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# HEWLETT-PACKARD



## HP LAN Manager/X<sup>(1)</sup>

Data Sheet

Product Numbers B1003A, B1011A (Version 1.01)

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In order to provide transparent integration of PCs with UNIX(R) systems, Hewlett-Packard and Microsoft(R) jointly developed a powerful networking product, LAN Manager/X! LAN Manager/X is an advanced, full-featured network operating environment that enables UNIX-based machines to operate as file and resource servers to MS-DOS(R) and OS/2 PC workstations. It is supported on the HP9000 HP-UX mini-computers and workstations. LAN Manager/X also provides a standard application program interface to which developers can write distributed applications across the network between UNIX systems and PC workstations. Using both the HP LAN Manager/X product and the HP LAN Manager Named Pipes / Mailslots Developer's Kit, developers can easily create distributed applications.

HP's LAN Manager products form the networking foundation for client/server computing. The client/server architecture is the most efficient, powerful, and cost-effective way to solve individual, workgroup and company-wide computing needs. These solutions include database servers and applications, electronic mail, user-friendly interfaces, etc. HP's NewWave Office provides users with workgroup applications and solutions for client/server computing.

With HP LAN Manager/X, users can have the best of both worlds: access to a wealth of PC applications PLUS access to the power, resources, and security of UNIX. PC applications can continue to be used from the familiar PC environment. In addition, users can also access the power, resources, and security of UNIX which includes a wide range of CPUs, a variety of large disks, and high-quality printers and plotters. HP LAN Manager/X complements other Hewlett-Packard networking products such as the ARPA/Berkeley Services, HP Network Services (NS), and Network File System (NFS)<sup>(TM)</sup>. HP LAN Manager/X is also the networking platform for HP's NewWave Office for HP-UX.

HP LAN Manager/X increases workgroup productivity in both technical and commercial markets. The emergence of the powerful Intel-based PC has increased the number of PCs found in engineering environments. HP LAN Manager/X solves the engineer's and system administrator's problem of integrating these PCs with their existing UNIX equipment and resources.

The commercial marketplace already contains a large installed base of PCs. As workgroups grow, users need greater server performance and capabilities. HP LAN Manager/X provides an easy growth path from existing PC servers to high powered UNIX systems. HP LAN Manager/X can be easily added to PC networks providing a growth path for increased server performance.

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## Functionality

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HP LAN Manager/X provides a comprehensive set of capabilities for MS-DOS and OS/2 PC users. These include:

### Network File and Peripheral Sharing

With LAN Manager/X, users can create, delete and modify files on HP-UX servers from their MS-DOS and OS/2 PC workstations. PC users are also able to share devices such as printers and plotters.

### Sophisticated Administration Tools

LAN Manager/X provides a flexible set of network management, administration, and diagnostic tools. At the local HP-UX console or through a terminal, the administrator can use HP-UX, MS-DOS, or OS/2 syntax to manage, configure and troubleshoot the server. The administrator can use the HP-UX System Administration Manager (SAM) utility for user accounts, peripheral management and basic network configuration management. For viewing or modifying HP LAN Manager/X configuration parameters, the administrator can use the SAM-like utility, LMConfig, provided with HP LAN Manager/X. In addition, a window interface is available to PC users for seeing available resources, setting up access to these resources, and checking or changing the status of their print jobs.

### Comprehensive Printer Management and Print Spooling

LAN Manager/X provides a powerful and flexible set of print spooling services. Print spooling capabilities include:

- o Configurable print priorities
- o Multiple queues for one printer
- o One queue for multiple printers
- o Printer access subject to the same permissions as file access
- o Print jobs routed to first available printer
- o Print jobs routed to specifically configured printers
- o Optional notification of job status
- o Ability for users to display print queues and manage their own jobs
- o Ability to print jobs at specified times

### Advanced Security System

LAN Manager/X has a comprehensive security system. Access privileges are managed by the network administrator. Access rights can be established for individual files, subdirectories or entire directory trees using the same security model as the HP-UX file system. In addition, guest accounts can be set up with limited resource permissions. The number of users who can simultaneously access the same shared resource is configurable. Security capabilities include:

- o User-level and share-level security
- o HP-UX access via UNIX security mechanisms

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## Application Program Interface (API)

LAN Manager/X provides a standard set of APIs which allows developers to write to the same APIs on HP-UX as on MS-DOS and OS/2. This extends the API capabilities of MS-DOS and OS/2 across the network to HP-UX systems. APIs supported on HP-UX include:

