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CC:  
Subj:

Dear Netware User,

We will be shortly distributing the latest version of Netware ver 3.11 under the Australian University Consortium Education Account Purchase program. To assist you with familiarization to the above product we have enclosed a brief overview of Netware ver 3.11 and current price list.

Sincerely,

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AN INTRODUCTION TO NETWARE V3.11

By Laura Chappell  
Novell Technology Institute

Netware v3.11 provides all the reliability, performance, and security features found in its predecessor; NetWare v3. 1. The latest version of Novell's 32-bit multitasking operating system also includes enhancements to the following features:

- \* Product stratification
- \* Installation/upgrade
- \* Open communications protocol support
- \* File and printing services
- \* Network management
- \* Backup/restore support
- \* Open client-server protocol support
- \* Additional product support

NetWare for Macintosh  
NetWare NFS  
NetWare for SAA  
NetWare FTAM  
NetWare Name Service  
NetWare SQL 386

This article describes some of the enhancements that are included with NetWare v3. 11 or are available as add-on products.

#### Product Stratification

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With NetWare v3. 11, Novell introduces a new packaging strategy. NetWare v3. 11 is available in three versions:

- \* 20-user version (not available under education discount programme)
- \* 100-user version
- \* 250-user version All three versions provide the same functionality and are available on either 3.5-inch or 5.25-inch high-density media.

#### Installation and Upgrade Enhancements

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Remote Installation/Upgrade. Through the Remote Management Facility (RMF) feature, network supervisors can use RCONSOLE or ACONSOLE to install or upgrade NetWare v3.11 from a remote location. The remote workstation or file server can be connected via cable or an asynchronous link. Remote installation was possible with NetWare v3. 1, but the RCONSOLE utility now includes asynchronous link options~ There are three main steps for remote installation across LAN-to-LAN links.

1. Load the REMOTE and RSPX NetWare loadable modules (NLMs) at the file server (File Server 1 ) that contains the most current version of the operating system. This is the operating system that you will transfer over to the other file server (File Server 2)

2. Reboot File Server 2

(the file server running the older version of NetWare) with its new NetWare v3. 1 I SERVER.EXE file and load the REMOTE and RSPX NLMs to establish a remote session.

3. From a workstation,

log in to File Server 1 and use RCONSOLE to establish a remote session with File Server 2. Once connected to File Server 2, press the asterisk on the numeric keypad at the workstation to bring up the RCONSOLE menu. Choose "Copy Public and System Files." On the screen, you will see the status Or the transfer, including the name Or each file and remaining bytes to be transfer.

To upgrade a file server via an asynchronous link,

you can use the RSETUP utility to create a remote boot diskette for the server. The remote boot diskette contains the new operating system, disk and LAN drivers, and the NLMs required to establish a remote session.

(You may also want to create this boot diskette to use in Step 2 outlined in the LAN-to-LAN upgrade process.)

#### Generic Product Install

NLMs. The new PINSTALL.NLM is invoked through the INSTALL.NLM v3.11 and provides a generic installation of all Novell-added NLM-based .server applications. The installer invokes the PINSTALL.NLM by selecting "Product Options FROM the INSTALL menu a pressing [ins].

PIINSTALL.NLM resides on the program diskette of the add-on product (such as the NetWare for Macintosh diskette) and is not copied into the SYSTEM directory during installation. this procedure (used for installing NetWare for macintosh, for example) makes the installation of add-on products simple and efficient. help screens are available during this process to explain the necessary steps to configure NLMs or add-on products.

"Skip option" . During the installation procedure, you are prompted if you want to skip (and not install) a diskette. if you choose not to install a diskette, the installation program will continue, asking for the next diskette to be install

#### Open communications protocol support

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NetWare v3.11 allows workstations to use the communications options to access NetWare v3.11 resources products listed as "optional" are not bundled with NetWare v3.11 but are available separately as add-on products.

