

Utilities Reference

Novell® NetWare®

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Contents

About This Guide	9
1 Utilities	11
1.1 ABORT REMIRROR	11
1.2 Activatemodule	12
1.3 ADD NAME SPACE	12
1.4 ALERT	13
1.5 ALIAS	15
1.6 ARP	17
1.7 BASH	17
1.8 BIND	20
1.9 CAPTURE	23
1.10 CDDVD	23
1.11 CHARSET	24
1.12 Certificate Server	25
1.13 CLEAR STATION	25
1.14 CLIB	26
1.15 CLS	27
1.16 CLUSTER ALERT	27
1.17 CLUSTER CVB REBUILD	27
1.18 CLUSTER DHCP	28
1.19 CLUSTER DOWN	28
1.20 CLUSTER JOIN	28
1.21 CLUSTER LEAVE	29
1.22 CLUSTER MAINTENANCE	29
1.23 CLUSTER MIGRATE	29
1.24 CLUSTER OFFLINE	30
1.25 CLUSTER ONLINE	30
1.26 CLUSTER POOLS	30
1.27 CLUSTER RESOURCES	30
1.28 CLUSTER RESTART	31
1.29 CLUSTER STATS	31
1.30 CLUSTER STATUS	31
1.31 CLUSTER VIEW	32
1.32 COMPFIX	32
1.33 CONFIG	33
1.34 CONLOG	35
1.35 ConsoleOne	37
1.36 CPUCHECK	39
1.37 CX	39
1.38 DISABLE LOGIN	41
1.39 Dismount	42
1.40 Display Environment	42
1.41 DISPLAY INTERRUPTS	44
1.42 DISPLAY IPX NETWORKS	45
1.43 DISPLAY IPX SERVERS	46

1.44	DISPLAY MODIFIED ENVIRONMENT	48
1.45	DISPLAY PROCESSORS	49
1.46	Down	50
1.47	DSDiag (DS diagnostics)	51
1.48	DSMerge	51
1.49	DSRepair	52
1.50	DTRACE	55
1.51	EDIRUTIL	55
1.52	EDIT	56
1.53	ENABLE LOGIN	57
1.54	Enhanced SBACKUP	57
1.55	FILER	58
1.56	FLAG	59
1.57	Format	64
1.58	Health	65
1.59	HELP	66
1.60	Hidescreen	67
1.61	ICAPTURE	67
1.62	ICE	68
1.63	IFCONFIG	69
1.64	iMonitor	71
1.65	INETCFG	71
1.66	INITIALIZE SYSTEM	73
1.67	iPrint Broker	74
1.68	iPrint Print Manager	74
1.69	IPRNTCMD	75
1.70	IPXCON	75
1.71	IPXPING	77
1.72	IPXS	78
1.73	JAVA	79
1.74	KEYB	80
1.75	KF8	81
1.76	LANGUAGE	82
1.77	LFVMOUNT	83
1.78	LFVOLUMES	83
1.79	LIST DEVICES	83
1.80	LIST STORAGE ADAPTERS	85
1.81	LIST STORAGE DEVICE BINDINGS	86
1.82	LOAD	87
1.83	Loggerpath	90
1.84	Loggersave	90
1.85	LOGIN	91
1.86	LOGOUT	93
1.87	MAGAZINE	94
1.88	MAP	94
1.89	MEDIA	97
1.90	Memory	98
1.91	Memory Map	98
1.92	MIRROR STATUS	99
1.93	MODULES	100
1.94	MONITOR	102
1.95	MOUNT	113

1.96	NAME	114
1.97	NCMCON	114
1.98	NCOPY	115
1.99	NCS Debug	115
1.100	NDIR	116
1.101	NETSTAT	116
1.102	NetWare Login	117
1.103	Novell iCapture	118
1.104	Novell iManager	118
1.105	Novell Migration Wizard	119
1.106	Novell NetWare Server Consolidation	119
1.107	Novell Printer Manager	120
1.108	Novell Remote Manager for NetWare	120
1.109	Nslookup	121
1.110	NSS	124
1.110.1	Using NSS	124
1.110.2	Additional Information	140
1.111	NSSMU	140
1.112	NSWEB	143
1.113	NVXADM	143
1.114	NVXWEB	143
1.115	NWBACK32	144
1.116	NWCONFIG	146
1.117	NWPING	148
1.118	NWTrace	149
1.119	PING	150
1.120	PPPCON	150
1.121	PPPTRACE	151
1.122	PROTECT	151
1.123	PROTECTION	152
1.124	PROTOCOL	152
1.125	PSEVER	153
1.126	RCONAG6	154
1.127	RCONPRXY	156
1.128	RConsoleJ	157
1.129	REBUILD	158
1.130	RECORD	159
1.131	Register Memory	160
1.132	REINITIALIZE SYSTEM	163
1.133	REMIRROR PARTITION	164
1.134	REMOVE NETWORK ADAPTER	165
1.135	REMOVE NETWORK INTERFACE	166
1.136	Remove Storage Adapter	166
1.137	Removemodule	167
1.138	REPLACE	168
1.139	REPLAY	168
1.140	RESET ENVIRONMENT	168
1.141	RESET NETWORK ADAPTER	169
1.142	RESET NETWORK INTERFACE	170
1.143	RESET ROUTER	171
1.144	Restart Server	171
1.145	RIGHTS	172

1.146	ROUTE	174
1.147	ROUTECON	178
1.148	SCAN ALL	179
1.149	SCAN FOR NEW DEVICES	181
1.150	SCRSaver	182
1.151	SEARCH	184
1.152	SECURE CONSOLE	185
1.153	Server	186
1.154	SET	188
1.155	Showscreen	252
1.156	SHUTDOWN NETWORK INTERFACE	252
1.157	SPEED	253
1.158	SPFCON	254
1.159	SPXCONFIG	254
1.160	SPXS	256
1.161	START PROCESSORS	257
1.162	STOP PROCESSORS	258
1.163	SWAP	259
1.164	TCPCON	261
1.165	TECHWALK	263
1.166	TIME	263
1.167	TIMESYNC	264
1.168	TLI	264
1.169	TPING	265
1.170	TRACK OFF	266
1.171	TRACK ON	266
1.172	UNBIND	268
1.173	UNLOAD	270
1.174	UPS_AIO	272
1.175	VERIFY	274
1.176	VERSION	275
1.177	VIEW	275
1.178	VOLUME	276
1.179	VREPAIR	277
1.180	WAN Traffic Manager	282
1.181	XLOG	282
1.182	XNTPD	283

A LAN Driver Statistics 285

A.1	Monitoring Network Traffic	285
A.1.1	Common LAN Driver Statistics	285
A.1.2	Custom LAN Driver Statistics	286

B Documentation Updates 299

B.1	November 9, 2009	299
B.2	December 2008	299
B.3	October 25, 2006 (NetWare 6.5 SP6)	299
B.4	December 23, 2005 (NetWare 6.5 SP5)	299
B.5	August 19, 2005 (NetWare 6.5 SP4)	300

About This Guide

Utilities Reference gives you essential information about Novell® NetWare® 6.5 utilities. For more information about any utility, see the online help for that utility. Unless otherwise specified, the commands in this guide apply to NetWare 6.5 SP4 or later.

For step-by-step instructions to accomplish specific tasks, or for information on NetWare concepts, follow the cross-reference links listed with the respective utilities.

Some new utilities have been included with OES. Some legacy NetWare utilities have been discontinued, while others have been combined with related utilities.

Before you can work effectively with OES utilities, you must have a basic understanding about the NDS® and Novell eDirectory™ infrastructures. For more information, see the *Novell eDirectory 8.8 Administration Guide*.

Audience

This guide is intended for anyone using the utilities included with NetWare.

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Documentation Updates

For the most recent version of *Utilities Reference*, see the online [NetWare 6.5 SP8 Documentation Web site \(http://www.novell.com/documentation/nw65\)](http://www.novell.com/documentation/nw65).

Documentation Conventions

In Novell documentation, a greater-than symbol (>) is used to separate actions within a step and items in a cross-reference path.

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When a single pathname can be written with a backslash for some platforms or a forward slash for other platforms, the pathname is presented with a backslash. Users of platforms that require a forward slash, such as Linux* or UNIX*, should use forward slashes as required by your software.

Also, in this *Utilities Reference*, certain command syntax conventions are used. The following MAP example illustrates several of these conventions, and the subsequent table lists and explains all the possible conventions.

```
MAP [P | NP] [option] drive:= [drive:|path]
```

TIP: Unless specifically noted otherwise in the documentation, text typed at command line prompts, in configuration files, etc., is not case sensitive and can be entered in either upper- or lowercase letters.

Convention	Explanation
Boldface	Boldface characters indicate items that you type at the prompt, such as commands.
<i>Italicized</i> characters	Italicized characters indicate variables that you replace with information pertinent to your task.
...	Ellipses indicate that parameters, options, or settings can be repeated.
[]	An item enclosed in square brackets is optional. You can enter the command with or without the item.
[[]]	Items enclosed by nested square brackets are optional. But if you use the items within the innermost brackets, you must also use the items within the outer brackets.
	When items are separated by a delimiter bar, you can use either item, but not both.
{ }	Braces indicate that you must choose at least one of the enclosed options.
< >	Angle brackets enclose a descriptive name for any value that is provided as output by a computer.

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This chapter gives you essential information about Novell® utilities. For more information about each utility, see the online help for that utility. Unless otherwise specified, the commands apply to NetWare®.

For step-by-step instructions to accomplish specific tasks, or for information on NetWare concepts, follow the cross-reference links listed with the respective utilities.

1.1 ABORT REMIRROR

Purpose

Use at the server console to stop remirroring a logical partition. Abort Remirror can be used on any NetWare mirror, regardless of type as long as all the partition types in the mirror match. This includes NSS, TRAD, SBD, and iSCSI devices and any other NetWare partition types that are mirrored.

Syntax

```
ABORT REMIRROR logical_partition_number
```

Parameter	Use to
<i>logical_partition_number</i>	Specify the number of the logical partition you want to stop remirroring.

NOTE: To view a list of disk partitions, execute the MIRROR STATUS command. See [Section 1.92, “MIRROR STATUS,” on page 99](#).

Example

To stop remirroring logical partition 0x2, enter

```
ABORT REMIRROR 2
```

Additional Information

Topic	See
Restart remirroring	Section 1.133, “REMIRROR PARTITION,” on page 164
Mirroring and unmirroring partitions	For NSS volumes on NetWare, see “Managing NSS Software RAID Devices” in the NW 6.5 SP8: NSS File System Administration Guide . For Traditional volumes, see “Using Software RAID1 Devices for Data Fault Tolerance” in the NW6.5 SP8: Traditional File System Administration Guide .

1.2 Activatemodule

Purpose

Use at the System Console prompt to load or start modules that are preloaded by the `startup.ncf` file or modules that were loaded using the `load -s` command.

Preloading modules is required to avoid a fatal loss of access to essential driver files during a time period in the boot process when access to the FAT (DOS) partition containing the files is not possible. This period begins when the first driver is activated and ends when the partition is made available through NetWare drivers instead of Real Mode (BIOS/DOS) drivers.

If you have installed a new driver that works with the CLOS specification, you can use this command to install and test your load options on the driver before adding a command to load it to the `startup.ncf` file.

Syntax

```
activatemodule = all|module_name
```

For example:

```
activatemodule idecd.cdm
```

Parameter	Use to
all	Activate all modules that have been preloaded.
module_name	Specify the name of a preloaded module that you want to activate.

Additional Information

For related information, see [Section 1.137, “Removemodule,” on page 167](#).

1.3 ADD NAME SPACE

Purpose

Use at the server console to add support for storing files for other file systems on a NetWare volume.

IMPORTANT: Before you can use this command, you must load a name space module. See [Section 1.82, “LOAD,” on page 87](#).

Syntax

```
ADD NAME SPACE [name [TO [VOLUME]] volume_name]
```

Parameter	Use to
(no parameter)	Display the loaded name spaces.

Parameter	Use to
<i>name</i>	Specify the name of the name space module you loaded. Supported names are LONG (OS/2*, Windows*) MAC (Macintosh*) NFS (NFS*) FTAM (FTAM) FTAM is an add-on module that you can purchase from another provider.
<i>volume_name</i>	Specify the name of the volume where you want to apply the namespace.

Using ADD NAME SPACE

- ♦ You need to add a name space only once to a volume with the ADD NAME SPACE command.

Each time you mount a volume to which you added a name space (for example, each time you bring up the server), the corresponding name space module is autoloaded.

NOTE: Because you don't need to add a name space to a volume each time the server comes up, you don't need to put the ADD NAME SPACE command in the `autoexec.ncf` file.

- ♦ When name space support is added to a NetWare Traditional volume, another entry is created in the directory table for the directory and file naming conventions of that name space (file system).
- ♦ With name space support on NSS volumes, the name space entry is part of the directory or file metadata.

Additional Information

Topic	See
Adding name space support	“Adding a Name Space” in the <i>NW6.5 SP8: Traditional File System Administration Guide</i>

1.4 ALERT

Purpose

Use at the server console to manage NetWare® alerts. You can enable or disable the display and logging of specific alerts, limit the amount of information displayed with an alert, and control other aspects of alert messages.

Syntax

`ALERT nmID command On|Off`

Parameter	Use to
<i>nmID</i>	<p>Specify the nmID number of the alert you want to manage. This number appears in parentheses whenever the alert is generated.</p> <p>For example, server address changes cause a 50019 alert. The alert message includes the alert ID number in brackets, like this: [nmID=50019].</p>
<i>command</i>	<p>Specify the functionality to be turned on or off for the alert.</p> <p>Valid command values are:</p> <p>EVENT LOG EVERYONE CONSOLE BELL ID LOCUS ALERT NMID ALL</p>
<i>On Off</i>	Enable or disable the functionality of the command parameter.

Command Parameter Values

Command	Function
EVENT	Generates an event when the alert is generated.
LOG	Sends the alert message to a log file.
EVERYONE	Sends the alert to everyone on the network.
CONSOLE	Displays the alert message on the server console.
BELL	Sounds a warning bell when the alert is generated.
ID	Displays ID information. This information appears in some older error and alert messages but is no longer used.
LOCUS	Displays locus information. This information appears in some older error and alert messages but is no longer used.
ALERT	Generates the alert.
NMID	Displays the alert nmID in the alert message.

Command	Function
ALL	Enables or disables the LOG, CONSOLE, EVERYONE, and BELL commands at the same time.

Using ALERT

- ♦ Use ALERT to stop the logging of less important alerts or to prevent the repeated display of alerts you don't want to see on the server console.
- ♦ You can specify one command parameter at a time. Repeat the ALERT command to execute additional command parameters. (The exception is the ALL command, which lets you set the LOG, CONSOLE, EVERYONE and BELL commands at the same time.)

Examples

- ♦ The following command turns off logging, console display, and the warning bell for everyone on the network for all 50019 alerts (a server address change alert):

```
ALERT 50019 ALL Off
```

- ♦ The following command turns off logging of all 50019 alerts.

```
ALERT 50019 LOG Off
```

1.5 ALIAS

Purpose

Use at the server console to define an alias. An alias is a user-defined keyword that represents a string. (The string can include both spaces and punctuation.)

When you enter the keyword at the command line, the server replaces the word with the string. The keyword remains in effect until you restart the server.

WARNING: If you are associating a keyword with a command string, make sure that you do not inadvertently leave out the keyword. If you do leave out the keyword, the first word in the command string becomes the keyword. If you then try to execute the command, the server will interpret it as a keyword, not as a command.

For example, if you enter ALIAS LOAD INSTALL, LOAD becomes a keyword for INSTALL. If you then try to execute a LOAD command, the server displays a message saying that INSTALL has been replaced by NWCONFIG.

Syntax

```
ALIAS [keyword[text]]
```

Parameter	Use to
(no parameter)	Display all defined aliases and the text they represent.
<i>keyword</i> and <i>text</i>	Assign the keyword to the text.
<i>keyword</i>	Delete the keyword as an alias for the text.

Using ALIAS

Define an alias to reduce keystrokes or to avoid having to remember arguments in a long command string.

Examples

In the following example, ALIAS associates the keyword `proto` with a command to bind a protocol.

```
ALIAS PROTO BIND IPX NE3200 NET=12345678
```

To use the keyword, enter the alias at the server console prompt, instead of the BIND command:

```
PROTO
```

Executing ALIAS with no parameter displays a list of defined aliases, similar to the following:

```
1. PROTO alias for <BIND IPX NE3200 NET=12345678>
```

```
2. M alias for <MODULES>
```

To revoke the keyword `proto` as an alias, you would enter the following at the server console prompt:

```
ALIAS PROTO
```


1.6 ARP

Purpose

Use at the server console to display and modify the IP-to-Ethernet address translation table used by the address resolution protocol (ARP). The hostname can be specified by name or IP address and is associated with an interface.

Syntax

```
arp [-n] -i interface_name hostname
```

```
arp [-n] -a arp -d -i interface_name hostname
```

```
arp -d -a arp -s -i interface_name hostname ether_addr [temp] arp -S -i  
interface_name hostname ether_addr [temp] arp -f filename
```

Option	Use To
-n	Show IP addresses as numbers to save DNS lookup time. (Normally, ARP attempts to display addresses symbolically.)
-a	Display or delete (with -d option) all of the current ARP entries.
-d	Delete an entry for the host named <i>hostname</i> . It can be combined with the -a option to delete all entries.
-s	Create an ARP entry for the host named <i>hostname</i> (if an ARP entry does not already exist for this <i>hostname</i>) with the Ethernet address <i>ether_addr</i> . The Ethernet address is given as six hex bytes separated by colons (:). The entry will be permanent unless the word temp is given in the command.
-S	Similar to -s, except that any existing ARP entry for the <i>hostname</i> will be deleted first.
-f	Cause the filename to be read and multiple entries to be set in the ARP table. Entries in the file should be of the form of <i>interface_name</i> <i>hostname</i> <i>ether_addr</i> [<i>temp</i>].

1.7 BASH

Purpose

Provides the BASH shell, including a variety of useful system utilities, on NetWare®.

Syntax

`bash.nlm`

Known Issues

This section contains known issues, including issues where BASH might work differently than on NetWare.

Limited Functionality on DOS Partitions

Several BASH utilities rely on the existence of inode numbers for proper operation. Because files on the DOS partition do not have inode numbers, these utilities might exhibit strange behavior when accessing files on DOS partitions.

These errors might limit functionality on DOS partitions, but should not result in server abends or data loss.

Control Sequences

Command Sequence	Description
Ctrl+Z (suspend)	Does not work and has no effect on processes.
Ctrl+C (interrupt)	Works only for processes actively reading from the keyboard or writing to the screen.
Ctrl+\ (quit)	Works only for processes actively reading from the keyboard or writing to the screen.
Ctrl+D (end of file)	Works only for processes actively reading from the keyboard or writing to the screen.

Creating Mount Points to Access NetWare Volumes

The BASH shell on NetWare uses POSIX style directory syntax similar to Linux* when specifying pathnames. The forward slash character (/) is a path separator. The backslash character (\) is *not* a path separator. Volume names may not be used to specify the location of files or directories (that is, it is invalid to type `cd sys:/system`). The `sys:` volume is specified by an initial forward slash (/) in the path (for example, `cd /system`). To access other volumes at the BASH prompt, you must set up a `pathtab` file.

To set up this file, modify (or create) `sys:/etc/pathtab`, placing each mount point and volume on a line similar to the following:

`[POSIXPath] [NetWare Path]`

For example:

```

/vols/data  data:\
/mystuff    data:\users\username
/vol1       VOL1:\

```

The first example mounts the data volume to /vols/data in BASH, the second example mounts the users\username folder to /mystuff in BASH, and so on. In these examples, the directories /vols/data, /mystuff, and /vol1 must exist in the root of the sys: volume.

NOTE: Creating mount points to remote systems is not supported.

Supported BASH Commands

The following BASH commands are supported in NetWare. For commands marked with *, see “Notes” on page 20. Information on using each of these commands can be obtained by running man [command] in BASH.

ar	arch	awk	basename	bc
bunzip2	bzip2	bzip2recover	cal	cat
chgrp	chmod*	chown	cksum	clear
cmp	col	colcrt	colrm	column
comm	cp	cpio*	csplit	cut
date	dc	dd	df	diff
diff3	dir	dircolors	dirname	du
echo	egrep	env	envsubst	expand
expr	factor	false	fgrep	file
find	flex	fmt	fold	funzip
getopt	gettext	gnucore	grep	groups
gunzip	gzip	head	hostid	hostname
iconv	id	install	join	kill
less	lessecho	lesskey	line	ln*
Logger	look	ls	m4	make
man	man2html	mcookie	md5sum	mkdir
mkfifo	mknod*	mktemp	more	mv
namei	ngettext	nice*	nm	nohup
od	paste	patch	pathchk	pawk
ping	pr	printenv	printf	ptx
pwd	ranlib	readlink*	rename	renice*
rm	rmdir	sdiff*	sed	seq

sh	sha1sum	shred	size	sleep
sort	split	stat	strings	strip
stty*	sum	sync	tac	tail
tar*	tee	test	time	touch
tr	true	tsort	tty	ul
uname	unexpand	uniq	unlink	unzip
unzipsfx	vdir	vim	wc	wget
whereis	which	whoami	xargs	xxd
yes	zcat	zip	zipinfo	zipnote
zipsplit				

Notes

The following table contains notes for any utility marked with * in the previous table:

Utility	Notes
chmod	Modifies only the write bit on file permissions.
cpio	Does not support archiving on remote systems or as a different user. Does not support file links.
ln	<p>Hard links are supported on Novell Storage Services (NSS) volumes on NetWare 6.5 and OES NetWare and Linux. For information, see “Managing Hard Links” in <i>NW 6.5 SP8: NSS File System Administration Guide</i>. Soft links are not supported in NSS.</p> <p>File links are not supported on NetWare Traditional volumes; it always returns an error.</p>
mknod	Supports only FIFOs on NetWare.
nice	Has no effect on NetWare.
readlink	File links are not supported on NetWare. Always returns success.
renice	Has no effect on NetWare.
sdiff	Does not support interactive editing mode.
stty	Not all flags are supported or relevant on NetWare.
tar	Does not support the -z flag.

1.8 BIND

Purpose

- ♦ Use at the server console to link a communication protocol to a network board and its LAN driver. Unless you link the protocol to the board, the board can't process packets.

- ♦ You can also use INETCFG to link the network boards and their LAN drivers to the communication protocols.

NOTE: Before you bind a protocol to a network board and LAN driver, you must install the network board and load the LAN driver.

Syntax

```

BIND protocol [TO] lan driver | board name [driver parameter...] [protocol
parameter...]

```

Bind Parameters

Parameter	Use to
<i>protocol</i>	Specify the communication protocol.
<i>lan driver board name</i>	Specify either the LAN driver name or the network board name.
<i>driver parameter</i>	Identify a particular network board. If you specified a network board name, you do not need to specify driver parameters. If you specified a LAN driver and your server has more than one instance of the LAN driver loaded, use a driver parameter to specify the particular board the driver is running. For a list of valid driver parameters, see “Driver Parameters” on page 21 .
<i>protocol parameter</i>	Specify the protocol parameters required for the protocol you are binding. See “Protocol Parameters” on page 22 .

Driver Parameters

Depending on your system, one or more of the following parameters can be used to identify a particular board.

Parameter	Use to
DMA= <i>number</i>	Specify the DMA channel for the board. Use the same channel number you did when you loaded the driver.
FRAME= <i>number</i>	Specify the frame type for the board. Use the same type you did when you loaded the driver.
INT= <i>number</i>	Specify the interrupt number for the board. Use the same interrupt number you did when you loaded the driver.
MEM= <i>number</i>	Specify the memory address for the board. Use the same memory address you did when you loaded the driver.
PORT= <i>number</i>	Specify the I/O port for the board. Use the same I/O port number you did when you loaded the driver.

Parameter	Use to
SLOT= <i>number</i>	Specify the network board by the lot it was installed in. Use this parameter with microchannel and EISA computers. Specify the same slot number you used when you loaded the driver.
NODE= <i>number</i>	Specify the node address for the board. This is a 12-digit hexadecimal number.

Protocol Parameters

Protocol/Parameter	Use to
For IPX protocol: NET= <i>number</i>	<p>Specify the IPX™ external network number. This is the number of the cabling system attached to the board.</p> <p>If the board is attached to an existing cabling system, use the same IPX external network number as used by other boards of the same frame type attached to this cabling system. Do not use the same number that was used by boards of a different frame type.</p> <p>If the board is attached to a new cabling system or if it is the first board of its frame type attached to the cabling system, you can enter any hexadecimal number of up to eight digits, as long as the number is different from all other network numbers.</p> <p>Remember that all boards of the same frame type attached to the same cabling system must use the same IPX external network number for that cabling system.</p>
For other protocols:	Specify the information required by the particular protocol.
Refer to the documentation that comes with the protocol. Or, consult the Novell® Support Connection™ Web site (http://support.novell.com) or your Novell Authorized Reseller SM representative.	

Using BIND

- ♦ You may not need to use the BIND command unless you want to add new LAN drivers after the initial server installation.
- ♦ You can also use INETCFG to load and bind LAN drivers. INETCFG places the BIND statements in the `init.sys.cfg` file.
- ♦ If you use only the IPX/SPX™ protocol, you can add the BIND statement to the `autoexec.ncf` file.

Additional Information

Topic	See
Binding a protocol to a driver	Section 1.65, "INETCFG," on page 71
Viewing a list of communication protocols	Section 1.124, "PROTOCOL," on page 152
Loading LAN drivers	Section 1.82, "LOAD," on page 87

1.9 CAPTURE

Purpose

A command line utility that allows you to print from applications not designed for NetWare® print services. It sets up redirection parameters for printing output from your workstation; the NetWare DOS Requester™ software then redirects the workstation output from an LPT port to the specified network printer or file.

NOTE: This utility is for use with legacy, queue-based Novell® print services. Novell iPrint is the default and preferred print system in NetWare 6.0 and later. If you have legacy applications that print only to an LPT port, use iPrint's iCapture command to redirect LPT port output to an iPrint printer. For more information on iPrint, see the *NW 6.5 SP8: iPrint Administration Guide*.

Syntax

```
CAPTURE P=printer_name|Q=queue_name L=1|LPT1 [options]
```

Additional Information

Topic	See
Using CAPTURE	Setting Up CAPTURE for Applications Not Designed for Network Printing (http://www.novell.com/documentation/lg/nw51/printenu/data/hzm3nqx9.html) in <i>NetWare 5.1 Queue-Based Printing</i> .

1.10 CDDVD

Purpose

Use at the server console to allow a CD or DVD disk to function as a Novell® Storage Services (NSS) volume. Immediately mounts the NSS volume.

This version of `cddvd.nss` replaces other CD modules used in previous NetWare releases. The NetWare 6 version of this module is `cdrom.nlm` and should be used only for NetWare 6 installation because `cdrom` loads the `nss` module, `cd9660.nss`, and `cdhfs.nss`, and these modules are not needed in NetWare 6.5. The NetWare 5 version was named `cdinst.nlm` and should be used only for NetWare 5 installation.

Syntax

```
[LOAD] CDDVD
```

Using CDDVD

IMPORTANT: Use a CD or DVD disk as a read-only NSS volume.

- ◆ NSS supports CD and DVD volumes mounted with the Macintosh* and ISO 9660 name spaces.
- ◆ Also supports High Sierra, ISO 9660, and HFS (Apple*) file system formats.

Additional Information

Topic	See
NSS volumes	“Managing CDs and DVDs as NSS Volumes (NetWare)” in the <i>NW 6.5 SP8: NSS File System Administration Guide</i>

1.11 CHARSET

Purpose

Use at the server console to change the code page currently used by the NetWare® server.

Syntax

```
CHARSET CPxxx [stay]
```

Parameter	Use to
(no parameter)	Display available code pages.
CPxxx	Specify the code page you want to use on the server, where xxx is the code page number.
stay	Leave the CHARSET code in memory. If you do not use the stay option, CHARSET unloads itself after it changes the code page.

Using CHARSET

The following code pages are supported for NetWare: 437, 737, 850, 852, 855, 857, 860, 861, 863, 865, 866, 869.

Additional Information

Topic	See
Changing code pages	“Changing the Language NetWare Uses” in the <i>NW 6.5 SP8: Server Operating System Administration Guide</i>

1.12 Certificate Server

Novell® Certificate Server enables the use of public keys cryptography and public key certificates in an eDirectory-enabled network. Certificate Server allows you to request, manage, and store public key certificates and their associated key pairs in the eDirectory tree, and establish and manage an eDirectory tree certificate authority (CA) that is specific to your eDirectory tree and to your organization.

Certificate Server also works with most commercial certificate authorities and with the major certificate authority software. Certificate Server optionally generates PKCS #10 formatted certificate signing requests (CSR) that can be used by commercial or external CAs.

Certificate Server consists of a PKI NLM™ and a snap-in module to ConsoleOne™. A network administrator uses ConsoleOne as the administration point for Certificate Server.

Certificate Server uses the cryptography services provided by the Novell International Cryptography Infrastructure (NICI). NICI is a modular infrastructure that offers replaceable cryptography engines. As such, a single version of Certificate Server can be used in NetWare installations throughout the world. Certificate Server derives all supported cryptography and signature algorithms, as well as supported key sizes from NICI.

For additional information and procedures, refer to the Help system or to the *Novell Certificate Server 3.3 Administration Guide*.

1.13 CLEAR STATION

Purpose

Use at the server console to clear a workstation connection.

WARNING: If you use CLEAR STATION while the workstation is in the middle of a transaction or a file update, files might be saved with incomplete data.

Syntax

```
CLEAR STATION {n|all}
```

Parameter	Use to
<i>n</i>	Specify the connection number of the workstation you want to clear from the server.
all	Clear all workstation connections to the server.

Using CLEAR STATION

- ♦ To determine the connection number, from MONITOR's Available Options, select Connections > Connection Information at the server console or use NLIST on a workstation.
- ♦ You can use CLEAR STATION either after a workstation has crashed and left files open on a server or before you need to bring down the server.
- ♦ CLEAR STATION closes the workstation files and erases the server's internal tables for the station, including drive mappings not saved in the login script.
- ♦ The communication link between server and station is broken.

Additional Information

Topic	See
Removing server resources from a workstation	"Clearing a Workstation Connection" in the <i>NW 6.5 SP8: Server Operating SystemAdministration Guide</i>
Clearing a workstation connection from a client that has Auto Restart enabled	"Clearing a Connection That Uses Auto Reconnect" in the <i>NW 6.5 SP8: Server Operating SystemAdministration Guide</i>

1.14 CLIB

Purpose

The functionality of earlier versions of CLIB has been incorporated into a server library of C functions. The server library provides an ANSI-compliant runtime interface for other NetWare® Loadable Module™ (NLM™) programs. You cannot load the server library manually because it is autoloaded by the server operating system. The server library includes the following NLM programs, of which `clib.nlm` is one:

- ♦ **fpsm.nlm** —A library of functions providing floating-point support for NLM programs
- ♦ **threads.nlm** —A library of functions that constitute the NetWare threads package
- ♦ **requestr.nlm** —A library of functions that make up the NetWare requester
- ♦ **nlmlib.nlm** —A library of functions that provide basic runtime support for NLM programs, including POSIX-mandated functionality
- ♦ **nit.nlm** —A library of NetWare interface tools needed by some NLM programs
- ♦ **clib.nlm** —The standard C runtime library containing ANSI-mandated functions
- ♦ **lib0.nlm** —The message library, containing system and error messages for most of the other server library NLM programs

Using CLIB

CLIB and the other modules of the server library are autoloaded by the server operating system.

1.15 CLS

Purpose

Use at the server console to clear the console screen and move the console prompt to the top of the screen.

Syntax

```
CLS
```

1.16 CLUSTER ALERT

Purpose

Use at the server console to specify whether you want a cluster resource to fail over, fail back, or start.

The resource start, failover, or failback mode is set to manual and the resource is waiting to start on a node or to fail over or fail back to another node. Specify the resource name in the command and use the Yes|No switch to specify whether you want the resource to fail over, fail back, or start.

Syntax

```
CLUSTER ALERT resource YES|NO
```

1.17 CLUSTER CVB REBUILD

Purpose

Use at the server console to rebuild the CVB database to allow the use of duplicate pool names.

This command is specific to implementations using Veritas. It causes Cluster Services to disregard the current Cluster Volume Broker (CVB) database.

Syntax

```
CLUSTER CVSBIND {ADD, DEL} resource IP_address
```

1.18 CLUSTER DHCP

Purpose

Use at the server console to specify the eDirectory™ context where DHCP configuration information is stored.

This command is useful if you have problems getting DHCP to function properly on a cluster.

Syntax

```
CLUSTER DHCP context
```

1.19 CLUSTER DOWN

Purpose

Use at the server console to remove all cluster nodes from the cluster. This command has the same effect as executing the CLUSTER LEAVE command on every server in the cluster.

Syntax

```
CLUSTER DOWN
```

1.20 CLUSTER JOIN

Purpose

Use at the server console to add a node to the cluster.

This command adds the node to the cluster where the command is executed and makes the node visible to other servers in the cluster. Novell Cluster Services™ software must already be installed on a node for it to join the cluster.

Syntax

```
CLUSTER JOIN
```

1.21 CLUSTER LEAVE

Purpose

Use at the server console to remove the node from the cluster where the command is executed. The node will no longer be visible to other servers in the cluster.

Syntax

```
CLUSTER LEAVE
```

1.22 CLUSTER MAINTENANCE

Purpose

Use at the server console to temporarily suspend the cluster heartbeat while hardware maintenance is being performed.

This command is useful if you want to reset or power down the switch that the cluster is using to communicate with shared storage without bringing the cluster servers down.

Syntax

```
CLUSTER MAINTENANCE On|Off
```

1.23 CLUSTER MIGRATE

Purpose

Use at the server console to migrate the specified resource from the node where it is currently running to the node you specify in the command.

The node you migrate the resource to must be running in the cluster and also be in the resource's assigned nodes list.

Syntax

```
CLUSTER MIGRATE resource node_name
```

1.24 CLUSTER OFFLINE

Purpose

Use at the server console to unload the specified resource from the node where it is currently running.

Syntax

```
CLUSTER OFFLINE resource
```

1.25 CLUSTER ONLINE

Purpose

Use at the server console to start the specified resource on the most preferred node that is currently active.

You can start the resource on a different node by specifying that node in the command.

Syntax

```
CLUSTER ONLINE resource node_name  
[XXX]
```

1.26 CLUSTER POOLS

Purpose

Use at the server console to list the NSS pools on the shared disk system that are accessible via Novell Cluster Services.

Syntax

```
CLUSTER POOLS
```

1.27 CLUSTER RESOURCES

Purpose

Use at the server console to list all resources that currently exist in the cluster. The resources do not have to be online or running.

Syntax

CLUSTER RESOURCES

1.28 CLUSTER RESTART

Purpose

Use at the server console to restart Novell Cluster Services software on all servers in the cluster after a specified time interval (in seconds).

Syntax

CLUSTER RESTART *seconds*

1.29 CLUSTER STATS

Purpose

Use at the server console to display the node number, node name, and heartbeat information. You must switch to the log console screen to see cluster statistics.

