high level logic and the data link that maintains control of the data link. The data link level performs such functions as inserting transmit bits and deleting receive bits; interpreting address and control fields; generating, transmitting, and interpreting commands and responses; and computing and interpreting frame check sequences. See also *higher level*, *packet level*, and *physical level*. (2) In X.25 communications, synonym for *frame level*.

data packet. In X.25 communications, a packet used for the transmission of user data on a virtual circuit at the DTE/DCE interface.

data set. The major unit of data storage and retrieval, consisting of a collection of data in one of several prescribed arrangements and described by control information to which the system has access.

database. (1) A collection of data with a given structure for accepting, storing, and providing, on demand, data for multiple users. (T) (2) A collection of interrelated data organized according to a database schema to serve one or more applications. (T) (3) A collection of data fundamental to a system. (A) (4) A collection of data fundamental to an enterprise. (A)

DCE clear confirmation packet. A call supervision packet that a data circuit-terminating equipment (DCE) transmits to confirm that a call has been cleared.

deactivate. To take a resource of a node out of service, rendering it inoperable, or to place it in a state in which it cannot perform the functions for which it was designed. Contrast with *activate*.

deallocate. A logical unit (LU) 6.2 application program interface (API) verb that terminates a conversation, thereby freeing the session for a future conversation. Contrast with *allocate*.

decipher. (1) To convert enciphered data in order to restore the original data. (T) (2) In computer security, to convert ciphertext into plaintext by means of a cipher system. (3) To convert enciphered data into clear data. Contrast with *encipher*. Synonymous with *decrypt*.

decrypt. (1) In computer security, to decipher or decode. (2) Synonym for *decipher*. (T)

definite response (DR). In SNA, a protocol requested in the form-of-response-requested field of the request header that directs the receiver of the request to return a response unconditionally, whether positive or negative, to that request chain. Contrast with *exception response* and *no response*.

definition statement. (1) In VTAM, the statement that describes an element of the network. (2) In NCP, a type of instruction that defines a resource to the NCP. See [Figure 12](#), [Figure 13](#), and [Figure 14](#). See also *macroinstruction*.

operands _____|_____ suboperands suboperands _|_ _|_ START A,(B,C),
 KEYWORD1=D, KEYWORD2=(E,F) |__ _| |__ _| |_____| statement positional
 keyword identifier operands operands |_____| statement

Figure 12. Example of a Language Statement

definition keyword operand statement _____|_____ identifier suboperands _|_ _|_ LINE AUTO=(YES,32)
 |_____| definition statement

Figure 13. Example of an NCP Definition Statement

definition keyword operand statement _____|_____ identifier suboperands _|_ _|_ PU DISCNT=(YES,NF)
 |_____| definition statement

Figure 14. Example of a VTAM Definition Statement

dependent LU. See *SSCP-dependent LU*.

dependent LU requester (DLUR). An APPN end node or an APPN network node that owns dependent LUs, but requests that a dependent LU server provide the SSCP services for those dependent LUs. Contrast with *dependent LU server*.

dependent LU server (DLUS). An APPN network node that provides SSCP services for a dependent LU in its own or another APPN network. Contrast with *dependent LU requester*.

destination. (1) Any point or location, such as a node, station, or a particular terminal, to which information is to be sent. (2) In ACF/TCAM, the place to which a message being handled by a message handler is to be sent. (3) An external logical unit (LU) or application program to which messages or other data are directed.

destination logical unit (DLU). The logical unit to which data is to be sent. Contrast with *origin logical unit (OLU)*.

destination node. The node to which a request or data is sent.

device. (1) A mechanical, electrical, or electronic contrivance with a specific purpose. (2) In the AIX operating system, a valuator, button, or the keyboard. Buttons have values of 0 or 1 (up or down); valuator return values in a range, and the keyboard returns ASCII values.

dial-in. Pertaining to the direction in which a switched connection is requested by any node or terminal other than the receiving host or an NCP.

dial-out. Pertaining to the direction in which a switched connection is requested by a host or an NCP.

direct activation. In VTAM, the activation of a resource as a result of an activation command specifically naming the resource. See *automatic activation*. Contrast with *indirect activation*.

directory. (1) A table of identifiers and references to the corresponding items of data. (I) (A) (2) A database in an APPN node that lists names of resources (in particular, logical units) and records the CP name of the node where each resource is located. See *distributed directory database* and *local directory database*. (3) In VM/SP, a control program (CP) disk file that defines each virtual machine's normal configuration: the user ID, password, normal and maximum allowable virtual storage, CP command privilege classes allowed, dispatching priority, logical editing symbols to be used, account number, and CP options desired.

directory services (DS). A control point component of an APPN node that maintains knowledge of the location of network resources.

disabled. (1) Pertaining to a state of a processing unit that prevents the occurrence of certain types of interruptions. (2) Pertaining to the state in which a transmission control unit or audio response unit cannot accept incoming calls on a line. (3) In VTAM, pertaining to a logical unit (LU) that has indicated to its system services control point (SSCP) that it is temporarily not ready to establish LU-LU sessions. An initiate request for a session with a disabled logical unit (LU) can specify that the session be queued by the SSCP until the LU becomes enabled. The LU can separately indicate whether this applies to its ability to act as a primary logical unit (PLU) or a secondary logical unit (SLU). See also *enabled* and *inhibited*.

discarded packet. A packet that is intentionally destroyed.

disconnection. In VTAM, the termination of a physical connection.

display. (1) A visual presentation of data. (I) (A) (2) To present data visually. (I) (A) (3) Deprecated term for *panel*.

distributed directory database. The complete listing of all the resources in the network as maintained in the individual directories scattered throughout an APPN network. Each node has a piece of the complete directory, but it is not necessary for any one node to have the entire list. Entries are created, modified, and deleted through system definition, operator action, automatic registration, and ongoing network search procedures. Synonymous with *distributed network*

directory and *network directory database*.

distributed network directory. Synonym for *distributed directory database*.

DLC. Data link control.

DLU. Destination logical unit.

DLUR. Dependent LU requester.

DLUS. Dependent LU server.

DNS. Domain name system.

domain. (1) That part of a computer network in which the data processing resources are under common control. (T) (2) In SNA, see *end node domain*, *network node domain*, and *system services control point domain*. (3) In the Internet, a part of a naming hierarchy in which the domain name consists of a sequence of names (labels) separated by periods (dots). (4) In Open Systems Interconnection (OSI), a part of a distributed system or a set of managed objects to which a common policy applies.

domain name system (DNS). The online distributed database system used to map domain names to internet addresses.

domain operator. In a multiple-domain network, the person or program that controls operation of resources controlled by one system services control point (SSCP). See also *network operator*.

downstream. In the direction of data flow from the host to the end user. Contrast with *upstream*.

DR. (1) In VTAM, NCP, and CCP, dynamic reconfiguration. (2) In SNA, definite response.

DSECT. Dummy control section.

dump. (1) To record, at a particular instant, the contents of all or part of one storage device in another storage device. Dumping is usually for the purpose of debugging. (T) (2) Data that has been dumped. (T) (3) To copy data in a readable format from main or auxiliary storage onto an external medium such as tape, diskette, or printer. (4) To copy the contents of all or part of virtual storage for the purpose of collecting error information.

duplex. Pertaining to communication in which data can be sent and received at the same time. Synonymous with *full duplex*. Contrast with *half duplex*.

dynamic. (1) In programming languages, pertaining to properties that can only be established during the execution of a program; for example, the length of a variable-length data object is dynamic. (I) (2) Pertaining to an operation that occurs at the time it is needed rather than at a predetermined or fixed time. (3) Contrast with *static*.

dynamic reconfiguration (DR). The process of changing the network configuration (peripheral PUs and LUs) without regenerating complete configuration tables or deactivating the affected major node.

dynamic switched definition. The representation within VTAM of a switched device not previously defined to VTAM.

E

EBCDIC. Extended binary-coded decimal interchange code. A coded character set consisting of 8-bit coded characters.

(A)

EC. Engineering change.

EIA. Electronic Industries Association.

Electronic Industries Association (EIA). An organization of electronics manufacturers that advances the technological growth of the industry, represents the views of its members, and develops industry standards.

element. (1) A field in the network address. (2) In SNA, the particular resource within a subarea that is identified by an element address. See also *subarea*.

element address. In SNA, a value in the element address field of the network address identifying a specific resource within a subarea. See *subarea address*.

EN. End node.

enable. To make functional.

enabled. (1) Pertaining to a state of the processing unit that allows the occurrence of certain types of interruptions. (2) Pertaining to the state in which a transmission control unit or an audio response unit can accept incoming calls on a line. (3) In VTAM, pertaining to a logical unit (LU) that has indicated to its system services control point (SSCP) that it is ready to establish LU-LU sessions. The LU can separately indicate whether this prevents it from acting as a primary logical unit (PLU) or a secondary logical unit (SLU). See also *disabled* and *inhibited*.

encipher. (1) To scramble data or to convert data to a secret code that masks the meaning of the data to any unauthorized recipient. (2) In VTAM, to convert clear data into enciphered data. Contrast with *decipher*. Synonymous with *encrypt*.

encrypt. Synonym for *encipher*. (T)

end node (EN). (1) See *Advanced Peer-to-Peer Networking (APPN) end node* and *low-entry networking (LEN) end node*. (2) In communications, a node that is frequently attached to a single data link and cannot perform intermediate routing functions.

end node domain. An end node control point, its attached links, and its local LUs.

end user. The ultimate source or destination of application data flowing through an SNA network. An end user can be an application program or a workstation operator.

Enterprise Systems Connection (ESCON). A set of IBM products and services that provide a dynamically connected environment within an enterprise.

entry point (EP). In SNA, a type 2.0, type 2.1, type 4, or type 5 node that provides distributed network management support. It sends network management data about itself and the resources it controls to a focal point for centralized processing, and it receives and executes focal-point initiated commands to manage and control its resources.