- o **Administrative APIs** - Enable programs to work with the basic server functions such as sharing resources and administering sessions, connections, and open files.
- o **Interprocess Communication (IPC) APIs** - HP LAN Manager/X provides a rich set of programming tools for interprocess communication. These APIs enable processes on any LAN Manager MS-DOS or OS/2 PC workstation to communicate with processes on UNIX or OS/2 servers as though they were local processes. The two IPC mechanisms supported by LAN Manager/X are *named pipes and mailslots*.
  - o **Named pipes**. A high-performance means of passing variable-length, variable-content data between two processes. By possessing a name, named pipes can be addressed across the network and can provide highly reliable two-way communication. Access to named pipes can be controlled by the LAN Manager/X security system so only specified users can gain access to them.
  - o **Mailslots**. An IPC mechanism for reading and writing blocks of data. Mailslots provide high-speed one-way communication. While named pipes can be thought of as similar to a telephone conversation, mailslots are similar to sending a letter.

## Station-to-Station Messaging

HP LAN Manager/X provides a pop-up messaging facility to send text messages from PC to PC and from server to PC. The LAN Manager/X Application Program Interface (API) enables applications to send messages as well as allow automatic administrative alerts.

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## Features and Benefits

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### ■ Wide Range of Servers

HP LAN Manager/X runs on HP's full line of UNIX-based systems. This wide range of processing power allows users to buy exactly the price/performance server needed to get the job done.

HP LAN Manager client software can access the full line of PCs, HP-UX, and MPE servers. This not only extends the range of processing power available for PC users but it also protects the user's hardware and software investment.

It is easy to upgrade existing servers as workgroups and departments require greater power. Users do not need to learn another networking service when upgrades are necessary.

### ■ Network File Sharing

Data can be transparently shared among PC and HP-UX users. Sharing data reduces the number of redundant copies in existence. All users can work from one source which increases data integrity.

PC users can access HP-UX files without having to learn UNIX commands. This reduces learning time and increases productivity.

PC users can store their files on HP-UX and have them automatically backed-up as part of the backup routine for the HP 9000. This increases data integrity and security.

### ■ Network Peripheral Sharing

PC users can transparently access large disks available on UNIX. This makes it easy to use HP-UX resources and reduces the amount of disk space needed for each PC.

Workgroups and departments save money by sharing expensive peripherals instead of having to dedicate a peripheral to each PC. Users have access to a wide variety of powerful printers and plotters attached to HP-UX systems. This allows users to choose the most appropriate output device for their particular processing needs.

Groups can better utilize existing peripherals by allowing them to be accessible to entire groups and departments. This protects workgroup's current investment in hardware.

### ■ Comprehensive Spooler

Comprehensive spooling capabilities allows users to print or plot without needing to verify the availability of a specified device. Users can also view and delete their own print jobs. This saves considerable time and effort.

Users can send their files to be printed or plotted while keeping their own systems available for other work. This increases productivity.

HP LAN Manager/X utilizes the features of the HP-UX spooler program. This gives users greater spooler flexibility and power.

- **Low MS-DOS Memory Requirements**

The amount of memory necessary for the MS-DOS PC networking code has been tuned to minimize the amount of memory required on the MS-DOS<sup>(R)</sup> clients to run HP LAN Manager 1.1. This increases the amount of memory available for applications. In addition, HP LAN Manager 1.1 may be used in conjunction with third party memory managers which further increases the amount of memory available for applications. This allows users to run a greater number of applications while enjoying the benefits of networking. This increases user's productivity and satisfaction.

- **Internetting**

HP LAN Manager/X 1.1 DOS clients can access remote HP LAN Manager/X or HP LAN Manager 1.1 servers through routers and gateways. This allows users to access servers anywhere on a TCP/IP-based network. Users have easy access to an increased amount of data and information.

- **Windows 3.0 and NewWave 3.0 Support**

HP LAN Manager/X MS-DOS clients are supported under Microsoft Windows 3.0 and HP NewWave 3.0. (Named Pipes applications are not supported under Windows 3.0 or NewWave 3.0.) Integration of networking with the latest windowing technology allows users to be more productive.

- **PC Backup**

Third party PC backup programs for network environments should work with HP LAN Manager/X. This allows MS-DOS users to backup their entire local disk or specified files to the HP LAN Manager/X server. These files can then be backed up as a regular part of UNIX administration. Users save time by having a backup tool instead of manually backing up each and every file. Users have increased confidence in the integrity of their valuable data.

