IBM ®

IBM eNetwork Communications Server for OS/2 Warp, Version 5.0 Connects Diverse Applications and Network Environments

Overview

IBM eNetwork Communications Server for OS/2® Warp, Version 5.0 is part of IBM's eNetwork Software family of communications servers. These servers provide enterprise-class universal connectivity and information access for cost-effective network computing.

Communications Server for OS/2 Warp, Version 5.0 enables PCs running OS/2, Windows 3.1, Windows NT™, Windows® 95, and DOS to communicate with S/390®, AS/400®, and with each other, over SNA and TCP/IP networks. It supports token-ring and Ethernet LANs, leased and switched lines, Frame Relay, FDDI, ISDN, SDLC, GDLC, and X.25.

Communications Server provides a powerful multiprotocol communications platform. You can mix SNA and TCP/IP-based networks as your networks evolve. Applications written to either SNA, SOCKETS, IPX, or NetBios can execute unchanged on mixed network backbones, providing enterprise-class end-to-end connectivity. It also provides flexibility in adapting network support to your changing needs.

Communications Server for OS/2 Warp, Version 5.0 delivers enterprise-class functionality, such as: HPR over WAN, Branch Extender, Host On-Demand, HPR MLTG support, Remote Web-based administration, and Windows 95 and Windows NT access feature support. Communications Server continues to deliver on its enterprise-class 3270 performance compared with Microsoft® SNA Server. It delivers superior transaction throughput and faster response times, while requiring less CPU resources than SNA Server. It provides:

- Enterprise-class reliability, scalability, and performance for mission-critical environments

- End-to-end connectivity via versatile, high-capacity support for LAN-to-LAN, LAN-to-host, and LAN-to-Internet via SNA, TCP/IP, IPX, and NetBios environments

- Ease-of-use via its remote Web-based administration and installation facilities

Intended Customers

IBM eNetwork Communications Server for OS/2 Warp, Version 5.0 is the recommended upgrade path if you are a user of Communications Manager/2 "gateway function" or Communications Server, Versions 4.0 or 4.1.

Key Prerequisites

- OS/2 Warp, Version 3.0, or later, for Communication Server and OS/2 Access Feature Version 5.0

- OS/2 Warp, Version 3.0, or later, for Communication Server and OS/2 Access Feature Version 4.1

- OS/2 Warp, Version 2.11, or later, for OS/2 Access Feature Version 4

- Windows NT Version 3.5 for Windows NT Access Feature

- Windows 95 for Windows 95 Access Feature

Planned Availability Date

September 26, 1997

At a Glance

eNetwork Communications Server offers:

- High Performance Routing (HPR) over WAN

- Branch Extender ─ an APPN® Border Node subset

- Multi-link Transmission Group (MLTG) support

- Integrated Host On-Demand

- Remote Web-based administration

- New Windows NT and Windows 95 Access Feature support

- All the robust, function-rich capabilities included in Communications Server for OS/2 Warp, Versions 4.0 and 4.1 and Communications Manager/2, such as:

    - Complete multiprotocol support

    - Complete Advanced Program-to-Program Network (APPN) node support

    - 32-bit API support

    - Connectivity

    - LAN and WAN adapter support

    - Superior performance over Microsoft SNA Server

For ordering, contact:
Your IBM representative, an IBM Business Partner, or IBM North America Sales Centers at

| 800-IBM-CALL | Reference: SE001 |

Description

IBM eNetwork Communications Server for OS/2 Warp, Version 5.0 is the follow-on to IBM Communications Server for OS/2 Warp, Versions 4.0 and 4.1. These products are based on the very popular Communications Manager/2 and AnyNet® products.

The following is a summary of the new functions and enhancements:

HPR over WAN

HPR increases data routing performance, availability and reliability. This version extends the support for HPR to WAN data link controls such as SDLC and other data link controls supported by GDLC. In addition it supports the case where a logical link appears to be a LAN link, but is actually transparently bridged or routed over a WAN (such as Frame Relay).

Branch Extender

Branch extender is an APPN border node subset that is designed to interconnect a remote branch office to an APPN WAN backbone network. Branch extender optimizes the peer-to-peer communication environment for administrators who want to connect LAN-based branches to one large WAN primarily based on a switched network. The branch extender enhances performance in large APPN networks. Specifically, branch extender:

- Reduces the number of network nodes in large APPN networks, enabling you to add additional branch networks

- Hides branch topology information

- Enables peer-to-peer communications between branches connected to the same APPN connection node

- Enables coexistence with PU gateway servers

- Reduces uplink CP-CP session traffic (WAN traffic)

- Isolates the branch network from backbone WAN traffic overhead

Multi-Link Transmission Group (MLTG)

The HPR support is extended to include APPN MLTG. This support allows you to add additional capacity during peak periods. Links can be added and removed from a MLTG dynamically without affecting any network applications. This can lower costs by allowing you to add the extra capacity only when needed. In addition, MLTG support can lower costs by allowing several circuits to be used together to achieve the capacity needed, a technique that lessens the impact of carrier pricing policies where very high speed links are significantly more expensive than the equivalent combination of lower speed links. The use of MLTGs also improves network reliability because if one link in an MLTG goes down, another link will automatically be used.

Host On-Demand

The IBM Host On-Demand function is integrated in this version of Communications Server for OS/2 Warp. Host On-Demand is an Internet-to-SNA interconnectivity solution that provides 3270 application discovery and access through the World Wide Web (WWW). Web users needing access to host applications such as public catalogs, software applications, databases, or other resources can use Host On-Demand from inside a Java™-enabled Web browser to access central computer data.

Remote Web-Based Administration

Communications Server for OS/2 Warp includes a new Web-based tool that provides a remote integrated cross-server administration capability. IBM takes Web-based server administration to a new dimension. A simple GUI provides a convenient, at-a-glance status of Communications Server while a consistent user interface preserves a common look and feel across server platforms.

Windows NT and Windows 95 Access Feature

This new function provides communications to host machines and other connections from Windows NT and Windows 95 client workstations.

API support includes:

- Common Programming Interface for Communications (CPI-C)

- Advanced Program-to-Program Communications (APPC)

- Request Unit Interface (RUI) and Conventional LU Application (LUA)

- Common Services Programming Interface (CSV)

Also included is support for the TN62 API. This function enables existing LU 6.2 applications to be used over a TCP/IP network without changes to the applications. This simplifies the installation and configuration and could reduce the memory requirements in client workstations.

This feature includes support for APPN as an end node and uses the advanced network features of HPR and dependent LU requester (DLUR). AnyNet support includes:

- AnyNet SNA over TCP/IP can be used to connect SNA sessions (LU0, 1, 2,3, or 6.2), dependent LU 6.2, APPC3270, display sessions, or 5250 sessions through a TCP/IP network.

- AnyNet Sockets over SNA enables TCP/IP application programs using the Winsock 1.1 or 2.0 socket interface to communicate over an SNA network.

