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## Chapter 3. Product Specifics

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### Network Operating Systems

#### IBM OS/2 LAN Server 4.0 Entry

Ken Macken, President, Product Logic, wrote "IBM LAN Server 4.0 represents a fundamental shift in IBM LAN System's strategy. The product redefines the IBM customer to include any company that needs a network operating system. The new product's innovative graphical user interface, easy installation, high performance and reasonable hardware requirements make LAN Server 4.0 a viable NOS for offices of all types, sizes and budgets. Frankly, I'm highly impressed."

The OS/2 LAN Server family provides several benefits, including:

- Access to file and print on all IBM platforms from LAN Server clients
- Peer capability for additional flexibility in sharing printers and files
- Network clipboards, cut and paste across the network
- One user interface from a LAN Server client to the IBM disk and printers

OS/2 LAN Server 4.0 Entry and LAN Server 4.0 Advanced utilize the power and the industrial strength of the award-winning OS/2 operating system. DOS/Windows and OS/2 Requesters available for both servers have been improved with full graphical user interfaces (GUIs), a new messaging system, and memory savings. Networked DDE and Clipboard extend the collaborative nature of the OS/2 and Windows requesters. An extension to LAN Server Entry and Advanced, LAN Server for Macintosh continues to provide Macintosh clients access to LAN Server.

OS/2 LAN Server 4.0 Entry, with its enhanced usability, presents an affordable solution for small- and medium- size businesses, where shared resources must be available to OS/2, Windows, and DOS clients. In addition to server access, DOS, Windows, and OS/2 LAN Server 4.0 requesters include limited peer support that provides the ability for clients to informally share local resources with other LAN Server 4.0 requesters. OS/2 LAN Server 4.0 Entry requires a minimal hardware investment and supports NetBIOS and TCP/IP over Token-Ring, Ethernet, and FDDI. LAN Server 4.0 Entry features enhanced usability, a new publication, an extended list of supported network adapters, and new features. OS/2 LAN Server 4.0 Entry eliminates the need for a dedicated server because the server machine can be used as a workstation, capable of running OS/2, Windows, or DOS applications.

OS/2 LAN Server 4.0 Entry and Advanced share the features provided in earlier versions. Among the more significant capabilities are:

#### Single System Image

A *domain* is the logical grouping of one or more servers in a LAN. This grouping is defined by a *network administrator*. This association allows a user to log on to a domain and gain access to resources on the individual servers. Once logged on, Single Systems Image allows the user to view both

local and remote resources as if the resources were all part of the local workstation.

### **Remote Administration**

The network administrator can perform administrative tasks on a given domain from an OS/2 requester on the LAN. The network administrator creates and maintains the domain definitions centrally stored in the *domain control database* on the *domain controller*, a role given to one of the servers in the domain at server installation time.

### **UPS support**

The Uninterruptible Power Supply (UPS) support provides warning and orderly server shutdown facilities when used with a compatible, uninterruptible power supply available from a variety of vendors. The power supply signals the software through the serial port.

### **Remote Initial Program Load (Remote IPL)**

Remote IPL supports workstations with or without local media in both a DOS and OS/2 environment. The Remote IPL feature mimics the normal boot process of a PC booting from a local drive with several slight variations, which allow the boot information to come from the network rather than from the hard file or diskette drive. Remote IPL for both DOS and OS/2 is supported over Token-Ring, PC NET, and Ethernet.

### **Redirected install**

The Configuration/Installation/Distribution (CID) feature of the OS/2 LAN Server 4.0 product enables the installation of requesters and servers in a remote and unattended manner. Remote installation is a form of redirected install that supports loading code on workstations over the LAN from a designated code server.

### **Peer Services**

Peer Services is a feature that gives a DOS, Windows, and OS/2 requester file, printer, and serial device access to another requester on the same LAN. The server need not be present to run. Peer Services allows the owner to share directories, one printer queue, and one communication-device queue (OS/2 only) with other users on the network. It lets one user at a time connect to (that is, create a session with) the peer.

The following list describes more details about the new enhancements and features of both the Entry and Advanced versions:

### **Simplified LAN Manual: *Up and Running!***

The manuals previously shipped with LAN Server are easily accessible online. A newly designed book has been included, which provides answers to more than 80% of the questions encountered within the first 30 days during the installation and administration of LAN Server 4.0. The redesigned documentation reduces support requirements of installation.

### **Drag and Drop Administration**

The LAN administration interface to LAN Server has been augmented with a drag and drop interface. This allows for the creation, change, and deletion of users, groups, and resources, as well as assignments of users or groups to resources. By using the workplace shell paradigm, the GUI reduces the time necessary to administer the LAN, and simplifies the process so it is natural for non-LAN personnel.

**Peer**

DOS, Windows, and OS/2 requesters have the ability to informally share local resources with another LAN Server 4.0 requester. This can eliminate the need for additional *peer-to-peer* software providing similar functions. The flexibility of LAN Server 4.0 offers the integrity of server-maintained data with the flexibility attributed to *peer-to-peer* sharing resources.

**Network Clipboard**

LAN Server 4.0, Windows, and OS/2 requesters can share data between applications across a LAN using DDE or cut, copy, and paste functions of the application. Cut and paste is a requirement on today's desktop. IBM brings this to the LAN.

**Simple Mail**

A windowed messaging service is available with LAN Server 4.0 that allows for creating and receiving text messages between LAN Server 4.0 clients. Notification of incoming messages and the queuing of multiple messages is supported. This function provides a simple to use interoffice communication vehicle without the complexity of E-Mail.

**Upgradeable**

LAN Server 4.0 Entry can be transparently upgraded to LAN Server 4.0 Advanced. No migration of user data or resources is necessary. This provides an easy path to LAN Server 4.0 Advanced when high performance or Advanced extensions are required. The pricing model of LAN Server does not penalize you when upgrading, because the prices of the Entry and Advanced versions are independent of the number of users requiring their services. Additionally, the ease of migration combined with ease of installation allows LAN Server to grow with your business, with minimal impact on your time and money.

**Seamless Install**

Treats a new installation or upgrade and the associated installation of LAN protocol drivers as a common install procedure. This reduces the complexity of the installation and reduces the amount of time necessary to install a server or requester.

**Auto Configuration**

A configuration scenario provides a default configuration that can be modified for more advanced users after the installation procedure is completed. This reduces the complexity of installation and allows LAN Server 4.0 Entry to be installed without any LAN knowledge.

**Adapter Autosense**

The seamless installation program detects the LAN adapter card installed on the machine and selects the correct drivers if available. More adapters than ever are supported by LAN Server 4.0. This function eliminates the need to physically identify the LAN adapter installed in the server or client machines, and allows LAN Server 4.0 Entry to be installed without any hardware knowledge.

## **TCP/IP**

This version of LAN Server includes TCP/IP stacks and TCPBEUI for those customers requiring TCP/IP as their Network Protocol. This can reduce cost when requiring TCP/IP as LAN protocol. This implementation has enhanced performance, as compared to the previous version of TCP/IP. While this implementation is not a native TCP/IP implementation, it is as effective as though it were combined with a nominal 9-byte IP routing information added to a NetBIOS packet. This allows LAN Server 4.0 to operate in a TCP/IP environment.

## **32-bit API**

LAN Server APIs have been enabled for 32-bit operation so that no degradation is discovered when interfacing 32-bit OS/2 applications. This allows for full exploitation of OS/2 and LAN Server 32-bit applications.

## **REXX API**

A REXX API interface enables the direct access to LAN Server APIs without requiring command line parsing or C language programming as an interface to REXX applications. REXX allows for a fast and easy interface to LAN Server for the purposes of automating LAN Administration.

## **Command Line Interface**

The command line interface (CLI) has full parity with the other LAN Server interface. Any LAN Server administrative function can now be started from any API, or through the GUI or command line. This allows for the automation of LAN Administrative tasks by CMD programs.

## **GUI Requesters**

A GUI interface is now available for DOS, as well as Windows and OS/2 requesters, to administer user profile management and allow for the connection to server resources. This simplifies access to server resources by users who have no LAN knowledge.

## **DOS Requester memory**

DOS clients have in excess of 610KB available for application programs. The increased memory available to DOS workstations increases the variety of applications that can be run on a DOS client and takes advantage of shared data offered in a LAN environment.

## **Hardware Requirements**

Server: OS/2 2.1 capable, 10MB RAM, 11MB DASD

Client: OS/2 2.1 capable, 0.6MB RAM, 6MB DASD; DOS 3.3, 5.0, 6.1, or 6.3 capable

## **Software Requirements**

Server: OS/2 2.1 or higher

Client: OS/2 2.1 or higher; DOS 3.3, 5.0, 6.1, or 6.3; MS-DOS\*\* 3.3, 5.0, 6.0, or 6.2

## **IBM Announcement Letter**

In the US: 294-564

**Ordering Information**

Call 800-IBMCALL (800-426-2255) in the US, or call 800-565-SW4U (800-565-7948), Ext. 246 in Canada.

**Note:** The part numbers, hardware requirements, and software requirements are approximations and might not be complete. For specifics, call the 800 telephone numbers listed previously, contact a reseller, or contact an IBM office near you.

**Part Number**

In the US:

LAN Server 4.0 Entry CD-ROM 52G8474

LAN Server 4.0 Entry 3.5 inch diskette 52G8468

## **IBM OS/2 LAN Server 4.0 Advanced**

OS/2 LAN Server 4.0 Advanced extends the features, functions, and usability of LAN Server 4.0 Entry. It presents enhanced capacity and performance, as well as fault tolerant support, SMP support, and Pentium\*\* exploitation. These attributes make it the ideal solution for both large and small businesses where enhanced performance is required. LAN Administration tasks are streamlined to reduce the cost of LAN administration. Multidomain access extends the number of servers available to users.

LAN Server 4.0 Advanced is also the platform for LAN Server extensions, which enhance the capabilities of LAN Server Advanced. LAN Server Ultimedia, an available extension to LAN Server Advanced, exhibits better DASD utilization than prior versions of LAN Server Advanced.

IBM OS/2 LAN Server Version 4.0 Advanced shares the same features and functions as OS/2 LAN Server 4.0 Entry, with the following additional new features and functions:

### **Drag and Drop Administration**

The LAN administration interface to LAN Server has been augmented with a drag and drop interface. This allows for the creation, change, and deletion of users, groups, and resources, as well as assignments of users or groups to resources. By using the workplace shell paradigm, the GUI interface reduces the time necessary to administer the LAN and reduces the expense of LAN Administration.

### **Disk Limits**

This feature allows the administrator to set limits on server disk resources at the subdirectory level to ensure users do not exceed their authorized allocations of file space. Thresholds can be set to notify a user prior to exceeding the limit. By setting appropriate limits, a user who might use all the servers' disk space will be controlled and will be the only user experiencing an apparent out-of-space condition. Without Disk Limits, all users would experience an out-of-disk-space or disk full message with this previous scenario. Disk limits provided by LAN Server 4.0 Advanced establishes DASD control by the LAN Administrator, thereby reducing disk full errors.

### **Pentium optimization**

LAN Server 4.0 Advanced takes advantage of high performance hardware servers, thereby protecting your investment in Pentium equipped hardware.

### **SMP Support**

LAN Server supports SMP machines with 2, 4, or 8 processors when running OS/2 SMP. Once again, LAN Server allows for the utilization of high-performance servers.

### **Fault Tolerant**

RAID implementations allow for the mirroring of disks to provide backup in the event of a system problem. LAN Server 4.0 supports hot swappable disks in a disk array when they are supported by the hardware. Uninterrupted Power Supply (UPS) systems are supported for momentary power outages. Additional RAID 0-5 support is available through an additional IBM product, OASAS. LAN Server 4.0 supports high availability in the event of hardware or power failure.

### **Task Oriented GUI**

A collection of administrative tasks have been automated in such a manner as to reduce the number of keystrokes and increase the efficiency of a LAN Administrator. The tasks are independent and can be augmented by customer-written programs. The tasks shipped with LAN Server represents those tasks that are most frequently exercised by LAN Administrators in large installations. These automated tasks increase the productivity of LAN Administration.

### **High-Performance File System (HPFS)**

This is a non-FAT file system that provides a higher level of performance than the OS/2 HPFS. The HPFS supports partition sizes up to 64GB. The HPFS gets the most out of the server machine, thereby protecting your hardware investment.

### **Single system image**

Domains allow clients to have simultaneous access to multiple servers through a single logon. LAN Server 4.0 supports multiple domain logons, further increasing the connectivity options of a LAN Server 4.0 requester.

### **Hardware Requirements**

Server: OS/2 2.1 capable, 10MB RAM, 11MB DASD

Client: OS/2 2.1 capable, 0.6MB RAM, 6MB DASD; DOS 3.3, 5.0, 6.1, or 6.3 capable

### **Software Requirements**

Server: OS/2 2.1 or higher

Client: OS/2 2.1 or higher; DOS 3.3, 5.0, 6.1, or 6.3; MS-DOS 3.3, 5.0, 6.0, or 6.2

### **IBM Announcement Letter**

In the US: 294-564

### **Ordering Information**

Call 800-IBMCALL (800-426-2255) in the US, or call 800-565-SW4U (800-565-7948), Ext. 246 in Canada.

**Note:** The part numbers, hardware requirements, and software requirements are approximations and might not be complete. For specifics, call the 800 telephone numbers listed previously, contact a reseller, or contact an IBM office near you.

### **Part Number**

In the US:

LAN Server 4.0 Advanced CD-ROM 52G8476

LAN Server 4.0 Advanced 3.5 inch diskette 52G8475

## IBM OS/2 LAN Server for Macintosh

The OS/2 LAN Server for Macintosh program allows DOS, DOS/Windows, OS/2, and Macintosh users to be connected on the same network. The program is a file and print server running in the OS/2 environment. It is available as an OS/2 LAN Server 3.0- or 4.0-based product.

With LAN Server for Macintosh, you can mix and match networked printers. The program acts as an intermediary between the workstations and PostScript\*\* printers on a network, to enable all users (Macintosh, DOS, Windows, and OS/2 clients) to share printer resources. The shared printers can be attached to OS/2 servers or connected as part of the AppleTalk\*\* network.

Its print spooler allows up to 9 LaserWriter\*\* printers to be associated with print queues, along with any of the PostScript printers attached to the OS/2 LAN Server. As a result, Macintosh users can spool jobs to printers attached to the OS/2 LAN Server, while DOS, Windows, and OS/2 users can send jobs to printers on the AppleTalk network, immediately freeing their workstations so they can turn to other tasks.

LAN Server for Macintosh provides security features that are consistent with both OS/2 LAN Server and AppleShare controls. What is more, it allows you to tighten security even more through passwords at the user and at the administrator levels. Users can maintain their own passwords. An optional audit trail keeps track of logons and file activity.

The LAN Server for Macintosh 1.0 can be administered from any OS/2 workstation running LAN Requester with an administrator logon. The program includes a configuration function that can be used from any OS/2 workstation that is connected to the LAN Server. This function has the same look and feel as the OS/2 User Profile Management, so network administrators will be comfortable and productive with a familiar interface.

### Hardware Requirements

Server: Same as LAN Server 3.0 or higher

Client: AppleTalk support capability for Macintosh clients

### Software Requirements

Server: Same as LAN Server 3.0 or higher

Client: Macintosh 6.0.5 or higher; OS/2 and DOS clients are same as LAN Server 3.0 or higher

### IBM Announcement Letter

In the US: 292-600

### Ordering Information

Call 800-IBMCALL (800-426-2255) in the US, or call 800-565-SW4U (800-565-7948), Ext. 246 in Canada.

**Note:** The part numbers, hardware requirements, and software requirements are approximations and might not be complete. For specifics, call the 800 telephone numbers listed previously, contact a reseller, or contact an IBM office near you.

### Part Number

In the US: 96F8455



## IBM LAN Server/400

LAN Server/400 combines the best of LAN Server 3.0 and the AS/400. With over 20 000 business applications available on the AS/400, and the speed and stability of LAN Server 3.0, client/server is a reality for customers and software providers.

LAN Server/400 is a hardware and software implementation of LAN Server 3.0 on the AS/400 that provides competitive performance across the LAN. The hardware consists of a FSIOP (File Server Input/Output Processor) that utilizes a 486 DX2 66MHz processor. Cache is available from 16MB to 64MB. The adapter supports two LAN connections that are software configurable to be either Token-Ring or Ethernet, or a combination of both. The LAN Server 3.0 software stored on the AS/400 disk, provides the performance and LAN software connection. The LAN Server 3.0 clients, running LAN Requester for DOS, Windows, or OS/2, provide the connection to the AS/400 for file access.

The design points for the LAN Server/400 were *performance, integrated administration, integrated security, and integrated data*:

- The performance of the AS/400 is improved, not only through the LAN Server 3.0 software, but through the integration of the FSIOP card which handles file services over the LAN to an AS/400.
- Administration of LAN Server/400 provides for AS/400 style commands, configuration, save and restore, move, and copies of data. This means that an AS/400 account can issue AS/400-style commands to run these activities locally or across the Ethernet Token-Ring Local Area Network. This allows you to utilize existing AS/400 skills to administer and automate LAN activities, such as backup and recovery, error detection, and PC server monitoring.
- Security is integrated between the AS/400 and LAN Server 3.0 networks. When the system operator creates a user profile on the AS/400, that user profile is created and synchronized with the LAN Server domain. This increases security on a Local Area Network by providing a single point of maintenance using both AS/400 applications and LAN based PC applications. LAN Server/400 merges the security model of OS/2 LAN Server with AS/400 security to provide a single view of users and access rights for users.
- Data is integrated between the AS/400 and LAN Server servers on the network. Applications can now transparently access data either on the AS/400 relational database or on remote LAN Servers on the network. This further advances the client/server capabilities for the 20 000 applications now running on the AS/400 and LAN Server. LAN Server is now able to take advantage of the reliability and disk capacity of the AS/400. Up to 128GB of storage can be allocated for each PC file system and the AS/400's RAID technology is available to LAN Server.

### Hardware Requirements

Server: AS/400 model D, E, F, all Advanced Series, 65MB DASD for each NLV of LAN Server/400, 25MB DASD for each FSIOP

OS/2 Client: 0.6MB RAM, 5.5MB DASD

DOS Client: 130KB RAM, 3.2MB DASD

### Software Requirements

Server: OS/400 3.1

Client: OS/2 2.0 or higher; DOS 3.3 or 5.0 Windows 3.0 or 3.1 plus appropriate LAN Requester

**IBM Announcement Letter**

In the US: 294-222

**Ordering Information**

Call 800-IBMCALL (800-426-2255) in the US, or call 800-565-SW4U (800-565-7948), Ext. 246 in Canada.

**Note:** The part numbers, hardware requirements, and software requirements are approximations and might not be complete. For specifics, call the 800 telephone numbers listed previously, contact a reseller, or contact an IBM office near you.

**Part Number**

In the US: 5763-XZI

## IBM LAN Server for AIX 1.0

LAN Server for AIX brings IBM's popular client/server technology to the UNIX marketplace. LAN Server for AIX allows DOS, Windows, and OS/2 requesters transparent access to the resources of an AIX server. If a DOS, Windows, or OS/2 machine is already connected to an IBM LAN Server environment, or a Microsoft LAN Manager environment, no changes are required for the requester to access LAN Server for AIX. LAN requesters access AIX disks and printers in the same way as other LAN Server resources. LAN Server for AIX can function as a domain controller or as an additional server in a LAN Server domain.

The main advantage of LAN Server for AIX is access to disk space as well as the high availability and reliability of the AIX or UNIX platform.

LAN Server for AIX provides an attractive solution in the following environments:

- Data exists on AIX machines that needs to be shared with DOS or OS/2 users. There are many ways that this situation can arise. For instance, many customers are using AIX as a way of “rightsizing” their environments. This puts critical enterprise data on AIX machines that many DOS and OS/2 users need to access.
- Greater disk capacity is required than can be handled by Intel-based products. The current maximum for a single RISC System/6000 machine is 904GB. This is a very large amount of data that can be shared between AIX, DOS, and OS/2 users.
- Access to the advanced features of the AIX file system is required. The AIX file system has been called an “industrial strength” file system. Some of the features provided include dynamic resizing and relocation, the ability to span multiple physical disks, and transaction logging that provides total recovery of critical data in the event of a power outage.
- Access to the high-availability features of the AIX HACMP/6000\* offering is required. HACMP/6000 can be used to provide an environment where no single point of failure exists by using off-the-shelf components in conjunction with software. When a failure does occur, recovery is rapid. This is all transparent to the end users. This capability of the RISC System/6000 can be beneficial to customers who have “mission critical” applications.

### Hardware Requirements

Server: RISC System/6000 processor; 32MB RAM Tape drive capable of reading 8 mm tapes on server

Client: OS/2 2.0 or 2.1 capable; i386\*\* or higher; 0.6MB RAM minimum increment above other system requirements; DOS/Windows; DOS 3.3 capable; 130KB RAM; 3.2MB DASD

### Software Requirements

Server: AIX Version 3.2.5 for RISC System/6000, plus AIX PTF's U424591, U426552, U431538, and U431540

Client: OS/2 2.0 or 2.1; DOS 3.3 or 5.0; Windows 3.1

### IBM Announcement Letter

In the US: RPQ Reference Number P94400

**Ordering Information**

Call 800-IBMCALL (800-426-2255) in the US, or call 800-565-SW4U (800-565-7948), Ext. 246 in Canada.

**Note:** The part numbers, hardware requirements, and software requirements are approximations and might not be complete. For specifics, call the 800 telephone numbers listed previously, contact a reseller, or contact an IBM office near you.

**Part Number**

In the US:

Product number 5799-QGX

PRPQ number P94400

## IBM LAN Server for MVS and VM

IBM LAN Server for MVS and VM (previously known as LAN File Services/ESA) is a complement to workgroup LAN servers. It extends the LAN environment by enabling transparent access to System/390\* storage resources. For applications requiring very large capacities and high performance access, LAN Server for MVS and VM is an excellent extension to LAN-based super servers. A key advantage is the ability to leverage your existing investments in high-bandwidth communications and storage resources of large systems. For many environments, the reuse of System/390 resources is substantially less expensive than implementing and managing a unique outboard storage subsystem.

LAN Server for MVS and VM is designed to:

- Provide a workstation-compatible file system on S/390
- Provide high performance and transparent access to S/390 resources
- Support transparent sharing of data between clients of LAN Server for MVS and VM
- Reduce the LAN administrator's workload by leveraging S/390 resources and services
- Allow the large storage capacity of S/390 to be used to relieve the capacity constraints of workstation-based servers
- Support both LAN and coax-attached workstations
- Support ESCON\* and IBM PS/2\* Micro Channel\* to Mainframe Connection channel attachments between S/390 and the OS/2 LAN Server

### Hardware Requirements

IBM System/370\* or System/390 processor or equivalent. See Announcement Letter for other requirements.

### Software Requirements

MVS: MVS/ESA\* SP JES 2 or 3.1.3 or 4.2.0 or higher; MVS/ESA SP JES 3 3.1.3 or 4.2.1 or higher

VM: VM/ESA\* 1.0 ESA or 370 feature or Release 1.1 or higher; C/370\* Library 2.0 and Software License Monitor/MVS and VM Release 1.1

See Announcement Letter for other requirements.

### IBM Announcement Letter

In the US: 293-312

### Ordering Information

**Note:** The part numbers, hardware requirements, and software requirements are approximations and may not be complete. For specifics, contact a reseller or an IBM office near you.

### Part Number

In the US: 5648-039

## NetWare 3.12 from IBM

NetWare 3.12 from IBM contains the following maintenance updates and enhancements to NetWare 3.11:

- NetWare for Macintosh 5-user.
- MHS Basic services.
- E-mail applications: First Mail for DOS and First Mail for Macintosh.
- New VLM client architecture.
- New client tools to better support Microsoft Windows.
- Support for CD-ROM installation and CD-ROM read-only volumes.
- Electronic documentation for English, French, German, Italian, and Spanish conversion includes all five languages. Diskette version is single language.