- **Standard Application Program Interfaces (APIs)**

LAN Manager/X provides most of the standard APIs on HP-UX that are available on LAN Manager for OS/2 and MS-DOS. This enables application developers to write applications across all three platforms (MS-DOS, OS/2, and HP-UX) without having to change the LAN Manager API calls. Users benefit by having more applications available in a shorter amount of time.

Standard IPC mechanisms (named pipes and mailslots) make it easy for developers to write distributed network applications. Many developer's have adopted the named pipes interface and have announced distributed network applications. With the HP LAN Manager Named Pipes / Mailslots Developer's Kit, developers can easily create distributed applications. Users benefit by having a large number of applications available to them.

Servers work well for the compute- and disk-intensive part of the application while PCs provide easy-to-use graphics for the interface part of the application. Distributed network applications make better use of available resources, reduces processing time, and saves money.

Distributed applications reduce the amount of network traffic. Instead of passing entire files and data blocks over the network, only information needed by the PC is transferred. Since less data is transferred over the network, users benefit from increased security and better performance.

■ **Industry Standard Network Transport (TCP/IP)**

Standards allow users to interoperate with other systems. By having a widely accepted standard, users can invest in systems best suited to their needs.

HP LAN Manager/X servers can be installed on existing and new TCP/IP networks. Users can continue to use current networking services such as ARPA/Berkeley Services, HP Network Services, and NFS while benefiting from the new HP LAN Manager capabilities. The use of standards protects user's investments in both hardware and software.

■ **Wide Range of Industry Standard Links**

HP LAN Manager/X supports the standard Ethernet/IEEE 802.3 LAN interface card on HP 9000 systems. This card can connect to either EtherTwist or IEEE 802.3/Ethernet (thinLAN or thickLAN) wiring configurations.

A wide range of PC LAN interface cards from both HP and third parties are supported on the PC client. These cards can be used in both PC AT(R) and Micro Channel backplanes. HP LAN Manager clients use the industry standard card interface, Network Driver Interface Specification (NDIS). Industry standard links allow users to choose the solution best suited to their needs.

■ **Open Architecture**

The LAN Manager/X specification has been published by X/Open and is therefore available to any vendor. LAN Manager/X was also accepted by OSF (Open Software Foundation) as part of the DCE (Distributed Computing Environment) submittal. In addition, the LAN Manager/X source code can be licensed by OEMs. This allows customers to run one network operating system across multiple platforms. Customers have greater confidence that their hardware and their software investment is protected.

LAN Manager specifications are available from Microsoft or X/Open, enabling any vendor to implement LAN Manager. Additionally, specifications are available to enable developers to port applications to LAN Manager. This makes LAN Manager one of the most widely supported LAN standards today. So far, it has been endorsed by HP, Microsoft, 3Com, IBM(R), DEC(R), AT&T(R) and others. LAN Manager runs on DOS, OS/2, and UNIX, today. It is expected to migrate to other environments in the future. This allows users to run one network operating system across multiple platforms. Users have greater confidence that their hardware and software investment will be protected through the use of standards.

■ **Sophisticated network administration and management tools**

Users can easily monitor and update the network resources to ensure that the network is properly functioning. This increases overall user productivity and reduces the effort needed for network administration.

Network administration can be performed either at the server or remotely from the PC using Telnet or terminal emulator connected via RS-232. This allows the administrator to administer servers from anywhere on the network. This reduces the amount of time needed to configure, maintain, and troubleshoot the network.

Administration tools assist the administrator in easily maintaining the network. This increases the amount of time the network is available to users.

■ **High-performance, non-dedicated server**

With HP LAN Manager/X, large workgroups can use a single server. This reduces the number of systems necessary to administer. Not only does this reduce administration effort and time but it also increases security.

The multitasking capability of HP-UX makes it possible to concurrently run many applications and services in addition to HP LAN Manager/X. This increases the user's ability to do work productively.

HP's LAN Manager offers superior performance over industry-standard protocols. This ensures that network user's performance needs are met.

■ **Compatible with Other HP-UX Services and HP PC Integration Products**

HP LAN Manager/X coexists with other HP-UX services such as ARPA/Berkeley Services, HP Network Services, NFS, HP-UX mail, etc. This allows users to continue to have access to existing services plus have the additional capabilities of LAN Manager. This protects their software investment.

HP LAN Manager/X clients can talk to all HP LAN Manager servers. In addition, these clients are fully compatible with other PC Integration products such as HP Network Services 2.X/MS-DOS and HP ARPA Services 2.X/MS-DOS. This provides a complete PC-UNIX network solution.