Communications Server Performance

Communications Server delivers superior 3270 performance to the Microsoft SNA Server. This is the conclusion of The Tolly Group (Tolly Group Document 6273) report that compares the efficiency of Communications Server for OS/2 Warp, V4.1 and Microsoft's SNA Server V2.11 in several PC platforms and gateway configurations. They measured gateway transaction throughput and corresponding CPU utilization and response time of each product. Communications Server for OS/2 Warp, Version 5.0 is an extension to the Version 4.1 release and the performance characteristics measured from the previous version (V4.1) were maintained.

The results show that Communications Server delivers superior transaction throughput and faster response time while requiring less CPU resources. Communications Server throughput with one processor is more then double SNA Server's throughput with dual processors. Furthermore, Communications Server running on a single

Pentium® platform has better response time then all configurations of SNA Server!

For more details on The Tolly Group report, visit our Web page:

http://www.networking.ibm.com/cms/cs2tolly1.html

Communications Server License

The license for the IBM Communications Server for OS/2 Warp, Version 5.0 includes:

- The IBM Communications Server for OS/2 Warp, Version 5.0

- One license for the Access Feature for either the OS/2 Access Feature for OS/2 2.11 or OS/2 Warp (Version 4.0 or Version 4.1), the Windows Access Feature Version 4.1, Windows NT, or Windows 95.

- The IBM Personal Communications AS/400 and 3270 ─ APPC/LUA Entry Level emulator for administrative use on the IBM Communications Server for OS/2 Warp, Version 4.1. It is not licensed to be distributed to PCs attached to the server.

The Access Feature is designed for use on desktop machines other than the Server. These features may be ordered only after the Communications Server has been ordered or acquired.

Communications Server Packaging

A CD-ROM containing the following:

- IBM Communications Server for OS/2 Warp, Version 5.0
- Access Features for:
  - OS/2 2.11 and OS/2 Warp
  - Windows 3.1
  - Windows NT Versions 3.51 and 4.0
  - Windows 95
- Product files
- Documentation
- Productivity Aids
- Sample response files
- API support files
- Adapter device drivers

Year 2000

This product is Year 2000 Ready. When used in accordance with its associated documentation, it is capable of correctly processing, providing, and/or receiving date data within and between the twentieth and twenty-first centuries, provided all other products, (for example, software, hardware, and firmware) used with the product properly exchange date data with it.

Product Positioning

IBM's Communications Manager/2 and Personal Communications/AS400 and 3270 are the workstation communications products of choice for millions of customers.

IBM recently introduced the products that continue the natural evolution of this widely recognized, industry-leading SNA communications software. These products are:

- The IBM Communications Server for OS/2 Warp, Version 4 for customers running OS/2 2.11, or later

- The IBM Communications Server for OS/2 Warp, Version 4.1 for customers running OS/2 Warp Version 3, or later

- IBM Personal Communications Version 4.1 family of products (PCOMM) with powerful client communications for OS/2, DOS, Windows 3.1, and Windows 95 desktop environments.

The introduction of Communications Server for OS/2 Warp, Version 5.0 represents the next phase of IBM communications support for Multiprotocol, SNA, and APPN. Communications Server is the natural path for CM/2 customers who need the advanced, all-in-one multiprotocol server support, and the other functions described in this announcement.

With the PCOMM family of client products, IBM offers a line of clients across multiple operating system environments. PCOMM provides customers with 3270 and 5250 emulation, SNA and TCP/IP client support, and automation tools for their workstations running OS/2, DOS/Windows, and Windows 95.

PCOMM for OS/2 Version 4.1 is the natural migration path for CM/2 customers who need the advanced emulation capabilities provided in PCOMM, with APPN and API support for the desktop.

To learn about the PCOMM family of client products, refer to Software Announcement 296-084, dated March 19, 1996, or access:

http://www.raleigh.ibm.com/pcf/pcfprod.html

To learn more about the Communications Server product go to our WWW home page at:

http://www.raleigh.ibm.com/cm2/cm2prod.html

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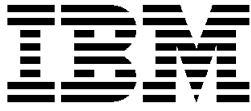
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Publications

One copy of *Communications Server for OS/2® Warp: Quick Beginnings* (GC31-8189) is shipped in the program package.

Communications Server for OS/2 Warp: Quick Beginnings (GC31-8189) can be ordered separately from IBM after planned availability. To order, contact your IBM authorized dealer or IBM representative or call 800-879-2755.

The following Communications Server publications can be ordered separately or as a set using BOF number SBOF-7015 entitled Programming References:

Title	Order Number
32-Bit ACDI Programming Reference	SC31-7182
32-Bit APPC Programming Guide and Reference	SC31-8148
32-Bit Application Programming Guide	SC31-8152
32-Bit Conventional LU Application Programming Reference	SC31-8149
32-Bit System Management Programming Reference	SC31-8151
32-Bit X.25 Programming Reference	SC31-8150
Developer's Toolkit for ANDIS	SC31-7179
Developer's Toolkit for Intelligent Adapters	SC31-7183
CPI-C Reference Supplement	SC31-8153
Service Point Application Router and Remote Operations Service Guide	SC31-8188

The following Communications Server publications can be ordered separately or as a set using BOF number SBOF-7016 entitled Planning and Reference Guides:

Title	Order Number
Network Administration and Subsystem Management Guide	SC31-8181
Command Reference	SC31-8183
Frame Relay User's Guide and Reference	GC31-8319
Glossary	SC31-8184
Guide to AnyNet® LAN Gateway	GC31-8320
Guide to AnyNet SNA over TCP/IP	GC31-8193
Guide to AnyNet Sockets over SNA	GC31-8191
Problem Determination Guide	SC31-8186
Response File Reference	SC31-8187
AnyNet Guide to APPC over TCP/IP for Windows®	SV40-0215

Displayable Softcopy Publications: The Communications Server CD-ROM has the following Communications Server publications in BookManager®, PostScript, and OS/2 INF view formats (except where noted):

- 32-Bit ACDI Programming Reference

- 32-Bit APPC Programming Guide and Reference

- 32-Bit Application Programming Guide

- 32-Bit Conventional LUA Programming Reference

- 32-Bit System Management Programming Reference

- 32-Bit X.25 Programming Reference Command Reference

- CPI-C Reference Supplement

- Developer's Toolkit for ANDIS

- Developer's Toolkit for Intelligent Adapters

- Frame Relay User's Guide and Reference (BookManager and Postscript only)

- Guide to AnyNet LAN Gateway

- Guide to AnyNet SNA over TCP/IP

- Guide to AnyNet Sockets over SNA

- Message Reference (INF format only)

- Network Administration and Subsystem Management Guide

- Problem Determination Guide

- Response File Reference

- Service Point Application Router and Remote Operations Service Guide Quick Beginnings

These IBM APPC Networking Services for Windows 1.0 publications are on the CD-ROM in BookManager and PostScript formats:

- Getting Started

- Administrator's Guide

- Application Programmer's Reference

- Configuration Parameters Reference for Administrators and Application Programmers

The IBM AnyNet Guide to APPC over TCP/IP for Windows is on the CD-ROM in BookManager and PostScript formats.

Open Blueprint®

Communications Server provides the desktop screen look and feel. Its implementation is consistent with the User Interface function described in IBM's Open Blueprint. It provides the OS/2 Presentation Manager® interface from IBM to facilitate open, distributed, multivendor interoperability.

