NetWare® Client™ for Mac OS

White Paper

December 1995

Novell.

NetWare Client for Mac OS
White Paper
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Table of Contents

A Better Mac OS Client 1

Market Needs 2

Meeting Market Needs 3

- Network Administrator Benefits 3
- User Benefits 6

Technical Description 8

- Installation 9
- Navigating the Network with the NetWare Directory Browser 9
- Standards Support 10
- Security 10

Future Direction 10

Conclusion 11

Specifications 11

How to Obtain the NetWare Client for Mac OS 12

For More Information 12

A Better Mac OS Client

The NetWare Client for Mac OS is a major advancement in network client technology. It gives Mac OS users better and easier access to NetWare 4 networks, including NetWare Directory Services™ (NDS™). It also enables administrators to set up and manage Mac OS users more easily and allows better utilization of network servers.

Novell's client strategy emphasizes freedom of choice, which means giving users on all popular desktop operating systems optimal access to the network. NetWare supports more desktops than any other desktop operating system. Supported desktops include DOS, Windows, Windows NT Workstation, Windows 95, OS/2, UNIX and Mac OS. Until the NetWare Client for Mac OS, Novell provided access to Mac OS users through NetWare for Macintosh, which is a set of NetWare Loadable Modules™ (NLMs™) that run on the network server and AppleShare to communicate with NetWare desktops through the AppleTalk protocol. The existing NetWare for Macintosh is a very good solution for Mac OS users because it lets them access the network using the native Mac OS interface they're accustomed to. However, because it uses the AppleShare client software that comes installed on each Mac OS computer, it requires network administrators to manage Mac OS users separately from other network users. Using AppleShare client software, Mac OS users cannot browse the NDS tree for servers, printers and other resources, and the server-based NLMs required **to be AFP compliant** take up server resources that could be used for other tasks.

The new NetWare Client for Mac OS enables Mac OS computers to access the network using native IPX rather than AppleTalk to give users optimal network access and to enable administrators to manage Mac OS clients in the same way they administer DOS, Windows and other clients. It also eliminates the need for the NetWare for Macintosh NLMs running on the server, although it is compatible with the NLMs, so both can run on the server simultaneously.

Novell is committed to providing the best network access to Mac OS users. This white paper outlines the NetWare Client for Mac OS features, benefits and basic components.

Market Needs

The Mac OS computer plays a critical role in many organizations. It has become an essential tool in marketing, graphic design and many other departments within companies. Mac OS computers are also prominent in the education market, where they make up 61 percent of the computers in the kindergarten through 12th grade schools and 28 percent of computers in all schools. Mac OS market share has increased over the last quarter, and Apple Computer Corporation, which is the second largest selling personal computer brand, is now licensing this operating system to third parties.
(Source: *Wall Street Journal*, DataQuest.)

This presence of Mac OS computers has posed a networking challenge for IS personnel. Mac OS users need to access the same network resources as users of DOS, Windows, OS/2 and other computers, yet because networking is built in to the Mac OS operating system using AppleTalk, Mac OS computers are handled separately on mixed-platform networks.

Mac OS users have not been able to take full advantage of the network. For example, they can access only AppleTalk-compatible printers, which must be configured by IS to handle both AppleTalk and any other network protocols. Mac OS users on NetWare networks can access only servers that have been set up to run NetWare for Macintosh. The Mac OS solutions on the market today all limit Mac OS scalability because they limit the total number of Mac OS computers that can connect to a server at one time. Mac OS users do not have remote console management, full access to NDS, full protection of NetWare security, the reliability of NetWare SFT III or the protection of network backup services.

Today's Mac OS user needs the same access to the network as users on other desktop platforms, especially with the capabilities now provided by NetWare 4 through NDS and its other advanced services. IS personnel also need to be able to manage Mac OS clients as easily as they manage DOS, Windows and other clients connected to the network.

Meeting Market Needs

To meet market needs, Novell is introducing the NetWare Client for Mac OS. The NetWare Client for Mac OS enables Mac OS computers to communicate on the network using the native IPX™ protocol that is used throughout the network rather than the traditional AppleTalk protocol. This gives users more access to network resources and enables an easier way for users to find those resources. It also allows administrators to more easily manage networks that connect Mac OS with other clients.

Network Administrator Benefits

The NetWare Client for Mac OS makes the administrator's job easier, from installing the client to administering Mac OS clients and maintaining the network.