- \* IPX/SPX for DOS, windows, and OS/2v1.3 clients
- \* Transmission Control Protocol/Internet protocol(TCP/IP) support for internetwork communications
- \* AppleTalk for macintosh workstations (optional).
- \* Open systems Interconnection (OSI) Transport protocol 4 (TP4) for systems conforming to the OSI Government open system interconnection Profile (GOSIP) standard (optional).

TCP/IP Transport Services. TCP/IP services are available through the following five main features included with netware v3.11:

- \* Application program interface (API) support provides developers with the tools to create TCP?IP-compliant NLMs.
- \* Multiple topology support is possible through the use of Novell's open Data-Link Interface (ODI) technology. Novell's ODI drivers allow a single network interface board to support multiple protocol stacks, such as TCP/IP, IPX/SPX, and AppleTalk.
- \* IP routing enables NetWare v3.11 servers to route IP packets across all LAN adapters configured to support IP packets across all LAN adapters configured to support IP. \*\*\*\*
- \*IP "tunneling" allows NetWare v3.11 IPX LANs to communicate over TCP/IP internetwork. for example, a netware user in New York needs to send IPX packets via an IP internetwork to another netware users in Los Angeles. Standard IP route would not recognize an IPX packet and would discard

it. IP tunneling is performed at the NetWare v3. 11 file server by enveloping IPX packets in a form acceptable to the IP routers on the internetwork.

- \* Simple Network Management protocol (SNMP) NLMs provide support for the management of a variety of TCP/IP components. SNMP can be used to monitor network performance and status; to report, analyze, and isolate faults; and to control operational parameters. The SNMP protocol carries information between managers and agents. Managers are software programs that query agents using various SNMP commands. Agents store management data and report to the managers when queried.

NetWare client TCP/IP with remote terminal protocol (TELNET) and file transfer protocol (FTP) support is available with Novell's LAN Workplace products. The LAN Workplace products use ODI technology to allow multiple protocols to run at the workstation (such as IPX and TCP/IP), enabling users to hot-key between the UNIX environment and NetWare. The LAN Workplace product line includes the following:

- \* LAN Workplace for DOS (includes Windows support)
- \* LAN Workplace for Macintosh
- \* LAN Workplace for OS/2

#### File Service Enhancements

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OS/2 files, UNIX files, and Macintosh files are stored in a different format than DOS files. The NetWare v3. 11 file system has been enhanced to support a variety of clients; allowing them to use the NetWare v3. 11 server to store and retrieve files. The following is a list of the file systems supported:

OS/2 High Performance Filing System (HPFS). NetWare v3. 11 supports extended attributes and long names of OS/2 HPFS.

- \* Extended Attributes. Extended Attributes (EAs) contain information that is attached to an OS/2 file or directory. These EAs are stored separately from the file or directory and do not affect the contents of the file or directory. An application can use EAs to provide a description of the file or directory, but does not place that information inside that file or directory.
- \* Long Names. OS/2 filenames can be longer than the standard DOS eight character names (with three character extensions) and can have associated EAs.
- \* HPFS. The HPFS file system of OS/2 can be used in place of the FAT system of DOS. HPFS can handle partitions and files up to 2GB in size.

Network File System (NFS). NFS name support is included for UNIX workstations running NFS and gives the NetWare v3. 11 file server knowledge of the UNIX naming conventions and file attributes. Within the UNIX community, NFS has become the industry standard for distributed file systems. Available as an add-on product, NetWare NFS allows NFS clients to view the NetWare file system as an extension of their native file system, and provides printing support as well as file and resource sharing.

Macintosh Name Space. MAC.NAM supports the Apple Macintosh name space. MAC.NAM allows a file entry containing a Macintosh filename and Finder information to be included in the NetWare v3. 11 directory table. The Macintosh filename can be up to 32 characters. NetWare for Macintosh is available as an add-on product.

File Transfer, Access, Management (FTAM). The name space support for OSI GOSIP-compliant FTAM systems is provided with the NFS.NAM file.

