Glossary

How to Use This Manual

This manual provides definitions for terms and acronyms used in NetWare development.

> **NOTE:** As of Edition 2.2 (Release 6 of the CD-ROM), this manual is in the process of development and not yet complete.

How to Find It

Since this SDK is extremely large and provides many APIs, it can be difficult to find the information that you want. To find the information you need, see SDK Views, or look in the Master Index (online only). If you are looking for a specific function reference, you might want to look in Functions and Structures Master List, which provides listings of all functions in this SDK both alphabetically and by service group.

For detailed help in **using DynaText* to find things**, choose the Reader Guide option from the Help menu. The "Searching Books and Collections" chapter provides basic information about searching. The "Advanced Searching Techniques" chapter should help you with more advanced searches, such as wildcard searches, boolean searches, and so on. For answers to frequently-asked questions, see the "Getting Help" chapter.

New in This Release

For a summary of new features and significant changes in this release of the NetWare SDK, New Features and Important Information. Summaries of changes for previous releases can also be found there.

Commonly-Used Terms

Terms and acronyms are defined in this manual. The following defines selected often-used terms.

API

Application Programming Interface. A set of functions provided to developers to enable them to use a service.

client

The user of a service. NetWare **clients include NLM™ applications** as

well as the DOS, OS/2*, Windows*, Windows95* and Windows NT* platforms.

NLM

NetWare Loadable Module™. A program written to run on the NetWare OS.

OS

Operating System. The software that controls computer (or network, in the case of NetWare) resources and provides basic services.

SDK

Software Developer's Kit. A product containing the software and documentation needed for using one or more APIs.

server

A computer that provides services to workstations on a network. In this manual, **a server is assumed to be a NetWare server** unless otherwise specified.

NetWare Versions

This manual references different version numbers of the NetWare OS.

2.x---NetWare versions referred to as NetWare 2.x are built for the 16-bit environment. The NetWare 2.x label signifies that NetWare versions 2.0, 2.1, 2.15, and 2.2 are supported.

3.x---NetWare versions referred to as NetWare 3.x are designed specifically for the 32-bit 80386, 80486, and Pentium* environments. The NetWare 3.x label signifies that NetWare versions 3.0, 3.1, 3.11, and 3.12 are supported.

4.x---NetWare versions referred to as NetWare 4.x, like NetWare 3.x, are designed specifically for 80386, 80486, and Pentium environments. It provides the services available to the NetWare 3.x OS, plus many other services. The NetWare 4.x label signifies that NetWare versions 4.0, 4.01, 4.02, and 4.1 are supported.

If the topic being discussed is specific to a particular NetWare version number, the manuals provide that version number (such as NetWare 2.2 or NetWare 4.0). **3.x and 4.x** signifies that NetWare 3.x and 4.x are supported.

Conventions

The following typographical conventions are used in this manual:

Functions and macros appear **like this**.
Parameters appear *like this*.

Structure names appear like this.
Structure field names appear *like this*.
Types appear like this.
Commands appear **like this**.
Code and syntaxes appear `like this`.
NDS™ class names appear like this.
NDS attribute type names appear *like this*.
Key names appear **like this**.

Getting Assistance

For developer technical support information, call 1-800-REDWORD (1-800-733-9673) or 1-801-429-5588, or you can send a FAX to 1-801-429-2990.

Release Notes

The README.TXT file, under the DOCS directory, contains information that was not available when the manual set was produced. This file contains supplemental release notes to the documentation supplied with the this SDK, and you should read it before installing the software of this SDK.

AAA

abend

Abnormal end. A serious software failure that halts (brings down) the server.

absolute path

A path specification that is complete, starting with a NetWare volume or DOS drive letter. The syntax of a NetWare path is volume:\directory\ . . . \directory\filename. For example:

SYS:

SYS:PUBLIC\FILER.EXE

C:WINDOWS\SYSTEM\WINSOCK.DLL

access control list

ACL. In NDS, a property of every object in the NDS database. It contains a list of other objects that can access the object. Trustee assignments and the inherited rights filter are included in the ACL.

access mask

A binary value that specifies a combination or rights in the NetWare file system. When a trustee has no assigned rights to a file or directory, the trustee inherits rights from a superior directory for which rights are assigned. The access mask can be used to modify those inherited rights. If the access mask is 0, the trustee inherits all rights from the superior directory. Also known as the inherited rights mask.

account

An administrative entity that gives a user access to a system upon login.

account balance

The amount in an account.

accounting

The process of tracking resources used on a network.The network supervisor can charge for network services and resources by assigning account balances to users that they draw from as they use network resources.

acknowledgment

A code sent by the destination station to the origination station, to indicate that it is ready to accept data, or to acknowledge error-free receipt of data. In certain network protocols, ACK is the name of the field, frame, or packet that contains such a code. ACK is the mnemonic for the ACKnowledge character, ASCII code 6.

ACL

access control list. In NDS, a property of every object in the NDS database. It contains a list of other objects that can access the object. Trustee assignments and the inherited rights filter are included in the ACL.

adaptive mutex

(Symmetric multiprocessing) A mutual exclusion lock that combines elements of both spin locks and mutex sleep locks. An example of an adaptive lock is a lock which begins as a spin lock, then converts into a mutex sleep lock after a given number of spin attempts to acquire the lock. See also mutex.

address

A value that uniquely identifies and specifies the location of an element in a computer or computer network, for example: a location in memory or disk storage, a network or portion of a network, a station or other device on a network, and so forth.

address space

(Symmetric multiprocessing) The range of memory addresses that is available to a task in a multiprocessing environment. This set of addresses uniquely identifies threads that compose a task of executable work.

administrator

The person who sets up a server, creates user login accounts and passwords, creates groups, sets security, and maintains the server.

ADSP

AppleTalk* Data Stream Protocol. A symmetric, connection-oriented AppleTalk protocol that provides reliable, full-duplex, byte-stream service between sockets. It guarantees that data bytes are delivered in the same order as they were sent, and that they are free of duplicates.

AES

Asynchronous Event Scheduler.

AFP

AppleTalk Filing Protocol. An AppleTalk protocol that provides communication and data transmission between file servers and clients in an AppleShare network.

AIO

Asynchronous I/O. I/O model in which processing overlaps input and output. Both hardware and software must be designed to handle AIO.

alert

A message that notifies the user of a software or hardware problem.

algorithm

A procedure for solving a problem in a finite number of steps, frequently involving repetition of an operation, as by a computer. Data compression and creating lists of random numbers are uses of algorithms.

alias

An alternative name assigned to a system, to a program, to an electronic mail address, or to another object.

allocate

To set apart; to designate. For example, "to set apart a range of the available memory in a computer."

alpha test

A test of the code-complete product by a select group of users, usually internal to the developer's company. Alpha testing follows integration and system testing.

ANSI

American National Standards Institute. The organization that sets the standards for many technical fields and provides the most common standard for computer terminals.

API

application programming interface. A set of functions, procedures, values, or other defined interface standards that an application uses to request and carry out services performed by another program or by an operating system. A single API typically specifies how input should be requested and obtained, and how output should be done.

append

Add to the end.

AppleTalk

Apple* Computer's suite of protocols that make up a complete network architecture. AppleTalk is a set of protocols that specify communications, ranging from application interfaces to media access. AppleTalk enables the hardware and software on a network to interact and to route data so that users can share files, access printers, and communicate with one another.

AppleTalk Data Stream Protocol

ADSP. A symmetric, connection-oriented AppleTalk protocol that provides reliable, full-duplex, byte-stream service between sockets. It guarantees that data bytes are delivered in the same order as they were sent, and that they are free of duplicates.

AppleTalk Session Protocol

ASP. An extension of ATP that allows two processes, such as a client and a server, to exchange transactons and commands reliably.

AppleTalk Transaction Protocol

ATP. An AppleTalk connection-oriented protocol that adds reliability to lower-layer services by providing loss-free delivery of packets from a source socket to a destination socket.

AppleTalk zone

A logical grouping of AppleTalk devices such as Macintosh computers, Apple printers, and NetWare servers. The network administrator defines AppleTalk zones and can assign devices to a particular zone.

