IBM ®

Communications Server for MVS/ESA Release 2 with VTAM Version 4 Release 4 for MVS/ESA

Overview

In order to remain competitive, businesses today require the following:

- Access to a broad base of applications
- Cross-network communications with suppliers and consumers
- Interoperability between diverse computing environments

Addressing these needs requires networking solutions that support mission-critical, business-to-business, and business-to-consumer communications across LANs, enterprise WANs, intranets, and the Internet. The Communications Server for MVS/ESA™ has the technologies to address these various communication needs.

IBM Communications Server for MVS/ESA Release 2 updates the VTAM® component to include the new VTAM Version 4 Release 4. The TCP/IP component remains at the Version 3 Release 2 level. The Communications Server Release 2 level of function provides you with a leading-edge communications server for connecting your diverse applications and networking environments.

The VTAM Version 4 Release 4 component of IBM Communications Server for MVS/ESA Release 2 provides significant enhanced functions that extend the capabilities previously provided by IBM Communications Server for MVS/ESA Release 1. Now, the powerful, open communications gateway that combines SNA and TCP/IP networking technologies into a single product offering adds the following:

- Dramatic new availability support for the S/390® Parallel Sysplex™ insulates end-users from VTAM and hardware failures utilizing the new Multinode Persistent Sessions capability

- New High Performance Data Transfer (HPDT) facilities to offer improved throughput for APPC applications
- S/390 applications to take advantage of high-speed, Asynchronous Transfer Mode (ATM) connections in the network without application change
- Significant throughput improvements made possible by new HPDT multipath channel connection (MPC) capabilities
- High Performance Routing (HPR) improvements to serve a broader range of network configurations, maximizing its value to the enterprise
- Single systems image capability extended to TSO/E SNA users of S/390 Parallel Sysplex for improved usability
- An array of additional enhancements to improve security, serviceability, and usability

Communications Server Release 2 allows you to choose applications based on your business needs, and quickly deploy these applications without disrupting your existing mission-critical applications.

Intended Customers

Those customers currently not planning on migrating to OS/390™ but do need to evolve their existing networks to address current and emerging business requirements that are Internet, multivendor, or multiprotocol related.

Key Prerequisites

IBM Communications Server for MVS/ESA Release 2 and VTAM Version 4 Release 4 for MVS/ESA operate on any IBM System/370™ (308x, 3090™, or 43xx), System/390®, or ES/9000® processor that supports MVS/ESA SP™ Versions 4.3 or later.

Planned Availability Date

March 28, 1997

This announcement is provided for your information only. For additional information, contact your IBM representative or call 800-IBM-4YOU.

Description

Multinode Persistent Sessions (MNPS)

The very important aspect of high availability for mission-critical applications in the network is addressed in Communications Server Release 2 through the capability known as MNPS. VTAM previously had the capability to preserve sessions across an application outage. This was known as persistent LU-LU sessions. MNPS extends persistent sessions capability across hosts connected through the S/390 Coupling Facility and enables the recovery of VTAM, MVS®, or hardware failures with minimal impact to end users. The actual level of recovery capability that can be achieved is dependent on the application. MNPS delivers this new function through use of HPR in conjunction with the S/390 Coupling Facility. Since session information is preserved, the need for extra network traffic related to re-establishing sessions is eliminated. As you might imagine, this can be a considerable amount of traffic in your network. In conjunction with the Automatic Restart Manager function of MVS/ESA, the application restart can be automatically executed, further minimizing the impact to end users. Since a hardware or software outage can be recovered without termination and re-establishment of large numbers of user sessions, some have estimated cost savings per outage ranging into $100,000s.

Coupled with HPR, MNPS allows you to build networks and applications that are fault tolerant, with the potential to maintain S/390 connectivity through planned or unplanned outages.

High Performance Data Transfer (HPDT) for APPC Applications

To better capitalize on high-speed networking, the Communications Server introduces HPDT services and an HPDT interface to optimize performance for Communications Server APPC applications — particularly those that transfer larger data objects.

HPDT Services

HPDT services are available to applications written to the Communications Server's APPCCMD interface and whose sessions connect two intrahost applications or traverse one of the following high-bandwidth network attachments:

- S/390 Open Systems Adapter-2 connected to a native ATM network
- APPN® node-to-node channel connections
- Cross System Coupling Facility (XCF) links between processors in a Sysplex
- IBM 2216 NWays Multiaccess Connector Model 400 with ESCON® channel attachment feature or the IBM 3746 NWays Multiprotocol Controller Models 900 and 950 with the Multiaccess Enclosure and ESCON channel features.

No application change is required to receive performance benefits, although additional benefits can be achieved through application change.

This performance enhancement is achieved by such improvements as:

- Reduction of movement of data within the S/390
- A new buffer management scheme that reduces the increase in path length related to buffer handling and management that normally occurs as the application is sending or receiving large data objects

- Data packing (without additional data movement) to increase effective data transfer rate
- Improved scheduling of channel programs to reduce S/390 CPU overhead related to I/O

These performance improvements scale up as message size increases.

HPDT Interface

The HPDT interface is a programming interface that allows system-authorized applications requiring efficient bulk data transfer to gain additional performance improvements. The HPDT interface builds on HPDT services to offer additional efficiencies.

The interface eliminates entirely the data copy as data is transferred between the APPCCMD application and VTAM. The performance improvement realized increases as the API crossing size increases.

Support for the new APPCCMD interface includes a new Communications Server Release 2 storage manager that allows Communications Server Release 2 and applications to exchange ownership of a single piece of commonly addressable storage so that there is no need to copy data at the APPCCMD API.

In order to gain the additional performance improvements provided by the HPDT interface, applications must change to use the new storage manager, as well as the new extensions provided for the APPCCMD macroinstruction.

So, if you have multimedia, video, image, or large data files to handle in your network, HPDT can help you move that data much faster than previously possible by minimizing the usage of critical system resources like CPU cycles, memory bus, CPU cache, and channels.