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## Product Requirements

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### Required Hardware

- **Server Hardware:**
  - HP 9000 Series 300/400 or Series 600/800 Computer (except 310, 318 and 320)
  - Recommended Minimum Memory Requirements - 8 Mbytes
  - LAN/9000 Series 300/400 or 600/800 Link (note some systems come bundled with a link)
  
- **For the MS-DOS PC Client:**
  - o An HP Vectra PC or other IBM(r) compatible 808x, 80286, 80386 or 80486 PC<sup>3</sup>
  - o A minimum of 640 kbytes of memory. (For optimum performance, more than 640 kbytes of memory is recommended.)
  - o At least one 1.2 megabyte floppy disk drive or one hard disk drive with one floppy disk drive .
  - o One of the following 802.3 network interface cards<sup>2</sup>:
    - o HP 27236A StarLAN 10 PC Link
    - o HP 27240A StarLAN 10 PC Link II
    - o HP 27241A StarLAN 10 MC Link
    - o HP 27245A EtherTwist PC Adapter Card/8
    - o HP 27246A EtherTwist MC Adapter Card/16
    - o HP 27247A EtherTwist PC Adapter Card/16
    - o HP 27267A EtherTwist PC Adapter Card/8 6-Pack
    - o HP 27250A ThinLAN Adapter Card
    - o HP 27210A/B ThinLAN Link
    - o 3Com EtherLink (3C501)
    - o 3Com EtherLink II (3C503)
    - o 3Com EtherLink/MC (3C523)
    - o Western Digital EtherCard+
    - o Western Digital StarCard+
    - o Western Digital EtherCard+ /A
    - o Western Digital StarCard+ /A
    - o IBM Token Ring Adapters (1, 2, or A)
  
- **For the OS/2 PC Client:**
  - o An HP Vectra PC or other IBM compatible 80286, 80386, or 80486 PC<sup>2</sup>
  - o A minimum of 4 megabytes of memory
  - o A hard disk drive with one floppy disk drive
  - o One of the 802.3 Ethernet PC interface cards listed above for MS-DOS clients

### Required Software

- **Server Software:** HP-UX 7.X
  
- **PC Software:** MS-DOS 3.X to 4.X or OS/2 version 1.1

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## **Installation and Support**

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### **Installation:**

HP LAN Manager/X is a customer installable product. However, the customer can purchase installation from HP if desired.

### **Hardware Support Services:**

Provides customers with standard hardware support for their HP 9000 and HP PC hardware.

### **Software Support Services:**

**HP Software Materials Update Service** - Entitles customers to receive updated software and documentation for any revisions to the product up to but not including the next upgrade.

**HP BasicLine Software Support** - Provides customers with self-support through right-to-use updates and access to an electronic database.

**HP ResponseLine Software Support** - Provides all the services of HP BasicLine Software Support plus unlimited access to the Response Center for problem resolution assistance.

**HP TeamLine Software Support** - Provides all the services of HP ResponseLine Software Support plus a local account-assigned HP Service Engineer who will assist the customer with pro-active planning and other support needs.

### **Network Support Services:**

**HP WireTest** - Verifies the suitability of the customer's existing twisted pair cabling for their network. By utilizing sophisticated tests, which quickly and accurately evaluate existing cabling, the customer can potentially save a substantial investment that would be required for re-wiring. Please refer to the HP WireTest data sheet for more information.

**Network Planning and Design** - Provides customers with a comprehensive network strategy that supports their business objectives. HP Network consultants analyze the customer's communication requirements and create a detailed network design based on these requirements. Please refer to the HP Network Planning and Design data sheet for more information.

**Network Startup** - Provides customers with quick implementation of their network, a simplified service interface, verified network operation and assured on-going supportability. Please refer to the HP Network Startup data sheet for more information.

**NetAssure** - Provides customers with fault isolation and assistance with problem resolution anywhere on their network. Please refer to the HP NetAssure data sheet for more information.