An AppleTalk zone organizes network devices into logical divisions so that users can locate and use servers and network printers.

application layer

The seventh (highest) of seven layers of the OSI model; it provides network access to users.

application programming interface

API. A set of functions, procedures, values, or other defined interface standards that an application uses to request and carry out services performed by another program or by an operating system. A single API typically specifies how input should be requested and obtained, and how output should be done.

architecture

The logical structure of a system. For example, a communication system's architecture is composed of protocols, formats, sequences of operations, and functional specifications.

archive

To copy files to a storage device (such as a diskette, magnetic tape, or optical disc) for long-term storage or backup purposes.

ARCnet

Attached Resource Computer Network. A LAN topology that combines the token-passing element of token ring with star, bus, and tree topologies. ARCnet is assigned the ANSI standard number 878.1. ARCnet is relatively fast (2.5 Mbps), reliable, and supports coaxial, twisted pair, and fiber-optic implementations.

array

A named, ordered collection of data elements that have identical attributes; or an ordered collection of identical structures (from *Newton's Telecom Dictionary*).

ASCII

American Standard Code for Information Interchange. The standard adopted by ANSI for compatible data transfer between data systems and associated equipment. The 8-bit code consists of 7 character bits with the 8th bit for parity check. The full ASCII character set consists of 128 characters.

ASCIIZ string

A NULL-terminated ASCII string.

ASP

AppleTalk Session Protocol. An extension of ATP that allows two processes, such as a client and a server, to exchange transactons and commands reliably.

Asynchronous Event Scheduler

See AES.

ASMP

asymmetric multiprocessing. A technique used to improve processing performance by dividing operations among two or more processors. For example, when NetWare SFT III is running on a dual-CPU machine, one processor performs all hardware-related I/O, while the other processor performs file service, NCP service, and other processing not directly related to the server hardware.

assembly language

A low-level computer language that closely approximates machine code. Assembly language is often used when high speed is desired.

asymmetric multiprocessing

ASMP. A technique used to improve processing performance by dividing operations among two or more processors. For example, when NetWare SFT III is running on a dual-CPU machine, one processor performs all hardware-related I/O, while the other processor performs file service, NCP service, and other processing not directly related to the server hardware.

asynchronous I/O

AIO.

asynchronous execution

(Symmetric multiprocessing) The mechanism of controlling the execution of two or more processes (threads) by sharing event status information, but without using specific common events (such as common clock or timing signals). The SMP synchronization functions are based on asynchronous mechanisms.

atomic

Being indivisible. For example, an atomic action is an action that has no intermediate condition between initiation and completion.

Store and fetch operations of small objects to or from memory are generally atomic. By using synchronization operations, larger operations can be made atomic. Atomic operations alter specific hardware memory to prevent other processors or devices from changing the target location during the same hardware cycle. Most hardware accomplishes this by means of bus signals such as LOCK on Intel* processors, which signal other processors to stay off the hardware bus until the LOCK signal is deasserted by the current processor. (# sign means that the signal is active low).

See also SMP.

ATP

AppleTalk Transaction Protocol. An AppleTalk connection-oriented protocol that adds reliability to lower-layer services by providing loss-free delivery of packets from a source socket to a destination socket.

attach

To establish a connection between a workstation and a NetWare server. The server assigns each client a connection number and attaches each to its LOGIN directory. For Macintosh clients, this restricts the user to viewing server resources without connecting to the server.

attribute

In NDS, a property belonging to a class. An attribute consists of a type identifier together with one or more values. Also known as a property.

attribute type

In NDS, a letter or letters that distinguish the type of object name, such as O or OU (same as name type) or CN.

audit file

A system log created when auditing is enabled at the volume or Directory Services container level. At the volume level it stores a record of all audited transactions;at the Directory Services level it also stores all activities performed bythe auditor. Also called "audit data file."

audit history file

A system log, created when auditing is enabled at the volume container level,which stores a record of all activities carried out by the auditor.

auditing

In NetWare, the collecting and examining of records to make sure that the server's resources are protected by the server Trusted Computing Base (TCB).

auditor

An individual authorized by an organization to use the NetWare network's auditing mechanisms to identify attempted or successful access by users to unauthorized information.

authentication

A means of verifying that an NDS object (user or otherwise) is authorized to use the network. This process provides network security.

autochanger

A storage media system that automatically exchanges the storage device (such as tape or CD-ROM) in a drive. An autochanger allows many storage devices to be available at once.

autoload

To load automatically. For example, an NLM might autoload another NLM that provides a service, such as an API.

BBB

back up

To make duplicate copies of data as insurance against disk failure, power outage, or accidental deletion of data.

background

See background processing.

background processing

Computer processing that occurs without interaction with the user.

backout

In TTS, the process of halting an incomplete transaction and leaving the database in its original condition.

backup

A duplicate of data (file, directory, volume), copied to a storage device (floppy diskette, cartridge tape, hard disk). A backup can be retrieved and restored if the original is corrupted or destroyed.

banner page

The first page of a print job that supplies information about a print job, such as the name of the user who initiated the job, and the time and date of printing.

barrier

(Symmetric multiprocessing) A synchronization mechanism that guarantees that all participating threads have reached a specified point in their execution before any of the threads are allowed to proceed.

For example, a barrier can be made of two shared variables (barrier and barrier flag variables) both initially set to zero. Each arriving thread increments the barrier variable until the barrier flag variable notifies all threads that the Nth thread has been executed. Then, all N threads are ready to resume execution. Until the Nth thread arrives, the other threads that previously arrived at the barrier continue to poll the barrier flag.

base class

In NDS, the class used in the creation of an object in the Directory tree.

base schema

The standard set of NDS object classes and properties defined by Novell. The schema can be extended by custom applications.

beta test

A test of a finished product by a select group of users, both internal and external to the developer's company. Beta testing follows alpha testing.

binary

Describing a numbering system with a radix of 2 that uses only the digits 0 and 1, or a signalling system that uses only two states, OFF (0) and On (1). Binary numbering can be used to encode data.

bindery

A flat (nonhierarchical) network database used by NetWare® versions before 4.0 that contains definitions for objects such as users, print queues, servers, and so on.

bindery context

The container object in the Directory tree that enables NDS servers to provide network information to servers and programs that depend on using the bindery.

bindery object

An entry in a bindery.

BIOS

A set of programs, usually in firmware, that enables each computer's CPU to communicate with printers, disks, keyboards, consoles, and other attached input and output devices.

bit

A contraction of the term "binary digit." A bit (1 or 0) is the smallest unit of information a computer can process.

bit rate

The rate at which bits (binary digits) are transmitted over a communications line. Bit rate is usually expressed in bits per second (bps).

bitmap

A set of bits that define attributes of an object, or the options of a function.

block

The smallest amount of disk space that can be allocated.

blocked thread

A thread (process) that has suspended operation and is waiting for some event to occur before it can continue execution. For example, a thread might block (or sleep) while waiting to complete a device read or to aquire a lock or resource, allowing other threads to run in the meantime.

blocking

The temporary suspension of the operation of a thread, which is retained in memory without terminating. Blocking allows other threads to run. A blocked thread is also described as sleeping.

blocking function

In NLM™ programming, a function that relinquishes control of the CPU. Some functions block while waiting for a given event to occur (for example, a device read). Some functions block to allow other threads to run.

boot

To start or restart a computer and ready it for use. A "cold" boot is done by turning on the power switch. A "warm" boot resets the computer without turning off the power source.

BOOTP

Bootstrap Protocol. A TCP/IP protocol that enables an internet node (for example, a diskless workstation) to discover certain start-up information, such as its IP address.

border

The boundaries of a window, portal, or dialog box.

bps

bits per second. The number of bits transmitted or received in one second.

breakpoint

A location in a program that brings up the debugger.

bridge

A device that retransmits packets from one segment of the network to another segment. See also router.

bring down

To halt a server.

bring up

To start a server.

broadcast

To send a message to all connected nodes on a data communications network (as opposed to sending a message to a single node). For example, in NetWare, to send a message to all nodes on a network that are currently logged in to the same Directory tree.

browse

To scan a collection of items, such as a database, a File Manager view, a list box, web pages, or text files, for a particular item or for items of interest. To browse implies observing rather than changing information.

Browsing is scrolling through and examining screens or windows of data.

browser

A utility that enables a user to browse.

BSD

Berkeley Software Distribution

buffer

A temporary storage location in memory where data can be held for

processing.