#### Network Management Enhancements

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Remote Management Facility (RMF). RMF allows supervisors to access the NetWare console from a remote location. The remote location can be another computer on the LAN or a computer connected via an asynchronous line.

NetWare v3. 1 included the REMOTE and 12SPX NLMs as well as RCONSOLE.EXE. NetWare v3. 11, however, includes the ability to dial-in to the file server as an additional RMF feature. RMF includes the following:

- \* REMOTE.NLM
- \* RSPX.NLM
- \* RCONSOLE
- \* RS232.NLM
- \* ACONSOLE
- \* RSETUP

REMOTE.NLM and RSPX.NLM must be loaded at the file server (in that order) to run RCONSOLE from a workstation. A password is assigned during this load procedure to ensure proper security of the console~ RCONSOLE.EXE is a menu utility run from a workstation on the LAN. RCONSOLE.EXE allows network supervisors to "take over" the server console to do the following:

- \* Load or unload NLMs.
  - \* Check statistics (with MONITOR, P120TO, TCPCON, ATCON utilities).
  - \* Edit NetWare configuration file (.NCF file) within the DOS environment or NetWare environment (via EDIT NLM) .
  - \* Fine tune the operating system configuration with the SET command.
  - \* Run console commands such as TRACK ON/OFF CONFIG, and so on.
  - \* Reboot the file server from a remote location.
- RS232.NLM loads the NetWare remote console R5232 driver for remote asynchronous (dial-up) access to the server console. after loading RS232, the operator i.s prompted for information regarding the modem (COM ports 1 or 2; baud rate 2400 to 9600). Once the RS232 driver is loaded, the operator can type MODEM at the console to interact directly with the modem

The ACONSOLE.EXE utility allows network supervisors to asynchronously dial-up the file server console. ACONSOLE can be run from a workstation on another LAN or on a standalone system (provided all the required files are available on the the standalone system). ACONSOLE is used to configure the modem used for in to the server and for the actual calling function. (ACONSOLE requires REMOTE.NLM and RS232.NLM to be loaded at the file server.)

RSETUI'EXE i.s a utility run from either a workstation on the LAN or a standalone station. The RSETUP utility is used to create a boot diskette for a new file server and load the NLMs required to establish a remote session with the new server.

#### TCPCON.NLM.

TCPCON is the TCP/IP console NLM that can be invoked at the file server or remotely through the use of RMF. The main TCPCONscreen provides statistics about the TCP/IP environment such as the following:

- \* IP Receives/Transmits
- \* TCP Receives/Transmits
- \* UPD Receives/Transmits
- \* IP Forwards (enabled/disabled)
- \* Number of TCP Connects

Detailed statistics are also available under "Statistics" option, including IP< TCP< User Datagram Protocol (UDP), and IP information. TCPCON allows access to the local TCP/IP protocol stack Management objects and is an integral component of the SNMP architecture.

TCPCON can also provide statistics about other file servers on the same internetwork that run TCP/IP and support SNMP. These statistics can be used for troubleshooting or benchmarking.

ATCON.NLM. ATCON is the AppleTalk console NLM that can also be invoked at the file server or remotely via RM~ This console utility provides several options including the following:

- \* Echo Testing. Bounce AppleTalk "echo" packets off a selected node to confirm that an AppleTalk client is communicating on the network.
- \* Lookup Service. "Look" for services available on the AppleTalk network.
- \* Router Interface Information. View configuration information for the router portion of the AppleTalk Stack/Router.
- \* Stack/Router Statistics. View statistical counters that are maintained by the router or stack portion Or the AppleTalk Stack/Router (such as packets received and transmitted, or packets dropped due to Datagram Delivery Protocol, orDDP checksum error).
- \* View System Log. View all messages received or recorded since the last time the system log was cleared (including AppleTalk Stack/Router messages).
- \* Zone List. View the AppleTalk zones available on the network (similar to the zone list displayed in the Macintosh Chooser).