Among the NetWare 3.11 features continued with NetWare 3.12 are:

- Support for OS/2 as well as various DOS-based workstations and the Named Pipes interfaces between NetWare and those products. The capabilities enhance the coexistence of OS/2 LAN Server clients and NetWare OS/2-based clients.
- The remote management facility provides support for user workstation software updates from remote locations coupled with the ability to delegate management tasks to workgroup managers.
- Reliability features include a Hot Fix capability as well as disk mirroring and duplexing. The Btrieve\*\*-based database support can coexist with OS/2 distributed applications.
- Communications support includes NetBIOS as well as a source-routing NLM that enables NetWare IPX packets to be routed through IBM source-routing bridges.

Additional features are described in the product documentation.

A five-user version of NetWare for Macintosh 3.12 is included with each NetWare 3.12 from IBM server. A 200-user version of NetWare for Macintosh 3.12 from IBM may be ordered separately.

### Hardware Requirements

Server: i386 or higher, appropriate LAN adapters

Workstation: i8088 or higher, RISC System/6000, Macintosh, and others.

### Software Requirements

Server: NetWare 3.12 (5, 10, 25, 50, 100, 250, user sizes)

Workstation: OS/2 2.0 or higher, DOS 3.1, Macintosh 6.0.5, or System 7.

### IBM Announcement Letter

In the US: 294-469

### Ordering Information

Call 800-IBMCALL (800-426-2255) in the US, or call 800-565-SW4U (800-565-7948), Ext. 246 in Canada.

**Note:** The part numbers, hardware requirements, and software requirements are approximations and might not be complete. For specifics, call the

800 telephone numbers listed previously, contact a reseller, or contact an IBM office near you.

**Part Number**

In the US: See Announcement Letter

## NetWare 4.02 from IBM

NetWare 4.02 from IBM is a complete operating system designed to operate in a multivendor distributed environment. It adds to the functional capabilities of NetWare 3.12, a 32-bit enterprise-wide application capability.

NetWare Directory Services (NDS) treats all network resources as objects in a distributed database known as the *NetWare Directory database*. The database organizes resources in a hierarchical tree structure, independent of the physical location of the resources. Users and supervisors can access any network service without having to know the physical location of the server that stores the service.

The Directory replaces the bindery, which served as the system database for previous versions of NetWare. While the bindery supports the operation of a single NetWare server, NDS supports an entire network of servers. So, instead of storing all information on one server, which can be a single point of failure, information is distributed over a global database and accessed by all servers.

The term *Directory* refers to that global database provided by the NetWare 4.02 servers. Compatibility with previous versions of NetWare is provided through bindery emulation.

NDS helps you manage Directory resources, such as NetWare servers, but it does not provide control over the file system (volumes, directories, and files). Graphical and text utilities help you manage NDS and the file system.

Although NDS is the major enhancement, NetWare 4.02 from IBM has other improvements on predecessor products.

Memory management in NetWare 4.02 has been redesigned to increase efficiency. Memory is managed by the server so that applications do not run out of memory.

NetWare 3.12 allocates memory in five or more memory pools that serve different purposes. After continuous operation of the server, some applications run out of memory, because when an application no longer needs a section of memory, management routines do not note that the memory is available to other applications. NetWare 4.02 has only one memory allocation pool, and memory is reallocated from one application to another. The server operates more efficiently as a result of fewer memory management operations and pools.

File compression allows NetWare 4.02 to compress files that are saved to the hard file, and then uncompress those files when they are retrieved. Using file compression allows system volumes to hold more online data.

File compression is managed internally by NetWare 4.02. You can flag your files or directories so they are compressed after being used, or flag them so they are never compressed.

After compression is enabled, files flagged for compression that are not accessed for a specific amount of time are automatically compressed. Files are decompressed when accessed again by a user.

File compression does not reduce network traffic because data is compressed only on the hard file. Files saved to a backup tape cannot be compressed with this feature.



NetWare print services use print servers and print queues to service network printers. In bindery-based NetWare, only the print server and print queues exist as bindery objects; printers are defined as attributes of the print server. In NDS, the print server, print queue, and printer are individual objects. They can be created and modified in any order with text or graphical utilities.

Network users never need to know about print queues or print servers in NetWare 4.02. Users can send their print jobs directly to a printer by specifying the printer name.

Network printers can attach directly to the network, to any NetWare server, or to DOS or OS/2 workstations. NetWare 4.02 servers use NPRINT.NLM, and DOS or OS/2 workstations use NPRINT.EXE, to make attached printers available to the network.

A five-user version of NetWare for Macintosh 4.0 is included with each NetWare 4.02 from IBM server. A 1000-user version of NetWare for Macintosh 4.0 from IBM may be ordered separately.

#### **Hardware Requirements**

Server: i386 or higher, appropriate LAN adapters

Workstation: i8088 or higher, Macintosh, and others.

#### **Software Requirements**

Server: NetWare 4.02 (5, 10, 25, 50, 100, 250, 1000 user sizes)

Workstation: OS/2 2.0 or higher, DOS 3.1, Macintosh 6.0.5, or System 7

#### **IBM Announcement Letter**

In the US: 294-470

#### **Ordering Information**

Call 800-IBMCALL (800-426-2255) in the US, or call 800-565-SW4U (800-565-7948), Ext. 246 in Canada.

**Note:** The part numbers, hardware requirements, and software requirements are approximations and might not be complete. For specifics, call the 800 telephone numbers listed previously, contact a reseller, or contact an IBM office near you.

#### **Part Number**

In the US: See Announcement Letter

## NetWare 4.01 for OS/2 from IBM

NetWare 4.01 for OS/2 provides native Novell\*\* NetWare 4.x in an OS/2 environment. It uses the same source code and provides the same function as a dedicated NetWare server. NetWare 4.01 for OS/2 consists of a set of add-on drivers that permit the NetWare 4.01/4.02 modules to be loaded in the OS/2 environment. The benefits of running the native NetWare in the OS/2 environment are that NetWare 4.x NLMs can be run unmodified, NetWare 4.x device drivers can be run unmodified, and the high performance and reliability of NetWare is maintained.

NetWare 4.01 for OS/2 runs NetWare 4.x as a parallel operating system to OS/2. It runs at Ring 0 with a protected block of memory that is dedicated solely to NetWare. NetWare 4.01 for OS/2 consists mainly of three modules: a virtual device driver (VNETWARE.SYS), a physical device driver (PNETWARE.SYS), and a 32-bit Ring 3 OS/2 application (NWOS2.EXE).

NetWare 4.01 for OS/2 can be accessed from all the same platforms as NetWare 4.x (OS/2, Macintosh, UNIX, DOS, and Windows). From a client perspective, the NetWare server is the same as a dedicated NetWare 4.x server.

The preemptive multitasking capabilities of OS/2 allow other workgroup and communication applications, such as OS/2 Communications Manager, OS/2 Database Manager, Lotus Notes, and others, to run concurrently with the NetWare 4.x Server. Work in an OS/2, DOS, or WIN-OS2 session continues, while the NetWare server provides file and print services for other network users in your office. This capability gives network administrators the flexibility of managing servers either locally or remotely.

Flexibility exists to develop NLMs or OS/2-based client/server applications. All NLMs certified for NetWare 4.x run unmodified with NetWare 4.01 for OS/2. NLM development for NetWare 4.01 for OS/2 is supported with the NetWare 4.01 Software Developers Kit (SDK) available from Novell's professional developer program.

The NetWare 4.01 for OS/2 environment can achieve 90 to 95% of the dedicated NetWare 4.X performance. The small overhead of 5 to 10% is due to the fact that OS/2 is now handling all hardware, interrupt, and I/O services. The optimization of these services in the OS/2 operating system and the streamlining of the NetWare 4.01 for OS/2 add-on modules result in negligible performance degradation.

Capability is provided to divide the CPU processing time between OS/2 and NetWare by setting a performance tuning parameter. This parameter lets you specify what portion of CPU time is available to NetWare; the remaining CPU time is used by OS/2. The performance can be tuned while the server is running by using the Graphical Monitor Utility that is provided with NetWare 4.01 for OS/2. This parameter can also be set to an initial value in the NFT.CFG file.

### Hardware Requirements

Same as NetWare 4.01 and NetWare 4.02

**Note:** To calculate memory and disk space requirements, add the amount required by NetWare 4.x to that which is required by OS/2. NetWare 4.01 for OS/2 must have dedicated memory and its own partition on the hard file. For example, if you need 16MB for OS/2 and 16MB for the NetWare server, plan to install 32MB of RAM. If you need 80MB of disk space for OS/2 and 100MB for NetWare, plan to have at least a 180MB hard file.

**Software Requirements**

OS/2 2.1, NetWare 4.01 for OS/2, NetWare 4.01, or NetWare 4.02

**IBM Announcement Letter**

In the US: 293-172

**Ordering Information**

Call 800-IBMCALL (800-426-2255) in the US, or call 800-565-SW4U (800-565-7948), Ext. 246 in Canada.

**Note:** The part numbers, hardware requirements, and software requirements are approximations and might not be complete. For specifics, call the 800 telephone numbers listed previously, contact a reseller, or contact an IBM office near you.

**Part Number**

In the US: 53G5730

## NetWare for SAA 1.3B from IBM

Developed as a NetWare Loadable Module (NLM), NetWare for SAA is a powerful solution for integrating NetWare networks with IBM System/370, System/390, and AS/400 SNA environments. NetWare for SAA provides NetWare users with transparent access to your S/370 or S/390 and AS/400 applications from DOS, Windows, Macintosh, OS/2, AIX, and UNIX workstations.

NetWare for SAA's high performance 32-bit operating environment supports over 500 concurrent NetWare for SAA sessions with maximum reliability and throughput. NetWare for SAA also offers comprehensive data-link support for low-speed dial-up SDLC, Token-Ring and Ethernet connections, and high-speed direct channel attachments.

NetWare for SAA is licensed in scalable packages ranging from 16 to 254 sessions. Up to 2 packages can be combined on a single server, allowing configuration flexibility and a maximum capacity of up to 508 sessions. Furthermore, NetWare for SAA 1.3B from IBM allows access to multiple AS/400s from a single server, and it can directly attach from a Token-Ring or Ethernet network up to 128 AS/400s. In an Advanced Peer-to-Peer Networking\* (APPN\*) environment, NetWare for SAA can connect up to 253 AS/400s, allowing each individual PC Support user to access up to 32 AS/400s through APPN.

NetWare for SAA, in conjunction with a variety of hardware from IBM and third-party vendors, gives you the widest range of WAN connections, from low-speed dial-up SDLC and QLLC/X.25 to high-speed, direct channel attachments. NetWare for SAA 1.3B provides an ODI-compliant implementation of the 802.2 protocols at a NetWare 3.12 or 4.01 server, so any Ethernet or Token Ring ODI 4.0-compliant adapter can be used as a NetWare for SAA host data link. This also simplifies connections to AS/400s in Ethernet environments. NetWare's multiple-transport protocol supports DOS, Windows, Macintosh, OS/2, AIX, and UNIX workstations through these workstations' native IPX/SPX, TCP/IP, AppleTalk, and 802.2 protocols. Drivers are available to support virtually any workstation hardware and network topology for use with NetWare for SAA.

Among the primary host-based network management features are:

- Alert forwarding sends alarms generated by the NetWare server to the NetWare operator console.
- RUNCMD support lets the NetView operator enter run for commands (RUNCMDs) at the NetView console that are forwarded to the NetWare server for operation.
- Centralized configuration distribution greatly simplifies the configuration tasks of administrators responsible for managing branch offices and large corporate networks.
- Centralized configuration backup allows network administrators to back up configurations over LAN or WAN connections to a centralized location. Servers can be reconfigured and brought back into service with minimal effort and time in disaster situations.

### Hardware Requirements

i386 or higher, 8MB RAM, LAN adapter

### Software Requirements

Server: NetWare 3.11 or higher

Client: Appropriate emulators

### IBM Announcement Letter

In the US: 293-542

**Ordering Information**

Call 800-IBMCALL (800-426-2255) in the US, or call 800-565-SW4U (800-565-7948), Ext. 246 in Canada.

**Note:** The part numbers, hardware requirements, and software requirements are approximations and might not be complete. For specifics, call the 800 telephone numbers listed previously, contact a reseller, or contact an IBM office near you.

**Part Number**

In the US: See Announcement Letter

## Additional Application Programs

### IBM LAN Server Ultimedia

This application program turns your server into a video server. Adding multimedia capabilities, full-motion video, and audio to your network can help provide a tremendous boost in productivity for users on the LAN. The spectrum of exciting applications you can use to enhance human performance and retention is virtually unlimited.

The key to success in distributing multimedia over a LAN is a solid platform that can manage the increased multimedia volume while avoiding congestion with current network data traffic. Now you can achieve this easily with LAN Server Ultimedia. This powerful program extends the distributed multimedia capabilities of LAN Server Advanced. Used together, LAN Server Advanced and LAN Server Ultimedia establish a controlled environment that guarantees uncompromised playout to audio/video applications.

With LAN Server Ultimedia, you can add multimedia support to Token-Ring, Ethernet, and FDDI LANs without disrupting the operation of normal data applications. LAN Server Ultimedia supports DOS, Windows, and OS/2 multimedia applications without change, and is also transparent to the type of multimedia content required by the application. On a Token-Ring LAN, 40 multimedia streams can be delivered to 40 clients from a single server. For analog distribution of video server data, you can use Ultimedia VideoCharger.

#### Hardware Requirements

See Announcement Letter.

#### Software Requirements

LAN Server 3.0 or 4.0 Advanced

#### IBM Announcement Letter

In the US: 293-658

#### Ordering Information

Call 800-IBMCALL (800-426-2255) in the US, or call 800-565-SW4U (800-565-7948), Ext. 246 in Canada.

**Note:** The part numbers, hardware requirements, and software requirements are approximations and might not be complete. For specifics, call the 800 telephone numbers listed previously, contact a reseller, or contact an IBM office near you.

#### Part Number

In the US: 96F8520

## IBM Ultimedia VideoCharger

IBM Ultimedia VideoCharger is client/server software that enables video playback for a large number of clients on existing departmental or campus LANs (Token-Ring and Ethernet). Included with Ultimedia VideoCharger are client, resource management, and player software. These allow audio and video programs stored in a digital file server to be retrieved, decompressed, and played on a specific channel at the workstation from either an existing LAN, or a site television cable (CATV) network. Several digital file servers are supported, including LAN Server Ultimedia.

The Ultimedia VideoCharger desktop client allows a user or application to select a video and use VCR-like controls (START, PAUSE, STOP, REWIND, MUTE) to control the playback of that video. Upon receiving a request from the client, the Ultimedia VideoCharger Resource Manager allocates one of its digital video players and lets the client view the video at the desktop. The actual video signals travel from the Ultimedia VideoCharger player to the client's desktop from the LAN or from a CATV distribution network. This same CATV distribution network can concurrently be used for broadcasts and video conferencing.

Ultimedia VideoCharger's method of using the LAN or CATV networks to deliver video information to the client does not impact the existing bandwidth for the LAN. Therefore, digital video playback can be provided to many concurrent users without impacting normal LAN traffic. Ultimedia VideoCharger also facilitates the sharing of digital video playback equipment by any number of clients. This shared environment eliminates the need to purchase digital playback equipment for each desktop where digital video needs might exist.

A video tape is available for a more detailed explanation of the product, its features, functions, and benefits. The video tape number is SV20-8600.

### Hardware Requirements

Resource Manager: i386 or higher, OS/2 2.0 capable; 0.5MB DASD; appropriate adapter; 3.5-inch diskette drive

Player: i386 or higher, OS/2 2.0 capable or DOS Windows capable; 0.5MB DASD; 3.5 inch diskette drive; appropriate adapter; and an ActionMedia\*\* II card for DVI\*\* CODEC or an Optibase PCMotion card for MPEG1 CODEC

**Note:** One player can be combined with the server on a single workstation. The hard disk requirements must also be combined (1.0MB DASD).

Client: i386 or higher, OS/2 2.0 capable or DOS/Windows 3.1 capable; 0.5 MB DASD, appropriate adapter; 3.5-inch diskette drive; and TV, PS/2, M-Motion adapter card, or similar device for displaying analog signal.

Video File Server: The file server can be any suitable PC or a PC's equivalent, an appropriate LAN adapter, DASD is approximately equal to 10MB times the number of minutes of video stored on the server.

Analog Distribution Network: The analog distribution network connects the output of the CODEC cards in the players to the receiving clients. This is essentially a small private cable system.

Card Compatibility Information: Device drivers for the LAN Adapter, ActionMedia II, and Optibase PCMotion cards are required and are provided with the respective cards purchased separately.

## Software Requirements

The following table shows prerequisite operating systems and protocols by Ultimedia VideoCharger components.

Table 3-1. Prerequisite Operating Systems and Protocols		
Component	OS/2 Protocol	DOS/Windows Protocol
Server	Yes and use NetBIOS or TCP	No
Player	Yes and use NetBIOS or TCP	Yes and use NetBIOS or TCP
Client	Yes and use NetBIOS or TCP	Yes and use NetBIOS or TCP

Server: OS/2 2.0 or higher, DOS/Windows (DOS 4.01 or higher); TCP/IP 1.2.1 or 2.0 is required with OS/2; TCP/IP 2.0 or higher is required with DOS/Windows when using TCP/IP for client/server communications. When using NetBIOS, Version 4.0 is required.

Device drivers for the LAN Adapter, ActionMedia II, and Optibase PCMotion cards are required and are provided with the respective cards.

Ultimedia VideoCharger runs with OS/2 LAN Server Version 3.0 or higher, with LAN Requester Versions 2.0 and 3.0, and with LAN Server Ultimedia.

For NetBIOS, NTS/2 Version 1.0 and LAN Support Program 1.13 are required.

Client: OS/2.0 or DOS 4.01, as well as Microsoft Windows 3.1.

Compatibility: Ultimedia VideoCharger provides compatibility for applications written to utilize the Ultimedia VideoCharger client and server API as long as the underlying operating systems and communications applications are installed.

### IBM Announcement Letter

In the US: 294-181

### Ordering Information

Call 800-IBMCALL (800-426-2255) in the US, or call 800-565-SW4U (800-565-7948), Ext. 246 in Canada.

**Note:** The part numbers, hardware requirements, and software requirements are approximations and might not be complete. For specifics, call the 800 telephone numbers listed previously, contact a reseller, or contact an IBM office near you.

### Part Number

In the US: 95G0939



## IBM Network Door/2 1.0

NetDoor\* is an OS/2-based application integration program for LANs. It supports OS/2 clients in either a NetBIOS or a TCP/IP environment. In addition, NetDoor also supports a central maintenance environment.

### Application Integration

NetDoor provides the framework for adding all types of applications to the computing environment. The application catalog and central maintenance functions can be used for implementing any application that operates from a server. The file synchronization function can then replicate the new applications throughout the enterprise. The power of central maintenance becomes especially useful for easily maintaining client/server applications, which often have version dependencies between the client and server portions. NetDoor can update all program parts for both client and server.

### Central Maintenance

NetDoor provides a complete set of facilities for the administration of the LAN environment. The major functions are:

- Single system image for LAN server and TCP/IP NFS resources. The NetDoor client enables access to multiple LAN Server domains from a single logon. You can log on to NetDoor and other domains concurrently, and simultaneously use file and print services across those domains. This offers you a single system image of the LAN making access to scattered resources easier.
- Concurrent use of software licenses. This allows you to share the use of software licenses in a LAN environment, optimize the use of software licenses, provide a large selection of software licenses to end-users, and reduce installation and maintenance efforts.

Applications are installed on the "Vendor" server and are accessed by the end user from a Presentation Manager\* catalog.

- Fault-tolerant access to application servers. NetDoor optionally supports paired domain controllers (called couplets) that provide users with continuous access if one domain controller or Network File System\*\* (NFS) data server in a couplet is disabled.
- Automatic load distribution among application servers. When you log on to a NetDoor LAN with multiple servers, a connection is made to the least utilized server. You do not need to be aware of the physical server to which you are connected.
- Flexible replication and synchronization of server files. NetDoor provides the ability to automatically synchronize maintenance across multiple file servers. Maintenance applied to a single server can be automatically applied to other servers on a scheduled basis. This synchronization function is generalized and rule driven. It can be used to synchronize any files needing replication on multiple servers. This capability is not limited to servers on the same physical LAN, but can be connected as TCP/IP NFS servers in a TCP/IP environment. When connected from the LAN-to-WAN Wide Area Network (LTLW) connections in an SNA environment, central maintenance is enabled throughout an enterprise.

- Maintenance facility for updating NetDoor client and server systems. An administrator can schedule automatic information updates on any NetDoor system. Changes are propagated without end user involvement.

NetDoor characteristics can be viewed from both a user's and an administrator's perspective.

User Perspective:

- Users browse through a catalog of the available applications and request one or more applications to be added to their NetDoor folders.
- Any application that does not require reconfiguration of the user's system can be run from a server rather than being installed on the user's system. Users can try an application before adding it to their NetDoor folders.
- When applications require configuration changes, the NetDoor catalog function automatically makes those changes on the user's system.
- Application icons are added to the NetDoor user system, exploiting the ease-of-use features of the OS/2 Workplace Shell.
- A single catalog entry can add multiple applications to ease system setup for specific groups of end users.
- The NetDoor catalog functions can also remove applications that are no longer needed.
- Tailoring the application or creating profiles for user-specific information is fully supported. Users are not limited to only the centrally defined configurations of an application.

Administrator Perspective:

- Administrators can define application catalog entries visible only to specific sets of users.
- NetDoor supplies tools to assist administrators with the definition of catalog entries and application configuration processes. Support personnel define these changes using NetDoor catalog tools and REXX.

### **Hardware Requirements**

Server: i386 or higher; 16MB RAM

Client: i386 or higher; 8MB RAM

### **Software Requirements**

Server: OS/2 2.0 LAN Server 2.0/3.0 or TCP/IP

Client: OS/2 1.3 or higher and LAN Server Requester or TCP/IP 1.2.1

### **IBM Announcement Letter**

In the US: 293-536

### **Ordering Information**

Call 800-IBMCALL (800-426-2255) in the US, or call 800-565-SW4U (800-565-7948), Ext. 246 in Canada.

**Note:** The part numbers, hardware requirements, and software requirements are approximations and might not be complete. For specifics, call the 800 telephone numbers listed previously, contact a reseller, or contact an IBM office near you.

**Part Number**

In the US:

Server 72G6198

Client 72G6312

## **IBM Network SignOn Coordinator/2 1.1**

IBM Network SignOn Coordinator/2 (NSC) aids users on client workstations to coordinate logons and synchronize passwords across multiple locally attached workstations and central site host security facilities. In simple terms, it is a single interface to the multiple systems on which a user has accounts.

NSC allows users to enter their user IDs and passwords one time (either through a full-screen menu or a command line) to run sign-on operations on the following:

- The local OS/2 workstation or local DOS workstation
- User Profile Management (UPM) Nodes
- OS/2 LAN Server domains
- Novell NetWare 3.11 file servers
- Hosts attached to the local DOS or OS/2 workstation, or to NSC servers
- Remote NSC servers, such as OS/2 database servers

NSC supports two configurations: the NSC Client (DOS and OS/2) and the NSC server.

Users can install the NSC DOS or OS/2 Client code to obtain logon and password coordination on OS/2 LAN domains, NetWare 3.11 file servers, and locally attached hosts, as well as various other sign-on options, from a remote workstation installed as an NSC server.

NSC servers can be installed to provide DOS and OS/2 clients password-change capability for UPM accounts on the NSC Server and on hosts attached through the NSC server. (In this case, the NSC Server functions as a gateway.)