Easy Installation

The NetWare Client for Mac OS offers four installation options and automatic configuration to make installation and setup quick and easy. The client software can be installed in the following ways:

1. Directly from a CD-ROM connected to the workstation.
2. On the server from a CD-ROM connected to the server.
3. From a server volume.
4. From another Mac OS computer on the network.

The administrator can preconfigure the client software by creating a preferences file that includes the user's name and context in the NDS tree. This is similar to a NET.CFG file. The intelligent installation application autodetects the correct frame type to use—Ethernet 802.2, Ethernet 802.3, Ethernet II or Ethernet 802.2 SNAP. It also automatically deletes old client files and installs the new files in the correct locations on the client hard drive.

Reduces the Need for User Assistance

The administrator can create NDS object icons that give users direct access to frequently used printers and server volumes from their desktop. This makes it easier for users to find network resources without administrator assistance.

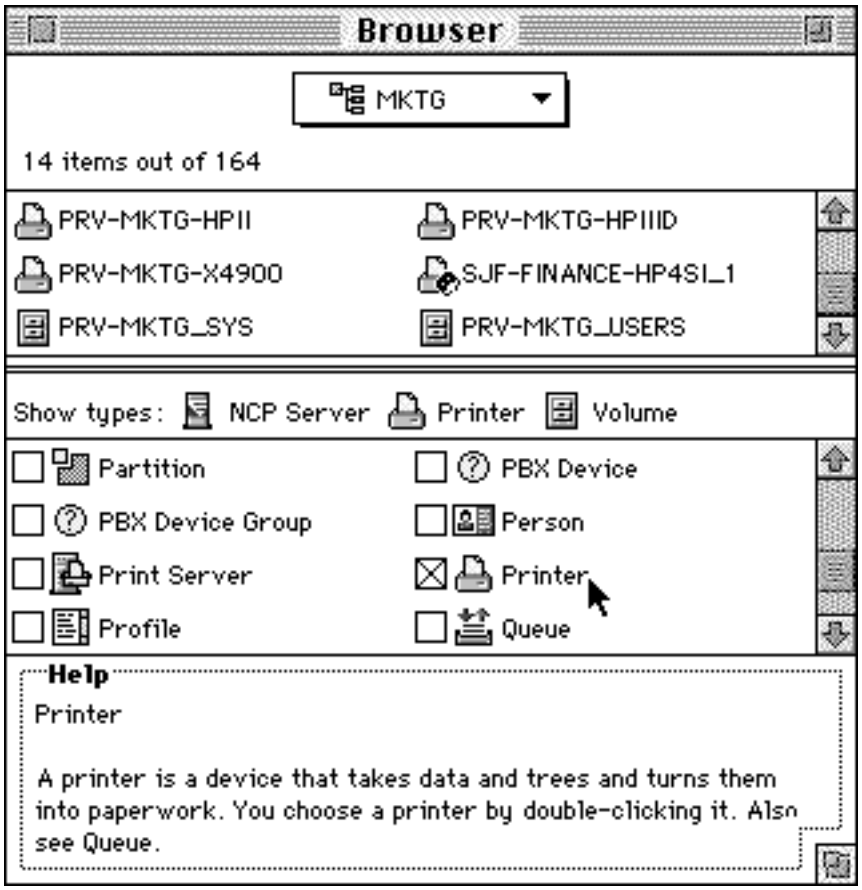

Figure 1. Administrators use the NetWare Directory Browser to simply drag and drop NDS objects such as servers and printers to the desktop. This is similar to using Mac OS aliases.

Figure 2. Users simply double click on the icon like this one to change printers.

Easier Maintenance

Administrators have the option of running a mixed network with IPX/SPX and AppleTalk, or they can delete the previous NetWare for Macintosh NLMs and run IPX/SPX only. Running a single protocol simplifies network maintenance by allowing administrators to manage Mac OS users the same way they manage other users on the network.

The NetWare Client for Mac OS enables administrators to use the tools they are familiar with to manage the network. The NWADMIN.EXE utility can be used for creating and administering users for all clients, including DOS, Windows, and Mac OS. The MONITOR.NLM tool, for example, allows administrators to see which clients are logged in to the network and to see by user name and IPX node address which users have a specific file open. This is possible because the NetWare Client for Mac OS has a dedicated IPX node address, not a dynamically changing AppleTalk network node address.

Remote Console

A Remote Console application is included with the NetWare Client for Mac OS to enable administrators to back up the server, load and unload NLMs, install other applications and change configuration parameters from a Mac OS computer. The remote console application can open windows to multiple servers so administrators can easily view the console of two or more servers simultaneously. This makes compare settings among servers easy.