ER. (1) Explicit route. (2) Exception response.

ESCON. Enterprise Systems Connection.

Ethernet. A 10-Mbps baseband local area network that allows multiple stations to access the transmission medium at will without prior coordination, avoids contention by using carrier sense and deference, and resolves contention by using collision detection and transmission. Ethernet uses carrier sense multiple access with collision detection (CSMA/CD).

event. (1) An occurrence of significance to a task; for example, the completion of an asynchronous operation, such as an input/output operation. (2) In the NetView program, a record indicating irregularities of operation in physical elements of a network.

exception. An abnormal condition such as an I/O error encountered in processing a data set or a file.

exception response (ER). In SNA, a protocol requested in the form-of-response-requested field of a request header that directs the receiver to return a response only if the request is unacceptable as received or cannot be processed; that is, a negative response, but not a positive response, can be returned. Contrast with *definite response* and *no response*.

exchange identification (XID). A specific type of basic link unit that is used to convey node and link characteristics between adjacent nodes. XIDs are exchanged between link stations before and during link activation to establish and negotiate link and node characteristics, and after link activation to communicate changes in these characteristics.

exit. (1) To execute an instruction within a portion of a computer program in order to terminate the execution of that portion. Such portions of computer programs include loops, subroutines, modules, and so on. (T) (2) See *installation exit* and *user exit*.

exit program. Synonym for *exit routine*.

exit routine. Either of two types of routines: installation exit routines or user exit routines. Synonymous with *exit program*. See *installation exit routine* and *user exit routine*.

expedited flow. In SNA, a data flow designated in the transmission header (TH) that is used to carry network control, session control, and various data flow control request/response units (RUs); the expedited flow is separate from the normal flow (which carries primarily end-user data) and can be used for commands that affect the normal flow. Contrast with *normal flow*.

Note: The normal and expedited flows move in both the primary-to-secondary and secondary-to-primary directions. Requests and responses on a given flow, whether normal or expedited, usually are processed sequentially within the path, but the expedited flow traffic may be moved ahead of the normal-flow traffic within the path at queuing points in the half-sessions and for half-session support in boundary functions.

explicit route (ER). In SNA, a series of one or more transmission groups that connect two subarea nodes. An explicit route is identified by an origin subarea address, a destination subarea address, an explicit route number, and a reverse explicit route number. Contrast with *virtual route (VR)*.

extended architecture (XA). An extension to System/370 architecture that takes advantage of continuing high performance enhancements to computer system hardware.

extended binary-coded decimal interchange code (EBCDIC). A coded character set of 256 8-bit characters.

extended border node. A border node that interconnects (a) APPN networks having different network identifiers or (b) separate partitions of the same APPN network, where the partitioning is to allow isolated topology subnetworks (or clusters). An extended border node supports intermediate network routing, allowing it to support LU-LU sessions that do not terminate in its native network. Contrast with *peripheral border node*.

extended recovery facility (XRF). A facility that minimizes the effect of failures in MVS, VTAM, the host processor, or high availability applications during sessions between high availability applications and designated terminals. This facility provides an alternate subsystem to take over sessions from the failing subsystem.

external communication adapter (XCA). A communication adapter that is part of a device (such as the IBM 3172 Interconnect Controller) other than the host processor. Contrast with *integrated communication adapter*.

F

FDDI. Fiber Distributed Data Interface.

FDX. Full duplex.

feature. A part of an IBM product that may be ordered separately by the customer.

Fiber Distributed Data Interface (FDDI). An American National Standards Institute (ANSI) standard for a 100-megabit-per-second LAN using optical fiber cables.

FIC. First-in-chain.

filter. (1) A device or program that separates data, signals, or material in accordance with specified criteria. (A) (2) In the NetView program, a function that limits the data that is to be recorded on the database and displayed at the terminal. See *recording filter* and *viewing filter*.

first-in-chain (FIC). A request unit (RU) whose request header (RH) begin chain indicator is on and whose RH end chain indicator is off. See also *RU chain*.

flat file. (1) A one-dimensional or two-dimensional array: a list or table of items. (2) In a relational database, synonym for *relation*. (3) A file that has no hierarchical structure.

flow. In NETDA/2, the amount of traffic that can pass through a node, connection, or route in both directions during a given period of time.

flow control. In SNA, the process of managing the rate at which data traffic passes between components of the network. The purpose of flow control is to optimize the rate of flow of message units with minimum congestion in the network; that is, to neither overflow the buffers at the receiver or at intermediate routing nodes, nor leave the receiver waiting for more message units. See also *adaptive session-level pacing*, *pacing*, and *session-level pacing*.

FMCB. Function management control block.

frame. (1) In Open Systems Interconnection architecture, a data structure pertaining to a particular area of knowledge and consisting of slots that can accept the values of specific attributes and from which inferences can be drawn by appropriate procedural attachments. (T) (2) The unit of transmission in some local area networks, including the IBM Token-Ring Network. It includes delimiters, control characters, information, and checking characters. (3) In SDLC, the vehicle for every command, every response, and all information that is transmitted using SDLC procedures.

frame level. See *link level*.

frame relay. (1) An interface standard describing the boundary between a user's equipment and a fast-packet network. In frame-relay systems, flawed frames are discarded; recovery comes end-to-end rather than hop-by-hop. (2) A technique derived from the integrated services digital network (ISDN) D channel standard. It assumes that connections are reliable and dispenses with the overhead of error detection and control within the network.

frequency. The rate of signal oscillation, expressed in hertz.

FRR. Functional recovery routine.

full duplex (FDX). Synonym for *duplex*.

functional recovery routine (FRR). In MVS, a recovery routine that is used by the locked programs, the service request blocks, and the supervisor control routines.

G

gateway. (1) A functional unit that interconnects two computer networks with different network architectures. A gateway connects networks or systems of different architectures. A bridge interconnects networks or systems with the same or similar architectures. (T) (2) In the AIX operating system, an entity that operates above the link layer and translates, when required, the interface and protocol used by one network into those used by another distinct network. (3) In TCP/IP, a device used to connect two systems that use either the same or different communications protocols. (4) The combination of machines and programs that provide address translation, name translation, and system services control point (SSCP) rerouting between independent SNA networks to allow those networks to communicate. A gateway consists of one gateway NCP and at least one gateway VTAM. (5) In the IBM Token-Ring Network, a device and its associated software that connect a local area network to another local area network or a host that uses different logical link protocols.

generation. The process of assembling and link editing definition statements so that resources can be identified to all the necessary programs in a network.

generic resource name. A name that represents multiple application programs that provide the same function in order to handle session distribution and balancing.

generic unbind. Synonym for *session deactivation request*.

giveback. The process by which an alternate subsystem releases itself from its extended recovery facility (XRF) sessions with terminal users and is replaced by the primary subsystem. See also *takeover*.

group. In the NetView/PC program, to identify a set of application programs that are to run concurrently.

H

half-duplex (HD, HDX). In data communication, pertaining to transmission in only one direction at a time. Contrast with *duplex*. See also *half-duplex operation* and *half-duplex transmission*.

half-duplex operation. A mode of operation of a data link in which data can be transmitted in both directions, one way at a time. (T)

half-duplex transmission. Data transmission in either direction, one direction at a time. (I) (A)

half-session. A session-layer component consisting of the combination of data flow control and transmission control components comprising one end of a session. See also *session connector*.

hardcopy. (1) A permanent copy of a display image generated on an output device such as a printer or plotter, and which can be carried away. (T) (2) A printed copy of machine output in a visually readable form; for example, printed reports, listings, documents, and summaries. (3) Contrast with *softcopy*.

hardware configuration definition. An interactive tool that can be used to define hardware configurations to the operating system and the channel subsystem.

HDLC. High-level data link control.

header. (1) System-defined control information that precedes user data. (2) The portion of a message that contains control information for the message such as one or more destination fields, name of the originating station, input sequence number, character string indicating the type of message, and priority level for the message.

help panel. Information displayed by a system in response to a help request from a user.

high-level data link control (HDLC). In data communication, the use of a specified series of bits to control data links in accordance with the International Standards for HDLC: ISO 3309 Frame Structure and ISO 4335 Elements of Procedures.

hop. (1) In APPN, a portion of a route that has no intermediate nodes. It consists of only a single transmission group connecting adjacent nodes. (2) To the routing layer, the logical distance between two nodes in a network.

host. In the Internet suite of protocols, an end system. The end system can be any workstation; it does not have to be a mainframe.

host master key. In SNA, deprecated term for *master cryptography key*.

host node. (1) A node at which a host computer is located. (T) (2) A node that provides an application program interface (API) and a common application interface. See *boundary node*, *node*, *peripheral node*, *subarea host node*, and *subarea node*. See also *boundary function* and *node type*.

I

I/O. Input/output.

ICA. Integrated communication adapter.

ID. (1) Identifier. (2) Identification.

IEEE. Institute of Electrical and Electronics Engineers.

inactive. (1) Not operational. (2) Pertaining to a node or device not connected or not available for connection to another node or device. (3) In the AIX operating system, pertaining to a window that does not have an input focus. (4) In VTAM, the state of a resource or a major or minor node that has not been activated or for which the VARY INACT command has been issued. Contrast with *active*. See also *inoperative*.

inbound. In communications, data that is received from the network.

incoming call packet. A call supervision packet transmitted by a data circuit-terminating equipment (DCE) to inform a called data terminal equipment (DTE) that another DTE has requested a call.

independent LU. See *SSCP-independent LU*.

indirect activation. In VTAM, the activation of a lower-level resource of the resource hierarchy as a result of SCOPE

or ISTATUS specifications related to an activation command naming a higher-level resource. Contrast with *direct activation*.

information (I) format. A format used for information transfer.

information (I) frame. A frame in I format used for numbered information transfer.

inhibited. In VTAM, pertaining to a logical unit (LU) that has indicated to its system services control point (SSCP) that it is temporarily not ready to establish LU-LU sessions. An initiate request for a session with an inhibited LU will be rejected by the SSCP. The LU can separately indicate whether this applies to its ability to act as a primary logical unit (PLU) or a secondary logical unit (SLU). See also *disabled* and *enabled*.