HPDT Performance Results Quantification

The results that have been achieved up to this time indicate that HPDT can yield improvements in the reduction of communications CPU utilization that range from a factor of 1.3x reduction in cycles to a factor of 2.7x reduction in cycles. Another way of saying this is that if for example an application was utilizing 20% of available CPU cycles for communications, HPDT could reduce this utilization to the range of 15.4% to 7.4% for the given workload and throughput. This results in more cycles available for other work. In addition, improvements in channel program scheduling has resulted in increasing the I/O engine capacity that yielded a throughput increase in the range of 1.25x. These results were produced in our own test environment and are subject to change either upward or downward depending on the system configuration and the size and type of data objects used.

Asynchronous Transfer Mode (ATM)

The natural place for a high-speed, high-capacity server for an ATM network is the S/390. The Communications Server Release 2, in conjunction with the S/390 Open Systems Adapter-2 (OSA-2) and the OSA Support Facility (OSA/SF), provides an ATM Forum User-to-Network Interface (UNI) compliant, native ATM communication capability for the S/390 server.

This introduction of native ATM support, coupled with VTAM's HPDT and APPN High Performance Routing (HPR) support, gives you the ability to utilize advanced networking and system functions in your OS/390 server. APPN HPR class of service (COS) will be mapped to ATM virtual channel connection characteristics. Therefore, existing applications require no changes to exploit these

new high-speed connections when they are added to the network. However, these applications will be able to fully utilize the capabilities of the ATM network.

The Communications Server Release 2 native ATM offering includes both best effort virtual circuits and reserved bandwidth virtual circuits.

This native ATM support results in reduced overhead and less network configuration complexity compared to ATM LAN emulation.

Native ATM best effort support combines the capabilities of the OSA-2 ATM adapter with VTAM Version 4 Release 4 HPR and HPDT to give you the ability to optimize link capacity by allowing best effort circuits to use the native ATM network during periods when reserved bandwidth connections are idle.

The native ATM reserved bandwidth virtual circuit gives you the ability to provide your network users with the most up-to-date support characteristics like:

- Bandwidth reservation specified and allocated based on application needs
- Prioritization of interactive traffic over batch traffic
- Prioritization and segregation of batch traffic associated with disaster recovery backup of mission-critical data within a predefined window of time
- Prioritization and segregation of classes of users allowing establishment of mandatory response time targets. In this manner engineering, medical, or emergency response traffic is prioritized over business-as-usual administrative traffic.

HPDT Multipath Channel (MPC) Connections

The VTAM Version 4 Release 4 for MVS/ESA component of Communications Server Release 2 expands the capability of MPC to now include HPDT MPC connections. HPDT MPC connections, also known as MPC+, provide increased channel throughput compared to previous MPC connections. Applications that use VTAM's record API (RAPI) and APPCCMD interfaces can use HPDT MPC connections. HPDT MPC also facilitates the performance optimizations provided by HPDT Services for APPCCMD applications related to reduced CPU utilization.

HPDT MPC is used by VTAM Version 4 Release 4 for MVS/ESA to enable the following connections:

- APPN Node-to-node Connections (ANNCs)
  - This is a connection between a VTAM APPN host node and an adjacent APPN node such as the IBM 2216 NWays Multiaccess Connector Model 400 with the ESCON channel attachment feature or the IBM 3746 NWays Multiprotocol Controller Models 900 and 950 with the Multiaccess Enclosure and ESCON channel features.
- Native ATM Connections
  - HPDT MPC is used to enable the connection between a VTAM APPN host node and an IBM S/390 OSA-2 adapter port that provides access to an ATM network.

High Performance Routing (HPR) Enhancements

In Communications Server Release 2, HPR is expanded to benefit a broader range of network configurations. HPR provides:

- Improved performance.
- Non-disruptive accommodation of network failures.
- Sophisticated congestion control.
- Maximum throughput.
- Highly efficient utilization of network bandwidth.

With Communications Server Release 2, HPR session end-points can reside in different APPN networks and subnetworks providing HPR value to a substantially larger user population.

This release simplifies migration to HPR for environments using APPN over subarea connections (VRTGs) in their networks as HPR sessions are now supported across those connections. For example, applications can reside on an S/390 with attached 3745/NCP so users will have the advantage of HPR when applications are on a composite network node (CNN) or migration data host (MDH).

These significant new facilities further enhance HPR's value to intra and inter-enterprise network computing.

APPN network availability is enhanced with this level of HPR support because it:

- Eliminates the effects of network outages.
- Eliminates single points of failure.
- Provides improved NCP performance and NCP storage savings compared to SNA Network Interconnect (SNI), via HPR Border node.
- Simplifies migration to APPN.
- Provides enhanced network management information.

VTAM Version 4 Release 4 also includes a new capability to deal with a scenario in which a link or node failure in a network could cause an HPR path switch to occur from a preferred path to an alternate path. It is possible that the alternate path chosen could have less desirable characteristics than the preferred path. VTAM V4R4 provides a new capability that will automatically switch from the alternate path back to the preferred path once the preferred path is available. This capability obviously can result in improved network performance and less manual effort and intervention in order to ensure that preferred paths are utilized.

HPR Border Node Performance Results Quantification

In a comparison of HPR Border Node and SNI, our performance test results have shown a significant improvement in logon time and CPU utilization for the Border Node configuration as compared to an SNI configuration. The logon time for 10K LUs was 4.1x improved while CPU utilization was 2.1x to 2.5x reduction in cycles used.

Generic Resource Support for TSO/E (TSO/GR)

Another capability that addresses high availability for mission-critical applications in the network is provided in the Communications Server Release 2 through the extension of VTAM generic resource support to TSO/E. TSO/GR not only extends generic resource support to TSO/E, but also provides the capability to balance session distribution across TSO systems in the sysplex via the coupling facility. TSO/GR can greatly enhance productivity for end-users of the S/390 Parallel Sysplex servers. Availability of TSO resources is increased because now all TSO/VTAMs can be accessed using the generic name. If a particular TSO/VTAM fails, a session request using the generic name can still be successful as another TSO/VTAM with the same generic name can be selected as the session partner.