Syntax

CLUSTER STATS {Display, Clear}

1.30 CLUSTER STATUS

Purpose

Use at the server console to display the status of the specified resource.

This includes the number of times the resource has been migrated or failed over to another server, the resource state, and the node where the resource is currently running.

Syntax

CLUSTER STATUS *resource*

1.31 CLUSTER VIEW

Purpose

Use at the server console to display the node name, cluster epoch number, master node name, and a list of nodes that are currently members of the cluster.

Syntax

```
CLUSTER VIEW
```

1.32 COMPFIX

Purpose

Use the Compfix utility to repair compressed volumes. Load `compfix.nlm` on your server, then enter the Compfix command at the server console.

Syntax

```
compfix [-attribute] [-noheader] path [log_volume]
```

Parameter	Use to
path	Specify the compressed volume or the individual file that has compression errors you want to repair. For example, <i>volume</i> or <i>volume:path</i> , where <i>path</i> includes the file name and is in the Long name space.
log_volume	If <i>log_volume</i> is specified, log data is written to <i>log_volume:\compfix.txt</i> . If <i>log_volume</i> is not specified, log data is written to <i>volume:\compfix.txt</i> .
-noheader	If -nheader is specified, no compression header will be validated. Use this on scanned volumes.
-fs	Fix compression statistics.
-lc	List all corrupted compressed files.
-df	Diagnose an individual compressed file.
-ff	Fix an individual compressed file.
-fc	Fix all fixable corrupted compressed files on the volume.
-bg	Diagnose the background compression effect for an individual file.
-cc	Clears the Cannot Compress (Cc) attribute for files in the specified volume. or for a specified file.

Using COMPFIX to Repair Compressed Volumes

The following table illustrates typical uses of the Compfix utility.

Command	Use to
<code>compfix -fs <i>volume</i></code>	Fix compression statistics for the specified volume. The specified volume should be in maintenance mode in order for statistics to be computed correctly.
<code>compfix -lc [-noheader] <i>volume</i> [<i>log_volume</i>]</code>	List all corrupted compressed files on the specified volume.
<code>compfix -df [-noheader] <i>volume:\path</i> [<i>log_volume</i>]</code>	Diagnose an individual compressed file.
<code>compfix -ff <i>volume:\path</i></code>	Fix an individual compressed file.
<code>compfix -fc [-noheader] <i>volume</i> [<i>log_volume</i>]</code>	Fix all fixable corrupted compressed files on the specified volume.
<code>compfix -bg <i>volume:\path</i> [<i>log_volume</i>]</code>	Diagnose the background compression effect for an individual file.
<code>compfix -cc <i>volume</i> [<i>log_volume</i>]</code>	Clears the Cannot Compress (Cc) attribute for files in the specified volume.

1.33 CONFIG

Purpose

Use at the server console to view the following:

- ♦ NetWare® server name, internal network number (server ID), server up time, and loaded LAN drivers
- ♦ Driver version numbers, hardware settings, node (station) addresses, external network number of the cabling scheme, board name, frame type, and networking protocol for each network board
- ♦ The server's eDirectory tree and bindery context

Syntax

CONFIG

Using CONFIG

- ♦ Before installing memory boards, network boards, or host bus adapters, execute CONFIG to see a list of hardware settings already in use by LAN drivers.
- ♦ On some systems, CONFIG may also display information about NetWare Loadable Module™ (NLM™) programs. The kind and amount of NLM information depends on the system.

The following is an example of server information that CONFIG returns:

IPX internal network number: 0F42DB87
Server Up Time: 235 Days 17 Hours 7 Minutes 6 Seconds

Novell NE2000
Version 3.65a December 22, 2002
Hardware setting: I/O ports 300h to 31Fh,
Interrupt 3h

Node address: 00001B2709AF
Frame type: ETHERNET_802.2
Board name: NE2000_1_E82
LAN protocol: IPX network 01010340

Novell NE2000
Version 3.65a December 22, 2002
Hardware setting: I/O ports 300h to 31Fh,
Interrupt 3h
Node address: 00001B2709AF
Frame type: ETHERNET_II
Board name: NE2000_1_EII
LAN protocol: ARP
LAN protocol: IP address 123.45.678.910
mask FF.FF.FF.0 interfaces 1 mask FF.FF.FF.0 interfaces 1

Tree Name: DS_JSBACH

Bindery Context(s):
.novell

Additional Information

Topic	See
Loadable modules	Section 1.93, "MODULES," on page 100 Section 1.94, "MONITOR," on page 102
Configuration information for storage device drivers	Section 1.94, "MONITOR," on page 102

Topic	See
Server's external network numbers	Section 1.42, "DISPLAY IPX NETWORKS," on page 45

1.34 CONLOG

Purpose

Use at the server console to

- ♦ Capture all console messages generated at the server while CONLOG is loaded. This includes system messages, eDirectory messages, the console output of all commands executed, and messages that announce RCONSOLE connections and disconnections.
- ♦ Write the messages to the default `sys:\etc\console.log` file (or to another file of your choice).
- ♦ View console messages for useful information although they scroll too quickly to read.
- ♦ Reveal errors that might occur during system initialization.

Syntax

```
[load] conlog [file=log filename] [save=backup filename] [archive=yes]
[entire=yes] [maximum=max file size] [next=hh:mm:ss] | help
```

TIP: Do not include a space before or after the equals sign (=).

Parameter	Use to
help	View a description of each CONLOG command option. You can load CONLOG using any combination of these options.
file=log filename	Specify the log file you want to use if you don't want CONLOG to write to the default log file <code>sys:\etc\console.log</code> . Note: You can change the name of the log file and store it in another directory. However, most configuration files are in the <code>sys:\etc</code> .
save=backup file name	Specify the filename in which you want to save the preexisting console log. By default, when you load CONLOG or when the console log file reaches its maximum size, the server deletes the existing console log file and creates a new file in its place. This parameter also enables <code>autoexec.ncf</code> to load CONLOG without overwriting the previous console log. Use this parameter at the command line or in <code>autoexec.ncf</code> if you want to examine the old console log for troubleshooting purposes. The backup file is in turn overwritten when a preexisting console log is saved just before it is replaced with a new file.

Parameter	Use to
archive=yes	<p>Archive up to 1000 console log files on your NetWare server.</p> <p>The first time you load CONLOG with this option, the server saves the existing console log file as the <code>console.000</code> file.</p> <p>Then each time you load the CONLOG utility with the ARCHIVE option (or each time the console log file reaches its maximum when when CONLOG is loaded with the ARCHIVE option), the server increments the extension of the archive file by 1—<code>console.001</code>, <code>console.002</code>, etc.</p>
entire=yes	<p>Capture the lines already on the screen at the time CONLOG is loaded.</p> <p>Without this parameter, CONLOG starts logging with the next output to the console after it is loaded.</p>
maximum= <i>max file size</i>	<p>Specify the maximum size, in kilobytes, of the log file.</p> <p>If the log file exceeds the <i>max file size</i>, it is deleted—or renamed if <i>backup filename</i> was specified. In either case, logging starts over with an empty log file.</p> <p>Important: If a maximum file size is not specified, there is no limit.</p>
next= <i>hh:mm:ss</i>	<p>Specify the time of day (24-hour clock) with hour, minutes, and seconds when the server archives the existing console log and creates a new file.</p> <p>This option allows you to know the beginning time of a backup file or an archive file.</p> <p>Use this option with <code>save</code> or <code>archive</code>.</p>

Using CONLOG

You can view the console log from a workstation with any text editor. Any logged-in user with the Read right to the `sys:\etc` directory can view console log files in this way.

To view the console log file from the server console, use the VIEW utility or the INETCFG utility.

- ◆ Console messages can reveal errors that occur during system initialization.
- ◆ The command LOAD CONLOG is typically added to the `autoexec.ncf` file, as in the following example:

```
file server name netw5_svr
ipx internal net c92556e
load conlog
load remote
load rspx
```

Where you place the `load conlog` command in `autoexec.ncf` determines which console messages the server saves in the console log file. To record as many console messages as possible, place the LOAD CONLOG command near the beginning (immediately after the FILE SERVER NAME, as above). Use EDIT or NWCONFIG to modify the `autoexec.ncf` file.

Examples

- ♦ To start capturing console messages during system initialization, enter

```
[load] conlog
```

- ♦ To load CONLOG but save the current log file as `clog.bak` and limit the size of `console.log` to 100 KB, enter

```
[load] conlog save=clog.bak maximum=100
```

- ♦ To load CONLOG, limit the size of `console.log` to 200 KB, and schedule existing console log files for daily archiving at 6:00 a.m., enter

```
[load] conlog maximum=200 archive=yes next=06:00:00
```

- ♦ To stop capturing console messages, enter

```
unload conlog
```

Additional Information

Topic	See
Viewing console log file	Section 1.177, "VIEW," on page 275 Section 1.65, "INETCFG," on page 71
Editing <code>autoexec.ncf</code> file	"Using Server Batch Files" in the <i>NW 6.5 SP8: Server Operating System Administration Guide</i>

1.35 ConsoleOne

Purpose

ConsoleOne® is a Java*-based tool for managing your network and its resources. By default, ConsoleOne lets you manage:

- ♦ eDirectory™ objects, schema, partitions, replicas, and rights
- ♦ NetWare file system resources

If you install other Novell products, additional functionality might be added to ConsoleOne. For example, if you install Novell eDirectory, the capability to configure the LDAP interface to eDirectory is snapped in to ConsoleOne automatically.

ConsoleOne is designed like a file manager utility: in the left window pane you browse containers, and in the right window pane you work with the resources in those containers.

Starting ConsoleOne

To start ConsoleOne on a NetWare server, do either of the following:

- ♦ On the servertop (server GUI), click Novell > ConsoleOne.
- ♦ At the system console prompt, type C1START.

To start ConsoleOne on a Windows workstation:

- 1 Map a drive to the `sys:` volume of a NetWare server.
- 2 On the mapped drive, go to `public\mgmt\consoleone\1.2\bin`, and then run `consoleone.exe`.

If ConsoleOne is installed locally on the Windows computer, simply double-click the ConsoleOne icon on the desktop.

If ConsoleOne is installed remotely on a NetWare or Windows server and you don't have a shortcut to that installation, do the following:

- 1 In Windows Explorer, find the mapped or shared drive that represents the server volume where ConsoleOne is installed and then browse to the folder where ConsoleOne is installed.

By default, this is:

Windows	<code>c:\novell\consoleone\1.2</code>
NetWare	<code>sys:public\mgmt\consoleone\1.2</code>

IMPORTANT: You must browse for ConsoleOne on a drive that is mapped to a letter, not a UNC path.

- 2 In the bin subfolder, double-click `consoleone.exe`.
- 3 (Optional) For future use, create a shortcut on your desktop to the remote `consoleone.exe` file.

To start ConsoleOne on Linux* or Solaris*:

At the system prompt of a local session or an X terminal (remote) session, enter the following command:

```
/usr/ConsoleOne/bin/ConsoleOne
```

Additional Information

Topic	See
Why use ConsoleOne?	ConsoleOne User Guide (http://www.novell.com/documentation/lg/consol13/index.html)

1.36 CPUCHECK

Purpose

Use CPUCHECK at the server console to display per-processor information, including processor number, processor clock speed (MHz), processor ID, processor version and subversion, amount of L1 and L2 cache memory, and current revision number.

Syntax

```
cpuccheck [processor_number...]
```

Using CPUCHECK

When you run CPUCHECK, the output for a uniprocessor server is similar to the following:

```
Processor Speed 199 MHZ, CPUID 619:FBFF
Family 6, Model 1, Stepping 9
L1 cache: 16K Bytes, L2 cache: 256K Bytes
Current Revision: D1
```

To verify information for a particular processor, specify the processor number.

Additional Information

Topic	See
Displaying information on processors	Section 1.45, "DISPLAY PROCESSORS," on page 49
Checking processor's clock speed	Section 1.157, "SPEED," on page 253

1.37 CX

Purpose

Use at a workstation to view or change your eDirectory™ context, or to view containers and leaf objects in your eDirectory tree structure.

Syntax

```
CX [new context] [/option...] [/? | /VER]
```

Parameter	Use to
(no parameter)	View the current context.
<i>new context</i>	Move to a new context or specify the context you want for an option.
<i>/option</i>	Replace <i>option</i> with any available option. See “CX Options” on page 40.
<i>/?</i>	View online help. All other parameters are ignored when <i>/?</i> is used.
<i>/VER</i>	View the version number of the utility and the list of files it uses to execute. All other parameters are ignored when <i>/VER</i> is used.

Using CX

- ♦ CX is similar to the DOS CD and DIR commands in that CX allows you to change contexts and view all objects below a given container.
- ♦ CX doesn't recognize spaces in object names. If you have spaces in container names, put quotation marks around the names or use underscores (`_`) in place of the spaces.

For example, for container CORPORATE ADMIN, type `Corporate Admin` or `Corporate_Admin`.

CX Options

Option	Use to
<i>/R</i>	List containers at the root level, or change context in relation to the root.
<i>/T</i>	List containers below the current context or a specified context in a tree structure.
<i>/CONT</i>	List containers at the current context or a specified context in a vertical list with no structure.
<i>/A</i>	Include all objects at or below the context. Use with <i>/T</i> or <i>/CONT</i> .
<i>/C</i>	Scroll continuously through output.

Examples

- ♦ To see your context in eDirectory before logging in, type
`CX`
- ♦ To set a new context from the root
 - ♦ Place a period in front of the new context you type, or
 - ♦ Enter the proper number of trailing periods to reach the root level, or
 - ♦ Use the */R* option.
- ♦ To back up one level in the eDirectory tree, type
`CX .`
 (You must put a space between the command and the trailing period.)

- ♦ To go down two levels from PROVO.NOVELL to SYSTEM.ENGINEERING. PROVO.NOVELL, type
`cx system.engineering`
- ♦ To change your current context from TESTING. PROVO.NOVELL.US to SYSTEM.MARKETING. PROVO.NOVELL.US, type
`cx .system.marketing.provo.novell.us`
or
`cx system.marketing.`
- ♦ To change to the root when your context is TEST.PROVO.NOVELL, type
`CX . . .`
or
`CX /R`
- ♦ To change the complete context from TESTING. PROVO.NOVELL to TESTING.PARIS.NOVELL, type
`cx .testing.paris.novell`
- ♦ To show all containers in the current context, type
`CX /CONT`
- ♦ To show all containers in the context SALES.NOVELL in a tree structure, type
`cx .sales.novell /t`
- ♦ To show all containers and leaf objects in the current context in a tree structure, type
`cx /t /a`

1.38 DISABLE LOGIN

Purpose

Use at the server console to prevent users from logging in.

Syntax

```
disable login
```

Using DISABLE LOGIN

- ♦ Use this command to prevent users from logging in when you are making repairs, backing up files, or loading software.
- ♦ Users already logged in aren't affected. However, a user who logs out can't log in again until you execute ENABLE LOGIN. See [Section 1.53, "ENABLE LOGIN," on page 57](#).

1.39 Dismount

Purpose

Use at the server console to make a volume unavailable to users.

Syntax

```
dismount volume_name
```

Parameter	Use to
<i>volume_name</i>	Specify the name of the volume you want to dismount.

Using Dismount

- ◆ `Dismount` allows you to maintain or repair a volume and to upgrade disk drivers while the NetWare server is up.
- ◆ Use this command to dismount all volumes residing on a removable drive before you remove the drive.
- ◆ If you are running out of memory and cannot add more RAM, consider dismounting a volume that is used infrequently.

Mounted volumes take up memory allocated for file caching and thus affect server performance. NSS volumes use much less memory than Traditional volumes.

Additional Information

Topic	See
Dismounting a volume	“Mounting and Dismounting an NSS Volume (Linux)” in the <i>NW 6.5 SP8: NSS File System Administration Guide</i> .

1.40 Display Environment

Purpose

Use at the server console to display current search paths and current values of the settable server parameters, along with their default values and range of valid values.

If you use a color monitor as your console, the parameter name appears in white and its current value in yellow.

NOTE: `DISPLAY ENVIRONMENT` displays only settable server parameters that are not marked as hidden.

Syntax

display environment

Using DISPLAY ENVIRONMENT

DISPLAY ENVIRONMENT lists the server's current search paths first and then the settable server parameters follow.

The following example illustrates a sample of the command display. Note that the sample begins with the Communications Parameters, just as SET and MONITOR do.

```
PATH=\\BREMEN\SYS\SYSTEM\;C:\NWSERVER;\\BREMEN\SYS\JAVA\BIN\;\\BREMEN\SYS\JAVA\NWGFX\;
```

```
SPX Maximum Window Size: 0
TCP Defend Land Attacks: On
TCP Defend SYN Attacks: Off
IP Wan Client Validation: Off
Allow IP Address Duplicates: Off
IPX Router Broadcast Delay: 0
Reply To Get Nearest Server: On
IPX NetBIOS Replication Option: 2
Use Old Watchdog Packet Type: Off
Number of Watchdog Packets: 10
Delay Between Watchdog Packets: 59.3 seconds
Delay Before First Watchdog Packet: 4 minutes
Console Display Watchdog Logouts: Off
Maximum Packet Receive Buffers: 500
Minimum Packet Receive Buffers: 128
Maximum Physical Receive Packet Size: 4224
New Packet Receive Buffer Wait Time: 0.1 seconds
IPX CMD Mode Routing: Off
Load Balance Local LAN: Off
Garbage Collection Interval: 5 minutes
Alloc Memory Check Flag: Off
Reserved Buffers Below 16 Meg: 300
Read Ahead Enabled: On
Read Ahead LRU Sitting Time Threshold: 10 seconds
Minimum File Cache Buffers: 20
Maximum Concurrent Disk Cache Writes: 4000
Dirty Disk Cache Delay Time: 0.1 seconds
```

Additional Information

Topic	See
Listing server parameters settings that have been modified from default values	Section 1.44, "DISPLAY MODIFIED ENVIRONMENT," on page 48
Restoring server parameter settings to their default values	Section 1.140, "RESET ENVIRONMENT," on page 168

Topic	See
Descriptions of settable server parameters	Section 1.154, "SET," on page 188
Printing server parameter settings to a file	"Printing Current Parameter Values to a File" in the NW 6.5 SP8: Server Operating System Administration Guide

1.41 DISPLAY INTERRUPTS

Purpose

Use to display currently assigned hardware interrupts, interrupt handlers (also called Interrupt Service Routines or ISRs), and interrupt statistics.

Syntax

```
DISPLAY INTERRUPTS [option]
```

Option	Use to
(no option)	Display interrupts currently in use.
<i>n</i> ...	Display one or more interrupts by number.
ALL	Display all interrupts.
PROC	Display per-processor interrupt information.
ALLOC	Display allocated interrupts.
REAL	Display interrupts that occurred while the OS was in real mode and that were then reflected back to protected mode to be serviced.

Using DISPLAY INTERRUPTS

When a processor is taken offline or when an interrupt handler (ISR) is removed, the detailed statistics pertaining to that processor or interrupt handler are, by default, removed from memory.

To retain per-processor interrupt handler statistics for offline processors or to retain the total interrupt contribution from a previously loaded handler, change the SET parameter Set Auto Clear Interrupt Statistics to Off.

Examples

To display interrupts currently in use, enter DISPLAY INTERRUPTS with no options. The display is similar to the following sample:

```
Total Interrupt Count For All Processors: 940208
```

Interrupt 0: OS Allocated Bus Interrupt 292828
Interrupt Handler: Timer 0 Interrupt Handler

Interrupt 1: OS Allocated Bus Interrupt 375
Interrupt Handler: Keyboard Interrupt Handler 375

Interrupt 5: OS Allocated Bus Interrupt 86229
Interrupt Handler: E100B Hardware ISR 94829

Interrupt 9: OS Allocated Bus Interrupt 30691
Interrupt Handler: NPA Environment 30691

Interrupt 12: OS Allocated Bus Interrupt 1299
Interrupt Handler: PS/2 Mouse Port Interrupt 1299

Interrupt 39: MPS14.PSM Allocated Local Interrupt 0
Interrupt Handler: APIC Spurious Interrupt Handler

Additional Information

Topic	See
Registered system interrupts and interrupt information	MONITOR Available Options > Kernel > Interrupts

1.42 DISPLAY IPX NETWORKS

Purpose

Use at the server console to list all networks and assigned network numbers that the NetWare® server's internal router recognizes.

Syntax

DISPLAY IPX NETWORKS

Using DISPLAY IPX NETWORKS

DISPLAY IPX NETWORKS lists the IPX external network numbers of networks recognized by this server. The following example illustrates a portion of the command display:

```
0000000D 2/3    00000016 5/11  00000070 5/11
```

```
00000097 6/12  000000ED 5/6   000000F1 3/3
```

```
000000FF 2/2    00000101 6/11  00000111 5/11
```

```
000003E8 5/11  00000456 6/12  00000666 5/17
```

Each address is followed by two numbers separated by a slash:

- ♦ The first number is the number of routing hops between your server and the network at that address
- ♦ The second number is the number of ticks (1/18th of a second) required to send a packet to that address

Additional Information

Topic	See
Listing servers on the network	Section 1.43, "DISPLAY IPX SERVERS," on page 46

1.43 DISPLAY IPX SERVERS

Purpose

Use at the server console to view a list of IPX servers and services being advertised by Service Advertising Protocol (SAP) packets.

Syntax

```
display ipx servers [string]
```

Parameter	Use to
(no parameter)	Display a list of all servers the IPX internal router is aware of.
<i>string</i>	Specify the name of the server you want to display information about. The string can include an asterisk (*) as the last character. In this case, the system displays a list of all servers whose names begin with the string. For example, DISPLAY IPX SERVERS D* displays a list of all servers with names beginning with the letter D.

Using DISPLAY SERVERS

- ♦ Lists server address names for services such as the following:

File services

eDirectory™

Print services

Storage Management Services™ (SMS™)

Services for Structured Query Language (SQL) servers

- ♦ Also displays eDirectory trees and network addresses. A server can be displayed many times, once for each service that it advertises.

For example, a NetWare® server running IPX would be listed at least twice because it would use SAP both for eDirectory and for advertising file services.

The following sample shows the beginning of a typical display:

```
AAA          4    ACAPULCO  5    AIRBUS    7
```

```
ANATOL      4    ASSURE1   4    ASSURE2   4
```

```
BEAST       3    BANCROFT  6    BREMEN    3
```

The number listed after the server name indicates the number of routing hops between this server and the listed servers. Your server is indicated by 0 hops.

Servers more than 16 hops away aren't recognized.

Additional Information

Topic	See
Listing networks	Section 1.42, "DISPLAY IPX NETWORKS," on page 45

1.44 DISPLAY MODIFIED ENVIRONMENT

Purpose

Use at the server console to display all server parameter settings that have been modified from default values.

Syntax

```
DISPLAY MODIFIED ENVIRONMENT
```

Using DISPLAY MODIFIED ENVIRONMENT

DISPLAY MODIFIED ENVIRONMENT displays the current values of the server parameter settings that have been modified from their default values. Default values are also displayed. When parameter values are changed, the new values are persistent.

The following example shows a portion of the command display:

```
Maximum Concurrent Disk Cache Writes:  
    Current Setting: 4000  
    Default Setting: 200
```

```
Dirty Disk Cache Delay Time:  
    Current Setting: 0.1 seconds  
    Default Setting: 3.3 seconds
```

```
Auto Restart After Abend:  
    Current Setting: 0  
    Default Setting: 1
```

```
Default Tree Name:  
    Current Setting: DT_BREMEN  
    Default Setting:
```


Additional Information

Topic	See
Listing server parameters and display their current settings with defaults and limits	Section 1.40, "Display Environment," on page 42
Restoring server parameter settings to their default values	Section 1.140, "RESET ENVIRONMENT," on page 168
Printing server parameter settings to a file	"Printing Current Parameter Values to a File" in the NW 6.5 SP8: Server Operating System Administration Guide

1.45 DISPLAY PROCESSORS

Purpose

Use at the server console to display the status of all processors installed in the server computer and available to the NetWare® operating system.

Syntax

```
display processors [ n ...]
```

Parameter	Use to
(no parameter)	Display online or offline status of all processors.
<i>n ...</i>	Specify the number of the processor for which you want to display status. By using spaces to separate processor numbers, you can display the status of more than one specific processor.

Using DISPLAY PROCESSORS

DISPLAY PROCESSORS lists the online or offline status of all processors. The following example illustrates the command display when all four processors are online:

```
Processor 0 is ONLINE.  
Processor 1 is ONLINE.  
Processor 2 is ONLINE.  
Processor 3 is ONLINE.
```

If you have a color monitor for your console, the output appears in green for online processors and in red for offline processor.

Additional Information

Topic	See
Stopping secondary processors	Section 1.162, "STOP PROCESSORS," on page 258
Starting secondary processors	Section 1.161, "START PROCESSORS," on page 257
Starting processors automatically when Platform Support Module is loaded	SET "Multiprocessor Parameters" on page 220
Adjusting load balancing threshold	SET "Multiprocessor Parameters" on page 220
Displaying per-processor interrupts and interrupt information	Section 1.41, "DISPLAY INTERRUPTS," on page 44
Displaying per-processor information	Section 1.36, "CPUCHECK," on page 39
Displaying per-processor information	Section 1.94, "MONITOR," on page 102 MONITOR Available Options > Kernel > Processors

1.46 Down

Purpose

Use at the server console to execute an orderly shutdown of the NetWare® server before either

- ♦ Turning off power to the server, or
- ♦ Rebooting NetWare with new parameters or accessing DOS files

Syntax

down

Using Down

- ♦ `Down` ensures data integrity by writing cache buffers to disk, closing files, and updating Directory tables and File Allocation Tables.

If you turn off power without using `DOWN` first, changes held in cache buffers will be lost.

- ♦ `Down` executes a `shutdown.ncf` file if one is present.

For example, although most modules, including those in protected address spaces, unload automatically when you down or restart the server, some modules might require that you unload them individually first.

You can unload them manually at the server prompt. Or you can simply place the unload commands in a `shutdown.ncf` file. (Run the modules command to determine address spaces for specific modules.)

Additional Information

Topic	See
Bringing down the NetWare server	“Starting and Stopping the Server” in the <i>NW 6.5 SP8: Server Operating SystemAdministration Guide</i>
Restarting the server without rebooting it	Section 1.144, “Restart Server,” on page 171
Creating server batch files	“Using Server Batch Files” in the <i>NW 6.5 SP8: Server Operating SystemAdministration Guide</i>
Determining the address space a module is loaded in	Section 1.93, “MODULES,” on page 100

1.47 DSDiag (DS diagnostics)

Purpose

Use at the server console to

- ♦ Document your current eDirectory configuration
- ♦ Check the health of your eDirectory tree
- ♦ Diagnose or pinpoint problems

Additional Information

DSDiag has been incorporated into iMonitor, and is no longer available on NetWare. See [Section 1.64, “iMonitor,”](#) on page 71 for more information.

1.48 DSMerge

Purpose

Use at the server console to

- ♦ Merge the roots of two separate eDirectory trees
- ♦ Rename a tree to verify that all servers in the eDirectory tree are responding properly and have the same tree name
- ♦ View time synchronization information and display the time server for all servers in the tree
- ♦ Graft a single server source tree's Tree object under a container specified in the target tree

Syntax

```
[load] [path] dsmerge
```

Parameter	Use to
<i>path</i>	Specify the path to <code>dsmerge.nlm</code> if you moved it from the default directory of <code>sys:system</code> .

Things to Consider before Merging Trees

- ◆ Before merging two trees, make sure that time synchronization is operating correctly and that both trees are synchronized. DSMerge allows the merge to complete if the time on the source tree is behind 5 minutes of the target tree time, but not ahead of the target tree time.
- ◆ When merging very wide trees with long subordinate names or many subordinate names (500 or more), the error -251 OS: ERR_NO_SUCH_PROPERTY is returned. Rename the objects using shorter names or reduce the number of subordinates.
- ◆ When preparing a NetWare 4.1x tree for a merge, use DSRepair v4.56 or later to import the schema. Previous versions of DSRepair import the schema for NetWare incorrectly.
- ◆ Partition synchronization operations generally complete quickly after a merge, but in some cases can take several hours. Use DSRepair to check synchronization status before performing a merge to ensure that replica synchronization processes are occurring properly.
- ◆ If you will merge trees where both your source and target tree contain Security containers, one of the Security containers must be deleted to successfully complete the merge. The Security container is located in [Root] of the eDirectory tree. Deleting the Security container could have serious consequences for the eDirectory tree Certificate Authority and Key Material objects. See the *Novell Certificate Server 3.3 Administration Guide* for more information on this issue.

Additional Information

Topic	See
Configuring time synchronization	<i>NW 6.5 SP8: Network Time Synchronization Administration Guide</i>
Using DSMERGE	F1 in the utility
Merging Novell eDirectory trees	<i>Novell eDirectory 8.8 Administration Guide</i>

1.49 DSRepair

Purpose

Use at the server console to maintain and repair the database of a Novell eDirectory tree. DSRepair performs the following operations:

- ◆ Correct eDirectory problems such as bad records, schema mismatches, bad server addresses, and external references.

- ♦ Make advanced changes to the eDirectory schema.
- ♦ Check the structure of the database automatically without closing the database and without user intervention.
- ♦ Check the database operational indexes.
- ♦ Reclaim free space by discarding empty records.
- ♦ Repair the local database.
- ♦ Repair replicas, replica rings, and Server objects.
- ♦ Analyze each server in each local partition for synchronization errors.
- ♦ Locate and synchronize objects in the local database.

If the server abends, use DSRepair to verify the integrity of the eDirectory database after restarting the server.

Syntax

```
[LOAD] [path] DSREPAIR [-U|-A]
```

Option	Use to
<i>path</i>	Specify the path to <code>dsrepair.nlm</code> if you are not running it from <code>sys:system</code> .
-U	Perform a full unattended repair and exit automatically upon completion.
-A	Make advanced (and possibly destructive) replica and partition options available in the DSRepair menus.

DSRepair Options

- ♦ [“Unattended Full Repair” on page 53](#)
- ♦ [“Time Synchronization” on page 54](#)
- ♦ [“Report Synchronization Status” on page 54](#)
- ♦ [“Repairing Network Addresses” on page 54](#)

Unattended Full Repair

An unattended full repair performs all possible repair operations that do not require your input. This is the suggested means of repair unless you are told by Novell technical support to perform other operations manually.

The log file is displayed by default when the repair completes. The log file is a text file named `dsrepair.log` and it is stored in the `sys:system` directory.

Time Synchronization

Select this option to determine whether this server has synchronized its clock with other servers on the network. Because replica synchronization depends on time stamps, replica synchronization can be delayed until time synchronization is achieved.

When changing a read/write replica to a master, make sure the time synchronization on the server is working correctly so the changes will happen in a timely manner.

NOTE: eDirectory operates on “synthetic time” if true synchronization has not been accomplished. Synthetic time is generated when the time stamp on a replica of a partition is ahead of the actual server time. eDirectory conducts its normal operations fully on synthetic time, but some partition and replication work can be delayed until time is synchronized.

If time is not synchronized to the network, server clocks are automatically adjusted in small increments until synchronization is achieved. In this case, no user intervention is required.

The Time Synchronization option of DSRepair generates a warning message if synchronization has not completed within 12 hours. In this case, you should troubleshoot your time server configuration.

Report Synchronization Status

This option gets replica synchronization status from all servers that hold replicas of the same partitions held on this server. It also reports other eDirectory errors associated with those servers or replicas. Use this option to determine whether you need to repair replicas, resolve communications problems, or initiate some other action.

Error code descriptions are in the *Novell Error Codes Reference Guide*.

Repairing Network Addresses

Repair Network Addresses (RNA) checks the network address for every server in the local eDirectory database files by searching the local SAP tables if IPX is enabled or by using SLP in an IP-only environment.

Each address is then compared to the NetWare Server object's Network Address property and the address record in each Replica property of every partition [ROOT] object. If the addresses are different, they are updated to be the same.

If the server address is not found in the SAP table or through SLP, no other repair is performed.

Additional Information

Topic	See
Using DSREPAIR	F1 in the utility
Repairing the Novell eDirectory database	<i>Novell eDirectory 8.8 Administration Guide</i>

1.50 DTRACE

Purpose

DTRACE is a menu-driven trace utility used with U.S. Robotics* ISDN Allegra adapter with `fxpri.lan` and `fxbri.lan` ISDN drivers.

1.51 EDIRUTIL

Purpose

The Novell® eDirectory™ Management Toolbox (eMBox) lets you access all of the eDirectory backend utilities remotely as well as on the server. eMBox works with Novell iManager to provide Web-based access to eDirectory utilities such as DSRepair, DSMerge, Backup, and Restore, as well as to Service Manager functionalities. All functions are accessible, either on the local server or remotely, through a command line client. You can perform tasks for multiple servers from one server or workstation using the eMBox Client.

The EDIRUTIL utility gives you a shortcut to running the eMBox Client. It points to the Java* executable and the default location where the eMBox Client is installed with eDirectory. And for NetWare® software, it includes the necessary `-ns` option (which is a Java option on NetWare meaning “new screen”).

You must have access behind the firewall to use the eMBox command line client for the servers you want to manage—so if you are remote, you'll need VPN access.

Syntax

```
edirutil -i
```

Using EDIRUTIL

To display the eMBox general command line help before going in to the eMBox Client, do the following:

- ♦ NetWare and UNIX: At the command line, enter `edirutil -?`
- ♦ Windows: Run `drive\novell\nds\embox\edirutil.exe -?`

To display the eMBox interactive command line help while you are in the interactive mode, at the eMBox Client prompt, enter a question mark (?). For example:

```
eMBox Client> ?
```

To use the eMBox Client on a machine other than an eDirectory server:

- 1 Copy the `eMBoxClient.jar` file from an eDirectory server to your machine.
 - ♦ NetWare: `sys:\system\embox\eMBoxClient.jar`

- ♦ Windows: \novell\nds\embox\emBoxClient.jar
 - ♦ UNIX: /usr/lib/nds-modules/embox/emBoxClient.jar
- 2 Make sure the machine has Sun® JVM® 1.3.1 or later installed.
 - 3 Make sure you have access behind the firewall to use the eMBox command line client for the servers you want to manage.

You can't use the EDIRUTIL command on a workstation as a shortcut to getting in to the eMBox Client in interactive mode as you can on a server. You must either set up the environment once in your path and class path or enter it manually each time.

Additional Information

Topic	See
eDirectory Management Toolbox	<i>Novell eDirectory 8.8 Administration Guide</i>

1.52 EDIT

Purpose

Use at the server console to create or modify a text file on a boot, DOS, USB, or NetWare® partition.

Syntax

```
[LOAD] [path]EDIT [pathname]
```

Parameter	Use to
<i>path</i>	Specify the path to edit.nlm if you moved it from the default directory (c:\nwserver).
<i>pathname</i>	Specify the pathname of the file you want to edit.