PROTO.NLM. PROTO.NLM is the "Protocol Explorer" NLM that displays (at the console or throughll RME) a list Or the protocols registered with the Link Support Layer (LSL) via ODI. Statistics on protocols include the following:

- \* Configuration Information
- \* Which Boards the Protocols Are Bound to
- \* General Statistics
- \* Custom Statistics (if available for the protocol)

WSUPDATE. NetWare v13. 11 includes a new command line utility to globally update workstation files including the NetWare shell program and LAN drivers. The following is the syntax for WSUPDATE:

WSUPDATE [source path] [destination drive:destination filename] /option

WSUPDATE options allow you to control a variety of execution parameters including the following:

- \* Copy the new file over the old file without being prompted by the operating system.
- \* Rename the old file (.OLD) and then copy the new file
- \* Rename the old file (you are prompted for the filename) and then copy the new file.
- \* Search all valid workstation drives (A, B, C, and so on) for the file to be updated.
- \* Search for outdated files in all subdirectories of destination drive.
- \* Create a log file detailing the copying process for each user (copies found, copies outdated, copies updated, local drive and directory the file was located in, and so on). This information can also be appended to a log file.
- \* Update Read-Only files and restore Read-only attribute after copying new file.

#### Multivendor Backup and Restore Support

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The new SBACKUP.NLM is a menu-driven backup and restore program supporting multiple file types, such as DOS, Macintosh, NFS, OS/2, and FTAM. The SBACKUP NLM allows you to do the following:

- \* Use a NetWare v3. 11 file server to back up other NetWare v3. 11 servers as well as its own files.
- \* Perform timed backups.

Drivers for SBACKUP support many third-party tape backup devices. SBACKUP can be used at the file server or remotely via RMI~ NBACKUP.EXE is a workstation utility that is included in NetWare v3. 11 for compatibility purposes only and should not be used to back up NetWare v3. 11 servers with multiple name space NLMs loaded. NBACKUP only supports DOS and Macintosh name spaces and is no~ compatible with SBACKUP

#### Open Client-Server Protocol Support

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NetWare v3. 11 provides industry-standard interfaces to developers building applications for the NetWare environment. The industry standard interfaces listed below allow applications written to these interfaces to run on NetWare networks without modification:

- \* NetBIOS
- \* LU 6.2
- \* DOS named pipes
- \* Berkeley Sockets interface library
- \* AT&T Streams and TLI environments

#### Support for Additional Products

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NetWare v3. 11 supports Novell products that provide a variety of additional services including the following:

NetWare for Macintosh. Providing NetWare file, print, and routing services to Macintosh computers, NetWare for Macintosh v~.0 is a combination of NLMs. NetWare for Macintosh supports the full AppleTalk Protocol Suite including AppleTalk Filing Protocol (AFP), Printer Access Protocol (PAP), and AppleTalk Data Stream Protocol (ADSP) as well as other AppleTalk protocols.

NetWare NFS. NetWare NFS provides file sharing (File Transfer Protocol daemon, or FTPd), printing support (Line Printer daemon, or LPd), and resource sharing (Lock Manager NLM) to UNIX workstations through a number of NLMs. UNL~ clients will also realize the reliability and performance benefits inherent in NetWare v3. 11 .

NetWare FTAM. NetWare FTAM is a collection of NLMs that implement the OSI protocol specifications for FTAM and provide 100 percent U.S. GOSIP compliance. FTAM derlines an OSI-compliant file transfer facility for exchanging data among multivendor equipment. As of August 1990, the federal government cannot buy a network system that is not compliant with the GOSIP standards. This compliance requirement affects not only governments, but also government contractors (such as defense and aerospace companies), universities, and the financial community.