APPN Enhancements

- In Communications Server Release 2, maintenance of the APPN topology database uses an enhanced garbage collection function. This new capability can improve APPN network operation because it provides an easy means of marking resources as not usable for route selection.
- When a non-IBM product is an adjacent CP, potential problems can occur when the node is not returning a pacing response. This can result in a serious network performance problem because it causes VTAM to hold data to be transmitted to the adjacent node. In Communications Server Release 2, VTAM now detects when the pacing response has not been received and issues a message that the node is congested and stops sending locates to the adjacent node.
- Communications Server Release 2 offers more effective use of network RTP connection resources by providing the NCP with the information necessary to allow the NCP to use the effective capacity of the PU in the route setup for the effective capacity of the RTP connection, thus having a more realistic effective capacity.
- The XNETALS start option has been improved to provide more flexibility. XNETALS can now be overridden on the PU statement regardless of the value specified on the start option. In addition, the operand on the PU statement is now XNETALS instead of NOXNETLS. These changes make it easier to make dynamic changes in your network.
- Dynamic reconfiguration (addition and deletion) of switched major nodes is now supported. A user can be moved from one control unit to another without having to deactivate and then reactivate the switched major node. A GROUP statement has also been added to switched major nodes to allow values to be sifted-down to the PU, PATH, or LU statements. In addition, the MAXGRP, MAXDLUR, MAXPATH, and MAXNO operands are no longer necessary; if specified, they are ignored. These changes provide significant productivity improvements for system programmers as well as end-users.
- Two new operator commands have been added to provide improvements in serviceability.
  1. DISPLAY SRCHINFO provides information on outstanding APPN and/or subarea searches. Information can be displayed for specific nodes, network types (APPN or subarea) or for a specific session using the PCID.
  2. DISPLAY VTAMSTOR can display the service level and storage address of a VTAM module, the resource definition table entry for a specified resource name or network address, or storage that is accessible to VTAM.
- In today's networks, it is possible to encounter conditions in which sessions are set-up using subarea routing even though APPN is preferable. This, of course, means that if the session is set-up over a subarea path it is impossible to take advantage of all of the benefits of a path set-up using HPR. VTAM V4R4 provides a new capability which will ensure that if you prefer APPN routing so that HPR benefits can be utilized, there is a method provided that will make this happen. This new capability means that you can be sure that you take advantage of the HPR path benefits without a lot of effort or manual intervention required.

LUALIAS Network Qualified Name Enhancement

VTAM V4R4 provides a significant new name management capability to dynamically generate an LUALIAS for a cross network CDRSC. This eliminates the requirement to predefine CDRSCs. Through the use of this new function, VTAM 4.4 treats a dynamically created LUALIAS in the same manner as a predefined LUALIAS. VTAM 4.4 guarantees a unique eight character name by which applications can identify its session partners. So, now even applications that had not previously added support for network qualified names (NQN) can now take advantage of this VTAM 4.4 capability to reduce the complexity of names management.

Product Positioning

Communication Server for MVS/ESA is the IBM recommended choice for multiprotocol networking in non-OS/390 environments. Communication Server for OS/390 is the IBM recommended choice for multiprotocol networking in OS/390 environments.

Communications Server for MVS/ESA complements the Communications Server for OS/390 with its packaging and currency of functions thereby enabling a smoother migration to OS/390.

Communications Server for MVS/ESA interoperates with and enhances the IBM family of Enterprise Communication Servers which includes Communication Server for AIX® and Communication Server for OS/2®.

TCP/IP and VTAM continue as separately available products to address unique single protocol networking needs.

Education Support

Descriptions of all classroom and self-study courses are contained in IBM Education catalogs. Call IBM Education and Training at 800-IBM-TEACH (426-8322) for education catalogs, schedules, and enrollments.

The IBM education offerings include:

- G3787 — TCP/IP Networking Workshop
- G3886 — TCP/IP for MVS and VM Implementation
- G3838 — VTAM/APPN Implementation
- G3791 — APPN Concepts, Architecture, and Migration

Additional Information

Enhancements to VTAM® Cryptographic Support

- Message authentication code (MAC) support improves network security because it ensures data was not tampered with between sender and receiver.
- Transaction Security System (TSS) enhancement provides support for a broader range of Common Cryptographic Architecture (CCA) products and services and can help lower the cost of computing.
- Support of common master key for LUs with same cryptographic key eliminates the need to redundantly code keys for each LU (for example, 3174). This enhancement can increase the productivity of the system programmer while reducing complexity.

Dynamic Definition of VTAM-to-VTAM Connections

This capability works in conjunction with the cross-system coupling facility (XCF) of OS/390™ R3. It allows you to eliminate predefinition of channel-to-channel connections between VTAMs. This function enables you to add additional S/390® images without VTAM-specific definitions for the connections.

APPC Enhancements for Improved Performance, Usability, and Security

- LU=OWN allows two programs in the same system to communicate more efficiently. APPC/MVS® will exploit this new function.
- Password substitution is provided to prevent APPC conversation partners from sending passwords "in the clear".
- Applications written to the APPCCMD API can exploit third party authentication — a security function of DCE that allows end users to access a network with a single logon. Applications write to the GSS-API available with DCE 1.1.

AnyNet® /MVS Feature Integration

Effective with Communications Server Release 2 and VTAM Version 4 Release 4, the feature known as AnyNet/MVS is integrated into the base VTAM Version 4 product. This means that you now have the multiprotocol application support for socket applications in SNA networks as well as SNA applications in TCP-IP networks included in the base VTAM product. The separate installation of the VTAM Version 4 AnyNet/MVS feature is eliminated. Now, VTAM Version 4 customers get this multiprotocol application for no additional charge. This was already the case for the IBM Communications Server for MVS/ESA™ customers. Effective April 1, 1997, the separate charge is eliminated for the AnyNet/MVS optional feature on prior releases of VTAM Version 4, such as VTAM Version 4 Release 2 as well as VTAM Version 4 Release 3.