Using EDIT

- ♦ If you don't enter a pathname when you load EDIT, a dialog box displays where you can enter the pathname.
- You can also press Insert to display a browse window from which you can select a file. To see the contents of a volume or directory, select the volume or directory name in the window and press Enter. Use the arrow keys to scroll up and down the list of files and directories. When the file you want to edit is selected, press Enter to display the file.
- ♦ If the file doesn't exist, EDIT displays a prompt asking if the file should be created.
 - ♦ When you create a new file, the file can be no larger than 8 KB. Each time you open the file after that, you can increase the file size by up to 4 KB.
 - ♦ You can use EDIT to view read-only files.

- ♦ EDIT is particularly useful for creating .ncf batch files that automatically execute server commands.
- ♦ You can use the following function keys:

Function Key	Usage
Ctrl+F	Search for text in a file.
Ctrl+R	Search for and replace text in a file.
F3	Find the next text previously searched.
Esc	Exit the file. If changes have been made, you are prompted whether to save the changes.

Additional Information

Topic	See
Creating and editing text files on the server	“Using EDIT to Create and Edit Text and Batch Files” in the <i>NW 6.5 SP8: Server Operating System Administration Guide</i>

1.53 ENABLE LOGIN

Purpose

Use this command at the server console prompt to

- ♦ Reenable the login function after using DISABLE LOGIN.
- ♦ Enable the supervisor account when the account has been locked by the intruder detection function. (The supervisor account exists only on bindery-based servers or on NetWare® 4 servers when bindery emulation is active.)

Syntax

```
ENABLE LOGIN
```

Using ENABLE LOGIN

You don't need to use ENABLE LOGIN when you start the NetWare server or workstation. The login function is enabled during the startup process.

1.54 Enhanced SBACKUP

Purpose

Use at the server console to back up and restore Storage Management Services™ (SMS™) targets such as eDirectory, binderies, the file system, or hard disks on workstations to media for off-site storage.

Starting Enhanced SBACKUP

Certain prerequisites must be met before loading the backup software. For more information, see *NW 6.5 SP8: Storage Management Services Administration Guide*.

A series of NetWare modules must be loaded in sequence:

1. Type `smdr`. This loads the backup submitter so the backup software on the server can communicate with the TSA.
2. Enter the full context of your user name.
3. Enter the administrator password.
4. Type `tsa600`. This loads the TSA for NetWare 6.
5. Type `smsdi`.
6. Type `qman`. This creates a queue.
7. Type `sbsc`.
8. Type `sbcon`. This loads the backup engine.

You can also back up data from a Windows* 95* or Windows NT* workstation by starting NWBACK32 (`sys:public\nwback32.exe`).

Using Enhanced SBACKUP

When you type `sbcon`, the backup engine loads, and the main menu appears. Make your selections from this screen. Press F1 for Help.

Additional Information

Topic	See
Storage Management Services	<i>NW 6.5 SP8: Storage Management Services Administration Guide</i>

1.55 FILER

Purpose

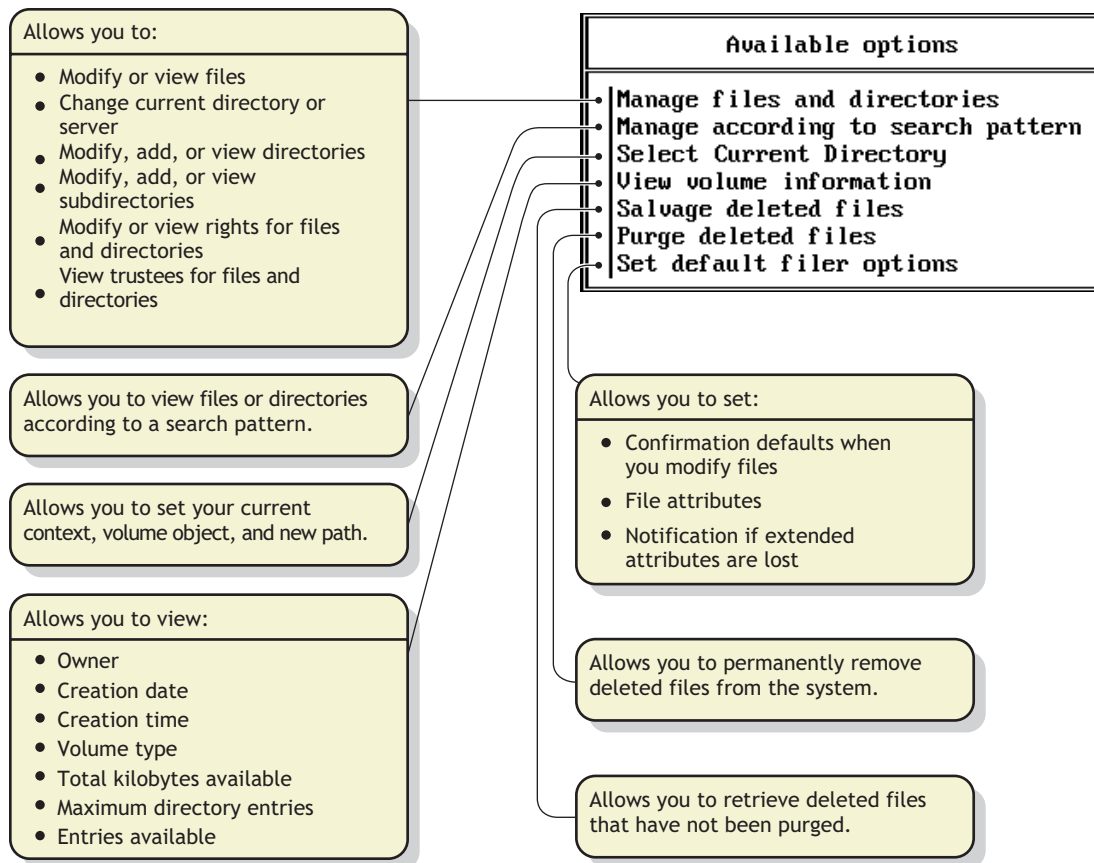
This legacy DOS utility can be used at a workstation to manage files and directories on NSS for NetWare volumes. FILER works with the file system; it doesn't affect eDirectory objects.

Filer is a client-side application, not a server-side application. Install the Novell Client for Windows on your workstation, then use the Novell Map Network Drive option in the client menu to map a local drive letter to the `sys:/public` directory. Open a DOS Command Prompt window, `cd` to the mapped drive, then issue the `filer` command from the command line.

Syntax

Figure 1-1 on page 59 shows the functions of FILER.

Figure 1-1 *FILER Functions*



1.56 FLAG

Purpose

Use at a workstation to

- ♦ View or modify file and directory attributes to determine which operations can be performed with the file or directory
- ♦ Modify the owner of a file or directory
- ♦ View or modify the search mode of executable files to determine how the program uses search drives when looking for a file

Syntax

```
SYS:PUBLIC\FLAG.EXE path [[+ | -] attribute...] [/option...] [/? | /VER]
```

Parameter	Use to
(no parameter)	If you type FLAG with no parameters, the attribute status of all the files in the current directory appears.
<i>path</i>	Specify the path to the file or directory whose attributes or search modes you want to modify.
+ -	Add attributes to a file or directory with the + (plus). Remove attributes from a file or directory with the - (minus). If neither + nor - is used, the attributes will be assigned to the file/directory as specified. If you add and remove attributes in the same command, group all + (plus) attributes together and all - (minus) attributes together.
<i>attribute</i>	Specify one or more file or directory attributes. See “Directory Attributes” on page 61 and “File Attributes” on page 61 .
<i>/option</i>	Replace option with any available option. See “General FLAG Options” on page 60 .
<i>/?</i>	View online help. All other parameters are ignored when <i>/?</i> is used.
<i>/VER</i>	View the version number of the utility and the list of files it uses to execute. All other parameters are ignored when <i>/VER</i> is used.

NOTE: For help with tasks, press F1 in the utility.

Using FLAG

- ♦ Use FLAG options to add or delete directory and file attributes, as defined in the preceding parameters table.

For attributes that can be applied to directories, see [“Directory Attributes” on page 61](#).

For attributes that can be applied to files, see [“File Attributes” on page 61](#).

- ♦ When you add or delete multiple attributes, include a space between attribute abbreviations.
- ♦ You can use wildcard characters.

General FLAG Options

Option	Use to
<i>/NAME GROUP = name</i>	Change the owner of a file or directory.
<i>/D</i>	View details about a file or directory.
<i>/DO</i>	View or modify only directories in the specified path.
<i>/FO</i>	View or modify only files in the specified path.
<i>/OWNER=name</i>	View all files or directories owned by a user.

Option	Use to
/M=mode	Modify search modes of executable files. See “Search Modes for Executable Files” on page 62.
/S	Search the subdirectory in the specified path and any subdirectories below that level.
/C	Scroll continuously through output.

Directory Attributes

Option	Use to
ALL	Specify the Di, H, Ic, P, Ri, and Sy attributes as a group. Primarily used to assign directories these specific attributes.
Di (Delete Inhibit)	Prevent the directory from being deleted. This attribute overrides the trustee Erase right. When it is enabled, no one, including the owner and network administrator, can delete the directory or file. A trustee with the Modify right must disable this right to allow the directory or file to be deleted.
Dm (Don't Migrate)	Prevent the directory from being migrated to a secondary backup system (regardless of what the volume is set to).
H (Hidden)	Prevent the directory from being seen in the directory listing.
Ic (Immediate Compress)	Compress the files in the specified directory as soon as the OS can. This does not apply to the directory's subdirectories and the files in them. Use Ic in combination with the /S option to apply immediate compression to the directory's subdirectories and their files recursively.
N (Normal)	Specify no attributes.
P (Purge)	Purge the directory or files in a directory immediately when deleted.
Ri (Rename Inhibit)	Prevent the directory from being renamed.
Sy (System)	System hides the directory so it does not appear in a file manager or directory listing. System is normally used with operating system files, such as Linux or NetWare system files.

File Attributes

Option	Use to
ALL	Specify the A, Ci, Di, H, Ic, P, Ri, Ro, Sh, Sy and T attributes as a group. Primarily used to assign files these specific attributes.
A (Archive needed)	Indicate that the file has been modified since the last backup.
Ci (Copy Inhibit)	Prevent files from being copied. This attribute overrides the trustee Read right and File Scan right.
Dc (Do not Compress)	Prevent a file from being compressed.

Option	Use to
Di (Delete Inhibit)	Prevent a file from being deleted or copied over. This attribute overrides the trustee Erase right. When it is enabled, no one, including the owner and network administrator, can delete the directory or file. A trustee with the Modify right must disable this right to allow the directory or file to be deleted.
Dm (Don't Migrate)	Prevent a file from being migrated to a secondary backup system (regardless of what the volume or directory is set to).
Ds (Don't Suballocate)	Prevent an individual file from being suballocated, even if suballocation is enabled for the system. Use on files which are enlarged or appended to frequently, such as certain database files. This flag applies only to files in a NetWare Traditional File System volume.
H (Hidden)	Prevent a filename from being displayed with the DOS DIR command. The file can't be copied or deleted.
Ic (Immediate compress)	Compress a file as soon as the OS can.
N (Normal)	Specify the Rw attribute.
P (Purge)	Purge a file immediately if the file is deleted.
Ri (Rename Inhibit)	Prevent a file from being renamed.
Ro (Read Only)	Allow a file to only be read; it can't be written to or deleted (in other words, Ro includes Ri and Di).
Rw (Read Write)	Allow a file to be read and written to.
Sh (Shareable)	Allow a file to be used by several users simultaneously. This attribute is usually used with Read Only.
Sy (System)	System hides the directory or file so it does not appear in a file manager or directory listing. System is normally used with operating system files, such as Linux or NetWare system files.
T (Transactional)	Protect a file by using the Transaction Tracking System™.
X (Execute)	Identifies executable files such as .exe and .com files.

Search Modes for Executable Files

IMPORTANT: The syntax is /M=*mode*. Replace *mode* with a mode number from the following table.

Mode	Use to
0	Search for instructions in the <code>net.cfg</code> file (the default mode).
1	Search the path specified in the file. If there is no path, the file searches the default directory, and then all search drives.
2	Search the path specified in the file. If there is no path, the file searches only the default directory.

Mode	Use to
3	Search the path specified in the file. If there is no path, the file searches the default directory; then if the open request is read only, the file searches the search drives.
4	Reserved; don't use.
5	First search the path specified and then all search drives. If there is no path, the file searches the default directory and then all search drives.
6	Reserved; don't use.
7	First search the path specified. If the open request is read only, the file searches the search drives. If there is no path, the file searches the default directory and then all search drives.

Status Flags

NOTE: Status flags show attribute information for a file or directory. You can't change these flags.

Status	Indicates
Cc (Cannot compress)	The file cannot be compressed because of limited space savings or failures that might have occurred during an unsuccessful compression attempt. If this flag is set for a file, the system will not attempt compression again until the next time the file is saved. To allow the file to be reevaluated for compression, use the COMPFIX utility to reset (turn off) this flag. For information, see Section 1.32, "COMPFIX," on page 32 .
Co (Compressed)	The file has been compressed.
M (Migrated)	The file has been migrated.

Examples

- ♦ To add Rw and Ic and remove Di and A from all files in the current directory, enter

```
FLAG *.* +R W Ic -Di A
```

- ♦ To view attributes for file STUDENTS in directory sys:\course\winter, enter

```
FLAG SYS:\COURSE\WINTER\STUDENTS
```

- ♦ To give files in drive G: the Hidden attribute, enter

```
FLAG G:*.* H /FO
```

- ♦ To set the search mode to 7 for all executable files in the current directory, enter

```
FLAG *.* /M=7
```

- ♦ To set the search mode to 1 and assign all files in the current directory the Read Write attribute, enter

```
FLAG *.* RW /M=1
```

1.57 Format

Purpose

Use at the System Console prompt to format a local FAT volume, such as diskettes or USB drives, that have not already been formatted.

Syntax

```
FORMAT Local_FAT_Vol [/V:label] [/U] [/Q] [/FS:fat_type]  
[/A:cluster_size]
```

Parameter	Use to
<i>Local_FAT_Vol</i>	Specify a drive letter followed by a colon.
/V: <i>label</i>	Specify a label for the newly formatted FAT volume. Quotes are allowed in the label name.
/U: <i>label</i>	Unconditionally format the whole drive.
/Q	Perform a quick format of the device. Resets only the boot sector, FAT, and directory, and is the default format.
/FS: <i>fat_type</i>	Specify the filesystem type, FAT or FAT32.
/A: <i>cluster_size</i>	Specify the required size for a cluster. Options include 512, 1K, 2K, 4K, 8K, 16K, 32K, 64K, 128K, 256K, 512K.
IMPORTANT: The format fails if the requested size is not possible.	

Examples

To format a diskette that is located in drive A: of the server and label the volume with the name of DEMO, enter the following at the system console prompt:

```
FORMAT A: /V: DEMO
```

To quickly format a diskette that is located in the A: drive of the server, enter the following at the System Console prompt:

1.58 Health

Purpose

Use at the server console to display the status of a server's overall health on the system console as determined through Novell Remote Manager.

Syntax

```
health [all]
```

Parameter	Use to
no parameter, default	Display only the overall server health status.
all	<p>Display the status for all individual components that comprise the server's overall health.</p> <p>The asterisk (*) indicates the lowest value for the component rather than the peak.</p> <p>The output on the System Console screen from the <code>health all</code> command might not display correctly on non-English language servers. Use Novell Remote Manager from a client browser to view the Server Health summary listing.</p>

Using Health

To use this command, make sure `portal.nlm` is loaded on the server.

If the overall health status for the server is any value other than Good, you might want to view the status of the individual components by using the All option. By default, all components are included in this status. If you want to exclude any component, configure the Include options by using Novell Remote Manager.

Health Status Definitions

Status	Meaning
Good	The status of all components included in the server's health configuration list is Good.
Suspect	One or more of the components included in the server's health configuration list has a Suspect status or has a minor problem.
Bad	One or more of the components included in the server's health configuration list has a Bad status or has a critical problem.

Additional Information

Topic	See
Excluding a component from overall server health in Novell Remote Manager	“Monitoring Overall Server Health or the Health of a Specific Item” in the <i>NW 6.5 SP8: Novell Remote Manager Administration Guide</i> .

1.59 HELP

Purpose

Use at the server console to view the syntax, a brief description, and an example of a console command.

Syntax

```
HELP [console command] [ALL]
```

Parameter	Use to
(no parameter)	View a list of all console commands.
<i>console command</i>	Specify the name of the console command you want to view help for.
ALL	View a short description of each console command. Press Enter after each description to view the next description. Press Esc to exit.

Examples

- ♦ To view help for LIST DEVICES, type

```
HELP LIST DEVICES
```

- ♦ To view a description of each command, type

```
HELP ALL
```

1.60 Hidescreen

Purpose

Use this command at the System Console prompt to hide a screen for a utility that is running at the server console. Using this command can be helpful if there is a console utility that you want to run but you don't always want to view its screen while it is running.

To learn a screen name, press Ctrl+Esc to display the Current Screens list. Hidden screens are indicated by an asterisk before the screen name in this list.

To restore a screen after it has been hidden, use the [Showscreen \(page 252\)](#) command.

Syntax

```
HIDESCREEN screen_name
```

Examples

To hide the running Monitor screen, enter

```
HIDESCREEN netware 6 console monitor
```

1.61 ICAPTURE

Purpose

ICAPTURE is a DOS command line utility that lets you capture LPT ports and redirect the output to iPrint printers. The utility is installed when you install the iPrint Client, and it can be used at the DOS-box command line, called from a batch files, or called from a login script.

IMPORTANT: `Icapture.exe` requires that the iPrint printer be installed before the command is run. You can install a printer from the DOS command line using [IPRNTCMD \(page 75\)](#).

Use the following parameters when executing the `icapture.exe` command.

Parameter	Description
LPTx or L=x where x is the port number	Port you want to capture.
P= <i>printer_name</i>	Name of the printer that appears in the Printers Folder after the iPrint printer is installed.
EndCap	Ends the capture to the specified port.
NOTE: Captured ports remain captured, even through a workstation restart, until you end the capture.	

Parameter	Description
Show	Displays status of currently captured ports and their associated printers.

Syntax

```
icapture l=LPT port number p=iPrint printer name[parameters]
```

Additional Information

Topic	See
Using ICAPTURE	“Using Icapture.exe to Capture Printer Ports” in the <i>NW 6.5 SP8: iPrint Administration Guide</i>

1.62 ICE

Purpose

The Novell Import Conversion Export (ICE) utility lets you

- ♦ Import data from LDIF files to an LDAP directory.
- ♦ Export data from the LDAP directory to an LDIF file.
- ♦ Migrate data between LDAP servers.
- ♦ Perform a schema compare and update.
- ♦ Load information into eDirectory using a template.

Syntax

```
ice general_options
-S[LDIF | LDAP | DELIM | LOAD | SCH] source_options
-D[LDIF | LDAP | DELIM] destination_options
```

For a description of the options, see “Novell eDirectory Linux and UNIX Commands and Usage” in the *Novell eDirectory 8.8 Administration Guide*.

Additional Information

Topic	See
Novell Import Conversion Export Utility	<i>Novell eDirectory 8.8 Administration Guide</i>

1.63 IFCONFIG

Purpose

Use at the server console to configure network interface parameters.

Syntax

```
ifconfig board_name create addr address [parameters]...
```

Binds *address* as a primary IP address to the board *board_name* with the specified parameters. Note that a board cannot have more than one primary IP address in a given network.

```
ifconfig board_name AddrChange address new_address [parameters]...
```

Changes a primary IP address of the board *board_name* from *address* to *new_address*.

```
ifconfig board_name [addr address] [parameters]...
```

Configures specified parameters. Use the optional [addr *address*] if the board *board_name* has multiple primary IP addresses bound to it. Ifconfig *board_name* displays the board parameters.

```
ifconfig board_name [addr address] destroy [verbose]
```

Unbinds the primary IP address bound to the board *board_name*. Use the optional [addr *address*] if the board *board_name* has multiple primary IP addresses bound to it.

```
ifconfig [-a] [-d | -u] [-af address_family]
```

Displays the parameters of all the boards:

-a displays information about all the boards in the system.

-d displays the parameters of boards that are down.

-u displays the parameters of boards that are up.

-af specifies the address family. The supported address family is inet.

```
ifconfig -l [-d | -u] [-af Address_Family]
```

Displays the list of all the board names.

```
ifconfig -help | -h
```

-help displays the detailed help for the utility.

-h displays the syntax of the utility.

Parameters	Use To
add alias <i>sec_ip_address</i>	Add the specified <i>sec_ip_address</i> as a secondary IP address to the specified board.
noarp	Specify a secondary IP address as non-arpable.
delete -alias <i>sec_ip_address</i>	Delete the secondary IP address.
metric Cost <i>cost</i>	Specify the cost that RIP associates with this interface.
Mcast <i>ip_address</i>	Override TCP/IP's standard IP multicast handling.
-Mcast	Send IP multicast packets using TCP/IP standard practices. This is the default Mcast option.
down	Mark an interface so that the system will not attempt to transmit messages through that interface.
up	Enable an interface after an "ifconfig down". It happens automatically when setting the first address on an interface. If the interface was reset when previously marked down, the hardware will be reinitialized.
Netmask Mask <i>mask</i>	Specify the mask of an interface.
ProxyARP	Enable the Proxy ARP option.
- ProxyARP	Disable the Proxy ARP option (default).
DefRoute	Enable the default route option.
-DefRoute	Disable the default route option (default).
PoisonReverse	Specify that RIP uses Poison Reverse.
-PoisonReverse	Disable the poison reverse option (default).
Gateway Gate <i>ip_address</i>	Specify the gateway for this interface.
arp	Enable the use of ARP (default).
-arp	Disable the use of ARP.
broadcast Bcast	Specify the broadcast IP address. Default: FF.FF.FF.FF

1.64 iMonitor

Purpose

Novell iMonitor provides cross-platform monitoring and diagnostic capability to all servers in your eDirectory tree. This utility lets you monitor your servers from any location on your network where a Web browser is available. iMonitor lets you look at the eDirectory environment in depth on a partition, replica, or server basis. You can also examine what tasks are taking place, when they are happening, what their results are, and how long they are taking.

Syntax

(In a Web browser)

```
http://server's_TCP/IP_address:httpstack_port/nds
```

Additional Information

Topic	See
Using Novell iMonitor	<i>Novell eDirectory 8.8 Administration Guide</i>

1.65 INETCFG

Purpose

Use at the server console to set up and customize your internetworking configuration for IPX, IP, and AppleTalk*.

INETCFG simplifies the process of configuring local area networks (LANs) to work with network and routing protocols supported by NetWare®.

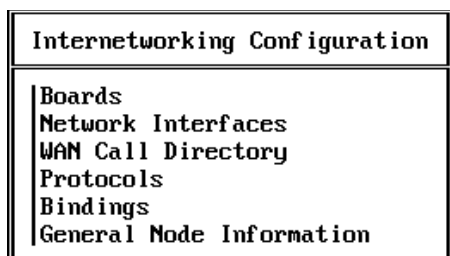
Syntax

```
[LOAD] INETCFG
```

Using INETCFG

When you load INETCFG, the Internetworking Configuration menu appears, as shown in the following figure. You access INETCFG features from this menu.

Figure 1-2 *Description: Description: Internetworking Configuration menu*



Menu options are described in the following table.

Option	Use to
Boards	<p>Select and configure boards. To configure a board, you select a driver, assign a name to the board, and specify values for the board parameters.</p> <p>Each driver that is compatible with NetWare has a driver description file, sometimes called the LDI file. The LDI file defines the parameters necessary for the driver to operate with the board you select. It also specifies the valid range of values for each parameter.</p> <p>If a driver has an LDI file, the parameters are presented in the Board Configuration window; you simply select a value for each parameter.</p> <p>If a driver has no LDI file, you must enter the values yourself in the Board Parameters field.</p>
Network Interfaces	Applies only to wide area network (WAN) configurations for multiple interface WAN boards. (NetWare does not support WANs.)
WAN Call Directory	Applies only to WAN configurations. (NetWare does not support WANs.)
Protocols	Select and configure network protocols. To configure a protocol, you select the protocol, such as IPX or IP, and configure the protocol-specific parameters that pertain to routing, packet forwarding, etc.
Bindings	<ul style="list-style-type: none"> ◆ Bind a network protocol to an interface. ◆ Configure protocol and interface-specific parameters, such as frame type, network number (for IPX), local IP address (for IP), and zone information (for AppleTalk). ◆ Delete a bound interface from the configuration.
Manage Configuration	Specify Simple Network Management Protocol (SNMP) information, such as the SNMP device name, hardware description, physical location, and human contact for the server or router.
View Configuration	<ul style="list-style-type: none"> ◆ View the INETCFG configuration information file and the console messages captured during system initialization ◆ Import or export configuration information to or from a diskette.

INETCFG records information in various configuration (.cfg) files located in `sys:\etc`. Some of these files are present at system startup; others are created by INETCFG, depending on what you configure. Here is a partial list of these files:

- ♦ `aurp2`
- ♦ `tcpip.cfg`
- ♦ `ipxspx.cfg`
- ♦ `nlsp.cfg`
- ♦ `netinfo.cfg`

WARNING: INETCFG creates these files strictly for its own use; do not delete them or change their contents.

Additional Information

Topic	See
Capturing console messages	Section 1.34, "CONLOG," on page 35

1.66 INITIALIZE SYSTEM

Purpose

Use at the server console to enable the multiprotocol router configuration by executing all commands in the system `netinfo.cfg` file.

Syntax

```
INITIALIZE SYSTEM
```

Using INITIALIZE SYSTEM

This command is typically executed from the `initsys.ncf` file during server startup.

WARNING: Executing INITIALIZE SYSTEM on a system that has already been initialized can generate errors when the system discovers that the commands in the `netinfo.cfg` file have already been executed.

Additional Information

Topic	See
Server startup	Section 1.153, "Server," on page 186

1.67 iPrint Broker

Purpose

The Broker provides three network support services not previously available in NetWare: the Service Registry Service (SRS), Event Notification Service (ENS), and Resource Management Service (RMS). While these services are invisible to end users, administrators should be aware of them. Novell Distributed Print Services™ (NDPS®) uses these services in the following ways:

- ♦ **Service Registry Service.** The Service Registry allows public access printers to advertise themselves so that administrators and users can find them. This service maintains information about device type, device name, device address, and device-specific information such as the manufacturer and model number.
- ♦ **Event Notification Service.** This service enables printers to send customized notifications to users and operators about printer events and print job status. The Notification Service supports a variety of delivery methods including NetWare pop-up, log file, e-mail (GroupWise®), and programmatic.
- ♦ **Resource Management Service.** This service allows resources to be installed in a central location and then downloaded to clients, printers, or any other entity on the network that needs them. The Resource Management Service supports adding, listing, and replacing resources including printer drivers, printer definition (PDF) files, banners, and fonts.

Additional Information

Topic	See
Creating a Broker	“Creating a Broker” in the NW 6.5 SP8: iPrint Administration Guide
Managing the Broker	“Managing the Broker” in the NW 6.5 SP8: iPrint Administration Guide

1.68 iPrint Print Manager

Purpose

The Print Manager is an object in the eDirectory™ tree as well as software that runs on your server. Print jobs are submitted to the Print Manager and then forwarded to the printer, when the printer is ready.

A single Print Manager can handle print jobs for multiple printers. Depending on your network configuration (for example, remote locations), you can create additional Print Managers on other servers, but only one Print Manager can exist on the any one server. Using access control, the Print Manager allows authorized users to print.

A single Print Manager can control multiple Printer Agents. (There is no hard limit.)

A specific Print Manager can be loaded only on one server. If it controls a local printer, it must be loaded on the server that the local printer is attached to.

A user creating an Print Manager should have the Supervisor right for the container where the object will be created.

1.69 IPRNTCMD

Purpose

If you need to install an iPrint printer but cannot use a Web browser, you can use the IPRNTCMD command at a DOS prompt. `iprntcmd.exe` can install, remove, or set a printer as the default printer. This command is most often used in login scripts in conjunction with the **ICAPTURE** (page 67) command. Use the following parameters when executing the IPRNTCMD command.

Parameter	Description
add	Installs the specified printer.
default	Sets the specified printer as the default.
remove	Removes the specified printer.
temporary	Installs the specified printer for this session only. When the workstation is rebooted, the printer is removed.

Syntax

```
iprntcmd iprint_printer_url [parameters]
```

Additional Information

Topic	See
Using IPRNTCMD	“Using <code>iprntcmd</code> on Linux and Macintosh” in the <i>NW 6.5 SP8: iPrint Administration Guide</i>

1.70 IPXCON

Purpose

Use at the server console to

- ♦ Monitor and troubleshoot IPX routers and network segments throughout your IPX internetwork
- ♦ View the status of an IPX router or network segment
- ♦ View all paths through which IPX packets can flow
- ♦ Locate all active IPX routers on your internetwork
- ♦ Monitor remote IPX routers that are running NetWare® IPX Router software

Syntax

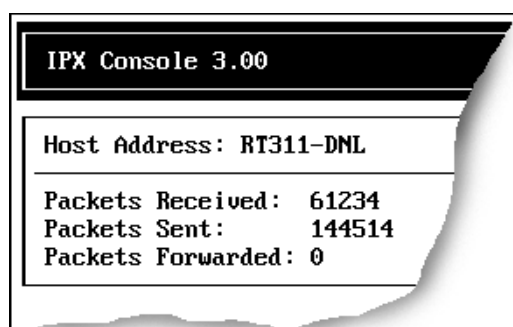
[LOAD] IPXCON [/P]

Parameter	Use to
/P	View the Link State Packets (LSPs) received by the router, if the remote router is running NetWare Link Services Protocol™ (NLSP™).

Using IPXCON

When you load IPXCON, the top of the screen displays a summary of routing statistics for the selected router. (The following figure shows a partial display of routing statistics.) The bottom of the screen displays an Available Options menu.

Figure 1-3 IPXCON Routing Statistics Screen Example



The following table explains the fields in the summary display. Because IPXCON is a real-time monitor, these fields are always active, and some values in the fields change as the router processes IPX packets.

Field	Explanation
Host Address	Name of the router being monitored.
Packets Received	Number of IPX packets received by the selected router.
Packets Sent	Number of IPX packets sent by the selected router.
Packets Forwarded	Number of IPX packets forwarded by the selected router.
Circuits	Number of circuits in use on the router. A circuit is a logical attachment to a network segment through which a router can reach other systems. A circuit can be a local or wide area connection.
Networks	Number of networks known to the selected router.
Services	Number of services that can be reached from the selected router.

The Available Options menu allows access to additional features of IPXCON. These features are described in the following table.

Option	Use to
SNMP Access Configuration	<p>Select the server you want to monitor.</p> <p>You can monitor the local system, which is the default, or a remote system.</p> <p>You can monitor the remote system through IPX or TCP/IP.</p> <p>You can also set the poll interval to specify how often the information will be retrieved through SNMP.</p>
IPX Information	<p>View statistics for the selected router's IPX packet routing.</p> <p>To display additional packet routing statistics, select Detailed IPX Information from the bottom of the IPX Information window.</p>
IPX Router Information	View general information about the selected IPX router.
NLSP Information	<p>View the following NLSP information about the selected router:</p> <p>System information Area addresses Neighbors Routers LANs LSPs</p> <p>To view the Link State Packets (LSPs) received by the system, load IPXCON by typing</p> <pre>[LOAD] IPXCON /P</pre> <p>The LSP option is enabled only if the server is running NLSP.</p>
Circuits	View circuit information.
Forwarding	View the Forwarding table.
Services	View information for the currently reachable services.

- ♦ IPXCON uses Simple Network Management Protocol (SNMP) to exchange management information and operational statistics with remote IPX routers.
- ♦ IPXCON operates over both IPX and TCP/IP networks.
- ♦ To execute IPXCON automatically each time you boot the server, add the Load IPXCON command after the `initsys.ncf` line in your `autoexec.ncf` file.

1.71 IPXPING

Purpose

Use at the server console to check connectivity to an IPX server on your internetwork.

Syntax

```
[LOAD] IPXPING
```

Using IPXPING

- ♦ IPXPING sends an IPX ping request packet to an IPX target node (server or workstation). When the target node receives the request packet, it sends back a reply packet.
- ♦ To select an IPX server or workstation, enter its IPX internal network number and node number.
You can also specify the number of seconds between each request packet transmission.
- ♦ To start sending request packets, press Esc. The sending node continues to send request packets and collect response time statistics until you press Esc again to exit IPXPING.
- ♦ Request and reply packets use the same format; each packet contains the standard IPX header.
- ♦ To add other nodes, press Insert and select another server.

1.72 IPXS

Purpose

Provides IPX protocol to NLM™ programs that require STREAMS-based IPX.

Syntax

```
[LOAD] [path]IPXS [LDFILE = [path]filename[.ext]]
```

Parameter	Use to
<i>path</i>	Specify the path to <code>ipxs.nlm</code> if you moved it from the default directory.
<code>LDFILE = [path]filename[.ext]</code>	(Optional) Specify a filename that contains the SAP filtering, SAP and RIP timers, and IPX configuration parameters. Note: If you don't specify a filename, IPXS sets the parameters defined in the <code>ipxspx.cfg</code> file. If you don't specify a file extension, the default is <code>.cfg</code> . For example, to load an alternate configuration file, type <code>[load] ipxs ldfile = ipxspx2.cfg</code>

Using IPXS

NOTE: The `ipxspx.cfg` file is modified from the INETCFG utility when you set SPX/IPX parameters.

- ♦ When you load `ipxs`, streams is autoloaded.
- ♦ `ipxspx.cfg` contains the Service Advertising Protocol (SAP) filtering, SAP and Router Information Protocol (RIP) timers, and the IPX configuration defaults.
- ♦ You can create multiple configuration files in addition to `ipxspx.cfg`. Use this feature if you frequently alternate between two or more IPX/SPX configurations.

To create multiple configuration files, copy the `ipxspx.cfg` file to a new filename (`ipxspx.cfg`, for example). Then you can change the `ipxspx.cfg` file (by using INETCFG) and still preserve the original configuration in the `ipxspx2.cfg` file.

- ♦ To load a configuration file other than the default `ipxspx.cfg` file, use the LDFILE option.
For example, if you have a second configuration file called `ipxspx2.cfg`, you can load that configuration by typing

```
[LOAD] IPXS LDFILE = IPXSPX2
```

Additional Information

Topic	See
Filtering RIP and SAP packets using SET	Section 1.154, "SET," on page 188
Setting IPX parameters using SET	Section 1.154, "SET," on page 188
Setting IPX parameters using INETCFG	Section 1.65, "INETCFG," on page 71

1.73 JAVA

Purpose

Load at the server console to start the Novell® JVM for NetWare® product. The Novell JVM product is comprised of several NLM™ programs that let the NetWare server run Java*-based applications and applets, including multi-threaded applications and applications that use a graphical interface.

Syntax

```
[LOAD] JAVA
```

Using JAVA

- ♦ You must load the JVM before you can run Java-based applications and applets on the server and before you can set necessary environment variables.
- ♦ Starting the NetWare servertop automatically loads the JVM.

Additional Information

Topic	See
General information about NetWare Java-based components	"Java-Based Components of NetWare" in the NW 6.5 SP8: Server Operating SystemAdministration Guide

Topic	See
Using Java on the NetWare Server	“Using the Novell JVM (NJVM) for NetWare on the Server” “Using the Novell JVM (NJVM) for NetWare on the Server” in the <i>NW 6.5 SP8: Server Operating System Administration Guide</i>

1.74 KEYB

Purpose

Use at the server console to change the console keyboard type to the language of your keyboard.