Communications Server provides the capability for distributed parts of an application to "converse" with one another. Its implementation is consistent with the Conversational function described in IBM's Open Blueprint. It provides the Common Programming Interface for Communications (CPI-C) industry-standard interface from X/Open. It supports the Advanced

Program-to-Program Communication (APPC) protocol from IBM to facilitate open, distributed, multivendor interoperability.

Communications Server enables Sockets applications to communicate across a SNA network. These Sockets applications can provide the Remote Procedure Call function that enables distributed parts of an application or applications to request service from the other part and await reply.

Communications Server provides the ability to synchronize services and have them retain integrity. Its implementation is consistent with the Transaction Manager function described in IBM's Open Blueprint.

This Systems Network Architecture Sync Point support function allows distributed transaction coordinators, such as DB2® for OS/2, to provide products that implement two-phase commit protocols. These protocols, referred to as Syncpoint Managers, can be invoked by an application program to define synchronization points (sync points) where all changes to distributed resources are consistently either committed or backed out, even if errors or failures occur. Sync Point Managers make it easier for programmers to write reliable, distributed applications programs by reducing the application logic required to recover from application errors, system failures, and network failures.

IBM has announced the following Sync Point Managers built on the LU6.2 Sync Point support. Refer to Software Announcement 296-021, dated January 30, 1996.

- Distributed Relational Database Architecture™ (DRDA®), Sync Point Manager support of DB2 for OS/2 Version 2.1.1

- Distributed Database Connection Services (DDCS), for OS/2 Multi-User Gateway Version 2.3.1

Communications Server 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. It supports the Multi-Protocol Transport Network (MPTN) industry-standard protocol from X/Open to facilitate open, distributed, multivendor interoperability.

Communications Server provides the ability to transport information over wide area and local area networks. Its implementation is consistent with the Transport Services function described in IBM's Open Blueprint. It provides the Berkeley Sockets interface from the University of California at Berkeley. It also supports the Transmission Control Protocol/Internet Protocol (TCP/IP) industry-standard protocol from the Internet Engineering Task Force (IETF) and the Advanced Program to Program Network (APPN®) industry-standard protocol from the APPN Implementers Workshop to facilitate open, distributed, multivendor interoperability.

Communications Server provides for the manageability of hardware and software resources. Its implementation is consistent with the Systems Management function described in IBM's Open Blueprint.

Communications Server supports the Systems Network Architecture/Management Services (SNA/MS) protocol from IBM and the Common Management Information Protocol (CMIP) industry-standard protocol from the International Telecommunications Union ─ Telecommunications (ITU-T) and the International Organization for Standardization and its associated

technical committee (ISO/IEC) to facilitate open, distributed, multivendor interoperability.

Communications Server provides support for building distributed or client/server applications. Its implementation is consistent with the Development Tools function described in IBM's Open Blueprint. It supports the building of applications and solutions that use the standard interfaces associated with the various components and resource managers of the Open Blueprint. The applications and solutions can be distributed across the various parts of the network to facilitate open, distributed, multivendor interoperability.

Communications Server provides the collection of procedures used to dynamically establish, maintain, and terminate connections in a communications network. Its implementation is consistent with the Signalling and Control Plane function described in IBM's Open Blueprint. It supports the Integrated Services Digital Network (ISDN) industry-standard protocol from the ITU-T Conferencing industry-standard protocol from the ITU-T to facilitate open, distributed, multivendor interoperability.

Communications Server provides the structure to let networks accommodate and exploit high-speed and highly-reliable transmission technologies. Its implementation is consistent with the Subnetworking function described in IBM's Open Blueprint. It supports the following standards to facilitate open, distributed, multivendor interoperability.

- LAN (Ethernet, token ring) industry-standard protocol from the International Organization for Standardization and its associated technical committee (ISO/IEC)

- ISO Data Link Control (ISO DLC) industry-standard protocol from the International Organization for Standardization and its associated technical committee (ISO/IEC)

- Frame Relay industry-standard protocol from the ITU-T

- Asynchronous Transfer Mode (ATM) industry-standard protocol from the ITU-T and the ATM Forum

Technical Information and Specified Operating Environment

Hardware Requirements

Communications Server for OS/2 Warp, Version 5.0 supports IBM and non-IBM Intel®-processor-based PCs that are supported by IBM's OS/2 Warp Server, Version 4 or by IBM's OS/2 Warp, Version 3, or later, operating system. PCs must have an Intel 80486SX processor, or later, adequate RAM, and adequate hard drive storage capacity. If Communications Server is to be locally installed, the PC must also have a CD-ROM drive.

Memory and hard-drive resource capacity required to install and run Communications Server and the Access Feature will depend on a number of factors including:

- The OS/2 configuration
- Other installed user applications
- The Communications Server and OS/2 Access Feature configuration

The following estimates of Communications Server and OS/2 Access Feature (exclusive of OS/2) memory and hard drive resource requirements are provided as a guide. Customers should consult OS/2 documentation

and their application documentation to determine the memory and hard drive storage required for those parts of their overall installation.

Memory Requirements

- Communications Server memory requirements

    – About 4MB RAM for a small gateway configuration with approximately 20 downstream PCs

    – About 10MB RAM for a robust gateway configuration with approximately 300 downstream PCs

- OS/2 Access Feature requires approximately 3MB RAM for AN APPC, or LUA, or DLUR configuration

Hard Drive Requirements: Communications Server hard drive requirements for the base product:

Component	Hard Drive (MB)
Typical Communications Server	21.8
Typical OS/2 Access Feature	15.9
Minimum installation	5.0[1]

[1] The OS/2 Access Feature can now be installed in as little as 5MB. If you have a stable configuration and limited hard drive space, you can reduce the amount of storage Communications Server requires by removing the components that enable you to change your configuration or the functions you have installed. If you later need to change the configuration you will need to reinstall.

Communications Server hard drive requirements for additional features:

Component	Hard Drive (MB)
Configuration Services	4.2
Keylock	0.04
Problem Determination Aids	1.3
Productivity Aids	4.1
Remote Operations	0.4
Subsystem Management	0.7
16-bit Toolkit Samples and Examples	5.0
32-bit Toolkit Samples and Examples	2.7
WIN-OS/2® CPI-C Toolkit and Samples	0.3
WIN-OS/2 CPI-C	0.2

Communications Server hard drive requirements for documentation:

Component	Hard Drive (MB)
Command Reference	0.18
Documentation ─ Administration	1.8
Documentation ─ Programming	5.7
Glossary	0.3
Message Reference	1.3
Problem Determination Guide	0.6
Response File Reference	0.4
Quick Beginnings	0.6

Keyboards: Keyboards are supported via the base operating system for Communications Server and OS/2 Access feature.

Printers and Plotters: Printers and plotters are supported via the base operating system.

Communications Adapters: A Communications ServerPC may require one or more communications adapters (and appropriate cables). The PC may also require a modem for SDLC, Asynchronous, or X.25 communications. The number of slots on a PC available for communications may also be affected by the other devices that the PC requires.