Support for OS/390 Library Concatenation

This new VTAM Version 4 Release 4 capability provides logical parameter library (parmlib) concatenation to SYS1.PARMLIB and alternate data sets specification for SYS1.LPALIB. These OS/390 enhancements enable the customer to isolate parmlib members that have been customized by the installation and change the sequence in which these members are used. Up to 10 concatenated data sets may be used to contain a parameter file. This usability change makes VTAM Version 4 Release 4 for MVS/ESA more compatible with OS/390.

Customers migrating to Communications Server Release 2 from Communications Server Release 1 do not have to reinstall the TCP/IP component because it is unchanged.

The amount of storage required by Communications Server Release 2 depends on configuration options.

Basic product functions require MVS/ESA Version 4.3 or later. Other software may be required depending on the applications and optional features.

Open Blueprint®

IBM Communications Server for MVS/ESA Release 2 provides the ability to insulate applications from the underlying communication network. Its implementation is consistent with the Common Transport Semantics function described in IBM's Open Blueprint. It provides the Transport Layer Protocol Boundary (TLPB) industry-standard interface from X/Open. To facilitate open, distributed, multivendor interoperabilty, it supports the following:

- Multi-Protocol Transport Network (MPTN) industry-standard protocol from X/Open

IBM Communications Server for MVS/ESA Release 2 provides the ability to transport information over WANs and LANs. Its implementation is consistent with the Transport Services function described in IBM's Open Blueprint. It provides the following:

- X/Open Transport Interface (XTI) industry-standard interface from X/Open
- Berkeley Sockets interface from the University of California at Berkeley

To facilitate open, distributed, multivendor interoperability, it supports the following:

- TCP/IP industry-standard protocol from the Internet Engineering Task Force (IETF)

- Advanced Program to Program Network (APPN®) industry-standard protocol from the APPN Implementers Workshop

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Open Enterprise:

- IEEE802.2
- IEEE802.3
- IEEE802.4
- UNI 3.0
- UNI 3.1

Technical Information

Specified Operating Environment

Hardware Requirements: IBM Communications Server for MVS/ESA Release 2 is designed to operate in a virtual storage environment on any IBM System/370™ (308x, 3090™, or 43xx), System/390® , or ES/9000® processor that supports the operating systems specified in the **Software Requirements** section.

Certain IBM Communications Server for MVS/ESA Release 2 functions require the use of appropriate IBM machines.

New hardware requirements since IBM Communications Server for MVS/ESA Release 1 are:

- APPN over Native ATM requires:
  - OSA-2 Adapter
  - 9672-R*2 or 9672-R*3 processor
  - ATM external private or public network equipment
    -- For example, 8260 Nways™ Multiprotocol Intelligent Switching Hub
- Coupling Facility with coupling facility control code (CFCC) Level 1 is required for the following VTAM Version 4 Release 4 functions:
  - Multinode Persistent Sessions
  - Cross System Coupling Facility (XCF) support
  - TSO Generic Resource support
- VTAM Version 4 Release 4 cryptographic enhancements, when used with extended recovery facility (XRF) and transaction security system (TSS) family of products (4755), require 4755 Model 23 and higher (23, 24, 33, 34).

The machine requirements previously announced for VTAM Version 4 and TCP/IP Version 3 are restated below.

For communication with remote resources, one or more of the following products supported by VTAM, or their equivalent, is required:

- Channel-to-channel adapter
- IBM 3088 Multisystem Channel Communication Unit
- IBM Enterprise System Connection (ESCON®) channel
- IBM 3720, 3725, or 3745 Communication Controller
- IBM 3746 Nways Multinetwork Controller
- IBM 3174 Establishment Controller
- S/390 Open Systems Adapter
- IBM 3172 Interconnect Controller

For hardware-assisted data compression, VTAM requires one of the following:

- IBM ES/9000 9021 711-based model processor
- IBM ES/9000 9121 511-based model processor
- IBM ES/9000 9221 211-based model processor
- IBM S/390 9672 Parallel Transaction Server
- IBM S/390 9673 Parallel Query Server

Attachment of TCP/IP to the network requires one of the following network processors and associated components or equivalent:

- IBM 3172 Interconnect Controller with the Interconnect Controller Program
- TCP/IP Offload to IBM 3172 Interconnect Controller Model 003 and its required software
- IBM 8232 LAN Channel Station
- S/390 Open Systems Adapter
- IBM RS/6000™ Parallel Channel Attachment
- IBM RS/6000 ESCON Channel Attachment
- IBM 3720 Communication Controllers for X.25 or SNALINK without NCP IP Dynamics (NCPROUTE)
- IBM 3745/46 Communication Controller
- IBM 3746 Model 950 Nways* Multiprotocol Controller
- HYPERchannel A220 Processor
- A network attachment device using the Continuously Executing Transfer Interface (CETI)
- High Performance Parallel Interface (HiPPI)

Refer to Software Announcement 296-435, dated November 5, 1996, and Software Announcement 295-206, dated May 30, 1995, for more information.

Software Requirements: IBM Communications Server for MVS/ESA Release 2 requires, at a minimum, operating system MVS/ESA SP™ Version 4 Release 3 (5695-047 or 5695-048); earlier versions, releases, and modifications are not supported.

Certain IBM Communications Server for MVS/ESA Release 2 functions require the use of the appropriate level of associated IBM licensed programs.

The following new requirements are introduced for IBM Communications Server for MVS/ESA Release 2:

- Multinode Persistent Sessions
  - MVS/ESA Version 5 Release 2.2 (5655-068 or 5655-069)
- Cross System Coupling Facility (XCF) support
  - OS/390 Release 3 XCF and WLM components
    -- With XCF APAR OW20970
  - TSO Generic Resource support
    -- OS/390 R3 TSO/E component with APAR OW23828
  - HPR and MNPS network management
    -- TME 10® NetView® for OS/390 (5697-B82)
  - HPR Border Node
    -- NCP V7R5 (5648-063)
  - All VTAM nodes connected via Multipath Channel (MPC). APPN host-to-host channel (AHHC) or High Performance Routing (HPR) connections
    -- VTAM APAR OW21862
  - APPN over Native ATM
    -- OSA Support Facility V1R2 (5655-104) with APAR:
      Δ OW21906 for best effort support
      Δ OW24052 for reserved bandwidth support
  - High Performance Data Transfer
    -- MVS/ESA APAR OW11449
  - For compatibility with NPM V2R2
    -- APAR OW20323
    -- APAR OW22737
  - All VTAM nodes connected through Multipath Channel (MPC), APPN host-to-host channel, or High Performance Routing (HPR) connections
    -- VTAM APAR OW21862

Refer to Software Announcement 296-435, dated November 5, 1996, and Software Announcement 295-206, dated May 30, 1995.