The language you specify with KEYB must match the language of your keyboard, not the server language.

IMPORTANT: Changing the keyboard type causes some keys to represent different characters. Therefore, do not use this command unless you have the appropriate keyboard for the language you are specifying and you are familiar with the keyboard's use.

Syntax

```
[LOAD] [path]KEYB [keyboard_type]
```

Parameter	Use to
(no parameter)	View a list of available keyboard types.
<i>path</i>	Specify the path to <code>keyb.nlm</code> if you moved it from the default directory.

Parameter	Use to
<i>keyboard_type</i>	Specify one of the following keyboard types: Belgium Brazil Canadian French Denmark France Germany Italy Japan Latin America Netherlands Norway Portugal Russia Spain Sweden Swiss French Swiss German United Kingdom United States U.S. International

Using KEYB

To change the keyboard type, unload KEYB and then reload it, specifying the new keyboard type parameter.

1.75 KF8

Purpose

Use at the server console to enable or disables pausing between commands executed from NCF files.

Syntax

KF8 parameter

Parameter	Use to
On	Enable pausing between commands.
Off	Disable pausing between commands.

1.76 LANGUAGE

Purpose

Use at the server console to set the language for subsequently loaded modules.

NOTE: LANGUAGE does not change the language of the operating system or of currently loaded modules.

The LANGUAGE command gives the modules access to directories containing message files in the specified language. This directory structure is under `sys:system` as follows:

`sys:system\nls\language_number`

Syntax

```
LANGUAGE [language_name | number] [LIST | REN number new_name]
```

Parameter	Use to
(no parameter)	View the current language setting for modules.
<i>language_name</i> <i>number</i>	Specify a language by its name or number.
LIST	Display a list of language names and numbers. (Not all languages in the list are supported.)
REN <i>number new_name</i>	Rename a language specified by a language number. The syntax is: LANGUAGE REN <i>number new_name</i>

Examples

- ♦ To set a module to use the German message files, type

```
LANGUAGE GERMAN
```

or

```
LANGUAGE 7
```

- ♦ To change the name of Spanish to Espanol, type

```
LANGUAGE REN 14 ESPANOL
```

- ♦ To display a list of language names and numbers, type

```
LANGUAGE LIST
```

1.77 LFVMOUNT

Purpose

Use at the System Console prompt to mount all local FAT volumes not recognized by DOS and assign them a local drive letter.

Syntax

```
LFVMOUNT
```

1.78 LFVOLUMES

Purpose

Use at the System Console prompt to display a list of local FAT volumes currently mounted.

Syntax

```
LFVOLUMES
```

1.79 LIST DEVICES

Purpose

Use at the server console to display a list of the storage devices on the server and to register new devices with the server's Media Manager database.

A device can be a disk drive, magneto-optical disc drive, CD-ROM, or any other physical device.

Syntax

```
LIST DEVICES
```

Using LIST DEVICES

LIST DEVICES forces a scan for devices , displays the return list of storage devices, and registers any new devices with the Media Manager database. This command does not simply read the database.

When you are installing new storage devices, you can load drivers with a no scan parameter, and then run LIST DEVICES so that drivers will find their devices simultaneously.

The command output is returned by the device drivers. The information for each storage device includes the device number and name, as well as additional information that varies by device and by manufacturer.

Following is an example of a device listing:

```
0x0001:[V023-A0-D0:0] SEAGATE ST31051N rev:0530
0x0002:[V023-A0-D0:1] NEC CD-ROM DRIVE:500 rev:2.5
```

The hexadecimal integer at the beginning of the line is the device's Media Manager object ID.

The bracketed numbers comprise the device name that identifies the storage device, as follows:

- ♦ **Vendor number.** A unique number specific to the device vendor
- ♦ **Adapter number.** The instance number of an adapter registered with Media Manager. In the example, A0 identifies the first instance of an adapter installed in the server.
- ♦ **Device number.** The number of the disk or other device. For a SCSI disk, this is the SCSI ID, usually set by a jumper on the hard disk.

For an IDE disk, this number represents the bus from the IDE controller. IDE numbers range from D0 through D3, representing the primary, secondary, tertiary, or quaternary bus.

- ♦ **Logical unit number (LUN).** The LUN identifies individual devices when more than one device is attached to one bus.

For example, one IDE bus can be attached to two disks, a master and a slave. LUN 0 represents the master and LUN 1 represents the slave.

However, because disk manufacturers rarely use the logical unit number to identify hard disks, the LUN almost always appears as 0.

The driver's version or revision number appears at the end of the line.

Additional Information

Topic	See
Reading the Media Manager database and displaying a list of registered storage devices and controllers	Section 1.80, "LIST STORAGE ADAPTERS," on page 85
Scanning for new SCSI devices and registering them with the Media Manager	Section 1.149, "SCAN FOR NEW DEVICES," on page 181
Scanning for all SCSI devices or a specified SCSI device and registering new devices with the Media Manager	Section 1.148, "SCAN ALL," on page 179
Determining the operating status of a storage device	"Activating and Deactivating a Hard Disk" in the <i>NW6.5 SP8: Server Disks and Storage Devices</i> .
Storage device drivers	"Drivers for Host Adapters and Storage Devices" in the <i>NW6.5 SP8: Server Disks and Storage Devices</i>

1.80 LIST STORAGE ADAPTERS

Purpose

Use at the server console prompt to display a list of registered storage adapters and the devices they drive. The information is read from the Media Manager database.

Syntax

```
LIST STORAGE ADAPTERS
```

Examples

Following is an example of a listing of a server's storage adapter and the associated storage device:

```
[V025-A0] NOVELL IDE HOST ADAPTER MODULE
[V025-A0-D1: 0] QUANTUM FIREBALL_TM3840a
```

The first line in the example identifies an IDE disk adapter. The second line identifies a hard disk operated by that adapter. The second line is indented to indicate that the device is associated with the adapter in the preceding line.

The bracketed numbers at the beginning of each line comprise the device name. The device name identifies the adapter or device, as follows:

- ♦ **Vendor number.** A unique number specific to the device vendor.
- ♦ **Adapter number.** The instance number of an adapter registered with NWPA. In the example, A0 identifies the first instance of an adapter installed in the server.
- ♦ **Device number.** The number of the disk or other device. For a SCSI disk, this is the SCSI ID, usually set by a jumper on the hard disk.

For an IDE disk, this number represents the bus from the IDE controller. IDE numbers range from D0 through D3, representing the primary, secondary, tertiary, or quaternary bus.

- ♦ **Logical unit number (LUN).** The LUN identifies individual devices when more than one device is attached to one bus.

For example, one IDE bus can be attached to two disks, a master and a slave. LUN 0 represents the master and LUN 1 represents the slave.

However, because disk manufacturers rarely use the logical unit number to identify hard disks, the LUN almost always appears as 0.

Additional Information

Topic	See
Scanning devices and registering new devices with Media Manager	Section 1.79, "LIST DEVICES," on page 83

Topic	See
Scanning for new SCSI devices and registering them with the Media Manager	Section 1.149, "SCAN FOR NEW DEVICES," on page 181
Scanning for all SCSI devices or a specified SCSI device and registering new devices with the Media Manager	Section 1.148, "SCAN ALL," on page 179
Determining the operating status of a storage device	"Activating and Deactivating a Hard Disk" in the <i>NW6.5 SP8: Server Disks and Storage Devices</i>
Storage device drivers	"Drivers for Host Adapters and Storage Devices" in the <i>NW6.5 SP8: Server Disks and Storage Devices</i>

1.81 LIST STORAGE DEVICE BINDINGS

Purpose

Use at the server console to list all Custom Device Modules (CDMs) bound to a particular device.

Syntax

```
LIST STORAGE DEVICE BINDINGS number
```

Parameter	Use to
<i>number</i>	<p>Specify the object number for the device whose CDMs you want to list.</p> <p>To find the object number, enter LIST DEVICES at the console prompt. The object number is the first number on the left.</p> <p>This number is displayed with leading zeros, for example, 0x0001. Do not include the zeros on the command line; for example:</p> <pre>list storage device bindings 1</pre>

Using LIST STORAGE DEVICE BINDINGS

When you execute the command, the screen displays information similar to the following:

```
Device: [V312-A0-D0:0] SEAGATE ST32430N rev:0510
Filter: NetWare Elevator Filter
Filter: NetWare Sector Conversion Filter
Base: Novell SCSI Fixed Disk CDM
HAM: [V312-A0] ADAPTEC PCI Host Adapter Module
```

The first line specifies the device.

The next lines specify the CDMs associated with the device.

- ♦ Filters are CDMs that communicate with the storage device. The elevator filter controls messages to and from the storage device, including scatter-gather messages. The sector conversion filter converts sector sizes to standard 512 byte units.
- ♦ The Base is the essential CDM required to manage communication with the Host Adapter Module.
- ♦ Information about CDMs for changers (called *Enhancers*) might also be displayed.

The last line identifies the Host Adapter Module for the adapter to which the device is connected.

1.82 LOAD

Purpose

Use LOAD to link loadable modules to the operating system. Loadable modules include disk drivers, LAN drivers, NLM™ programs, platform support modules, and name space modules.

Use the LOAD command to load application modules to a protected address space, a region of logical memory in user mode (ring 3). Protected modules operate in their own execution environment. You can also mark a protected address space for restart after cleanup.

IMPORTANT: LAN and disk drivers or the MONITOR utility are not candidates for protected address space because they must run in the kernel. For example, MONITOR makes system calls that the call gate doesn't allow between protected space and the kernel.

Use the LOAD command at the server console to load server NLM programs. You can also use LOAD at a workstation running the Novell® Client™ to load client modules. Client NLM programs used by Novell Client load without parameters.

TIP: In most cases you can load an NLM program by simply entering the name of the NLM program at the server console prompt. LOAD is implied. For example, to load `monitor.nlm`, just enter MONITOR.

The exception is if there is an `.ncf` file of the same name as the utility. In this case, you must use the LOAD command. Using LOAD tells the server to load the utility instead of executing an `.ncf` file with the same name.

The following information explains the loading process and load parameters, whether or not you actually use LOAD as part of the command string.

Syntax

```
[LOAD] [PROTECTED | RESTART | address_space_name] [path]loadable_module_name
[parameter...]
```

Option	Use to
<i>path</i>	Specify the path to the loadable module if you moved it from the default directory.
<i>loadable_module_name</i>	Specify the name of the loadable module. To determine the name, see the documentation for the loadable module.
<i>parameters</i>	<p>Include parameters for the module you are loading. Parameters that can be used with most modules are explained in the following tables.</p> <p>Individual modules may have specific parameters of their own; see the documentation for the loadable module.</p>

Memory Protection Parameters

Parameter	Use to
<i>protected module_name</i>	<p>Load one module into a new protected address space. By default the space is named ADDRESS_SPACE<i>n</i>, where <i>n</i> is a number.</p> <p>If you want to load more than one module into the same address space, use the address space parameter instead of the protected parameter.</p>
<i>restart module_name</i>	<p>Load one module into a new protected space with restart functionality. By default the space is named ADDRESS_SPACE<i>n</i>, where <i>n</i> is a number.</p> <p>Restart functionality means that if the protected space abends, the system closes the space, cleans up its resources, restarts the space, and reloads modules into it.</p>
<i>address space = address_space_name module_name</i>	<p>Load one module into a new protected address space with a user-defined name. Use this command when you want to define your own name for the space and when you want to load more than one module into the same address space.</p> <p>You can specify only one module at a time to load into the address space, but you can repeat the command for each module you want to load into the space.</p>

Using LOAD

- ♦ When a module is loaded, it links itself to the operating system and allocates a portion of the computer's memory for its use, thus using system resources. When modules are unloaded, allocated resources are returned to the system.

Some modules, such as LAN drivers and disk drivers, need to be loaded every time the server is booted. To load modules automatically when the server boots, include LOAD commands in the `autoexec.ncf` or `startup.ncf` file. (See “[Using Server Batch Files](#)” in the *NW 6.5 SP8: Server Operating System Administration Guide*.)

Other modules, such as MONITOR, can be loaded, used, and then unloaded. Refer to the documentation for the specific module.

- ♦ You can load modules in protected address space. Because NetWare supports NLM programs running in user mode (ring 3), server-based network applications, such as GroupWise® or Lotus* Notes* can have their own execution environment.
- ♦ You can also load shared libraries such as CLIB in more than one space (point one copy to two places). Multiple instances share code but have different data. Because each instance of the module must be loaded at the same logical address in each address space, that place is reserved across application spaces when you load the shared library in the first address space.
- ♦ When you install system and public files on the server, any .nlm and .lan modules are copied to sys:system. The .ham and .nam modules are copied to the boot directory of the server.
- ♦ The installation of LAN drivers can be best accomplished with HDETECT. This means that HDETECT can load, bind, and configure the drivers and add the LOAD command to the autoexec.ncf file. (See “Unbinding and Unloading LAN Drivers” in the *NW 6.5 SP8: Novell Server Communications Administration Guide* and Section 1.116, “NWCONFIG,” on page 146.)

Examples

- ♦ To load the NE3200™ driver (without parameters), enter

```
[LOAD] NE3200
```

- ♦ To load the NWCONFIG module, enter

```
[LOAD] NWCONFIG
```

- ♦ To load a module called database.nlm in a protected address space, enter

```
[LOAD] PROTECTED DATABASE.NLM
```

- ♦ To load a module in a protected address space and flag the address space as restartable, enter

```
[LOAD] RESTART GRPWISE
```

The PROTECTED option is not necessary if either RESTART or ADDRESS SPACE are specified on the command line.

Additional Information

Topic	See
Loading disk drivers	“Loading Disk Drivers” in the <i>NW6.5 SP8: Server Disks and Storage Devices</i>
Loading LAN drivers	“Loading and Binding LAN Drivers” in the <i>NW 6.5 SP8: Novell Server Communications Administration Guide</i>

Topic	See
Loading name space modules	“Storing Non-DOS Files on a Traditional Volume” in the <i>NW6.5 SP8: Traditional File System Administration Guide</i>
Loading modules	“Loading and Unloading NetWare Loadable Modules” in the <i>NW 6.5 SP8: Server Operating System Administration Guide</i>
Using protected address spaces	“Loading Protected Address Spaces” , “Using Protected Address Spaces” and “Unloading Protected Address Spaces” in the <i>NW 6.5 SP8: Server Memory Administration Guide</i>

1.83 Loggerpath

Purpose

Use at the System Console prompt to change the directory where the `logger.txt` file is saved. The default directory is the server startup directory. If the path does not exist, it is created.

You can change the path to any volume on volume `sys:` or the boot drive.

The `logger.txt` file contains the text from the logger screen buffer.

Syntax

```
loggerpath = volume_name:directory_name
```

For example:

```
loggerpath = sys:\logger
```

Additional Information

For related information, see [Section 1.84, “Loggersave,”](#) on page 90.

1.84 Loggersave

Purpose

Use at the System Console prompt to save the logger screen buffer to the `logger.txt` file. The default directory is the server startup directory.

You can change the path it is saved to using the `loggerpath` command.

Syntax

loggersave

Additional Information

For related information, see [Section 1.83, “Loggerpath,” on page 90](#).

1.85 LOGIN

Purpose

Use at a workstation to access the network by logging in to a server and running a login script.

Syntax

```
LOGIN [server_name/ | tree/][user] [/option...][/? | /VER]
```

Parameter	Use to
(no parameter)	Request a login prompt.
<i>server_name/</i>	Specify the server you want to log in to.
<i>tree/</i>	Specify the tree you want to log in to.
<i>user</i>	Specify the username you want to log in with.
<i>/option</i>	Replace option with any available option. See “LOGIN Options” on page 92 .
<i>/?</i>	View online help. All other parameters are ignored when <i>/?</i> is used.
<i>/VER</i>	View the version number of the utility and the list of files it uses to execute. All other parameters are ignored when <i>/VER</i> is used.

Using LOGIN

- ♦ Using LOGIN implies use of the LOGOUT command. That is, using LOGIN to access an additional server logs you out of all other servers.

To remain logged in to other servers, use the no script (/NS) option.

NOTE: Using the /NS option is similar to using the ATTACH command in NetWare® 3.

- ♦ To use another object's login script, you need the Read property right to the Login Script property of that object. This login script replaces the profile script (if one is specified).
- ♦ To set your context before you log in, either use the CX command or set your context in the `net.cfg` file using the following statement:

name context = *complete_name*

NOTE: For OS/2* do not use the equals sign or quotation marks.

LOGIN Options

Option	Use to
/NS	Prevent a login script from running and prevent you from being logged out of other servers you are logged in to.
/NB	Prevent the Welcome to NetWare banner from being displayed during the login process.
/S <i>path</i> <i>object_name</i>	Specify a login script file. Replace <i>path</i> with the path to the script. Replace <i>object name</i> with the object whose script you want to run.
/B	Specify a bindery login.
/PR= <i>profile_object_name</i>	Specify the Profile object script you want to run.
/NOSWAP	Prevent LOGIN from swapping to extended or expanded memory, or to disk.
SWAP= <i>path</i>	Tells login to swap to this path when external commands are executed. DOS only.
/TREE	Specify that you want to log in to a tree.

Examples

- ♦ To log in to server PAYROLL as user MARIE without logging out of other servers you are logged in to, type

```
LOGIN PAYROLL/MARIE /NS
```

- ♦ To log in to tree TERMINAL as user MARIE, type

```
LOGIN TERMINAL/MARIE /TREE
```

- ♦ To log in to the eDirectory™ tree as user SAM (if current context is set to SAM's container), type

```
LOGIN SAM
```

- ♦ To log in as user SAM and specify a Profile object to use as a login script, type

```
LOGIN SAM /PR=WPGROUP.NOVELL
```

1.86 LOGOUT

Purpose

Use at a workstation to exit the network or to log out of servers.

Syntax

```
LOGOUT [server_name | /T] [/? | /VER]
```

Parameter	Use to
(no parameter)	Exit the network by logging out of all servers and eDirectory™.
<i>server_name</i>	Specify the server you want to log out of if you want to log out of one server but remain logged in to other servers or to the eDirectory tree.
<i>/option</i>	Replace option with any available option.
/T	Log out of eDirectory and all servers in the eDirectory tree, but not out of bindery servers (NetWare® 2 and 3 servers).
/?	View online help. All other parameters are ignored when /? is used.
/VER	View the version number of the utility and the list of files it uses to execute. All other parameters are ignored when /VER is used.

Using LOGOUT

You can use wildcard characters in the *server name* parameter.

Examples

- ♦ To log out of all servers, type

```
LOGOUT
```

- ♦ To log out of server MARATHON while remaining logged in to other servers, type

```
LOGOUT MARATHON  
[XXX]
```

- ♦ To log out of all servers that begin with TEST, type

```
LOGOUT TEST*
```

1.87 MAGAZINE

Purpose

Use at the server console in response to the screen prompts Insert Magazine and Remove Magazine. The screen prompts refer to media magazines (hardware devices that hold several pieces of media).

Syntax

```
MAGAZINE [parameter]
```

Parameter	Use to
Inserted	Confirm that the media magazine was inserted in response to the Insert Magazine prompt.
Not Inserted	Confirm that the media magazine was not inserted in response to the Insert Magazine prompt.
Not Removed	Confirm that the media magazine was not removed in response to the Remove Magazine prompt.
Removed	Confirm that the media magazine was removed in response to the Remove Magazine prompt.

1.88 MAP

Purpose

Use at a workstation to

- ♦ View drive mappings
- ♦ Create or change network or search drive mappings
- ♦ Map a drive to a fake root directory (for applications that must use a root directory)

Syntax

```
MAP [P | NP] [option...] drive:= [drive: | path] [/? | /VER]
```

Parameter	Use to
(no parameter)	View drive mappings.
P	Map to a physical volume. Must be listed first or second.
NP	Overwrite local or search drives without being prompted. Must be listed first or second.
<i>option</i>	Replace <i>option</i> with any available option. See “MAP Options” on page 95.
<i>drive:</i>	Specify the drive you want to change.
<i>path</i>	Specify the path you want to map a drive to. To map to a physical volume on a server that is not your default server, specify the entire path (including server, volume, and directory name). For example, <code>server1/sys:account\pay (server/volume:directory\subdirectory)</code>
/?	View online help. All other parameters are ignored when /? is used.
/VER	View the version number of the utility and the files it uses to execute. All other parameters are ignored when /VER is used.

Using MAP

- ♦ If you don't include drive mappings in your login script, they will have to be manually recreated each time the user logs in.
- ♦ You can have up to 26 mappings, including local drives.
- ♦ Search drive mappings begin with the letter Z and continue backward through the alphabet.
- ♦ To map a search drive, use S and a number. (See “MAP Options” on page 95.)
- ♦ If you don't want to overwrite existing search drives, use the INS option.
- ♦ To map to the next available search drive, use S16:=.

MAP Options

Option	Use to
P	Map to a physical volume. Must be listed first or second.
Np	Overwrite local or search drives without being prompted. Must be listed first or second.
C	Change a regular drive to a search drive, or a search drive to a regular drive.
DEL	Delete a drive mapping.
INS	Insert a search drive mapping without replacing an existing mapping.
N	Map the next available drive to the specified path.
ROOT	Map a drive to a fake root directory for applications that require rights in a root directory.
W	Do not change master environment.

Examples

- ♦ To view mappings, enter

```
MAP
```

- ♦ To map drive G: to `sys:\home\jan` on the current server, enter

```
MAP G:=SYS:\HOME\JAN
```

- ♦ To extend the mapping for drive G: above to `sys:\home\jan\ PROJECTS`, type

```
MAP G:=PROJECTS
```

- ♦ To map search drive 4 to PRUFROCK (server) SYS (volume) APP (directory), enter

```
MAP S4:=SERVER1/SYS:APP
```

- ♦ To change Y: from a regular NetWare® drive to a search drive, enter

```
MAP C Y:
```

- ♦ To delete the mapping for drive G:, enter

```
MAP DEL G:
```

- ♦ To map drive F: to the `dosgames` volume of the `games` directory as a fake root, enter

```
MAP ROOT F:=GAMES\DOSGAMES:
```

- ♦ To map the last possible search drive to IZARD (server) SYS (volume) PUBLIC (directory), enter

```
MAP S16:=IZARD/SYS:PUBLIC
```

- ♦ To map the next available drive to `z:\public\dos\app` from `Z:\PUBLIC`, enter

```
MAP N DOS\APP
```

- ♦ To map the next available drive to `michel/sys:acct\old`, enter

```
MAP N MICHEL/SYS:ACCT\OLD
```

- ♦ To insert COUNT (server) SYS (volume) PUBLIC (directory) as a new search drive, enter

```
MAP INS S4:=COUNT/SYS:PUBLIC
```


- ♦ To map to `public\rpts` under Volume object `SYS.ACCOUNTING.ACME.US` from the root, enter

```
MAP H:=.SYS.ACCOUNTING.ACME.US:PUBLIC\RPTS
```

Additional Information

Topic	See
Creating login scripts	“Using Login Scripts” in the <i>Novell Login Scripts Guide</i>
Using Directory Map objects	“Using Directory Map Objects” in the <i>NW6.5 SP8: Traditional File System Administration Guide</i>

1.89 MEDIA

Purpose

Use at the server console in response to the screen prompts Insert Media and Remove Media.

This command is used by Media Manager for the Human Jukebox. It is seldom used because most applications that use the Media Insert/Remove APIs register the notification routines and support their own methods of detecting when media is inserted or removed. This command corresponds to a default notification to insert or remove media if the application does not register one. It simply waits for the user to enter the command to notify Media Manager that a piece of media was inserted or removed into/from the “mailbox” slot of the computer.

Syntax

```
MEDIA [parameter]
```

Parameter	Use to
Inserted	Confirm that the specified media was inserted in response to the Insert Media prompt.
Not Inserted	Confirm that the specified media was not inserted in response to the Insert Media prompt.
Not Removed	Confirm that the specified media was not removed in response to the Remove Media prompt.
Removed	Confirm that the specified media was removed in response to the Remove Media prompt.

1.90 Memory

Purpose

Use at the server console to display the total amount of installed memory that the operating system can address.

Syntax

```
memory
```

About Memory Addressing

- ♦ On EISA bus computers, NetWare® 3.1 and later versions address memory above 16 MB.
- ♦ On microchannel and ISA (AT) bus computers, NetWare (all versions) can address memory only up to 16 MB.
- ♦ On PCI bus computers, NetWare can address up to 4 GB.

Additional Information

Topic	See
Enabling the operating system to address memory above 16 MB	Section 1.131, "Register Memory," on page 160.

1.91 Memory Map

Purpose

Use at the server console to display the amount of memory (in bytes) allocated to DOS and to the server.

Syntax

```
MEMORY MAP
```

Using Memory Map

`Memory Map` displays the memory allocated to DOS and to the server's memory.

1.92 MIRROR STATUS

Purpose

Use at the server console to

- ♦ View the status of mirrored disk partitions
- ♦ View the percentage of mirrored data on each partition

Mirror Status can be used on any NetWare mirror, regardless of type as long as all the partition types in the mirror match. This includes NSS, TRAD, SBD, and ISCSI devices and any other NetWare partition types that are mirrored.

Syntax

```
MIRROR STATUS [logical_partition_number]
```

Parameter	Use to
(no parameter)	View a list of all logical disk partitions with their mirrored status.
<i>logical_partition_number</i>	Display the partition's mirrored status and the devices that make up the members of the mirror group.

Using MIRROR STATUS

The possible status messages are explained in the following table.

Status	Explanation
Being remirrored	Remirroring is in progress; the percent completed is displayed.
Fully synchronized	The mirrored partitions have the same data. Remirroring is complete.
Not mirrored	Disk mirroring was not set up for this partition. It has no mirrored partner.
Orphaned state	A partition has been removed from a mirrored group, and the volumes on the partition have not been renamed. These volumes cannot be mounted unless they are renamed or remirrored.
Out of synchronization	The partition is out of synchronization with its mirrored partners and for some reason cannot be resynchronized.

Additional Information

Topic	See
Mirroring disks	(For NSS volumes) “ Managing NSS Software RAID Devices ” in the <i>NW 6.5 SP8: NSS File System Administration Guide</i> (For Traditional volumes) “ Using Software RAID1 Devices for Data Fault Tolerance ” in the <i>NW6.5 SP8: Traditional File System Administration Guide</i>

1.93 MODULES

Purpose

Use at the server console prompt (or at a workstation running Novell® Client™ software) to display a list of currently loaded modules. For each module, the command displays the following information:

- ♦ The module short name or filename
- ♦ Color coding that indicates the module's functional group
- ♦ The address space where the module is loaded
- ♦ The file from which the module was loaded
- ♦ A descriptive string or long name for each module
- ♦ The version number if the module is a disk driver, LAN driver, or NLM™ program
- ♦ The date on the module file
- ♦ Copyright information

Syntax

`MODULES [string]`

Parameter	Use to
(no parameter)	View a list of all loaded modules.
<i>string</i>	Display a list of all modules with names matching the string. The string can also contain an asterisk (*) as the last character. In this case, the system displays a list of module names where the names begin with the string. For example, <code>MODULES D*</code> displays a list of all modules beginning with the letter D.

Using Modules

If you are using a color monitor, each module name is displayed in a color that represents the functional group it belongs to.

- ♦ **Cyan** (light blue) module name indicates a module loaded by `server.exe`
- ♦ **Red** module name indicates a module loaded from the startup directory
- ♦ **White** module name indicates a module loaded from the `autoexec.ncf` file
- ♦ **Purple** module name indicates a module loaded by other modules

The following example illustrates output of the `MODULES` command:

```
CDBEF          (Address Space = OS)
  Loaded from internal nlm list.
NetWare Configuration DB Engine
Version 5.00 (Build 28)   April 28, 1998
Copyright 1998 Novell, Inc. All rights reserved.
```

```
[XXX]CPUCHECK.NLM    (Address Space = OS)
Loaded from internal nlm list.
```

```
NetWare Processor Checking Utility
```

```
Version 1.00      April 10, 1998
```

```
Copyright 1998 Novell, Inc. All rights reserved.
```

```
AHA2940.HAM      (Address Space = OS)
```

```
Adaptec 7800 Family HAM Driver for NetWare v7.00
```

```
Version 7.00      April 22, 1998
```

```
Copyright 1997 Adaptec, Inc. All rights reserved.
```

Additional Information

Topic	See
Loadable modules	Section 1.82, "LOAD," on page 87 Section 1.173, "UNLOAD," on page 270
Loading modules	"Loading and Unloading NetWare Loadable Modules" in the <i>NW 6.5 SP8: Server Operating System Administration Guide</i>

1.94 MONITOR

Purpose

Use at the server console to

- ♦ View server statistics and activity
- ♦ Assess server RAM and processor utilization
- ♦ Set server parameter values
- ♦ Print server parameter settings to a file

NOTE: The screen saver and the console-locking features have been removed from Monitor and incorporated in the Scrsaver utility.

Syntax

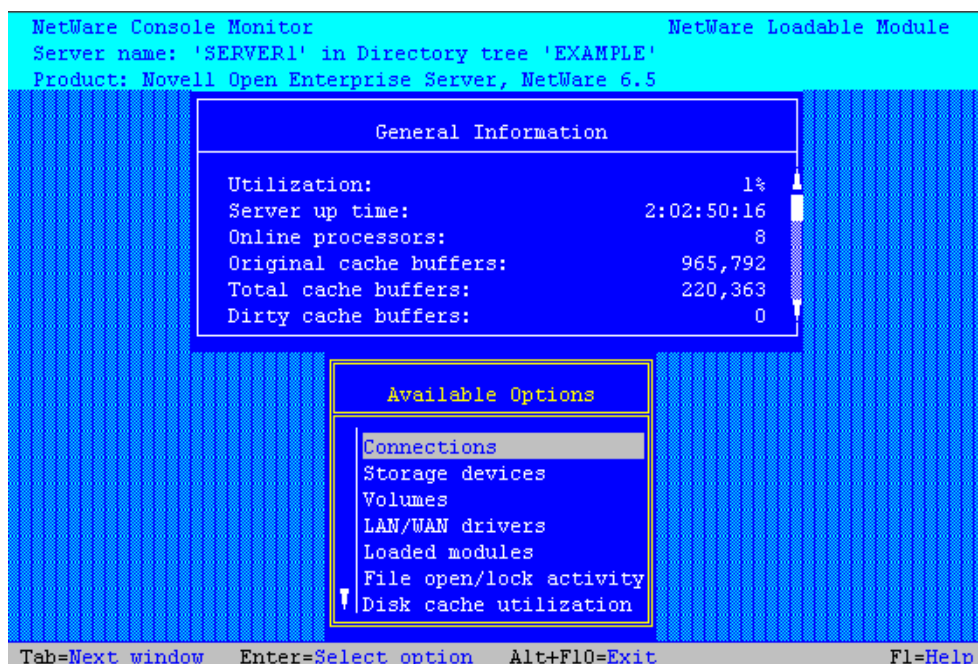
```
[LOAD] [path] MONITOR
```

Parameter	Use to
<i>path</i>	Specify the path leading to MONITOR if you copied it to a directory other than the default directory.

Using Monitor

When Monitor is first loaded, both the General Information window and the Available Options menu are displayed.

Figure 1-4 *General Information Window and the Available Options Menu*



The Available Options menu allows you to access additional server information, statistics, and settings. At some windows, you can also perform operations.

The General Information window displays many of the key statistics that Monitor reports.

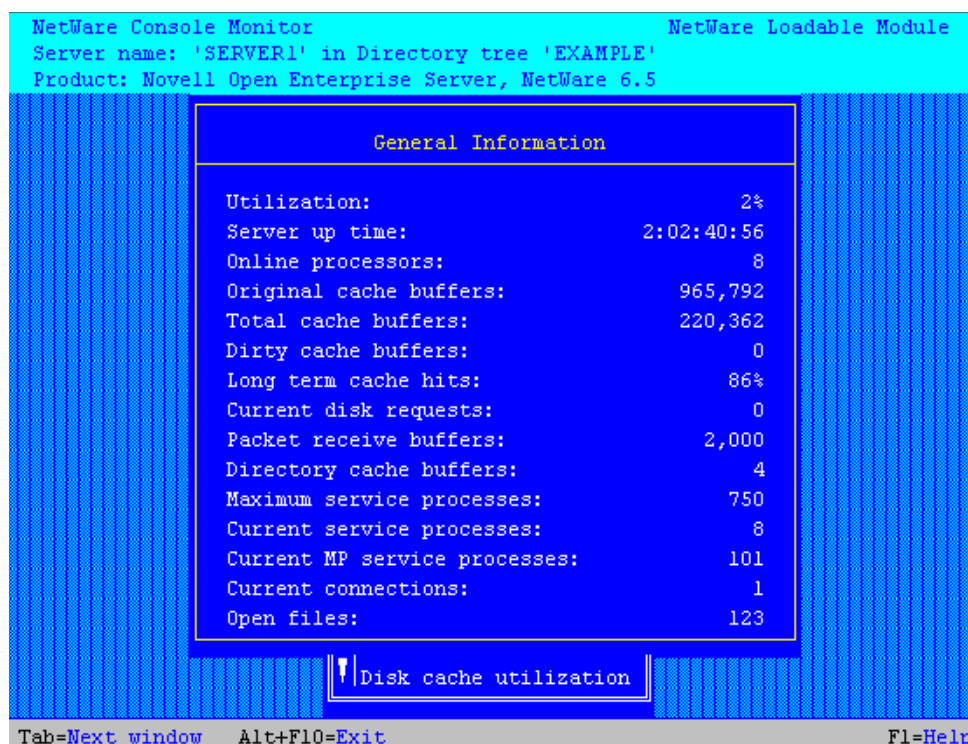
The arrow to the left of the vertical line in the Available Options menu indicates that the menu can be scrolled.

TIP: For explanations of options on Monitor menus as well as lists and statistics, you can press press F1 to access Monitor's online help when you are running MONITOR at the server console.

You can press Tab to expand and activate any information window. You can press Tab again to toggle back to a list or menu. The active window is always highlighted in yellow.

After a period of inactivity at the Available Options menu, the General Information screen expands by default to allow convenient monitoring of more critical statistics, as shown in the following figure.

Figure 1-5 MONITOR General Information Screen



The following table describes the fields of General Information.