A buffer can be used to hold data in an area where it can be easily accessed. It is often used to compensate for differences in data-flow rates (for example, between a terminal and its transmission line). A buffer can also be used as a backup mechanism, holding data that can then be retransmitted if an error is detected during transmission.

bug

An error in a program.

bus

A common pathway, usually hardware, between multiple devices. All devices on the bus receive the same data, but only those to which the data is addressed will use the data.

bus network

A network in which all workstations and the NetWare server are connected to a central cable (called a trunk or bus). A common example is Ethernet.

byte

A group of consecutive binary digits (bits) that a computer recognizes as one unit. In almost all computers, a byte consists of eight bits equivalent to a single character, such as the letter A. Earlier computers, however, have used 16-bit or 32-bit bytes.

CCC

cache

A quickly-accessible area of RAM or a directory or a disk that is used to store frequently-used information.

cache memory

Available random access memory (RAM) that NetWare uses to improve NetWare server access time. Cache memory allocates memory for the hash table, the FAT, the Turbo FAT, suballocation tables, the directory cache, a temporary data storage area for files and NLM files, and available memory for other functions.

callback

A routine that runs when a specified event occurs.

case-insensitive

Describes an application or feature that does not distinguish between uppercase and lowercase letters (for example, DOS).

case-sensitive

Describes an application or feature that distinguishes between uppercase and lowercase letters.

CD-ROM

compact disk read-only memory. A means of data storage using optical storage technology. A single CD-ROM disk can hold more than 650 megabytes of information, or half a billion characters of text. Unlike floppy disks, CD-ROM disks can be read from but not written to.

central processing unit

CPU. The integrated circuit that processes data in a computer.

channel

A path that allows the transmission of electromagnetic signals between a computer and a device; the path can consist of cables and storage devices and can include a host bus adapter.

character string

An array of zero or more adjacent characters (of type char) followed by a NULL character which marks the end of the string.

checksum

The numeric computation that combines the bits of a transmitted message; also the resulting value. The value is transmitted with the message; the receiver recalculates the checksum and compares it to the received value to detect transmission errors.

class

In NDS, the type of an object in the Directory tree, such as User, Volume, or Group.

CLIB_OPT

An option that specifies run-time parameters for the NetWare API.

It can also be used as a work around when **sopen** is called multiple times by the same thread. See **sopen**.

client

A physical or logical entity (such as a workstation) that uses services provided by another entity (such as a server). For example, a NetWare server can have Windows 3.1, Windows NT, Windows 95, DOS, OS/2, and NLM clients.

client-server

Describes software that includes both a component that runs on client workstations and a component that runs on a server.

client-server model

A programming method that devides tasks between the workstations (clients) and servers on a network.

coarse-grained multiprocessing

A form of multiprocessing in which a large number (typically tens of thousands) of instructions are executed between synchronization points. See also fine-grained multiprocessing.

code

A sequence of commands to a computer or peripheral device to perform a task.

code page

A table stored in a computer that defines the character set required by a language.

COM port

communications port. A connection device between a computer and another component, such as a printer or modem. A COM port is a serial port, meaning that information is transmitted through it one bit at a time.

command

A verbal or typed instruction given to a computer system.

command history buffer

A part of memory that saves strings entered from the keyboard. (String oriented functions support this feature.)

command line

The place a user enters a command, such as after a DOS prompt.

communication protocol

A convention or set of rules used by a program or operating system to communicate between two or more endpoints. Although many communication protocols are used, they all allow information to be packaged, sent from a source, and delivered to a destination system. Also known as transport protocol.

compiler

A program that translates source code into machine language object code modules which can then be linked into executable programs.

compression

The process of compacting information for more efficient transmission or storage. The information must then be decompressed before it is used.

condition variable

In SMP, a synchronization mechanism that is used to communicate information between cooperating threads. Threads sleep (suspend execution) to wait on a condition (or event) variable until a predicate based on shared variables is satisfied. Sleeping threads can then resume execution through the operations of signal or broadcast condition variables.

connection number

A unique number assigned to any process, print server, application, workstation, or other entity that attaches to a NetWare server. The number can be different each time an attachment is made. Connection numbers are used in implementing network security and for network accounting. They reflect the object's place in the file server's connection table. Additionally, they provide an easy way to identify and obtain information about the objects logged in on the network.

connectionless communication

A communication method in which packets are sent and received independently of one another, such as in datagram delivery.

console

The monitor and keyboard where a user views and controls NetWare server or host activity.

console command

An instruction issued at the NetWare server console prompt to control the network server.

console operator

A user or member of a group who has been assigned rights to manage the NetWare server.

container

In NDS, a high-level NDS object that holds and is used to logically organize other objects in the Directory tree.

container object

In NDS, an NDS object that can hold, or contain, other objects. Container objects are used to logically group related objects in the Directory tree to provide those objects with rights and services. The three types of container

objects are Country, Organization, and Organizational Unit.

context

The environment of a function or object. For example, NDS functions require context information that describes a location within the Directory tree. CLIB context contains information required by NLM applications, such as current thread.

context-sensitive help

Help information about the specific choice that the cursor or pointer is on. Context-sensitive help can also be online information in Help that is relevant to what the user is doing within an application. Sometimes pressing **F1** is referred to as "context-sensitive help" because the choice of help topic is based on the user's context.

control-character checking

If the DONT_CHECK_CTRL_CHARS attribute is set, control characters (Ctrl+C, Ctrl+S, and Tab) are not checked for. Ctrl+C terminates an NLM abnormally (via the abort function), and Ctrl+S pauses output (output can be resumed by pressing any key). Tab stops are eight columns apart.

convergence

(NDS) The synchronization process that makes a partition and all of its replicas match after changes in NDS configuration.

CPU

central processing unit. The integrated circuit that processes data in a computer.

CRC

cyclic redundancy check. A sophisticated checksum algorithm used to detect packet transmission errors. The CRC is built into each Ethernet frame as an error checking value to ensure data integrity.

critical section

A block of code for a thread that does not permit other code (for other threads) to run concurrently. For example, a section of code might manipulate shared data, requiring exclusive access to that data to prevent data corruption.

current working directory

CWD. The directory in which tasks are currently taking place.

cursor

A symbol (such as a blinking line or block) on the screen that indicates where your next keystroke will appear or have effect.

cursor coupling

The combining of input and output cursors into one cursor.

CWD

current working directory. The directory in which tasks are currently taking place.

cyclic redundancy check

CRC. A sophisticated checksum algorithm used to detect packet transmission errors.

DDD

DAB

dynamic array block. A data structure used to manage dynamic arrays.

DAT

digital audio tape.

data

Data are entities that convey meaning. Computer data is stored as a series of electrical charges arranged in patterns to represent information. In other words, data refers to the form of the information (the electrical patterns). It is not the information itself.

data fork

The part of a Macintosh file that contains information (data) specified by the user.

Data-Link layer

The second of seven layers of the OSI Reference Model. It is involved in both packaging and addressing information, and controlling the flow of separate transmissions over communication lines.

data migration

The transfer of inactive data from a NetWare volume to tape, optical disk, or other near-line or offline storage media.

database

A software program that maintains records. A flatfile database (such as Notebook) lets you access only one record at a time. A relational database (such as DataPerfect) lets you link information from multiple records, and may contain a set of programming commands to let the user perform complex tasks.

Datagram Delivery Protocol

DDP. An AppleTalk protocol that provides best-effort socket-to-socket delivery of datagrams accross an AppleTalk network.

DBCS

double-byte character set. A character set that uses two bytes to represent a single character (unlike ASCII, which uses one byte per character). DBCS's are used for non-Roman alphabets such as Japanese, Chinese, and Korean.

DDP

Datagram Delivery Protocol. An AppleTalk protocol that provides best-effort socket-to-socket delivery of datagrams accross an AppleTalk network.

deadlock

A condition created by threads waiting for an event that will never occur. For instance, consider two threads (T1 and T2) and two resources (R1 and R2). If thread T1 has mutually exclusive access to resource R1 and attempts to obtain it for R2 and at the same time thread T2 has mutually exclusive access to resource R2 and attempts to obtain it for R1, threads T1 and T2 are in deadlock.

debug

To remove errors from a program.

debug screen

A screen that can be accessed from within an assembly or C program or via a special key sequence. This screen is hidden unless the file server is at a breakpoint.

debugger

A tool that facilitates the removal of errors from a program.

decryption

The unscrambling or decoding of encrypted data.

default

A preset option or value used by the computer until it is specifically changed by a user.

definition file

A file containing keywords (or directives) that direct the linker when creating the executable. It contains standard linking information for an

NLM, such as the names of the object files and executable, imported and exported functions, and so on.