INITIATE. A network services request sent from a logical unit (LU) to a system services control point (SSCP) requesting that an LU-LU session be established.

inoperative. The condition of a resource that has been active but is not currently active. A resource may be inoperative for reasons such as the following: a) it may have failed, b) it may have received an INOP request, or c) it may be suspended while a reactivate command is being processed. See also *inactive*.

input/output channel. (1) In a data processing system, a functional unit that handles transfer of data between internal and peripheral equipment. (I) (A) (2) In a computing system, a functional unit, controlled by a processor, that handles transfer of data between processor storage and local peripheral devices. Synonymous with *data channel*. See *channel*. See also *link*.

insert. In LANs, to make an attaching device an active part of the LAN.

installation exit. The means specifically described in an IBM software product's documentation by which an IBM software product may be modified by a customer's system programmers to change or extend the functions of the IBM software product. Such modifications consist of exit routines written to replace one or more existing modules of an IBM software product, or to add one or more modules or subroutines to an IBM software product, for the purpose of modifying or extending the functions of the IBM software product. Synonymous with *installation-wide exit*. See *user exit*.

installation exit routine. A routine written by a user to take control at an installation exit of an IBM software product.

installation-wide exit. Synonym for *installation exit*.

integrated communication adapter (ICA). A communication adapter that is an integral part of the host processor. Contrast with *external communication adapter*.

interactive problem control system (IPCS). A component of VM that permits online problem management, interactive problem diagnosis, online debugging for disk-resident CP abend dumps, problem tracking, and problem reporting.

Interactive System Productivity Facility (ISPF). An IBM licensed program that serves as a full-screen editor and dialogue manager. Used for writing application programs, it provides a means of generating standard screen panels and interactive dialogues between the application programmer and terminal user.

interchange node. A VTAM node that acts as both an APPN network node and a type 5 subarea node to transform APPN protocols to subarea protocols and vice versa. Contrast with *migration data host*.

interchange transmission group (TG). The logical connection between an interchange node and a node (of any type) that includes at least one hop requiring SSCP-SSCP sessions for session setup. The physical connection underlying an interchange TG can traverse multiple subarea and APPN subnetworks.

interconnected networks. SNA networks connected by gateways.

interconnection. See *SNA network interconnection (SNI)*.

interface. (1) A shared boundary between two functional units, defined by functional characteristics, signal characteristics, or other characteristics, as appropriate. The concept includes the specification of the connection of two devices having different functions. (T) (2) Hardware, software, or both, that links systems, programs, or devices.

intermediate node. A node that is at the end of more than one branch. (T)

International Telegraph and Telephone Consultative Committee (CCITT). An organization (one of four permanent organs of the International Telecommunication Union, headquartered in Geneva, Switzerland) that is concerned with the problems relating to international telephony and telegraphy. The CCITT Plenary Assembly meets at regular intervals to prepare a list of technical questions related to telephone and telegraph services. The Assembly assigns these questions to study groups, which then prepare recommendations to be presented at the next plenary meeting. Approved recommendations are published for the use of engineers, scientists, and manufacturers around the world.

Internet Protocol (IP). A connectionless protocol that routes data through a network or interconnected networks. IP acts as an intermediary between the higher protocol layers and the physical network. However, this protocol does not provide error recovery and flow control and does not guarantee the reliability of the physical network.

interoperability. The capability to communicate, execute programs, or transfer data among various functional units in a way that requires the user to have little or no knowledge of the unique characteristics of those units. (T)

IP. Internet Protocol.

IPCS. Interactive problem control system.

ISPF. Interactive System Productivity Facility.

ISTATUS. In VTAM and NCP, a definition specification method for indicating the initial status of resources. See also *indirect activation*.

item. In CCP, any of the components, such as communication controllers, lines, cluster controllers, and terminals, that comprise an IBM 3710 Network Controller configuration.

K

keyword. (1) In programming languages, a lexical unit that, in certain contexts, characterizes some language construct; for example, in some contexts, IF characterizes an if-statement. A keyword normally has the form of an identifier. (I) (2) One of the predefined words of an artificial language. (A) (3) A significant and informative word in a title or document that describes the content of that document. (4) A name or symbol that identifies a parameter. (5) The part of a command operand that consists of a specific character string (such as `DSNAME=`). See also *definition statement* and *keyword operand*. Contrast with *positional operand*.

keyword operand. An operand that consists of a keyword followed by one or more values (such as `DSNAME=HELLO`). See also *definition statement*. Contrast with *positional operand*.

keyword parameter. A parameter that consists of a keyword followed by one or more values.

L

LAN. Local area network.

LEN. Low-entry networking.

LEN connection. A link over which LEN protocols are used.

line. (1) The portion of a data circuit external to data circuit-terminating equipment (DCE), that connects the DCE to a data switching exchange (DSE), that connects a DCE to one or more other DCEs, or that connects a DSE to another DSE. (I) (2) Synonymous with *channel* and *circuit*.

line control discipline. Synonym for *link protocol*.

line discipline. Synonym for *link protocol*.

line switching. Synonym for *circuit switching*.

link. (1) The combination of the link connection (the transmission medium) and two link stations, one at each end of the link connection. A link connection can be shared among multiple links in a multipoint or token-ring configuration. (2) To interconnect items of data or portions of one or more computer programs: for example, the linking of object programs by a linkage editor, linking of data items by pointers. (T)

link-attached. Pertaining to devices that are connected to a controlling unit by a data link. Contrast with *channel-attached*. Synonymous with *remote*.

link connection. The physical equipment providing two-way communication between one link station and one or more other link stations; for example, a telecommunication line and data circuit-terminating equipment (DCE). Synonymous with *data circuit*.

link level. A part of Recommendation X.25 that defines the link protocol used to get data into and out of the network across the full-duplex link connecting the subscriber's machine to the network node. LAP and LAPB are the link access protocols recommended by the CCITT. See *data link level*.

link protocol. (1) The rules for sending and receiving data at the link level. (2) See *protocol*. (3) See also *link level*.

link station. (1) The hardware and software components within a node representing a connection to an adjacent node over a specific link. For example, if node A is the primary end of a multipoint line that connects to three adjacent nodes, node A will have three link stations representing the connections to the adjacent nodes. See also *adjacent link station*. (2) In VTAM, a named resource within an APPN or a subarea node that represents the connection to another APPN or subarea node that is attached by an APPN or a subarea link. In the resource hierarchy in a subarea network, the link station is subordinate to the subarea link.

local. Pertaining to a device accessed directly without use of a telecommunication line. Synonym for *channel-attached*.

local area network (LAN). (1) A computer network located on a user's premises within a limited geographical area. Communication within a local area network is not subject to external regulations; however, communication across the LAN boundary may be subject to some form of regulation. (T) (2) A network in which a set of devices are connected to one another for communication and that can be connected to a larger network. See also *Ethernet* and *token ring*. (3) Contrast with *metropolitan area network (MAN)* and *wide area network (WAN)*.

local directory database. That set of resources (LUs) in the network known at a particular node. The resources included are all those in the node's domain as well as any cache entries.

local SNA major node. In VTAM, a major node whose minor nodes are channel-attached peripheral nodes.

Locate. Synonym for *Locate/CD-Initiate*.

Locate/CD-Initiate. An abbreviated term for a message exchanged between APPN nodes that contains one of the following sets of general data stream (GDS) variables:

◦ A Locate, a Find Resource, and a Cross-Domain Initiate GDS variable used for a network search request

◦ A Locate, a Found Resource, and a Cross-Domain Initiate GDS variable used for a search reply when a network resource has been located

These message structures correspond to the CP components that perform the search of the distributed network directory and establish the session. The Locate GDS variable contains information used to control the delivery of the search messages in the network. The Find and Found GDS variables contain information used in the directories: origin cache data (control point information) and search arguments (destination LU name), and located resource information, respectively. The Cross-Domain Initiate GDS variable contains endpoint TG vector information to be used in selecting the route for the session. The length of the Locate/CD-Initiate message is limited to 1024 bytes.

logged-on operator. A NetView operator station task that requires a terminal and a logged-on user. Contrast with *autotask*.

logical record. (1) A set of related data or words considered to be a record from a logical viewpoint. (T) (2) In VSAM, a unit of information normally pertaining to a single subject; a logical record is the user record requested of or given to the data management function.

logical unit (LU). A type of network accessible unit that enables end users to gain access to network resources and communicate with each other.

logical unit (LU) 6.2. A type of logical unit that supports general communication between programs in a distributed processing environment. LU 6.2 is characterized by (a) a peer relationship between session partners, (b) efficient utilization of a session for multiple transactions, (c) comprehensive end-to-end error processing, and (d) a generic application program interface (API) consisting of structured verbs that are mapped into a product implementation.

logmode table. Synonym for *logon mode table*.

logon. In VTAM, an unformatted session-initiation request for a session between two logical units.

logon mode. In VTAM, a subset of session parameters specified in a logon mode table for communication with a logical unit. See also *session parameters*.

logon mode table. In VTAM, a set of entries for one or more logon modes. Each logon mode is identified by a logon mode name. Synonymous with *logmode table*.

low-entry networking (LEN). A capability of nodes to attach directly to one another using basic peer-to-peer protocols to support multiple and parallel sessions between logical units.

low-entry networking (LEN) end node. A LEN node receiving network services from an adjacent APPN network node.

low-entry networking (LEN) node. A node that provides a range of end-user services, attaches directly to other nodes using peer protocols, and derives network services implicitly from an adjacent APPN network node, that is, without the direct use of CP-CP sessions.