Field	Explanation
Operating system version and date	The version and release date of the system (upper- left corner of the screen).
Server <i>server name</i> on network <i>tree name</i>	The name of the server and the eDirectory™ tree name.
Utilization	<p>Average of the server's total processing capacity that was used during the last second (default update interval), expressed as a percentage. The remainder is spent in the idle loop process.</p> <p>On a uniprocessor server, this value reflects processor utilization.</p> <p>On a multiprocessor server, this value is the average utilization of all active processors. For utilization information about individual processors, select Monitor Available Options > Kernel > Processors.</p> <p>This utilization value will reflect the changes in system configuration as they occur, such as an NLM™ program being loaded or unloaded, or a volume being mounted or dismounted.</p>
Server Up Time	<p>Time elapsed since the server was most recently started.</p> <p>This value is displayed in the format DD:HH:MM:SS (days:hours:minutes:seconds).</p> <p>Use this information to detect power failures or to determine whether an intruder brought down the server.</p>

Field	Explanation
Online Processors	The number of enabled and active processors.
Original Cache Buffers	<p>The original size of the cache buffer pool, which is the number of cache buffers available when the server is booted. All memory not used to load NetWare® (code plus loader) is assigned to the cache buffer pool. Memory is borrowed from this pool as needed.</p> <p>The default size of a cache buffer is a 4096-byte memory page.</p>
Total Cache Buffers	<p>The number of cache buffers currently available for file caching after allocating memory for NetWare. This number decreases as modules are loaded or memory is allocated in other ways.</p> <p>A minimum parameter controls when the server cannot continue to allocate file cache buffers. An alert can be set to report when the number of cache buffers approaches this limit.</p> <p>See Table 1-16 on page 238 for a description of these parameters. You can set these parameter values in MONITOR Available Options > Server Parameters > File Caching Parameters. You can also use the SET utility.</p> <p>The Disk Cache Utilization option provides additional file cache buffer statistics for assessing RAM.</p>
Dirty Cache Buffers	<p>Number of cache buffers that contain updated data that has not yet been written to disk. The operating system writes the data to disk either as soon as the cache buffer is filled or else when the Dirty Disk Cache Delay Time elapses (default 3.3 seconds).</p> <p>The trade-off is between allowing small writes to wait the delay time and reducing the delay time by performing two writes. See “Improving Disk Reads on Traditional Volumes” and “Improving Disk Writes for Traditional Volumes” in the <i>NW6.5 SP8: Traditional File System Administration Guide</i>. Also, see “Traditional File Parameters” on page 237 for a description of the parameter that controls the delay time.</p> <p>If the number of dirty buffers is frequently above 50% of Total Cache Buffers, install more RAM for cache.</p> <p>A disk I/O bottleneck may be indicated if the number of dirty buffers remains constant and the number of Current Disk Requests remains high. Consider installing a faster hard disk and controller.</p>
Long Term Cache Hits	<p>Cumulative percentage of requests for disk blocks that were already in cache.</p> <p>Use this value to assess overall disk cache utilization. If this value falls below 90%, install more RAM for cache.</p> <p>Another field to check as you assess RAM is LRU Sitting Time. See “Tuning File Cache” in the <i>NW 6.5 SP8: Server Memory Administration Guide</i>.</p>

Field	Explanation
Current Disk Requests	<p>Number of pending disk I/O requests that are queued for service.</p> <p>Use this value as a measure of the system load for the disk channel. If this number is consistently high, the disk and controller may be too slow.</p> <p>If the number of Dirty Cache Buffers exceeds 50% of Total Cache Buffers and server performance is slow, consider installing faster hard disks.</p>
Packet Receive Buffers	<p>Number of buffers that are available to the file system for holding client requests until they can be processed. Also referred to as communication buffers. The buffer size is fixed and is determined by the network board. The server allocates buffers as needed within minimum and maximum parameter values.</p> <p>For a description of these parameters, see SET "Communications Parameters" on page 193. You can set these parameter values in MONITOR Available Options > Server Parameters > Communications Parameters. You can also use the SET utility.</p>
Directory Cache Buffers	<p>The number of buffers available to the file system to cache the most frequently requested directory entries. The server allocates more directory cache buffers as needed within minimum and maximum parameter values.</p> <p>For a description of these parameters, see SET "Directory Caching Parameters for the Traditional File System" on page 239. You can set these parameter values in MONITOR Available Options > Server Parameters > Disk Caching Parameters. You can also use the SET utility.</p>
Maximum Service Processes	<p>Maximum number of processes (threads or task handlers) the system will allocate to service client NCP™ requests.</p> <p>The server creates more service processes as needed within minimum and maximum parameters. Once memory is allocated for service processes, it remains allocated even when no longer required. Each service process requires 4 KB of RAM.</p> <p>For a description of these parameters, see SET "Miscellaneous Parameters" on page 213. You can increase the value of Maximum Service Processes using Novell Remote Manager > Set Parameters > Miscellaneous Parameters, using MONITOR Available Options > Server Parameters > Miscellaneous Parameters. You can also use the SET command line utility.</p>

Field	Explanation
Current Service Processes	<p>Number of threads or task handlers that are currently allocated to service client NCP requests.</p> <p>As the number of client requests increases, the server creates more service processes within minimum and maximum parameters. As this value approaches the maximum number that can be created, server performance will be adversely affected. An alert appears when the maximum number is reached.</p> <p>For a description of these parameters, see SET "Miscellaneous Parameters" on page 213. You can increase the value of Maximum Service Processes using Novell Remote Manager > Set Parameters > Miscellaneous Parameters, using MONITOR Available Options > Server Parameters > Miscellaneous Parameters. You can also use the SET utility.</p>
Current Connections	<p>Number of current active connections. This includes both licensed and unlicensed connections. Both licensed and unlicensed connections are considered active connections. A license for a NetWare network permits a user to connect to as many servers in an eDirectory tree as needed. An unlicensed connection doesn't consume a license.</p> <p>Connection licenses are no longer managed at the server level. Under Novell Licensing Services (NLS), the licensable entity is a NetWare network connection rather than a server connection. See "Overview" in the <i>NW 6.5 SP8: Licensing Services Administration Guide</i>.</p> <p>You can view a list of active connections using Novell Remote Manager > Connections or using MONITOR Available Options > Connections. All connections described as licensed or unlicensed, authenticated or Not Logged-In, are considered active connections and are tracked by the server</p>
Open Files	<p>Number of files currently being accessed by the server and by other clients. Certain files, such as the hidden files that support eDirectory, are always open.</p>

The following table explains what information can be accessed through MONITOR options.

Menu Option	Use to
Connections	<ul style="list-style-type: none"> ◆ List active connections. ◆ Determine connection status—whether connections are licensed or unlicensed, authenticated or Not-Logged-In, or waiting on a lock. ◆ View client's network address, connection time, number of requests, kilobytes read, kilobytes written, semaphores used, and number of logical record locks. ◆ Determine whether logged-in user has additional rights corresponding to bindery Supervisor rights. ◆ Clear UDP and NCP connections before bringing the server down. Send a message to one or more client user connections.
	<hr/> <p>TIP: Press F3 to sort the items in the connection list.</p> <hr/>
Storage Devices	<ul style="list-style-type: none"> ◆ List system storage devices, including hard disks, controllers, adapters, media, magazines, changers, and slots. ◆ View divisions of the media's capacity given to the operating system, including partitions, Hot Fix™ and Mirror objects. ◆ View dependencies of each object. ◆ View per-device information, such as Media Manager object ID, device type, disk size and capacity, sector size, block size per I/O request, and number of sectors, heads, cylinders. ◆ Determine whether the device is activated, registered with Media Manager, marked read-inhibit, writable or write-protected, reserved by an application, or whether it has associated I/O methods. ◆ Determine the controller number, the device number (LUN), the adapter number (instance of loaded driver), driver used in accessing the device, and driver type (such as NWPA). ◆ Determine the Mirror status of the NetWare partition. ◆ Change the Read After Write Verify status of the hard disk. ◆ Activate/deactivate a hard disk. ◆ Mount/dismount a removable media device. ◆ Lock/unlock a removable media device. (If locked, the media can be ejected only by using a software switch.)

Menu Option	Use to
Volumes	<ul style="list-style-type: none"> ♦ View per-volume mount status. ♦ See which file system is used on each volume. ♦ View per-volume information on loaded name spaces. ♦ View per-volume information on compression status, suballocation, file migration status, and number of migrated files. ♦ See whether volume is read-only. ♦ View per-volume information on block size, sectors per block, total blocks, and number of free blocks, blocks dedicated to file allocation table, freeable and nonfreeable blocks in the salvage system. ♦ View per-volume number of blocks dedicated to directory entry tables, directory entries, and directory entries in use. ♦ View amount of space allocated to store long names, name spaces, and cookies that provide the location of nearline and offline storage.
LAN/WAN Drivers	<ul style="list-style-type: none"> ♦ List LAN driver instances loaded on the server. ♦ View the LAN driver version, logical board number (LAN driver instance), and the protocols or frame types bound to it. ♦ View node and network address. ♦ View generic per-driver counters for total packets transmitted and received, specific types of receive and transmit failures, adapter resets, and packets queued for transmission. ♦ View per-driver counters associated with a specific method of media access control or topology, such as those for Ethernet, token-ring, or FDDI. ♦ View per-driver custom counters associated with a particular type of model of network board. (Check the documentation that comes with the driver.) <p>For information on each LAN driver counter, see Appendix A, "LAN Driver Statistics," on page 285.</p>

Menu Option	Use to
Loaded Modules	<ul style="list-style-type: none"> ◆ List modules loaded on the system by name. ◆ Recover unused memory pages (garbage collection) per module. ◆ View major version, minor version, revision number, and creation date of the module. ◆ View bytes of memory required to load this module (code, data, and messages). ◆ View amount of memory requested by the NLM™ for its use in bytes and nodes. View the module's load flags. ◆ List resources allocated by the module (resource tags). ◆ View resource tag memory usage. <p>TIP: Press F3 to sort the modules by bytes of allocated memory or date of creation, in addition to name.</p>
File Open/Lock Activity	<ul style="list-style-type: none"> ◆ Check a file's lock activity and status. ◆ View number of client connections using this file, whether locked, logged, or open. ◆ Determine number of connections opening this file requesting read access and write access. ◆ Determine number of connections opening this file requesting that other stations not be allowed to read or write to the file. ◆ View which clients have open files. ◆ View mounted volumes and directories on each volume. ◆ View files in a directory.
Disk Cache Utilization	<ul style="list-style-type: none"> ◆ View disk cache block request statistics, including total cache block requests, the number of times a block request had to wait because there were no available cache blocks, long and short term cache hits and dirty cache hits. ◆ Use the Long Term Cache Hits information (the percentage of time the operating system retrieves the data it needs directly from cache) to assess cache utilization. For explanations and guidelines, see <i>“Assessing Server RAM”</i> and <i>“Tuning File Cache”</i> in the <i>NW 6.5 SP8: Server Memory Administration Guide</i>. <p>TIP: For more information on these statistics, press F1 for help while in this screen.</p>

Menu Option	Use to
System Resources	<ul style="list-style-type: none"> ♦ View server memory usage in bytes for the cache buffer pool, allocated memory in movable and nonmovable memory pools, code and data memory, and total server work memory. ♦ View allocated memory information for the entire system or for one selected system module. ♦ List tracked resource types and determine which modules use the resource. List resource tags and associated modules. ♦ Determine a module's use of resource by type, its owning module, address space, and amount of resource. ♦ Determine resource usage by owning module, address space, and resource type.
	<p>TIP: Press F3 for sort options for Resource Tags.</p>
Virtual Memory	<ul style="list-style-type: none"> ♦ View virtual memory by address spaces or swap files. ♦ View the number of NLM programs loaded in each address space. ♦ View per-address space information, including number of times the address space faulted and restarted, and elapsed time since the last fault. ♦ View page faults statistics. ♦ View amount of allocated memory the NLM requested, in bytes and nodes. ♦ Recover unused memory pages (garbage collection) in the OS address space. ♦ View amount of mapped physical memory pages backing the OS address space. ♦ View statistics for page-in and page-out requests. ♦ View information and statistics on swap pages, including maximum size, minimum size, current size, free file space, minimum free file space, and used file space.

Menu Option	Use to
Kernel	<ul style="list-style-type: none"> ♦ View kernel information by all threads, processors, interrupts, and busiest threads. ♦ View the list of all threads running on the system <p>In NetWare 5, all threads running on a NetWare server are grouped into two categories called NetWare Application and Java Application. To access NetWare 5 thread information, you select Kernel > Applications > NetWare Application [or] Java Application.</p> <p>In NetWare 6, threads are not categorized on the basis of the application. All threads can be viewed from a common category in MONITOR called All Threads. To view NetWare 6 thread information, you simply select Kernel > All Threads.</p> ♦ See whether a processor is online or offline. ♦ View processing load as a percentage both per-processor and for all processors combined. ♦ View number of threads bound to online processor. ♦ View number of interrupts fired on processor and the amount of time spent processing interrupts. ♦ List all registered interrupts. ♦ List all Interrupt Service Routines registered to a selected interrupt. ♦ View the number of interrupts handled by a specific Interrupt Service Routine, both per-processor or for all processors combined. ♦ Determine interrupt type and number of Interrupt Service Routines executed per-interrupt. ♦ List the busiest threads in the Threads option. ♦ View per-thread information, including parent module, current state, reason thread is suspended, processor execution time, thread's stack size, soft affinity or hard affinity.
Server Parameters	<p>Set values for server parameters.</p> <p>This menu provides the same functionality as the SET command. For descriptions of parameter categories and individual parameters, see Section 1.154, "SET," on page 188.</p>

For a description of the MONITOR Server Parameters, see the tables for each parameter category in [Section 1.154, "SET," on page 188](#).

Additional Information

Topic	See
Assessing server RAM	"Assessing Server RAM" in the <i>NW 6.5 SP8: Server Memory Administration Guide</i>

Topic	See
Checking for disk errors	<p>"Configuring and Monitoring Devices" in the <i>NW6.5 SP8: Server Disks and Storage Devices</i></p> <p>"Checking Server Error Logs" in the <i>NW 6.5 SP8: Server Operating SystemAdministration Guide</i></p>
LAN and WAN driver statistics	Appendix A, "LAN Driver Statistics," on page 285
Clearing workstation connections	<p>"Clearing a Workstation Connection" in the <i>NW 6.5 SP8: Server Operating SystemAdministration Guide</i></p> <p>Section 1.13, "CLEAR STATION," on page 25</p>
Sending a message to a logged-in client	"Sending Console Messages to Workstations" in the <i>NW 6.5 SP8: Server Operating SystemAdministration Guide</i>
Increasing packet receive (communications) buffers	<p>"Communications Parameters" on page 193</p> <p>"Increasing Maximum and Minimum Packet Receive Buffers" in the <i>NW 6.5 SP8: Novell Server Communications Administration Guide</i></p>
Setting values of server parameters	<p>Section 1.154, "SET," on page 188</p> <p>"Setting Server Parameter Values" in the <i>NW 6.5 SP8: Server Operating SystemAdministration Guide</i></p>

1.95 MOUNT

Purpose

Use at the server console to make a volume available to users.

Syntax

```
MOUNT volume_name | ALL
```

Parameter	Use to
<i>volume_name</i>	Specify the name of the volume you want to mount.
ALL	Mount all volumes not mounted.

Using MOUNT

- ♦ If you set up the `autoexec.ncf` file to mount all volumes automatically each time the server comes up, then you would use the MOUNT command only if you have dismounted a volume and want to remount it.
- ♦ After you replace a removable drive, use this command to mount all volumes residing on the removable drive.
- ♦ You can mount and dismount volumes while the server is running.

Examples

- ♦ To mount volume STATISTICS, type

```
MOUNT STATISTICS
```

- ♦ To mount all unmounted volumes at once, type

```
MOUNT ALL
```

1.96 NAME

Purpose

Use at the server console to display the server name.

TIP: You can also use the SET parameter, Replace Console Prompt with Server Name = *servername*, in `autoexec.ncf` to display the server name with the console prompt. See SET “Miscellaneous Parameters” on page 213.

This is very useful where you have multiple server consoles in one location or access several servers from a single management console.

Syntax

```
NAME
```

1.97 NCMCON

Purpose

Load the Novell® Configuration Manager (NCMCON) at the server to control and monitor PCI Hot Plug.

PCI Hot Plug technology allows industry-standard PCI adapters to be inserted and removed without shutting down the NetWare® server. NCMCON displays slot configuration details, including adapter driver information and status.

Syntax

```
[LOAD] NCMCON
```

Using NCMCON

The Configuration Manager Console consists of three screens: the Main menu, the Slot Options menu, and the Slot Detailed Information screen.

If you want this utility to load each time the server is started, add the command to load NCMCON to the server's `autoexec.ncf` file.

Additional Information

Topic	See
Hot Plug architecture and management	“Setting Up, Enabling, and Managing PCI Hot Plug” in the <i>NW 6.5 SP8: Server Operating System Administration Guide</i>

1.98 NCOPY

Purpose

The `ncopy` command is a legacy DOS utility that provides two attributes to specify your intention for copying a compressed file to a compressed volume or a non-compressed volume. NCOPY is client-side application, not a server-side application. Install the Novell Client for Windows on your workstation, then use the Novell Map Network Drive option in the client menu to map a local drive letter to the `sys:/public` directory. Open a DOS Command Prompt window, `cd` to the mapped drive, then issue the `ncopy` command from the command line. You can also run a GUI version of NCOPY from the Novell Client by selecting NetWare Utilities > NetWare Copy, then following the instructions.

Syntax

Command	Use to
<code>ncopy /R</code>	Retain compression on supported media.
<code>ncopy /R/</code>	Retain compression on unsupported media.

1.99 NCS Debug

Purpose

NCS Debug displays and saves a record of all NCS port activity in an ASCII text file named `ncstrace.log` in the `sys:system` directory. The size of the log file is limited to 800 KB. After the file reaches that size, the entries wrap around to the beginning of the file and logging continues.

1.100 NDIR

Purpose

The `ndir` command is a legacy DOS utility that allows you to view file attributes and compression information for all files in a directory.

NDIR is a client-side application, not a server-side application. Install the Novell Client for Windows on your workstation, then use the Novell Map Network Drive option in the client menu to map a local drive letter to the `sys:/public` directory. Open a DOS Command Prompt window, `cd` to the mapped drive, then issue the `ndir` command from the command line.

Syntax

Command	Use to
<code>ndir /R</code>	View the file attributes for all files in a directory.
<code>ndir /COMP</code>	View the compression information for all files in a directory. It shows the amount of disk space saved by compressing data.
<code>ndir /COMP /VOL</code>	View the compression information for the volume. It also shows the disk space saved on the volume.

1.101 NETSTAT

Purpose

Use at the server console to monitor the network status.

Netstat prints information about the NetWare networking subsystem. The type of information printed is controlled by the first argument.

Syntax

```
netstat [-aLn] [-f address_family] netstat [-rn] [-f address_family] netstat  
[-bdi] [-I interface] -w wait netstat [-p protocol] netstat [-s] [-f  
address_family] [-i] [-I interface] netstat -help
```

The following table contains a list of supported options and a description of what each does.

Option	Use To
(none)	Display the syntax for the utility.
<code>-a</code>	Show the state of all sockets along with the default display. (Normally, sockets used by server processes are not shown.)

Option	Use To
-L	Display a list of ports TCP/IP is listening on.
-n	Display network addresses as numbers. (Normally, NETSTAT interprets addresses and attempts to display them symbolically.) This option can be used with any of the display formats.
-f <i>address_family</i>	Limit statistics or address control block reports to those of the specified <i>address_family</i> . Supported <i>address_family</i> : inet
-r	Display the routing tables.
-b	Display the number of bytes in and out when used with the interface display option -i.
-d	Display the number of dropped packets when used with the interface display option -i.
-i	Display the state of all interfaces. If the -f <i>address_family</i> option is also used, then the -i option displays per-interface statistics on all interfaces for the specified <i>address_family</i> .
-l <i>interface</i>	Display information about the specified interface; used with a wait Interval. If the -f <i>address_family</i> option (with the -s option) is also used, then the -l <i>interface</i> option displays per-interface statistics on the interface for the specified <i>address_family</i> .
-w <i>wait</i>	Display network interface statistics at specified intervals. Replace <i>wait</i> with the number of seconds to wait between displays.
-p <i>protocol</i>	Display statistics about the specified protocol, which is either a well-known name for a protocol or an alias for it. Supported protocols: TCP, UDP, IP, ICMP, EGP, OSPF
-s	Display all the protocol statistics.
-help	Display detailed help for this utility.

1.102 NetWare Login

Purpose

Use at a Windows* 3.1x or Windows 95 workstation to

- ♦ Access an eDirectory tree or a NetWare® server
- ♦ Run a login script

Starting NetWare Login

By default, NetWare Login runs when you start Windows. However, you can start NetWare Login any time by choosing its icon in Windows.

Depending on your Windows platform, type the appropriate executable filename: either LOGINW31 or LOGINW95.

Example:

```
loginw95 /a
```

An additional parameter, /A, is provided to cause the advanced tabs to appear in the NetWare Login dialog box.

Open the login window on a Windows 95 workstation by clicking Start > Programs > Novell > NetWare Login.

Using NetWare Login

Use the options provided in the NetWare Login dialog box or in your Client 32™ settings. For more information, see the online Help for NetWare Login.

Additional Information

Topic	See
NetWare Login dialog box	Online Help within the dialog box
Command-line options	Section 1.85, "LOGIN," on page 91
Client 32 settings	Online Help within the dialog box

1.103 Novell iCapture

Purpose

Novell iCapture LPT Port Redirector utility lets you capture LPT ports and redirect the output to iPrint printers through a GUI interface. Novell iCapture is installed when you install the iPrint Client. Before using the LPT Port Redirector, you must have iPrint printers installed on the workstation, and the Print Manager and Printer Agents must be up and running.

You can use the LPT Port Redirector to also end a printer capture by selecting a port and clicking End Capture.

Additional Information

Topic	See
Using Novell iCapture	"Using the Novell iCapture LPT Port Redirector Utility" in the NW 6.5 SP8: iPrint Administration Guide .

1.104 Novell iManager

Purpose

Novell iManager 2.5 is a Web-based network management application. You can use iManager to

- ♦ Manage your server and environment.

- ◆ Configure network services.
- ◆ Set up and manage your Novell eDirectory tree.
- ◆ Create and manage eDirectory objects.

Additional Information

Topic	See
Using Novell iManager	“Navigating the iManager Interface” in the <i>Novell iManager 2.7.3 Administration Guide</i> .

1.105 Novell Migration Wizard

The Novell Migration Wizard utility is a self-extracting executable that lets you copy your NetWare 3.1x server bindery and file system across the wire and place them in a desired location in an existing eDirectory tree.

The across-the-wire upgrade (also referred to as a *migration*) is administered on a Windows 95 or Windows NT workstation.

Additional Information

Topic	See
Novell Migration Wizard	The utility's Help system. <i>Migration Wizard Administration Guide</i>

1.106 Novell NetWare Server Consolidation

The Novell NetWare Server Consolidation Utility helps you consolidate data and reorganize your network by moving data from any number of NetWare volumes (or directories within volumes) or NT domains to a NetWare 5.1, 6.0, or 6.5 server; to a NetWare Cluster/SAN; or to multiple NetWare 6.0 or 6.5 servers. The Server Consolidation Utility will perform these functions either within the same tree or between servers in different trees. This means you have fewer servers to manage.

In each case, the accompanying rights, trustees, ownership, and name space information are copied along with the files to the destination server. The Server Consolidation Utility also copies many user attributes from one tree to another.

The server consolidation is administered on a Windows NT (4.0 or later), Windows 2000, or Windows XP Professional Edition workstation with 50 MB of available disk space.

Additional Information

Topic	See
Novell Server Consolidation Utility	The utility's Help system. <i>Novell NetWare Server Consolidation Utility Guide</i> .

1.107 Novell Printer Manager

Purpose

The Novell Printer Manager lets workstation users manage all of their Novell Distributed Print Services (NDPS) printing tasks including printer installation, customized printer configuration, and print job management.

Users can also use the Printers folder in Windows to add NDPS printers and perform certain printer management tasks.

Novell Printer Manager provides a graphical display of all the NDPS printers that are currently installed on a workstation. Through an easy-to-use graphical interface, users can add and configure additional printers for their installed printers list.

When a user adds a printer to the workstation, the corresponding printer driver is automatically installed on that workstation. Administrators can specify printers to be added automatically to workstations through the Remote Printer Management feature of NDPS. (See [Using Remote Printer Management \(http://www.novell.com/documentation/lg/nw6p/ndps_enu/data/h26ruuv3.html#h26ruuv3\)](http://www.novell.com/documentation/lg/nw6p/ndps_enu/data/h26ruuv3.html#h26ruuv3) in the *NetWare 6 Novell Distributed Print Services Administration Guide*.)

Users can view real-time status and configuration information about their printers and print jobs and receive event notification for their print jobs. Feedback that they can receive includes information about the following:

- ♦ A printer's status
- ♦ A printer's characteristics and properties
- ♦ A printer's features
- ♦ Printer events that require operator intervention (such as low toner, empty paper tray, or jammed feed mechanism)
- ♦ A print job's status, characteristics, and properties

Additional Information

Topic	See
Using Novell Printer Manager	Using the Novell Printer Manager Workstation Utility (http://www.novell.com/documentation/lg/nw51/ndps_enu/data/htwn0jb2.html) in the <i>NetWare 5.1 Novell Distributed Print Services Administration Guide</i> .

1.108 Novell Remote Manager for NetWare

Purpose

Use at a workstation through a Web browser to diagnose and manage NetWare® servers. The following main tasks that can be completed using this tool are:

- ♦ Diagnose server problems

- ♦ Manage servers, applications, hardware
- ♦ Access eDirectory™ management tools

Additional Information

Topic	See
Complete information about accessing and using Novell Remote Manager for NetWare	<i>NW 6.5 SP8: Novell Remote Manager Administration Guide</i>

1.109 Nslookup

Purpose

Use at the server console to diagnose DNS setup problems or DNS problems in an application. This utility is similar to other Nslookup applications available in Windows and UNIX; however, this utility supports only the interactive mode and the commands and options listed below or in the online help. The interactive mode allows you to query name servers for information about various hosts and domains or to display a list of hosts in a domain.

Using Nslookup

Using this utility requires you to be familiar with how DNS works. For more information about DNS, see the references in [“Additional Information” on page 124](#).

To load Nslookup utility, enter `nslookup` at the System Console prompt.

For optimum performance, Nslookup uses the `sys:\system\etc\resolv.cfg` file to obtain the DNS configuration information. If this file is missing or not configured, the Nslookup queries might display information that looks similar to the following:

Figure 1-6 Message Displayed if `resolv.cfg` Is Missing

```
Default DNS server name cannot be resolved
Default DNS server: 0.0.0.0
Address: 0.0.0.0

> www.novell.com
Server: 0.0.0.0
Address: 0.0.0.0

www.novell.com QUERY FAILED
*** 0.0.0.0 can't find www.novell.com: Non-existent domain
> _
```

To resolve this problem, either configure the `resolv.cfg` file with the correct DNS configuration information and then exit and reload Nslookup or issue the following server command for Nslookup to use as the DNS server information for future queries:

```
SERVER IP_ADDRESS
```

Syntax

After loading Nslookup, use the following commands to make queries about DNS.

command variable | [optional] *command* [*variable*]

The following table contains a list of supported commands and a description of what each does.

Command	Description
exit	Exits the utility.
help or ?	Displays help for the utility at the server console. The ? can be used instead of entering HELP.
lserver	Changes the default server to the specified DNS domain. The LSERVER command uses the initial server to look up the information about the specified DNS domain. This is in contrast to the SERVER command, which uses the current default server.
<i>name</i>	Displays information about the host or domain <i>name</i> .
<i>name1 name2</i>	Displays information about the host or domain <i>name1</i> but performs a lookup using <i>name2</i> as server.
root	Changes the default server to a server for the root of the DNS domain name space. You can change the name of the root server with the SET ROOT command.
server <i>name</i>	Changes the default server to <i>name</i> using the current server to resolve <i>name</i>
set <i>option</i>	Changes the configuration settings that affect how the lookup functions. For a list of supported options, see the following table.

The following table contains a list of supported NSLOOKUP SET command options and a description of what each does.

Set Option	Description
all	Displays the current values of all the configuration settings and default server.
class= <i>value</i>	<p>Changes the query class.</p> <p>Supported values:</p> <ul style="list-style-type: none">♦ IN specifies the Internet class♦ CS specifies CSNET class (obsolete in RFC 1035)♦ CH specifies the CHAOS class♦ HS specifies the MIT Athena Hesiod class♦ ANY allows a wildcard query that will match any of the supported classes <p>Default = IN</p>
[no]debug	<p>Turns debugging mode on or off. With debugging on, more information is displayed about the response to each query.</p> <p>Default = nodebug</p>

Set Option	Description
[no]defname	<p>Appends the default DNS domain name to any lookup request where the name does not end in a dot (implied name to root).</p> <p>Default = defname</p>
domain= <i>name</i>	<p>Changes the default DNS domain to the name specified.</p> <p>The default DNS domain name is appended to a lookup request depending on the state of the defname option.</p> <p>Default = <i>name</i> in the domain line of the <code>resolv.conf</code> file (if it is present). If the domain line is not present, no default name is used. Queries will not use a default domain unless the SET DOMAIN=<i>name</i> command is used.</p>
querytype= <i>value</i> or type= <i>value</i>	<p>Changes the type of information queried. More information about types can be found in Request for Comment (RFC) 1035 (http://www.ietf.org/rfc/rfc1035.txt). The SET TYPE command is a synonym for SET QUERYTYPE.</p> <p>Supported values:</p> <ul style="list-style-type: none"> ♦ A is the computer's IP address ♦ ANY is all types of data ♦ CNAME is the canonical name for an alias ♦ HINFO is the computer's CPU and operating system type used by a host ♦ MX identifies a mail exchanger for the domain ♦ NS is the authoritative name server for the domain ♦ PTR is the computer name if the query is an IP address (otherwise, it is the pointer to other information) ♦ SOA is the DNS domain's start-of-authority record <p>Default = A</p>
[no]recurse	<p>Tells the DNS name server to query other servers if it does not have the information.</p> <p>Default = recurse</p>
retry= <i>number</i>	<p>Sets the number of retries. When a reply to a request is not received within a certain amount of time (change with SET TIMEOUT), the request is re-sent before giving up.</p> <p>Default = 1</p>
root= <i>root_server_name</i>	<p>Changes the name of the root server. This affects the root command.</p> <p>Default = A.ROOT-SERVERS.NET</p>
timeout= <i>number</i>	<p>Changes the initial number of seconds to wait for a reply to a request. When a reply to a request is not received within this time period, the request is re-sent the configured number of retries (changed with SET RETRY) before giving up.</p> <p>Default = 2</p>

Additional Information

Topic	See
Domain Names—Concepts and Facilities	Request for Comment (RFC) 1034 (http://www.ietf.org/rfc/rfc1034.txt)
Domain Names—Implementation and Specification	Request for Comment (RFC) 1035 (http://www.ietf.org/rfc/rfc1035.txt)
In-depth information about NSLOOKUP	<i>DNS and BIND</i> by Paul Albitz and Cricket Liu, published by O'Reilly and Associates, April 2001

1.110 NSS

Use the Novell Storage Services (NSS) console commands to do the following:

- ♦ Unload NSS
- ♦ Display NSS module or volume information
- ♦ Check NSS volume statistics
- ♦ Change NSS caching
- ♦ Modify other NSS tunables

1.110.1 Using NSS

- ♦ “Load Commands” on page 125
- ♦ “Status Commands” on page 126
- ♦ “Maintenance Commands” on page 127
- ♦ “System Volume Recovery Commands (NetWare)” on page 128
- ♦ “Compression Commands” on page 129
- ♦ “Encrypted Volume Support Commands (NetWare)” on page 129
- ♦ “SALVAGE and PURGE Commands” on page 130
- ♦ “Read Ahead Commands” on page 131
- ♦ “Cache Balancing Commands (NetWare)” on page 132
- ♦ “Commands for Mounting CDs and DVDs as NSS Volumes (NetWare)” on page 133
- ♦ “Commands for CD and DVD Image Files as NSS Volumes (NetWare)” on page 134
- ♦ “DOS FAT Commands (NetWare)” on page 134
- ♦ “MSAP Commands” on page 135
- ♦ “Multipath Connection Failover Commands (NetWare)” on page 136
- ♦ “Pool Snapshot Commands (NetWare)” on page 137
- ♦ “Security Equivalence Vector Update Commands (Linux)” on page 137
- ♦ “Other NSS Commands” on page 139

For online Help for the NSS console commands, enter the following at the server console:

`nss /help` or `nss /?` opens the NSS console Help facility.

The interface returns a list of NSS commands, each with a brief definition and any constraints such as the default value, a range of valid values, and persistence information.

Default Value

The default value is the setting used for a given server configuration parameter unless you modify it for your particular implementation. Default values are the best choice for a majority of server configurations, but you should review the settings as you fine-tune the server.

Range of Valid Values

The range of valid values establishes the constraints for any particular variable setting.

Persistence

If a command's setting is persistent, the values you set remain in effect for the server through any subsequent server reboots until you next modify the settings. If a command is not persistent, the setting remains in effect only until the next server reboot.

Load Commands

NSS provides the following startup commands. Startup commands are only valid when NSS is loading.

Issuing NSS Startup Commands while OES NetWare Boots

NSS Startup commands can run as part of the OES NetWare `c:\nwserver\server.exe` command by using the `-z` option. However, these commands are not persistent through a server reboot; you must enter them each time you boot your server.

At the server command line, enter

```
server -z"/parameter=value"
```

In the above example, the `-z` tells the server to look for specific NSS startup commands. The information in quotes is the actual command with command values, if any. For example:

```
server -z"CDDVD"
```

Making NSS Startup Commands Persist through an OES NetWare Reboot

NSS Startup commands issued at the command line during a server boot do not persist through a server reboot. To make non-persistent command settings persist automatically through a server reboot, place the commands in the `nssstart.cfg` file, which NSS reads on startup.

- 1 In a text editor, create a file called `nssstart.cfg` in the `c:\nwserver` directory.
- 2 Enter any NSS startup commands that you want to persist through server reboots.
Each NSS command should be preceded by a forward slash (/) and followed with a space. For example:
`/numworktodos=40 /cddvd /dosfat`
- 3 Save and close your `c:\nwserver\nssstart.cfg` file.

Startup Commands

Commands	Description
CDDVD	If it is specified in the <code>nssstart.cfg</code> file, loads the <code>cddvd.nss</code> module that is essential for CD, DVD, and Macintosh support.
defaultNLMs	If it is specified in the <code>nssstart.cfg</code> file, loads only default NSS NLM™ programs and any additional LSS modules specified on the command line.
DOSFAT	If it is specified in the <code>nssstart.cfg</code> file, loads only those modules that are essential for accessing FAT 16 and FAT 12 drives. NetWare does not support FAT 32 drives.
/allLSS	If it is specified in the <code>nssstart.cfg</code> file, it loads all LSS modules.
/noLSS	If it is specified in the <code>nssstart.cfg</code> file, it does not load the LSS modules.
/NumAsyncIOs= <i>value</i>	Sets the number of asynchronous I/O entries to allocate. [Default=2048; Range=4 to 65536]
/NumBonds= <i>value</i>	Sets the number of bond entries to allocate. [Default=5000; Range=512 to 2097152]
/NumWorkToDo= <i>value</i>	If used in the <code>nssstart.cfg</code> file, sets the number of WorkToDo entries. Entries can execute concurrently. NSS uses WorkToDo entries for tasks such as flushing file metadata to disk in the background. Increasing the number of WorkToDo entries might be useful on a system that is heavily used. NSS always reserves 20 WorkToDo entries. [Default=50; Range=5 to 100]
/zLSS	If it is specified in the <code>nssstart.cfg</code> file, loads only those modules that are essential for zLSS support.