DET

directory entry table. A table located on every network volume that contains directory entries for that volume. The server uses the entries to keep track of file locations.

developer

A person who creates software, either for internal use or for commercial sale.

device

A piece of hardware attached to a computer or network, such as a printer.

device driver

A program that controls a device.

DFS

direct file system. An interface that enables developers to access the file system at a low level. This interface is useful for such applications as databases and backup utilities.

DIB

Directory Information Base. The database that holds NDS™ information. The DIB can be broken up into partitions stored in separate locations.

direct memory access

DMA. The ability to transfer data to and from the computer's memory without passing through the CPU.

directory

A disk structure that contains files.

directory cache

The area of server memory where the most often requested directory entries are copied from disk directory tables. The file cache reduces the time it takes

to determine a file's location on the disk.

directory entry table

Contains information about directories and files. It consists of several kinds of 128-byte entries including directory nodes, file nodes, and trustee nodes.

directory cache

The area of server memory where the most often requested directory entries are copied from the DET. This reduces the time required to determine the location of a file or directory on the disk.

directory entry

Basic information about a directory or file, such as name, owner, date and time of the last update (for files), and location of the first block of data.

directory entry table

DET. A table located on every network volume that contains directory entries for that volume. The server uses the entries to keep track of file locations.

Directory Information Base

DIB. The database that holds NDS™ information. The DIB can be broken up into partitions stored in separate locations.

directory node

Contains information about a directory: directory name, attributes, inherited rights mask, creation date and time, creator's object ID, a link to the parent directory, and a link to a trustee node (if one exists). It also includes a name space indicator, last archived date and time, last modification date and time, up to 8 trustee object IDs, up to 8 trustee rights masks. See also file node and trustee node.

directory path

The full specification that includes server name, volume name, and name of each directory leading to the file system directory you need to access. The position of a file within the file system is its directory path.

Directory Services

See NDS.

directory table

A table that contains basic information about files, directories, directory trustees, or other entities on the volume.

Directory tree

(NDS) The hierarchical structure of objects in the DIB. The Directory tree includes container objects that are used to organize the network and leaf objects that represent resources.

dirty cache buffers

File blocks in memory waiting to be written to disk.

disk allocation block

A data storage unit used by a volume. Disk allocation blocks come in five sizes: 4 KB, 8 KB, 16 KB, 32 KB, and 64 KB. Disk allocation block sizes can vary from volume to volume; however, one volume can have only one block size. A disk allocation block represents the smallest file size for that volume.

disk cache

A disk cache or cache is an area of RAM used to store data accessed frequently from disk. Caches are very useful for increasing the performance of applications that have to access a lot of data from disk, like databases and spreadsheets.

disk operating system

DOS. Software that directs the flow of data between disk drives and the computer. It translates commands from the user into the machine language the computer uses.

display

To present on the monitor screen.

distinguished name

DN. The complete name, or path, from an object to the [Root] of the Directory tree.

DLL

dynamic link library. A set of program routines and data available to applications at run-time that can be used as a common resource by many programs.

DMA

direct memory access. The ability to transfer data to and from the computer's memory without passing through the CPU.

DN

distinguished name. The complete name, or path, from an object to the [Root] of the Directory tree.

domain

A memory segment in NetWare that allows you to separate NLM programs from the OS. NetWare 4.x has two domains, OS and OS_PROTECTED.

DOS

disk operating system. Software that directs the flow of data between disk drives and the computer. It translates commands from the user into the machine language the computer uses.

DOS partition

A set of files accessible from the server PC booted under DOS. The set of files includes any files on floppy disks, on DOS partitions on hard disks, and on any other DOS drive.

DOS Requester

The DOS client software portion of NetWare 4.x. This software serves as the connection point between your local software (DOS) and network services. The DOS Requester is made up of VLM™ programs.

drive

The device that holds and reads a hard disk or diskette.

drive duplexing

In SFT III, the treatment of disk drives on separate, mirrored servers, as duplexed partitions on a single server. If one server goes down, the remaining server is able to continue fulfilling requests from clients. When the server is brought up again, the drives are remirrored in the background.

driver

A software module that manages the operation of a specific device or protocol and provides services to modules running above it. Drivers allow higher-level modules, such as applications, to be device- and protocol-independent (able to run on any device or protocol for which a driver is available).

dynamic array

An array that can grow as a program runs. A dynamic array has no fixed size.

dynamic array block

DAB. A data structure used to manage dynamic arrays.

dynamic link library

DLL. A set of program routines and data available to applications at run-time that can be used as a common resource by many programs.

dynamic object

A bindery object that is created and deleted frequently, for example, objects placed in the bindery by SAP. Dynamic objects disappear from the bindery when the server is restarted. See also bindery, static object.

EEE

EA

extended attribute. Special-purpose data associated with a file. Contrast with extended file attribute.

EBCDIC

Extended Binary-Coded Decimal Interchange Code. One of two coding schemes (standard formats) used by IBM mainframes and minicomputers for representing characters with numbers. The other standard is ASCII.

ECB

Event Control Block. A data structure that controls events related to the transmission and reception of IPX™ and SPX™ packets. ECBs also control the establishment and termination of SPX sessions.

effective class

An NDS class that can be used to create an object in the Directory tree. See also noneffective class.

effective privileges

See effective rights.

effective rights

The rights that an object can actually exercise to see or modify a particular directory, file, or object. An object's effective rights to a directory, file, or object are calculated by NetWare each time that object attempts an action.

EISA

Extended Industry Standard Architecture. A bus standard, compatible with ISA, developed by a consortium or nine computer-industry companies.

element

a generic term for any entity that can be considered a standalone item in a broader context, such as an item in a list or a control in a window.

e-mail

A communications service for computer users by which they can send

A communications service for computer users by which they can send messages and files to each other on network or telephone lines.

enabling

See internationalization.

encrypt

To translate data into a secret code to prevent an intruder from viewing or copying it.

encryption

The translation of data into a secret code that prevents an intruder from viewing or copying it.

EOF

end of file.

Ethernet

A LAN configuration developed by Xerox*. Ethernet uses a bus topology and accommodates Large Internet Packet Exchange (LIPX).

event

A signal that a specific process is about to occur or has occurred. For example, the EVENT_DOWN_SERVER is generated when the server is brought down. Callback routines can be written to run when this event occurs (before the server shuts down).

Event Control Block

ECB. A data structure containing information used for sending and receiving IPX™ or SPX™ packets.

exactly-once transaction

XO transaction. A transaction method that ensures that a request is implemented only once.

executable

A program that can be run by a computer. Executable programs can have extensions such as .exe, .com, or .nlm.

execution thread

See thread.

expanded memory

Memory outside of conventional memory.

explicit transaction tracking

Requires applications to make TTS™ calls, and allows applications to neatly bracket file update sequences with locking and TTS calls. Explicit transaction tracking allows applications to determine precisely when updates within the transaction are written to disk. See also implicit transaction tracking.

export

To make a symbol (function) in one program available to other programs.

extended attribute

EA. Special-purpose data associated with a file. Contrast with extended file attribute.

extended file attribute

One of additional attributes defined for files in NetWare versions 3.x and above that were not defined for NetWare 2.x. An example of an extended file attribute is the transaction bit (used by TTS). See also File Attributes and Extended File Attributes. Contrast with extended attribute.

FFF

FAT

File Allocation Table. An index table that points to the disk areas where a file is located.

fault tolerance

A means of protection data by providing data duplication on muliple storage devices.

File Allocation Table

See FAT.

file attributes

Fourteen properties containing information about files that can be used for security.

file cache

An area of server RAM where the hash table, FAT, Turbo FAT, directory cache, and temporary data storage for files are located.

file handle

A number used to identify a file.

file locking

The means of ensuring that a file is updated correctly before another user, application, or process can access the file.

file node

Contains information about a file: file name, attributes, file size, creation date and time, deleted date and time, deletor's object ID, owner's object ID, object IDs of up to 6 trustees, trustee rights mask for up to 6 trustees, inherited rights mask, last-accessed date, last-updated date and time, and a link to a directory. See also directory node and trustee node.

file rights

Rights that control what a trustee can do with a file.

file server

See server.

file system

The system that the NetWare server uses to organize data on its hard disks.