WAN Communications Adapter Support: The adapters and device drivers are supported by the adapter vendors. The Communications Server Web pages have the most complete and current hardware and software compatibility information. The URL for the compatibility page is:

http://www.networking.ibm.com/cms/cm2adap.html

Communications Server is compatible with these ISA/EISA bus WAN adapters:

IBM Adapters

- ISA SDLC/ASYNC Communications Adapter switched and asynchronous connections (IRQ 3 and 4 only)

- Wide Area Connector for SDLC, X.25 over leased and switched connections

- Wide Area Connector for Frame Relay over leased connections

- Multiprotocol Communications Adapter for ISA for SDLC over leased, switched, and asynchronous connections

- X.25 Co-Processor for X.25 over leased connections

- WaveRunner™ Digital Modem for SDLC, X.25 and IDLC over ISDN

- ATM (LAN Emulation) adapters for LAN protocols

- ISDN Interface Co-Processor for SDLC, X.25, IDLC over ISDN

- SDLC Adapter for SDLC over leased and asynchronous connections

- Serial/Parallel Adapter (Asynchronous port) for SDLC over asynchronous connections

- Realtime Interface Co-Processor Multiport (supported via RTIC support Program)

- Realtime Interface Co-Processor Multiport Model 2 (supported via RTIC support Program)

- Realtime Interface Co-Processor Multiport Model 2 (supported as a shallow adapter) for SDLC over leased, switched, and asynchronous connections

- Coax adapters for LAN over coax (3174 Peer):

    – Advanced 3278/79 Emulation Adapter
    – 3278/79 Emulation Adapter

- Twinax adapters for LU6.2 applications

    – Enhanced 5250 Display Station Emulator Adapter over Twinax

Non-IBM Adapters

- ARN for X.25 over ISDN

- Diehl (subsidiary of Eicon Technology) for SDLC, X.25, IDLC over ISDN

- Digi International for SDLC over leased and switched connections

- Eicon Technology Adapters for SDLC, X.25, Frame Relay over Leased, Switched, and ISDN

- MicroGate Digital Services Adapter (DSA) for SDLC over leased, switched and asynchronous connections

- Synaptel for SDLC, X.25, IDLC, DLSW, over leased, switched, and ISDN

- Coax adapters for LAN over coax (3174 Peer):

  - DCA IRMA 3 Convertible
  - Advanced 3270 Adapter by Attachmate

- Twinax adapters for LU6.2 applications

  - Affinity Systems

Communications Server supports these Micro-Channel bus WAN adapters[2]:

IBM Adapters

- Wide Area Connector for SDLC, X.25 over leased and switched connections

- Wide Area Connector for Frame Relay over leased connections

- WaveRunner Digital Modem for SDLC, X.25, and IDLC over ISDN

- ATM (LAN Emulation) adapters for LAN protocols

- ISDN Interface Co-Processor/2 Model 2 for SDLC, X.25, IDLC over ISDN

- PS/2® Dual Asynchronous Adapter/A for SDLC over asynchronous connections

- X.25 Interface Co-Processor/2 for X.25 over leased connections

- IBM PS/2 Multiprotocol Adapter/A for SDLC over leased, switched, and asynchronous connections

- IBM Asynchronous/SDLC V.32 Modem/A (MPA Card with modem) SDLC over asynchronous connections

- IBM P370 and P390 Adapters containing VTAM® support

- IBM Realtime Interface Co-Processor Portmaster® Adapter/A (supported via RTIC Support Program)

- IBM Realtime Interface Co-Processor Portmaster Adapter/A (supported as a shallow adapter) for SDLC over leased, switched, and asynchronous connections

- ARTIC 960 adapter for SDLC and X.25 over leased and switched connections

- Coax adapters for LAN over coax (3174 Peer)

  - IBM 3270 Connection (DFT)

  - DCA IRMA 3 Convertible (MCA and ISA bus adapter)

  - Advanced 3270 Adapter/2 by Attachmate

- Twinax adapters for LU6.2 applications

  - IBM S/36/38 Workstation Emulation Adapter/A

  - IBM 5250 Emulation Adapter/A

Non-IBM Adapters

- ARN for X.25 over ISDN

- Diehl (subsidiary of Eicon Technology) for SDLC, X.25, IDLC over ISDN

- Digi International for SDLC over leased and switched connections

- Eicon Technology Adapters for SDLC, X.25, Frame Relay over Leased, Switched, and ISDN

- Synaptel for SDLC, X.25, IDLC, DLSW, over leased, switched, and ISDN

Communications Server supports these PCI bus WAN adapters[2]:

IBM Adapters

- ARTIC 960 adapter for SDLC and X.25 over leased and switched connections

Non-IBM Adapters

- Synaptel for SDLC, X.25, IDLC, DLSW, over leased, switched, and ISDN

- Enhanced 5250 Display Station Emulator Adapter over Twinax

- Wide Area Connector for SDLC, X.25 over leased and switched connections

- Wide Area Connector for Frame Relay over leased connections

[2] Because of machine interrupts and DMA usage conflicts, not all combinations of communications adapters can be used concurrently by Communications Server.

Modems: Communications Server supports these types of modems:

- Asynchronous modems (both 14.4 and 28.8 Kbps).

  - Modems 100% compatible with the Hayes AT® command set

  - IBM modems that conform to the ITU-T (CCITT) V.24/V.28 (EIA RS-232-D) and V.35 interface standards

  - Non-IBM asynchronous modems are also supported, as well as the base function of ITU-T (CCITT) V.24 (EIA RS-232-D) standard data terminal equipment (DTE) to data circuit-terminating equipment (DCE) interface for asynchronous communications

  - Modems that conform to the RS232D standard DTE to DCE interface

- Synchronous Modems and CSU/DSU units that support the V.25bis command set

- Modems 100% compatible with the Hayes AutoSync protocol

- Cellular modems

- PCMCIA modems

X.25 users will require a synchronous connection to the Link Access Protocol Balanced (LAPB) link. Contact your network supplier for the recommended connection type and modem.

Communications Server provides initialization strings for, and has been tested with, a wide variety of asynchronous and Hayes AutoSync-compatible modems. A list of the modems, which is regularly updated, may be obtained online from the CM/2 section of the OS2DF2 forum on CompuServe (file name CMMODM.TXT). The Communications Server Web pages have the most complete and current hardware and software

compatibility and modem information. The URL for the compatibility page is:

http://www.networking.ibm.com/cms/cm2adap.html

PCMCIA Adapter Support: Communications Server is compatible with these PCMCIA adapters. The adapters and device drivers are supported by the adapter vendors. The Communications Server Web pages have the most complete and current hardware and software compatibility information. The URL for the compatibility page is:

http://www.networking.ibm.com/cms/cm2mkt.html

- ARN for X.25 over ISDN
- Diehl (subsidiary of Eicon Technology) for SDLC, X.25, IDLC over ISDN
- IBM 5250 PCMCIA card for APPC applications
- IBM ISDN Active 2000 PCMCIA adapter

LAN Adapter Support: Communications Server is compatible with a variety of LAN adapters. The adapters are listed in the Communications Server Web pages at this URL:

http://www.networking.ibm.com/cms/cm2adap.html

LAN Support Through MPTS: Communications Server uses the LAN Adapter and Protocol Support (LAPS) transport. This support is provided via the Multiprotocol Transport Services (MPTS) (included in the package). MPTS can also be included as part of the operating system package that you use.