Systems configured as NSC Servers can receive and process the password change and password verification requests described in the previous sections from DOS and OS/2 clients. Servers can also store user or group configuration information and transmit it to workstations at which users initiate NSC, if so configured. Sign-on and status activities are represented by icons, and passwords are masked when transmitted to the server.

### **Hardware Requirements**

Server: OS/2 2.1 capable or higher; appropriate LAN/WAN hardware

Client: DOS 3.3 capable or higher

### **Software Requirements**

Server: OS/2 1.3 capable or higher, appropriate LAN/WAN hardware

Client: DOS 3.3 or higher, OS/2 Communications, Database and LAN Transport support

### **IBM Announcement Letter**

In the US: 293-322

**Ordering Information**

Call 800-IBMCALL (800-426-2255) in the US, or call 800-565-SW4U (800-565-7948), Ext. 246 in Canada.

**Note:** The part numbers, hardware requirements, and software requirements are approximations and might not be complete. For specifics, call the 800 telephone numbers listed previously, contact a reseller, or contact an IBM office near you.

**Part Number**

In the US: 96F8628

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# Desktop Operating Systems

## IBM OS/2 Warp, Version 3

Imagine interacting with your computer in a way that is not only intuitive, but fun. Imagine having a true multitasking system that works the way you do. Imagine taking advantage of all the speed and power your 32-bit computer has to offer. You don't have to imagine. You can have all this and more with IBM's OS/2 Warp, Version 3.

Now you can run an extensive array of DOS and Windows<sup>†</sup> applications, plus a whole new collection of 32-bit software programs in a stable, crash-proof environment. And you can do it faster and more easily than you ever dreamed, on your desktop or laptop, in as little as 4MB of memory.

### IBM Operating System/2 Warp, Version 3 at a Glance

There are two separate OS/2 Warp products to choose from: one is for users who have Microsoft\*\* Windows<sup>†</sup> installed and the other is for users who do not have Windows<sup>†</sup> installed, but would like to run DOS and Windows<sup>†</sup> applications under OS/2 Warp.

### The New Standard

Operating System/2 Warp is the latest version of the OS/2 operating system that has won more than 45 top industry honors. And now it's even better, optimized to give you terrific performance in low-memory environments, with a host of new features that make it even easier to use. What's more, it is enriched with BonusPak for OS/2 Warp, a separate product that ships with OS/2 Warp, that provides a suite of full-function applications, plus built-in access to the information highway.

The new OS/2 Warp is productive, fun, and easy to use; the perfect fit for small businesses, notebook computers, and home use. Whether you are a novice or a power user, this advanced, graphical 32-bit operating system brings computing to the human level, while offering you more capability than you ever dreamed possible.

And everyone will benefit from the object-based Workplace Shell. This truly intuitive interface has been visually redesigned with 3-D and animated icons that make it even simpler and more enjoyable to use. Plus, it can be customized to work the way you do.

OS/2 Warp's true multitasking and multithreading capabilities allow you to work in the most natural and productive way. You can run an extensive array of DOS, Windows<sup>†</sup>, and OS/2 applications at the same time if you choose, or attend to one task while one or more others run in the background. And thanks to OS/2 Warp's efficient use of memory, processor-intensive applications run faster.

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<sup>†</sup> There are two OS/2 Warp products to choose from, depending on what your system currently has installed and what type of applications you want to run. Both of these include the support needed to run a wide variety of OS/2 and DOS applications. If you already have Windows installed, the OS/2 Warp product that uses your existing Windows is the product to choose. If you don't have Windows installed and want to run Windows applications, choose the OS/2 Warp product that includes IBM's WIN-OS/2 code, which provides the support required to run most Windows applications.

## Proven and Reliable

Why wait to harness your computer's full 32-bit capabilities? OS/2 Warp is a proven, robust 32-bit operating system that already has more than 2,000 applications written for it, plus, it supports your existing DOS and Windows<sup>†</sup> applications. And because it has been honed and tested through several releases, you know you can depend on it to safely run your most important applications. OS/2 Warp from IBM: It is the new standard in personal operating systems.

## High Performance

OS/2 Warp is optimized to give you significantly higher performance over previous OS/2 versions. With as little as 4MB of memory, you can make the most of all that it has to offer, on portables and desktops alike.

Your processor-intensive applications will run more swiftly, thanks to enhanced memory management. This powerful operating system also features single-click access to your applications from the Workplace Shell's LaunchPad, so you will save multiple steps and will not have to wait for your computer to catch up. Screen response times are snappier too, and less waiting means more time to be productive.

## Access the Information Highway

The BonusPak for OS/2 Warp can be your passport to the global community of the Service, thanks to IBM's Internet Connection Service. This information-highway access solution lets you seamlessly navigate through the Internet with easy-to-use graphical interfaces and automatic dial-up connection to a worldwide Internet service provider. Now, even if you are a novice user, you can surf the net and connect with people and services around the world.

Using the IBM WebExplorer and Gopher features, you will be able to find and retrieve data from thousands of databases worldwide, look at the latest NASA pictures taken by Voyager, or entertain young users with audio-enhanced cartoon characters. With FTP or Gopher, you can download software, news, weather maps, images, and more.

You can also tap into more than 4,000 news groups with NewsReader. It's like having an electronic conversation with people who share your interests, for example, photography, political news or fine wines. You can send e-mail as easily as making a phone call. What's more, IBM's WebExplorer allows you to participate in the growing Internet World Wide Web, letting you access company home pages, shopping opportunities, and valuable information. Hyperlinks make Internet navigation a snap.

**Note:** The IBM WebExplorer is available to all users through 1/95 by downloading it from the Internet. Thereafter, the IBM WebExplorer will be part of the IBM OS/2 Warp package.

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<sup>†</sup> There are two OS/2 Warp products to choose from, depending on what your system currently has installed and what type of applications you want to run. Both of these include the support needed to run a wide variety of OS/2 and DOS applications. If you already have Windows installed, the OS/2 Warp product that uses your existing Windows is the product to choose. If you don't have Windows installed and want to run Windows applications, choose the OS/2 Warp product that includes IBM's WIN-OS/2 code, which provides the support required to run most Windows applications.

## Simple Operation and Installation

When it comes to simplicity and smooth operation, OS/2 Warp takes you to a whole new level. The enhanced Workplace Shell presents an inviting desktop for first-time users, and can be customized to place any of your favorite functions in the LaunchPad. For example, you can switch between applications or shut down your system quickly.

Installation of OS/2 Warp is quick and simple. You can choose easy install and be up and running without a hitch. Your applications, even DOS and Windows<sup>†</sup> applications, can be installed more quickly, too.

OS/2 Warp's new tutorial lets you get actual work done as you learn. And if you're a notebook user, the new Plug and Play feature is perfectly suited for you. The system automatically identifies the PCMCIA cards you have installed so you won't have to reconfigure and reboot if you swap your modem for your PCMCIA hard drive.

## BonusPak for OS/2 Warp

OS/2 Warp is a terrific value. Not only do you get this exceptional 32-bit operating system, you also get BonusPak for OS/2 Warp, which provides a set of full-function applications, not just mini-apps, that makes the most of OS/2 Warp's advanced features.

First, there is IBM Works, which includes word processing, spreadsheet, charting, data filing and report writing applications, all integrated to work together with the same easy-to-learn graphical interface.

That's not all: you also receive fax and communications software, including HyperAccess Lite for OS/2 that gives you an easy way to access online services, bulletin boards, and other PCs and mainframes, plus Personal Information Manager, e-mail, software for CompuServe, and IBM's Person to Person for OS/2, a software solution for collaborative computing.

BonusPak for OS/2 Warp, also includes the Multimedia Viewer, which lets you view software motion video and images and plays audio files. You can capture, clip, and play synchronized video and audio with Video IN for OS/2. Plus, there is the System Information Tool, a utility that assists with system and software problem resolution. You can install as many of these applications as you wish, quickly and easily so you're sure to be up and running in no time.

## Hardware Requirements

i386\*\* SX microprocessor (or compatible) or higher; VGA display (minimum); fax/modem (to access information highway); 4MB RAM (minimum); 35MB to 50MB of DASD, depending on the installation options selected; BonusPak for OS/2 Warp requires up to 30MB additional free space (user-selectable)

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<sup>†</sup> There are two OS/2 Warp products to choose from, depending on what your system currently has installed and what type of applications you want to run. Both of these include the support needed to run a wide variety of OS/2 and DOS applications. If you already have Windows installed, the OS/2 Warp product that uses your existing Windows is the product to choose. If you don't have Windows installed and want to run Windows applications, choose the OS/2 Warp product that includes IBM's WIN-OS/2 code, which provides the support required to run most Windows applications.



**Software Requirements**

Not applicable

**IBM Announcement Letter**

In the US: 294-667

**Ordering Information**

Call 800-IBMCALL (800-426-2255) in the US, or call 800-565-SW4U (800-565-7948), Ext. 246 in Canada.

**Note:** The part numbers, hardware requirements, and software requirements are approximations and might not be complete. For specifics, call the 800 telephone numbers listed previously, contact a reseller, or contact an IBM office near you.

**Part Number**

In the US:

OS/2 Warp:

3.5 inch diskette 83G8100

CD-ROM 83G8102

OS/2 Warp with WIN-OS/2\*:

3.5 inch diskette 83G8700

CD-ROM 83G8701

## SOMobjects Developer Toolkit for OS/2

The SOMobjects\* Developer Toolkit for OS/2 provides an open, standards-compliant, object-oriented development environment on the OS/2 and AIX platforms. The product provides distributed, language-neutral capabilities for defining and manipulating objects/class libraries. It provides the long-needed technology for breaking the language barriers that have confined object-oriented programming development environments to language-related exclusive islands. SOM-based objects can be truly open and shared in any application language and distributed across heterogeneous networks.

Language neutrality for objects and class libraries is a unique differentiator for this product. Code can be reused to extend beyond single language boundaries, making the benefits of object-oriented programming (OOP) far more open and expansive. The Toolkit includes language bindings for use with C and C++\*\* programming languages.

SOMobjects for OS/2 is fully compliant with the Common Object Request Broker Architecture (CORBA\*\*) specification of the Object Management Group (OMG). The product also provides distributed object compatibility across processes or address spaces in a single workstation, and across multiple workgroup nodes in a workgroup LAN configuration. The respective run-time packages, Workstation Runtimes, and Workgroup Runtimes, enable the running of SOM-based applications with the described distributed capabilities.

### Hardware Requirements

OS/2 2.0 or higher, 10MB RAM (includes OS/2), 14MB DASD

### Software Requirements

OS/2 or higher

### IBM Announcement Letter

In the US: 293-319

### Ordering Information

Call 800-IBMCALL (800-426-2255) in the US, or call 800-565-SW4U (800-565-7948), Ext. 246 in Canada.

**Note:** The part numbers, hardware requirements, and software requirements are approximations and might not be complete. For specifics, call the 800 telephone numbers listed previously, contact a reseller, or contact an IBM office near you.

### Part Number

In the US: 96F8647

## **IBM OS/2 for Symmetrical Multiprocessing 2.11**

OS/2 for Symmetrical Multiprocessing (OS/2 for SMP) expands the OS/2 family of products by providing support for multiple Intel processors within a single personal computer. It contains architecture support for 1 to 16 Intel processors. OS/2 for SMP supports the Multiprocessor Specification V1.1 (MPS1.1). Systems built on this standard can run OS/2 for SMP without making changes to the BIOS, operating system, and hardware interfaces.

OS/2 for SMP provides all the benefits of OS/2 2.1 (industry standard device support, compliance with industry standards, a graphical installation, an online tutorial, enhanced standing as a premier client, and enhanced support for OS/2), DOS, and Windows programs. All these features are delivered on top of a stable, mature platform that has been “fit and finished” over time.

OS/2 for SMP can provide scalable performance and compatibility with DOS, Windows 3.1, and OS/2 applications to extend your investment in software. Using OS/2 for SMP, server systems can be scaled to handle larger networks running CPU-intensive applications, such as database and graphics programs. *Scalable performance* means that you can have the power you need in your current SMP-compatible computer as well as the ability to grow to new, more powerful applications. OS/2 printer and video drivers are identical to those included in the OS/2 2.1 product.

OS/2 2.1 protects your investment in existing DOS and Windows applications by providing the capability for them to run simultaneously and seamlessly with OS/2 16- and 32-bit applications on the same display. Multiprocessing benefits can be realized by DOS and Windows 3.1 applications because each Virtual DOS Machine (VDM\*\*) under OS/2 for SMP is a separate task that is dispatched to available processors. You can continue to run existing applications while using advanced 32-bit OS/2 applications.

OS/2 has been enhanced to support Symmetric Multiprocessing. These systems contain from 2 to 16 Intel 486 or Pentium processors in a single personal computer. There are some very attractive benefits of SMP beyond the increased raw CPU power. *Caching* is a technique used in hardware and software to increase performance. SMPs increase the effectiveness of various caches dramatically.

OS/2 for SMP expands the OS/2 Operating System family of products to exploit the emerging technology of multiple Intel 486DX or Pentium processors within a single personal computer. SMP computers represent the high end of the personal computer market with up to 16 processors operating within a single system.

### **Hardware Requirements**

See Announcement Letter

### **Software Requirements**

See Announcement Letter

### **IBM Announcement Letter**

In the US: 294-407

### **Ordering Information**

OS/2 for SMP is primarily a preload/preinstall product; however, it can be ordered from software dealers or the following 1-800 numbers. Call 800-IBMCALL (800-426-2255) in the US, or call 800-565-SW4U (800-565-7948), Ext. 246 in Canada.

**Note:** The part numbers, hardware requirements, and software requirements are approximations and might not be complete. For specifics, call the 800 telephone numbers listed previously, contact a reseller, or contact an IBM office near you.

**Part Numbers**

In the US:

OS/2 for SMP 1-2 Processors CD-ROM 83G7550  
OS/2 for SMP 1-7 Processors CD-ROM 83G8077  
OS/2 for SMP 1-16 Processors CD-ROM 83G8078

## IBM PC DOS 6.3

PC DOS 6.3 is an advanced 16-bit operating system with superior features, performance, and ease of use. PC DOS 6.3 is compatible with previous DOS versions, including MS-DOS. But PC DOS 6.3 delivers even more. In one all inclusive package, you get many of the best new features and functions on the market today.

Several of the new features and functions are:

- Improved memory management and performance with enhanced EMM386 support and a dynamic memory optimizer that automatically tracks and improves memory usage.
- Integrated SuperStor\*\*/DS disk compression that increases the amount of data that can be stored on the disk. PC DOS 6.3 compression is fully compatible with MS-DOS DoubleSpace technology. This function offers valuable features like Universal Data Exchange (UDE), which allows users to share compressed floppy diskettes with other users running any version of DOS with or without compression.
- Improved feature-rich backup utility. PC DOS 6.3 includes the award-winning, full-featured Central Point backup utility with user-friendly full-screen DOS and Windows interfaces, file viewers, and SCSI and QIC/40 tape support.
- Proven industrial-strength protection against various forms of computer viruses. This package protects against over 2000 viruses while maintaining a small memory footprint from 1KB to 6KB.
- Program scheduling using a full-screen scheduler utility with an easy-to-use calendar interface that supports unattended operation. This feature makes other programs such as defrag, anti-virus, and backup even more useful.
- Powerful and flexible text editor. The E editor lets you edit and view multiple files, change margins and tabs, and use macros to do addition, drawing, sorting, and much more.
- PEN support is included in PC DOS 6.3. Full-numeric, gesture, and mouse support is available for PEN-aware or PEN-unaware applications. PEN technology lets users with the appropriate hardware substitute a pen for the keyboard, or mouse.
- Provides PCMCIA technology. This is the standard that offers credit-card sized hardware options. PC DOS 6.3 offers PCMCIA support from Phoenix\*\* Technologies with features like hot-plugability, power management, and support for a wide array of device drivers.

### Hardware Requirements

i80x86-based IBM-compatible personal computer, 3MB DASD, 512KB RAM (minimum)

### Software Requirements

Not applicable

### IBM Announcement Letter

In the US: 294-263

**Ordering Information**

Call 800-IBMCALL (800-426-2255) in the US, or call 800-565-SW4U (800-565-7948), Ext. 246 in Canada.

**Note:** The part numbers, hardware requirements, and software requirements are approximations and might not be complete. For specifics, call the 800 telephone numbers listed previously, contact a reseller, or contact an IBM office near you.

**Part Number**

In the US:

Base, new machine version 82G5400

Upgrade version 82G5401

## Other Related Operating Systems

### IBM AIX 4.1

IBM AIX 4.1, the most significant enhancement to AIX since initial introduction, delivers new functions in a system designed to be the platform for your growth for many years to come. AIX 4.1 is largely compatible with AIX Version 3. Middleware and applications with kernel extensions must be evaluated individually for compatibility. Some companion licensed programs from IBM are announced concurrently with AIX 4.1; others will follow.

AIX 4.1, a new version of IBM's implementation of the UNIX operating system, supports and exploits the latest in POWER2 and PowerPC technologies. AIX 4.1 continues to support your investments in previous IBM POWER, POWER2, and PowerPC systems, as well as the emerging PowerPC Reference Platform.

AIX 4.1 enables you to select from specific packages of AIX function tailored for typical client and server environments:

- AIX 4.1 for Clients
- AIX 4.1 for Servers

The AIX Version 4.1 graphical user interface (GUI) and Installation Assistant help facilitate AIX installation.

A new GUI, based on the Common Desktop Environment, enhances user productivity. For AIX 4.1, this new GUI is included in AIX 4.1 for Clients and AIX 4.1 for Servers packages.

The broad scalability of AIX is enhanced in AIX 4.1 to enable a wide range of system solutions from entry level to enterprise level. AIX 4.1 is enabled for multiprocessing.

AIX 4.1 is designed to conform to standards for compatibility with other UNIX systems. This includes support for a range of standards and specifications, including the X/Open XPG4 Base Profile and the emerging common application interfaces defined by PowerOpen\* and Spec1170.

AIX 4.1 also enhances language support for traditional Chinese and Korean, adds bidirectional library support, and supports additional Arabic, Hebrew, and Eastern European locales.

AIX 4.1 provides tools and enhanced integrated function in the open environment of the AIX client/server dimension. You can continue to expand your business with a proven, highly successful operating system.

Following is a summary of the enhancements in AIX 4.1:

- Provides the most powerful version of AIX, from affordable entry level, to the high-power enterprise level
- Provides improvements such as greater than 2GB file systems, AIX kernel threads, and enhancements to the install process
- Protects your investment in current systems and supports new systems
- Provides you with package choices tailored for client and server environments

- Provides a new GUI that is based on the Common Desktop Environment
- Improves ease-of-use with the addition of a GUI for installation and automatic installation of device drivers detected during install
- Improves standards alignment because it is designed to meet the XPG4 Base Profile definition and the emerging common applications interfaces defined by Spec1170 and PowerOpen, and to continue its commitment to openness
- Provides choice of flexible service options
- Enhances National Language Support
- Provides Journaled File System (JFS) support for disk fragmentation, and for dynamic compression and decompression
- Introduces a new license

#### **Hardware Requirements**

Any RISC System/6000 model except RISC System/6000 7016 POWERserver\* 730 and RISC System/6000 Notebook Workstation model N40. See the Announcement Letter for details.

#### **Software Requirements**

Server: 16MB system memory, 164MB DASD plus 72MB DASD for graphic servers

Client: 16MB system memory, 128MB DASD plus 72MB DASD for graphic clients

#### **IBM Announcement Letter**

In the US: 294-439

#### **Ordering Information**

**Note:** The part numbers, hardware requirements, and software requirements are approximations and might not be complete. For specifics, contact a reseller or an IBM office near you.

#### **Part Number**

In the US: 5765-393 (New users). See Announcement Letter for more part numbers.



## IBM OS/400 3.1

Operating System/400\* (OS/400) provides an outstanding foundation from which AS/400 customers can expand their businesses. To excel in today's competitive environment, solutions must be delivered faster than ever with higher quality. The sales forces, product development teams, and supporting staffs who can demonstrate and deliver effective solutions in the shortest time are the most successful. In the information technology industry, however, the "right" solution means different things to different people. Some think of it in terms of state-of-the-art client/server and openness solutions, while others think of it in terms of a mature and stable platform. For all customers, resources must be focused so users can concentrate on business needs, and not on inventing and managing the system.

To meet these dynamic needs, OS/400 3.1 provides the tools to handle two computing environments. Enhancements for the highly successful AS/400 commercial computing environment continue to build on proven function. The second environment, client/serving, has been greatly enhanced. These enhancements include performance, adherence to industry standards, and database support. You can take advantage of the system's price/performance and integration of system solutions for a complete product package. Both approaches are flexible and contribute to the AS/400 reputation for reliability and ease of use.

OS/400 database management functions have been expanded with advanced operating system function, and given the name DB2/400\*. As the most widely used multiuser relational database management system (RDBMS) in the world, DB2/400 has evolved to include state-of-the-art database functions, improved performance, and conformance to industry standards. DB2/400 continues to provide the stability and maturity for which it has always been known, and is included as part of OS/400 at no additional cost.

Following is a summary of OS/400 3.1:

- The OS/400 database manager (DB2/400) provides advanced operating system function.
- OS/400 supports the Client Access/400 Family of products.
- Significantly enhanced are the AS/400 system's portability and interoperability characteristics in a heterogeneous networked world. With Integrated File System (IFS), selected implementation of industry standards such as POSIX, XPG, BSD Sockets, and DCE is provided. Your investments in existing systems, networks, applications, data, and people are preserved.
- Significant TCP/IP functional enhancements and APPC performance improvements are provided.
- OS/400 communications is now part of the AnyNet\* product offerings.
- Simple Network Management Protocol (SNMP) supports a heterogeneous environment using TCP/IP.

### Hardware Requirements

Any AS/400 model, 600MB DASD

### Software Requirements

All AS/400 system programs must be at the same release and modification level

**IBM Announcement Letter**

In the US: 294-225

**Ordering Information**

**Note:** The part numbers, hardware requirements, and software requirements are approximations and might not be complete. For specifics, contact a reseller, or contact an IBM office near you.

**Part Number**

In the US: 5763-SS1

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# Distributed Computing Environment

## IBM AIX Distributed Computing Environment (DCE) Product Family

The AIX Distributed Computing Environment (DCE) product family is a set of licensed products based on the Distributed Computing Environment from the Open Software Foundation (OSF).

AIX DCE is the foundation for distributed, client/server computing in the open enterprise for the 1990s. AIX DCE gives you access to enterprise-wide data and hardware using IBM RISC System/6000 POWERstation\* and POWERserver\* machines. AIX DCE consists of the following components:

- AIX DCE Base Services/6000 provides threads, remote procedure call, cell director, security clients, time services, basic distributed file system services, and administrative tools.
- AIX DCE Cell Directory Server/6000 provides a highly available, efficient naming service for all network objects.
- AIX DCE Security Server/6000 provides data encryption using a trusted, third-party model and a two-step process of authentication and authorization based on Kerberos Version 5.
- AIX DCE Enhanced Distributed File System/6000 extends the basic distributed file system services by providing replication, cloning, and file set aggregation.
- AIX DCE Threads/6000 provides a separate packaging of DCE user pthreads that permit programmers to exploit inherent parallelism in a distributed environment. Threads support continues to be offered in DCE Base Services/6000 as well.

### AIX DCE Base Services/6000

AIX DCE Base Services/6000 is a collection of four modules that are available on an individual basis:

- AIX DCE Base
- AIX DCE Base Privacy Level Protection (a no-charge option)
- Encina for AIX Base (optional)
- AIX DCE Base and Encina for AIX Base.