LU. Logical unit.

LU-LU session. A logical connection between two logical units (LUs) in an SNA network that typically provides communication between two end users.

LU type 6.2 (LU 6.2). A type of logical unit that supports general communication between programs in a distributed processing environment. LU 6.2 is characterized by (a) a peer relationship between session partners, (b) efficient utilization of a session for multiple transactions, (c) comprehensive end-to-end error processing, and (d) a generic application program interface consisting of structured verbs that are mapped into a product implementation.

LU 6.2. Logical unit 6.2.

LU 6.2 session. A session that is initiated by VTAM on behalf of a logical unit (LU) 6.2 application program, or a session initiated by a remote LU in which the application program specifies that VTAM is to control the session by using the APPCCMD macroinstruction.

LU 6.2 verb. A syntactical unit in the LU 6.2 application program interface representing an operation.

LUS. Logical unit services.

M

macroinstruction. (1) An instruction in a source language that is to be replaced by a defined sequence of instructions in the same source language and that may also specify values for parameters in the replaced instructions. (T) (2) In assembler programming, an assembler language statement that causes the assembler to process a predefined set of statements called a macro definition. The statements normally produced from the macro definition replace the macroinstruction in the program. See also *definition statement*.

major node. In VTAM, a set of resources that can be activated and deactivated as a group. See *minor node*.

MAN. Metropolitan area network.

manager. (1) In OSI management, a user that, for a particular interaction, has assumed a manager role. (2) A system that assumes a manager role.

mapping. The process of converting data that is transmitted in one format by the sender into the data format that can be accepted by the receiver.

master cryptography key. In SNA products, a key used to encipher operational keys that are to be used at a node.

Mbps. Megabits per second.

medium. (1) A physical carrier of electrical energy. (2) A physical material in or on which data may be represented.

message. (1) An assembly of characters and sometimes control codes that is transferred as an entity from an originator to one or more recipients. A message consists of two parts: envelope and content. (T) (2) In VTAM, the amount of function management data (FMD) transferred to VTAM by the application program with one SEND request.

message switching. The process of receiving a message, storing it, and forwarding it to its destination unaltered. (T)

method. In the NetView program, the code that runs within the Resource Object Data Manager (RODM) address space. Methods are used to implement behavior specified by an operation.

metropolitan area network (MAN). A network formed by the interconnection of two or more networks which may operate at higher speed than those networks, may cross administrative boundaries, and may use multiple access methods. (T) Contrast with *local area network (LAN)* and *wide area network (WAN)*.

migration. The installation of a new version or release of a program to replace an earlier version or release.

migration data host. A VTAM node that acts as both an APPN end node and a type 5 subarea node. Contrast with *interchange node*.

minor node. In VTAM, a uniquely defined resource within a major node. See *major node* and *node*.

mode. See *mode name*.

mode name. The name used by the initiator of a session to designate the characteristics desired for the session, such as traffic pacing values, message-length limits, sync point and cryptography options, and the class of service within the transport network.

MPTN. Multiprotocol transport networking.

multipath channel (MPC). A channel protocol that uses multiple unidirectional subchannels for VTAM-to-VTAM bidirectional communication.

multiple-domain network. (1) A network with more than one system services control point. (2) An APPN network with more than one network node.

Multiple Virtual Storage (MVS). See *MVS*.

Multiprotocol Network Program. The IBM software that controls the functions of the IBM 6611 Network Processor. It is a licensed program made up of base code and the Configuration Program.

multiprotocol transport networking (MPTN). A networking architecture that allows programs that have matching characteristics to communicate via transport protocols of any type through a gateway defined by the architecture. Matching characteristics include shared upper-layer protocols and transport services (such as record or stream and expedited data support).

MVS. (1) Multiple virtual storage. Implies MVS/370, the MVS/XA product, and the MVS/ESA product. (2) Multiple Virtual Storage, consisting of MVS/System Product Version 1 and the MVS/370 Data Facility Product operating on a System/370 processor. See also *MVS/XA product*.

MVS/XA product. Multiple Virtual Storage/Extended Architecture product, consisting of MVS/System Product Version 2 and the MVS/XA Data Facility Product, operating on a System/370 processor in the System/370 extended architecture mode. MVS/XA allows virtual storage addressing to 2 gigabytes. See also *MVS*.

N

name resolution. In Internet communications, the process of mapping a machine name to the corresponding Internet Protocol (IP) address. See also *domain name system (DNS)*.

NCP. Network Control Program.

NCP/Token-Ring interconnection (NTRI). An NCP function that allows a communication controller to attach to the IBM Token-Ring Network and that provides both subarea and peripheral node data link control (DLC) services in the SNA network.

negative response (NR). In SNA, a response indicating that a request did not arrive successfully or was not processed successfully by the receiver. Contrast with *positive response*.

NetBIOS. Network Basic Input/Output System. The standard interface to networks, IBM personal computers (PCs), and compatible PCs, that is used on LANs to provide message, print-server, and file-server functions. The IBM NetBIOS application program interface (API) provides a programming interface to the LAN so that an application program can have LAN communication without knowledge and responsibility of the data link control (DLC) interface. See also *BIOS*.

NETID. Network identifier.

NetView-NetView task (NNT). The task under which a cross-domain NetView operator session runs. See *operator station task*.

NetView Performance Monitor (NPM). An IBM licensed program that collects, monitors, analyzes, and displays data relevant to the performance of a VTAM telecommunication network. It runs as an online VTAM application program.

network. (1) An arrangement of nodes and connecting branches. (T) (2) A configuration of data processing devices and software connected for information interchange. (3) A group of nodes and the links interconnecting them.

network adapter. A physical device, and its associated software, that enables a processor or controller to be connected to a network.

network address. (1) In a subarea network, an address, consisting of subarea and element fields, that identifies a link, link station, physical unit, logical unit, or system services control point. Subarea nodes use network addresses; peripheral nodes use local addresses or local-form session identifiers (LFSIDs). The boundary function in the subarea node to which a peripheral node is attached transforms local addresses or LFSIDs to network addresses and vice versa. Contrast with *network name*. (2) According to ISO 7498-3, a name, unambiguous within the OSI environment, that identifies a set of network service access points.

network architecture. The logical structure and operating principles of a computer network. (T)

Note: The operating principles of a network include those of services, functions, and protocols.

network congestion. An undesirable overload condition caused by traffic in excess of what a network can handle.

Network Control Program (NCP). An IBM licensed program that provides communication controller support for single-domain, multiple-domain, and interconnected network capability.

network directory database. Synonym for *distributed directory database*.

network identifier. (1) In TCP/IP, that part of the Internet address that defines a network. The length of the network ID depends on the type of network class (A, B, or C). (2) A 1- to 8-byte customer-selected name or an 8-byte IBM-registered name that uniquely identifies a specific subnetwork.

network management. The process of planning, organizing, and controlling a communication-oriented data processing or information system.

network name. (1) The symbolic identifier by which end users refer to a network accessible unit, a link, or a link

station within a given subnetwork. In APPN networks, network names are also used for routing purposes. Contrast with *network address*. (2) In a multiple-domain network, the name of the APPL statement defining a VTAM application program. The network name must be unique across domains. Contrast with *ACB name*. See *uninterpreted name*.

network node (NN). Synonym for *Advanced Peer-to-Peer Networking (APPN) network node*.

network-node domain. An APPN network-node control point, its attached links, the network resources for which it answers directory search requests (namely, its local LUs and adjacent LEN end nodes), the adjacent APPN end nodes with which it exchanges directory search requests and replies, and other resources (such as a local storage device) associated with its own node or an adjacent end node for which it provides management services.

network node server. An APPN network node that provides network services for its local LUs and client end nodes.

network operator. (1) A person who controls the operation of all or part of a network. (2) In a multiple-domain network, a person or program responsible for controlling all domains. Contrast with *domain operator*.

network topology database. The representation of the current connectivity between the network nodes within an APPN network. It includes (a) entries for all network nodes and the transmission groups interconnecting them and (b) entries for all virtual routing nodes to which network nodes are attached.

NIB. Node initialization block.

NN. Network node.

no response. In SNA, a protocol requested in the form-of-response-requested field of the request header that directs the receiver of the request not to return any response, regardless of whether or not the request is received and processed successfully. Contrast with *definite response* and *exception response*.

node. (1) In a network, a point at which one or more functional units connect channels or data circuits. (I) (2) Any device, attached to a network, that transmits and receives data. (3) An endpoint of a link or a junction common to two or more links in a network. Nodes can be processors, communication controllers, cluster controllers, or terminals. Nodes can vary in routing and other functional capabilities. (4) In VTAM, a point in a network defined by a symbolic name. See *major node* and *minor node*. (5) In NETDA/2, a combination of hardware, software, and microcode that can generate message traffic, receive and process message traffic, or receive and relay message traffic.

node initialization block (NIB). In VTAM, a control block associated with a particular node or session that contains information used by the application program to identify the node or session and to indicate how communication requests on a session are to be handled by VTAM.

node name. In VTAM, the symbolic name assigned to a specific major or minor node during network definition.

node type. A designation of a node according to the protocols it supports or the role it plays in a network. Node type was originally denoted numerically (as 1, 2.0, 2.1, 4, and 5) but is now characterized more specifically by protocol type (APPN network node, LEN node, subarea node, and interchange node, for example) because type 2.1 nodes and type 5 nodes support multiple protocol types and roles.

nonnative network. (1) A subnetwork whose network identifier differs from the network identifier that a node uses for its own network-qualified resource names. (2) Any network attached to a gateway NCP that does not contain that NCP's resources.

normal flow. In SNA, a data flow designated in the transmission header (TH) that is used primarily to carry end-user data. The rate at which requests flow on the normal flow can be regulated by session-level pacing. Normal and expedited flows move in both the primary-to-secondary and secondary-to-primary directions. Contrast with *expedited flow*.

notification. (1) An unscheduled, spontaneously generated report of an event that has occurred. (2) In OSI management, information emitted by a managed object relating to an event that has occurred within the managed object.