Security: Users are responsible for evaluation, selection, and implementation of security features, administrative procedures, and appropriate controls in application systems and communication facilities. To assist the user in this effort, Communications Server has implemented the following optional facilities:

Session Level Encryption is enabled as an optionally configured function for all LU types. It operates as an exit facility that is compatible with the IBM Transaction Security Services (TSS) available with the IBM 4755 Cryptographic Adapter. The 4755 facility provides key management and data confidentiality services compliant with the IBM Common Cryptographic Architecture. Other adapters compliant with the IBM Common Cryptographic Architecture are also supported.

Users of functions/applications should also rely on the host application for security, audibility, and control.

Supported Security Adapters

- 4755 Cryptographic Adapter models 3, 13 (ISA bus)
- 4755 Cryptographic Adapter models 4, 14 (MCA bus)
- Other adapters compliant with the IBM Common Cryptographic Architecture

Controllers: Communications Server supports these IBM host communication controllers:

- 2217 Nways™ Multiprotocol Concentrator
- 3172 Nways Interconnect Controller
- 3174 Establishment Controller
- 3274 Control Unit
- 3705 Communications Controller
- 3720 Communications Controller
- 3725 Communications Controller
- 3745 Communications Controller
- 3746 Nways Multiprotocol Controllers Model 900 and 950
- 4702 Processor
- 5294 Control Unit
- 5394 Remote Controller (AS/400®)
- 5494 Remote Controller (AS/400)
- 7845 ISDN Network Terminator Extended
- 9370 Telecommunications and Workstation Subsystem Controllers

Protocol Converters: Communications Server supports these IBM protocol converters:

- 7820 ISDN Terminal Adapter (Basic Rate)
- 7830 ISDN Terminal Adapter (Basic to Primary Rate)
- 8209 LAN Bridge (token ring 802.2 to Ethernet 802.3)

Communications Server supports these IBM asynchronous protocol converters for ACDI APIs:

- 3708 Model 001
- 3710 Network Controller
- 7171 Model 001
- Series/1™ Note: With Yale ASCII Version 2 IUP
- 3174 Models 51R or 52R
- 9370 ASCII Subsystem
- 3172 SDLC (SNA over async)

Windows Access Feature Hardware Requirements

The IBM APPC Networking Services for Windows Version 1.0.2 and IBM AnyNet APPC over TCP/IP Version 1.0 for Windows support IBM and non-IBM Intel processor based PCs supported by Microsoft® Windows 3.1 or Microsoft Windows for Workgroups 3.1, or later. These systems include but are not limited to: IBM ThinkPads, PS/Notes™, PS/1s, PS/2s, PS Value Points, PC 300s, PC 500s, PC 700s, Aptiva®, IBM Industrial Computers, PC Servers, PS/55s, and non-IBM PCs, including SMP machines, or any 100% IBM-compatible system with a minimum 386 processor and 4MB RAM (8MB recommended). An appropriate communications adapter is required to support the selected connectivity type.

For detailed hardware requirements, refer to Software Announcement 294-562, dated September 20, 1994, and refer to Software Announcement 295-110, dated March 21, 1995.

NLS Support

Communications Server is available in single-byte character set (SBCS) and double-byte character set (DBCS) versions and is enabled for several language groups including Latin I (plus Icelandic), Latin II, and Latin V (Turkey).

Communications Server is available in

- Chinese Simplified
- Chinese Traditional
- English
- French
- German
- Italian

- Japanese
- Korean
- Portuguese, Brazilian
- Spanish

Software Requirements

Operating System: Communications Server supports IBM's OS/2 Warp, Version 3, or later operating system, including service packs and translated versions.

Host Communications Programs

APPC (LU6.2) Support

Program	Program Number	Version
CICS/MVS®	5665-403	2.1.2, or later
CICS/VSE®	5686-026	2.2, or later
ACF/VTAM® for MVS/ESA™	5685-085	3.4.2, or later
	5695-117	4.2, or later for DLUR/S, Session Security, Session level Encryption, and/or AnyNet support
ACF/VTAM for VM/ESA®	5684-095	3.4.1, or later
	5654-010	4.2 for APPN and DLUR/S support
ACF/NCP	5688-231	6.1, or later
	5648-063	7.1, or later
VSE/VTAM	5666-363	3.4, or later
APPC NS/WIN		1.01, or later
RS/6000™ AIX®	5756-030	3.2.1, or later
OS/400®	5738-SS1	2.3, or later
	5763-SS1	3.0, or later
Communications Server for AIX	5765-652	4, or later

APPN Support

Program	Program Number	Version
OS/400	5738-SS1	3.1, or later
ACF/VTAM for MVS/ESA	5695-117	4.1, or later (Session Security and Session Level Encryption) 4.2, or later for DLUR/S support 4.3, or later for HPR support 4.4, with APAR OW25739 for Branch Extender support
ACF/VTAM for VM/ESA	5654-010	4.2, or later for DLUR/S support
VSE/VTAM	5686-065	4.2
3174 Controller		Configuration Support C
AIX SNA Server/6000	5765-247	2.1, or later
AIX SNA Gateway/6000	5765-261	2.1, or later
Communications Server for AIX	5765-652	4, or later
APPC NS/WIN		1.02

HPR Support

Program	Program Number	Version
ACF/VTAM for MVS/ESA	5695-117	4.3, or later
OS/400	5738-SS1	3.0, or later
ACF/NCP	5648-063	7.3, or later
AIX SNA Server/6000	5765-247	2.1.1
Communications Server for AIX	5765-652	4, or later

AnyNet Support

Program	Program Number	Version
OS/400	5738-SS1	2.3, or later, including AnyNet/400 APPC over TCP/IP AnyNet/400 Sockets over SNA
ACF/VTAM for MVS/ESA	5685-085 features	3.4.2, or later. APPC over TCP/IP, Sockets over SNA for both MVS® and OS/2
	5695-117 features	4.2, or later, SNA over TCP/IP, Sockets over SNA for both MVS and OS/2, Sockets over SNA Gateway for OS/2 only
	5695-117 features	4.3, or later, SNA over TCP/IP Sockets over SNA for MVS only
AIX SNA Server/6000	5765-247 features	2.1.1 and 2.1.2, or later, AnyNet/6000 APPC over TCP/IP, AnyNet/6000 Sockets over SNA
Communication Server for AIX	5765-652	4, or later

LUA (LU0) Support

Program	Program Number	Version
IMS™ DB/DC	5740-XX2	1.2, or later
	5665-332	2.1, or later
IMS/ESA® DB	5665-408	3.0, or later
	5685-012	4.0, or later
	5695-176	5.0, or later
CICS/VSE	5686-026	2.2, or later
CICS/MVS	5665-403	2.1.2, or later
CICS/ESA®	5685-083	3.3, or later
	5655-018	4.1, or later