The first module, AIX DCE Base module, provides support for remote procedure call, threads, cell directory, security, time, and the distributed file system. The distributed file system is the key distributed data-sharing component of DCE. DFS provides a uniform global name space, centralized administration, and client caching for scalability and performance. AIX DCE Base also contains the administrative tools that allow any machine in the network to perform as an administrative console. AIX DCE Base also provides optionally installable tools, such as the Network Interface Definition Language (NIDL) to IDL conversion program and the IDL compiler. These tools are used by DCE application developers.

The second module, AIX DCE Base Privacy Level Protection module, is a no-charge module that is used for controlling the export of the Data Encryption Standard (DES) algorithm.

The third module, the Encina Base, is an optional module. It is used to extend the distributed computing environment, and along with the services provided by the Encina for AIX product family, provide application developers data integrity that is critical for commercial transaction processing.

The final module consists of AIX DCE Base and Encina Base for AIX combined into a single module. This module is provided to simplify the configuration of DCE cells that use the services of the Encina product family.

#### **AIX DCE Cell Directory Server/6000**

The AIX DCE Cell Directory Server/6000 is a separate licensed program product that provides a central repository for information about resources in a DCE cell that can be retrieved from anywhere in the cell. It is a replicated service for higher availability and provides caching for increased efficiency.

#### **AIX DCE Security Server/6000**

The AIX DCE Security Server/6000 is a separate licensed program product that enables secure communications and controlled access to resources. It provides a set of security-related functions, including authentication, authorization, and user account management. Use of the security server replication feature provides a higher level of availability for these functions.

#### **AIX DCE Enhanced Distributed File System/6000**

Includes a log-based physical file system, the DCE Local File System (LFS). LFS supports enhanced administration features that are useful in a distributed environment, such as limiting access to DCE LFS data by supporting DCE access control lists. This is available as a separate licensed program.

AIX DCE Enhanced DFS/6000 also includes the ability to simplify data administration by dividing the file system into easily managed units called *filesets*.

#### **AIX DCE Threads/6000**

AIX DCE Threads/6000 is a new licensed program that offers a user-level pthreads library. As a separate offering, it is ideal for those who do not need the DCE services, such as directory and security.

Application developers can use AIX DCE Threads/6000 to structure concurrent applications. AIX DCE Threads/6000 complies with the POSIX 1003.4a, Draft 4 standard.

#### **AIX DCE Global Directory Server/6000**

The Global Directory Server for AIX DCE provides a distributed, replicated directory service that can be used in a DCE environment as the highest level directory service to allow multiple DCE cells to share directory location information using the CCITT X.500/ISO 9594 industry standard.

#### **AIX DCE Global Directory Client/6000**

The Global Directory Client is a separate licensed program that provides a user-level pthreads library, administration tools to manage the directory database, and the X/Open XDS/XDM application programming interface. XDS/XDM is a common API that enables applications to access either the cell directory server or the global directory server.

#### **Hardware Requirements**

Refer to announcement letter.

#### **Software Requirements**

Refer to announcement letter.

## **IBM Announcement Letters**

In the US: 292-533, 293-363, 293-491

## **Ordering Information**

**Note:** The part numbers, hardware requirements, and software requirements are approximations and might not be complete. For specifics, contact a reseller or an IBM office near you.

## **Part Number**

In the US:

- AIX DCE Base Services/6000 5765-117
  - DCE and Encina base feature 5050
  - DCE base feature 5051
  - Encina base feature 5052
  - Base Privacy Protection Level feature 5053
- AIX DCE Cell Directory Server/6000 5765-119
- AIX DCE Security Server/6000 5765-118
- AIX DCE Enhanced Distributed File System/6000 5765-121
- AIX DCE Threads/6000 5765-232
- AIX DCE Global Directory Server/6000 5765-120
- AIX DCE Global Directory Client/6000 5765-259

## Encina for AIX/6000 Product Family

The Encina family is a suite of 5 modular products that allow companies to start designing and begin implementing distributed, transactional applications that run in a heterogeneous, networked computing environment. The products are based on technology provided by the Transarc Corporation.

Encina consists of 5 separate products:

### **Encina Server for AIX/6000**

The Encina Server for AIX/6000 is required on workstations that run transactional application servers. It provides logging capabilities that enables the databases, managed by the transaction manager, to be rolled back to their original state in the event that a transaction fails. The X/Open XA interface included in this product provides support for both the preliminary version and final version of the XA interface specification.

### **Encina Structured File Server for AIX/6000**

Where a fast recoverable record-oriented data storage mechanism is desired, the Encina for AIX/6000 SFS provides support for indexed sequential storage of data. This licensed program product supports B-tree clustered files, relative files, and entry-sequenced files. Encina Structured File Server for AIX/6000 takes full advantage of the transaction integrity and log-based recovery features of the client portion of Encina and Encina Server for AIX/6000. It supports industry-standard interfaces, such as ISAM defined by X/Open and Micro Focus\*\* COBOL's external file handler, allowing C users and COBOL users to share a common data storage mechanism.

### **Encina Monitor for AIX/6000**

The Encina Monitor for AIX/6000 adds the development, execution, and administration services to the capabilities of the Encina Server AIX/6000. Administration is provided by a cell management facility that monitors active clients, server availability, and server load, and also coordinates start-up and shutdown. System administrators can use any workstation in the cell managed by the monitor to access administrative functions.

### **Encina PPC Executive with SyncPoint Level 2 Support for AIX/6000**

The basic function provided by this licensed program is to allow workstations on the network to communicate as peers over TCP/IP. This server supports the CPI-C/RR interface. CPI-C has been adopted by X/Open for peer-to-peer communications.

### **Encina for PPC Gateway with SyncPoint Level 2 Support for AIX/6000**

The Gateway with SyncPoint Level 2 Supports bridges TCP/IP and SNA networks, and interoperates with CICS\* products on mainframes.

### **Hardware Requirements**

Minimum machine requirements are affected by the application workload distribution, total system memory, and page space availability.

### **Software Requirements**

See Announcement Letter.

### **IBM Announcement Letter**

In the US: 292-534, 293-363, 294-047, 294-428

## Ordering Information

**Note:** The part numbers, hardware requirements, and software requirements are approximations and might not be complete. For specifics, contact a reseller or an IBM office near you.

### Part Numbers

In the US:

- Encina Server for AIX/6000 5696-240
- Encina Structured File Server for AIX/6000 5696-237
- Encina Monitor for AIX/6000 5696-239
- Encina Peer-to-Peer Executive with SyncPoint Level 2 Support for AIX/6000 5696-931
- Encina Peer-to-Peer Gateway with SyncPoint Level 2 Support for AIX/6000 5696-930

## **IBM DCE Software Developer's Kit for OS/2 and Windows 1.0**

The Distributed Computing Environment (DCE) Software Developer's Kit for OS/2 and Windows facilitates the creation of applications that enable IBM PC-compatible systems to take advantage of DCE. The application programming interfaces for DCE reside above the operating system and network transmission layers.

DCE is based on technology licensed from the Open Software Foundation (OSF) and is endorsed by leading computer manufacturers that participate in the OSF (IBM, DEC\*\*, HP\*\*, and others). It enables the creation of applications that allow a network of multivendor systems to appear as a single system with user access to many different computing resources on a network. Since the architecture accommodates numerous operating system and hardware platforms, any DCE-enabled process running on one computer can interoperate with a DCE-enabled process on other computers, regardless of each computer's manufacturer or operating system.

The DCE components are:

### **OS/2 Security Services**

This facility is designed to provide authentication, authorization (using access control lists), user account management, and data integrity verification. Security is based on an enhanced Kerberos system defined by the Massachusetts Institute of Technology (MIT) with components from Hewlett-Packard\*\*. In the US, the government Data Encryption Standard (DES) is available for encryption of user data through a remote procedure call.

### **OS/2 Cell Directory Services (CDS)**

This facility defines a single naming model through which resources in the distributed system are identified and located. Use of this model permits you to access servers and other system resources by name without needing to know the network location, even when the resource's network has changed.

### **Remote Procedure Call (RPC)**

This is a proven method for distributing application execution across multiple computers in a network. The SDK provides a compiler that converts high-level interface descriptions of the remote procedures into portable C-language source code. This code permits the RPCs to process the same way as a local procedure.

### **Time Services and Threads Facility**

Time Services provides regulation of clocks for time synchronization to assist in scheduling activities and processing sequences. Threads provides the ability to create and control multiple threads of execution within a single process in cases where this facility is lacking in the base operating system.



**Software Developer's Kit Features:**

This software developer's kit includes distributed computing run-time clients; 5 each for OS/2 and Windows. These clients feature RPC, Threads, and time services and provide access to Cell Directory and Security Services. In addition, there are development tools for both OS/2 and Windows. These tools include:

- An Interface Definition Language (IDL) compiler
- A Universal Unique Identifier generator
- Dynamic Link Libraries
- Sample source code

**Hardware Requirements**

OS/2-based development environments: 10MB RAM (12 recommended), 18MB DASD (estimated), i386 or higher

Windows development environments: 8MB RAM (estimated), 6M DASD (estimated), i386 or higher

Run-time environments for both OS/2 and Windows are smaller

**Software Requirements**

OS/2-based environments: OS/2 2.0 or higher; OS/2 2.1 or OS/2 2.1 Special Edition for use with Windows 3.1 recommended

Windows environments: DOS 5.0 recommended, Windows 3.1

**IBM Announcement Letter**

In the US: 293-428

**Ordering Information**

Call 800-IBMCALL (800-426-2255) in the US, or call 800-565-SW4U (800-565-7948), Ext. 246 in Canada.

**Note:** The part numbers, hardware requirements, and software requirements are approximations and might not be complete. For specifics, call the 800 telephone numbers listed previously, contact a reseller, or contact an IBM office near you.

**Part Number**

In the US: 96F8690

## **IBM Distributed Computing Environment Runtime Client for OS/2 1.0**

The IBM Distributed Computing Environment Runtime Client for OS/2 is a robust, production-level DCE runtime client for the IBM PC-compatible market. It is designed to interoperate with IBM AIX DCE/6000 and other Open Software Foundation (OSF) DCE-compliant implementations. Distributed applications developed for the DCE UNIX environment can now be expanded to include the IBM PC-compatible market with this DCE runtime client for OS/2.

The product is based on DCE Version 1.0.2, as provided by OSF, and allows execution of both the client and server portions of the DCE remote procedure call. It also provides access to the DCE Cell Directory and DCE Security Services as needed for distributed computing. The DCE client coexists with all other OS/2 networking functions in the OS/2 multitasking environment.

### **Hardware Requirements**

i386 or higher, 5MB RAM (7MB recommended), 12MB DASD

### **Software Requirements**

IBM OS/2 2.0 or higher; OS/2 2.1 or OS/2 2.1 Special Edition for Windows 3.1 recommended

### **IBM Announcement Letter**

In the US: 293-428

### **Ordering Information**

Call 800-IBMCALL (800-426-2255) in the US, or call 800-565-SW4U (800-565-7948), Ext. 246 in Canada.

**Note:** The part numbers, hardware requirements, and software requirements are approximations and might not be complete. For specifics, call the 800 telephone numbers listed previously, contact a reseller, or contact an IBM office near you.

### **Part Number**

In the US: 96F8691

# IBM Distributed Computing Environment Runtime Client for Windows

The IBM Distributed Computing Environment Runtime Client for Windows expands the reach of DCE applications to this popular desktop environment. It is designed to interoperate with IBM AIX DCE/6000 and other Open Software Foundation (OSF) DCE-compliant implementations.

The product is based on DCE Version 1.0.1, as provided by OSF, and allows execution of both the client and server portions of the DCE remote procedure call. It also provides access to the DCE Cell Directory and DCE Security Services as needed for distributed computing.

## Hardware Requirements

i386 or higher, 4MB RAM (6MB recommended), 6MB DASD (10MB recommended)

## Software Requirements

DOS 3.3 or higher (5.0 or higher recommended), Windows 3.1 with the appropriate transport package, or OS/2 2.1

## IBM Announcement Letter

In the US: 294-003

## Ordering Information

Call 800-IBMCALL (800-426-2255) in the US, or call 800-565-SW4U (800-565-7948), Ext. 246 in Canada.

**Note:** The part numbers, hardware requirements, and software requirements are approximations and might not be complete. For specifics, call the 800 telephone numbers listed previously, contact a reseller, or contact an IBM office near you.

## Part Number

In the US: 96F8692

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# Network Communications

## Host Attachment

### IBM Communications Manager/2 1.1

IBM Communications Manager/2 (CM/2) is IBM's premier communications manager product for OS/2. It is an "all-in-one" workstation communications package that allows you to take advantage of new technologies, such as the mobile and client/server computing environment, while protecting your investment in legacy applications and host-based data.

CM/2 addresses today's environment by providing balanced function to exploit the traditional computing environment and the rapidly expanding world of mobile and client/server computing. CM/2 provides stability for mission-critical applications while enabling controlled growth into the emerging new computing environments.

CM/2 provides the connectivity, emulation, and APIs that address the current needs of most enterprises, while also providing room for change and growth. CM/2 is a comprehensive solution that addresses the workstation communication needs for:

- The mobile computing environment with SNA Phone Connect
- High-speed communications across synchronous nonswitched lines
- Large enterprise networks of interconnected LANs, WANs, and hosts
- Distributed networks and client/server environments
- Host-centric systems

CM/2, combined with the power of OS/2, creates significant opportunities in the desktop networking environment. CM/2 1.0 and 1.1 offer a variety of communications and networking features that support connectivity in the client/server environment over local and wide area networks, as well as in traditional office computing environment.

CM/2 1.11, with SNA Phone Connect, extends the reach of CM/2 into the mobile computing environment. Now customers can access SNA applications anywhere there is a phone line. This support is provided for asynchronous, synchronous, and Hayes\*\* AutoSync connectivities. CM/2 1.11 also provides many additional functions, including the integration of high-speed communications across synchronous nonswitched lines.

CM/2 1.1 provides, in a single integrated product, the end user and programmer support, system services functions formerly requiring multiple special-purpose products in DOS, and DOS/Windows-based products. It is an OS/2 Presentation Manager-based product that, in most environments, consumes very little system resources. In a LAN-based environment, client code space can be reduced by utilizing a distributed feature workstation option. In addition, a selective install facility permits installation of only those features required at a specific workstation. This install process can also be done remotely.

End user support includes:

- 3270 Terminal Emulation: COAX and SDLC connections are supported and the connection can flow from a single workstation or through a nondedicated gateway. ISDN flows over X.25 networks are also supported. Up to 26 logical connections may be established and up to 5 different hosts can be active concurrently. Host directed print, file transfer, and graphics view support are provided.
- 5250 Terminal Emulation: AS/400 connections are supported through Ethernet, Twinax, X.25 SDLC, and Token-Ring in support of up to 15 emulator sessions. As is the case with 3270 emulation, these sessions are Presentation Manager-based, and both emulators use the same application programming interface.
- ASCII Terminal Emulation: This function is provided by the imbedded productivity tool, Softerm Custom Plus, licensed for use by Softronics. Programmer support is provided primarily through the 13 supported Application Programming Interfaces (APIs) and the BASIC, C, COBOL, Macro Assembler, and REXX language support.

Among the more significant APIs are:

- Emulator High-Level Language API (EHLAPI): This API allows a program to act like a high-speed keyboard operator in communicating with S/370 and AS/400 hosts.
- Advanced Program to Program Communications (APPC): This API, along with a companion API, provides peer-to-peer-based application support useful in building applications involving multiple-connected LANs.
- ISDN Data Link Control (IDLC): This API provides call, connection, and native protocol support for ISDN-based applications.

System services include:

- A nondedicated SNA gateway capability capable of multiple PU and multiple LU support for both 3270 and 5250 emulation
- IBM SNA session level data compression
- PCMCIA 3270 Adapter support to facilitate usage in the portable laptop environment
- Advanced Peer-to-Peer networking network node and end node support to support transparency among end user nodes in multiple LAN environments
- Remote configuration and installation support through either a LAN server or a remote host

CM/2 1.11 highlights include:

- Connectivity Enhancements
  - SNA Phone Connect
    - SNA applications over asynchronous/synchronous lines (switched/nonswitched)
    - Hayes AutoSync protocol support
    - V25.bis Autodial and Autoanswer
  - IBM MultiProtocol Communications Adapter for SDLC and Async (ISA bus; up to 19.2 Kbps)
  - IBM Wide Area Connector for SDLC and X.25 (MCA and ISA bus; up to 64 Kbps)

- IBM WaveRunner Digital Modem for IDLC (MCA and ISA bus; up to 57.6 Kbps)
- IBM X.25 Interface Coprocessor (ISA bus; up to 64 Kbps)
- IBM 5250 Emulation PCMCIA adapter
- X.25/X.32
  - X.32 (Autoanswer/Autodial and XID)
  - X.25 Facilities Field (including NUI and Closed User Group)
- APPN Enhancements
  - APPN DLUR subset enablement (requires VTAM\* V4R2 or AnyNet V2.0)
  - Interoperability with VTAM Peripheral Border Node
  - CPI-C 2.0 support
- 3270/5250 Emulator Enhancements
  - Import/Export support for OfficeVision/MVS\*
  - APL support for 3270 emulation
  - GDDM-OS2 (GDDM\*) Link incorporated into CM/2
- NLS Enhancements
  - Korean and Spanish versions
  - Brazil, Japanese, Korean, Taiwan keyboard
  - French 122-key keyboard

#### **Hardware Requirements**

i286 or higher, 1.5MB+ RAM, 10MB+ DASD (feature dependent), appropriate adapters

#### **Software Requirements**

OS/2 2.0 or higher

#### **IBM Announcement Letter**

In the US: 293-575

#### **Ordering Information**

Call 800-IBMCALL (800-426-2255) in the US, or call 800-565-SW4U (800-565-7948), Ext. 246 in Canada.

**Note:** The part numbers, hardware requirements, and software requirements are approximations and might not be complete. For specifics, call the 800 telephone numbers listed previously, contact a reseller, or contact an IBM office near you.

#### **Part Number**

In the US: 79G0258

## AnyNet/2

AnyNet/2 uses IBM's Multiprotocol Transport Networking (MPTN) architecture to provide communications protocol independence to application programs.

### AnyNet/2 1.0

AnyNet/2 Version 1.0 supports Advanced Program to Program Communications (APPC) over TCP/IP and Sockets over SNA.

With AnyNet/2, APPC over TCP/IP customers can use the powerful LU 6.2 APPC interface to communicate between workstations in a TCP/IP environment. Any OS/2 APPC or CPI-C application, such as CICS and DB2\*, can communicate between OS/2 workstations across a TCP/IP network. AnyNet/2 provides this without change to application programs. This product is compatible with AnyNet/MVS and provides connectivity to the host environment. AnyNet/2 provides the ability to reduce costs by eliminating duplicate networking hardware, software, and communications lines.

As customers develop APPC applications, two key networking protocols, SNA and TCP/IP, will be able to transport the application program function with no change required to the application.

With Sockets over SNA, you can use the sockets interface to communicate between workstations in an SNA environment. Most BSD 4.3 sockets applications, such as FTP, Telnet, and NFS, can communicate between OS/2 workstations across an SNA network. AnyNet/2 provides this without change to application programs. This product is compatible with AnyNet/MVS and provides connectivity to the host environment. AnyNet/2 reduces costs by eliminating duplicate networking hardware, software, and communications lines.

Two new AnyNet products expand the AnyNet family of solutions, helping to add new applications and to simplify multiprotocol networks: AnyNet/2 2.0 and AnyNet/2 NetBEUI over SNA.

### AnyNet/2 2.0

AnyNet/2 2.0 delivers support for additional SNA logical unit (LU) types, including emulators and printers over TCP/IP networks. This product reduces the number of SNA resources required by using full duplex, when available, and provides OS/2 DCE support when running Sockets applications over SNA networks.

AnyNet/2 2.0 provides:

- SNA over TCP/IP: Adds all LU types (LU 0, 1, 2, 3, and 6.2) to provide total SNA connectivity across TCP/IP networks, including terminals and printers
- Sockets over SNA: Adds full duplex support to allow improved use of SNA networking resources, and adds DCE support for AnyNet/2 NetBEUI over SNA 1.0

- SNA networks to add NetBIOS applications, without adding a separate NetBIOS network: This also extends the use of existing SNA networks to include NetBIOS application traffic without requiring additional router or gateway equipment. Together, these AnyNet functions can help organizations:
  - Broaden end users' access to applications, and reduce the cost and effort usually required to achieve this connectivity
  - Reduce the number of physical and logical networks required, thereby simplifying the network and reducing maintenance costs
  - Improve application programmers' productivity by allowing programmers to focus on new applications without requirements to accommodate new or multiple protocols
  - Protect investment in existing and future applications through application independence from the transport layer

### **AnyNet/2 NetBEUI over SNA**

AnyNet/2 NetBEUI over SNA is a new AnyNet product family member that provides NetBIOS application connectivity across SNA networks without any application changes.

AnyNet/2 delivers multiprotocol transport networking (MPTN) architecture support for OS/2 workstation-to-workstation and workstation-to-VTAM-host communications. Applications can be written or acquired without concern for the underlying network transport protocol.

### **AnyNet/2 Sockets over SNA Gateway 1.1**

The AnyNet/2 Sockets over SNA Gateway 1.1 delivers a set of three gateway sizes. The low-priced entry size meets the needs of small, remote offices by providing 20 concurrent connections. The 100- and 250-connection gateways support the requirements of medium and large networks.

You can change the size of AnyNet/2 Sockets Gateway by simply using a password; you do not have to reinstall or reconfigure anything. These options are separately priced to provide the most cost-effective gateway solution to your multiple protocol networks.

The AnyNet/2 Sockets Gateway, in conjunction with AnyNet/2 and AnyNet/MVS software, connects SNA and TCP/IP networks to allow Sockets applications data to flow freely across both environments. Your workstation and hosts in SNA networks can now run Sockets applications and appear to be directly connected to your TCP/IP network. In addition, dual AnyNet/2 Sockets Gateways can be used to connect TCP/IP networks across an SNA network. All of the connections are made with no changes to your Sockets applications, TCP/IP network, or SNA network.

#### **Hardware Requirements**

i286 or higher

#### **Software Requirements**

OS/2 2.0 or higher, OS/2 Communications Support (TCP/IP for OS/2 2.0 or higher)

#### **IBM Announcement Letter**

In the US:

- AnyNet/2 1.0 293-415



- AnyNet/2 Sockets over SNA Gateway 1.1 294-390
- AnyNet/2 2.0 and NetBEUI 294-392

**Ordering Information**

Call 800-IBMCALL (800-426-2255) in the US, or call 800-565-SW4U (800-565-7948), Ext. 246 in Canada.

**Note:** The part numbers, hardware requirements, and software requirements are approximations and might not be complete. For specifics, call the 800 telephone numbers listed previously, contact a reseller, or contact an IBM office near you.

**Part Number**

In the US:

AnyNet/2 1.0 65G1246

AnyNet/2 2.0 87G7776

AnyNet/2 NetBEUI over SNA 87G7794

AnyNet/2 Sockets 1.1 95G0977

## IBM Personal Communications/3270 4.0

The new Personal Communication/3270 Version 4.0 (PC/3270 V4.0) is a member of IBM's family of premier 3270 and 5250 emulator products. It succeeds PC/3270 V3.1; providing added connectivity, productivity, and operating system support enhancements.

PC/3270 provides host connection and gateway services for the Personal System/2\* (PS/2\*) and personal computers. In a single package, 3270 emulation support is provided for the following:

- Entry-Level DOS mode (Control Unit Terminal (CUT) and Home3270)
- Full Function DOS mode
- Windows mode as a native Microsoft Windows 3.1 and Microsoft Windows for Workgroups 3.11 application
- NEW Windows mode client to Microsoft SNA Server for Windows NT\*\*
- 3270 DOS Gateway

PC/3270 V4.0 continues the theme of using a single product to satisfy your 3270 emulation requirements and allows you to have a common look and feel across a wide variety of connection platforms.