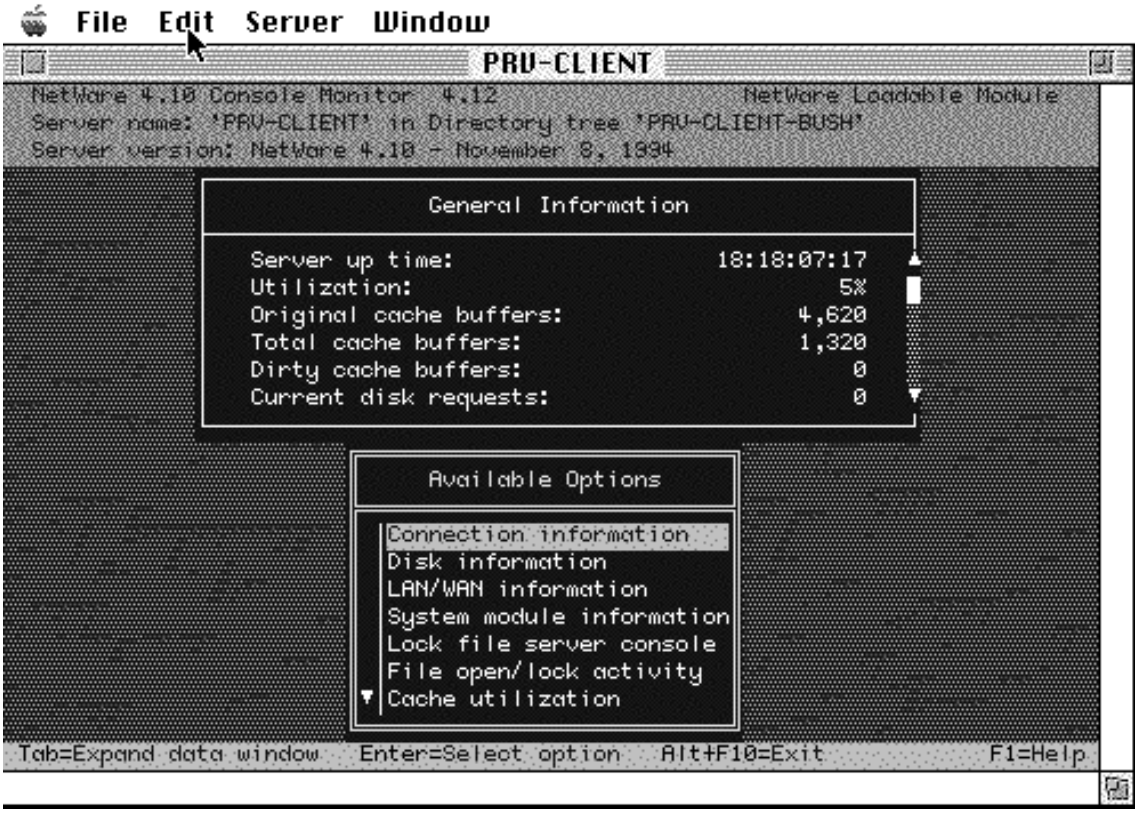

Figure 3. The Remote Console enables administrators to manage the network from a Mac OS workstation.

User Benefits

The NetWare Client for Mac OS gives Mac OS users the same access to the services of the NetWare network that other network users enjoy. The client software also gives users a browser to easily navigate the network and the added benefit of instant access to network volumes and printers by double clicking on NDS objects placed on the desktop. Files and folders on the network can also be easily accessed over IPX by creating an alias of the file or folder.

Full Access to NetWare Services

With NDS, users need to log in to the network only once, regardless of the number of servers connected to the network. The NetWare Client for Mac OS then gives the user easy access to any authorized resource on the network, including server volumes and printers. The user can combine the easy-to-use Browser that is included with the NetWare Client for Mac OS software with the Mac OS alias function to easily find and use server volumes, print queues and so on.

For example, an employee needs to fill out an expense report and send it to his or her manager in San Jose. The employee turns on the Mac OS workstation and is automatically asked for a password. When the password is entered, the employee is logged in to the network, and a server volume appears on the desktop. The employee double clicks on an alias located on the desktop and an expense report template located on the network opens together with its application. The employee then uses the NetWare Directory Browser to quickly find the manager's printer in San Jose and prints the report there. The employee also drags the printer icon onto his or her desktop to make it even easier to use the San Jose printer in the future.

Access to the Entire Network

Until now, Mac OS users have faced three limitations to accessing network resources. Users could not access servers that did not have NetWare for Macintosh installed, they could not access portions of the network that used routers which did not support the AppleTalk protocol, and they could not use printers and print queues that had not been configured for use with AppleTalk.