Host Communications Controller Programs

Controller	ACF/NCP	Version/Release
3720	5668-738	5.4
3725	5668-854	4.3.1
3745	5668-738	5.4
	5688-231	6.2, or later
	5648-063	7.1, or later
3746-900	5688-231	6.2, or later
	5648-063	7.1, or later
3720	5668-791	2.1
3725	5688-035	3.4
3745	5688-035	3.4, or later
3746-900	5688-035	3.8

ISDN Connection Support

The following programs are required for support of the IBM ISDN adapters:

- ISDN Interface Co-Processor Support Program 1.2, or later
- WaveRunner Adapter Support Program

Use of the IBM 7830 Primary Adapter requires the associated licensed program:

- 7830 ISDN Primary Gateway (5612-195)

Appropriate programs are also required for:

- 3174 Control Unit with ISDN BRI Adapter
- AS/400 with BRI Feature

Network Management

IBM Products

- NetView® for OS/2

- NetView 3.1, or later, for HPR support

  - for MVS/ESA: 5655-007

- NetView 2.2, or later

  - for MVS/ESA: 5685-111
  - for MVS/XA™: 5685-138
  - for VM/ESA: 5756-051
  - for VM: 5684-111

- SystemView® for AIX: 5765-527 and SystemView Server for AIX (V4)

  - Manages OS/2, DOS, and Windows systems among others

- NetView for AIX 3.0, or later: 5696-731 or 5696-905

- NetView DM for MVS 4.0, or later: 5685-016

- NetView DM for VM 2.0, or later: 5684-017

- AIX Netview DM/6000 1.1, or later: 5765-196

- NetView DM for OS/2 2.1, or later: 53G3941 or 53G3924

- Distributed Console Access Facility (DCAF) 1.1, or later: 5621-414

OEM Products

- Novell NetWare 3.11, or later
- Novell NetWare for SAA® 1.3, or later

LAN Gateway: The LAN Gateway function interoperates with these products:

- LAN-to-LAN over WAN (LTLW) V1.09, or later
- Entry LAN-to-LAN over WAN (ELTLW) V1.03, or later
- AnyNet IPX over SNA Gateway for OS/2 V1.0
- IBM 2217 Nways Multiprotocol Concentrator Release 1 and 2

The LAN Gateway function in Communications Server migrates control files and other pertinent user modified information from these products:

- LAN to LAN over WAN V1.09, or later
- Entry LAN to LAN over WAN V1.03, or later
- AnyNet IPX over SNA Gateway for OS/2 V1.0

TN3270E Server: The TN3270E Server adheres to the following industry standards:

- RFC 1576 ─ TN3270 Current Practices
- RFC 1646 ─ TN3270 Extensions for LUname and Printer selection
- RFC 1647 ─ TN3270 Enhancements

The TN3270E Server supports any downstream TN3270 or TN3270E client which adheres to these RFCs. For example these client applications are supported:

- IBM Personal Communications 3270 for OS/2 Version 4.x
- IBM Personal Communications 3270 for Windows Version 4.x
- IBM TN3270 (OS/2, DOS, and AIX)
- XANT
- Brixton 3270 Open Client (AIX, OS/2)
- PMANT
- Wall Data RUMBA Office (Windows)
- Attachmate Extra! Personal Client (Windows)
- Reflection on Windows 3.11
- Chameleon on Windows 3.11

Host On-Demand: Host On-Demand requires any Web server capable of serving Java™ applets to be installed on the same machine as Communications Server for OS/2 Warp, Version 5.0.

Windows Access Feature Software Requirements

IBM APPC Networking Services for Windows and IBM AnyNet APPC over TCP/IP for Windows require Microsoft Windows 3.1, or Microsoft Windows for Workgroups 3.1, or later, running in enhanced mode with DOS 5.0, or later.

Access Feature for Windows requires:

- Windows 3.1
- Windows 95
- Windows NT™ 3.51 or 4.0

AnyNet APPC over TCP/IP for Windows requires IBM APPC Networking Services for Windows (included in the Windows Access Feature) and one of the following TCP/IP communications products:

- IBM TCP/IP for DOS, Version 2.1.1, with CSD UB10718
- FTP PC/TCP Network Software for DOS/Windows, Version 3.0
- FTP PC/TCP OnNet 1.1 for DOS/Windows
- Microsoft TCP/IP 3.11a for Windows for Workgroups, Version 3.11
- NetManage Chameleon TCP/IP for Windows, Version 4.01
- Novell LAN Workplace™ for DOS, Version 4.2

SNA Gateway (Communications Server only)

Communications Server provides a full-function, cost-effective, SNA gateway. The gateway enables multiple LAN-attached OS/2, Windows, or DOS PCs to access multiple System/370™ or System/390® hosts through one or more physical connections to one or more hosts. The gateway is optimized to provide cost-effective host connectivity by sharing communications resources such as adapters and telephone connections.

The Communications Server gateway has support for:

- SNA protocols LU0, 1, 2, 3, and dependent LU6.2 (APPC). The gateway also supports LU0, 1, 2, or 3 to an AS/400 host using SNA pass-through.
- Multiple physical unit type 2.0 (PU2.0) and up to 254 logical units (LUs) per PU. To increase efficiency, LUs may be dedicated to a PC or pooled among PCs.
- Up to 254 concurrently active PCs per LAN adapter to transparently access one or more System/390 hosts. Implicit PC definitions simplify gateway configurations and management since downstream PCs are not required to be configured on the Communications Server.
- Downstream applications and PCs using standard SNA connectivity protocols for LU0, 1, 2, 3 and dependent LU6.2, and communicating through an SNA Gateway to a host. The downstream PCs include Novell NetWare for SAA and APPLE Macintosh SNAps Gateway.
- Dedicated and pooled LU definitions. The LUs defined in the gateway can be dedicated to a particular PC or pooled among multiple PCs. Pooling allows PCs to share common LUs, which increases the efficiency of the LUs and reduces the configuration and startup requirements at the host. You can also define multiple LU pools, each pool associated with a specific application. When a link is defined through the gateway between a PC and the host, the LU is activated when the session is established and returned to the pool for access by other PCs when the session is ended.
- Automatic host backup, link which enables each primary link to be defined with a secondary or backup link. This backup link is automatically activated when activation of the primary link fails.
- Session inactivity management (auto logoff) which supports configuration of a SNA gateway to automatically stop a session after a specified period of inactivity if there are other PCs waiting. This procedure helps increase the number of shared logical units that are available.
- Pools can be unlimited in size by defining the same pool name on multiple host links.
- The transmission of network management vector transports (NMVTs) between the gateway and the host. For example, commands coming from the NetView program in the host are received in the gateway and may be passed to and used by another application on the gateway, such as IBM LAN Network Manager.
- Each host views the SNA gateway as an SNA PU2.0 node, supporting one or more LUs per PC. As far as the host is concerned, all LUs belong to the SNA gateway PU. The SNA gateway can have multiple host connections simultaneously and can direct different PC sessions to specified hosts. However, only one host (and it must be on a link with a CP PU) can act as the focal point, and the CP name is appended to all NMVTs routed through the gateway.
- Upstream multiple PU over a single SDLC link

- Downstream PU visibility allows run commands and NMVTs to be passed through the gateway to the workstation. This is most useful with DLUR or multiple PUs over a single SDLC link. It allows sharing of a host link while still having host visibility. For example this is used by 470X banking terminals.
- SDLC supports 16 or more upstream and downstream physical connections, and two-way simultaneous full-duplex communications.
- The WAN line speed has been increased up to 2.0Mbps (T1/E1).
- Communications Server can now act as the multipoint primary control for downstream PCs. This support is for PCs and devices connected to the server over SDLC, on a multidrop line over synchronous adapters such as the IBM WAC, MPA, and ARTIC.
- Dependent LU support across a TCP/IP network with SNA Subarea and APPN support upstream from the configured gateway.
- Dependent LU support across an SNA network with TCP/IP support upstream from the configured gateway.