New connectivity enhancements add support for SNA-over-Async and Hayes Autosync. These enhancements are in addition to existing support for a variety of connectivities including Novell's IPX/SPX (NetWare for SAA) and TCP/IP. Support is also provided for connection via credit card (PCMCIA) adapters.

End-user productivity enhancements such as 3D Iconic Tool Bar and 3D Hotspots make it easier than ever for you to access PC/3270 functions, commands, and macros. Enhanced color and keypad mapping give users even more options for customizing PC/3270 to suit their needs.

### Hardware Requirements

PC: 8086 (PC/XT\*), i286, i386, i486\*\*; 384KB RAM (640KB for TCP/IP), 512KB RAM for gateway configuration (640KB for X.25 gateway); appropriate communications adapter and modems

### Software Requirements

PC: PC DOS 3.3, 4.0 with PTF UR24270 or higher, 5.0, or 6.1 or higher; OS/2 2.0 or 2.1 in Windows mode; Novell DOS 7; OS/2 2.0 or 2.1; or Windows 3.1 or Windows for Workgroups 3.11

S/370: See Announcement Letter

### IBM Announcement Letter

Call 1-800-426-4329 (800-IBM-4FAX) and select option 3 for the Announcement Letter list.

### Ordering Information

Call 800-IBMCALL (800-426-2255) in the US, or call 800-565-SW4U (800-565-7948), Ext. 246 in Canada.

**Note:** The part numbers, hardware requirements, and software requirements are approximations and might not be complete. For specifics, call the 800 telephone numbers listed previously, contact a reseller, or contact an IBM office near you.

### Part Number

In the US: 3.5-inch diskettes 20H1749

## IBM Personal Communications AS/400 4.0 for Windows

IBM Personal Communications AS/400 Version 4.0 for Windows connects personal computers with an AS/400. Personal Communications AS/400 provides a full function, integrated solution including the latest in graphical user interface (GUI), shared folder support, and data transfer support in a single, easy to install, software solution running with IBM OS/400 (V2R2 or higher).

Personal Communications AS/400:

- Can run alone as a true Windows-based router or can be integrated with your already existing PC Support/400 installations, or along with the new Client Access/400 programs.
- Provides PC Organizer support along with Text Assist features to integrate platforms seamlessly.
- Makes you as mobile as you need to be with the latest in asynchronous connectivity, including Hayes Autosync support and wireless communications.
- Expands the types and complexity of supported Local Area Networks (LAN) and Wide Area Network (WAN) environments. These include LAN 802.2, Twinaxial, SDLC, NetWare for SAA (IPX) and TCP/IP support, as well as the latest in asynchronous dial capability.
- Provides for connection through credit card adapters (PCMCIA).

Additional functions improve usability and increase overall productivity. Shared Folder support is available to allow the connection of you AS/400 folders to your personal computer, creating a seamless, integrated platform for user productivity. Data Transfer is also provided to allow the updating and sharing of information across your network.

IBM's emulation family of products provide a common look and feel across multiple platforms (DOS, Windows, OS/2, etc.). This enables S/390 networks to integrate with AS/400 networks and provide a consistent emulation look and feel spanning environments. With the common look and feel across platforms and environments, training expenses can be reduced by providing a consistent end user interface across both S/390 and AS/400 emulation platforms.

### Hardware Requirements

PC: i386, i486, or Pentium microprocessor; 3.5-inch diskette drive; 4MB RAM minimum; 7MB DASD; appropriate communications adapter

AS/400: AS/400 all models (9402, 9404, 9406)

### Software Requirements

PC: PC DOS 5.0 or higher, Windows 3.1 or higher, or Windows for Workgroups 3.11

AS/400: OS/400 V2 Release 2.0 or higher; OS/400 V2 Release 3.0 or higher.

### IBM Announcement Letter

Call 1-800-426-4329 (800-IBM-4FAX) and select option 3 for the Announcement Letter list.

**Ordering Information**

Call 800-IBMCALL (800-426-2255) in the US, or call 800-565-SW4U (800-565-7948), Ext. 246 in Canada.

**Note:** The part numbers, hardware requirements, and software requirements are approximations and might not be complete. For specifics, call the 800 telephone numbers listed previously, contact a reseller, or contact an IBM office near you.

**Part Number**

In the US:

3.5-inch diskettes 20H1624

3.5-inch diskettes with AS/400 File Transfer Tape (¼-inch cartridge)  
20H1628

## IBM Personal Communications Toolkit for Visual Basic

The Personal Communications Toolkit for Visual Basic is a companion product to the IBM Personal Communications/3270 and Personal Communications AS/400 for Windows terminal emulator products. The Toolkit provides Windows with a rich set of tools and utilities to create new client/server applications based on S/390 and AS/400 host applications, and new front ends for existing host applications.

With the Personal Communications Toolkit, application developers can create value-added clients (based on Visual Basic) for the Windows workstation that use existing host applications as servers for data and text processing. The clients can utilize the enhanced graphics, video, and sound capabilities of the workstation. The host applications provide the security, integrity, and capacity for storing and processing business-critical data and text. This provides an effective way to migrate mission critical host applications to client/server computing.

With the Personal Communications Toolkit, end users and application developers can create graphical user interface (GUI) front ends for existing S/390 and AS/400 applications. Data and text from one or more host applications can be captured and displayed at a workstation in a Microsoft Windows format. New or revised data can then be returned to the host application from the workstation window.

The Personal Communications Toolkit includes two components:

- Tools and utilities for the application developer
- Run-time support for the IBM Personal Communications emulators

The tools and utilities are productivity aids for application developers working with Visual Basic or C. One of the tools, QuickFRONT Generator\*\* (QFG), generates Visual Basic programs that execute on the workstation and use data and text from S/390 and AS/400 applications. The tools eliminate the need for Visual Basic programmers to have experience with the high level language application programming interface (HLLAPI) that is used with the terminal emulators.

The run-time support consists of Windows dynamic link libraries (DLLs) that work in conjunction with the PC/3270 and Personal Communications AS/400 for Windows emulators. A copy of the DLLs can be made and installed on personal computers that have a license of PC/3270 3.0, or higher; or Personal Communications AS/400 for Windows Version 4.0.

### Hardware Requirements

IBM or IBM-compatible personal computer; RAM as shown under PC/3270 or PC AS/400 in this guide; 4MB DASD in development environment, .5MB DASD in run-time environment

### Software Requirements

Development and run-time environment: PC DOS or MS-DOS\*\* with Windows 3.1 or higher; PC/3270 3.0 or PC AS/400 for Windows 4.0; Borland C++\*\*, Microsoft C, C++, Visual C++\*\*, Microsoft Visual Basic

### IBM Announcement Letter

Call 1-800-426-4329 (800-IBM-4FAX) and select option 3 for the Announcement Letter list.

**Ordering Information**

Call 800-IBMCALL (800-426-2255) in the US, or call 800-565-SW4U (800-565-7948), Ext. 246 in Canada.

**Note:** The part numbers, hardware requirements, and software requirements are approximations and might not be complete. For specifics, call the 800 telephone numbers listed previously, contact a reseller, or contact an IBM office near you.

**Part Number**

In the US: 20G2169

# LAN to LAN Attachment

## TCP/IP for OS/2 2.1

Transmission Control Protocol/Internet Protocol (TCP/IP) 2.0 for OS/2 provides upgrades to functions previously provided in TCP/IP 1.2 and 1.2.1 for OS/2. This product also includes support for the OS/2 2.0 and OS/2 2.1 operating systems.

It consists of a series of separately orderable kits, as follows:

- X Window System Server Kit

TCP/IP supports Version 11 Release 5 (X11R5) of the X Window System\*\* server function. The OS/2 X Window System server enables the end user to display and control X Window System client application programs in an OS/2 windowed session. These application programs can reside in one or more IBM (or other) computing systems that support the X Window System client function.

- X Window System Client Kit

The X Window System (X11R5) enables X Window System client applications to run on OS/2. It includes X libraries and Intrinsics libraries.

- Network File System Kit

The Network File System (NFS) allows you to access files and run programs on remote systems if they are local. This kit includes both an NFS client and server. The NFS client supports file sharing and record locking. This provides a method of protection when sharing files with other users. This support adheres to Version 3 of Sun's Network Lock Manager (NLM) protocol.

- DOS/Windows Access Kit

This facility allows DOS applications written to the IBM TCP/IP for DOS Version 2.1 programming interfaces, and Windows applications written to the Windows Sockets API Version 1.0 or Version 1.1 specifications, to run in an OS/2 environment on top of IBM TCP/IP Version 2.0 for OS/2. This product requires you to have the OS/2 Version 2.1 operating system installed.

- Programmer's Toolkit

The Programmer's Toolkit consists of 32-bit APIs, which include sockets, Sun RPC, FTP API, and SNMP DPI functions. It provides the support for the IBM C Set/2 Compiler.

- Domain Name Server Kit

A Domain Name Server is a designated network node that enables clients to obtain host names, Internet addresses, and host information. It is also used to deliver and route Internet mail to designated hosts. IBM's Domain Name Server is based on BIND (Berkeley Internet Name Domain) 4.8.3 and supports primary, secondary, and caching-only name servers.

- Extended Networking Kit

The SNALink interface with TCP/IP for OS/2 allows you to connect to another TCP/IP network over an SNA network. With this release, TCP/IP now supports the LU6.2 level of SNA networks. SNALink uses the System Network Architecture (SNA) Advanced Program-to-Program Communication (APPC) to communicate to remote hosts and establish sessions between SNALink hosts.

Also included in this kit is the Extended Networking (X.25) interface. The X.25 interface is the standard for protocols with the standard formats that define the interface between a terminal and a packet-switching network. TCP/IP packets are encapsulated into X.25 packets and are transferred over X.25-switched virtual circuits (SVCs), as described in RFC 877.

- NetBIOS Kit

The IBM TCP/IP Version 2.0 for OS/2 NetBIOS kit is an implementation of the Network Basic Input/Output System (NetBIOS) that has been specifically designed to operate with IBM TCP/IP Version 2.0. The NetBIOS program allows peer-to-peer communication over the network with other computers that provide compatible services. The NetBIOS Kit enables communication with any computer conforming to NetBIOS Internet RFCs 1001 and 1002.

- Applications Kit

This kit is comprised of all of the applications that exist in the IBM TCP/IP Version 2.0 for OS/2 Base Kit. They include LPR/LPD, FTP, TELNET, ROUTE/ROUTED, REXX C, and RSH. This kit can be used only if you have installed a protocol stack equivalent to the protocol stack supplied in the IBM TCP/IP Version 2.0 for OS/2 Base Kit.

- OSF/Motif Kit

This support includes the OSF/Motif\*\* Version 1.2 libraries for OSF/Motif client applications on OS/2. The TCP/IP for OS/2 X Window System Client Kit is a prerequisite for the OSF/Motif Kit.

- Asia/Pacific Kit

This kit is comprised of the Base kit and DBCS functions for the Asia/Pacific community. The DBCS functions include FTP, LPR, and LPD.

- Total Kit

This kit is comprised of the following kits: Base, NFS, X Window System Server, and Extended Networking. It is provided as a convenience for those who require all 4 kits.

- MultiMail Kit

MultiMail is the state-of-the-art implementation of electronic mail. It can be used to send electronic mail across a heterogeneous TCP/IP network. A more basic electronic mail capability is also provided in the Sendmail and LaMAIL functions of the Base Kit, and MultiMail can be used to exchange text mail with these functions, or with any standard implementation of TCP/IP electronic mail.

MultiMail can be used to transmit multimedia messages in conformance with the MIME RFC multimedia mail standard. It supports a wide variety of multimedia data, including text, Rich Text, images (BMP, GIF, and TIFF), audio (wave and MIDI), simple video clips, and binary files. MultiMail provides an easy-to-use Workplace Shell interface to implement mail objects (folders, address books, and envelopes) that behave and resemble objects that exist in the more traditional paper world.

### **Hardware Requirements**

OS/2 2.0 capable system

### **Software Requirements**

OS/2 2.0 or higher



**IBM Announcement Letter**

In the US: 293-410

**Ordering Information**

Call 800-IBMCALL (800-426-2255) in the US, or call 800-565-SW4U (800-565-7948), Ext. 246 in Canada.

**Note:** The part numbers, hardware requirements, and software requirements are approximations and might not be complete. For specifics, call the 800 telephone numbers listed previously, contact a reseller, or contact an IBM office near you.

**Part Number**

See Announcement Letter

## TCP/IP for DOS 2.1.1

IBM TCP/IP Version 2.1.1 provides both Windows TCP/IP applications and DOS-based TCP/IP applications. TCP/IP Version 2.1.1 for DOS provides users of DOS and Windows with the capability to participate in a multivendor network using the TCP/IP protocol set. TCP/IP Version 2.1.1 is part of the IBM family of TCP/IP products which also includes TCP/IP for MVS, VM, OS/2, AIX, OS/400, and IBM 3174 Telnet. These products are designed to address multivendor communication requirements and to allow most IBM platforms access to networks involving non-IBM systems. IBM TCP/IP Version 2.1.1 for DOS meets these requirements.

IBM TCP/IP Version 2.1.1 for DOS is enhanced with the following new functions for improved interoperability:

- Windows Telnet 5250 terminal emulation for accessing AS/400 systems
- ODI (open data-link interface) for improved coexistence with a Novell NetWare client
- IBM's Personal Communications/3270 Version 3.1 with TCP/IP support for:
  - 3270 graphic terminal emulation
  - EHLLAPI (enhanced high-level language application programming interface)
  - IND\$FILE support for file transfer

Improvements have also been made to Windows Telnet, Windows FTP (file transfer protocol), SLIP (Serial Line Internet Protocol), NFS (Network File System) and NetBIOS (RFC 1001/1002). Upgrades to TCP/IP Version 2.1 are available at no charge.

### Hardware Requirements

i286 or higher; 2MB RAM protected memory; 8MB DASD free space; appropriate LAN adapters

### Software Requirements

IBM PC-DOS 3.3 or higher, MS-DOS 3.3 or higher; Windows 3.1

### IBM Announcement Letter

In the US: 294-037

### Ordering Information

Call 800-IBMCALL (800-426-2255) in the US, or call 800-565-SW4U (800-565-7948), Ext. 246 in Canada.

**Note:** The part numbers, hardware requirements, and software requirements are approximations and might not be complete. For specifics, call the 800 telephone numbers listed previously, contact a reseller, or contact an IBM office near you.

### Part Number

See Announcement Letter

## LAN Bridge Programs

The following first three bridge products are a replacement and enhancement of the original IBM Token-Ring Network Bridge Program, which was introduced in 1987, just 18 months after IBM's announcement of the Token-Ring Network. It quickly became successful and has become the industry's technology yardstick.

- "IBM Local Token-Ring Bridge/DOS 1.0"
- "IBM Remote Token-Ring Bridge/DOS 1.0" on page 3-68
- "IBM LANStreamer Token-Ring Bridge/DOS 1.0" on page 3-69
- "IBM LAN Bridge Manager/2 1.0" on page 3-70

**IBM Local Token-Ring Bridge/DOS 1.0:** The IBM Local Token-Ring Bridge is a PS/2 DOS application that provides local source route bridging for Token-Ring networks. It connects 2 Token-Ring networks operating at 4 or 16 Mbps and provides 5 of the most commonly used filters, including a user programming interface to support user-written filters. The Local Token-Ring Bridge provides the LAN Network Manager server function for media management and LAN Bridge server to allow the IBM LAN Network Manager to monitor and control the bridge functions. In addition, LAN Bridge Manager/2 can be used for distributed installation, setup, and management.

This local media access control (MAC) layer bridge provides an interconnection that is efficient and accommodates all the communications protocols being used.

The Local Token-Ring Bridge/DOS application allows you to interconnect local area networks that were implemented independently by more than one group within an enterprise to share resources.

### Hardware Requirements

IBM PC AT\* or higher with 512KB RAM, 300KB DASD or diskette space, appropriate Token-Ring Adapter

### Software Requirements

IBM DOS 5.0 or higher

### IBM Announcement Letter

In the US: 293-326

### Ordering Information

Call 800-IBMCALL (800-426-2255) in the US, or in Canada call 800-565-SW4U (800-565-7948), Ext. 246.

**Note:** The part numbers, hardware requirements, and software requirements are approximations and might not be complete. For specifics, call the 800 telephone numbers listed previously, contact a reseller, or contact an IBM office near you.

### Part Number

In the US: 71G9346

**IBM Remote Token-Ring Bridge/DOS 1.0:** The Remote Token-Ring Bridge is a PS/2 DOS application that provides remote source route bridging for Token-Ring networks. It interconnects LAN segments remotely over a wide area network (WAN) and supports connection speeds from 9.6 Kbps to 2 Mbps. The Remote Token-Ring Bridge/DOS can coexist with the Local Token-Ring Bridge/DOS in the same LAN segment and jointly participate in the Spanning Tree Algorithm. A user programming interface is provided to support user-written filters, and 5 of the most commonly used filters. In addition, it provides the LAN Network Manager server function for media management of Token-Ring segments and the LAN bridge server to allow IBM LAN Network Manager to monitor and control the bridge functions. LAN Bridge Manager/2 can also be used for distributed installation, setup, and management.

The Remote Token-Ring Bridge also provides dial support, full T1 (1.544 Mbps) or full E1 (2.048) line speeds when using the High-Speed Communications Co-Processor/2 Adapter, and increased communications adapter transmit buffer to 256Kb for improved performance to keep bursty traffic to a minimum.

With the explosive growth of personal computers, coupled with the development of high-speed communication networks, a massive paradigm shift from host-centric to network-centric systems has occurred. It became necessary to connect geographically dispersed locations to the central host.

A single license of the remote bridge supports both halves of the bridge. This makes it very cost-effective. As with the local bridge, the Remote Token-Ring Bridge has become the industry's standard. It accommodates virtually all the communications protocols being used.

#### **Hardware Requirements**

IBM PC AT or higher, 594 free disk or diskette space, plus the appropriate LAN and WAN Adapters

#### **Software Requirements**

IBM DOS 5.0 or higher

#### **IBM Announcement Letter**

In the US: 293-326

#### **Ordering Information**

Call 800-IBMCALL (800-426-2255) in the US, or call 800-565-SW4U (800-565-7948), Ext. 246 in Canada.

**Note:** The part numbers, hardware requirements, and software requirements are approximations and might not be complete. For specifics, call the 800 telephone numbers listed previously, contact a reseller, or contact an IBM office near you.

#### **Part Number**

In the US: 71G9347

**IBM LANStreamer Token-Ring Bridge/DOS 1.0:** The LANStreamer Token-Ring Bridge is a PS/2 DOS application that provides local source route bridging for Token-Ring networks. When the LANStreamer adapter is used, bridge performance is determined by the speed of the PS/2 processor and not the Token-Ring adapter. With the use of a high-end platform, the LANStreamer bridge provides media speed performance. The LANStreamer bridge also supports a hop count of 13 and is fully compatible with LAN Bridge Manager/2 and LAN Network Manager.

The LANStreamer adapter is a brand new technology that eliminates the performance bottleneck. The LANStreamer Token-Ring Bridge allows you to go beyond ordinary bridge solutions for your most demanding applications.

**Hardware Requirements**

IBM PC, 594KB DASD or diskette space plus, two IBM AUTO  
LANStreamer MC 32 Adapters

**Software Requirements**

IBM DOS 5.0 or higher

**IBM Announcement Letter**

In the US: 293-326

**Ordering Information**

Call 800-IBMCALL (800-426-2255) in the US, or call 800-565-SW4U  
(800-565-7948), Ext. 246 in Canada.

**Note:** The part numbers, hardware requirements, and software requirements are approximations and might not be complete. For specifics, call the 800 telephone numbers listed previously, contact a reseller, or contact an IBM office near you.

**Part Number**

In the US: 71G9348

**IBM LAN Bridge Manager/2 1.0:** This OS/2-based application allows distributed installation, setup, and management of the IBM Local, Remote, and LANStreamer bridges thereby allowing bridges and their resources can be managed remotely from a central location. This lets you automate bridge software installation, provide filter management, retrieve hardware and software from each bridge, configure parameters, and communication files, provide inventory accounting and the location of each bridge, and perform mass changes of bridge link passwords.

This application consists of two parts offered separately; a bridge management utility, which is the manager and resides in the server, and an agent, managed by the manager, that resides in the bridge. The manager supports OS/2 2.0, DOS, and Novell NetWare.

This product allows remote upgrade and management of IBM Token-Ring bridges dispersed at different locations. It saves you the administrative skill that would otherwise be required to maintain and manage each individual remote or local bridge.

#### **Hardware Requirements**

OS/2 2.0 capable or higher. If installed in an existing server, an additional 300KB DASD and 5KB storage is required over the requirement of the server software. The bridge agent component must reside with the bridge that LAN Bridge Manager manages.

#### **Software Requirements**

Manager: OS/2 2.0 or higher

Agent: IBM LAN Support Program 1.3 (for OS/2 LAN Server, 1.3 or 2.0) and IBM DOS LAN Requester (for OS/2 LAN Server, 1.3 or 2.0), or Novell NetWare DOS ODI Support (for NetWare 3.11 server)

#### **IBM Announcement Letter**

In the US: 293-326

#### **Ordering Information**

Call 800-IBMCALL (800-426-2255) in the US, or call 800-565-SW4U (800-565-7948), Ext. 246 in Canada.

**Note:** The part numbers, hardware requirements, and software requirements are approximations and might not be complete. For specifics, call the 800 telephone numbers listed previously, contact a reseller, or contact an IBM office near you.

#### **Part Number**

In the US: 71G9349

# LAN to Wide Area Network (WAN) Attachment

## IBM LAN to LAN WAN Program 1.07 and IBM Entry LAN to LAN WAN Program 1.01

These OS/2-based applications route NetBIOS, TCP/IP, and IPX protocols across Token-Ring or Ethernet networks, using a variety of transports, including SNA, X.25, LU6.2, and ISDN. These programs can run on any WAN network supported by OS/2 Communications Manager's APPC (X.25, ISDN, SDLC, LANs). However, for Frame Relay networks, RouteXpander/2 is required. The LAN-to-LAN WAN program (LTLW) supports 255 NetBIOS stations (512 NetBIOS applications) and 512 TCP/IP and IPX stations on 47 concurrent active stations with over 2000 partner definitions. The Entry LTLW supports 10 stations (30 sessions) and also provides a loop-back driver for OS/2 dial support. Both products provide full 802.2 and LU6.2 support, as well as filter access to LAN resources, support data link switching for improved network access, and include accounting functions of bandwidth usage for charge-out purposes.

The LTLW products provide an efficient and powerful means of LAN-to-WAN communication over existing SNA networks that eliminate the need for a second network. It leverages considerable existing investment in administering and managing mission-critical SNA backbones.

The LLC and NetBIOS timers are satisfied by the local LTLW, preventing the potential time-outs sometimes experienced in bridge networks when bridging connection-oriented LLC frames. LTLW also eliminates WAN broadcast traffic, which boosts performance results.

The LTLW products do not require any additional software and provide a low cost solution for routing NetBIOS, TCP/IP, or IPX applications across an existing network, such as SNA.

### Hardware Requirements

OS/2 2.0 capable or higher, 1.2MB DASD for LTLW without logging events and messages (more needed for logging files), and appropriate adapter

### Software Requirements

OS/2 2.0 or higher, Communications Manager/2 1.0

### IBM Announcement Letter

In the US: LTLW 290-553

ENTRY LTLW 293-005

### Ordering Information

Call 800-IBMCALL (800-426-2255) in the US, or call 800-565-SW4U (800-565-7948), Ext. 246 in Canada.