NOTIFY. A network services request that is sent by a system services control point (SSCP) to a logical unit (LU) to inform the LU of the status of a procedure requested by the LU.

NPM. NetView Performance Monitor.

NPSI. X.25 NCP Packet Switching Interface.

NTRI. NCP/Token-Ring interconnection.

O

object. In object-oriented design or programming, an abstraction consisting of data and the operations associated with that data. See also *class*.

offline. (1) Pertaining to the operation of a functional unit that takes place either independently of, or in parallel with, the main operation of a computer. (T) (2) Neither controlled by, nor communicating with, a computer. Contrast with *online*.

OIC. Only-in-chain.

OLU. Origin logical unit.

online. (1) Pertaining to the operation of a functional unit when under the direct control of the computer. (T) (2) Pertaining to a user's ability to interact with a computer. (A) (3) Pertaining to a user's access to a computer via a terminal. (A) (4) Controlled by, or communicating with, a computer. (5) Contrast with *offline*.

only-in-chain (OIC). A request unit for which the request header (RH) begin chain indicator and RH end chain indicator are both on. See also *RU chain*.

open. (1) A break in an electrical circuit. (2) To make an adapter ready for use.

Open Systems Interconnection (OSI). (1) The interconnection of open systems in accordance with standards of the International Organization for Standardization (ISO) for the exchange of information. (T) (A) (2) The use of standardized procedures to enable the interconnection of data processing systems.

Note: OSI architecture establishes a framework for coordinating the development of current and future standards for the interconnection of computer systems. Network functions are divided into seven layers. Each layer represents a group of related data processing and communication functions that can be carried out in a standard way to support different applications.

Open Systems Interconnection (OSI) architecture. Network architecture that adheres to that particular set of ISO standards that relates to Open Systems Interconnection. (T)

Open Systems Interconnection (OSI) reference model. A model that describes the general principles of the Open Systems Interconnection, as well as the purpose and the hierarchical arrangement of its seven layers. (T)

operand. (1) An entity on which an operation is performed. (I) (2) That which is operated upon. An operand is usually

identified by an address part of an instruction. (A) (3) Information entered with a command name to define the data on which a command processor operates and to control the execution of the command processor. (4) An expression to whose value an operator is applied. See also *definition statement*, *keyword*, *keyword parameter*, and *parameter*.

operating system (OS). Software that controls the execution of programs and that may provide services such as resource allocation, scheduling, input/output control, and data management. Although operating systems are predominantly software, partial hardware implementations are possible. (T)

operation. In object-oriented design or programming, a service that can be requested at the boundary of an object. Operations include modifying an object or disclosing information about an object.

operator. (1) In a language statement, the lexical entity that indicates the action to be performed on operands. See also *definition statement*. (2) A person or program responsible for managing activities controlled by a given piece of software such as MVS, the NetView program, or IMS. See *logged-on operator* and *network operator*. See also *autotask* and *operator station task*. (3) A person who operates a device. (4) A person who keeps a system running.

operator station task (OST). The NetView task that establishes and maintains the online session with the network operator. There is one operator station task for each network operator who logs on to the NetView program. See *NetView-NetView task*.

OPNDST. Open destination.

OPT. Option.

option set. A set of functions that may be supported by products that implement a particular architecture. A product may support any number of option sets or none. For each option set supported, all functions in that set are supported. See *base set*.

origin. An external logical unit (LU) or application program from which a message or other data originates. See also *destination*.

origin logical unit (OLU). The logical unit from which data is sent. Contrast with *destination logical unit (DLU)*.

OS. Operating system.

OSI. Open Systems Interconnection.

other-domain resource. A representation for a logical unit that is owned by another domain and is referenced by a symbolic name, which can be qualified by a network identifier.

outbound. In communications, data that is transmitted to the network.

P

padding. A technique by which a receiving component controls the rate of transmission of a sending component to prevent overrun or congestion. See *session-level padding*, *send padding*, and *virtual route (VR) padding*. See also *flow control*.

package. A collection of attributes, notifications, operations, or behaviors that are treated as a single module in the specification of a managed object class. Packages can be mandatory or conditional when referenced in a definition of a

managed object class.

packet. In data communication, a sequence of binary digits, including data and control signals, that is transmitted and switched as a composite whole. The data, control signals, and, possibly, error control information are arranged in a specific format. (I) See *call-accepted packet*, *call connected packet*, *call request packet*, *clear indication packet*, *clear request packet*, *data packet*, *DCE clear confirmation packet*, *discarded packet*, *incoming call packet*, *permit packet*, and *reset packet*. See also *frame*.

packet level. (1) The packet format and control procedures for exchange of packets containing control information and user data between data terminal equipment (DTE) and data circuit-terminating equipment (DCE). See also *data link level*, *higher level*, and *physical level*. (2) A part of Recommendation X.25 that defines the protocol for establishing logical connections between two DTEs and for transferring data on these connections.

packet mode operation. Synonym for *packet switching*.

packet switching. (1) The process of routing and transferring data by means of addressed packets so that a channel is occupied only during transmission of a packet. On completion of the transmission, the channel is made available for transfer of other packets. (I) (2) Synonymous with *packet mode operation*. See also *circuit switching*.

page. (1) In a virtual storage system, a fixed-length block that has a virtual address and is transferred as a unit between real storage and auxiliary storage. (I) (A) (2) A printed form. (3) The information displayed at the same time on the screen of a display device. (4) In VSE, a fixed-length block of instructions, data, or both that can be located in processor storage or in the page data set on disk. (5) To replace the information displayed on the screen with prior or subsequent information from the same file.

panel. (1) In SAA Basic Common User Access architecture, a particular arrangement of information that is presented in a window or pop-up. If some of the information is not visible, a user can scroll through the information. (2) A formatted display of information that appears on a display screen. See *help panel* and *task panel*. (3) In computer graphics, a display image that defines the locations and characteristics of display fields on a display surface.

parallel sessions. Two or more concurrently active sessions between the same two network accessible units (NAUs) using different pairs of network addresses or local-form session identifiers. Each session can have independent session parameters.

parameter. (1) A variable that is given a constant value for a specified application and that may denote the application. (I) (A) (2) In SAA Basic Common User Access architecture, a variable used in conjunction with a command to affect its result. (3) An item in a menu for which the user specifies a value or for which the system provides a value when the menu is interpreted. (4) Data passed to a program or procedure by a user or another program, namely as an operand in a language statement, as an item in a menu, or as a shared data structure. See also *keyword*, *keyword parameter*, and *operand*.

path. (1) In a network, any route between any two nodes. A path may include more than one branch. (T) (2) The series of transport network components (path control and data link control) that are traversed by the information exchanged between two network accessible units. See also *explicit route (ER)*, *route extension*, and *virtual route (VR)*. (3) In VTAM when defining a switched major node, a potential dial-out port that can be used to reach that node. (4) In the NetView/PC program, a complete line in a configuration that contains all of the resources in the service point command service (SPCS) query link configuration request list.

pending active session. In VTAM, the state of an LU-LU session recorded by the system services control point (SSCP) when it finds both logical units (LUs) available and has sent a CINIT request to the primary logical unit (PLU) of the requested session.

peripheral border node. A border node that interconnects adjacent APPN networks having different network identifiers in order to support LU-LU sessions that have one partner LU in its native network. Contrast with *extended border node*.

peripheral logical unit (LU). In SNA, a logical unit in a peripheral node.

peripheral node. A node that uses local addresses for routing and therefore is not affected by changes in network addresses. A peripheral node requires boundary-function assistance from an adjacent subarea node. A peripheral node can be a type 1, 2.0, or 2.1 node connected to a subarea boundary node.

peripheral physical unit (PU). In SNA, a physical unit in a peripheral node.

peripheral PU. Peripheral physical unit.

permit packet. At the interface between a data terminal equipment (DTE) and a data circuit-terminating equipment (DCE), a packet used to transmit permits over a virtual circuit.

physical circuit. A circuit established without multiplexing. See also *data circuit*. Contrast with *virtual circuit*.

physical connection. (1) A connection that establishes an electrical circuit. (2) In VTAM, a point-to-point or multipoint connection.

physical level. In X.25, the mechanical, electrical, functional, and procedural media used to activate, maintain, and deactivate the physical link between the data terminal equipment (DTE) and the data circuit-terminating equipment (DCE). See *data link level* and *packet level*.

physical unit (PU). The component that manages and monitors the resources (such as attached links and adjacent link stations) associated with a node, as requested by an SSCP via an SSCP-PU session. An SSCP activates a session with the physical unit in order to indirectly manage, through the PU, resources of the node such as attached links. This term applies to type 2.0, type 4, and type 5 nodes only. See also *peripheral PU* and *subarea PU*.

physical unit (PU) services. In SNA, the components within a physical unit (PU) that provide configuration services and maintenance services for SSCP-PU sessions. See also *logical unit (LU) services*.

PLU. Primary logical unit.

port. (1) An access point for data entry or exit. (2) A connector on a device to which cables for other devices such as display stations and printers are attached. Synonymous with *socket*. (3) The representation of a physical connection to the link hardware. A port is sometimes referred to as an adapter; however, there can be more than one port on an adapter. There may be one or more ports controlled by a single DLC process. (4) In the Internet suite of protocols, a 16-bit number used to communicate between TCP or the User Datagram Protocol (UDP) and a higher-level protocol or application. Some protocols, such as File Transfer Protocol (FTP) and Simple Mail Transfer Protocol (SMTP), use the same well-known port number in all TCP/IP implementations. (5) An abstraction used by transport protocols to distinguish among multiple destinations within a host machine.

positional operand. An operand in a language statement that has a fixed position. See also *definition statement*. Contrast with *keyword operand*.

positive response. In SNA, a response indicating that a request was received and processed. Contrast with *negative response*.