File Transfer, Access, and Management

See FTAM.

filename

The name assigned to a file.

filename extension

The letters appearing after the period at the end of a filename.

fine-grained multiprocessing

A form of multiprocessing where a relatively small number (typically hundreds) of instructions are executed between synchronization points. Parallel execution of loops is a common example. See also coarse-grained multiprocessing.

first-level files

Files opened at the operating system level (with the **open**, **sopen**, and **creat** functions). See also second-level files.

fragmentation

The process in which a packet is broken into smaller pieces to fit the size requirements of the physical network it is transmitted across.

frame

A packet data format for a given media.

FTAM

File Transfer, Access, and Management. A protocol for file transfer and manipulation between different OS's. Supports OSI GOSIP.

GGG

gang scheduling

(Symmetric multiprocessing) Scheduling a set (gang) of related activities to run concurrently on different processors.

garbage collection

The process of deallocating blocks of memory that were once allocated but are no longer in use. Also, the process of gathering scattered blocks of free memory into larger contiguous free blocks.

general service queries

Seek a response from every qualified server. The query can specify all servers of a particular type or all servers of any type whatsoever. Every server on the network that matches the indicated type will respond with an identification packet. See also nearest service queries.

Graphical User Interface

GUI.

GUI

Graphical User Interface.

HHH

HAM

Host Adapter Module. A driver component used to drive specific host adapter hardware in the NetWare® Peripheral Architecture (NPA).

handle

An identifier that uniquely identifies a resource or feature.

hashing

A process that facilitates acces to a file in a large volume by calculating the address of the file both in cache memory and on the hard disk.

HCSS

High Capacity Storage System. A system that increases data storage capacity by integrating an optical disk library into the NetWare file system.

hexadecimal

A base-16 numeric notation system using digits 0 through 9 and A through F.

High Capacity Storage System

See HCSS.

Host Adapter Module

See HAM.

Hot Fix™

A method NetWare uses to ensure that data is stored safely. Data blocks are redirected from faulty blocks on the server disk to a small portion of disk space set aside as the Hot Fix Redirection Area.

hot spot

(Symmetric multiprocessing) A memory contention caused by concurrent requests to a shared variable by many processors in a shared memory architecture.

III

implicit transaction tracking

Requires no coding on the part of an application developer. If TTS™ is enabled on a file server, TTS tracks all transactions to all transactional files (including transactions made by the NetWare® OS to bindery files). Implicit transaction tracking is designed to work transparently with existing multiuser software that uses record locking (physical or logical). See also explicit transaction tracking.

Inheritance Rights Filter

IRF. A list of rights that can be created for any file, directory, or object, that controls the rights that a trustee can inherit from parent directories and container objects.

inherited rights mask

A mask that filters out selected rights in inheritance.

input cursor

Indicates the starting column/row position on the screen where the blinking cursor will be located when a function that takes input from the keyboard is called.

internationalization

The process of adapting software for use with multiple languages.

Internet

The DARPA Internet and its TCP/IP protocols. A collection of networks and routers (ARPANET, MILNET, NFSnet, and so on) that uses TCP/IP protocol suite and functions as a single, cooperative virtual network.

Internet address

IP address. A 32-bit address assigned to hosts using TCP/IP.

Internet Protocol

IP. The datagram service portion of TCP/IP.

internetwork

Two or more networks connected by a router, bridge, or gateway. Each network has a unique IPX™ network number.

Internetwork Packet Exchange

IPX. A Novell® communication protocol that sends data packets to requested destinations on the network. A best-effort (datagram) delivery service. Similar to the XNS protocol.

I/O symmetry

(Symmetric multiprocessing) An architecture in which all interrupts can be handled by any processor and all I/O devices in the system can be directly accessed by every processor.

IP

Internet Protocol. The datagram service portion of TCP/IP.

IP address

A 32-bit address assigned to hosts using TCP/IP.

IPX

Internetwork Packet Exchange. A Novell® communication protocol that sends data packets to requested destinations on the network. A best-effort (datagram) delivery service. Similar to the XNS protocol.

IPX address

An address comprising a 4-byte network number, a 6-byte node number, and a 2-byte socket number.

IRF

Inherited Rights Filter. A list of rights that can be created for any file, directory, or object, that controls the rights that a trustee can inherit from parent directories and container objects.

ISA

Industry Standard Architecture. A commonly accepted industry standard for the bus design used on the IBM* PC/XT, which makes use of plug-in boards and expansion slots.

ITEM property

A bindery property that contains a single bindery object. See also bindery, SET property.

KKK

keyboard input

Only one thread can wait on keyboard input from a given screen at a time. Any other thread which attempts input is blocked until the keyboard is free.

LLL

LAN

Local Area Network. A network located within a small area or common environment, such as in a building or a building complex. A group of computers and other devices connected by a communication link allowing interaction between all equipment.

LAN board

A circuit board installed on each network station to allow workstations to communicate with each other and with servers.

LAN driver

A program that controls a LAN board. A LAN driver links the OS of a computer or server to the physical network.

Leaf Object

NDS objects that cannot contain other objects, also called **noncontainer** objects. Leaf objects represent the actual network resources that perform some function in the NDS tree, such as Users, Printers, Modems, Servers, or Volumes.

library NLM

An NLM™ application that exports functions to be called by other NLM applications.

limbo space

(Data migration) Space on migration media used by files that have been restored to the local file system but not removed from the migration media.

Link Support Layer™

See LSL.

Local Area Network

See LAN.

local semaphores

Used to control finite resources, to synchronize execution among threads, or

Used to control finite resources, to synchronize execution among threads, or to queue threads that want to use critical code sections.

localization

The preparation of software and documentation for a specific language and culture.

log in

To enter a user name and password to gain access to a network.

log out

To discontinue access to a network. This procedure terminates the network connection and deletes drives mapped to the network.

loosely coupled

(Symmetric multiprocessing) Describes a type of clustering design. Typically, loosely coupled systems are separate platforms connected over some type of communications medium. In the case of nonshared-memory machines, each processor complex communicates through a small shared memory region or via messages over a private bus. The NetWare client-server environment is a loosely coupled distributed processing implementation. ASMP and clustering designs are loosely coupled.

LRU

Least Recently Used.

LSL™

Link Support Layer. Software that serves as an interface between the LAN drivers of a NetWare server and communication protocols, such asIPX™ and TCP/IP.

MMM

main function

A developer-written function where program execution begins. It executes as the initial thread of the NLM.

marshalling

(SMP) The requirement that a function be processed on processor 0. A marshalling function forces the thread associated with it to sleep, migrate to processor 0, process the function, sleep again, then migrate back to the processor from which the function was called before resuming operation. This pattern significantly hinders the performance of an SMP application.

mask

See bitmask.

master replica

(NDS™) A writable replica that contains all object informaton for a partition. All partition operations (create, merge, move, create replica, delete replica, repair) are performed on the master replica of a partition.

MCA

Micro Channel Architecture. IBM's 32-bit bus for PS/2* computers. As for ISA and EISA, the speed of the MCA bus is limited to 8 or 10 MHz.

Media Manager

A database built into NetWare® that keeps track of peripheral storage devices and media attached to the servers. Applications use Media Manager to access and obtain information about these peripherals and media.

medium-grained multiprocessing

(SMP) A form of multiprocessing in which a moderate number (typically thousands of instructions) are executed between synchronization points. See also coarse-grained multiprocessing, fine-grained multiprocessing.

memory

The internal dynamic storage of a computer that can be addressed by its OS. Frequently referred to as RAM.

memory allocation

The process of reserving specific memory locations in RAM for processes, instructions, and data.

memory protection

The structuring of memory resources in NetWare 4.x that guards server memory from corruption by ill-behaved NLM™ applications.

menu

A selectable list of user options presented on the screen by a program. Pa rt of the user interface of a program

message services

Enable applications to send broadcast messages (1 to 58 bytes) to specified target connections (workstations 1 to 250). The sending workstation and the target workstations must be attached to the same file server.

Micro Channel Architecture

See MCA.

migration

The process of moving from one system to another. For example, one might want to migrate software from the bindery to NDS.

migration

(SMP) The movement of sleeping threads back and forth from multiprocessing to uniprocessing OS environments without data conversion.