The minimum software requirements previously announced for VTAM Version 4 and TCP/IP Version 3 are restated below.

These functions also operate with later versions and releases of the required programs unless otherwise

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stated. Earlier versions and releases or versions and releases for which IBM no longer provides service are not supported.

VTAM and TCP/IP require:
- Data Facilities Product (DFP) V3.1 (5665-XA3), or
- DFSMS/MVS® V1.1 (5695-DF1)

Functions introduced in VTAM Version 4 have the following software requirements.
- HPR automatic network routing in composite network node requires:
  -- NCP V7.3 (5648-063)
- APPN Multiple Network Connectivity requires:
  -- NCP V7.1 (5648-063) in configurations where NCP provides the boundary function support for the APPN connection between two APPN networks
  -- NetView V2.4 (5685-111)
- Connection Network requires NCP V7.1 in configurations where NCP provides the boundary function attachment to the connection network
- Spare SDLC lines require:
  -- NCP V7.2 (5648-063)
  -- NTuneMON™ V1.2 (5648-077) and NTuneNCP™ V1.1 (5648-089) OR NTuneMON V2.1 (5648-141)
- Frame-relay over token-ring logical connections, new NCP operands require:
  -- NCP V7.3 (5648-063)
- Expanded Dial Information requires:
  -- NCP V7.1 (5648-063) for token-ring and frame relay
  -- NPSI V3.7 (5688-035) when using NPSI resources
- Performance Monitor Interface exploitation requires:
  -- NetView Performance Monitor V2.2 (5655-043)
- VTAM topology agent and CMIP services exploitation requires:
  -- NetView V3.1 (5655-007)
- Use of MVS Symbolics, Auto Restart Manager, APPN Host-to-Host Channel automatic recovery of a failed channel address requires:
  -- MVS V5.2 (5655-068 or 5655-069)
- Virtual-route-based Transmission Group, Expanded addressing pool, and display enhancements require:
  -- NetView V2.4 (5685-111)
- Generic resources require:
  -- MVS/ESA V5.1 (5655-068 or 5655-069)
- Capturing of diagnosis information with First Failure Support Technology™ (FFST™) requires:
  -- First Failure Support Technology/MVS™ R2 (5695-044)
- Use of the interactive panel interface to support analysis tools for an externally recorded VIT and VTAM dump analysis enhancements requires:
  -- Interactive System Productivity Facility (ISPF) V3.2 (5685-054)
- Formatting of trace records through ACF/TAP requires:
  -- SSP V3.8 (5665-338)
- APPC Application Suites require:
  -- IBM C/370™ Library V2 (5688-188) features 5860 or 5861 or 5862
     or
     IBM Language Environment® for MVS and VM (5688-198)
  -- TSO/E V2.2 (5685-025)
- AnyNet/MVS Sockets over SNA converged sockets require:
  - MVS/ESA V5.2.2 (5655-068 JES-2 or 5655-069 JES-3) with the most current OE Feature
  - Language Environment for MVS and VM (5688-198) V1.5
- AnyNet/MVS SNA over TCP/IP requires:

  -- Language Environment for MVS and VM (compatible with MVS/ESA V5.2.2)
- Building VTAM commands with IBM Command Tree/2 requires:
  - NetView V3 (5655-007) with Central System that includes the NetView Graphic Monitor Facility

The software requirements for TCP/IP Version 3 are listed below.

- For interactive use of all client commands except when running OpenEdition® applications on MVS V5.2.2:
  - TSO/E V2.5 (5685-025)
- Telnet and SMTPNOTE require:
  - TSO/E V2.5
- SNALINK LU0 and LU6.2 support requires:
  - ACF/NCP V6.3 (5688-231) (Ethernet only), or
  - ACF/NCP V7.1 (5648-063) (Ethernet and/or Token Ring)
- NCPROUTE Server requires:
  - ACF/NCP V7.1
  - IBM C/370 Runtime Library V2.2 (5688-188) or
  - IBM AD/Cycle® LE/370 Runtime Library V1.3 (5688-198) or
  - Language Support feature of OpenEdition/MVS (5655-068, 5655-069),
- X.25 Interface Support requires:
  - X.25 NPSI V3.4 (5688-035) for 3745 or 3720
  - X.25 NPSI V2.1 (5668-719) for 3725
- Domain name server (authoritative mode), Network Database System (NDB) client/server, or FTP DB2® query requires:
  - DB2 V2.3 (5665-DB2)
- SNMP (monitor) client support requires:
  - NetView V1.3 for MVS (5685-152)
- IBM GDDM® through X-Windows® System requires:
  - GDDM/MVS V2.3 (5665-356)
  - GDDM/MVS V3.1 (5695-167)
- FTP Server requires:
  - One of the following C runtime libraries:
    -- IBM C/370 Runtime Library V2.2 (5688-188)
    -- IBM AD/Cycle LE/370 Runtime Library V1.3 (5688-198) or
    -- Language Support feature of OpenEdition/MVS (5655-068, 5655-069)

    File access protection for FTP requires:
    -- RACF™ V1.9 (5740-XXH), or equivalent
- CICS® Sockets require:
  - CICS/MVS® V3.1 (5685-083)
- IMS™ Sockets require:
  - IMS V4 (5685-013)
- OS/2® Offload requires:
  - OS/2 Warp Connect 3.0
- IBM TCP/IP V3.2 for MVS functions written in C Language require:
  - IBM C/370 Runtime Library V2.2 (5688-188), or
  - IBM AD/Cycle LE/370 Runtime Library V1.3 (5688-198), or
  - Language Support feature of OpenEdition/MVS (5655-068, 5655-069)