PR. Print error.

primary logical unit (PLU). In SNA, the logical unit (LU) that sends the BIND to activate a session with its partner LU. Contrast with *secondary logical unit*.

problem determination. The process of determining the source of a problem; for example, a program component, machine failure, telecommunication facilities, user or contractor-installed programs or equipment, environmental failure such as a power loss, or user error.

processor. In a computer, a functional unit that interprets and executes instructions. A processor consists of at least an instruction control unit and an arithmetic and logic unit. (T)

profile. Data that describes the significant characteristics of a user, a group of users, or one or more computer resources.

program operator. A VTAM application program that is authorized to issue VTAM operator commands and receive VTAM operator awareness messages. See also *solicited message* and *unsolicited message*.

program temporary fix (PTF). A temporary solution or bypass of a problem diagnosed by IBM in a current unaltered release of the program.

protocol. (1) A set of semantic and syntactic rules that determine the behavior of functional units in achieving communication. (I) (2) In Open Systems Interconnection architecture, a set of semantic and syntactic rules that determine the behavior of entities in the same layer in performing communication functions. (T) (3) In SNA, the meanings of, and the sequencing rules for, requests and responses used for managing the network, transferring data, and synchronizing the states of network components. Synonymous with *line control discipline* and *line discipline*. See *bracket protocol* and *link protocol*.

PTF. Program temporary fix.

PU. Physical unit.

PU type. (1) Deprecated term for *node type*. (2) The type of physical unit in a node.

R

read-only memory (ROM). Memory in which stored data cannot be modified by the user except under special conditions.

receive pacing. In SNA, the pacing of message units being received by a component. See also *send pacing*.

Recommendation X.21. An International Telegraph and Telephone Consultative Committee (CCITT) recommendation for a general-purpose interface between data terminal equipment and data circuit equipment for synchronous operations on a public data network.

Recommendation X.25. An International Telegraph and Telephone Consultative Committee (CCITT) recommendation for the interface between data terminal equipment and packet-switched data networks. See also *packet switching*.

record. (1) In programming languages, an aggregate that consists of data objects, possibly with different attributes, that usually have identifiers attached to them. In some programming languages, records are called structures. (I) (2) A set of data treated as a unit. (T) (3) A set of one or more related data items grouped for processing. (4) In VTAM, the unit of data transmission for record mode. A record represents whatever amount of data the transmitting node chooses to send.

recording filter. In the NetView program, the function that determines which events, statistics, and alerts are stored on a database.

relation. (1) In a relational database, a set of entity occurrences that have the same attributes. (T) (2) The comparison of two expressions to see if the value of one is equal to, less than, or greater than the value of the other. (3) In a relational database, a table that identifies entities and their attributes. Synonymous with *flat file*.

release. (1) A distribution of a new product or new function and APAR fixes for an existing product. Normally, programming support for the prior release is discontinued after some specified period of time following availability of a new release. The first version of a product is announced as Release 1, Modification Level 0. (2) In VTAM, to relinquish control of resources (communication controllers or physical units). See also *resource takeover*. Contrast with *acquire*.

remote. Pertaining to a system, program, or device that is accessed through a telecommunication line. Contrast with *local*. Synonym for *link-attached*.

request parameter list (RPL). In VTAM, a control block that contains the parameters necessary for processing a request for data transfer, for establishing or terminating a session, or for some other operation.

request unit (RU). A message unit that contains control information, end-user data, or both.

request/response unit (RU). A generic term for a request unit or a response unit. See *request unit (RU)* and *response unit (RU)*.

reset. On a virtual circuit, reinitialization of data flow control. At reset, all data in transit are eliminated.

resource. (1) Any facility of a computing system or operating system required by a job or task, and including main storage, input/output devices, the processing unit, data sets, and control or processing programs. (2) In the NetView program, any hardware or software that provides function to the network.

resource takeover. In VTAM, an action initiated by a network operator to transfer control of resources from one domain to another without breaking the connections or disrupting existing LU-LU sessions on the connection. See also *acquire* and *release*.

response. In data communication, a reply represented in the control field of a response frame. It advises the primary or combined station of the action taken by the secondary or other combined station to one or more commands. See also *command*.

response time. (1) The elapsed time between the end of an inquiry or demand on a computer system and the beginning of the response; for example, the length of time between an indication of the end of an inquiry and the display of the first character of the response at a user terminal. (I) (A) (2) For response time monitoring, the time from the activation of a transaction until a response is received, according to the response time definition coded in the performance class.

response unit (RU). A message unit that acknowledges a request unit. It may contain prefix information received in a request unit. If positive, the response unit may contain additional information (such as session parameters in response to BIND SESSION). If negative, the response unit contains sense data defining the exception condition.

REX. Route extension.

ring. See *ring network*.

ring network. (1) A network in which every node has exactly two branches connected to it and in which there are exactly two paths between any two nodes. (T) (2) A network configuration in which devices are connected by unidirectional transmission links to form a closed path.

ROM. Read-only memory. (A)

route. (1) An ordered sequence of nodes and transmission groups (TGs) that represent a path from an origin node to a destination node traversed by the traffic exchanged between them. (2) The path that network traffic uses to get from source to destination.

route extension (REX). In SNA, the path control network components, including a peripheral link, that make up the portion of a path between a subarea node and a network addressable unit (NAU) in an adjacent peripheral node. See also

explicit route (ER), path, and virtual route (VR).

routing. (1) The process of determining the path to be used for transmission of a message over a network. (T) (2) The assignment of the path by which a message is to reach its destination. (3) In SNA, the forwarding of a message unit along a particular path through a network, as determined by parameters carried in the message unit, such as the destination network address in a transmission header.

routing table. A collection of routes used to direct datagram forwarding or to establish a connection. The information is passed among routers to identify network topology and destination feasibility.

RPL. Request parameter list.

RU. Request/response unit.

RU chain. In SNA, a set of related request/response units (RUs) that are consecutively transmitted on a particular normal or expedited data flow. The request RU chain is the unit of recovery: if one of the RUs in the chain cannot be processed, the entire chain is discarded. Each RU belongs to only one chain, which has a beginning and an end indicated by means of control bits in request/response headers within the RU chain. Each RU can be designated as first-in-chain (FIC), last-in-chain (LIC), middle-in-chain (MIC), or only-in-chain (OIC). Response units and expedited-flow request units are always sent as only-in-chain.

S

same-domain. Pertaining to communication between entities in the same SNA domain. Contrast with *cross-domain*. See also *single-domain network*.

SATF. Shared-access transport facility.

SDLC. Synchronous Data Link Control.

search concentration. A function, performed by network nodes and central directory servers, that minimizes the number of concurrent network searches that are sent for the same target resource.

secondary logical unit (SLU). In SNA, the logical unit (LU) that contains the secondary half-session for a particular LU-LU session. An LU may contain secondary and primary half-sessions for different active LU-LU sessions. Contrast with *primary logical unit (PLU)*.

secondary logical unit (SLU) key. A key-encrypting key used to protect a session cryptography key during its transmission to the secondary half-session.

send pacing. In SNA, pacing of message units that a component is sending. See also *receive pacing*.

server. A functional unit that provides shared services to workstations over a network; for example, a file server, a print server, a mail server. (T)

service point (SP). An entry point that supports applications that provide network management for resources not under the direct control of itself as an entry point. Each resource is either under the direct control of another entry point or not under the direct control of any entry point. A service point accessing these resources is not required to use SNA sessions (unlike a focal point). A service point is needed when entry point support is not yet available for some network management function.

session. (1) In network architecture, for the purpose of data communication between functional units, all the activities which take place during the establishment, maintenance, and release of the connection. (T) (2) A logical connection between two network accessible units (NAUs) that can be activated, tailored to provide various protocols, and deactivated, as requested. Each session is uniquely identified in a transmission header (TH) accompanying any transmissions exchanged during the session.

session activation request. In SNA, a request that activates a session between two network accessible units (NAUs) and specifies session parameters that control various protocols during session activity; for example, BIND and ACTPU. Contrast with *session deactivation request*.

session connector. A session-layer component in an APPN network node or in a subarea node boundary or gateway function that connects two stages of a session. Session connectors swap addresses from one address space to another for session-level intermediate routing, segment session message units as needed, and (except for gateway function session connectors) adaptively pace the session traffic in each direction. See also *half-session*.

session control (SC). In SNA, either of the following:

- ° One of the components of transmission control. Session control is used to purge data flowing in a session after an unrecoverable error occurs, to resynchronize the data flow after such an error, and to perform cryptographic verification.

- ° A request unit (RU) category used for requests and responses exchanged between the session control components of a session and for session activation and deactivation requests and responses.

session cryptography key. In SNA, a data encrypting key used to encipher and decipher function management data (FMD) requests transmitted in an LU-LU session that uses cryptography.

session deactivation request. In SNA, a request that deactivates a session between two network accessible units (NAUs); for example, UNBIND and DACTPU. Synonymous with *generic unbind*. Contrast with *session activation request*.

session-level pacing. A flow control technique that permits a receiving half-session or session connector to control the data transfer rate (the rate at which it receives request units) on the normal flow. It is used to prevent overloading a receiver with unprocessed requests when the sender can generate requests faster than the receiver can process them. See *pacing* and *virtual route pacing*.

session parameters. In SNA, the parameters that specify or constrain the protocols (such as bracket protocol and pacing) for a session between two network accessible units. See also *logon mode*.

session path. The half-sessions delimiting a given session and their interconnection (including any intermediate session connectors).

shared. Pertaining to the availability of a resource for more than one use at the same time.

shared-access transport facility (SATF). A transmission facility, such as a multipoint link connection, a public switched network, or a token-ring, on which multiple pairs of nodes can form concurrently active links.

single-domain network. In SNA, a network with one system services control point (SSCP). Contrast with *multiple-domain network*.