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## HP LAN Manager/X Ordering Information for HP 9000 Series 300/400

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### B1003A HP LAN Manager/X for the HP 9000 Series 300

*Includes:*

- \* Server software on cartridge tape
- \* Client software for DOS and OS/2 on 5.25" and 3.5" floppy disks
- \* One set of server and client documentation

*Options:*

- License to use HP LAN Manager/X with X number of clients (See Figure 1)
- Upgrade License (optional) (See Figure 1)

<u>Number of Clients</u>	<u>License to Use</u>	<u>Upgrade License</u>
8 Clients	Opt. 001	Opt. 020
16 Clients	Opt. 003	Opt. 021
32 Clients	Opt. 005	Opt. 022
64 Clients	Opt. 007	Opt. 023
128 Clients	Opt. 009	Opt. 024
256 Clients	Opt. 011	

*Figure 1*

- Additional copies of User's Manual (optional)  
opt. 033 PC Workstation User's Guide
- Delete PC client media and manuals (optional)  
opt. 040 Delete MS-DOS and OS/2 media and manuals
- Upgrade Client Software (requires previous purchase of B1003A prior to March 1, 1991)  
opt. 055

**Support Products:**

- H2012A + L00      HP BasicLine
- H2011A + H00      HP ResponseLine
- H2010A + T00      HP TeamLine
- H2014A + S00      HP Software Materials Update

The following processor / user options apply to the above products:

- #0JA 840(U)/850/855
- #0JB 840 (32-64)/835 U
- #0JC 825/835 (32-64)
- #0JD 825/835/840 (16)
- #0JE 500/834/635
- #0KE 350-370 (PE),815 (All)
- #0JG 310-340 (PE + AXE) / 808

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## HP LAN Manager/X Ordering Information for HP 9000 Series 600/800

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### B1011A HP LAN Manager/X for the HP 9000 Series 800

*Includes:*

- \* Server software on:
  - Cartridge Tape
  - 9-Track Tape
  - DDS / Digital Audio Tape (DAT)
- \* Client software for MS-DOS and OS/2 on 5.25" and 3.5" floppy disks
- \* One set of server and client documentation

*Options:*

License to use HP LAN Manager/X with X number of clients (See Figure 2)  
Upgrade License (See Figure 2) (optional)

<i>Number of Clients</i>	<i>License to Use</i>			<i>Upgrade License</i>
	<i>Cartridge</i>	<i>9-Track</i>	<i>DAT</i>	
8 Clients	Opt. 001	Opt. 002	Opt. 041	Opt. 020
16 Clients	Opt. 003	Opt. 004	Opt. 043	Opt. 021
32 Clients	Opt. 005	Opt. 006	Opt. 045	Opt. 022
64 Clients	Opt. 007	Opt. 008	Opt. 047	Opt. 023
128 Clients	Opt. 009	Opt. 010	Opt. 049	Opt. 024
256 Clients	Opt. 011	Opt. 012	Opt. 051	Opt. 025
512 Clients	Opt. 013	Opt. 014	Opt. 053	

*Figure 2*

Additional copies of User's Manual (optional)  
opt. 033 PC Workstation User's Guide

Delete PC client media and manuals (optional)  
opt. 040 Delete MS-DOS and OS/2 media and manuals

New LAN Manager 1.1 Client Software (requires previous purchase of B1011A prior to March 1, 1991)  
opt. 055 Upgrade Client Software

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## Documentation

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The following manuals are included with the HP LAN Manager/X product:

- Administrator's Guide HP LAN Manager/X
- PC Workstation User's Guide
- Tuning Guide HP's PC Integration Products
- Planning and Setup Guide HP's PC Integration Products
- Error Messages and Troubleshooting Guide HP's PC Integration Products
- Technical Addendum

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## Related Products

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- D1809B HP LAN Manager 1.1 (5 User)  
D1810B HP LAN Manager 1.1 (Unlimited User)
- B1018B HP LAN Manager/X 1.1 386/486  
32015A HP LAN Manager/XL (Named Pipes)
- D1811B HP Network Services 2.1/MS-DOS  
D1812B HP ARPA Services 2.1/MS-DOS  
D1819A HP Network Services 2.1/Novell  
B1823A HP ARPA Services 2.1/Novell
- D1815A HP LAN Manager Named Pipes/Mailslots Developer's Kit  
D1816A HP LAN Manager Developer's Assist Supplement

5091-1022E

(1) Based on Microsoft LAN Manager/X.

(2) For a list of currently supported PCs and LAN cards, contact your local HP sales representative or HP authorized dealer(R) UNIX is a registered trademark of AT&T in the U.S.A. and other countries.

(R) Microsoft is a U.S. registered trademark of Microsoft Corporation.

(R) MS-DOS is a U.S. registered trademark of Microsoft Corporation.

(TM) NFS is a trademark of Sun Microsystems, Inc.

(R) PC AT is a registered trademark of International Business Machines Corporation.

(R) IBM is a registered trademark of International Business Machines Corporation.

(R) DEC is a registered trademark of Digital Equipment Corporation.

(R) AT&T is a registered trademark of American Telephone and Telegraph Corporation.