**Note:** The part numbers, hardware requirements, and software requirements are approximations and might not be complete. For specifics, call the 800 telephone numbers listed previously, contact a reseller, or contact an IBM office near you.

### Part Number

In the US:

LTLW 74F7668

Entry LTLW 62G8512

## **IBM Frame Relay Bridge/DOS 1.0**

This DOS-based bridge program provides source route bridging and can connect point-to-point either over a leased line or across a frame relay network. It attaches locally to a Token-Ring LAN and bridges across the WAN communications link to a compatible bridge on a remote Token-Ring LAN.

The Frame Relay Bridge supports 4 bridge filters and provides filter source code to assist customers with user written filters. It fully supports LAN Network Manager, IBM's Realtime Interface Co-Processor (RTIC) family adapters, and the Wide Area Connector (WAC) adapter. It uses standard formats to allow inter-networking with other IBM products, such as 6611, 3745 NCP and RouteXpander/2, as well as non-IBM systems supporting the same standard.

The cost-effective combination of the Frame Relay, Token-Ring Bridge, and RouteXpander Multiport Support/2 (or a 6611 Network Processor) offer a range of options and benefits that allow you to preserve your investment in hardware. With only a software upgrade, a savings can be realized. Additional savings may be possible by switching to a Frame Relay connection rather than leased lines.

### **Hardware Requirements**

IBM PC, 582KB RAM, plus appropriate LAN and WAN adapters

### **Software Requirements**

IBM DOS 5.0 or higher

### **IBM Announcement Letter**

In the US: 294-125

### **Ordering Information**

Call 800-IBMCALL (800-426-2255) in the US, or call 800-565-SW4U (800-565-7948), Ext. 246 in Canada.

**Note:** The part numbers, hardware requirements, and software requirements are approximations and might not be complete. For specifics, call the 800 telephone numbers listed previously, contact a reseller, or contact an IBM office near you.

### **Part Number**

In the US: 95G0885



## IBM RouteXpander/2

Designed for the OS/2 platform, IBM RouteXpander/2 (RXR/2) provides source-route bridging and multiprotocol routing over a single connection to multiple destinations over a Frame Relay network or through a leased line. RXR/2 provides standard SNMP Management Information Base (MIB) for SNMP management. In addition, RXR/2 offers the following optional support programs which provide you with the flexibility to tailor your system to suit your business requirements:

- RXR LAN Network Manager Support/2

Provides LAN bridge server function for media management for Token-Ring segments.

- RXR X.25 Support/2

Offers X.25 connectivity and provides X.25 switching function, as well as Application Programming Interface, Data Compression to lower line usage cost, and address resolution to connect dissimilar X.25 Packet Switched Data Network.

- RXR Multiport Support/2

Provides multiport bridging function supporting maximum of 2 LAN ports and 8 WAN ports. However, the total number of LAN and WAN ports cannot exceed 9 for bridging.

RXR/2 is designed to give people in remote work groups, (like travel agents, insurance agents, branch banks, retail stores) inexpensive, high-speed access to other work groups and corporate offices. RXR/2 is:

### 1. Economical

- RXR/2 can be installed in an existing printer or file server and can coexist with other OS/2 applications in the same platform.
- RXR/2 can share not only the main processor, but also the LAN and WAN adapters.

### 2. Flexible

- RXR/2 offers optional support programs so you can order only what you need, tailoring your system to match your business environment.
- RXR/2 complies with Internet Engineer Task Force (IETF) standards and interoperates with both IBM and non-IBM bridges/routers that comply with the same standards.

### 3. Extendable

RXR/2 performance grows with the fast-paced technology of the PC environment.

## Hardware Requirements

OS/2 2.1 capable, 12MB DASD (OS/2 included) plus additional disk space dependent on the RXR/2 version, and appropriate adapters

## Software Requirements

OS/2 2.1 or higher; Network Transport Services/2 2.20 or higher; Communications Manager/2 1.0 or higher for SNA/APPN routing; and TCP/IP for OS/2 1.2.1 for IP routing and SNMP management

**IBM Announcement Letter**

In the US: 294-129

**Ordering Information**

Call 800-IBMCALL (800-426-2255) in the US, or call 800-565-SW4U (800-565-7948), Ext. 246 in Canada.

**Note:** The part numbers, hardware requirements, and software requirements are approximations and might not be complete. For specifics, call the 800 telephone numbers listed previously, contact a reseller, or contact an IBM office near you.

**Part Number**

In the US:

RouteXpander 2.0 95G0897

RXR LNM Support/2 95G0903

RXR X.25 Support/2 95G0906

RXR Multiport Support/2 95G0909

## IBM X.25 Xpander/2

The IBM X.25 Xpander/2 (XA/2) program, designed for the OS/2 platform, provides cost-effective X.25 switching function. In addition, X.25 Xpander/2 provides:

- IBM Communications Manager/2-compatible APIs to allow connectivity to other protocols
- Address resolution/substitution to connect dissimilar X.25 Packet Switched Data Networks
- Data compression to lower line usage cost
- SNMP Management Information Base (MIB)

Following are the benefits of X.25 Xpander/2:

### 1. Economical

- XA/2 can be installed in an existing printer or file server and can coexist with other OS/2 applications in the same platform and share the system unit with other OS/2 applications.
- XA/2's X.25 switching functions can be used to build cost-effective private X.25 networks. XA/2, supporting 32 (maximum number) physical lines and over 2000 virtual circuits per line, can be used to consolidate multiple X.25 devices. This program connects these devices to a central location.
- XA/2's application- level data compression lowers line usage cost.

### 2. Extendable

XA/2's address resolution/substitution capability can connect dissimilar X.25 networks.

## Hardware Requirements

OS/2 2.1 capable, 2MB incremental RAM, 4MB incremental DASD; WAN connection, IBM Wide Area Connector for frame relay network, IBM ARTIC adapters for X.25 network with RouteXpander X.25 Support/2, Portmaster\*/A with 512KB, 1MB or 2MB memory, Multiport/2, X.25 Interface Co-Processor/2

## Software Requirements

OS/2 2.11 or higher; Network Transport Services/2 2.20 or higher

## IBM Announcement Letter

In the US: 294-129

## Ordering Information

Call 800-IBMCALL (800-426-2255) in the US, or call 800-565-SW4U (800-565-7948), Ext. 246 in Canada.

**Note:** The part numbers, hardware requirements, and software requirements are approximations and might not be complete. For specifics, call the 800 telephone numbers listed previously, contact a reseller, or contact an IBM office near you.

## Part Number

In the US:

X.25 Xpander/2 1.0 95G0912

## Remote Access

### IBM LAN Distance 1.1

If you need to access your local area network (LAN) when you are away from the office, IBM's LAN Distance is the answer for you. LAN Distance is a software solution that lets your portable computer or remote PC access your LAN as if it were on the network. It is the most powerful, flexible, and easy way to connect to any network you are authorized to access.

LAN Distance consists of two components:

1. LAN Distance Remote for OS/2 and Windows lets you connect your remote PC to another PC, or to a LAN through a connection server. It provides a graphical user interface for connecting to the LAN and the necessary interfaces to let your LAN-based applications run remotely. LAN Distance Remote supports two connectivity options. Connecting to the LAN Distance Connection Server allows the remote PC to access LAN resources (like LAN Server or NetWare Server) as though it were physically connected to the LAN. Or, using a peer networking product (such as LAN Server Peer Services or Windows for Workgroups), a LAN Distance Remote PC can connect to another LAN Distance Remote PC and share files and printers.
2. LAN Distance Connection Server for OS/2 provides the ability to *bridge* your LAN to a wide area network, allowing access from remote PCs. Powerful security features make certain that only authorized remote users have access to your critical LAN resources. The LAN Distance Connection Server allows unprecedented freedom for you to choose your remote access configuration. LAN Distance is a software solution that can support up to 128 concurrent communications sessions and does not require a dedicated PC. LAN Distance Connection Server (8 Port) for OS/2 has the same features as the LAN Distance Connection Server. For smaller environments, it provides a lower cost alternative supporting up to 8 remote PCs at the same time.

Following is a list of the strengths of LAN Distance:

#### **Low Cost per connection**

Since LAN Distance is a software-only solution that does not require a dedicated connection server or special PC hardware, you get not only outstanding cost-performance, but also an easy upgrade path as your organization and remote computing needs grow.

#### **Application Transparency**

LAN Distance extends your LAN applications to wide area networks using the same LAN application programming interfaces. This allows you to run your LAN applications remotely with complete transparency. LAN Distance supports all major network applications, such as IBM LAN Server, Novell NetWare, Artisoft LANtastic\*\*, Windows for Workgroup, Communications Manager/2, PC/3270, TCP/IP, DB2/2, Person-to-Person, Lotus Notes, and many others.

#### **High Performance**

Sophisticated filtering techniques minimize the amount of unnecessary traffic on the dial-up connection. Users have found that most interactive applications have response times as though the workstation is physically on the LAN. Even batch applications, such as file copies, are still remarkably responsive.

### **Remote Connectivity**

In addition to exceptional asynchronous communications, LAN Distance supports synchronous, ISDN, and X.25 connections. LAN Distance also provides an extension to the industry-standard NDIS LAN device driver, allowing standard PC communications adapters to be supported.

### **Advanced security features**

A variety of security features are included to protect the integrity of LAN resources, including user ID/passphrase, call-back, terminal address identification, security administration, and configurable security policies. In addition, LAN Distance provides a generalized security exit that allows you to interface to third party authentication servers.

### **LAN-to-LAN**

While attached to the central LAN, you can have the LAN Distance Connection Server *dial off* the LAN to another LAN or remote PC. This allows you to connect, or *bridge*, for an occasional connection or backup alternative.

### **LAN Shuttle**

Using the LAN Shuttle feature, users can run the same applications and access the same data through identical user interfaces, whether they are physically connected to the LAN or dialing in remote.

### **Graphical User Interface**

LAN Distance provides an object-oriented graphical user interface with extensive online helps to guide the user through administration or remote computing.

### **Hardware Requirements**

Connection Server or Remote: i386sx (or compatible) or higher; Supported Communications adapter and Modem (9600 bps minimum);

Connection Server: Supported LAN Adapter

### **Software Requirements**

Connection Server: OS/2 2.0 or higher

Remote for OS/2: OS/2 2.0 or higher and appropriate LAN application

Remote for Windows: Windows 3.1 or higher and appropriate LAN application

### **IBM Announcement Letter**

In the US: 294-267

### **Ordering Information**

Call 800-IBMCALL (800-426-2255) in the US, or call 800-565-SW4U (800-565-7948), Ext. 246 in Canada.

**Note:** The part numbers, hardware requirements, and software requirements are approximations and might not be complete. For specifics, call the 800 telephone numbers listed previously, contact a reseller, or contact an IBM office near you.

**Part Number**

In the US:

LAN Distance Remote for OS/2 and Windows 52G8358

LAN Distance Connection Server (8 Port) for OS/2 52G8364

LAN Distance Connection Server for OS/2 52G8370

LAN Distance Connection Server Upgrade for OS/2 52G8376

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## Database and Transaction Management Support

### IBM DATABASE 2 OS/2 and IBM Distributed Database Connection Services/2

The IBM DATABASE 2 OS/2 1.2 (DB2/2) product is a 32-bit relational database management system and a member of the IBM DATABASE 2 (DB2) family of products. This family includes DB2 for MVS, DB2/VSE & VM (SQL/DS\*), DB2/400, IBM DATABASE 2 AIX/6000, IBM DATABASE 2 for HP-UX, and IBM DATABASE 2 for the Solaris\*\* Operating Environment.

The IBM Distributed Database Connection Services/2 (DDCS/2) product provides open connectivity for applications that need to access and update host databases transparently from OS/2, DOS, and Windows database client workstations.

#### Evolving Family of Database Products

The DB/2 product is designed for growth, and it answers the requirements for host-database access, as well as providing support for building new line-of-business applications for both the single-user workstation and the client/server LAN environments. Because DB2/2 has many built-in functions for mission-critical applications and a robust database engine that is similar in design to that of DB2 for MVS, it provides an excellent platform for database application development.

The commitment IBM has to database products on the desktop and in the client/server environment means your investment in these products today will be justified as IBM enhances and converges the family members in the future. Other related members of the IBM family are:

- The IBM Visualizer family. The workstation products in the Visualizer family are Query, Charts, Procedures, Plans, Statistics, and Ultimeia Query and Development. These products are designed to help you turn raw data into valuable business information.
- The DataHub products. These products offer a powerful way to manage IBM relational databases using a task-oriented graphical user interface.
- The DataReplication products. These products support end-to-end data replication from legacy data stores to the workstation relational environments.
- The VisualAge\* object-oriented application-building power tool. VisualAge can create advanced line-of-business applications for client/server environments in a fraction of the time normally required.

With the DB2 family of database products, your investment in both host-based and workstation-based relational data is protected by Distributed Relational Database Architecture\* (DRDA\*). DRDA and the DDCS/2 product enables applications running on DOS, Windows, or OS/2 workstations to transparently access and update data stored in IBM host databases or other databases that support the application server function of DRDA. To the end-user or application program, the host database can be thought of as an extension to the DB2/2 Version 1.2 database server capabilities.

## High Performance

Performance enhancements have been made to DB2/2 Version 1.2 to exploit OS/2 for SMP. You can expect query workloads to scale between 1.8 and 1.9 on a dual processor machine. These changes will also benefit DB2/2 Version 1.2 workloads running on non-SMP systems. With these enhancements, you could expect to see a performance improvement of up to 40% over DB2/2 Version 1, depending on the workload, in high contention situations.

Performance is enhanced by a *cost-based optimizer* that determines an efficient method of retrieving data using proven mathematical rules as well as query specific cost estimates. Performance of application programs can also be improved through the use of *stored procedures* and *row blocking*.

Stored procedures provide the ability to distribute application workloads between clients and servers. The ability to split an application program by running the processing logic on the server and presentation logic on the client can provide increased performance over traditional requester access. These improvements can be dramatic for applications requiring intermediate processing of data, which can be performed at the database server.

Performance is also enhanced by reducing the number of requests crossing the network. Row blocking helps reduce this traffic by providing remote transmission of data in blocks.

DB2/2 supports *multiple levels of concurrency* (repeatable read, cursor stability, and uncommitted read) along with a granular locking scheme (row-level and table-level) that help you tune application performance. You can set both the concurrency level and the level of granularity to maximize performance, while still ensuring your data is protected.

## Integrity and Security

Data integrity is essential to a relational database management system. Data integrity refers to the accuracy and credibility of the values within database tables. Wherever data is shared, there is a need to manage and control operations to maintain the integrity of the data in the database.

Full transaction support is provided by DB2/2 in much the same manner as in the IBM host databases. Any reading or writing to a database is done within a transaction. If the transaction completes normally, the changes are made to the data (COMMIT). All changes to tables and indexes have log entries written that provide sufficient information to allow the database manager to back out of an update (ROLLBACK) before any changes are made to the actual data.

Concurrent, multiuser application access is provided by row-level (record-level) locking. Row-level locking ensures that an application maintains control of a database row until the transaction completes. This prevents another application from changing a row simultaneously, which might result in data loss.

DB2/2 supports *declarative referential integrity*. This ensures the consistency of data values between related columns in different labels. Referential constraints apply to insert, update, and delete operations that are performed on the table data. This implementation is consistent with the DB2 for MVS implementation.



There are two levels of security that control access to DB2/2 and the data. Access to the DB2 system and data is managed by the operating system with a set of user and group validation and management functions. Access within the database is managed by two administrative authorities: system and database. These authorities give other users or groups the privilege to create objects, run utilities, issue database commands and access data.

### **High Availability**

High availability is achieved through the backup and restore utilities, as well as through log and data separation. DB2/2 1.2 has a new Backup API to allow a database administrator to perform a backup while others are connected to the database. This new option causes the backup to wait until current transaction activity completes, and prevents any new transactions from starting. After a quiesced state has been established, a backup is taken. During this time, other users of the database still maintain their database connections. After the backup has completed, user transaction activity resumes.

Full backup capability is provided using ADSTAR's Distributed Storage Manager. This allows data to be packed up to a remote MVS or VM system.

To aid in recovering from a media failure, there are utility programs to back up and restore data. The backup utility copies the entire database to disk or tape. The restore utility is used to reload a database that was saved using the backup utility. Roll-forward recovery allows for the rebuilding of a database to a state beyond the time that the last backup was made.

### **Standards Support**

DB2.2 supports SQL, which is very compatible with SQL supported by DB2 for MVS, making it very easy to transfer both skills and applications for the host systems into a client/server environment.

Standards and architectures supported by DB2/2 and DDCS/2 include DRDA, Call Level Interface (CLI) defined by X/Open, and Microsoft's Open Database Connectivity API. DRDA is implemented through the DDCS/2 product, which allows client applications to access data stored in the IBM host databases. X/Open's draft specification for a CLI defines the use of dynamic SQL without the need to precompile the program. Similarly, Open Database Connectivity (ODBC) allows Windows applications that are ODBC-enabled to use the database with no precompilation necessary, making applications that use CLI or ODBC independent of any particular database server.

### **Utilities to Manage Your Environment**

A set of database administration utilities are provided with DB2/2. They are installed optionally and provide functions for managing both DB2 and its databases.

- *Configuration Utilities* help you to specify the resources allocated for the database.
- *Recovery Utilities* help you perform backup and restore functions.
- *Directory Utilities* provide functions for creating and using databases.

### **Flexible Pricing**

DB2/2 1.2 and DDCS/2 2.2 offer flexible price and performance packaging options based on the number of concurrent users connected to a DB2/2 1.2

server or DDCS/2 2.2 gateway. The pricing structure has changed to provide a lower cost entry into the DB2/2 client/server and DDCS/2 environments.

The DB2/2 1.2 Client/Server and DDCS/2 2.2 Multi-User Gateway base products each support up to 4 concurrent users. As the number of users connected to the database server increases, additional user connection packs can be ordered. Ten-user and 50-user connection packs are available, and one or more of these packs can be ordered.

### **Third-Party Vendor Support**

Many leading vendors have taken advantage of the power, flexibility, and ease-of-use of the DB2 products that run on the workstations. These database applications are written for a wide range of industries and users. You can contact your IBM representative for a complete listing of these vendors.

### **Client/Server Support**

Support for the client/server environment is a high priority for many businesses. DB2/2 1.2 Client/Server supports remote clients residing on DOS, Windows, or OS/2. When DDCS/2 1.2 Multi-User Gateway is installed, these clients have access to the host enterprise data.

Remote clients can access DB2/2 1.2 Client/Server using NetBIOS, APPC, and Novell NetWare IPX/SPX. The DB2 Client Application Enabler/DOS 1.2 and DB2 Client Application Enabler/2 1.2 provide the capability for the remote clients to access DB2/2.

DB2/2 1.2 (both the single-user and client/server versions) can function as a client to other DB2/2 servers. The NetBIOS and APPC communications protocols are supported in this configuration.

### **Software Development**

IBM provides a suite of products that support application development for DB2/2. The IBM DATABASE 2 Software Developer's Kit/DOS 1.2 and IBM DATABASE 2 Software Developer's Kit/1.2 (DB2 SDKs) support client-based application development; development can also be done on the DB2/2 1.2 server using similar functions.

Applications can be written to run with DB2/2 in embedded SQL in C, FORTRAN, COBOL, PL/1, and REXX. Facilities are also provided for compiler writers to develop their own support for embedded SQL. In addition, the DB2 SDKs provide the capability to develop applications using the DB2 Call Level Interface (CLI).

DB2/2 1.2 includes Query Manager, a LAN-based end-user tool. Query Manager provides a user-friendly, prompted interface to many database functions, as well as query capability.

DB2/2 and DDCS/2 are key elements in the commitment IBM has to providing industrial-strength database products and connectivity on the desktop and in the client/server environment.

DB2 is a proven design with database integrity and recovery features that truly earn it the designation "industrial strength." The IBM DB2 family of products has a long history of solid performance and reliability. Every DB2 product is fully backed up by IBM service and support. Your proven DB2 applications can be easily extended to new systems, and migration is simple, allowing existing DB2 skills to be leveraged as your network environment evolves.

## Hardware Requirements

### IBM DATABASE 2 OS/2 Single-User and Client/Server:

OS/2 2.0 or higher capable. For RAM and DASD requirements, see IBM Announcement Letter.

### IBM Distributed Database Connection Services/2 Single-User and Multi-User Gateway:

See DB2/2 1.2 Single-User.

## Software Requirements

### IBM DATABASE 2 OS/2 Single-User and Client/Server:

OS/2 2.0 with Servicepak XRO6055 or higher, or OS/2 2.1

**Note:** If you are using OS/2 2.1, and you want to use the new backup capability available in DB2/2 1.2, then you need a fix for APAR PJ12396. This is available from IBM Service.

### IBM Distributed Database Connection Services/2 Single-User and Multi-User Gateway.

OS/2 2.0 with Servicepak XRO6055 or later, or OS/2 2.1 DB2/2 1.2 Single-User or Client/Server

For host connectivity; IBM Communications Manager/2 1.0 or later or IBM OS/2 Extended Services\* 1.0 (Communications Manager)

**Note:** DB2/2 1.2 Client/Server is a prerequisite for DDCS/2 2.2 Multi-User Gateway.

## IBM Announcement Letter

In the US: 294-317

## Ordering Information

Call 800-IBMCALL (800-426-2255) in the US, or call 800-565-SW4U (800-565-7948), Ext. 246 in Canada.

**Note:** The part numbers, hardware requirements, and software requirements are approximations and might not be complete. For specifics, call the 800 telephone numbers listed previously, contact a reseller, or contact an IBM office near you.

## Part Number

In the US:

DB2/2 1.2 Single-User 10H7363

DB2/2 1.2 Client/Server 10H7365

DDCS/2 2.2 Single-User 10H7369

DDCS/2 2.2 Multi-User Gateway 10H7370

## IBM DATABASE 2 Client Application Enablers and IBM DATABASE 2 Software Developer's Kits

The IBM DATABASE 2 (DB2) Client Application Enabler and the DB2 Software Developer's Kit products are elements of the complete suite of the IBM DB2 industrial-strength database solutions for networked environments. This suite provides high-quality database management systems, client/server support, and transparent access to host DB2 databases: DB2 for MVS, DB2/VSE & VM (SQL/DS), and DB2/400.

Client connectivity and application development are key strengths within the DB2 family of products. The DB2 databases in the client/server environment are designed to support clients and application development on a wide variety of platforms: OS/2, DOS, Windows, AIX/6000, HP-UX, and the Solaris operating environment. When the Distributed Database Connection Services (DDCS) product is installed, clients can access and update host DB2 databases.

### Client/Server Support

Support for the client/server environment is a high priority for many businesses. The DB2 databases in the client/server environment run on a number of operating systems: OS/2 (IBM DATABASE 2 OS/2), AIX/6000 (IBM DATABASE 2 AIX/6000), HP-UX (IBM DATABASE 2 for HP-UX), and Solaris (IBM DATABASE 2 for the Solaris Operating Environment). Clients might reside on DOS, Windows, OS/2, AIX/6000, HP-UX, or Solaris.

To allow remote clients to access data stored on members of the IBM Relational Database Management database, several client application enablers are provided as follows:

- IBM DATABASE 2 Client Application Enabler/DOS 1.2
- IBM DATABASE 2 Client Application Enabler/2 1.2
- IBM DATABASE 2 Client Application Enabler/6000 1.0
- IBM DATABASE 2 Client Application Enabler for HP-UX 1.0
- IBM DATABASE 2 Client Application Enabler for the Solaris Operating Environment 1.0

Using client application enablers, remote clients can access a DB2 client/server database using a variety of protocols.

If Distributed Database Connection Services (DDCS) is available, remote clients can also access DB2 for MVS, DB2/VSE & VM, DB2/400, and other relational database management systems that support the Distributed Relational Database Architecture (DRDA) application server function.