SLU. Secondary logical unit.

SNA. Systems Network Architecture.

SNA network. The part of a user-application network that conforms to the formats and protocols of Systems Network Architecture. It enables reliable transfer of data among end users and provides protocols for controlling the resources of

various network configurations. The SNA network consists of network accessible units (NAUs), boundary function, gateway function, and intermediate session routing function components; and the transport network.

SNA network interconnection (SNI). The connection, by gateways, of two or more independent SNA networks to allow communication between logical units in those networks. The individual SNA networks retain their independence.

SNI. SNA network interconnection.

socket. The abstraction provided by the University of California's Berkeley Software Distribution (commonly called Berkeley UNIX or BSD UNIX) that serves as an endpoint for communication between processes or applications.

softcopy. (1) A nonpermanent copy of the contents of storage in the form of a display image. (T) (2) One or more files that can be electronically distributed, manipulated, and printed by a user. Contrast with *hardcopy*.

solicited message. A response from VTAM to a command entered by a program operator. Contrast with *unsolicited message*.

SP. Service point.

span. In the NetView program, a user-defined group of network resources within a single domain. Each major or minor node is defined as belonging to one or more spans. See also *span of control*.

span of control. The total network resources over which a particular network operator has control. All the network resources listed in spans associated through profile definition with a particular network operator are within that operator's span of control.

specific mode. In VTAM, the following:

° The form of a RECEIVE request that obtains input from one specific session.

° The form of an accept request that completes the establishment of a session by accepting a specific queued CINIT request.

Contrast with *any-mode*. See *continue-specific mode*.

SSCP. System services control point.

SSCP-dependent LU. An LU that requires assistance from a system services control point (SSCP) in order to initiate an LU-LU session. It requires an SSCP-LU session.

SSCP-independent LU. An LU that is able to activate an LU-LU session (that is, send a BIND request) without assistance from an SSCP. It does not have an SSCP-LU session. Currently, only an LU 6.2 can be an independent LU.

SSCP-LU session. In SNA, a session between a system services control point (SSCP) and a logical unit (LU). The session enables the LU to request the SSCP to help initiate LU-LU sessions.

SSCP-PU session. In SNA, a session between a system services control point (SSCP) and a physical unit (PU); SSCP-PU sessions allow SSCPs to send requests to and receive status information from individual nodes in order to control the network configuration.

SSCP-SSCP session. In SNA, a session between the system services control point (SSCP) in one domain and the SSCP in another domain. An SSCP-SSCP session is used to initiate and terminate cross-domain LU-LU sessions.

SSCP takeover. See *resource takeover*.

SSP. System Support Programs.

start option. In VTAM, a user-specified or IBM-supplied option that determines certain conditions that are to exist during the time a VTAM system is operating. Start options can be predefined or specified when VTAM is started.

statement. A language syntactic unit consisting of an operator, or other statement identifier, followed by one or more operands. See *definition statement*.

static. (1) In programming languages, pertaining to properties that can be established before execution of a program; for example, the length of a fixed length variable is static. (I) (2) Pertaining to an operation that occurs at a predetermined or fixed time. (3) Contrast with *dynamic*.

static compression. A data compression algorithm that uses tables that are currently not being updated, while continuing to substitute compression codes for source data. Contrast with *adaptive compression*.

station. An input or output point of a system that uses telecommunication facilities; for example, one or more systems, computers, terminals, devices, and associated programs at a particular location that can send or receive data over a telecommunication line.

status. The condition or state of hardware or software, usually represented by a status code.

subarea. A portion of the SNA network consisting of a subarea node, attached peripheral nodes, and associated resources. Within a subarea node, all network accessible units (NAUs), links, and adjacent link stations (in attached peripheral or subarea nodes) that are addressable within the subarea share a common subarea address and have distinct element addresses.

subarea address. A value in the subarea field of the network address that identifies a particular subarea. See also *element address*.

subarea host node. A host node that provides both subarea function and an application program interface (API) for running application programs. It provides system services control point (SSCP) functions and subarea node services, and it is aware of the network configuration. See *boundary node*, *communication management configuration host node*, *data host node*, *host node*, *node*, *peripheral node*, and *subarea node*. See also *boundary function* and *node type*.

subarea network. Interconnected subareas, their directly attached peripheral nodes, and the transmission groups that connect them.

subarea node (SN). A node that uses network addresses for routing and maintains routing tables that reflect the configuration of the network. Subarea nodes can provide gateway function to connect multiple subarea networks, intermediate routing function, and boundary function support for peripheral nodes. Type 4 and type 5 nodes can be subarea nodes.

subarea PU. In SNA, a physical unit (PU) in a subarea node.

subnet. (1) In TCP/IP, a part of a network that is identified by a portion of the Internet address. (2) Synonym for *subnetwork*.

subnetwork. (1) Any group of nodes that have a set of common characteristics, such as the same network ID. (2) In the AIX operating system, one of a group of multiple logical network divisions of another network, such as can be created by the Transmission Control Protocol/Internet Protocol (TCP/IP) interface program. (3) Synonymous with *subnet*.

subsystem. A secondary or subordinate system, usually capable of operating independently of, or asynchronously with, a controlling system. (T)

switched major node. In VTAM, a major node whose minor nodes are physical units and logical units attached by switched SDLC links.

sync point. An intermediate or end point during processing of a transaction at which an update or modification to one or more of the transaction's protected resources is logically complete and error free. Synonymous with *synchronization point*.

synchronization point. Synonym for *sync point*.

synchronous. (1) Pertaining to two or more processes that depend upon the occurrence of specific events such as common timing signals. (T) (2) Occurring with a regular or predictable time relationship.

Synchronous Data Link Control (SDLC). A discipline conforming to subsets of the Advanced Data Communication Control Procedures (ADCCP) of the American National Standards Institute (ANSI) and High-level Data Link Control (HDLC) of the International Organization for Standardization, for managing synchronous, code-transparent, serial-by-bit information transfer over a link connection. Transmission exchanges may be duplex or half-duplex over switched or nonswitched links. The configuration of the link connection may be point-to-point, multipoint, or loop. (I) See also *binary synchronous communications*.

SYNTAX. In the Simple Network Management Protocol (SNMP), a clause in the MIB module that defines the abstract data structure that corresponds to a managed object.

sysplex. A set of MVS systems communicating and cooperating with each other through certain multisystem hardware components and software services to process customer workloads.

system. In data processing, a collection of people, machines, and methods organized to accomplish a set of specific functions. (I) (A)

system configuration. A process that specifies the devices and programs that form a particular data processing system.

system definition. The process, completed before a system is put into use, by which desired functions and operations of the system are selected from various available options. Synonymous with *system generation*.

system generation. Synonym for *system definition*.

system services control point (SSCP). A component within a subarea network for managing the configuration, coordinating network operator and problem determination requests, and providing directory services and other session services for end users of the network. Multiple SSCPs, cooperating as peers with one another, can divide the network into domains of control, with each SSCP having a hierarchical control relationship to the physical units and logical units within its own domain.

system services control point (SSCP) domain. The system services control point, the physical units (PUs), the logical units (LUs), the links, the link stations, and all the resources that the SSCP has the ability to control by means of activation and deactivation requests.

System Support Programs (SSP). An IBM licensed program, made up of a collection of utilities and small programs, that supports the operation of the NCP.

Systems Network Architecture (SNA). The description of the logical structure, formats, protocols, and operational sequences for transmitting information units through, and controlling the configuration and operation of, networks.

Note: The layered structure of SNA allows the ultimate origins and destinations of information, that is, the end users, to be independent of and unaffected by the specific SNA network services and facilities used for information exchange.

T

table. A repository for data that NETDA/2 uses to design a network. Each table contains information related to the network.

takeover. The process by which the failing active subsystem is released from its extended recovery facility (XRF) sessions with terminal users and replaced by an alternate subsystem. See *resource takeover*.

TAP. Synonym for *ACF/TAP*.

task. In a multiprogramming or multiprocessing environment, one or more sequences of instructions treated by a control program as an element of work to be accomplished by a computer. (I) (A)

task panel. Online display from which you communicate with the program in order to accomplish the program's function, either by selecting an option provided on the panel or by entering an explicit command. See *help panel*.

TCAM. Telecommunications Access Method. Synonymous with *ACF/TCAM*.

TCB. Task control block.

TCP. Transmission Control Protocol.

TCP/IP. Transmission Control Protocol/Internet Protocol.

Telecommunications Access Method (TCAM). An access method used to transfer data between main storage and remote or local terminals.

terminal. A device, usually equipped with a keyboard and a display device, that is capable of sending and receiving information.

TERMINATE. In SNA, a request unit that is sent by a logical unit (LU) to its system services control point (SSCP) to cause the SSCP to start a procedure to end one or more designated LU-LU sessions.

TG. Transmission group.

threshold. (1) In the NetView program, a percentage value, set for a resource and compared to a calculated error-to-traffic ratio. (2) In NPM, high or low values supplied by the user to monitor data and statistics being collected. (3) In IBM bridge programs, a value set for the maximum number of frames that are not forwarded across a bridge due to errors, before a "threshold exceeded" occurrence is counted and indicated to network management programs. (4) An initial value from which a counter is decremented to 0, or a value to which a counter is incremented or decremented from an initial value.

token. (1) In a local area network, the symbol of authority passed successively from one data station to another to indicate the station temporarily in control of the transmission medium. Each data station has an opportunity to acquire and use the token to control the medium. A token is a particular message or bit pattern that signifies permission to transmit. (T) (2) In LANs, a sequence of bits passed from one device to another along the transmission medium. When the token has data appended to it, it becomes a frame.

token ring. (1) According to IEEE 802.5, network technology that controls media access by passing a token (special packet or frame) between media-attached stations. (2) A FDDI or IEEE 802.5 network with a ring topology that passes tokens from one attaching ring station (node) to another. (3) See also *local area network (LAN)*.

topology. In communications, the physical or logical arrangement of nodes in a network, especially the relationships

among nodes and the links between them.

topology and routing services (TRS). An APPN control point component that manages the topology database, computes routes, and provides a Route Selection control vector (RSCV) that specifies the best route through the network for a given session based on its requested class of service.

topology database. See *network topology database*.