The NetWare Client for Mac OS overcomes these limitations through its use of IPX. Users can now gain access to all volumes on servers, and they can print to any printer on the network. (Mac name space must be added to each volume to enable Mac OS users to save files to the volume, and a printer driver is required for all non-Postscript printers).

Easier for Users

The NetWare Client for Mac OS makes network use easier in four ways:

- **NetWare Directory Browser**. The NetWare Directory Browser lets users easily navigate the NDS tree for resources. In the past, users had to know the name of the Mac OS zone and the name of the resource they were looking for. For example, to print to a printer in San Jose, a user would need to know the name of the zone in which the printer was located and the name of the printer. With the NetWare Directory Browser, the user simply selects the type of resource, such as a print queue, he or she is looking for. The user then moves through the tree to find the printer. Because resources are generally set up in the tree according to geographical location, department or some other logical grouping, resources are easy to find.

- **Desktop icons**. The user or administrator can copy frequently used printer, server and volume objects to the desktop. When a person uses the browser to locate a resource such as a printer, he or she can drag the object's icon to his or her desktop. Using the resource in the future is then as easy as clicking on the desktop icon.

- **Preferences files**. The administrator can set up preferences files for users. This file contains the user's name and context. The preferences file, NetWare Prefs, resides in the System folder's Preferences folder. Because the last five users' NDS contexts are cached, multiple users can share a workstation. When a user logs in, his or her NDS context is automatically entered so the user doesn't have to remember it.

- **Choice of Chooser or Browser**. Network administrators can choose to continue to use NetWare for Macintosh on their servers. This gives uses the option of accessing network resources through the Chooser or the NetWare Directory Browser.

Increased Performance

The NetWare Client for Mac OS provides faster response for the user in two ways.

- **Large internet packets (LIP)**. The NetWare Client for Mac OS supports LIP for faster network performance.

- **Native IPX**. IPX should provide faster response times than AppleTalk, and it does not require the NetWare Core Protocols (NCPs) to be processed at the server through the NetWare for Macintosh NLMs.

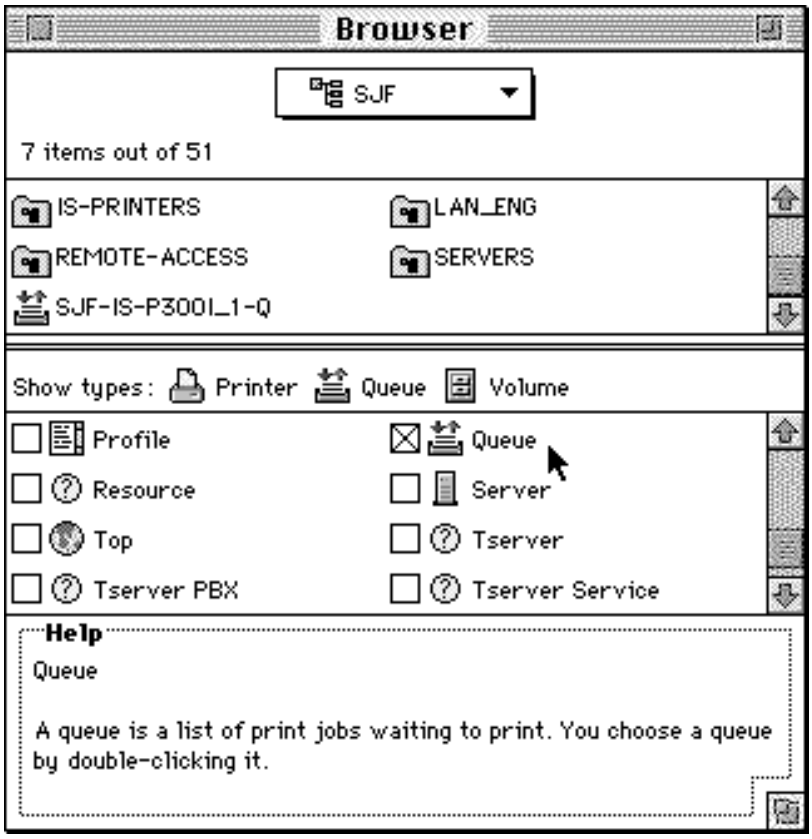

Figure 4. The NetWare Directory Browser enables users to easily select filters for quickly locating the resources they need.