Mirrored Server Link

See MSL.

mirroring

(SFT™) The duplication of data from the NetWare partition of one hard disk on the NetWare partition of another hard disk. This duplication of data provides fault tolerance---that is, should one hard disk fail, the other one would provide immediate backup.

MLID

Multiple Link Interface Driver™. A device driver written to theODI™ specification that handles the sending and receiving of packets to and from a physical or logical LAN medium.

MSL

Mirrored Server Link. (SFT) A dedicated, high-speed connection between SFT III™ primary and secondary servers.

multi-byte character

A character made up of more than one byte. Used by languages such as Chinese, which require more than one byte to encode all characters needed.

Multiple Link Interface Driver

See MLID.

multiple byte character

See multi-byte character.

multitasking

The process of running more than one process simultaneously by switching between them as they run.

multithreaded

Having or running more than one thread.

In SMP, this term describes code paths written to preclude corruption of shared data by multiple processors executing in parallel through the same code path. Using a multithreaded code sequence or algorithm, different processors may independently and concurrently execute the same code sequence operating on shared data.

mutex

(SMP) A lock that combines features of mutual and exclusion locks; that is, an atomic lock variable used to prevent multiple processors from accessing shared data structures at the same time. A mutex guarantees that no two threads can access a shared variable simultaneously. If a mutex is unavailable, the mutex operation can suspend the caller, or spin until the lock is free. Most mutexes are of the sleep type, but spinning can be useful

with multiple processors if the wait time is small enough. See also adaptive mutex.)

mutex sleep locks

Lock functions that sleep until the lock can be acquired. These functions behave much the same as the standard NetWare semaphore functions, except that they are atomic.

mutual exclusion

A programming technique that allows only one asynchronous process (thread) to access a given shared variable or to execute critical sections at a given time.

NNN

Name Binding Protocol

NBP. An AppleTalk protocol that performs the conversion of entity names into their corresponding Internet addresses. AppleTalk usees NBP to translate device names, as assigned to printers, servers, workstations, and so on, into specific network addresses.

name space

The area of a server in which the file system naming systems of various operating systems are stored. Name spaces other than DOS are provided by NLM™ applications. The NetWare® OS supports the following name spaces:

DOS
Mac OS
NFS
FTAM
OS/2 (also used by Windows 95)
Windows NT

name-address tuple

(AppleTalk) The mapping of a network-visible entity (NVE) to its Internet address. Name-address tuples are found in the name table of the entity node, and in the names directory.

NBP

Name Binding Protocol. An AppleTalk protocol that performs the conversion of entity names into their corresponding Internet addresses. AppleTalk usees NBP to translate device names, as assigned to printers, servers, workstations, and so on, into specific network addresses.

NCP

NetWare Core Protocol™. A packet-based protocol that allows a client to send requests to, and receive replies from, a server.

NDS

A global, distributed, replicated database that maintains information about resources on the network.

NDS database

See DIB.

NE2000

Ethernet Network Interface Card (NIC).

nearest service queries

Seek the nearest server of a particular type. In this context, "nearest" refers to the server that is able to respond the quickest. When making this query, the NLM gets information about a single server (if any are present on the network). See also general service queries.

NetBIOS

Network Basic I/O System. A high-level programming interface for IBM LANs which allows PCNET applications to run on IBM token ring networks.

NetWare

An OS for LANs developed by Novell®, Inc.

NetWare API

A core set of application programming interfaces that provide a direct programming link into the NetWare 3.x and above OS services. In addition to the functions unique to the NetWare OS, the NLM C Interface includes functions derived from the ANSI C Runtime Library, BSD Socket API, POSIX API, and Watcom C* Runtime Library.

NetWare Core Protocol

NCP. A packet-based protocol that allows a client to send requests to, and receive replies from, a server.

NetWare Directory

NDS. A global, distributed, replicated database that maintains information about resources on the network.

NetWare Directory Services

The former name of NDS.

Novell Directory Services

See NDS.

NetWare Directory schema

The definition of information types that control the way information is stored in the NetWare Directory. See the NDS Schema.

NetWare DOS Requester

The DOS client software of NetWare 4.x. The NetWare DOS Requester™ replaces the NetWare shell used by previous versions of NetWare.

NetWare Loadable Module

NLM. A program that runs on the NetWare OS. Once loaded, an NLM becomes part of the network OS.

NetWare partition

A partition on the hard disk of a server used by the NetWare partition.

NetWare Requester™

Software that allows clients to communicate with NetWare servers.

NetWare server

A computer running the NetWare OS.

NetWare NLM User Interface

NWSNUT. A library of functions used to create a user interface for NLM applications.

NetWire℠

The Novell online information service, which provides access to Novell product and services information and time-sensitive technical information for NetWare users and developers.

network

A group of computers and other devices that can communicate with each other, share peripherals (such as printers), and access remote hosts or other networks.

network administrator

See administrator.

Network File System

NFS. A protocol developed by Sun* Microsystems that allows the access of UNIX file systems over a network.

Network Interface Card

NIC. The hardware interface between a device such as a computer or printer and the network transmission media. Synonymous terms include network board and LAN adapter.

network management

The process of ensuring reliability and availability of a network, as well as timely transmission and routing of data.

network number

A number that uniquely identifies a network cable segment. Often referred to as the IPX™ external network number. For AppleTalk networks, this number must fall between one and 65,279.

network queue

A group of jobs waiting to be processed. A job contains data that is only interpreted by the job creator and the job server.

NFS

Network File System. A protocol developed by Sun* Microsystems that allows the access of UNIX file systems over a network.

NIC

Network Interface Card. The hardware interface between a device such as a computer or printer and the network transmission media. Synonymous terms include network board and LAN adapter.

NLM

NetWare Loadable Module. A program that runs on the NetWare OS. Once loaded, an NLM becomes part of the network OS.

NLM global data items

Data items that have only one value for the entire NLM. The data items are global to all the thread groups and threads in the NLM. Any changes made to the values of NLM global data items affect all the thread groups and threads in the NLM.

NLM screens

An NLM may have one or more regular or popup screens. Popup screens, which can be used to present instructional and error messages, are overlaid on regular screens. In some cases, an NLM may not require a screen. A library NLM, for example, may not require a screen. An NLM can also write to the System Console Screen or to the screen of another NLM (if the other NLM cooperates).

node

An addressable entity on a network. This term sometimes refers to a device itself.

node address

A number that uniquely identifies a network board; usually referred to as the node number.

node number

A number that uniquely identifies a network board. Also known as the node address.

nonblocking

Describes processes that do not give up control of the CPU, but run to completion. See also blocking.

nonblocking functions

Do not cause the caller to lose his thread of execution (do not relinquish control). See also blocking functions.

noneffective class

An NDS class that cannot be used to create an object in the Directory tree. Noneffective classes are used to define other classes. For example, Server is a noneffective class used to define the effective class Print Server. See also effective class.

nonpreemptive environment

NetWare 3.x and above is built around a fast, real-time, multitasking, nonpreemptive thread scheduler. Threads are scheduled according to priority levels and are executed on a run-to-completion basis. Since NetWare does not restrict a thread's execution by imposing time limits or preempting control of the CPU, a thread is responsible for its own conduct.

Novell Labs

A Novell agency that works with manufacturers to test hardware and software components designed to interoperate with the NetWare OS.

NWSNUT

NetWare NLM User Interface. A library of functions used to create a user interface for NLM applications.

OOO

object

See bindery object or NDS™ object.

object ID

A number that identifies an object.

object properties

Identify categories of information associated with the object.

object type

Classifies an object as a user, user group, file server, and so on.

ODI

Open Data-Link Interface™. An architecture that allows multiple LAN drivers and protocols to coexist on network systems.

OEM

Original Equipment Manufacturer.

Open Data-Link Interface

ODI. An architecture that allows multiple LAN drivers and protocols to coexist on network systems.

Open Systems Interconnection

OSI. The standard network architecture developed by the ISO. A seven-layer model for data communication.

operating system

OS. The software that controls computer (or network, in the case of the NetWare® OS) resources and provides basic services.

OS

Operating system. The software that controls computer (or network, in the case of the NetWare® OS) resources and provides basic services.

OS/2

An OS developed by IBM and Microsoft*, which runs on IBM compatible computers.