TPF. Transaction processing facility.

trace. (1) A record of the execution of a computer program. It exhibits the sequences in which the instructions were executed. (A) (2) For data links, a record of the frames and bytes transmitted or received.

Trace Analysis Program (TAP). Synonym for *Advanced Communications Function for the Trace Analysis Program (ACF/TAP)*.

transaction processing facility (TPF). A high-availability, high-performance system, designed to support real-time, transaction driven applications. The specialized architecture of TPF is intended to optimize system efficiency, reliability, and responsiveness for data communication and database processing. TPF provides real-time inquiry and update to a large, centralized database, where message length is relatively short in both directions, and response time is generally less than three seconds. Formerly known as the Airline Control Program/Transaction Processing Facility (ACP/TPF).

Transmission Control Protocol (TCP). A communications protocol used in Internet and in any network that follows the U.S. Department of Defense standards for internetwork protocol. TCP provides a reliable host-to-host protocol between hosts in packet-switched communications networks and in interconnected systems of such networks. It assumes that the Internet protocol is the underlying protocol.

Transmission Control Protocol/Internet Protocol (TCP/IP). A set of communications protocols that support peer-to-peer connectivity functions for both local and wide area networks.

transmission group (TG). (1) A group of links between adjacent subarea nodes, appearing as a single logical link for routing of messages. A transmission group can consist of one or more SDLC links (parallel links) or of a single System/370 channel. (2) In an APPN network, a unidirectional representation of a connection that consists of a single link.

transmission group (TG) profile. In VTAM, a named set of characteristics (such as cost per byte, cost per unit of time, and capacity) that is used for APPN links.

transmission group (TG) vector. A representation of an endpoint TG in a T2.1 network, consisting of two control vectors: the TG Descriptor (X'46') control vector and the TG Characteristics (X'47') control vector.

transmission priority. A rank assigned to a message unit that determines its precedence for being selected by the path control component in each node along a route for forwarding to the next node in the route.

U

UNBIND. In SNA, a request to deactivate a session between two logical units (LUs). See also *session deactivation request*. Contrast with *BIND*.

uninterpreted name. In SNA, a character string that a system services control point (SSCP) can convert into the network name of a logical unit (LU). Typically, an uninterpreted name is used in a logon or Initiate request from a secondary logical unit (SLU) to identify the primary logical unit (PLU) with which the session is requested.

unsolicited message. A message, from VTAM to a program operator, that is unrelated to any command entered by the program operator. Contrast with *solicited message*.

UP. Unnumbered poll.

upstream. In the direction of data flow from the end user to the host. Contrast with *downstream*.

user. Anyone who requires the services of a computing system.

user exit. (1) A point in an IBM-supplied program at which a user exit routine may be given control. (2) A programming service provided by an IBM software product that may be requested during the execution of an application program for the service of transferring control back to the application program upon the later occurrence of a user-specified event.

user exit routine. A user-written routine that receives control at predefined user exit points. User exit routines can be written in assembler or a high-level language.

user table. In TPNS, one or more text data entries contained in a table format, which may be referred to for logic testing and message generation.

USERVAR. A variable whose value is the name of the logical unit to which VTAM routes session-establishment requests.

V

V.24. In data communications, a specification of the CCITT that defines the list of definitions for interchange circuits between data terminal equipment (DTE) and data circuit-terminating equipment (DCE).

V.28. In data communications, a specification of the CCITT that defines the electrical characteristics for interchange circuits between data terminal equipment (DTE) and data circuit-terminating equipment (DCE) at rates below 20 kilobits per second.

value. (1) A specific occurrence of an attribute; for example, "blue" for the attribute "color." (T) (2) A quantity assigned to a constant, a variable, a parameter, or a symbol.

variable. (1) In the NetView command list language, a character string beginning with "&" that is coded in a command list and is assigned a value during execution of the command list. (2) In the Simple Network Management Protocol (SNMP), a match of an object instance name with an associated value.

vector. The MAC frame information field.

verb. See *LU 6.2 verb*.

version. A separately licensed program that usually has significant new code or new function.

view. In IBM network management products, a graphical representation of a network or a part of a network. A view

consists of resource symbols and resource labels; it may also include a background picture or text that a network operator has placed within it.

viewing filter. In the NetView program, the function that allows a user to select the alert data to be displayed on a terminal. All other stored data is blocked.

virtual circuit. (1) In packet switching, the facilities provided by a network that give the appearance to the user of an actual connection. (T) See also *data circuit*. Contrast with *physical circuit*. (2) A logical connection established between two DTEs.

virtual machine (VM). In VM, a functional equivalent of a computing system. On the 370 Feature of VM, a virtual machine operates in System/370 mode. On the ESA Feature of VM, a virtual machine operates in System/370, 370-XA, ESA/370, or ESA/390 mode. Each virtual machine is controlled by an operating system. VM controls the concurrent execution of multiple virtual machines on an actual processor complex.

Virtual Machine/Enterprise Systems Architecture (VM/ESA). An IBM licensed program that manages the resources of a single computer so that multiple computing systems appear to exist. Each virtual machine is the functional equivalent of a *real* machine.

Virtual Machine/System Product (VM/SP). An IBM licensed program that manages the resources of a single computer so that multiple computing systems appear to exist. Each virtual machine is the functional equivalent of a *real* machine.

virtual node. Synonym for *virtual routing node*.

virtual route (VR). In SNA, either a) a logical connection between two subarea nodes that is physically realized as a particular explicit route or b) a logical connection that is contained wholly within a subarea node for intranode sessions. A virtual route between distinct subarea nodes imposes a transmission priority on the underlying explicit route, provides flow control through virtual route pacing, and provides data integrity through sequence numbering of path information units (PIUs). See also *explicit route (ER)*, *path*, and *route extension (REX)*.

virtual route (VR) pacing. In SNA, a flow control technique used by the virtual route control component of path control at each end of a virtual route to control the rate at which path information units (PIUs) flow over the virtual route. VR pacing can be adjusted according to traffic congestion in any of the nodes along the route. See also *pacing* and *session-level pacing*.

virtual-route-based transmission group. In an APPN network, a unidirectional representation of a connection that consists of the subarea virtual routes between two interchange nodes.

virtual routing node. A representation of a node's connectivity to a connection network defined on a shared-access transport facility, such as a token ring. Synonymous with *virtual node*.

virtual storage. The storage space that may be regarded as addressable main storage by the user of a computer system in which virtual addresses are mapped into real addresses. The size of virtual storage is limited by the addressing scheme of the computer system and by the amount of auxiliary storage available, not by the actual number of main storage locations. (I) (A)

Virtual Storage Extended (VSE). An IBM licensed program whose full name is the Virtual Storage Extended/Advanced Function. It is a software operating system controlling the execution of programs.

Virtual Telecommunications Access Method (VTAM). An IBM licensed program that controls communication and the flow of data in an SNA network. It provides single-domain, multiple-domain, and interconnected network capability.

VIT. VTAM internal trace.

VM. Virtual machine.

VM/ESA. Virtual Machine/Enterprise Systems Architecture.

VM/SP. Virtual Machine/System Product.

VM/370 control program (CP). The component of VM/370 that manages the resources of a single computer with the result that multiple computing systems appear to exist. Each virtual machine is the functional equivalent of an IBM System/370 computing system.

VR. Virtual route.

VSE. Virtual Storage Extended. Synonymous with *VSE/Advanced Functions*.

VSE/Advanced Functions. The basic operating system support needed for a VSE-controlled installation. Synonym for *VSE*.

VSE/ESA. Virtual Storage Extended/Enterprise Systems Architecture.

VTAM. Virtual Telecommunications Access Method. Synonymous with *ACF/VTAM*.

VTAM application program. A program that has opened an access method control block (ACB) to identify itself to VTAM and that can therefore issue VTAM macroinstructions.

VTAM definition. The process of defining the user application network to VTAM and modifying IBM-defined characteristics to suit the needs of the user.

VTAM internal trace (VIT). A trace used in VTAM to collect data on channel I/O, use of locks, and storage management services.

VTAM operator. A person or program authorized to issue VTAM operator commands. See *domain operator*, *program operator*, and *network operator*.

VTAM operator command. A command used to monitor or control a VTAM domain. See also *definition statement*.

W

WAN. Wide area network.

wide area network (WAN). (1) A network that provides communication services to a geographic area larger than that served by a local area network or a metropolitan area network, and that may use or provide public communication facilities. (T) (2) A data communications network designed to serve an area of hundreds or thousands of miles; for example, public and private packet-switching networks, and national telephone networks. Contrast with *local area network (LAN)* and *metropolitan area network (MAN)*.

X

X.21. See *Recommendation X.21.*

X.25. See *Recommendation X.25.*

X.25 NCP Packet Switching Interface (NPSI). An IBM licensed program that allows SNA users to communicate over packet switching data networks that have interfaces complying with CCITT Recommendation X.25. It allows SNA programs to communicate with SNA or non-SNA equipment over such networks.

XA. Extended architecture.

XCA. External communication adapter.

XID. Exchange identification.

XRF. Extended recovery facility.



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BACK_1.BIBLIOGRAPHY.1 VTAM V4R2 Publications

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- Planning
- Installation, Resource Definition, and Tuning
- Customization
- Operation
- Writing Application Programs
- Diagnosis
- Quick Reference.

The complete set of unlicensed books in this section can be ordered using a single order number, SBOF-4394.

Subtopics:

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