Status Commands

NSS provides the following commands to show the status of various NSS parameters. To view a complete list, use the `nss /help` command.

Commands	Description
Status	Lists the current NSS status information.
Pools	Lists all of the NSS pools that are currently available on the server.
PoolAutoDisplay	Displays load-time policies for pools on the server.
Volumes	Lists all of the NSS volumes that are currently mounted and active, including the Admin volume.
SpaceInformation	Lists the amount of space on active pools and their associated volumes.

Commands	Description
ListFreeSpace	Lists the amount of available space that has not been assigned to a pool.
nss /StorageAlertMessages	Enables NSS to send Low Storage messages to all users. [Default=On]
nss /NoStorageAlertMessages	Disables NSS from sending Low Storage messages to all users.
CompScreen	Display the NSS Compression Statistics GUI.
CacheStats	Shows the caching statistics for buffers.
FileCacheStats	Shows the caching statistics for file system objects.
NameCacheStats	Shows the caching statistics for names.
ResetStats	Resets caching and file statistics.
nss /ErrorCode= <i>code</i>	Translates and describes the specified error code.
nss /GetMFLStatus= <i>volume</i>	Shows the modified file list status for the specified volume.
Modules	Lists the providers, loadable storage subsystems, and semantic agents.
Version	Displays the version information for NSS.

Maintenance Commands

NSS provides the following maintenance for pools and volumes. To view a complete list, use the nss /help command.

Commands	Description
nss /BackgroundChecking	Enables the background file system checker. [Default=On]
nss /NoBackgroundChecking	Disables the background file system checker.
ForceBackgroundCheck	Force background file system checking to start.
nss /FixDirectoryQuotas= <i>volume</i>	Recomputes used space for directory quotas for the specified volume.
nss /FixMFL	Repairs the modified file list to be consistent with the file system.
nss /MFL= <i>volume</i>	Enables modified file list maintenance for the specified volume.
nss /NoMFL= <i>volume</i>	Disables modified file list maintenance for the specified volume.
nss /MFLVerify= <i>volume</i>	Compares the modified file list with the specified volume and reports any inconsistencies.
nss /IncludeType= <i>type</i>	Include pools of the specified type for the given command. Possible types are SHARED, CORRUPT, and QUESTIONS.
nss /OverrideType= <i>type</i>	Override pools of the specified type for the given command. Possible types are SHARED, CORRUPT, and QUESTIONS.
Pools	Shows all of the currently available NSS pools.

Commands	Description
nss /PoolAutoDisplay	Displays current pool load time policies.
nss /PoolAutoActivate= <i>pool</i>	Activates specified pools at load time.
nss /PoolAutoDeactivate= <i>pool</i>	Leaves specified pools deactivated at pool load time.
nss /PoolAutoMaintenance= <i>pool</i>	Places specified pools in maintenance mode at pool load time.
nss /PoolAutoVerify	Verifies the specified pool's physical integrity at startup time. (NetWare)
nss /PoolRebuild= <i>pool</i>	Rebuilds the specified pools. (NetWare)
PoolRebuild	Select the pools to rebuild from a menu, then it rebuilds them. (NetWare)
nss /PoolVerify= <i>pool</i>	Verifies the physical integrity of the specified pool. (NetWare)
PoolVerify	Allows you to select pools from a menu and verifies their physical integrity. (NetWare)
nss /VolumeActivate= <i>volume</i>	Activates the specified NSS volume.
nss /VolumeDeactivate= <i>volume</i>	Deactivates the specified NSS volume.
nss /VolumeAutoActivate= <i>volume</i>	Activates the specified volume at load time.
nss /VolumeAutoDeactivate= <i>volume</i>	Deactivates the specified volume at load time.
nss /ForceActivate= <i>volume</i>	Forces an NSS volume to become active.
VolumeAutoDisplay	Displays the current volume's load time policies.
nss /VolumeMaintenance= <i>volume</i>	Places a specified volume into maintenance mode. Volumes can be put in maintenance mode, but maintenance occurs only at the storage pool level.
nss /UpgradeObjectsOnVolume	Upgrades objects on volumes to the current version.

System Volume Recovery Commands (NetWare)

NSS provides the following commands for recovering the system volume on NetWare. To view a complete list, use the `nss /help` command.

Commands	Description
nss /ChangeSysQuota= <i>size</i>	Lets you change the quota (in MB) for the <code>sys:</code> volume. Setting this value to zero sets the Quota to none and allows the <code>sys:</code> volume to grow to the size of the pool.
nss /ExpandSys	Lets you expand the pool that contains your <code>sys:</code> volume. When prompted, enter the partition ID of the free space you plan to use to expand the pool. You can obtain the partition ID of all free partitions by using the <code>/ListFreeSpace</code> command.
nss /ListFreeSpace	Lists all free partitions and NSS partitions that have not been assigned to a pool. Use this command to obtain the partition ID required when using the <code>/ExpandSYS</code> command.

Commands	Description
nss /RenameToSys	Lets you rename the <i>sys:</i> volume back to <i>sys:</i> if you have previously renamed it. At the prompt, enter the name of the volume you want to rename to <i>sys:</i> .
nss /SalvageSys	Lets you restore the <i>sys:</i> volume if you have deleted it (only if it has not yet been purged).

Compression Commands

NSS offers the following commands for configuring and monitoring compression. To view a complete list, use the `nss /help` command.

Command	Description
CompScreen	Displays the NSS volume compression statistics on the compression screen.
nss /Compression= <i>volume</i>	Enables the Compression attribute for the specified volume. After you enable the Compression attribute, the setting persists for the life of the volume. You cannot disable compression, but you can set parameters to effectively turn it off.
nss /Compression=all	Enables the Compression attribute for all volumes on the server.
StopNormalCompression	Stops all queued compression for files, based on the compression triggered by a file open or close.
nss /BGCompression	Allows compression to occur in the background at any time, instead of only within specified hours.
nss /NoBGCompression	Stops background compression and clears any queued background compression requests. Allow compression to occur only within the specified hours.

Encrypted Volume Support Commands (NetWare)

You can use NSS console commands to display volume status and to activate, mount, deactivate, or dismount encrypted volumes. You must enter a password only on the first activation following a system reboot. Thereafter, other environmental security and authentication measures control access to user data.

The following table provides the syntax for NSS commands to use with encrypted volumes. You can use this syntax to activate an encrypted volume from the console command line prompt or in a script file. In each case, replace *volname* with the name of the encrypted NSS volume. In general, you cannot use the wildcard option of “all” as the *volname*. Until an encrypted volume is activated with its password following each system reboot, the All option does not find the volume and does not execute the command. The system returns an error message, requesting more information.

Replace *volpassword* with the password you used when you created the encrypted volume. If the password is not supplied, and a corresponding key is not found in memory, NSS prompts for the password at the command line.

Command	Use To
<code>nss /activate=volname:volpassword</code>	Activate the encrypted NSS volume the first time after a system reboot.
<code>nss /activate=volname</code>	Activate the encrypted NSS volume in two steps.
If prompted, enter <i>volpassword</i> for the encrypted volume.	The password is required only on the first activation following a system reboot.
<code>nss / volumeactivate=volname:volpassword</code>	Activate the encrypted NSS volume the first time after a system reboot.
<code>nss /activate=all</code>	Activate all encrypted NSS volumes that have been previously activated with their passwords.
<code>nss /volumes</code>	View the status of an encrypted and non-encrypted NSS volumes. The encrypted volume returns a status of Encrypted.
<code>mount volname</code>	Mount an encrypted or non-encrypted NSS volume. The mount command is usable for encrypted volumes only after a previous activate with password. Otherwise, it returns an error message, requesting more information.
<code>mount all</code>	Activate and mount all encrypted NSS volumes that have been previously activated with their passwords. Encrypted NSS volumes that were not previously activated return an error message, requesting more information.

You cannot use wildcard options and commands to activate encrypted volumes, such as `nss /VolumeAutoActivate`.

SALVAGE and PURGE Commands

Both PURGE and SALVAGE commands are supported and behave almost the same in NSS as in previous versions of NetWare.

The SALVAGE command for the traditional NetWare file system and previous releases of NetWare was either turned on or off for the whole file system. In NSS, you can turn SALVAGE on or off for each NSS volume.

Use SALVAGE at the server console as follows:

Commands	Description
<code>nss /Salvage=volume/all</code>	Enables salvage of deleted files on volumes. <i>Volume</i> enables the Salvage command on the specified NSS volume on the specified server. All enables the Salvage command on all NSS volumes on the specified server.

Commands	Description
<code>nss /NoSalvage=<i>volume</i>/all</code>	Disables salvage of deleted files on volumes. <i>Volume</i> disables the Salvage command on the specified NSS volume on the specified server. All disables the Salvage command on all NSS volumes on the specified server.

NSS offers the following commands for tuning the purging processes for a volume. To view a complete list, use the `nss /help` command.

Commands	Description
<code>nss / LogicalVolumePurgeDelay=<i>value</i></code>	The number of seconds before deleted logical volumes are purged. This allows time to reverse the deletion. [Default=345600]
<code>nss / LogicalVolumePurgeDelayAfterLoad</code>	The number of seconds after NSS loads before deleted logical volumes are purged. This allows time to reverse the deletion. [Default=7200]
<code>nss / LogicalVolumePurgeDelayAfterContinue=<i>value</i></code>	The number of seconds to delay purging a logical volume after clicking Continue. After a volume starts to purge, it cannot be salvaged. [Default=900]
<code>nss / PoolHighWaterMark=<poolname>:Percentage</code>	Purging begins in the salvage area when the volume's low watermark is reached and continues until its high watermark is reached. When enough files are purged such that the free disk space increases to a percentage equal to or greater than the high watermark, the autopurge stops. Autopurging does not start again until free space again drops below the low watermark. The high and low watermarks must be at least 2% apart from each other. [Default=20; Range=2 to 100]
<code>nss / PoolLowWaterMark=<poolname>:Percentage</code>	Purging begins in the salvage area when the volume's low watermark is reached and continues until its high watermark is reached. When free disk space falls below a low watermark, NSS begins autopurging the salvage area. The high and low watermarks must be at least 2% apart from each other. [Default=10; Range=0 to 98]

Read Ahead Commands

NSS offers the following Read Ahead commands for tuning your storage solution. To view a complete list, use the `nss /help` command.

Commands	Description
nss /AllocAheadBlks= <i>value</i>	Sets the number of blocks to allocate ahead on writes. [Default=15; Range=0 to 63]
nss / ReadAheadBlks= <i>VolName:Count</i>	Specify VolName as the name of the volume that you are setting the attribute for. Specify the Count to be the number of 4 KB blocks that you want to NSS to read ahead. The default block count is 2 blocks, which satisfies the performance requirements for a typical volume. The valid range for a block count is 0 blocks to 1024 blocks, where a block count of zero (0) implies no read ahead. However, 128 blocks is the practical maximum. Read-ahead block counts higher than 128 can starve other system components for memory or buffers, which can impair performance or cause the system to hang. As the number of concurrent connections to unique files increase, you should reduce the number of read-ahead blocks. [Default=2; Maximum=1024; Practical maximum=128]

Cache Balancing Commands (NetWare)

NSS provides commands to balance the cache for NSS on NetWare.

WARNING: If you give NSS more memory than you allow for the server, NSS fails to load. Your NSS-based `sys:` volume becomes inoperable until you load the `c:\nwserver\server.exe` with an NSS override to correct the situation. For information, see [“Load Commands” on page 125](#).

Commands	Description
nss /CacheBalance= <i>value</i>	Enables the dynamic balancing of free memory for the NSS buffer cache. Sets the specified percentage of free kernel memory that NSS uses for its buffer cache. [Default=85; Range=1 to 99]
nss /NoCacheBalance	Disables the dynamic balancing of free memory for the NSS buffer cache.
nss /MinBufferCacheSize= <i>value</i>	Sets the specified minimum number of NSS buffer cache entries. [Default=512; Range=384 to 1048576]
nss /MinOSBufferCacheSize= <i>value</i>	Sets the specified minimum number of NetWare buffer cache entries. [Default=256; Range=256 to 1048576]
nss /NameCacheSize= <i>value</i>	Sets the specified maximum number of Name cache entries. [Default=100000; Range=17 to 1000000]
nss /CacheUserMaxPercent= <i>value</i>	Sets the specified maximum percentage of buffer cache that can be used for user data. [Default=80; Range=10 to 100]
nss /ClosedFileCacheSize= <i>value</i>	Sets the number of closed files that can have their beast objects cached in memory. On average, each Closed File Cache entry consumes 0.4 - 1KB of RAM. [Default=50000; Range=16 to 1000000; Recommended=100000]
CacheStats	Shows the caching statistics for buffers.

Commands	Description
FileCacheStats	Shows the caching statistics for file system objects.
NameCacheStats	Shows the caching statistics for names.
ResetStats	Resets caching and file statistics.
nss /FlushFilesImmediately= <i>volume</i>	Synchronously flush data to the specified volume when its files are closed instead of waiting for the next scheduled write of data to the volume.
nss / NoFlushFilesImmediately= <i>volume</i>	Disables synchronously flushing files to the specified volume when its files are closed. Instead, data is written to the volume on the next scheduled write of data to the volume.
nss /FileFlushTimer= <i>value</i>	Sets the flush time in seconds for writing data to modified open files. Increasing this number might reduce the number of writes to disk; however, it increases the amount of data that is lost if the system crashes. [Default=10 seconds; Range=1 to 3600 seconds]
nss /IDCacheResetInterval	Set the number of seconds between invalidation of the ID cache. [Default=90000 Range=0-200000000]

Commands for Mounting CDs and DVDs as NSS Volumes (NetWare)

`Cddvd.nss` is loaded automatically on startup by default. Use the following commands to manage CDs, DVDs, and Macintosh CDs as NSS volumes on Netware.

NOTE: The `cddvd.nss` module replaces `cdrom.nlm` and `cd9660.nss` for CD support, `udf.nss` for DVD support, and `cdhfs.nss` for Macintosh CD support. The following commands for `cddvd.nss` are the same ones used for previous CD and DVD management modules.

Commands	Description
CDDVD	If CDDVD is specified in the <code>nssstart.cfg</code> file, loads only those modules essential for CD and DVD support.
nss /(No)LeaveCDinNDS	If the switches <code>UpdateCDToNDS</code> or <code>LoginUpdateCDToNDS</code> is enabled, enable this switch to retain the CD or DVD volume objects when the actual disks are removed. [Default=Off]
nss /(No)LoadISOVolumeFirst	If this switch is enabled, tries to load UDF-bridge CD as and ISO9660 volume first. By default, a UDF-bridge CD is loaded as DVD format first and CD format second. [Default=Off]
nss /(No)LockCDMediaIn	If this switch is enabled, whenever CDs or DVDs are activated or deactivated as NSS volumes, locks or unlocks the media in the device. [Default=Off]

Commands	Description
nss /(No)UpdateCDToNDS	<p>If this switch is enabled, whenever CDs or DVDs are activated or deactivated as NSS volumes, updates their Novell eDirectory objects.</p> <p>[Default=Off]</p>
nss /(No)LoginUpdateCDToNDS	<p>If this switch is enabled, whenever CDs or DVDs are activated or deactivated as NSS volumes, updates their Novell eDirectory objects. You must login as admin.</p> <p>[Default=Off]</p>
nss / (No)MountISODiscSetInOneVolume	<p>If this switch is enabled, <code>cddvd.nss</code> attempts to load an ISO9660 multiple-disk set as a single NSS volume. This volume is not mounted until all disks among the set are available to <code>cddvd.nss</code>.</p> <p>If this switch is disabled, <code>cddvd.nss</code> mounts each disk in the set as one individual NSS volume.</p> <p>[Default=Off]</p>

Commands for CD and DVD Image Files as NSS Volumes (NetWare)

`Cddvd.nss` is loaded automatically on startup by default. `Cddvd.nss` provides the following commands for adding and removing CD and DVD image files as NSS Volumes.

While the CD or DVD image source file is loaded as an NSS volume, the following actions cause the image file to be removed as an NSS volume:

- ♦ Any file operations on the image source file, such as open, read, or write
- ♦ Deactivation of the NSS volume where the image source file resides

Commands	Description
nss / MountImageVolume= <i>path_imagefilename</i>	<p>Adds and mounts the specified CD or DVD image file as a read-only NSS volume.</p> <p>Replace <i>path_imagefilename</i> with the path on the NSS volume where the image file resides, including its filename. For example:</p> <p>nss /MountImageVolume=<i>nssvol:\suse9_1.iso</i></p>
nss / RemoveImageVolume= <i>path_imagefilename</i>	<p>Dismounts and removes the specified CD or DVD image file as a read-only NSS volume.</p> <p>Replace <i>path_imagefilename</i> with the path on the NSS volume where the image file resides, including its filename. For example:</p> <p>nss /RemoveImageVolume=<i>nssvol:\suse9_1.iso</i></p>

DOS FAT Commands (NetWare)

NSS provides the following commands for managing DOS FAT partitions.

Commands	Description
DOSFAT	If DOSFAT is specified in the <code>nssstart.cfg</code> file, loads only those modules essential for accessing FAT 16 and FAT 12 drives. OES NetWare does not support FAT 32 drives.
<code>nss / FATPartition=partition_type_number</code>	Supports up to three additional partition types containing 16-bit FATs, such as <code>/FATPartition=12,13</code> .
<code>nss /(No)FATLongNames</code>	Enables long filenames on FAT volumes. [Default=On]

NOTE: DOSFAT supports only hard drives. DOSFAT does not support USB drives.

MSAP Commands

The management file for pool MSAP is `_admin\manage_nss\pool\poolname\z1ss\msap.xml`. One file exists for each pool. This file contains MSAP statistics for the pool. The MSAP attribute is displayed in the `enabledAttributes` tag of the `poolinfo.xml` management file.

For `manage.cmd`, the pool operation `getPoolInfo` returns the MSAP tag (`<msap>`) in the `supportedAttributes` tag (`<supportedAttributes>`) and the `enabledAttributes` tag (`<enabledAttributes>`).

For APIs, the pool feature `zpool_feature_msap` can be viewed and controlled using the `zGetInfo` and `zModifyInfo` commands.

MSAP Console Command	Description
<code>nss /msapserver</code>	Enables MSAP for all the pools on the server. By default, MSAP is enabled for every pool on the server. We recommend that you never disable MSAP.
<code>nss /nomsapserver</code>	Disables MSAP for all the pools on the server. This command remains in effect only until the server is next rebooted. We recommend that you never disable MSAP.
<code>nss /msaprebuild</code>	Rebuilds a corrupt MSAP block. Before issuing the command to rebuild, you must deactivate the pool because a corrupt MSAP prevents a pool from going into Maintenance state. Rebuilding an MSAP block does not give the rebuilder ownership of the pool.
<code>nss /poolmsap=pool</code>	Enables MSAP for a given pool on the server. MSAP is enabled the next time the pool is activated. (Enter the command, deactivate the pool, then activate the pool. MSAP is now enabled.)
<code>nss /nopoolmsap=pool</code>	Disables MSAP for a given pool. Use the command when the pool is activated. MSAP is disabled the next time the pool is activated. (Enter the command, deactivate the pool, then activate the pool. MSAP is now disabled.)
<code>nss /pools</code>	Displays the message "Multi-use detect" for pools that have MSAP enabled.

Multipath Connection Failover Commands (NetWare)

NSS provides the following Media Manager commands for managing multipath connection failover.

Media Manager Multipath I/O Console Command	Description
list failover devices <i>device_id</i>	<p>This command lists all of the failover devices. It also lists all the paths associated with each device, their assigned priorities, and the path that is selected.</p> <p>To list the paths associated with all the devices on the server, enter the command without specifying the <i>device_id</i>.</p> <p>To list the paths associated with a given device, enter the command followed by the <i>device_id</i>.</p>
mm set failover priority <i>pathid=number</i>	<p>This command sets the priority level for the selected path. The <i>pathid</i> must be a valid path ID. The <i>number</i> is the priority to set for the selected path. The number must be a decimal integer value between 1 and 4 million, with 1 being the highest priority and 4 million being the lowest priority.</p>
mm set failover priority <i>pathid=number /insert</i>	<p>The <i>/insert</i> option inserts the specified path with its specified priority. For example, if you have four existing paths that are assigned the priorities of 1, 2, 3, and 4, and you enter a new path followed by a number 2 and the <i>/insert</i> option, then the paths that were previously assigned to 2, 3, and 4 priority are bumped to priority 3, 4, and 5 in order to accommodate the new path that has been assigned priority 2.</p>
mm set failover state <i>pathid=up /setpath</i>	<p>This command sets the state of the specified path to Up. The <i>pathid</i> must be a valid path ID.</p> <p>If the Up option is followed by the <i>/setpath</i> option, NSS automatically selects the highest priority path from among all the paths that are in the Up state, including the new path.</p>
mm set failover state <i>pathid=down /setpath</i>	<p>This command enables you to designate a path to be in the Down state so you can perform preventative maintenance or reroute cables on a good, functional path. If the path is bad, NSS automatically moves the path to a Down state.</p> <p>If the Down option is followed by the <i>/setpath</i> option, NSS automatically selects the highest priority path from among the other paths that are currently in the Up state.</p>
mm set failover path <i>pathid</i>	<p>This command activates the selected path as selected, which means it serves as the primary path. The <i>pathid</i> must be a valid path that is currently in the Up state. The priority of a path remains static regardless of whether a path is considered up or down or whether a path is selected or not selected as the primary path.</p>
mm restore failover path <i>device_id</i>	<p>This command forces the device to reselect the highest priority path that is online. The <i>deviceid</i> must be a valid device ID.</p>
mm reset failover registry	<p>This command resets the multipath settings in the operating system registry.</p>

Pool Snapshot Commands (NetWare)

The following table shows the server console commands you can use to manage pool snapshots.

Snapshot Management Commands	Description
<code>mm snap create <i>snappool datapool snapname</i></code>	Creates a pool snapshot.
<code>mm snap activate <i>snapname</i></code>	Activates a pool snapshot.
<code>mm snap deactivate <i>snapname</i></code>	Deactivates a pool snapshot.
<code>mm snap delete <i>snapname</i></code>	Deletes a pool snapshot.
<code>mm snap rename <i>snapname newsnapname</i></code>	Renames the pool as specified.
<code>mm snap list</code>	Lists the snapshots on the server.
<code>mm snap shred <i>snapname</i> = on</code>	<p>Turns on shredding for the internal volume of the pool where you are storing the specified snapshot.</p> <p>If this option is enabled:</p> <ul style="list-style-type: none">♦ You can have only one snapshot at a time of its original pool.♦ After you delete the snapshot, allow enough time for the shredding process before you create a new one.
<code>mm snap shred <i>snapname</i> = off</code>	<p>Turns off shredding for the internal volume of the pool where you are storing the specified snapshot.</p> <p>If any pool snapshot was created on this pool prior to the NetWare 6.5 SP3 release, shredding is already turned on. Use this command to turn off shredding.</p>

The following table shows the attribute descriptions for pool snapshot commands.

Attributes for Pool Snapshot Commands	Description
<code>snappool</code>	The unique name of the original data pool that you are snapping; must be 2 to 16 characters.
<code>datapool</code>	The unique name of the stored-on pool for the pool snapshot; must be 2 to 16 characters.
<code>snapname</code>	The unique snap name of the pool snapshot, which is used as its pool name when the pool snapshot is activated; must be 2 to 16 characters.

Security Equivalence Vector Update Commands (Linux)

The Security Equivalence Vector (SEV) is calculated for each NSS user based on information in the user's profile in Novell eDirectory. It is a list of eDirectory GUIDs, for example:

- ♦ the user's own GUIDs
- ♦ GUIDs of groups that include the user

- ♦ GUIDs of parent containers for the user and his or her groups
- ♦ security equivalent GUIDs

The SEV is used to validate the user against the trustee rights of the directory and file the user is attempting to access.

After you boot the Linux server, when a user first attempts to connect to the NSS file system, NSS contacts Novell eDirectory to retrieve the user's Security Equivalence Vector (SEV). eDirectory calculates the user's effective rights for the NSS volume, creates the SEV, and passes it to NSS. NSS compares the user's SEV with file system trustees and trustee rights for the specified file or directory to determine if the user can access the resource.

NSS caches the SEV locally in the server memory, where it remains until the server is rebooted or unless the user is deleted from eDirectory. NSS polls eDirectory at a specified interval for updates to the SEVs that are in cache.

In contrast, for NetWare, whenever a user connects to the NSS file system, NetWare retrieves the user's SEV from eDirectory and maintains it as part of the connection structure for the user's session. NSS retrieves the user's SEV from the connection structure.

Command line switches are available in the NSS Console utility (nsscon) to enable or disable the update, to set the update interval from 5 minutes to 90 days (specified in seconds), and to force an immediate update of security equivalence vectors. Polling too frequently can impact performance. Polling too infrequently can cause delays in granting or restricting access to certain users.

NSSCON Command	Description
nss /SecurityEquivalenceUpdating	<p>Enables SEV updates to occur in the background in addition to updates that occur when the system reboots. It is enabled by default.</p> <p>To make it persistent, include the command in the <code>/opt/novell/nss/conf/nssstart.cfg</code> file.</p>
nss /NoSecurityEquivalenceUpdating	<p>Disables SEV updates to occur in the background. Instead, SEV updates occur only on system reboot.</p> <p>To make it persistent, include the command in the <code>/opt/novell/nss/conf/nssstart.cfg</code> file.</p>
nss / UpdateSecurityEquivalenceInterval= <i>value</i>	<p>Sets the SEV update interval to the specified value in seconds. At the end of the elapsed time, NSS requires updated SEVs from eDirectory.</p> <p>To make it persistent, include the command in the <code>/opt/novell/nss/conf/nssstart.cfg</code> file.</p> <p>The default value is 7200 (2 hours). The valid range is 300 (5 minutes) to 7257600 (90 days).</p>

NSSCON Command	Description
nss /ForceSecurityEquivalenceUpdate	<p>Forces the SEV update to occur immediately for all users in the NSS file system. Use this command if you modify a user's access control settings in eDirectory and want those changes to be reflected immediately in the user's active SEV for this server.</p> <p>This command is invalid if used in the <code>/opt/novell/nss/conf/nssstart.cfg</code> file.</p> <p>A unique abbreviation such as</p> <p>nss /ForceS</p> <p>also works.</p>

Other NSS Commands

NSS provides these additional commands for managing pools and volumes. To view a complete list, use the `nss /help` command.

Commands	Description
nss /NoClassicDirectoryQuotas	<p>Turns emulation of Traditional NetWare volumes on or off.</p> <p>[Default=Off]</p>
nss /DataShredding= <i>volume:count</i>	<p>Enables the Data Shredding attribute for the specified volume. Specify the number of times you want to shred data.</p> <p>Data shredding overwrites purged files with bit patterns up to seven times. Unless you must use this feature for security reasons, it should be disabled, as data shredding consumes a great deal of disk I/O bandwidth.</p> <p>[Default=1; Range=0 to 7, where 0 indicates no shredding]</p>
nss /NoDataShredding= <i>volume</i>	Disables data shredding on the specified volume.
nss /DirectoryQuotas	Enables directory quotas on the volume.
nss /NoDirectoryQuotas	Disables directory quotas on the volume.
nss /FileCopyOnWrite	Creates a copy of files in the volume when they are open for write.
nss /NoFileCopyOnWrite	Does not create a copy of files on the volume when they are open for write.
nss /LVDeleteStatusBasic	Displays information about deleted logical volumes.
nss /LVDeleteStatusSalvageable	Displays information about salvageable logical volumes.
nss /Migration= <i>volume/all</i>	Enables migration of files on the volumes.
nss /NoMigration= <i>volume/all</i>	Disables migration of files on the volumes.
nss /StorageAlarmThreshold= <i>value</i>	<p>Lets you set the threshold for a low storage space warning.</p> <p>[Default=10; Range=0 to 1000000]</p>

Commands	Description
nss /(No)StorageAlertMessages	Turns On or Off the low storage message to users. [Default=On]
nss /StorageResetThreshold= <i>value</i>	Lets you reset the threshold for a low storage space warning. [Default=10; Range=1 to 1000000]
nss /NoTransaction= <i>volume/all</i>	Disables transactional writes in files on the volumes.
nss /UserSpaceRestrictions	Enables user quotas on the volume.
nss /NoUserSpaceRestrictions	Disables user quotas on the volume.
nss /Transaction= <i>volume/all</i>	Enables transactional writes in files on the volumes.
nss /ZLSSIOStatus	Displays current NSS IO status information.
nss /ZLSSPendingWriteIOs	Number of write inputs dropped to the storage subsystem. (0 = all available) [Default=1000; Range=0 to 3000]
nss /ZLSSPoolScan	Scans for and loads all ZLSS pools.
nss /ZLSSVolumeUpgrade	Allows the 5.x/ZLSS VolumeUpgrade to the NetWare 6 format to occur during the installation process.

1.110.2 Additional Information

Topic	See
Using commands and other management tools	<i>NW 6.5 SP8: NSS File System Administration Guide</i>

1.111 NSSMU

Purpose

The Novell Storage Services™ Management Utility (NSSMU) is a console-based utility for managing NSS storage media on a server. You can use it at any time as an alternative to the browser-based iManager Storage Management plug-in.

NSSMU for NetWare

NSSMU is the interface you use to set up your basic NSS storage solution during the NetWare installation. For example, you must use NSSMU to create the `sys` pool and `sys: volume`.

For OES NetWare, you can set up iSCSI partitions using the Partitions option in the main menu in NSSMU. You must have iSCSI target software loaded to make your server an iSCSI disk server. You cannot create iSCSI devices during the initial installation. For more information, see the *NW 6.5 SP8: iSCSI 1.1.3 Administration Guide*.

For OES NetWare, you can use NSSMU and Novell Remote Manager to create encrypted volumes. Encryption is an optional volume attribute, available only at volume-creation time. An encrypted volume meets the legal standard of making data inaccessible to software that circumvents normal access control, such as if the media were stolen. You cannot create encrypted volumes during the installation. The `sys:` volume is not eligible for encryption.

IMPORTANT: NSSMU is not meant to replace iManager or any other NetWare file system management utilities. However, it is the only management tool that can access your server if you accidentally delete or rename the `sys:` volume.

Load the NSSMU module (`nssmu.nlm`) from the command line of the server console by entering

```
nssmu
```

The following table identifies key functions available in NSSMU for NetWare.

Management Options	Function Keys	Description
Device Management	F1 = Help	Use this menu option to initialize and maintain a wide selection of physical storage devices and software RAID devices available to this server. Use the RAID Devices option to create and expand software RAID-0, RAID-1, and RAID-5 devices.
	F2 = Scan for devices	
	F3 = Initialize device (not for <code>sys:</code>)	
	F4 = Multipath (available only if there are multiple paths for the device)	
	F5 = Select/Deselect one or more devices for Initialize or Share actions	
	F6 = Share (Sharable/Not sharable for clustering)	
	F9 = Refresh details of the device	
Pool Management	Enter = Show partitions	Use this menu option to create, delete, rename, and expand NSS storage pools to efficiently use all free space in the available devices.
	Ins = Create a pool	
	Del = Delete a pool	
	F3 = Expand a pool (add segments)	
	F5 = Refresh details of the pool	
	F6 = Rename a pool	
	F7 = Activate/Deactivate pools	
	F8 = More (list more options)	
	F9 = Show/Hide deleted volumes	
	F10 = List devices (that a pool resides on)	
	Alt+F8 = Update NDS®/eDirectory™	
	Enter = Show volumes (on a server or pool)	

Management Options	Function Keys	Description
Volume Management	Ins = Create an encrypted or unencrypted volume	Use this menu option to create, delete, rename, activate/deactivate, and mount/dismount volumes and to set volume attributes.
	Del = Delete a volume	
	F3 = Rename a volume	
	F5 = Refresh details of the volume	
	F6 = Deactivate/Activate an encrypted or unencrypted volume. If encrypted, the volume prompts for a password on the first activate after a system boot or reboot.	
	F7 = Dismount/Mount a volume	
	F8 = More (list more options)	
	Alt+F8 = Update NDS/eDirectory	
Software RAID Management	Enter = Properties (change volume properties)	To store data in encrypted format, enable the encryption attribute on volume creation. The encryption setting persists for the life of the volume. The encryption password can be up to 16 standard ASCII characters, with a suggested minimum of six. The password generates a 128-bit NICI key for encryption. Supply the password on the first volume activate after a system boot or reboot.
	Ins = Create a Software RAID (0, 1, or 5)	A software RAID device emulates a hardware RAID device. RAID devices combine partitioned space on multiple physical devices into a single virtual device that you manage like any device. Each member device contributes an equal amount of space and only a single segment to the RAID.
	Del = Delete a software RAID device	
	F3 = Expand a RAID device (add segments)	
	F5 = Refresh details of the software RAID device	
	F6 = Restripe (resume restriping for paused RAID 0/5)	
	F8 = Show pools (list pools on selected RAID 0 or 5; for RAID 1, its single member pool appears in device details)	
	Enter = Show segments (list member segments)	
		You can also create a software RAID 10 pool by mirroring a pool on software RAID 0 devices, which must have no physical drives in common. Create a pool on one of the RAID 0 devices, then mirror the pool on up to three software RAID 0 devices, totalling up to four segments for the RAID 10 pool.
Partitions	Ins = Create an NSS or an iSCSI partition	Use this option to create and manage NSS partitions and iSCSI partitions. To create iSCSI partitions, the server must run iSCSI target software and be the server you plan to make your iSCSI disk server.
	Del = Delete an NSS or an iSCSI partition	
	F3 = Mirror (create a software RAID-1 device)	
	F5 = Refresh details of the partition	
	Enter = Show volumes	

1.112 NSWEB

Purpose

Use NSWEB and NSWEBDN to start and stop the NetWare® Web Manager and NetWare Enterprise Web Server.

Syntax

NVXWEBUP

NVXWEBDN

1.113 NVXADM

Purpose

Use NVXADMUP and NVXADMMDN to start and stop the NetWare® Web Manager.

Syntax

NVXADMUP

NVXADMMDN

1.114 NVXWEB

Purpose

Use NVXWEBUP and NVXWEBDN to start and stop the NetWare® Web Manager.