SNA Gateway Summary: The following table summarizes the SNA Gateway function provided by Communications Server.

Feature	Description
Active PCs and printers	2,000 active connections 254 per LAN Adapter (LAN) 128 Virtual Circuits (X.25)
Simultaneous sessions	More than 20,000 LU6.2 tested
Automatic logoff support	Yes
Downstream DLC	AnyNet (SNA over TCP/IP) ATM (LAN emulation) Ethernet PC Network token ring SDLC, X.25, and IDLC (synchronous, asynchronous, and AutoSync)
Downstream PCs	Any product that supports standard SNA connectivity protocols for LU0, 1, 2, 3 and 6.2.
Dynamic additions and changes	Yes
Implicit workstation support	Yes
LU pooling	For single hosts and across multiple hosts
Load balancing	Across active links in the pool
Multiple PU support	Yes, 16 tested
Automatic host backup link	Yes
Maximum number of LUs	254 per PU
Mode of operation	Multiple downstream PUs which are transparent to the host (except when through DLUR)
Segmenting support	Yes
Supported LU types	LU0, 1, 2, 3, and dependent LU 6.2

Feature	Description
Upstream DLC	AnyNet (SNA over TCP/IP) ATM (LAN emulation) Ethernet token ring SDLC, X.25, and IDLC (synchronous, asynchronous, and Autosync) Twinax (for 3270 passthrough)

Contacting IBM

The Internet

- The Communications Server home page on the Internet has general product information as well as service information about APARs and fixes. There are two ways you can get to the home page:

  - In the Communications Server folder select the Access Home Page icon

  - Using an Internet browser such as WebExplorer™, go to the following URL:

    http://www.networking.ibm.com/cmsabt.html

- The OS2DF2 forum on CompuServe

  In addition to a large and active group of users, this forum is monitored by Communications Server Development.

- The OS2CM2 CFORUM

  This forum is monitored by Communications Server Development.

  - In the U.S., access the OS2CM2 CFORUM on the OS2BBS bulletin board via TalkLink® .

    If you do not have access to TalkLink/OS2BBS, call 800-547-1283 (U.S. and Canada only). TalkLink administration personnel will send you a registration package that lists the available features and the current subscription rates. You should receive the registration package approximately two weeks after calling. Return the necessary documents and TalkLink administrations personnel will send you a welcome package that contains the software you need to access TalkLink/OS2BBS.

  - IBMLink™ customers can register via SMARTLink's new TalkLink selection.

  - In Canada, access the OS2CM2 CFORUM via IBMLink.

- IBMLink

  From IBMLink, you can locate the Communications Server for OS/2 Warp, Version 5.0 and Communications Server information APARs or create electronic problem reports.

  To view the information APARs:

  - Select SIS (FASTPATH)

  - In the Service Information Search SISMM1 window, type: CM2INFO as the search argument.

  - In the Change library selections field, type: Yes

  - Select AIX, OS/2, PC-DOS, CAD/CAM and other products in the Library Selections SISMM2 window.

  - The list of information APARs is displayed.

- IBM Communications Server Online Customer Support Bulletin Board

  Access this electronic bulletin board to view information APARs and to obtain APAR fixes. To request that an APAR fix be made available, either leave a message for SYSOP on the bulletin board or call 800-992-4777 (U.S. and Canada only).

  To access the electronic bulletin board:

  - Dial 919-543-8200 (country code 1 from outside the U.S.)

  - Use protocol N81

  - Follow the instructions

- The IBM Software Solutions Center

  In the U.S., Canada, and Puerto Rico, consult the Customer Service and Support Guide included in the product package.

  Outside the U.S., Canada, and Puerto Rico, contact your local IBM representative or Authorized IBM Supplier for information on warranty and software support.

- The OS/2 Developer's Assistance Program

  Call 800-992-4777 (U.S. and Canada only).

Compatibility

IBM Communications Server for OS/2 Warp, Version 5.0 protects the customer's investment in Communications Server for OS/2 Warp Versions 4.1 and 4.0 and CM/2 (Communications Manager/2) applications by providing upward compatibility for applications written for the CM/2 component of OS/2 Extended Edition, Extended Services® for OS/2, Communications Manager/2 (except for EHLLAPI and SRPI applications), and Communications Server for OS/2 Warp, Versions 4.0 and 4.1.

Communications Server will coexist with and interoperate with other OS/2 applications when run in the same system. Communications Server will also interoperate with other OS/2 applications that utilize the Communications Server APIs or utilize the SNA and TCP/IP control and data interfaces. These products can also interoperate with window applications that communicate across the network using the appropriate networking and application protocols.

Communications Server will migrate control files and other pertinent user modified information from EE 1.3, ES 1.0, CM/2 1.0, CM1.1 (including CM/2 1.11), and CS/2 V4.0 and 4.1. Code will be upgraded from the previously listed releases of CM/2 and AnyNet (except for EE 1.3).

The LAN Gateway function in Communications Server will migrate control files and other pertinent user modified information from the following products:

- LAN to LAN over WAN (LTLW) V1.09, or later
- Entry LAN to LAN over WAN (ELTLW) V1.03, or later
- AnyNet IPX over SNA Gateway for OS/2 V1.0

The Frame Relay function in Communications Server will not support migration from RouteXpander/2.

Planning Information

Refer to the **Technical Information Hardware Requirements** section for information on the RAM and hard drive resource capacity required.

Customer Responsibilities: Problem determination (PD) is a customer responsibility. PD is an assessment of whether a problem has been caused by hardware or software. PD is not complete until the cause of the problem is identified. This assessment includes examination of available symptoms using the PD procedures documented in the Communications Server publications.

Problem source identification (PSI) is a customer responsibility. PSI begins when software is determined to be the source of the problem. PSI includes tracing the source of the problem to a host system control program (SCP), an application program, or another source. Assisting the customer with PSI is an IBM service and support responsibility.

Installability: Communications Server can be installed directly from a CD-ROM drive or via the configuration, installation, and distribution (CID) process.

Packaging: The Communications Server package also has the following materials:

- The Quick Beginning publications
- IBM Personal Communications AS/400 and 3270 brochure
- Registration Card
- IBM International Program License Agreement
- License Information Booklet
- Service entitlement information card
- Proof of Entitlement

There is no registration card in the program package. The product contains the software registration tool, Axtive Registration Tool.