All DB2 Client Application Enablers provide:

- Client configuration support
- The ability to register applications with the database server
- Import and export capability
- Run-time support for applications developed using the DB2 Software Developer's Kits or developed using the application development tools provided by the DB2 clients/server database servers
- Run-time support for both IBM and non-IBM products that use the DB2 client/server databases

The DB2 Client Application Enabler/DOS provides client support for both the DOS and Windows environments. In addition to the base function provided, the DB2 Client Application Enabler/DOS provides a driver that supports Windows ODBC-enabled database applications.

DS and Windows clients on a Novell NetWare LAN, in conjunction with Firefox, Inc. NOV IX for NetWare, can now access IBM DATABASE 2 AIX/6000 (DB2/6000\*) and IBM DATABASE 2 for HP-UX (DB2 for HP-UX).

OS/2 users can run DOS applications under virtual DOS sessions, or Windows applications under WIN-OS/2 sessions that access the client/server databases. This support is provided by the DB2 Client Application Enabler/DOS. When the DB2 Client Application Enabler/DOS code is installed on the same machine as IBM DATABASE 2 OS/2 (DB2/2), DOS and Windows clients can access local databases without the need for communications protocols or communications adapters.

### **Software Development**

IBM provides a suite of products that support client-based application development. The DB2 Software Developer's Kits (SDKs) provide support to build applications that use data stored in IBM relational databases. The DB2 SDKs provided are:

- IBM DATABASE 2 Software Developer's Kit/DOS Version 1.2
- IBM DATABASE 2 Software Developer's Kit/2 Version 1.2
- IBM DATABASE 2 Software Developer's Kit/6000 Version 1
- IBM DATABASE 2 Software Developer's Kit for HP-UX Version 1
- IBM DATABASE 2 Software Developer's Kit for the Solaris Operating Environment Version 1

The DB2 SDKs provide facilities to develop applications using the embedded SQL interface or the DB2 Call Level Interface (CLI). The DB2 CLI, based on X/Open draft specifications, is a method of starting database services without having to precompile the application programs.

Applications developed using DB2 SDKs require client application enablers to be installed on the remote client where the applications are to be used.

All DB2 SDKs include:

- Precompilers, code samples, and a complete set of user documentation for developing embedded SQL applications
- Programming libraries, code samples, and documentation to develop applications using the DB2 CLI in the C-programming language
- Interactive SQL, allowing both the novice and the experienced user to perform ad-hoc queries and to prototype SQL statements

- Header files and libraries to assist others in enabling embedded SQL processing within their compilers
- All functions provided by the corresponding client application enabler

The development languages supported by the DB2 SDKs are C, COBOL, FORTRAN, PL/I, and REXX.

#### **Hardware Requirements**

**IBM DATABASE 2 Client Application Enabler/DOS 1.2 and DATABASE 2 SDK/DOS Version 1.2:** i286 or higher, supported by PC-DOS Version 3.3 or higher. See announcement letter for RAM and DASD requirements.

**IBM DATABASE 2 Client Application Enabler/2 1.2 and DATABASE 2 SDK/2 Version 1.2:** OS/2 capable; see announcement letter for RAM and DASD requirements

#### **Software Requirements**

**IBM DATABASE 2 Client Application Enabler/DOS 1.2 and DATABASE 2 SDK/DOS Version 1.2:** Native DOS: PC-DOS Version 3.3 or higher; Native Windows: Same software requirements as native DOS, except Microsoft Windows 3.1 is required to run Windows applications; DOS Session under OS/2: IBM OS/2 Version 2.0 with ServicePak XR06055 or higher, or IBM OS/2 Version 2.1; WIN-OS/2 Session under OS/2: See announcement letter for DB2/2 server requirements

**IBM DATABASE 2 Client Application Enabler/2 1.2 and DATABASE 2 SDK/2 Version 1.2:** IBM OS/2 Version 2.0 with ServicePak XR06055 or higher, or IBM OS/2 Version 2.1; see announcement letter for DB2/2 server requirements

#### **IBM Announcement Letter**

In the US: 294-318

#### **Ordering Information**

Call 800-IBMCALL (800-426-2255) in the US, or call 800-565-SW4U (800-565-7948), Ext. 246 in Canada.

**Note:** The part numbers, hardware requirements, and software requirements are approximations and might not be complete. For specifics, call the 800 telephone numbers listed previously, contact a reseller, or contact an IBM office near you.

#### **Part Number**

In the US:

DB2 CAE/DOS V1.2 5765-217  
 DB2 CAE/2 V1.2 5622-129  
 DB2 SDK/DOS V1.2 5622-216  
 DB2 SDK/2 V1.2 5622-215

## IBM CICS OS/2

The IBM Customer Information Control System (CICS) OS/2 is based on and offers transaction management features found in CICS/ESA\*. Currently CICS is available on the OS/2, OS/400, VSE, MVS/ESA, and AIX platforms. Future versions will be enabled to run on HP and NT\*\* platforms. It operates as a high-performance server for clients, supports cooperative processing with other CICS family systems, and provides powerful online transaction processing (OLTP) capabilities to support business mission critical applications and data in client-server environments. This allows CICS OS/2 to work with CICS/ESA to process large volumes of transactions a day when that kind of power is needed in a client-server environment.

Client/server applications can easily be developed using the same expertise being used on the mainframe and application development for host CICS can be done on CICS OS/2, thereby off-loading the mainframe. Applications can be ported to and from the mainframe.

CICS OS/2 Version 2.0 is licensed as single-user or multiuser server. If CICS OS/2 Version 2.0 multiuser is licensed, then distributed client features can also be licensed for the support of LAN attached client workstations.

CICS OS/2 Version 2.0 multiuser distributed client feature function may be installed or downloaded into client machines on the LAN. Function is provided for OS/2, DOS, and Windows client machines and is optimized for these environments. DOS and Windows clients can occupy less than 100KB of storage.

Applications running in client machines, in addition to requesting CICS function from the server, can interface to other local applications and can run their own user interfaces, including advanced GUIs.

CICS OS/2 Version 2.0 multiuser server may be used by a LAN server machine. It provides a *catcher* function in the server to accept requests from LAN attached client machines. Clients use the services of the server through Transaction Routing (transparent to the client), External Call Interface (ECI), or External Presentation Interface (EPI). Transaction Routing allows the client to run current CICS 3270 applications transparently.

CICS OS/2 Version 2.0 includes Btrieve technology for its emulated VSAM file management. It contains improvements that include more granular locking of files, a forward recovery capability and batch data sharing. Additionally, a utility is provided to allow customers to migrate their existing CICS OS/2 Version 1.20 VSAM files onto a CICS OS/2 Version 2.0 system. Developers of other file managers can enable their product to act as an alternative emulated VSAM file manager.

CICS OS/2 Version 2.0 multiuser supports ETHERAND and Token-Ring LAN architectures. In addition, the server can be linked to any other CICS family system for cooperative processing, including other CICS OS/2 Version 2.0 multiuser servers.

CICS OS/2 Version 2.0 single-user machines capable of full-function CICS operation can, when attached to a LAN, act as clients to CICS OS/2 Version 2.0 multiuser. They can request CICS function in the server in the same way as other client machines, but can also perform their own CICS processing. They can also accept requests from the server machine for cooperative processing, acting as an auxiliary or offload processor to the server. This allows (for example) a large LAN to be supported by one server running CICS OS/2 Version 2.0 multiuser, assisted by one or more further machines running

CICS OS/2 Version 2.0 single-user, rather than employing a single very high-powered multiuser machine.

CICS OS/2 Version 2.0 single and multiuser server applications can be written in C, C++, COBOL, and 32-bit PL/1 languages. CICS OS/2 provides EBCDIC support for COBOL applications, which allows CICS programs to receive and send EBCDIC data without the need for user data conversion tables.

CICS OS/2 Version 2.0 multiuser includes extensions to provide an interface to the Programmable Network Access (PNA) program. This enables it to support the environment of a workgroup consisting of a cluster of low-cost ASCII terminals attached by the ARTIC card to a server PS/2. To use this, you must also license the PNA product. ASCII terminals access CICS function by the equivalent of a 3270 screen attachment. Clusters can be large. For example, 5 ARTIC cards may be plugged into a PS/2 Model 95, each supporting 8 ASCII terminals, to give a cluster size of 40.

#### **Hardware Requirements**

Server: i386sx or higher processor, 2MB of additional storage, 11MB of DASD

Clients: DOS/Windows, 100KB RAM

#### **Software Requirements**

Server: IBM OS/2 2.0 or higher

Client:

- IBM OS/2 2.0 or higher
- IBM OS/2 Extended Edition 1.3.1 or higher
- Windows 3.1, DOS 3.3, DOS 4.0, DOS 5.0 or higher

#### **IBM Announcement Letter**

In the US: 293-171

#### **Ordering Information**

Call 800-IBMCALL (800-426-2255) in the US, or call 800-565-SW4U (800-565-7948), Ext. 246 in Canada.

**Note:** The part numbers, hardware requirements, and software requirements are approximations and might not be complete. For specifics, call the 800 telephone numbers listed previously, contact a reseller, or contact an IBM office near you.

#### **Part Number**

In the US:

Single-User 53G3861

Multi-User 53G3862

Clients 53G3863



## IBM DataHub 1.2

IBM DataHub is a set of products that provides an OS/2-based workstation control point, called a DataHub/2 workstation, from which you can manage IBM relational database management systems in a consistent way. The relational databases include: DB2, DB2/VM, DB2/400, DB2/600, and DB2/2.

If you are considering or implementing client/server computing or distributed database, or just trying to better integrate your existing systems, you are already concerned with such questions as: How do you manage enterprise-wide database systems? Who will manage such systems at remote locations? How can you minimize training costs yet maximize productivity?

DataHub products are designed to answer these questions and to help you meet the challenges of managing a complex environment from one point of control. It is useful to think of DataHub products as a client/server application with the DataHub/2 workstation (the OS/2 control point) functioning as a client to database machine servers. Part of the DataHub software resides at the workstation control point, and another part resides at the managed database systems. A user starts an action at the DataHub/2 workstation, a command is sent to the managing database system where it is carried out, and the results are sent back to the workstation.

The DataHub/2 workstation provides a graphical, task-oriented work environment in which database objects such as databases, tables, indexes, and user authorizations can be displayed and managed in a common way, no matter which IBM relational databases they are part of. This usability makes information technology personnel more effective because they can transfer their ability to manage one of IBM's relational databases management systems (such as DB2 MVS) to any of the others (DB2/2, DB2/6000, and so on).

Working from a DataHub/2 workstation, users can manage client/server and distributed database systems located anywhere in the enterprise from a central point of control. They can access catalog information without having to know each database system's structure, and they can invoke a variety of database management functions and a number of different tools supplied by IBM and other vendors, all from the workstation control point. As you add new databases and host systems to your environment, DataHub gives you the flexibility to locate them anywhere in the enterprise and manage them from a central control point.

DataHub 1.2 provides automatic job scheduling, BACKUP and RECOVER utilities for DB2/2 databases, and interactive send/receive for DB2 MVS, along with a variety of usability enhancements and support for managing DB2/6000.

Because DataHub products are designed to give you flexibility and choices in how you manage your databases, the hardware and software requirements depend on such things as the number and location of DataHub/2 workstation control points needed in your environment, your LAN configuration, and the number and type of databases to be managed. The requirements for the DataHub/2 workstation depend on whether you plan to use stand-alone workstations, or establish multiple DataHub/2 workstation control points on a LAN using the DataHub/2 Platform Requester feature. This feature allows you to install and configure DataHub/2 workstations as requesters to a DataHub/2 workstation server on a LAN.

The DataHub/2 workstation can be configured in one of these three ways:

**Stand-alone workstation**

A single DataHub/2 workstation control point is connected to the managed hosts.

**Workstation server**

A DataHub/2 workstation is installed and configured as a code server to LAN-attached DataHub/2 workstation requesters.

**Workstation requester**

A lower cost but fully functional DataHub/2 workstation, the requester accesses DataHub/2 code at the server but executes it locally.

If the stand-alone or server DataHub/2 workstation is on a LAN, the DataHub/2 database and the DDCS/2 gateway connection to the managed database systems can be located on any OS/2 workstation in the LAN that is a database server using the client/server version of DB2/2 Information Technology.

DataHub products can be an integral part of your enterprise's Information Technology (IT) strategy. They protect your existing information systems investment and facilitate expansion into the new database environments. DataHub's task-oriented work environment and consistent interface for using tools and managing multiple databases adds to DataHub's strategic value to your enterprise. As announced in October 1994, DataHub will support UNIX-based control points and multi-vendor databases in early 1995.

To run all of DataHub's functions, you need to have DataHub Support products installed at each managed database system. Also, you need the appropriate communications and connectivity products. The following hardware and software requirements are for the DataHub/2 workstation only.

**Hardware Requirements**

OS/2 2.1 capable or higher; 120MB DASD, all workstation types. 12MB of RAM, stand-alone and requester workstations; 14MB of RAM, workstation server

**Software Requirements**

Stand-alone, Server, and Requester:

- DataHub/2 Platform feature Release 2
- DataHub/2 Tools feature Release 2 (optional)
- OS/2 Version 2.1 or higher
- DB2/2 Version 1.1 or higher (1.2 is recommended)
- CM/2 Version 1.1 or higher
- DDCS/2 Version 2 or higher

Server Only:

- LAN Server Entry Version 3.0 or higher
- DB2/2 Client/Server Version 1.1 or higher
- DDCS/2 Multi-User Version 2 or higher

Requester Only:

- DataHub/2 Platform Requester feature (instead of DataHub/2 Platform feature)
- LAN Requester Distributed Feature Version 3 or higher

**IBM Announcement Letter**

In the US: 293-587 and 293-204

**Ordering Information**

**Note:** The part numbers, hardware requirements, and software requirements are approximations and might not be complete. For specifics, contact a reseller or an IBM office near you.

**Part Number**

See the Announcement Letter

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# Systems and Network Management

## System Management Concepts

The Concept of a manager/client division of work is fundamental in the distributed systems management industry. These definitions stated very simply follow:

**Manager** A manager (also called *managing system*) is responsible for the management of other systems.

**Client** A client (also called *agent* or *managed system*) is responsible for providing information about itself to the managing system.

Managing System components are:

- End user interface or automated operator

The manager has (optionally) a user interface to display information gathered by the management applications. If an operator is not available or not required, automation can be used to analyze the data collected and act on anticipated events. A manager could, in turn, be a managed system from another manager. Thus, information gathered at one manager could be forwarded to another in either a hierarchical or peer relationship.

- Management process application

A manager contains some managing process. This is an application that contains the logic and commands to process the management data received from the agents.

Clients contain agents that provide a linkage between the objects to be managed and the transport to the manager.

Agents respond to commands from the manager and collect requested data concerning the managed device. Agents can respond to commands from the manager or send unsolicited information to the manager if conditions arise that dictate such an action.

Management information about a resource includes status, characteristics, and data about some specific aspect of a managed device. This information can be hardware or software information. The information is stored in a management information base (MIB). Some examples of information are:

- Name of user for the system
- Status of software (running/not running)
- Number of jobs in the print queue
- Amount of memory on a system
- Amount of memory in use
- Names of users logged on to a server

To communicate, the agent and manager use a specific protocol, or language, called the Simple Network Management Protocol (SNMP). SNMP was created to manage the Internet network funded by the United States Government with links to networks throughout the world. Internet is the largest network in the world with thousands of attached networks and millions of attached devices. The devices include personal computers, mainframes, servers, and network equipment such as routers and hubs.

- Transport protocol

In addition to a management protocol (the language) there must be a protocol for communication. The transport can be in the same device (cross memory, for example), local (across a LAN or channel), or remote (across a wide area network). If the management protocol is the language for communications, then the transport protocol is the medium for communications. As we speak, the medium is the air through which sound travels. Or, the medium could be the telephone wires when we speak over the telephone.

Ideally, the management protocol should be able to use any transport protocol that you have. That is, as long as we are speaking the same language, it should not matter whether we are speaking in a room together, over phone wires, over a LAN using IBM's Person to Person product, over radio, or any other media.

- Two way

Another key aspect to the management protocol is the requirement for it to be a two-way method of communication. The agent should be able to notify the manager of critical conditions, and the manager should be able to send commands to the agent.

A client is managed by a manager. Clients contain agents which respond to commands from the manager and sends the requested management information back to the manager. The agent and manager communicate using SNMP.

## IBM NetView for OS/2

Local Area Network (LAN) and Wide Area Network (WAN) administrators require comprehensive and readily available information to keep user productivity high and to efficiently manage the resources on their networks. LANs are becoming increasingly widespread, and end users rely on their networked PCs for critical business applications.

LAN administrators are responsible for ensuring that users have maximum access to network resources and minimum interruption in service, whether a problem is involved, or whether a planned change is required to respond to the needs of the business. LAN administrators are also challenged to control costs; not only hardware and software costs, but the increasing costs of supporting a network.

IBM NetView for OS/2 specifically addresses these requirements:

- Increasing the ability to efficiently use network resources
- Increasing productivity on the LAN
- Increasing control of hardware, software, and support costs

For administrators, IBM NetView for OS/2 is an industry-standards-based managing system platform for creating and running systems management applications. Standard applications and agents are included so you can immediately begin managing your environment.

LAN Server, NetWare, OS/2 1.3/2.X, IBM DOS 5.0/6.1, MS-DOS 5.0/6.0, Windows 3.0/3.1, and Microsoft NT are all supported right out of the box. Other critical network devices such as hubs, routers, database servers, communications servers, and Simple Network Management Protocol (SNMP) devices are supported.

The common user interface for NetView for OS/2 is provided by the Management Desk component, which presents system and network resources as graphical objects on the display. This provides a convenient, object-oriented method for performing operations. Clicking on the icon brings up a menu of applications that can be performed against the resource.

The benefits of NetView for OS/2 are improved availability of network resources, greater efficiency for administrators, reduced costs over the running life of the LAN, and better service for all network users.

IBM NetView for OS/2 provides:

- A comprehensive, integrated set of systems management programs from IBM and other vendors for both local and remote LANs
- A common, graphical user interface that integrates IBM and non-IBM applications
- Topology display for different perspectives of the network, with automatic discovery and monitoring of resources
- IBM resource manager agents for OS/2, NetWare, DOS, DB2/2, and CM/2
- Fault, Performance, Configuration, and Operations applications to support these and other agents
- Host Connection, allowing two way communications with NetView and other SNMP Management Platforms, such as NetView for OS/2 or NetView for AIX

- An extendible product for future support of other platforms in addition to the current platforms
- Products written to a standardized, and an object interface that allows applications to support data collection on other platforms
- A set of programmer tools that enables vendors and customers to write their own systems management applications.

The following describes the significant features and benefits of NetView for OS/2:

### **Management Desk**

- Graphical user interface
- Integrates both IBM and non-IBM applications under a common user interface
- Enhances administrator productivity
- Allows execution of all functions with a common look and feel

### **Agents (operating systems and subsystems)**

- Supports IBM DOS 5.0/6.1, MS-DOS 5.0/6.0, Windows 3.0/3.1, OS/2 1.3/2.0/2.1 clients
- Supports IBM LAN Server 3.0 or higher, and NetWare 3.11/4.0 or higher servers/requesters
- Supports database servers and communications servers, such as IBM DATABASE 2 OS/2 (DB2/2) and Communications Manager/2 (CM/2)

### **Topology/Discovery Service**

- Automatically discovers resources on a network and displays them
- Provides an up-to-date picture of the network devices and system resources
- Discovers clients, servers, and network devices
- Makes network resources available to applications
- Allows you to control discovery by filtering
- Helps you keep accurate track of all devices and systems resources by monitoring all additions and deletions
- Reduces administrative costs associated with asset management
- Reduces unnecessary capital expenditures on equipment

### **Remote Command Line Interface**

- Allows entry of a command at the manager workstation for execution on remote OS/2 and Windows workstations
- Allows remote LAN Management
- Improves administrator productivity

### **MIB Loader/Browser**

- Provides access to functions in remote SNMP agent
- Allows dynamic loading of agent description so management applications can begin working with remote systems
- Allows requests to set or query agent values
- Improves administrator productivity by centralizing management

### **Data Collector**

- Collects performance information for reporting or displaying to use for making business decisions about upgrading systems
- Thresholding of performance information alerts the user about critical events

### **Application Builder**

- Application Generator allows users, without programming knowledge, to create custom applications which retrieve realtime information from an agent
- Generated applications automatically placed in a folder, and optionally on pulldown menus for fast operation

### **Event Disk**

- Filtering of display so users only see important events
- Historic information for tracking of problems
- Link to MIB Browser application for retrieval of more detailed information

### **Event Automation**

- Ability to automate responses to error conditions
- Support for pop-up displays, pagers, forwarding to other management systems, and users exits

### **Host Connection**

- Translates error messages to Host NetView format for centralized trouble monitoring
- Runs programs as specified by Host NetView operators

### **Development platform with programmer tools**

- Provides an application development platform for creating systems management applications and agents
- Provides interfaces for user interface integration and access to platform functions
- Allows vendors and customers to implement their own systems and network management applications and integrate them into NetView for OS/2
- Enables a more robust management system

### **Hardware Requirements**

Managing System: i486SX or higher, 16MB RAM or higher

OS/2 Agent: i386 or higher; 1MB RAM increment above other system requirements



**Software Requirements**

OS/2 2.0 (with ServicePak 2) or OS/2 2.1 (with ServicePak 2) both with appropriate APARs

**IBM Announcement Letter**

In the US: 294-550

**Ordering Information**

Call 800-IBMCALL (800-426-2255) in the US, or call 800-565-SW4U (800-565-7948), Ext. 246 in Canada.

**Note:** The part numbers, hardware requirements, and software requirements are approximations and might not be complete. For specifics, call the 800 telephone numbers listed previously, contact a reseller, or contact an IBM office near you.

**Part Number**

In the US:

NetView for OS/2 Version 2.0 16H9589

NetView for OS/2 Version 2.1 (available March 31, 1995) 16H9610

## IBM LAN NetView Management Utilities for OS/2

IBM LAN NetView Management Utilities for OS/2 (LMU) is an OS/2-based set of services that aids a system's management of LANs and is designed for the client/server enterprise environment. It allows a designated workstation to manage both servers and requesters in IBM LAN Server and Novell NetWare networks by providing the following systems management functions:

- Operations management
- Configuration management
- Performance management
- Fault and problem management

LMU consists of a graphical display of the local area network (LAN), command and data transport, and management applications (Configuration, Performance, Operation, and Fault), and it can collect asset information into an OS/2 database. User-written applications can supplement those supplied by IBM. LMU can run as a stand-alone application or be seamlessly integrated into the NetView for OS/2 framework.

Among the facilities offered by the IBM supplied utilities are:

### **Configuration Management:**

- Collects vital product information about the OS/2, DOS, Microsoft Windows 3.1, and Macintosh workstations, as well as the NetWare servers and IBM LAN Servers being managed. This data is either displayed on the managing station screen or placed in a central OS/2 database.
- Maintains a change log in the managing station, and optionally generates an alert when a managed station's configuration changes.
- Monitors the number of instances of specific OS/2 application programs in an OS/2 workstation and sends generic alerts to the Fault Management system when user-specified thresholds are reached.

### **Operation Management:**

- Provides the capability to remotely run a program or procedure at a managed OS/2 workstation, Windows workstation, or NetWare server station. OS/2 and Windows console text output can be optionally redirected to the administrator workstation or to IBM NetView. Some LMU functions can be remotely run on a Macintosh system.
- Provides the ability to shut down in an orderly manner all functions in a managed OS/2 system or NetWare server, and to optionally reboot the system.
- Schedules program execution on one or more OS/2 workstations, Windows workstations, Macintosh workstations, or NetWare server workstations on a timed basis.