Syntax

NVXWEBUP

NVXWEBDN

1.115 NWBACK32

Purpose

From a Windows* 95 or Windows NT* workstation, use this graphical utility to back up or restore Storage Management Services™ (SMS™) targets such as eDirectory™, binderies, the file system, or hard disks. With this utility, you can do the following:

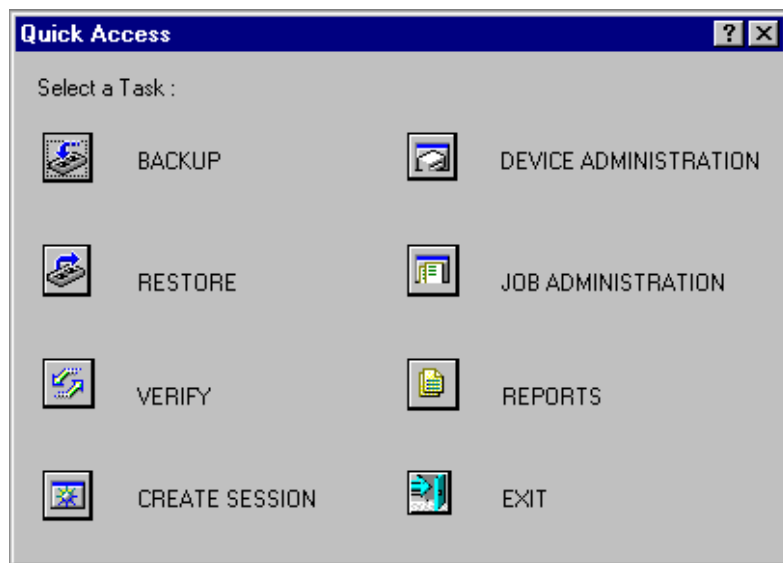
- ♦ Back up data
- ♦ Restore data
- ♦ Verify what you have backed up or restored
- ♦ Create new sessions
- ♦ Manage your devices
- ♦ Manage your backup or restore jobs
- ♦ Create log and error reports
- ♦ Schedule backup or restore jobs

Starting NWBACK32

Certain prerequisites must be met on the backup server before you can start NWBACK32 on a Windows 95 or Windows NT workstation. Also, if you are loading NWBACK32 for the first time, the steps are different. For more information, see the *NW 6.5 SP8: Storage Management Services Administration Guide* and the *NW 6.5 SP8: SBCON Administration Guide*.

- 1 Log in to the desired eDirectory tree.
- 2 Select *Network Neighborhood > Novell > sys:public > Nwback32*.
The Quick Access window appears.

Figure 1-7 Quick Access Window



Using NWBACK32

The following sections describe how the elements of NWBACK32 work. There are three methods for using NWBACK32: Quick Access, the toolbar, or the menu bar. Use the Quick Access window to determine what you want to back up or restore. Then Quick Access window does not contain as many features as in the menus or toolbar.

Interface

Click the preferred button in the Quick Access window:

- ♦ **Backup** lets you choose what to back up and where to back up.
- ♦ **Restore** lets you choose what to restore and where to restore.
- ♦ **Verify** lets you check the data on your media to ensure a successful backup.
- ♦ **Create Session** lets you create you log and error file sessions.
- ♦ **Device Administration** lets you monitor the properties of a device.
- ♦ **Job Administration** lets you view and change jobs.
- ♦ **Reports** lets you view the details of session and error reports.
- ♦ **Exit** quits NWBACK32.

When you reach your destination, in most instances you can right-click the last item. You may also use the menu bar or the toolbar to complete the task.

Bar

The menu bar displays headings for various menus. The tasks in the menus contains all the features the toolbar uses and more than the Quick Access menu. To complete a task or manage a job, select one of the following if preferred:

- ♦ **File** contains options for a new session, changing the context, changing the protocol, or exiting NWBACK32.
- ♦ **Backup** contains options for submitting a job, using filters, selecting a backup type, scheduling a backup, or selecting the backup frequency.
- ♦ **Restore** contains options for submitting a job, using the filters, and scheduling a restore.
- ♦ **Verify** contains an option for submitting a job.
- ♦ **Create Session** contains an option for submitting a job.
- ♦ **Device Administration** contains options for changing device labels or types, attaching to media, releasing a device, viewing media properties, erasing the media, moving the media, retention the media, or create a new media label.
- ♦ **Job Administration** contains options for checking properties of jobs, enabling or deleting jobs, starting or holding jobs, rescheduling a job, or aborting a job.
- ♦ **Reports** contains options for creating new log and error reports.

The toolbar displays buttons for various tasks or topics as follows:

- ♦ **Start a backup** initializes your backup job.
- ♦ **Start restore job** initializes your restore job.
- ♦ **Start verify session** initializes verification of data on the media.

- ♦ **Start create session** initializes a new session for the job.
- ♦ **Job administration** contains options for checking properties of jobs, enabling or deleting jobs, starting or holding jobs, rescheduling a job, or aborting a job.
- ♦ **Device administration** contains options for changing device labels or types, attaching to media, releasing a device, viewing media properties, erasing the media, moving the media, retention the media, or create a new media label.
- ♦ **Reports** lets you create a log or error report.
- ♦ **Run** lets you run a report.
- ♦ **Apply filters** lets you use the filters you selected in Backup.
- ♦ **Complete differential and incremental backup** lets you run these backup types.
- ♦ **Schedule the job** lets you schedule your backup or restore.
- ♦ **Frequency of backup** lets you indicate how often to back up.
- ♦ **Change the context** lets you change to another context.
- ♦ **IP/IPX** lets you change the protocol.
- ♦ **Help** displays the Help facility (not yet available).
- ♦ **Exit** closes NWBACK32.

Additional Information

Topic	See
Learning how backup and restore works	<i>"SMS Overview" in the NW 6.5 SP8: Storage Management Services Administration Guide</i>
Backing up data	<i>"Backing Up Data Using SMS" in the NW 6.5 SP8: Storage Management Services Administration Guide</i>
Restoring Data	<i>"Restoring Data Using SMS" in the NW 6.5 SP8: Storage Management Services Administration Guide</i>
Loading the backup software	<i>"Installing and Configuring SMS" in the NW 6.5 SP8: Storage Management Services Administration Guide</i>
Administering a job or a device	<i>"Using SMS" in the NW 6.5 SP8: Storage Management Services Administration Guide</i>

1.116 NWCONFIG

Purpose

Use at the server console to

- ♦ Modify your NetWare® server's configuration
- ♦ Perform server management operations
- ♦ Install additional products

Syntax

[LOAD] [path]NWCONFIG

Parameter	Use to
<i>path</i>	Specify the path to NWCONFIG if you moved it from the default directory.

Using NWCONFIG

The following table describes each option found on the NWCONFIG main menu.

NOTE: For information about NWCONFIG options, press F1 from any NWCONFIG window.

Table 1-1 NWCONFIG Installation Options Menu

Menu Option	Use to
Driver Options	This functionality has been moved to the Hardware Detection utility, <code>hdetect.nlm</code> .
Legacy Disk Options	These options are now provided by Novell iManager , Novell Storage Services Management utility (<code>nssmu.nlm</code>), and Novell Remote Manager (NRM).
License Option	Use iManager to install or delete licenses.
Copy Files Option	Copy NetWare files to various directories on volume <code>sys:</code> .
Directory Options	Install and remove eDirectory. Upgrade mounted volumes into the eDirectory tree. Perform eDirectory tree backup and restore options. Extend schema.
NCF Files Options	Create and edit the <code>startup.ncf</code> and <code>autoexec.ncf</code> files.
Multi CPU Options	This functionality has been moved to the Hardware Detection utility, <code>hdetect.nlm</code> .
Product Options	Install and configure additional NetWare or third-party products; remove additional products from the server. Add an additional language to the server or change the server language.
Exit	Exit NWCONFIG.

Additional Information

Topic	See
eDirectory	"Maintaining Novell eDirectory" in the Novell eDirectory 8.8 Administration Guide
.ncf files	Overview to "Using Server Batch Files" in the NW 6.5 SP8: Server Operating System Administration Guide

1.117 NWPING

Purpose

Use at the server console for remote host reachability diagnosis.

The NWPING utility sends a packet to the specified host and waits for a reply. The host address and roundtrip times for each pair of packets are displayed. In addition, the total number of packets sent; total number of packets received; percent packet loss; and the minimum, average, and maximum roundtrip times are displayed when the program exits.

Syntax

```
nwping [-afnq] [-c count] [-i wait] [-l preload] [-p pattern] [-s  
packetsize] [-S src_addr] [-t timeout] [host] [-help]
```

The following table contains a list of supported options and a description of what each does.

Option	Use to
-a	Include a bell (ASCII 0x07) character in the output when any packet is received.
-f	Output packets as fast as one hundred times per second. For every ECHO_REQUEST sent, a period (.) is printed; for every ECHO_REPLY received, a backspace is printed. This provides a rapid display of how many packets are being dropped. This can be very hard on the network and should be used with caution.
-n	Display numeric output only. No attempt will be made to look up symbolic names for host addresses.
-q	Quiet output. Nothing is displayed except the summary lines at startup and completion.
-c <i>count</i>	Stop after sending (and receiving) count ECHO_RESPONSE packets. If this option is not specified, NWPING operates until interrupted.
-i <i>wait</i>	Specify the time interval (in seconds) between packet sends. This option is incompatible with the -f option. Minimum: 1 Maximum: 10
-l <i>preload</i>	Send packets as fast as possible before falling into normal mode of behavior. Maximum: 100
-p <i>pattern</i>	Diagnose data-dependent problems in a network. You can specify up to 16 pattern bytes to fill out the packet you send. Length should be 16. Example: -p 012345678910abcdef

Option	Use to
<code>-s packetsize</code>	Specify the number of data bytes to be sent. Maximum: 36992 Default: 56 (equals 64 ICMP data bytes when combined with the 8 bytes of ICMP header data)
<code>-S src_addr</code>	Use the IP address as the source address in outgoing packets. On hosts with more than one IP address, this option can be used to force the source address to be other than the IP address of the interface that the probe packet is sent on. If the IP address is not one of this machine's interface addresses, an error is returned and nothing is sent.
<code>host</code>	Specify the destination host that the connection needs to be checked on.
<code>-help</code>	Display the help for this utility.

1.118 NWTrace

Purpose

Use at the server console to print the route that packets take to the network host.

NWTrace utilizes the IP Protocol time-to-live field and attempts to elicit an ICMP_TIME_EXCEEDED response from each of the gateways along the path to a host, to track the route the packets follow. The only mandatory parameter is the destination hostname or IP address. The default probe datagram length is 40 bytes, but this can be increased by specifying a packet length (in bytes) after the destination hostname.

Syntax

```
NWtrace [-Snv] [-M min_ttl] [-m max_ttl] [-q nqueries] [-s src_addr] [-w wait_time] host [packetlen]
```

Option	Use To
<code>-S</code>	Print a summary of how many probes were not answered for each hop.
<code>-n</code>	Print hop addresses numerically only rather than numerically and symbolically (saves a nameserver address-to-name lookup for each gateway found on the path.)
<code>-v</code>	Get verbose output. The received ICMP packets other than TIME_EXCEEDED and UNREACHABLEs are listed.
<code>-M min_ttl</code>	Set the initial time-to-live value used in outgoing probe packets. Default: 1 (start with the first hop)
<code>-m max_ttl</code>	Set the maximum time-to-live (max number of hops) used in outgoing probe packets. Default: 30 (default <i>max_ttl</i> used for TCP connections)

Option	Use To
-q <i>nqueries</i>	Set the number of probes per hop. Default: 3
-s <i>src_addr</i>	Use the specified IP address (that must be given as an IP number, not a hostname) as the source address in outgoing probe packets. On hosts with more than one IP address, this option can be used to force the source address to be other than the IP address of the interface the probe that the packet is sent on. If the IP address is not one of this machine's interface addresses, an error is returned and nothing is sent.
-w <i>wait_time</i>	Set the time (in seconds) to wait for a response to a probe. Default: 5

1.119 PING

Purpose

Use at the server console to send an Internet Control Message Protocol (ICMP) echo request packet to an IP node on your internetwork.

PING determines whether an IP node is reachable on your internetwork.

Syntax

[LOAD] PING

Using PING

- ◆ PING sends an ICMP echo request packet to an IP node on your internetwork. If the target node receives the packet, it sends back a reply packet.
- ◆ To select an IP node, enter its hostname or IP address in the Host Name field.
You can also specify the number of seconds between each packet transmission and the size of the packet, in bytes.
- ◆ To start sending packets, press Esc. The sending node continues to send request packets and collect response time statistics until you press Esc again to exit PING.
- ◆ To select additional IP nodes, press Insert. Enter the hostname or IP address of the node in the Host Name field. Press Esc to start sending packets.

1.120 PPPCON

Purpose

Use PPPCON to view Point-to-Point Protocol (PPP) interface configuration and statistical information.

1.121 PPPTRACE

Purpose

The PPPTRACE utility enables you to debug PPP data link problems.

PPPTRACE fully decodes and displays PPP protocol exchanges. You can also examine network protocol data that flows through the PPP link in a partially decoded format.

Because each captured frame is time-stamped to an accuracy of one-tenth of a second, PPPTRACE can also provide valuable timing information.

1.122 PROTECT

Purpose

Use at the server console to load NLM™ programs into a protected address space when the commands to load the NLM programs are in a `.ncf` file. Specify the `.ncf` file as a parameter to the command.

Syntax

```
PROTECT filename
```

Using PROTECT

Use this command when you normally use a `.ncf` file to load multiple modules at once, and you want the modules to be loaded into the same protected address space.

The command creates a protected address space with the same name as the `.ncf` file and executes the `.ncf` file to load all the modules into the space.

For example,

```
protect grpwise
```

creates a protected address space called `grpwise` and reads `grpwise.ncf` to load modules into the protected space.

IMPORTANT: Remember that not all modules can run in a protected address space. Some modules, such as LAN and disk drivers, MONITOR, and `server.exe`, must run in the kernel address space. For more information, see “[Modules Not Allowed in Protected Address Spaces](#)” in the *NW 6.5 SP8: Server Memory Administration Guide*.

1.123 PROTECTION

Purpose

Use at the server console to display a list of protected address spaces or to add or remove restart functionality from an existing address space.

Restart functionality means that if the protected address space faults, the memory management system automatically closes the space, cleans up its resources, restarts the space, and reloads modules into it.

Syntax

```
PROTECTION [RESTART | NO RESTART address_space]
```

Parameter	Use to
no parameter)	Display a list of address spaces and the modules loaded into them.
RESTART <i>address_space</i>	Add restart functionality to the designated address space.
NO RESTART <i>address_space</i>	Remove restart functionality from the designated address space.

Using PROTECTION

When you execute PROTECTION without parameters, the server displays a list of all loaded address spaces. Each address space name is followed by a list of the modules loaded into the space, with a short description of each module.

If you add restart functionality to an address space, use the Memory Protection No Restart Interval parameter to prevent the address space from repeatedly faulting and then restarting. See [“Memory Parameters” on page 210](#).

1.124 PROTOCOL

Purpose

Use at the server console to

- ♦ View the protocols registered on your NetWare® server
- ♦ Register additional protocols and frame types

Syntax

```
PROTOCOL [REGISTER protocol frame id#]
```


Parameter	Use to
(no parameter)	Display the protocols registered on your server.
REGISTER	Register a protocol. It is only necessary to use PROTOCOL REGISTER in unusual cases, such as when using a new media.
<i>protocol</i>	Specify the protocol name.
<i>frame</i>	Specify the name representing the frame type that is to be bound to the communication protocol.
<i>id#</i>	Specify the protocol identification number (also called a protocol ID, PID, an Ethernet type or E-type, or an SAP). This number is a unique, assigned hexadecimal number that tells the server how to recognize data coming from a certain network board through a designated communication protocol (such as IPX).

Using PROTOCOL

- ♦ LAN drivers automatically register IPX; other protocol stacks register themselves.
- ♦ For approved protocol loadable modules, consult your reseller. For the protocol name, check the documentation that comes with the protocol module.
- ♦ LAN drivers automatically register a frame type when they are loaded. If the LAN driver supports more than one frame type, the frame type is registered when you load the driver with that frame type.

Additional Information

Topic	See
Binding protocols to a LAN driver	Section 1.8, "BIND," on page 20.

1.125 PSERVER

Purpose

A print server is a *software* program that monitors and manages printers and print queues. PSERVER is the native NetWare print server that takes jobs from a NetWare print queue and directs them (via NPRINT) to the assigned printer. In NetWare 6 software, PSERVER is available only as a NetWare Loadable Module (NLM) program that can be loaded on a NetWare server. Beginning with NetWare 6 and later releases, Novell's preferred print system is iPrint.

NOTE: Multiple PSERVER modules cannot run concurrently on the same NetWare server.

Print server functions can be managed through the NetWare Administrator utility or at the server console.

TIP: This utility is for use with Novell legacy, queue-based print services. iPrint is the default and preferred print system in NetWare 6.5. Queue-based printing is fully supported in NetWare 6.5, which allows your users to continue printing as they always have until you complete the transition to NDPS.

Syntax at Server Console

```
PSERVER .CN=print_server_name.OU=container.O=container
```

Additional Information

Topic	See
Using PSERVER	See Setting Up Print Servers (http://www.novell.com/documentation/lg/nw51/printenu/data/hx6f2l7r.html#hx6f2l7r) in <i>NetWare 5.1 Queue-Based Printing</i> .

1.126 RCONAG6

Purpose

`Rconag6.nlm` is the RConsoleJ Agent. Load this NLM™ at the server console to allow remote console access to the server, using RConsoleJ Client.

Syntax

```
LOAD RCONAG6 [ENCRYPT] [-Edigest | password IP_port IPX_port secure_IP_port]
```

Parameter	Use to
(no parameter)	Load RCONAG6 without command line parameters. You will be prompted for a password, IP port number, and IPX™ port number, Secure IP port number.
ENCRYPT	Encrypt the password and create a <code>sys:system\ldrconag.ncf</code> script file if desired. This script file can be used to load RCONAG6 at startup. (by inserting <code>ldrconag.ncf</code> in <code>autoexec.ncf</code>).
-Edigest	<p>Specify an encrypted password (<i>digest</i>) that will be used at the command line.</p> <p>To use this parameter, you need to load RCONAG6 using the ENCRYPT option.</p> <p>This parameter is used in the <code>ldrconag.ncf</code> file (if you create the file using the ENCRYPT option).</p>
<i>password</i>	Specify the password you want administrators of the remote server to use.

Parameter	Use to
<i>IP_port</i>	<p>Specify the IP port number that RCONAG6 will listen for RConsoleJ or a proxy server on.</p> <p>The default is 2034.</p> <p>-1 disables IP listening.</p> <p>0 allows a dynamically assigned port to be used.</p>
<i>IPX_port</i>	<p>Specify the IPX port number that RCONAG6 will listen for a proxy server on.</p> <p>The default is 16800.</p> <p>-1 disables IPX listening.</p> <p>0 allows a dynamically assigned port to be used.</p>
<i>secure_IP_port</i>	<p>Specify the Secure IP port number that RCONAG6 will listen for RConsoleJ on a SSL-based port on.</p> <p>The default is 2036.</p> <p>-1 disables Secure IP listening.</p> <p>0 allows a dynamically assigned port to be used.</p>

Using RCONAG6

- ♦ If the target server runs Streams-based SPX™ services, you must load the `spxs.nlm` before loading RCONAG6. See *NW 6.5 SP8: Remote Server Management Administration Guide*.
- ♦ Before accessing a target server using RConsoleJ, load RCONAG6 on the server. When you load RCONAG6, you establish a password that must be entered when you execute RConsoleJ. To optimize security, use an encrypted password when loading RCONAG6.

To encrypt the password, enter

```
RCONAG6 ENCRYPT
```

The system prompts for a password. Enter the password. The password is encrypted and two options are provided:

- ♦ (Recommend) Create `ldrconag.ncf`, containing the script, to load `rconag6.nlm` with the encrypted password. This ensures that your password is in clear text. Additionally, you need not remember the password to load `rconag6.nlm` with the encrypted password.
- ♦ Load the `rconag6.nlm` without creating `ldrconag.ncf`
- ♦ If you want to connect to an SPX server using RConsoleJ, you must also create a proxy server using `rconprxy.nlm`.
- ♦ To make RConsoleJ sessions available whenever you boot the server, enter the following command in the `autoexec.ncf` file. (This assumes you have encrypted the password and created the `sys\system\ldrconag.ncf` file.)

```
LDRCONAG
```

Additional Information

Topic	See
Loading RCONPRXY	Section 1.127, "RCONPRXY," on page 156
Setting up a target server	"Setting Up RConsoleJ" in <i>the NW 6.5 SP8: Remote Server Management Administration Guide</i>
Using RConsoleJ	Section 1.128, "RConsoleJ," on page 157

1.127 RCONPRXY

Purpose

Load at the server console to create an RConsoleJ proxy server on a NetWare® 6 or later server. RConsoleJ proxy servers allow RConsoleJ to access target servers using an IPX™ (or IP) connection.

Syntax

```
[LOAD] RCONPRXY TCP_Port
```

Parameter	Use to
(no parameter)	Start RCONPRXY without command line parameters. You will be prompted for a TCP port number.
<i>TCP Port</i>	This is the TCP port number on which RCONPRXY will listen for RConsoleJ. The default is 2035. 0 allows a dynamically assigned port to be used.

Using RCONPRXY

- ♦ Use `rconprxy.nlm` to allow RConsoleJ to communicate with an NetWare 6 server IPX-only.
RCONPRXY creates a proxy server through which RConsoleJ can communicate with the IPX-only server.
- ♦ The proxy server must run both IP and Streams-based SPX™ services.
To load Streams-based SPX services on the proxy server, use the SPXS NLM™ program.

Additional Information

Topic	See
Loading RCONAG6	Section 1.126, "RCONAG6," on page 154

Topic	See
Setting up a proxy server	See “Loading the RConsoleJ Proxy Agent on a Proxy Server” in the <i>NW 6.5 SP8: Remote Server Management Administration Guide</i>
Using RConsoleJ	Section 1.128, “RConsoleJ,” on page 157

1.128 RConsoleJ

Purpose

Use at a workstation or server to remotely control a NetWare® server.

IMPORTANT: For security reasons, this version of RConsoleJ must be used only inside firewalls.

Using RConsoleJ

NetWare 6 provides Java*-based remote console utility (RConsoleJ) that lets you control a NetWare server from a workstation and perform the following tasks:

- ♦ Use console commands as you would at the server console
- ♦ Use NLM™ programs as you would at the server console (for example, `edit.nlm` to edit files)
- ♦ Send console commands in the server's native language from the RConsoleJ Client using Buffer Input
- ♦ Control the server from another server using RConsoleJ
- ♦ Upgrade a NetWare server (text-based UI only)
- ♦ Run a Secure Socket Layer (SSL)-based secure session

You can use the following keystrokes during a remote console session. All other keys function as if you were at the server console.

To	Press
Access the drop-down list of target server console screens	Alt+F1
Cycle to the next target server console screen	Alt+F2
Cycle to the previous target server console screen	Alt+F3

Additional Information

Topic	See
RConsoleJ	<i>NW 6.5 SP8: Remote Server Management Administration Guide</i>
Using RCONAG6	Section 1.126, “RCONAG6,” on page 154
Using RCONPRXY	Section 1.127, “RCONPRXY,” on page 156

1.129 REBUILD

Purpose

Use REBUILD to recover corrupted Novell Storage Services (NSS) pools. The REBUILD utility salvages the data it finds on your corrupted NSS pool and recovers it.

NetWare users may be used to using VREPAIR to repair and rebuild NetWare volumes. VREPAIR still works for NetWare Traditional volumes, but it does not work on NSS pools. For NSS, you must use REBUILD.

Rebuild verifies and uses the existing leaves of an object tree to rebuild all the other trees in the system. The NSS pools that are verified and rebuilt are placed in maintenance mode. This means the NSS pool and the volumes on it are unusable until this process is finished, and the pool is remounted.

After running REBUILD, you must run the VERIFY utility. VERIFY accounts for all blocks in the system. If errors are found, they are reported to the screen, and the NSS pool is left in maintenance mode. Run REBUILD again until no errors are found. If errors are not found, the pool is placed back in the active state. You may have to mount the pool and its volumes.

NOTE: This utility protects against system failures only, not hardware failures.

Syntax

To rebuild a single pool, specifying the name, enter

```
nss /poolrebuild=pool_name
```

Starting and Using REBUILD

Use REBUILD at the command line.

NOTE: Always back up your data. If an NSS pool uses several hard disks and one of the hard disks becomes corrupted, you must create a new NSS pool, then restore its NSS volumes from backup.

1 Load NSS.

2 Rebuild your NSS pool.

Select one of the following options:

- ♦ To rebuild a single pool, specifying the name, enter

```
nss /poolrebuild=pool_name
```

- ♦ To rebuild a single pool by selecting from a list of pool names, enter

```
nss /poolrebuild
```

A list of pools appears. Select the preferred pool. You must enter this command for each pool you want to rebuild.

- ♦ To rebuild more than one NSS volume at a time, enter

```
nss /poolrebuild=pool_name, pool_name
```

A process runs for each volume up to five NSS volumes.

Rebuilding a pool can take up to several hours, depending on the size of the pool.

3 Check the output screen.

This screen indicates the time elapsed, the time remaining, the total elapsed time, the number of objects processed, etc.

4 Verify your rebuilt NSS pool, by entering

```
nss /poolverify=[pool_name]
```

If you do not enter the NSS pool name parameter, you will be prompted to select it.

Additional Information

Topic	See
NSS volumes	“Managing NSS Volumes” in the <i>NW 6.5 SP8: NSS File System Administration Guide</i>

1.130 RECORD

Purpose

Use at the server console to record command sequences that you enter at the console over and over. The RECORD command creates a temporary batch file on the server. You can then save the temporary batch file as an `.ncf` file or delete it from memory.

Syntax

```
record [action] | [temporary batch file name]
```

To	Enter
Begin recording console commands into a memory batch file called mylist1	<code>record start mylist1</code>
Close the recording session for the temporary batch file named mylist1	<code>record stop</code>
Type the command sequences in the session named mylist1	<code>record type mylist1</code>
Remove the recorded session named mylist1 from server memory	<code>record kill mylist1</code>

To	Enter
Close the recording session and save it as <code>sys:system\mylist1.ncf</code>	<code>record stop ncf</code>
Execute the list of commands in the mylist1 session	<code>replay mylist1</code>
Save the MYLIST1 session that has already been closed to <code>sys:system\mylist1.ncf</code> .	<code>record save mylist1</code>

Additional Information

For information, see [Section 1.139, “REPLAY,” on page 168](#).

1.131 Register Memory

Purpose

Use at the server console to configure the operating system to recognize installed memory above the amount of memory that is automatically registered. NetWare® 6 can address up to 4 GB.

IMPORTANT: Use the `register memory` command only if absolutely necessary. Manually registering memory can cause memory fragmentation. Ideally, you should upgrade the system board so that NetWare's automatic memory registration will work.

Before using `register memory`, try the following:

- ♦ Review the `config.sys` or `autoexec.bat` files to make sure nothing is being loaded on the server that prevents memory recognition: sometimes a real mode driver or a memory manager stops NetWare from registering memory above 64 MB.
- ♦ If your server contains an older network board, such as many ISA and MCA devices, upgrade to a newer board.
- ♦ If you have access to the World Wide Web, search the knowledge base at <http://support.novell.com> for Register Memory topics.

Syntax

```
register memory start_address amount
```

Parameter	Use to
<i>start_address</i>	Specify the hexadecimal address where the memory you're adding will start. This is the amount of RAM your server currently recognizes and addresses. This number is usually 16 MB (1000000h); however, the default varies depending on the machine type. To obtain the start address, use the MEMORY command and convert its output to hexadecimal.

Parameter	Use to
<i>amount</i>	Specify an amount of memory, expressed in hexadecimal, that is installed beyond the start address. This number must be divisible by 10h. Up to 1 GB can be registered at one time.

NOTE: In the preceding table and in the following sections, the h after the number denotes a hexadecimal number. The d denotes a decimal number.

For example, 1000000h is 1 million in hexadecimal, and 1000000d is 1 million in decimal.

The hexadecimal numbers A through F correspond to the decimal numbers 10 through 15, respectively.

Using Register Memory

- ♦ NetWare registers all memory that it recognizes according to bus type. On an ISA bus, NetWare recognizes up to 16 MB. On an EISA or MCA bus, NetWare recognizes all of the memory that is present. On a computer with a Peripheral Component Interconnect (PCI) bus, NetWare 6 or later recognizes up to 4 GB.
- ♦ To have the additional memory registered automatically when the server boots, add the `register memory` line to the `startup.ncf` file.

IMPORTANT: Place the `register memory` command before the command to load disk drivers in the `startup.ncf` file so that the registered memory will be available to the `sys:` volume.

Failure to register memory before volume Sys is mounted can result in error messages indicating that the cache memory allocator is out of available memory, or that there is insufficient memory to mount volumes.

- ♦ If the memory does not register, check for the following possible errors:
 - ♦ An incorrect hexadecimal value was specified for *start address* or *amount*.
 - ♦ The *amount* value exceeds the total installed memory. Use the setup or reference diskette that came with the computer to determine the total amount of installed memory.

NOTE: You must avoid memory address conflicts. A conflict occurs if an adapter board uses 16- or 24-bit DMA or Bus-Master DMA.

To resolve this conflict, upgrade to 32-bit bus adapters or use drivers that are modified and certified to compensate for memory-addressing limitations. Or use the machine's configuration program to move system memory around the adapter if the program allows.

- ♦ In some cases, the ISA (16-bit) host adapter driver must be loaded in memory below 16 MB. To do so, add the following to the `startup.ncf` file:

```
load disk_driver
```

```
register memory amount of memory to add
```

For more information, consult the driver documentation.

Amount of Memory

The following table lists common start address and amount values for standard computers.

In the table, total memory = start address + amount of memory to add.

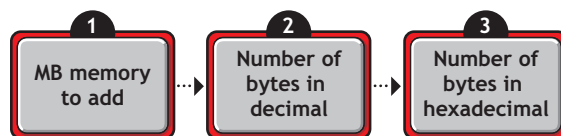
Total Memory	Start Address	Amount of Memory to Add
20 MB	16 MB = 1000000h	4 MB = 400000h
24 MB	16 MB = 1000000h	8 MB = 800000h
28 MB	16 MB = 1000000h	12 MB = C00000h
32 MB	16 MB = 1000000h	16 MB = 1000000h
36 MB	16 MB = 1000000h	20 MB = 1400000h
40 MB	16 MB = 1000000h	24 MB = 1800000h
64 MB	16 MB = 1000000h	48 MB = 3000000h
112 MB	16 MB = 1000000h	96 MB = 6000000h
128 MB	16 MB = 1000000h	112 MB = 7000000h
256 MB	16 MB = 1000000h	240 MB = F000000h
400 MB	16 MB = 1000000h	384 MB = 18000000h
1 GB (1000 MB)	16 MB = 1000000h	984 MB = 3D800000h
3 GB (3000 MB)	16 MB = 1000000h	2984 MB = BA800000h
3 GB (3000 MB)	64 MB = 4000000h	2936 MB = B7800000h

Register memory requires that the amount of memory to be registered is stated in hexadecimal format. If you are adding an amount of memory that is not in the preceding table, then you need to calculate the amount.

Calculating the Amount of Memory

The following figure illustrates how to calculate the amount of memory you are adding:

Figure 1-8 Calculating the Amount of Memory You Are Adding



1. Start with the amount of memory you are adding stated in decimal MB.

Obtain this number from the documentation that came with the memory you are adding.

2. Convert the memory value from MB to bytes.

NOTE: A megabyte of memory is more than a million bytes. One megabyte equals 1,048,576 bytes in decimal.

3. Convert the number of bytes from decimal to hexadecimal notation.
- To do this calculation, you can either use a calculator that converts decimal numbers to hexadecimal, or you can convert manually.
- For example, 1 megabyte = 1,048,576d, which is the same as 100000h.
- So 1,048,576 bytes in decimal equals 100000 in hexadecimal.
- To convert manually, consult a specialized manual.

Examples

- ♦ To add 4 MB of memory above 16 MB, type

`register memory 1000000 400000`
- ♦ To add 24 MB of memory above 16 MB, type

`register memory 1000000 1800000`

Additional Information

Topic	See
Editing the <code>startup.ncf</code> file	“Using Server Batch Files” in the NW 6.5 SP8: Server Operating SystemAdministration Guide
Displaying the total amount of memory the server is addressing	Section 1.90, “Memory,” on page 98

1.132 REINITIALIZE SYSTEM

Purpose

Use at the server console to enable configuration changes made since the commands in the `netinfo.cfg` file were executed.

Syntax

REINITIALIZE SYSTEM

Using REINITIALIZE SYSTEM

- ♦ `REINITIALIZE SYSTEM` compares the current `netinfo.cfg` file with the previous one, which became effective the last time you ran the `INITIALIZE SYSTEM` or `REINITIALIZE SYSTEM` command. If `REINITIALIZE SYSTEM` finds any new commands in the current `netinfo.cfg` file, it executes them.
- ♦ `REINITIALIZE SYSTEM` also informs any Simple Network Management Protocol (SNMP)-registered NLM™ file that it is executing. This is a call-back mechanism that enables NLM files that store configuration information outside the `netinfo.cfg` file to know that changes to the configuration have taken place.

Limitations of REINITIALIZE SYSTEM

- ♦ `REINITIALIZE SYSTEM` unloads any NLM affected by a configuration change. If `REINITIALIZE SYSTEM` cannot unload the NLM because of interdependencies with other modules, the configuration change will not take effect. Additionally, not all NLM files register with SNMP for notification of `REINITIALIZE SYSTEM`.
- ♦ When you create a new configuration or delete an existing configuration, `REINITIALIZE SYSTEM` recognizes the change. However, `REINITIALIZE SYSTEM` may not recognize changes to an already configured NLM that involve more than loading, unloading, binding, or unbinding protocol stacks.

IMPORTANT: If you are changing an existing configuration, the most effective way to ensure the changes are recognized is to bring down the server. Alternatively, if you know which NLM files have been changed by your modifications, you can unload them, then execute `REINITIALIZE SYSTEM`.

Additional Information

Topic	See
<code>netinfo.cfg</code> file	Section 1.65, "INETCFG," on page 71
<code>INITIALIZE SYSTEM</code>	Section 1.66, "INITIALIZE SYSTEM," on page 73

1.133 REMIRROR PARTITION

Purpose

Use at the server console to start the remirroring of a logical partition.

Because the server remirrors partitions automatically, you should use `REMIRROR PARTITION` only if you have stopped remirroring by using the `ABORT REMIRROR` command or something has caused your server to cease remirroring.

Remirror Partition can be used on any NetWare mirror, regardless of type as long as all the partition types in the mirror match. This includes NSS, TRAD, SBD, and ISCSI devices and any other NetWare partition types that are mirrored.

Syntax

```
REMIRROR PARTITION logical_partition_number
```

Parameter	Use to
<i>number</i>	Specify the number of the logical partition you want to start remirroring.

Example

To start remirroring for logical partition 0x4, enter

```
REMIRROR PARTITION 4
```

Additional Information

Topic	See
Stopping remirroring	Section 1.1, "ABORT REMIRROR," on page 11
Mirroring and unmirroring partitions	(For NSS volumes on NetWare) "Managing NSS Software RAID Devices" in the <i>NW 6.5 SP8: NSS File System Administration Guide</i> (For Traditional volumes) "Using Software RAID1 Devices for Data Fault Tolerance" in the <i>NW6.5 SP8: Traditional File System Administration Guide</i>

1.134 REMOVE NETWORK ADAPTER

Purpose

Use at the server console to unload one LAN driver when the LAN driver has been loaded multiple times to support multiple boards.