Technical Description

The NetWare Client for Mac OS is software that runs on the Mac OS workstation to provide full access to NetWare 4 networks. The NetWare Client for Mac OS can run concurrently with NetWare for Macintosh if the network administrator chooses.

The NetWare Client for Mac OS uses native NetWare IPX/SPX instead of the AppleTalk protocol that is built into the Mac OS. This gives the Mac OS the access capabilities of other clients on the network, including DOS, Windows, Windows NT Workstation, Windows 95, OS/2 and UNIX. It also eliminates the need for the AFP.NLM, ATPS.NLM and APPLETLK.NLM to be running on the NetWare server.

Installation

The NetWare Client for Mac OS runs on the Mac OS workstation and includes the NetWare Directory Browser utility that runs as an application. The client installs from an installer application that can be run from a CD-ROM, the server volume, another Mac OS or from floppy disk. The installer automatically deletes previous NetWare client software and deletes it. It also autodetects the correct frame type.

The administrator can choose to remove the NetWare for Macintosh NLMs previously used on the server by using the INSTALL.NLM.

Navigating the Network with the NetWare Directory Browser

Network users navigate the network using the NetWare Directory Browser that runs as an application on the workstation. The NetWare Directory Browser is used in place of the Chooser to access NDS services over IPX. It follows the Chooser metaphor by allowing users to click on a printer icon to display all available printers. Users on networks running the NetWare for Macintosh NLMs can also continue to use the Chooser to locate resources in AppleTalk zones. The Browser is divided into four sections: display of the selected tree container, a list of available resources, a choice of resource types and a help screen.

Container

The container section enables users to scroll through the NDS tree to find the container in which the resource they want is located. Network administrators usually set up containers geographically or by department to make locating resources easy.

Available Resources

This portion of the window shows all the available resources in the selected container. Resources can be network servers, printers and volumes.

Resource Types

This section enables users to limit their search to the type of resource they are looking for. For example, a user can select printers and servers to limit the displayed resources to printers and servers. Resource types can include printers, print queues, people, partitions, groups, print servers and so on.

Help Screen

The context-sensitive help screen defines the items in the NetWare Directory Browser when the user points to them. It explains how to select and access resources to help make the NetWare Directory Browser very easy to use.

Apple Guide Help

The Apple Guide Help is available when using the NetWare Directory Browser application on a Mac OS workstation running System 7.5 or higher. To access Apple Guide Help, just pull down the question mark menu located on the right side of the menu bar.

Standards Support

The NetWare Client for Mac OS supports all major network topologies, including Ethernet, LocalTalk and token-ring. It autodetects and configures the frame type to one of the following: Ethernet 802.2, Ethernet 802.3, Ethernet II or Ethernet 802.2 SNAP.

The client software is also compatible with dial-up access through Apple's AppleTalk Remote Access (ARA) software.

Security

The NetWare Client for Mac OS takes full advantage of the sophisticated security features found in NDS, including:

- Packet signing
- RSA public/private key encryption so the password never crosses the wire
- Up to 128-character password

Future Direction

Future releases of the NetWare Client for Mac OS will include support for NetWare/IP™ to enable Mac OS computers to communicate over IP-based networks.

A Packet Burst option will be available in future releases to enable even faster performance on the network.

Conclusion

Novell is committed to providing the best access to NetWare networks while giving users and administrators the freedom to choose the desktop operating systems that match their needs. The NetWare Client for Mac OS represents a big step forward in this commitment. It simplifies the administrator's job by allowing Mac OS users to access the network with the same IPX protocol used by other network clients. It also gives users easier access to all network services, including NDS. More resources are available to the Mac OS user, and using the NetWare Directory Browser, those resources are easier to find. The NetWare Client for Mac OS is another way Novell is delivering the best networking solutions today while preparing your network for your needs tomorrow.

Specifications

Workstation

Mac OS or compatible with 68030 or 68040 processor

Power PC compatible

Mac OS System 7.1 or higher

RAM: 4MB minimum

Hard disk space: 3MB minimum

Server

Network server running NetWare 4.1 or above

How to Obtain the NetWare Client for Mac OS

The NetWare Client for Mac OS is available at no charge on the NetWire® forum on CompuServe (Go NetWire) and on Novell's home page on the Internet at http://netware.novell.com. Client kits can also be purchased in the United States and Canada by calling 1-800-UPDATE1. In all other locations, call 1-801-429-5533 or contact your local Novell Authorized Reseller.

For More Information

In the United States and Canada, call 1-800-NETWARE. In all other locations, call 1-801-429 5833 or visit Novell's Web site at http://netware.novell.com.

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