NetWare for SAA. NetWare for SAA provides LAN-to-IBM host connections for 64 host sessions or 254 host sessions, depending upon the version of

NetWare for SAA purchased. Clients can purchase several NetWare for SAA products to increase the number of sessions supported to a maximum of 1,000 sessions. The NetWare Communications Services Manager is a Windows-based workstation application used to configure, monitor, and maintain communication services.

NetWare SQL. SQL, a relational database engine, is optimized for use with NetWare v3.11 and provides a simple migration path for down-sizing minicomputer or mainframe database applications.

NetWare Name Service. NetWare Name service (NNS) simplifies the use of multiserver networks by allowing users to log in to a domain that provides various services. NetWare Name Service can be used with existing NetWare products (NetWare v2.15 and above, and NetWare v.3.0 and above)

#### Training/Education

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Training courses for NetWare v3.11 are available through Novell Authorized Education Centers (NAECs) and Computer-Based Training (CBT) modules. For more information on the NAECs in your area, please call Novell at 1-800-233-EDUC or download NAEC.ZIP from NetWare. (See NOVA, library 17.)

#### Summary

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NetWare v3.11 is designed to be an enterprise-wide network operating system by allowing a variety of communication protocols, file and print services, and client (desktop) platforms. Using the new management features (ACONSOLE/RCONSOLE, TCPCON, ATCON, PROTO, and so on) network supervisors can diagnose LAN performance. The various name space and transport support modules enable networks to grow and expand regardless of what their desktop operating systems are.

Follow-up articles will take an in-depth look at many of the new features to NetWare v3.11, including TCP/IP connectivity, the Macintosh NLM (AppleTalk Protocol Suite), and NetWare NFS. -

#### NETWARE V3.11 FEATURES

Maximum disk storage (theoretical)	32TB
Maximum volume size	32TB
Maximum drives volumes can span	32
Maximum physical disk drives	1,024
Maximum file size	4GB
Maximum open files per server	100,000
Maximum RAM (theoretical)	4GB

#### NetWare v3.11 Reliability Features

- Disk mirroring
- Disk duplexing
- Duplicate directory and file allocation tables
- Read-after-write verification
- Hot Fix
- Transaction Tracking System
- UPS monitoring
- Resource management

#### NetWare v3.11 Product Overview Product

- Stratification
- 20-user version
- 100-user version
- 250-user version Bundled with NetWare v3.11
- Remote Management Facility (RMF)
- TCP/IP Transport Services Retrieve v5.15
- NetWare Requester for OS/2 v1.31
- Print Server v1.21 SBACKUP v3.11

#### Optional Add-On Products

- NetWare for Macintosh v3.11
- NetWare NFS
- NetWare for SAA NetWare
- FTAM NetWare Name Service

Novell Price List for Australian Universities Consortium

Dear Netware User,

To simplify their Netware products Novell have replaced the multiple products ELS I, ELS II, Advanced Netware and SFT Netware with v2.2 and 386 Netware has been replaced by v3.11.

Price structure is as follows:-

v2.2,	10 User	\$1419.00	
v2.2,	50 User	\$2591.00	
v3.11,	100 User	\$4966.00	
v3.11,	250 User	\$9624.00	Includes NW for Mac 100 User

Manuals \$ 242.00 (set)

NW for Macintosh

20	User	\$426.00
100	User	\$852.00

With Trade-In (Advanced, SFT)

v3.11,	100 User	\$1419.00
v3.11,	250 User	\$5675.00

(Trade-Ins require original GenData disk(s) to be supplied with order)

All new versions of NetWare are supplied on 3 1/2" microdisks, please advise if 5 1/4" floppy disks required.

Free Upgrades

Sites that have purchased Novell from Sydney University are entitled to free upgrades, valid until the Anniversary date of your Licence agreement. Handling and postage charges will be applied to free upgrades.

Pricing will shortly be available for LAN Workplace for DOS v4.0 and Netware NFS.

Orders to be address to:

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New South Wales, 2006, FAX: +61 2 660-6557

Despatch time approximately 48 hours from receipt of order

Regards,

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