OSI

Open Systems Interconnection. The standard network architecture developed by the ISO. A seven-layer model for data communication.

output cursor

Indicates the starting column/row position on the screen where the output will go when a function that writes to the screen is called.

PPP

packet

A unit of information used in network communication in which data is fragmented and given a header containing networking information.

palette

A color scheme or set of colors used for a special purpose. For example, NWSNUT provides several standard color combinations for portals.

PAP

Printer Access Protocol. An AppleTalk protocol that provides communication between a workstation and a print service.

partition

(NDS™) A logical division of the DIB. A partition forms a distinct unit of data in the Directory tree that you use to store and replicate NDS information.

partition root

(NDS) The object in the highest position in the partition.

password

The characters that a user must type to log in.

path

The encoding used to identify the location of a file or directory in the file system.

pathname

The server name, volume, directory path, and filename that uniquely identify a file in NetWare.

peer-to-peer

Describes a type of communication between two devices that is not managed by a host or server.

performance metrics

Data objects that are collected by kernel instrumentation to measure resource usage and system events. These data objects are input for reporting utilities and data collection mechanisms. Ultimately the data is manipulated and used by experienced system administrators and performance tuners to evaluate system usage and performance.

physical address

The Data-Link Layer address of a network device.

polling

The procedure of periodically checking the status of a physical or logical object.

popup screen

If the POP_UP_SCREEN attribute is set, the screen is a popup screen. A popup screen automatically overlays the currently displayed screen.

port

A memory address that identifies the physical circuit used to transfer information between two devices.

portal

A "window" or area of the screen in which text appears. See also NWSNUT.

POSIX

Portable Operating System Interface for UNIX. A standard API (ISO/IEC standard 9945-1; ANSI/IEEE Standard 1003.1) that provides functions for accessing OS services. POSIX is available for multiple platforms.

PostScript*

A page description language developed by Adobe*.

preemption

A scheduling technique in which resources held by a process may be taken away by the kernel before the process releases them, especially removing a process from the running state when a higher priority process is waiting.

preemption latency

The delay between the time a thread becomes runnable at sufficiently high priority to preempt a lower priority running thread, and the time that the preemption is complete and the higher priority thread begins executing.

PRELUDE.OBJ

Object file that contains routines to initialize and terminate NLM applications.

print job

A file stored in a print queue waiting to be printed.

print queue

A network directory that stores print jobs. When the printer assigned to a print queue is ready, the print server takes the print job out of the print queue and sends it to the printer.

print server

A server that takes print jobs out of a print queue and sends them to a network printer.

printer

A device that produces printed pages from digital input sent by a computer.

Printer Access Protocol

See PAP.

process

(SMP) An abstraction of a shared address space and a set of shared resources (for example, file descriptors) together with one or more threads executing in the shared resource space.

program

A series of specially coded instructions that perform a specific task when executed by a computer.

protocol

Conventions or rules governing data interchange. Usually refers to rules for data transport over a network. Examples of transport protocols include IPX™, SPX™, TCP/IP, TLI, and ASP (a member of the AppleTalk suite of protocols).

protocol stack

A complete suite of protocols that includes all layers required to handle transmission and receipt of packets.

protocol suite

A hierarchical set of related protocols, such as the AppleTalk suite (which includes ASP, PAP, ZIP, and others).

purge

The act of removing deleted files from a disk or memory.

QQQ

QMS

Queue Management System. A system that allows the creation and management of queues for printing and other tasks.

queue

A method of organizing workstation requests for a job server.

Queue Management System

QMS. A system that allows the creation and management of queues for printing and other tasks.

RRR

RAM

Random Access Memory. The internal dynamic storage of computer that can be addressed by the OS.

Random Access Memory

See RAM.

read-only

An attribute of an object that prevents that object from being written to.

read-write locks

(SMP) A synchronization mechanism that controls access for multiple classes of resource consumers such as readers and writers. This type of lock ensures that readers exclude writers and that a writer inhibits other writers before contending with readers. Normal locks and semaphores cannot be directly used by one class to inhibit other classes.

reboot

The act of restarting a computer.

record locking

A type of concurrency control that enables an application to prevent other processes from accessing a record within a file. Other users can read the record, but no other user can lock, update, or delete the record until the application that holds the lock releases it.

recursive mutex

(SMP) A special-case mutex in which the mutex is already locked by the calling thread, the recursive depth is incremented, and control is returned to the caller, as if the lock had just been acquired.

reentrant routine

A routine that can be safely executed concurrently by more than one process or thread. A thread calling a reentrant routine must be guaranteed control over shared data referenced by the routine.

remote server support

Provides an NLM™ with the ability to access other file servers on the network through the functions of the NetWare® API. A remote file server is accessed by calling **LoginToFileServer** with a file server name attached to the object name (server/object).

replica

(NDS™) A copy of an NDS partition that is used to provide fault tolerance and faster access to data for users on a WAN.

Requester

NetWare Requester™. A program that resides on a workstation and passes requests from an application to a server. The Requester is the NetWare program that provides network access for a client.

resource fork

The part of a Mac OS file that contains file resources, including information unique to the Mac OS, such as Finder* information.

resource tag

An OS identifier that tracks a server resource, such as screens and allocated memory. An NLM requests a resource tag from the server for each kind of resource that it uses.

return code

The value returned by a function upon its completion. The return code often indicates either success or the type of error that occurred during the execution of the function, but can also communicate other information.

right

An attribute assigned to an object, such as a user, that controls what that object can do with other objects, such as files or directories. Creating, reading, writing, and other operations can only be performed if an object has rights to perform them.

root directory

The highest directory level in a hierarchical directory structure. In NetWare, the root directory is the volume.

root object

The object in the Directory tree that is at the highest level in the hierarchy.

router

A device (workstation or server) that manages the exchnge of information (in the form of data packets) between network cabling systems.

router screen

Displayed whenever the file server **TRACK ON** command is executed.

RPC

Remote Procedure Call.

runnable thread

A thread that is not blocked (available for scheduling).

SSS

SAP

Service Advertising Protocol. A NetWare® protocol used by servers to advertise services on an internetwork. Used by bindery-based NetWare to communicate the availability of services between binderies. Used by NDS™ to communicate the availability of services to NetWare 3.x servers.

scheduling

The mechanism for determining the best sequence for assigning resources to contending threads. Scheduling involves managing concurrently running threads, responding to requests for services, tracking the progress of threads, and allocating system resources (especially memory space and CPU time).

schema

See NDS Schema.

screen attributes

A set of attributes that specify the screen's behavior. The supported screen attributes are listed as follows:

AUTO_DESTROY_SCREEN
DONT_CHECK_CTRL_CHARS
POP_UP_SCREEN
UNCOUPLED_CURSORS

screen handling services

Make it possible to manage the special features of the server's logical screens. Some of these special features are the ability to create new screens with a variety of different attributes, manipulate screen cursors, specify which screen is to be used when screen I/O is performed, and so on.

screen names

Can be specified in the linker directive file or by **CreateScreen**. The SCREENNAME directive option can be used to specify the "initial" screen name, the name of the first screen that is automatically created when the NLM™ application is loaded. If the SCREENNAME option is not specified, the NLM description specified in the FORMAT directive is used as the screen name. If the NLM creates other screens, the names of these screens are specified in **CreateScreen** using the *screenName* parameter.

screen output

Any number of threads can do output to a single screen at a time. All of the output functions in the NLM API will complete all of their output before an output function called from another thread is allowed to write to the screen. This means that in general, output from multiple threads is not scrambled together.

second-level files

Files opened at the stream level (with **fopen**, **fdopen**, and **freopen**). See also first-level files.

secondary server

(SFT III™) A server that is activated after the primary server that receives the mirrored copy of the memory and disk image from the first (primary) server activated.

(Time Synchronization) A server that obtains the time from a Single Reference, Primary, or Reference time server and provides the time to workstations.

semaphore

An integer value that is associated with resources and used to coordinate activities of processes to prevent data corruption in multithreaded environments.

There are two types of semaphores, spinning and sleeping. Sleeping semaphores, used by the NetWare OS, ensure mutual exclusion and event synchronization. These semaphores are either binary (use a count of either 0 or 1) or general (use a count of 0 to N). The value of the semaphore after the increment/decrement operation determines the action of the semaphore function.