Security, Auditability, and Control

When using the System/370 Remote Operations Support (ROPS) for NetView, and a RUNCMD is issued, all information is transmitted in the clear and is not secured. This transmitted information may include the user ID and password. Transmitted information is also displayed on the screen and is entered in the NetView log. The display on the NetView operator's screen and in the NetView log can be avoided by using the NetView suppression character when the RUNCMD is issued. If passwords are transmitted to the ROPS service, the user is responsible for securing the NetView terminal and the NetView logs so that sensitive data is not compromised.

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

Ordering Information

Communications Server for OS/2 Warp, Version 5.0 is a client/server product which has two charge units: server install and registered users. The server install is available in fixed quantities of 1 and 5. The registered users (clients) are available in fixed quantities of 1, 5, 10, and 50.

The Access Feature for OS/2, Windows, Windows 95, or Windows NT are called Registered Users and are designed for use on desktop machines other than the server machine on which the Communications Server for

OS/2 Warp, Version 5.0 is used. These features may be ordered only after the Communications Server has been ordered or acquired.

Communications Server for OS/2 Warp, Version 5.0 is available at an upgrade price for those customers currently licensed for the following qualifying programs:

- Communications Manager/2
- Communications Server for OS/2 Warp, Versions 4.0 and 4.1
- Any IBM or non-IBM gateway or communications server

Upgrades may be acquired up to the current level of use authorizations for the qualifying programs.

Description	Order Type	Feature Number	Part Number
Communications Server for OS/2 Warp, Version 5.0			
Program Package CD-ROM	5801-AAR	2411	4301114
1 Server Install	5802-AAR	1998	4301134
5 Server Install	5802-AAR	1999	4301135
Access Feature for OS/2, Windows, Windows 95, or Windows NT			
1 Registered Users	5807-AAR	0761	4301136
5 Registered Users	5807-AAR	0762	4301137
10 Registered Users	5807-AAR	0763	4301138
50 Registered Users	5807-AAR	0764	4301139
Communications Server for OS/2 Warp, Version 5.0 Documentation Pack			4301222
Upgrades			
Communications Server for OS/2 Warp V5.0 Program Package Upgrade from any IBM or non-IBM gateway or communications server	5803-AAR	0534	4301115
1 Server Install Upgrade from any IBM or non-IBM gateway or communications server	5804-AAR	0423	4301140
Access Feature for OS/2, Windows, Windows 95, or Windows NT 1 Registered User Upgrade from OS/2 or Windows Access Feature, V4.0 or V4.1	5808-AAR	0204	4301141
Software Advantage			
Communications Server for OS/2 Warp V5.01 Server Install for Software Advantage	5802-AAR		4301142

Description	Order Type	Feature Number	Part Number
Access Feature for OS/2 Windows, Windows 95, or Windows NT 1 Registered User for Software Advantage	5807-AAR		4301143
Communications Server for for OS/2 Warp, V5.0 Media Pack for Software Advantage			4301144
Software Advantage Upgrades			
Communications Server for OS/2 Warp, V5.0 1 Server Install for Upgrade and Software Advantage	5804-AAR		4301145
Access Feature for OS/2, Windows, Windows 95, or Windows NT 1 Registered User for Upgrade and Software Advantage	5808-AAR		4301146
Software Advantage Upgrade Protection			
Upgrade Protection for Communications Server for OS/2 Warp, V5.0 Server Install — One-Time Charge (OTC)	5809-AAR		33H7371
Access Feature for OS/2, Windows, Windows 95, or Windows NT Registered User — OTC	5809-AAR		64H2544

Upgrade Protection (Entitled Customers): Customers who have previously acquired Software Advantage Upgrade Protection, as shown in the table below, will automatically receive their program package shortly after general availability.

Description	OTC Part Numbers	Quarterly Charge Part Numbers	Program Package Upgrade Part Numbers
Upgrade Protection for Communications Server for OS/2 Warp, Version 4	33H7371	33H7372	4301114
Upgrade Protection for Access Features for OS/2, Windows	64H2544	64H2545	4301143

Terms and Conditions

Licensing: IBM International Program License Agreement. Proofs of Entitlement (PoE) are required for all authorized use.

Limited Warranty: Yes

Program Services

- Available until: December 31, 2000

Guarantee: 30-day, money-back guarantee for program packages

Copy and Use on Home/Portable Computer: No

Support Line: Personal Systems

Complimentary Introductory Support: Not available for OS/2 platform

Upgrades: Customers may acquire upgrades up to the currently authorized level of use of the qualifying programs.

Volume Orders: Yes, contact your IBM representative

Software Advantage Applies: Yes

Upgrade Protection Applies: Yes

Entitled Upgrade for Current Upgrade Protection Licensees: Yes

Variable Charges Apply: No

Educational Allowance Available: Yes, to qualified educational institution customers

Charges

Description	Part Number	OTC
Communications Server for OS/2 Warp, Version 5.0 Program Package CD-ROM	4301114	$ 995
Communications Server for OS/2 Warp, Version 5.0 1 Server Install	4301134	965
Communications Server for OS/2 Warp, Version 5.0 5 Server Install	4301135	4,585
Access Feature 1 Registered User	4301136	69
5 Registered Users	4301137	328
10 Registered Users	4301138	642
50 Registered Users	4301139	3,174
Upgrades		
Comm Server for OS/2 Warp, V5.0 Program Package Upgrade from any IBM or non-IBM gateway or communications server	4301115	595
Communications Server for OS/2 Warp, V5.0 1 Server Install Upgrade from any IBM or non-IBM gateway or communications server	4301140	565
Access Feature 1 Registered User Upgrade from OS/2 or Windows Access Feature, V4.0 or V4.1	4301141	41

Description	Part Number	OTC
Software Advantage		
Communications Server for OS/2 Warp, V5.0 1 Server Install for Software Advantage	4301142	965
Access Feature 1 Registered User for Software Advantage	4301143	69
Software Advantage Upgrades		
Communications Server for OS/2 Warp, V5.0 1 Server Install for Upgrade and Software Advantage	4301145	396
Access Feature 1 Registered User for Upgrade and Software Advantage	4301146	29

Description	Part Number	Upgrade Protection Charge
Software Advantage Upgrade Protection		
Upgrade Protection for Communications Server for OS/2 Warp Server, V5.0 Install ─OTC	33H7371	$289
Upgrade Protection for Access Feature Registered User ─OTC	64H2544	21

Call Now to Order

To order, contact the IBM North America Sales Centers, your local IBM representative, or your IBM Business Partner™.

IBM North America Sales Centers, our national direct marketing organization, can add your name to the mailing list for catalogs of IBM products.

    Phone: 800-IBM-CALL
    Fax: 800-2IBM-FAX
    Internet: ibm─direct@vnet.ibm.com
    Mail: IBM North America Sales Centers
              Dept. SE001
              P.O. Box 16848
              Atlanta, GA 30321-0848
    Reference: SE001

To identify your local IBM Business Partner or IBM representative, call 800-IBM-4YOU.

Note: Shipments will begin after the planned availability date.