  These functions include:
  - C sample programs
  - Domain Name Server
  - FTP C server
  - Kerberos Services
  - LPR
  - MISCSERV
  - NCPROUTE
  - NDB System Client and Server
  - Network Computing System (NCS)
  - Non-OpenEdition X Window System
  - NPF ISPF interface

- Portmapper server
- Remote procedure call (RPC)
- RouteD server
- RPCinfo
- SNMP client and server
- Socket API
- REXECD
- REXEC
- RSH
- Customer-written programs, if written in C, that interface to:
  - X Window System client
  - Remote Procedure Call
  - TCP protocol boundary
  - UDP protocol boundary
  - DPI, or
  - IP protocol boundary
  They require one of the following:
  - IBM C/370 Runtime Library V2.2 (5688-188)
  - IBM AD/Cycle LE/370 Runtime Library V1R3 (5688-198) or
  - Language Support feature of OpenEdition/MVS (5655-068, 5655-069),
  And one of the following compilers:
  - IBM C/C++ V3.1 for MVS/ESA (5655-121)
  - IBM SAA® AD/Cycle C/370 V1.2 (5688-216),
- Customer-written programs, if written in C++, that interface to:
  - C Sockets Library
  Require the following:
  - IBM C/C++ V3.1 for MVS/ESA (5655-121)
  - IBM AD/Cycle LE/370 Runtime Library V1.4 (5688-198) or
  - Language Support feature of OpenEdition/MVS (5655-068, 5655-069),
- Customer-written programs, if written in Pascal, that interface to:
  - TCP protocol boundary
  - UDP protocol boundary
  - DPI or IP
  Require the following:
  - IBM VS Pascal Compiler and Runtime Library (5668-767)
- OpenEdition X Window system And requires one of the following:
  - IBM C/370 Runtime Library V2.2 (5688-188) or
  - IBM AD/Cycle LE/370 Runtime Library V1.3 (5688-198) or
  - Language Support feature of OpenEdition/MVS (5655-068, 5655-069)
- Network Print Facility requires:
  - ISPF/PDF V3.5 (5665-402)
  - JES2 SP 4.2 (5695-048) or
  - JES3 SP 4.2.1, (5695-048) or later, with PTF UY75262
- TCP/IP OpenEdition Applications Feature requires:
  - MVS 5.2.2 OpenEdition Shell and Utilities feature
  - IBM C/C++ for MVS/ESA Language Support feature or Language Environment for MVS and VM Version 1.5 (5688-198)
  - FTP requires DFSMS™ Version 1.2 (5695-DF1)
  - File access protection for FTP requires RACF V2.1 (5695-039), or equivalent
  - OE FTP DB2 Query requires DB2 V2.3 (5665-DB2)
  - IBM C/C++ for MVS/ESA V3.1 (5655-121), IBM SAA AD/Cycle C/370 Compiler V1.2 (5688-216), or for customer-written programs in C that interface to an OE feature:
    -- REXEC, REXECD, RSHD
    -- RPC
    -- X Window System

Compatibility: IBM offered vendors the opportunity to receive early access to VTAM Version 4 Release 4. The following vendors are currently testing and upgrading their own products for compatibility with VTAM Version 4 Release 4:

- BMC Software
- Candle Corporation
- Landmark Systems Corporation

Refer to Software Announcement 296-435, dated November 5, 1996, and Software Announcement 295-206, dated May 30, 1995.

System Integrity

IBM will accept APARs where the installation of IBM Communications Server for MVS/ESA Release 2 introduces an exposure to the system integrity of MVS. Refer to Software Announcement P81-174, dated October 21, 1981. VTAM Version 4 Release 4 for MVS/ESA is intended to run authorized in MVS/ESA.

Security, Auditability, and Control

The announced program uses the security and auditability features of the MVS operating system.

The security and auditability feature of TCP/IP is the Kerberos function, which provides an additional security capability when used in the programming of interoperating TCP/IP applications. The Kerberos server allows an application server to verify the authenticity of a requesting application client.

Note: The Kerberos Security Feature is subject to U.S. Export Licensing Controls. Questions concerning eligibility or U.S. licensing requirements should be directed to your local Export Regulation Coordinator/Executive (ERC/ERE).

The security and auditability features of SNA include the following:

- Data encryption facility to protect data transmitted within a network or across networks.

- Confidential text capability that prevents user data from being included in VTAM buffer traces, and that clears the VTAM buffers prior to returning them to the VTAM buffer pool.

- Authorization function of the session management exit which can tell VTAM to accept or reject a session based on the parameters it is passed.

- Application definition statements that can be used to authorize application programs to use certain functions, for example, to issue VTAM operator commands.

- SNA Network Interconnect (SNI) or border node to isolate and protect one network from the operations of other networks.

- Call security verification to provide a two-way verification between type 4 or type 5 subarea nodes connected by switched links.

- LU6.2 session-level LU-LU verification to provide session-level security for LU6.2 applications.

- LU6.2 session-level CP-CP partner verification using the same method as LU-LU partner verification.

- LU6.2 user ID verification to allow conversation-level security for LU6.2 applications.

- VTAM OPEN Application Control Block (ACB) security to provide enhanced control of applications getting access to the network.

- TSO/VTAM message security to provide control for sending and receiving cross-address-space TSO messages.

The data encryption facility requires one of the following:

- Integrated Cryptographic Service Facility/MVS (5685-051)
- Network Security Processor MVS Support Program (5706-028)
- Programmed Cryptographic Facility (5740-XY5)
- Cryptographic Unit Support (5740-XY6)
- Transaction Security System (TSS) family of products (4755)

LU6.2 session-level LU-LU verification, VTAM OPEN ACB security, and TSO/VTAM message security interface with the installed security management product (RACF for example).