Sequenced Packet Exchange

SPX. A Novell® communication protocol that monitors network transmission to ensure delivery of packets.

server

A computer that provides network services. In NetWare SDK documentation, a server is presumed to be a NetWare server unless otherwise indicated.

server console

The monitor and keyboard connected to a server, with which server activity is controlled and monitored.

Service Advertising Protocol

SAP. A NetWare® protocol used by servers to advertise services on an internetwork. Used by bindery-based NetWare to communicate the availability of services between binderies. Used by NDS™ to communicate the availability of services to NetWare 3.x servers.

SET property

A bindery property that contains multiple bindery objects. See also bindery, ITEM property.

settable parameter

Server variables that are controlled by using the **SET** command.

SFT

System Fault Tolerant. A means of protecting data by providing data duplication on multiple storage devices.

sleep

To suspend operation of a thread without terminating (block). A sleeping thread is temporarily suspended but remains in memory so that some event (such as an interrupt or call from another thread) can awaken it (restore operation). While a thread is sleeping, other threads can run. See also block and blocking.

SMP

Symmetric MultiProcessing. The execution of processes (or subprocesses called threads) by multiple microprocessors having the same configuration.

SMS

Storage Management System. A set of related services that provide for the backup and retrieval of data.

socket

The part of an address that identifies the destination for packets.

spin

To loop through a section of code that tests a lock. This code repeatedly tests a lock until the lock is released.

spin locks

Functions that loop until a specified event occurs (until the mutex variable is acquired). Currently SMP does not include spin locking functions.

SPX

Sequenced Packet Exchange. A Novell® communication protocol that monitors network transmission to ensure delivery of packets.

stack-based parameter passing

Bytes, words, double words, and pointers are all pushed onto the stack as 4-byte parameters. The NetWare API uses stack-based parameter passing.

static object

A bindery object that is recorded in server memory and remains there until explicitly deleted. See also bindery, dynamic object.

Storage Management System

SMS. A set of related services that provide for the backup and retrieval of data.

stream

Name given to a second-level file which has been opened for data transmission. When a stream is opened, a pointer to a FILE structure is returned. This pointer is used to reference the stream when other functions are subsequently invoked.

Supervisor

The person responsible for the administration and maintenance of a network, database, or both. A Supervisor has access rights to all volumes, directories, and files.

Symmetric Multiprocessing

SMP. The execution of processes (or subprocesses called threads) by multiple microprocessors having the same configuration.

synchronization

A coordination activities that allows threads to inform other threads that certain events have occurred (such as having reached a certain point in execution). Synchronization is used to ensure that threads access shared resources properly to avoid data corruption.

synchronization point

A point where the normally asynchronous execution of a thread is synchronized (that is, modifies variables used for synchronization) with the execution of others. For example, code accessing a data structure would have a synchronization point wherever it examines or modifies shared data.

synchronous

Controlling the execution of two or more processes (threads) by using specific common events (usually common clock or timing signals).

system console screen

File server console commands can be entered at the command line of the System Console Screen. This screen always remains open in the background.

System Fault Tolerant

See SFT.

TTT

task

(SMP) A multiprocessing entity that is one or more sequences of instructions (threads) treated by the control program as a unit of work to be accomplished by the processors. A task has a definite address space shared in common by the individual threads composing the task.

task number

Unique number that identifies an individual program, running at any given time at a workstation. Task numbers are only unique for a given workstation.

TCP

Transmission Control Protocol. The major communication protocol in the Internet suite, providing reliable, connection-oriented, full-duplex streams. This protocol uses IP for delivery.

TCP/IP

Transmission Control Protocol/Internetwork Protocol. An industry-standard suuite of networking protocols that enable dissimilar nodes in a heterogeneous environment to communicate with one another. Originally developed for the Department of Defense.

thread

Short for thread-of-control. A stream of execution within a multitasking program.

thread global data items

Set of data items that are global only within each thread. That is, they have separate values for each thread. The data items of one thread cannot be referenced by another thread.

thread group

Consists of one or more threads as defined by the programmer.

thread group global data items

There is one instance of the data items for each thread group. Any change that one thread makes to the value of a thread group global data item affects

all the threads in the group.

thread of execution

Performs a request or polls for the occurrence of some event. Polling threads are always running but relinquish control after going through one polling loop. Normally, worker threads either quickly complete the request, or are put to sleep pending the completion of an external event, such as a disk I/O.

tightly coupled

Describes a symmetric multiprocessing hardware design in which processors share common memory and are typically hard-wired together over a shared multiplexed hardware bus. NetWare SMP uses this design.

timestamp

A code that indicates the time that an event happened.

time synchronization

The method used by NetWare® 4.x to ensure that all servers in the Directory tree report the same time.

TLI

Transport Level Interface. A STREAMS-based interprocess communication mechanism that provides protocol-independent support for server applications.

transaction

A set of one or more operations that must be completed together to maintain file and database integrity.

transaction backouts

Transactions are backed out because of system failures resulting from hardware problems and power outages at a workstation or the file server. But backouts also occur because of problems with applications running on a workstation or because of user intervention at a workstation.

Transaction Tracking System™

See TTS.

Transmission Control Protocol

See TCP.

Transmission Control Protocol/Internetwork Protocol

See TCP/IP.

Transport Level Interface

See TLI.

TTS

Transaction Tracking System. A system that protects databases from corruption by backing out incomplete transactions that result from the failure of a network component.

Turbo-File Allocation Table (TurboFAT)

Exists for each file large enough to require 64 or more FAT entries. The Turbo FAT assembles into one table the index to every disk allocation block in which a portion of a file exists. See also File Allocation Table (FAT).

type-ahead buffer

Holds input from the keyboard before it is processed by the NLM.

UUU

UDP

User Datagram Protocol. A transport protocol, part of the TCP/IP protocol suite, that provides less reliable datagram delivery.

User Datagram Protocol

See UDP.

Unicode*

A 16-bit character representation, defined by the Unicode Consortium, that supports up to 65,536 unique characters. Unicode enables the characters of multiple languages to be represented by a single encoding scheme.

user name

A name recognized by the network that represents a user.

VVV

Value-added Process

See VAP.

VAP

Value-added Process. A program that adds services to a NetWare® 2.x server without interfering with normal network operation. Replaced by NLM™ applications.

variable length argument lists

Macros used when a function does not have a fixed number of arguments. The **va_arg**, **va_end**, and **va_start** macros provide the capability to access these arguments.

Virtual Loadable Module™

See VLM.

virus

A program that attaches itself to a host program and activates whn the host program runs. It often contains code that damages other data on the computer by changing files on a hard disk, altering the system configuration, or copying itself to disk.

VLM

Virtual Loadable Module. A modular executable program that runs at a workstation and enables communication with the NetWare server.

volume

A physical amount of hard disk storage space, fixed in size. The volume is the hightest level in the NetWare directory structure.

volume table

Includes the number of volumes mounted in the file server, the name, size, and other information pertaining to each volume.

WWW

wildcard characters

NetWare® supports the following set of wildcard characters:

An asterisk (*) matches zero or more characters. The pattern * therefore matches any string. The pattern *.* matches anything with a period. Note that it does not match names without a period, since a period is treated as any other character.

A question mark (?) matches exactly one character, even a period.

The augmented period (^.) is a period with its high-order bit set. This character matches a period or an end-of-string. The augmented period is included primarily to allow a shell or program to search for file names while ignoring trailing periods.

An augmented question mark (^?) is a question mark with its high-order bit set. It matches one character or an end-of-string.

The augmented asterisk (^*) is an asterisk with its high-order bit set. It matches zero or more characters up to a period or an end-of-string.Wildcard characters can be mixed in any way within a string. Users cannot set high-order bits on characters from their stations; those characters are for use by NLM™ applications.

workgroup

A group of users who share access to certain information.

workgroup administrator

A user given workgroup privileges who can change the way workgroup resources are set up.

workgroup manager

The status assigned by the network administrator that enables a user to add or delete users from a group, and to assign trustee rights to the group and its members.

workstation

A computer connected to a network that is used to perform tasks through applications or utilities.

XXX

XO transaction

A transaction method that ensures that a request is implemented only once.

ZZZ

ZIP

Zone Information Protocol. An AppleTalk protocol that enables each router to maintain and access zone information for an AppleTalk internetwork, and that allows other nodes to obtain node information.

zone

A group of nodes on an AppleTalk network.

Zone Information Protocol

See ZIP.