### **Performance Management:**

- Collects OS/2 workstation performance data from the IBM System Performance Monitor/2 (SPM/2) product, sends the collected information to a central OS/2 database, and optionally generates generic alerts when user-specified thresholds are reached.
- Monitors the set of workstations (adapters) logged on to a specified OS/2 LAN server for IBM NetBIOS status, and generates generic alerts when specific conditions occur.
- Collects OS/2 LAN server statistics and generates generic alerts when thresholds are reached.
- Monitors network statistics for Novell's IPX and SPX layers for OS/2 and DOS workstations attached to a NetWare file server, and generates generic alerts when user-specified thresholds are reached.
- Collects NetWare server volume information, sends the collected information to a central OS/2 database, and optionally generates alerts when user-specified thresholds are reached.
- Collects NetWare server performance data, sends the collected information to a central OS/2 database, and optionally generates alerts when user-specified thresholds are reached. (This function requires Novell NetWare's SS.NLM module).

### **Fault Management:**

- Provides software LAN alerts from IBM LAN NetView Management Utilities applications
- Creates software LAN alerts (generic alerts) from C or REXX language programs in OS/2, and from batch files on DOS
- Provides alert thresholding and filtering
- Enables automated recovery for software LAN alerts, including alerts generated by IBM LAN NetView Management Utilities functions
- Forwards alerts directly to LAN Network Manager or NetView/390
- Converts alerts into SNMP traps for use with SNMP management platforms, such as LAN NetView and NetView/6000
- Serves as an alert automation exit routine for LAN Network Manager

### **Hardware Requirements**

Managing system: i386 or higher

Managed system: i286 or higher, Macintosh Plus or higher, Token-Ring or Ethernet network adapters

### **Software Requirements**

Managing system: OS/2 1.3 or higher, OS/2 REXX, appropriate LAN Requester, OS/2 Communications Manager, Database Manager (DB2/2), or TCP/IP if SNMP functions are selected

Managed system: OS/2 1.3 or higher, DOS 3.3 or higher, DOS 5.0/Windows 3.1 or higher, System 7, NetWare 3.11 or higher

**IBM Announcement Letter**

In the US: 293-463

**Ordering Information**

Call 800-IBMCALL (800-426-2255) in the US, or call 800-565-SW4U (800-565-7948), Ext. 246 in Canada.

**Note:** The part numbers, hardware requirements, and software requirements are approximations and might not be complete. For specifics, call the 800 telephone numbers listed previously, contact a reseller, or contact an IBM office near you.

**Part Number**

In the US: 76G7991

## IBM NetView Distribution Manager/2 2.1

NetView Distribution Manager Version 2.1 (NetView DM/2) provides remote administrator server control functions to OS/2, MS\*\* Windows, and DOS workstations in a LAN. System and application software can be distributed or installed at any workstation running the Change Control Client component of NetView DM/2 2.1 client/server application either locally or remotely.

The same client workstations can be effectively managed and controlled from the host, or from a designated LAN workstation (running the NetView DM/2 Extended base component, Change Control Server module) with no need of local intervention from a user at the client workstation site.

The host and the designated LAN workstation also allow complete tracking of changes applied at each target workstation by recording history information in the central repository (host) and in the local catalog (OS/2 designated workstation).

In particular, NetView DM/2 enhances the application of OS/2 system software changes by complying to the Configuration, Installation, Distribution (CID) directions established for the installation, upgrade and update of OS/2 system (and subsystem application) software, by:

- Performing a remote unattended redirected install. NetView DM/2 is the key CID compliant software distribution product for the unattended installation of OS/2 software changes.
- Providing the installation of changes through the usage of response files, including disk space checking on the end-user client workstations.
- Starting the OS/2 Install program of the system or subsystem being installed and, consequently, by preserving and migrating all the individual user customization applied to each workstation.
- Remote extended server administration (Remote Administrator feature).

When connected to a host System/370 or S/390, where NetView DM Release 5 is running, NetView DM/2 also enhances the distribution of files to LU6.2-connected workstations running NetView DM/2 2.1 Entry or 2.1 Extended by implementing data conversion (EBCDIC to ASCII) and data compression algorithms.

NetView DM/2 2.1 provides the capability to install and remove software and data to NetWare-managed servers through the use of NetWare Requester for OS/2 or NetWare Workstation Kit for OS/2. This support includes:

- NetWare Loadable Module (NLM)
- NetWare utilities and fixes
- Shared application software and fixes
- Shared user data

### Hardware Requirements

Entry: i386 or higher; 8MB RAM, 8MB DASD

Extended: 8MB RAM, 8MB DASD (Additional space requirements for Remote Administrator)

Client: 0.3MB RAM, 0.7MB DASD

Appropriate LAN, communications adapters for IBM NetBIOS

**Software Requirements**

OS/2 1.3 or higher, appropriate communications software

**IBM Announcement Letter**

In the US: 294-467

**Ordering Information**

Call 800-IBMCALL (800-426-2255) in the US, or call 800-565-SW4U (800-565-7948), Ext. 246 in Canada.

**Note:** The part numbers, hardware requirements, and software requirements are approximations and might not be complete. For specifics, call the 800 telephone numbers listed previously, contact a reseller, or contact an IBM office near you.

**Part Number**

In the US:

Entry 17H7720

Extended 17H7721

Remote Administrator 17H7889

## IBM Distributed Console Access Facility 1.2

Distributed Console Access Facility (DCAF) Version 1.2 addresses the need for a personal computer-based central site "Help Desk" function. It can be used to facilitate network management, network administration, problem determination, and application assistance and training involving personal computer workstations distributed across SNA networks and on NetBIOS LANs. With switched asynchronous connection capability, DCAF Version 1.2 can also be used as a point-to-point, station-to-station connection for home-to-office configurations, remote support applications, or as a backup for control of remote stations when the SNA connection is unavailable. A controlling station can be used to run most full-screen text mode or OS/2 Presentation Manager (PM) applications on a workstation, including applications that run on IBM OS/2 LAN Server Version 1.3 or higher, the IBM PC LAN Program (PCLP) Version 1.34, and user-developed applications. DOS/Windows and OS/2 Seamless Windows applications are also supported. No special programming is required; the DCAF function is transparent to the application being run.

Once a session is established, the target workstation receives all keystrokes entered at the controlling workstation, with the resulting screen images displayed on both the controlling and the target workstation. The target workstation also receives mouse commands from the controlling workstation. The controlling and the target workstations can switch from this operating mode to a monitoring mode in which target users control their own keyboards, but their screen images are echoed on the controlling personal computer.

The controlling workstation communicates to an OS/2 or OS/2 Seamless Windows target workstation through an LU6.2 (SNA) connection, either direct to another station through telecommunications across a LAN or across an SNA backbone. Switched asynchronous links can be used instead of SNA links, or as a backup for when the SNA link is not available. DOS targets and DOS/Windows targets are accessed through the DCAF LAN gateway. Additionally, the DOS/Windows target workstation can be accessed directly from the controlling workstation.

The benefit of DCAF is that it allows you, or another expert, to monitor and assist a remote user without ever leaving your office. DCAF also allows you to perform operations such as remote back-ups and remote problem solving from a central site. DCAF security features range from simple password security to elaborate schemes that are capable of protecting mission-critical applications and data (for example, remote branch banking) through userid, passphrase, access control lists, and encryption support.

### Hardware Requirements

Any model supported by OS/2

### Software Requirements

OS/2 2.0 with XRO6100 or higher and communications support (controlling workstation)

OS/2 with WR05150 or higher and communications support (OS/2 target)

DOS 3.3 or higher and a NetBIOS interface (DOS target)

DOS 5.0 or higher, Windows 3.0 or higher, and a NetBIOS interface (DOS/Windows)

### IBM Announcement Letter

In the US: 293-615

**Ordering Information**

Call 800-IBMCALL (800-426-2255) in the US, or call 800-565-SW4U (800-565-7948), Ext. 246 in Canada.

**Note:** The part numbers, hardware requirements, and software requirements are approximations and might not be complete. For specifics, call the 800 telephone numbers listed previously, contact a reseller, or contact an IBM office near you.

**Part Number**

In the US: 79G0466



## IBM Systems Performance Monitor/2

Whether you are an administrator, analyst, or developer, it is important for you to be able to identify and solve performance problems quickly and accurately. Systems Performance Monitor/2 (SPM/2) 2.0 helps you do just that by collecting, recording, graphing, and reporting performance data for the following critical OS/2 2.X system resources:

- CPU (to the process and thread level)
- Disk
- Memory and Working Set
- File accesses
- HPFS/FAT Cache
- Printer Ports
- Comm Ports

Resource usage and performance data can be broken down to the system, application, process, or thread level.

LAN Server and Requester 3.0 resources are also collected. SPM/2 2.0 lets you collect data from your local system or from remote workstations and servers connected through IBM LAN Server and Requester.

You can graphically display realtime CPU, Disk, RAM, and Working Set utilization, or playback previously collected data from a log.

Reports are provided to enable analysis of collected information:

- Summary, Tabular, and *Dump* reports available for OS/2 resources
- *Dump* reports available for LAN Server/Requester resources (Dump reports contain the full detail of every metric value that was read from the operating system without any summarization.)

The PM-based *Theseus2* memory analysis tool helps you determine application memory requirements and usage down to the process level, and lets you navigate through the OS/2 2.x memory management control blocks. Extensive on-line help is also provided for understanding OS/2 2.x memory management.

If you are a developer, you can use APIs to directly access performance data as it is collected, or to define performance metrics specific to your application. Then you can have SPM/2 2.0 collect and report that data.

### Hardware Requirements

OS/2 2.x capable, 0.75MB Memory and Working Set—Standalone, 2MB Memory and Working Set—Managing, 0.5MB—Managed; 2.7MB DASD—Standalone, 12.7MB DASD—Managing, 0.5MB—Managed

### Software System Requirements

OS/2 2.0 with Service Pak (level XRO6055) or OS/2 2.1, or OS/2 2.11 plus appropriate CSDs and APARs

### IBM Announcement Letter

In the US: 292-601

**Ordering Information**

Call 800-IBMCALL (800-426-2255) in the US, or call 800-565-SW4U (800-565-7948), Ext. 246 in Canada.

**Note:** The part numbers, hardware requirements, and software requirements are approximations and might not be complete. For specifics, call the 800 telephone numbers listed previously, contact a reseller, or contact an IBM office near you.

**Part Number**

In the US: 96F8379

# IBM LAN Network Manager and LAN Station Manager

## IBM LAN Network Manager Version 1.1

Whether you manage your local area networks (LANs) locally from a workstation or centrally from the host System/390 NetView program (with or without MultiSystem Manager MVS/ESA), you can do so more efficiently with the IBM LAN Network Manager 1.1 program. This LAN physical layer management tool enables you to manage multisegment Token-Ring networks, LAN bridges and Token-Ring hubs. Customers that have multivendor Token-Ring networks receive full value from their hardware investment when they use LAN Network Manager because it supports the Token-Ring architecture in the most comprehensive manner, while complementing other network management solutions.

### Easy to learn and use

Easy navigation through graphic displays at the network, segment, and device level, provides the following:

#### Fault Management

Status changes are shown *as they occur* on the topology display. You can navigate through the displays to the exact location of the problem or potential problem and access the event log for more detailed information, including suggested actions for problem resolution.

#### Configuration Management

The LAN topology is drawn and updated dynamically, showing all devices and their physical and logical relationships. A configuration database is maintained in the relational OS/2 Database Manager for easy access. Using the open interfaces available, applications can be written to perform detailed analysis of the event log, isolating trends in network and system availability.

#### Performance Management

LAN Network Manager collects performance statistics on Token-Ring bridges and on IBM 8209/8229 Token-Ring to Ethernet LAN bridge. Ring utilization can be obtained from the LAN Station Manager.

### Local Automation and Two-Way Communication with NetView

A command line interface enables customers to easily write applications to provide local automation using the alert user exit.

Automation routines can then be used to speed diagnostic and corrective action for LAN problems.

The command and response facilities from NetView V2.2 or higher, enable users to issue all LAN Network Manager commands from a NetView console using the command line interface, thereby enhancing the capability to manage a LAN/WAN network from a single console.

### Heterogeneous LAN Management

LAN Network Manager uses international standards to communicate with the IBM LAN Station Manager to gather vital product data. The management protocol is based on Open Systems Interconnect (OSI) and uses Common Management Information Protocol (CMIP) for the request/response service.

### **IBM LAN Network Manager Entry V1.0**

The LAN Network Manager Entry program is intended for customers who want centralized management of LANs from NetView 2.2 or higher. It provides the same capabilities of LAN Network Manager with single-segment LANs who wish to manage the LAN from the NetView console, thereby eliminating the need for a graphic user interface or LAN administration at the remote segment. This is a lower cost solution for LAN management in an environment that has many remote single-segment LANs and NetView 2.2 or higher.

### **IBM LAN Station Manager V1.0**

The LAN Station Manager program is an agent to LAN Network Manager, which provides new solutions for LAN asset management and control. An important function of LAN Station Manager is the reporting of ring utilization of the Token-Ring segment on which at least one of its workstations is located. Also, with the rich set of station-identifying information from LAN Station Manager and the attachment information from the 8230 CAU, the LAN Network Manager user can build a dynamic LAN topology that can provide information on the active and inactive stations on the network. The location and movement of station assets can be monitored. Access to the LAN can be controlled using the 8230.

### **Hardware Requirements**

LAN Network Manager 1.1: Any PS/2 with VGA for display or IBM Personal System/55 with a high resolution monitor and a minimum 20MHz 386DX; 40MB DASD, 12MB RAM minimum.

LAN Network Manager Entry: Any PS/2 or PS/55 with a minimum of 16MHz 386SX; 20MB DASD, 8MD RAM minimum.

LAN Station Manager: Dependent on the operating system used. See product information specifics, no hard drive required, 70KB RAM minimum.

### **Software Requirements**

LAN Network Manager 1.1: OS/2 EE 1.3 with corrective service diskette (CSD) 5050, or higher, or OS/2 2.0 and Extended Services 1.0. For host communication, NetView 2.2, or higher.

LAN Network Manager Entry: OS/2 EE 1.3 with CSD 5050, or higher, or OS/2 2.0 and Extended Services 1.0. For host communication, NetView 2.2, or higher.

LAN Station Manager: DOS 3.3, or higher, and IBM LAN Support Program 1.1 or 1.2; OS/2 EE 1.2 or 1.3; or OS/2 Extended Services 1.0.

### **IBM Announcement Letter**

In the US: 292-482

**Ordering Information**

Call 800-IBMCALL (800-426-2255) in the US, or call 800-565-SW4U (800-565-7948), Ext. 246 in Canada.

**Note:** The part numbers, hardware requirements, and software requirements are approximations and might not be complete. For specifics, call the 800 telephone numbers listed previously, contact a reseller, or contact an IBM office near you.

**Part Numbers**

In the US:

LAN Network Manager 1.1 74F5538

LAN Network Manager Entry 74F5539

LAN Station Manager 1.0 96X5681

## IBM DatagLANce 1.2

The DatagLANce Network Analyzer is the powerful, truly portable multitasking analyzer for LAN troubleshooting and analysis. DatagLANce software displays realtime traffic statistics on the network while simultaneously performing capture and 7-layer protocol decode. The DatagLANce software has a graphical, CUA\*-compliant end-user interface. DatagLANce offers such powerful features as:

- Simultaneous monitor and capture on Ethernet and Token-Ring networks
- An OS/2 flexible interface
- Full 7-layer decode for over 120 protocols and much more
- Custom alarms
- Extensive filtering options, including network-level addresses
- Traffic generation and playback features
- Comprehensive traffic and network statistics
- Support of capture traces from other analyzers

### Hardware Requirements

486/33 or higher, 8-32MB RAM, 12MB DASD; appropriate LAN adapter

### Software Requirements

OS/2 2.0 or higher

### IBM Announcement Letter

In the US: 294-386

### Ordering Information

Call 800-IBMCALL (800-426-2255) in the US, or call 800-565-SW4U (800-565-7948), Ext. 246 in Canada.

**Note:** The part numbers, hardware requirements, and software requirements are approximations and might not be complete. For specifics, call the 800 telephone numbers listed previously, contact a reseller, or contact an IBM office near you.

### Part Number

In the US:

DatagLANce Network Analyzer Ethernet and Token-Ring 1.2 11H0233  
DatagLANce Network Analyzer Ethernet 1.2 11H0234  
DatagLANce Network Analyzer Token-Ring 1.2 11H0235

# IBM NetFinity

IBM NetFinity is a complete hardware management environment designed with the user in mind. Combining system-monitoring and management features (previously available only in complicated and costly products) with the intuitive graphical interfaces that are popular today, NetFinity makes the most sophisticated management tasks simple.

NetFinity software is designed to work with the following popular network protocols; NetBIOS, TCP/IP, and IPX. It can also work independently of a network operating system. A network operating system is not required for installation.

There are two components of NetFinity software: NetFinity Services and NetFinity Manager. NetFinity Services are applications that reside on each connected system, providing the means for participating in NetFinity systems management. NetFinity Manager resides on the LAN administrator's systems, allowing remote initiation and control of NetFinity functions.

NetFinity Services include:

### **System Information Tool**

Detects and reports detailed information on a wide variety of systems, including adapters, SCSI configuration and devices, disk drives, PCMCIA devices, memory, I/O devices, and much more.

### **System Profile**

A fully customizable user and system information facility. Comes complete with a customizable template to get you started.

### **System Monitoring**

Displays line graphs and realtime monitors for a variety of system resources, including microprocessors, disks, and memory. Alerts the user or network manager when user-defined thresholds are exceeded.

### **Security Manager**

Prevents unauthorized access to your NetFinity Services.

### **Alert Manager**

Receives and processes application-generated alerts. You can examine, edit, and print reports from the alert log and customization actions (including logging alerts, notifying remote users, displaying pop-up messages, and starting programs) in response to received alerts.

### **ECC Memory Setup**

Enables you to control ECC memory features on many IBM personal computers.

### **System Partition Access**

A powerful access tool for IBM systems that have built-in System Partitions. Updates, back ups, even deletes your System Partition without using your Reference Diskette.

NetFinity Manager includes:

### **Remote System Manager**

Enables you to access and control all NetFinity Services installed on remote systems within your network. Systems are organized into logical system groups for simplified management. Remote System Manager also features a

Discovery process that automatically recognizes NetFinity systems and places them in a group.

**Power-On Error Detect**

Immediately warns you when a remote system has start-up problems, letting you minimize downtime.

**Remote Session**

Enables you to establish a fully active remote session with a remote system.

**File Transfer**

Enables you to easily send, receive, or delete files and directories locally and remotely.

**Screen View**

Takes a snapshot of a remote system's current screen display. Screens can be saved as bit maps and loaded for viewing later.

**Hardware Requirements**

i386SX or higher, LAN adapter if using Remote features

**Software Requirements**

NetFinity Manager: OS/2 2.x or higher, Windows 3.x

NetFinity Services: OS/2 2.x, Windows 3.x, NetWare 3.11 or higher

**IBM Announcement Letter**

In the US: 294-353

**Ordering Information**

**Note:** The part numbers, hardware requirements, and software requirements are approximations and might not be complete. For specifics, contact a reseller or an IBM office near you.

**Part Number**

In the US:

NetFinity Manager 2.0 83G7904

NetFinity Services 2.0 84G0003



# Backup Programs and Utilities

## ADSTAR Distributed Storage Manager/2

The ADSTAR Distributed Storage Manager/2 (ADSM/2) is a client/server application providing automated backup and archive to multivendor workstations, personal computers, and LAN file servers.

The ADSM/2 server runs on OS/2. Using an intuitive graphical user or command-line interface, administrators can easily define schedules remotely, so ADSM/2 runs automated backups and archives that are unattended. Just as easily, the administrator can arrange disk, tape, and optical storage into a hierarchy that is managed and optimally utilized by ADSM/2. ADSM/2 monitors thresholds, reclaims fragmented space on tapes, migrates data from one media to another, keeps client files on as few tapes as possible, and more.

As environments change, ADSM/2 allows administrators to move an existing ADSM/2 server to a smaller or larger system with different operating systems. Or, it can move part of one server's definitions and data to another ADSM/2 server to better balance the workload.

ADSM/2 users can recover any backed-up versions of their files through a simple point and click graphical user interface.

To reduce network bandwidth and server storage, ADSM/2 can compress client files before sending them to the server.

ADSM servers are also available on AIX/6000, MVS/ESA, VM/ESA, VM/XA\*, and OS/400 platforms. IBM will provide servers on Sun Solaris, HP-UX, and VSE.

ADSM clients available on all server platforms are: Macintosh, DEC ULTRIX\*\*, DOS, HP-UX, AIX/6000, OS/2 and OS/2 Double-Byte Character Support, Windows, NetWare, SCO\*\* UNIX 386 and Open Desktop\*\*, SunOS, and Solaris.

ADSM/2 supports a variety of storage devices and the widest array of communication protocols in the industry, which enables ADSM/2 to fit easily in a customer environment.

### Hardware Requirements

See the IBM Announcement Letter

### Software Requirements

Server: OS/2 2.1 or higher

See the IBM Announcement Letter

### IBM Announcement Letter

In the US: 293-686

## **Ordering Information**

**Note:** The part numbers, hardware requirements, and software requirements are approximations and might not be complete. For specifics, contact an IBM office near you.

### **Part Number**

In the US: 5871-AAA Feature Number 7327

## SaveUtility/2 1.1

IBM SaveUtility/2 is a full-function backup and recovery program for all workstations participating in a LAN. SaveUtility/2 offers the capability of backing up all files in an OS/2 or DOS environment including hidden files, long file names, and extended attributes. Any server, bridge, gateway, or end user system can send all data, programs, and files to a single system that manages data storage, tracking, and control. It supports both NetBIOS and IPX/SPX protocols.

IBM SaveUtility/2 improves quality by making it easy and automatic to back up data from up to 250 workstations (servers, gateways, bridges, and end users) to a single location. This enables better customer service to the end user, ensuring data and system integrity and availability.

Each LAN workstation can perform automated, unattended backup of data in either a full, incremental or progressive mode, allowing full control of the backup process. Data restoration of a single file, multiple file, subdirectory, or entire disk can occur for any system stored data. Restoration can be initiated by the end user, or remotely by the administrator, simply by requesting the files from a displayed list. IBM SaveUtility/2 also has the ability to completely restore the system data to the point of last backup, even if the disk were replaced. Access control lists, when utilized, are associated with the file at backup time and returned during restoration.

There can be a single point of administration and control with IBM SaveUtility/2 for all workstations participating in the backup system. All workstations send data to a single workstation that monitors activity, logs events, controls the processes, and moves the data to archive storage. From this workstation, an administrator can manage workstation profiles, monitor ongoing events, and analyze past events for completeness.

IBM SaveUtility/2 is independent of the LAN operating system and relies upon base network transport capabilities for data transfer between the participating workstation and the single-storage site. A mass-storage device is required for each backup system implemented. This device can be a personal computer tape drive, optical drive, or telecommunications link to another computer.

### **Hardware Requirements**

14MB DASD plus storage device/spare

DOS Client: 640KB RAM

### **Software Requirements**

Server: OS/2 2.0 plus LAN transport

Client: OS/2 1.3, DOS 3.3, or DOS 6.0 or higher

### **IBM Announcement Letter**

In the US: 293-554

**Ordering Information**

Call 800-IBMCALL (800-426-2255) in the US, or call 800-565-SW4U (800-565-7948), Ext. 246 in Canada.

**Note:** The part numbers, hardware requirements, and software requirements are approximations and might not be complete. For specifics, call the 800 telephone numbers listed previously, contact a reseller, or contact an IBM office near you.

**Part Number**

In the US: 82G1482