User management is responsible for evaluation, selection, and implementation of security features, administrative procedures, and appropriate controls in application systems and communication facilities.

Ordering Information

Current Licensees

Current licensees of Communications Server for MVS/ESA (5655-A29) and VTAM Version 4 (5695-117) will be sent a program reorder form that may be returned directly to IBM Software Manufacturing Solutions (SMS). These reorder forms are scheduled to be mailed by April 11, 1997. Reorder forms returned to SMS will be processed within 10 workdays of receipt.

When IBM Communications Server for MVS/ESA Release 2 is available, IBM Communications Server for MVS/ESA Release 1 will no longer be available.

In a similar manner, when VTAM Version 4 Release 4 is available, VTAM Version 4 Release 3 will no longer be available.

Beginning with IBM Communications Server for MVS/ESA Release 2 and VTAM Version 4 Release 4, the AnyNet/MVS feature is integrated into VTAM Version 4 Release 4. Separate ordering is no longer required. An order for either IBM Communications Server for MVS/ESA Release 2 or VTAM Version 4 Release 4 will include the AnyNet/MVS feature.

New Licensees

Orders for new licenses will be accepted now.

For ordering information on the IBM Communications Server for MVS/ESA Version 1 program, refer to Software Announcement 296-435, dated November 5, 1996.

For ordering on the IBM VTAM Version 4 for MVS/ESA program, refer to Software Announcement 295-206, dated May 30, 1995, and Software Announcement 294-393, dated June 21, 1994.

Shipment will begin on the planned availability date.

Orders that ship prior to the planned availability date will receive IBM Communications Server for MVS/ESA Version 1 Release 1 or VTAM Version 4 Release 3 depending on which program number was requested.

Orders that ship after the planned availability date will receive IBM Communications Server for MVS/ESA Version 1 Release 2 or VTAM Version 4 Release 4 depending on which program number was requested.

New users of IBM Communications Server for MVS/ESA should specify:

Type	Model
5655	A29

New users of VTAM Version 4 should specify:

Type	Model
5695	117

Withdrawal from Marketing

Effective April 1, 1997, the following AnyNet/MVS feature numbers for VTAM Version 4 (5695-117) are withdrawn from marketing.

5695-117 Charge Features to be Withdrawn: 0061 0062 0063 0064 0065 0066 0067 0072 0073 0209 0210 0211 0212 2181 3001 3002 3003 3004 3005 3006 3007 3008 3009 3010 3011 3012 3013 3014 3015 3018 3019 3020 3021 3022 3023 3024 3025 3026 3027 3028 3029 3030 3031 3032 3035 3036 3037 3038 3039 3040 3041 3042 3043 3044 3045 3046 3047 3048 3049 3052 3053 3054 3055 3056 3057 3058 3059 3060 3061 3062 3063 3064 3065 3066 3070 3071 3072 3073 3074 3075 3076 3077 3101 3102 3103 3104 3105 3106 3107 3108 3109 3110 3111 3112 3113 3114 3115 3118 3119 3120 3121 3122 3123 3124 3125 3126 3127 3128 3129 3130 3131 3132 3135 3136 3137 3138 3139 3140 3141 3142 3143 3144 3145 3146 3147 3148 3149 3152 3153 3154 3155 3156 3157 3158 3159 3160 3161 3162 3163 3164 3165 3166 9998

5695-117 Media Features to be Withdrawn: 5359 5891 5892

5695-117 Publication Features to be Withdrawn: 7082 7085 7115 7116 7117 7118 7119 7122 7131 7132 7133 7134 8210 8211 8212 8095

5665-A29 Publication Features to be Withdrawn: 7221 7222 7223 7224 7225 7226 7227 7228 8281 8282 8283

Unlicensed Documentation

5655-A29

A memo, program directories, and one copy of the following publications are supplied automatically with the basic machine-readable material.

Title	Order Number
IBM Communications Server for MVS/ESA Licensed Program Specifications	GC31-8423
VTAM Installation and Migration Guide	GC31-8367
VTAM Release Guide	GC31-6545
VTAM Messages	SC31-8368
VTAM Codes	SC31-8369
VTAM Network Implementation Guide	SC31-8370
VTAM Operation	SC31-8372
VTAM Resource Definition Reference	SC31-8377
VTAM Operation Quick Reference	SX75-0208
IBM TCP/IP for MVS Messages	SC31-7132

Title	Order Number
IBM TCP/IP for MVS Codes	SV40-1019
IBM TCP/IP for MVS User's Guide	SC31-7136
IBM TCP/IP for MVS Customization and Administration	SC31-7134
IBM TCP/IP for MVS Planning and Migration Guide	SC31-7189
IBM TCP/IP for MVS CICS TCP/IP Socket Interface Guide and Reference	SC31-7131
IBM TCP/IP for MVS IMS TCP/IP Application Development Guide and Reference	SC31-7186
IBM TCP/IP for MVS Network Print Facility	SC31-8074
IBM TCP/IP for MVS Offloading TCP/IP Processing	SC31-7133
IBM TCP/IP Version 3 for OpenEdition MVS Applications Feature Guide	SC31-8069
IBM TCP/IP Performance and Tuning Guide	SC31-7188

5695-117

A memo, program directory, and one copy of the following publications are supplied automatically with the basic machine-readable material.

Title	Order Number
VTAM Version 4 Release 4 for MVS/ESA Licensed Program Specifications	GC31-8379
VTAM Installation and Migration Guide	GC31-8367
VTAM Release Guide	GC31-6545
VTAM Messages	SC31-8368
VTAM Codes	SC31-8369
VTAM Network Implementation Guide	SC31-8370
VTAM Operation	SC31-8372
VTAM Resource Definition Reference	SC31-8377
VTAM Operation Quick Reference	SX75-0208

5655-A29 and 5695-117

The following optional publications will be available no later than general availability. The first copy is available at no charge to licensees of basic material by specifying the 7xxx feature number.

Title	Order Number	Feature Number
VTAM Programming	SC31-8373	7250
VTAM Programming for LU 6.2 Guide	SC31-8374	7251
VTAM Programming for LU 6.2 Reference	SC31-8375	7252
VTAM Programming for CSM	SC31-8420	7253
VTAM Resource Definition Samples	SC31-8378	7254
Planning for Integrated Networks	SC31-7123	7255
Guide to Sockets over SNA	SC31-8371	7256
Guide to SNA over TCP/IP	SC31-8376	7257

Title	Order Number	Feature Number
APPC Application Suite User's Guide	SC31-6532	7258
APPC Application Suite Administration	SC31-6533	7259
APPC Application Suite Programming	SC31-6534	7260
Systems Network Architecture: Formats	GA27-3136	7261
Systems Network Architecture: Management Services Formats	GC31-8302	7262
VTAM CMIP Services and Topology Agent Programming Guide	SC31-8365	7263

5655-A29

The following optional publications will be available no later than general availability. The first copy is available at no charge to licensees of basic material by specifying the 7xxx feature number.

Title	Order Number	Feature Number
IBM TCP/IP for MVS: Programmer's Reference	SC31-7135	7229
IBM TCP/IP for MVS: Application Programming Interface Reference	SC31-7187	7230

Additional copies of unlicensed publications will be available for a fee. These copies may be ordered from your IBM representative, through the System Library Subscription Service (SLSS), or by direct order.

Displayable Softcopy Publications

5655-A29

IBM Communications Server for MVS/ESA Release 2 licensed and unlicensed manuals, except for Licensed Program Specification, will be offered in displayable softcopy form on the Communications Server for MVS/ESA online product library.

The Communications Server for MVS/ESA online product library is available to licensees of the basic material by specifying the no-charge feature number 7273.

5695-117

VTAM Version 4 Release 4 licensed and unlicensed manuals, except for Licensed Program Specification, will be offered in displayable softcopy form on the VTAM for MVS/ESA V4R4 online product library.

The VTAM for MVS/ESA V4R4 online product library is available to licensees of the basic material by specifying the no-charge feature number 7271 for licensed manuals and feature number 7274 for non-licensed manuals.

5655-A29 and 5695-117

The IBM Communications Server for MVS/ESA Release 2 and VTAM Version 4 Release 4 unlicensed manuals, except for Licensed Program Specification, will be offered in displayable softcopy form on the next update of the Networking Softcopy Collection Kit.

The Networking Softcopy Collection Kit is available to licensees of the basic material by specifying the no-charge feature number 7231.

Additional copies are available for a fee using SLSS by specifying order number SK2T-6012, or by ordering the 5636-PUB Library Offering and specifying feature numbers 2003 and 5003.

The VTAM Glossary is available only in softcopy form. This manual will be included in the Communications Server Release 2 product kit as well as the VTAM Version 4 Release 4 unlicensed and Networking Systems kits mentioned above. The VTAM Glossary is in a file named ISTA9001.

These displayable manuals can be used with the BookManager® READ licensed programs in any of the supported environments. Terms and conditions for use of the machine-readable files are shipped with the files.

Licensed Documentation

5655-A29

The following licensed material will be available from IBM by general availability. To order, contact your IBM representative.

The first copy is available at no charge to licensees of basic material by specifying the 7xxx feature number. Use the 8xxx feature number to order additional copies for a fee.

Title	Order Number	Single Copy Feature Number	Additional Copies Feature Number	Price
IBM TCP/IP for MVS Diagnosis Guide	LY43-0105	7220	8280	$25.00
VTAM Customization	LY43-0075	7267	8301	8.85
VTAM Data Areas Volume 1	LY43-0076	7268	8302	12.50
VTAM Data Areas Volume 2	LY43-0077	7269	8303	12.50
VTAM Diagnosis	LY43-0078	7270	8304	31.00
Online product library CD-ROM licensed and non-licensed manuals	LK2T-9136	7273	8306	N/C

5695-117

The following licensed material will be available from IBM by general availability. To order, contact your IBM representative.

The first copy is available at no charge to licensees of basic material by specifying the 7xxx feature number. Use the 8xxx feature number to order additional copies for a fee.

Title	Order Number	Single Copy Feature Number	Additional Copies Feature Number	Price
VTAM Customization	LY43-0075	7267	8301	$ 8.85
VTAM Data Areas Volume 1	LY43-0076	7268	8302	12.50
VTAM Data Areas Volume 2	LY43-0077	7269	8303	12.50
VTAM Diagnosis	LY43-0078	7270	8304	31.00
Online product library CD-ROM Licensed manuals	LK2T-9135	7271	8305	N/C

Subsequent updates (technical newsletters or revisions between releases) to the publications shipped with the product will be distributed to the user of record for as long as a license for this software remains in effect. A separate publication order or subscription is not needed.

Terms and Conditions

The terms for Communications Server for MVS/ESA Version 1 and VTAM Version 4, licensed under the IBM Customer Agreement, are unaffected by this announcement. Refer to Software Announcement 296-435, dated November 5, 1996, Software Announcement 295-206, dated May 30, 1995, and Software Announcement 294-393, dated June 21, 1994.

Support Line: **S/390**

Charges

Effective April 1, 1997, the new charge for all of the AnyNet/MVS feature charge numbers for VTAM Version 4 (5695-117) withdrawn in this announcement is $0.00. All other charges for VTAM Version 4 are unaffected by this announcement.

Charges for Communications Server for MVS/ESA Version 1 (5655-A29) are unaffected by this announcement.

One-Time Charge: Customers who pay a one-time charge for a licensed program receive enhancements and future releases, if any, at no additional charge. Significant new function may be offered as an optional feature and charged for separately. If a replacement program is announced and the customer elects to license the replacement program for a one-time charge, an upgrade charge or a time-based credit may apply. If the replacement program is licensed for a monthly license charge, a time-based upgrade credit may apply.

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Program Upgrade Charge: For additional product information, refer to Software Announcement 296-435, dated November 5, 1996, Software Announcement 295-206, dated May 30, 1995, and Software Announcement 294-393, dated June 21, 1994.

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Note: Shipments will begin after the planned availability date.

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