Syntax

```
REMOVE NETWORK ADAPTER filename, [board_instance]
```

Parameter	Use to
<i>filename</i>	Specify the LAN driver name, such as <code>ne2000.lan</code>
<i>board_instance</i>	Specify the instance number of the board if there is more than one board of the same type in the server. Find the instance number in MONITOR by selecting LAN/WAN Drivers and highlighting the driver name. The information window at the top of the screen displays information about the driver, including the Board Instance Number.

Using REMOVE NETWORK ADAPTER

If there is only one instance of the network board in the server, you do not need to use REMOVE NETWORK ADAPTER. You can simply unload the LAN driver using the UNLOAD command. Unloading the LAN driver releases the memory resources used by the board and driver.

Example

```
REMOVE NETWORK ADAPTER NE2000, 2
```

1.135 REMOVE NETWORK INTERFACE

Purpose

Use at the System Console screen to unload one frame type when there are multiple frame types loaded with one LAN driver. Each instance of one frame type loaded with one LAN driver is called a *logical board*.

When you use REMOVE NETWORK INTERFACE to unload a frame type, the associated LAN driver with its other frame types remains loaded and active.

Syntax

```
REMOVE NETWORK INTERFACE board_number | board_name
```

Parameter	Use to
<i>board_number</i>	Specify the logical board number. Find the logical board number in MONITOR by selecting LAN/WAN Drivers and highlighting the driver name. The information window at the top of the screen displays information about the driver, including Logical Board Number.
<i>board_name</i>	Specify the logical board name. A name can be assigned to a logical board when the board is loaded using the LOAD command. If no name was assigned to the board, use the logical board number.

1.136 Remove Storage Adapter

Purpose

Use at the server console to remove one instance of a storage driver.

Syntax

```
remove storage adapter an
```

Parameter	Use to
<i>An</i>	<p>Specify the driver instance you want to remove.</p> <p>Find the number by entering the <code>list storage adapters</code> command at the console. The <i>An</i> number is enclosed in square brackets to the left of the storage adapter name. For example:</p> <p>[V312-A0] ADAPTEC PCI Host Adapter Module</p> <p>To unload the instance of the driver in the example, you would enter the following:</p> <pre>remove storage adapter a0</pre>

Using REMOVE STORAGE ADAPTER

If only one instance of the driver is currently loaded, the entire driver is unloaded.

If multiple instances of the driver are loaded, only the selected instance is unloaded.

1.137 Removemodule

Purpose

Use at the System Console prompt to remove modules that are preloaded by the `startup.ncf` file or modules that were loaded using the `load -s` command.

Preloading modules is required to avoid a fatal loss of access to essential driver files during a time period in the boot process when access to the FAT (DOS) partition containing the files is not possible. This period begins when the first driver is activated and ends when the partition is made available through NetWare drivers instead of Real Mode (BIOS/DOS) drivers.

If you have tested several load switches for a new driver and want only one to be active, remove it from the list and then reload and activate the driver.

Syntax

```
removemodule = all|module_name
```

For example:

```
removemodule idecd.cdm
```

Parameter	Use to
<code>all</code>	Remove all modules that have been preloaded.
<i>module_name</i>	Specify the name of a preloaded module that you want to remove.

Additional Information

For related information, see [Section 1.2, “Activatemodule,” on page 12](#).

1.138 REPLACE

Purpose

Use at the server console to unload and reload a specific module in one step. Entering this command unloads the module and reloads it using the current search path order.

To view the ordering of current search paths on the server, enter `search` at the server console.

Syntax

```
replace module_name
```

For example, if you have a new monitor nlm program that you have copied to `sys:\system`, rather than entering

```
unload monitor
```

```
load monitor
```

you only need to enter

```
replace monitor
```

1.139 REPLAY

Purpose

Use at the server console, to execute a list of commands that were recorded in and saved in a session using the **RECORD** command.

Syntax

```
replay [session_name]
```

For example, if the session was named `mylist1`, enter

```
replay mylist1
```

Additional Information

For information, see [Section 1.130, “RECORD,” on page 159](#).

1.140 RESET ENVIRONMENT

Purpose

Use at the server console to reset server parameters that have been modified to their default values. You can reset all modified parameters or you can confirm only those resets that you want.

Syntax

RESET ENVIRONMENT

Using RESET ENVIRONMENT

RESET ENVIRONMENT lists the first server parameter with the option of resetting the current value to the default value or of retaining the modified value. You can also reset all parameters that have modified settings to their default values, or else quit the utility.

The following example illustrates part of the command display:

```
Reset variable TIMESYNC Hardware Clock
(Y)es, (N)o, (A)ll, (Q)uit ?
```

Additional Information

Topic	See
List server parameters with current settings	Section 1.40, "Display Environment," on page 42
List server parameters with modified settings	Section 1.44, "DISPLAY MODIFIED ENVIRONMENT," on page 48
Print server parameters with current settings to a file.	Section 1.94, "MONITOR," on page 102 MONITOR Available Options > Server Parameters

1.141 RESET NETWORK ADAPTER

Purpose

Use at the server console to reset a network adapter manually.

WARNING: Resetting a network adapter stops whatever work the adapter is doing and resets it to a clean state.

Syntax

```
RESET NETWORK ADAPTER filename, [board_instance]
```

Parameter	Use to
<i>filename</i>	Specify the LAN driver name, such as <code>ne2000.lan</code>

Parameter	Use to
<i>board_instance</i>	Specify the instance number of the board if there is more than one board of the same type in the server. Find the instance number in MONITOR by selecting LAN/WAN Drivers and highlighting the driver name. The information window at the top of the screen displays information about the driver, including Board Instance Number.

Using RESET NETWORK ADAPTER

You might want to reset an adapter manually if you suspect a problem with the hardware. Resetting the adapter also resets the logical boards associated with the adapter.

Network adapters reset themselves automatically if something goes wrong. About one reset a day is normal. A great number of resets, such as one reset a minute, usually indicates a hardware problem.

Resets are included in the LAN statistics displayed in MONITOR. Select LAN/WAN Drivers and highlight a driver name. Press Tab to expand the information window at the top of the screen. Look for Adapter Resets in the Generic Counters section of the screen.

Example

```
RESET NETWORK ADAPTER NE2000, 2
```

1.142 RESET NETWORK INTERFACE

Purpose

Use at the server console to restart a logical board that has been shut down using the SHUTDOWN NETWORK INTERFACE command. See [Section 1.156, “SHUTDOWN NETWORK INTERFACE,” on page 252](#). (A *logical board* is an instance of one frame type associated with one LAN driver.)

RESET NETWORK INTERFACE restarts the logical board without requiring you to reload and bind the LAN driver.

NOTE: Resetting the logical board does not reset the adapter.

Syntax

```
RESET NETWORK INTERFACE board_number | board_name
```

Parameter	Use to
<i>board_number</i>	Specify the logical board number. Find the logical board number in MONITOR by selecting LAN/WAN Drivers and highlighting the driver name. The information window at the top of the screen displays information about the driver, including Logical Board Number.

Parameter	Use to
<i>board_name</i>	Specify the logical board name. A name can be assigned to a logical board when the board is loaded using the LOAD command. If no name was assigned to the board, use the logical board number.

1.143 RESET ROUTER

Purpose

Use at the server console to reset the router table in the server if the table becomes inaccurate or corrupted.

Syntax

```
RESET ROUTER
```

Using RESET ROUTER

- ♦ If several servers or bridges go down, packets sent to or through their routers are lost. Use RESET ROUTER to update router tables on active servers.
- ♦ Normally, the router updates its tables every minute. This command updates the router table immediately.
- ♦ RESET ROUTER is for IPX only. For TCP/IP, see [Section 1.147, “ROUTECON,” on page 178](#).

1.144 Restart Server

Purpose

Use at the server console to bring down the server and then to restart it immediately after.

Syntax

```
restart server [-parameter]
```

Parameter	Use to
(no parameter)	Restart the server and invoke all .ncf files.
-ns	Restart the server without invoking the <code>startup.ncf</code> file. For example, type: <code>restart server -ns</code>
-na	Restart the server without invoking the <code>autoexec.ncf</code> file.

Using Restart Server

`Restart server` is useful when troubleshooting requires that you bring down the server frequently. (If you need to bring the server down to reboot it with new parameters, use [Section 1.46, “Down,” on page 50.](#))

Additional Information

Topic	See
Restarting the server from DOS	Section 1.153, “Server,” on page 186

1.145 RIGHTS

Purpose

Use at a workstation to do the following:

- ♦ View or modify user or group rights for files
- ♦ View or modify user or group rights for directories and volumes

RIGHTS is a client-side application, not a server-side application. Install the Novell Client for Windows on your workstation, then use the *Novell Map Network Drive* option in the client menu to map a local drive letter to the `sys:/public` directory. Open a DOS Command Prompt window, `cd` to the mapped drive, then issue the `rights` command from the command line.

Syntax

```
RIGHTS path [[ + | - ] rights] [/option...] [/? | /VER]
```

Parameter	Use to
<i>path</i>	Specify the path to the file, directory, or volume you want to modify or view rights to (you must always specify a path).
+ -	Add or delete the specified rights. See “Using RIGHTS” on page 173.
<i>rights</i>	Specify one or more file or directory rights. See “Rights” on page 173.
<i>/option</i>	Replace <i>option</i> with any available option.
<i>/?</i>	View online help. All other parameters are ignored when <i>/?</i> is used.
<i>/VER</i>	View the version number of the utility and the list of files it uses to execute. All other parameters are ignored when <i>/VER</i> is used.

Option	Use to
<i>/C</i>	Scroll continuously through output.

Option	Use to
/F	View the Inherited Rights Filter (IRF).
/I	View the trustee and group rights that created the inherited rights, and view where the inherited rights came from.
/NAME= <i>username</i>	View or modify rights for the user or group listed. Replace <i>username</i> with the name of the user or group whose rights you want to view or modify.
/S	View or modify subdirectories below the current level.
/T	View trustee assignments in a directory.

Rights

The following table lists the rights, the letter to use for each right, and what the right is used for.

Right	Letter	Use to
Supervisor	S	Grant all rights to the file or directory.
Read	R	Open and read files in the directory.
Write	W	Open and write to files in the directory.
Create	C	Create files and subdirectories.
Erase	E	Erase files and directories.
Modify	M	Rename files and directories, and change file attributes.
File Scan	F	View and search on file and directory names in the file system structure.
Access Control	A	Add and remove trustees and change trustee rights to files and directories.
No Rights	N	Remove all rights.
Remove	REM	Remove the user or group as a trustee of the specified file or directory.
All	ALL	Add All rights except Supervisor.

Using RIGHTS

- ♦ If you use + (plus) to add rights, the rights you list are added to the existing rights.
- ♦ If you use - (minus) to remove rights, the rights you list are deleted from the existing rights.
- ♦ If you add and delete rights in the same command, group all added rights together and all deleted rights together.
- ♦ If you list rights without using + or -, the rights you list replace the existing rights.
- ♦ You must always specify a path. You can use a period (.) to represent your current directory.
- ♦ You can use wildcard characters.

Examples

- ♦ To set the trustee rights in the current directory for user JANICE to Read, Write, and File Scan, type

```
RIGHTS . R W F /NAME=JANICE
```

- ♦ To remove user ERNESTO from `alice/sys:users`, type

```
RIGHTS ALICE/SYS:USERS REM /NAME=ERNESTO
```

- ♦ To see where user PATRICK's inherited rights came from for `sys:users/home`, type

```
RIGHTS SYS:USERS/HOME /NAME=PATRICK /I
```

1.146 ROUTE

Purpose

Use at the server console on a token ring cabling system to pass frames (packets) from NetWare® through IBM*-compatible source route bridges.

ROUTE enables the operating system to

- ♦ Keep track of the source routing information in the frames
- ♦ Configure the source routing information in the frames according to the parameters with which ROUTE is loaded

NOTE: You must load the token ring LAN driver before you load ROUTE.

ROUTE and most ROUTE parameters can also be configured using the INETCFG utility. See [“Configuring Source Route End Station Parameters with INETCFG” on page 177](#).

Syntax

```
[LOAD] [path]ROUTE [BOARD=number] [NAME=board_name] [DEF|GBR|MBR]
[TIME=number] [RSP=AR|NR] [CLEAR] | [REMOVE=number] [XTX=number] [UNLOAD
[BOARD=number]]
```

Parameter	Use to
<i>path</i>	Specify the path to <code>route.nlm</code> if you moved it from the default directory.

Parameter	Use to
BOARD= <i>number</i>	<p>Specify the board you want to change parameters on or load ROUTE for. Replace <i>number</i> with the board number.</p> <p>If you don't specify a board number, the default is board number 1, or the board name specified in the NAME parameter.</p> <p>The system numbers the boards, using 1 for the first driver loaded. (Check the order in the <code>autoexec.ncf</code> file.)</p>
NAME= <i>board_name</i>	Specify the board name.
DEF (Default)	<p>Specify that all Unknown Unicast frames are to be sent as All Routes Broadcast frames.</p> <p>If DEF is specified, all frames with addresses not in the server's Source Routing table are forwarded as All Routes Broadcast frames.</p> <p>If DEF is not specified, all frames with addresses not in the server's Source Routing table are forwarded as Single Route Broadcast frames.</p> <p>If ROUTE is already loaded with the DEF parameter, reloading ROUTE with DEF sends all Unknown Unicast frames as All Routes Broadcast frames.</p>
GBR (General Broadcast frames)	<p>Specify that all General Broadcast frames are to be sent as All Routes Broadcast frames.</p> <p>If this parameter is not specified when ROUTE is loaded, all General Broadcast frames are broadcast as Single Route Broadcast frames.</p> <p>If ROUTE is already loaded with the GBR parameter, reloading ROUTE with GBR broadcasts all General Broadcast frames as All Routes Broadcast frames.</p>
MBR (Multicast Broadcast frames)	<p>Specify that all Multicast frames are to be sent as All Routes Broadcast frames.</p> <p>If the parameter is not specified when ROUTE is loaded, all Multicast frames are broadcast as Single Route Broadcast frames.</p> <p>If ROUTE is already loaded with the MBR parameter, reloading ROUTE with MBR broadcasts all Multicast frames as All Routes Broadcast frames.</p>
TIME= <i>number</i>	<p>Specify how often the Source Routing table should be updated.</p> <p>Replace <i>number</i> with a value from 3 to 255 seconds. The default is 10 seconds.</p> <p>This parameter forces the table to be updated with a new route if the route isn't used during the specified time.</p> <p>It enables ROUTE to determine alternate routes dynamically when an IBM bridge goes down.</p>

Parameter	Use to
RSP= <i>value</i> (Respond)	<p>Specify how the server should respond to a broadcast request.</p> <p>Replace <i>value</i> with one of the following:</p> <p>NR: Specifies that all Broadcast Requests are to be responded to directly; a Broadcast Response isn't required.</p> <p>AR (the default): Specifies that all Broadcast Requests are to be responded to with an All Routes Broadcast frame.</p>
CLEAR	<p>Clear the Source Routing table. Use when an IBM bridge has gone down and an alternate route is available.</p> <p>CLEAR forces a dynamic rebuilding of the table by sending a default frame to each specific node in the network.</p> <p>Use CLEAR to completely clear the Source Routing table, or use REMOVE to clear only one node address from the Source Routing table.</p>
REMOVE= <i>number</i>	<p>Remove a specified node address from the server's Source Routing table.</p> <p>Replace <i>number</i> with a 12-digit (6-byte) hexadecimal number.</p> <p>If you enter fewer than nine digits, ROUTE prefixes the address with 4000 in hexadecimal.</p> <p>For example, REMOVE=2 becomes REMOVE=400000000002.</p> <p>Use REMOVE when a bridge has gone down. When you remove the node from the Source Routing table, you force the server to determine an alternate route.</p>
XTX= <i>number</i>	<p>Specify the number of times to transmit on a timed-out route, using the old route.</p> <p>Replace <i>number</i> with a value between 00 and 255 seconds. The default is 02 times.</p>
UNLOAD [BOARD= <i>number</i>]	<p>Use to remove source routing support for a specified board.</p> <p>If you don't specify a board number, the default is 1.</p> <p>Example: ?remove this</p> <p>LOAD ROUTE UNLOAD BOARD=2</p> <p>Note: This parameter does not unload <code>route.nlm</code>, but disables source routing only for the board that you specify.</p>

Using ROUTE

- ♦ No parameters are required. However, you can load ROUTE a second time with a specified parameter to change the configuration.
- ♦ Most of the parameters have default values that should work with simple configurations for IBM bridges.

If you have parallel IBM bridges, you can change some of the parameters to reduce traffic on some of the paths.

- ♦ As frames pass through an IBM bridge, source routing information is added to the frame header at the Media Access Control (MAC) layer. The operating system's bridging is done above this layer.
- ♦ ROUTE can be loaded reentrantly.
 - ♦ If you have two token ring boards in the server, load ROUTE twice. The second time you load it, use the BOARD or NAME parameter to specify a particular board.
 - ♦ To change the configuration, load ROUTE with the parameter that needs to be changed.

Configuring Source Route End Station Parameters with INETCFG

You can use INETCFG to load ROUTE and configure many source route end station parameters.

To use INETCFG:

- 1 Load INETCFG.
- 2 Select *Internetwork Configuration > Boards* to load a token-ring board.
- 3 Return to the Internetwork Configuration menu and use the *Protocols* option to enable *Source Route End Station*.
- 4 Return to the Internetwork Configuration menu and select *Bindings*.
A list of bindings appears.
- 5 Select an existing binding or press Insert to add a new binding.
A list of enabled protocols appears.
- 6 Select *Source Route End Station*.
A list of boards is displayed.
- 7 Select the token ring board you configured with the *Boards* option.
The *Attach Source Route End Station to an Interface* menu appears.
The Source Route End Station parameters are listed in the following table.

Table 1-2 Source Route End Station Parameters

Parameter	Use to
Interface Name (same as NAME= <i>board_name</i> command line parameter)	View the name of the interface to which the end station source router is bound. This field is read-only.
Frame Type	View or modify the source route end station list of frame types. Press Enter to see the list. Press Insert to select a frame type. Press Delete to remove a frame type.
Send Frames with Unknown Address (same as DEF [Default] command line parameter)	Specify the type of explorer frame the end station source router sends to an unknown node address. Options: Single Route Explorer Frame, All Routes Explorer Frame Default: Single Route Explorer Frame

Parameter	Use to
Send Broadcast Frames (same as GBR command line parameter)	Specify the type of explorer frame the end station source router sends to a broadcast destination address. Options: Single Route Explorer Frame, All Routes Explorer Frame Default: Single Route Explorer Frame
Send Multicast Frames (same as MBR command line parameter)	Specify the type of explorer frame the end station source router sends to a multicast, group, or functional address. Options: Single Route Explorer Frame, All Routes Explorer Frame Default: Single Route Explorer Frame
Respond to Broadcast Request (same as RSP command line parameter)	Specify how the end station source router responds to a single route explorer frame. Options: Specifically Routed Frame, All Routes Explorer Frame Default: All Routes Explorer Frame
Route Update Interval (same as TIME= <i>number</i> command line parameter)	Specify the minimum delay in seconds before the end station source router updates the route for a given node. Range: 0 to 65,535 seconds (0=infinite) Default: 10

NOTE: To remove source route bridge support for the specified board, disable the binding.

Additional Information

Topic	See
INETCFG	Section 1.65, "INETCFG," on page 71
Source routing and broadcast frames	<i>IBM Token-Ring Network Architecture Reference</i>

1.147 ROUTECON

Purpose

Use at the server console to manipulate the routing tables manually.

Syntax

```
routecon [-h]
```

routecon displays the syntax for the utility.

-h displays detailed help for the utility.

```
routecon [-n] monitor
```

Continuously reports any changes to the routing table.

```
routecon [-n] flush
```

Removes all routes.

```
routecon [-nv] command [-net|-host] destination gateway [optional_modifier]
```

Options/Commands/Optional Modifiers	Use To
Options	
-n	Skip DNS lookup.
-v	Print additional details, if any.
-net	Force the destination to be interpreted as a network.
-host	Force the destination to be interpreted as a host.
<i>destination</i>	Specify the destination host or network
<i>gateway</i>	Specify the next-hop intermediary via which packets should be routed
Commands	
add	Add a route.
delete	Delete a route.
change	Change aspects of a route (such as its gateway).
get	Look up and display the route for a destination.
Optional Modifier	
-netmask <i>netmask</i>	Manually add a subnet route with the netmask different from the default mask.

1.148 SCAN ALL

Purpose

Use at the server console to scan all LUNs of all SCSI adapters in the server or all LUNs associated with a designated SCSI adapter.

IMPORTANT: SCAN ALL forces a scan and takes an order of magnitude longer to execute than SCAN FOR NEW DEVICES does. SCAN ALL should be used only when you know that there is an undetected device on a LUN other than LUN0.

Syntax

SCAN ALL *An*

Parameter	Use to
(no parameter)	Scan all LUNs of all SCSI adapters in the server.
<i>An</i>	<p>Specify the SCSI adapter you want to scan.</p> <p>Find the <i>An</i> number by entering the LIST STORAGE ADAPTERS command at the console. The <i>An</i> number is enclosed in square brackets to the left of the storage adapter name, for example:</p> <p>[V312-A0] ADAPTEC PCI Host Adapter Module</p> <p>To scan all LUNs associated with the adapter in the example, you would enter:</p> <p>SCAN ALL A0</p>

Using SCAN ALL

Several utilities perform much the same operation, but they each differ in some respects.

- ♦ LIST STORAGE ADAPTERS displays a list of registered storage adapters and the devices they drive. The information is read from the Media Manager database.
- ♦ LIST DEVICES forces a scan for devices , displays the return list of storage devices, and registers any new devices with the Media Manager database. This command does not simply read the database.
- ♦ SCAN FOR NEW DEVICES forces a scan on LUN0 of SCSI adapters and registers new devices with the Media Manager so that they are available to the operating system. This command scans only SCSI devices.

Additional Information

Topic	See
Reading the Media Manager database and displaying a list of registered storage devices and controllers	Section 1.80, "LIST STORAGE ADAPTERS," on page 85
Scanning devices and registering new devices with Media Manager	Section 1.79, "LIST DEVICES," on page 83
Scanning for new SCSI devices and registering them with the Media Manager	Section 1.149, "SCAN FOR NEW DEVICES," on page 181

Topic	See
Determining the operating status of a storage device	“Activating and Deactivating a Hard Disk” in the NW6.5 SP8: Server Disks and Storage Devices
Storage device drivers	“Drivers for Host Adapters and Storage Devices” in the NW6.5 SP8: Server Disks and Storage Devices

1.149 SCAN FOR NEW DEVICES

Purpose

Use at the server console to force a scan on LUN0 of SCSI adapters and to register new devices with the Media Manager so that they are available to the operating system.

Syntax

SCAN FOR NEW DEVICES

Using SCAN FOR NEW DEVICES

- ♦ Use this utility if you add new devices after you boot your server and the devices do not then appear with the LIST DEVICES command.
- ♦ If devices have been added, but the drivers aren't loaded in `startup.ncf`, use SCAN FOR NEW DEVICES after loading the drivers to register the devices with the system.
- ♦ After you boot the server, if NetWare® detects new devices, SCAN FOR NEW DEVICES registers the devices with the operating system. It does not return a message to the screen.
- ♦ This command scans only LUN0 of SCSI adapters. To scan all LUNs of SCSI adapters, use SCAN ALL. However, SCAN ALL should be used only when you know that there is an undetected device on a LUN other than LUN0. SCAN ALL may take far more time for to execute than does SCAN FOR NEW DEVICES. See [Section 1.148, “SCAN ALL,” on page 179](#).
- ♦ SCAN FOR NEW DEVICES does not produce any output.
- ♦ If you remove a Hot Plug mirrored disk without bringing down the server, you must execute SCAN FOR NEW DEVICES as soon as you remove the disk. This lets the system know that the remaining disk in the mirrored pair is no longer synchronized with a mirrored partner. If you unmirror the disk before removing it, you do not need to run SCAN FOR NEW DEVICES.

Additional Information

Topic	See
Read the Media Manager database and display a list of registered storage devices and controllers	Section 1.80, “LIST STORAGE ADAPTERS,” on page 85
Scan devices and register new devices with Media Manager	Section 1.79, “LIST DEVICES,” on page 83

Topic	See
Scan for all SCSI devices or a specified SCSI device and register new devices with the Media Manager.	Section 1.148, "SCAN ALL," on page 179
Storage device drivers	"Drivers for Host Adapters and Storage Devices" in the NW6.5 SP8: Server Disks and Storage Devices
Determine the operating status of a storage device	"Activating and Deactivating a Hard Disk" in the NW6.5 SP8: Server Disks and Storage Devices

1.150 SCRSAVER

Purpose

Use to lock the server console and to activate a screen saver for the console display.

NOTE: The screen saver and the console-locking features were formerly part of MONITOR. Separating them from `monitor.nlm` allows the new utility to protect the console by using the stronger security of eDirectory authentication.

Syntax

```
SCRSAVER [option] [;option] [;option] [...]
```

When SCRSAVER is loaded, you can use any of the following command options as console commands.

Command options	Use to
(no parameters)	Default to SCRSAVER AUTO CLEAR DELAY=60; DELAY=600; ENABLE; ENABLE AUTO CLEAR; ENABLE LOCK.
ACTIVATE	Override the delay interval and activate the screen saver immediately. ACTIVATE also overrides both DISABLE and ENABLE modes. This means that if you enter ACTIVATE when the screen saver has been disabled, the DISABLE mode is changed to ENABLE so that the screen saver can appear.
AUTO CLEAR DELAY	Set the number of seconds to wait before clearing the unlock dialog box. The range is 1 to 300 and the default is 60, or one minute.
DELAY	Set the number of seconds to wait before activating the screen saver. The range is 1 to 7000 and the default is 600, or 10 minutes.
DISABLE	Disable the screen saver, thereby preventing it from activating and saving the console display.
DISABLE AUTO CLEAR	Disable the automatic clearing of the unlock dialog box. When this command is executed, the unlock dialog box remains on the screen until it is cleared by user input.

Command options	Use to
DISABLE LOCK	Disable the console lock. When the locking feature is disabled, you can retrieve the console display without a username or password simply by pressing any key.
DISABLE USERNAME AUTO CLEAR	Allows the server console to be unlocked with only a password, rather than username and password.
ENABLE	Enable the screen saver. When enabled, the screen saver displays after the keyboard has been inactive for the number of seconds specified in the DELAY command option.
ENABLE AUTO CLEAR	Enable the automatic clearing of the unlock dialog box after the number of seconds of keyboard inactivity specified in the AUTO CLEAR DELAY command option
ENABLE LOCK	Enable the console locking feature. When enabled, the screen saver requires the username and password before restoring the console display. The user object must have appropriate rights
ENABLE USERNAME AUTO CLEAR	Requires both the username and password to unlock the server console.
HELP	Display information about command options and their use.
NO PASSWORD	Unlock the console without requiring a password in the event that eDirectory becomes unavailable. You must set this option when you load SCRSaver. Otherwise, the console cannot be unlocked when eDirectory is unavailable.
STATUS	Display the current status of screen saver features and command options.

Using SCRSaver

When the screen saver is displayed, a snake-like figure—one for each online processor—appears on the blank console screen. The snake for processor 0 is red and the snake for processor 1, blue, etc. The snakes move randomly on the screen, and as processor utilization increases, the snakes move faster and their tails lengthen.

When `scrsaver.nlm` is loaded, the server console can be in one of three states.

- ♦ **Active.** The console is active—you can enter console commands and monitor server activity.
- ♦ **Screen Saver.** The console can be locked or unlocked.
If the console is not locked, the screen saver appears by default after 10 minutes of inactivity. To retrieve the console display, press any key.
If the console is locked, the screen saver appears by default after one minute of inactivity. To retrieve the console display, the console must first be unlocked.
- ♦ **Verifying.** SCRSaver verifies rights to the console through eDirectory authentication.

To unlock the console, you must supply an eDirectory username and password. The eDirectory user must be either of the following.

- ♦ A trustee of the Server object having the Write right to the “access control list” (ACL) property of the Server object
- ♦ A Console operator or a member of a group assigned as “console operator,” with the user or group being a trustee of the Server object with at least the Read right to the [All Attributes Rights] property of the Server object

The chance of eDirectory™ becoming unavailable is very slim, but you can load SCRSAVER with the NO PASSWORD option to ensure that you can (if necessary) unlock the console without a password. (Of course, a password would still be required when eDirectory was available.)

For example, you might decide to run DSREPAIR in manual mode. In such a case, the eDirectory database would be locked until there was manual intervention. If SCRSAVER were also active and locked the console on schedule, you would have a deadlock situation—unlocking the console would be dependent on eDirectory authentication—and making eDirectory available for authentication would be dependent on unlocking the console.

If you first load SCRSAVER with NO PASSWORD, you avoid having to power off the machine or break into the debugger to exit NetWare®. To ensure that SCRSAVER is loaded when the server is started, you can use place SCRSAVER in the `autoexec.ncf` file.

1.151 SEARCH

Purpose

Use at the server console to

- ♦ Tell the server where to look for loadable module files and `.ncf` files
- ♦ Add other search paths or delete current search paths
- ♦ View the current search paths for the operating system

Syntax

```
SEARCH [ADD [number] path]
```

or

```
SEARCH DEL [number]
```

Parameter	Use to
(no parameter)	View the current search paths.
<i>number</i>	Specify the number of the search drive you want to add or remove.

Parameter	Use to
<i>path</i>	Specify the complete path of the directory you want searched. (The default is <code>sys:system</code> .) Begin the path with a DOS drive letter or a NetWare® volume name.

Using SEARCH

- ♦ To set search paths each time the server comes up, place the SEARCH commands in the `autoexec.ncf` file.
- ♦ If you execute SECURE CONSOLE, SEARCH is disabled to prevent modules from being loaded from directories other than the boot directory. The `sys:system` search path remains in effect, but you cannot create new search paths.

Once you execute SECURE CONSOLE, you must bring down the server and reboot it to create additional search paths.

NOTE: When the server comes up and volume `sys:` is mounted, the search path to the boot partition is deleted.

Example

- ♦ To display the current server search paths, type

```
SEARCH
```

- ♦ To add `vol1.ncf` (a network directory) as a search path, type

```
SEARCH ADD VOL1:NCF
```

Additional Information

Topic	See
Search drives	“Network-Search Drive Maps” in the <i>NW 6.5 SP8: File Systems Management Guide</i>

1.152 SECURE CONSOLE

Purpose

Use at the server console to increase network security by

- ♦ Preventing loadable modules from being loaded from any directory other than the boot directories—`sys:system` or `c:\nwserver`
- ♦ Preventing keyboard entry into the operating system debugger
- ♦ Preventing the server date and time from being changed

Syntax

SECURE CONSOLE

Using SECURE CONSOLE

- ♦ When you execute SECURE CONSOLE, path specifiers are disabled. The `sys:system` search path remains in effect, but you cannot create new search paths.
- ♦ Use of SECURE CONSOLE is recommended, especially in security-sensitive environments. SECURE CONSOLE prevents the following types of breaches in security:
 - ♦ **Trojan Horse modules.** If you don't use SECURE CONSOLE, a module can be loaded from a DOS partition, a diskette drive, or any directory on a NetWare® volume.
If you allow modules to be loaded from all these drives, anyone who has access to the server console can load a loadable module. An intruder could create a module to access or alter any information on the server, or to change user account information at the server security level.
 - ♦ **Date and Time Modifications.** Some security and accounting features (such as password expiration, time restrictions, intruder detection, and lockout intervals) depend on date and time for their enforcement.
If you don't use SECURE CONSOLE, an intruder can change the date and time at the server and bypass these time-dependent features.
- ♦ To disable SECURE CONSOLE, use DOWN to bring down the server in an orderly way, and then reboot the server.

Additional Information

Topic	See
Server console	<i>"The Server Console" in the NW 6.5 SP8: Server Operating System Administration Guide</i>
Screen saver and console lock	<i>Section 1.150, "SCRSAVER," on page 182</i>

1.153 Server

Purpose

Use at the server console from the DOS prompt to

- ♦ Boot the NetWare® operating system on your server
- ♦ Automatically load bound-in modules
- ♦ Execute the `startup.ncf` file
- ♦ Mount volume `sys:`
- ♦ Execute the `autoexec.ncf` file

Syntax

`server [parameter]`

Parameter	Use to
<code>-s [path]filename.ncf</code>	<p>Specify an alternative to <code>startup.ncf</code>. Replace <i>filename</i> with the name of the alternate file. (The file extension must be <code>.ncf</code>)</p> <p>The system looks for the file in the current boot directory, unless you specify a path.</p>
<code>-na</code>	<p>Prevent the <code>autoexec.ncf</code> file that you created in INSTALL from executing.</p> <p>This parameter is useful if you are changing drivers or other commands in your <code>autoexec.ncf</code> file.</p>
<code>-ns</code>	<p>Prevent the <code>startup.ncf</code> and <code>autoexec.ncf</code> files created in INSTALL from executing.</p> <p>This parameter is useful for changing the boot process.</p>
<code>-nl</code>	<p>Prevent the logo (server splash graphic) from displaying while server components are loading in the background.</p>

Using SERVER

- ♦ `Server` is an executable file containing bound-in modules. `Server` uses DOS as a cold boot loader to boot the NetWare operating system. From then on, NetWare is in control and loads modules.
- ♦ If neither of the `.ncf` files exists, `Server` prompts you for a server name and an IPX™ internal network number; `Server` then brings up the console prompt (:).

IMPORTANT: The internal net number is used as a server ID in IP networks as well as IPX networks. Do not delete it from `.ncf` files.

- ♦ To automatically bring up the server when you boot up the machine, you can place the `server` command in the `autoexec.bat` file in your boot partition.
- ♦ `Server` executes `startup.ncf` and `autoexec.ncf`, if they exist.
- ♦ To prevent the Novell® logo (server splash screen) from displaying, you can load `Server` with the `-nl` (no logo) command option. Otherwise the graphics screen displays for about 10 seconds while server components are loading in the background.

TIP: To substitute a different image for the current logo screen, place a file called `nwlogo.bmp` (for machines using a 256-color palette) or `nwlogo16.bmp` (for machines using a 16-color palette) in the same directory as `server.exe` (must be in `.bmp` format).

BIOS limitations on the size and resolutions of the image are 640x480 pixels. The server will display the 256-color version, if possible; otherwise, the server will use the 16-color image. If neither is found in the directory, the default logo screen is displayed.

Additional Information

Topic	See
Restarting server execution from the console prompt	Section 1.144, "Restart Server," on page 171
Bringing the server down	"Starting and Stopping the Server" in the NW 6.5 SP8: Server Operating SystemAdministration Guide
Editing .ncf files	"Using Server Batch Files" in the NW 6.5 SP8: Server Operating SystemAdministration Guide

1.154 SET

Purpose

Use at the server console to view and configure operating system parameters.

TIP: You can also modify server parameter values from Monitor's Available Options, and then Server Parameters or using the Set Parameter link in Novell Remote Manager.

The default SET parameter values give maximum performance for most systems. Server parameter values should seldom need to be modified.

Syntax

```
set [parameter] [value]
```

Parameter Categories

- ["Common File System Parameters" on page 190](#)
- ["Communications Parameters" on page 193](#)
- ["Directory Services Parameters" on page 200](#)
- ["Disk Parameters" on page 204](#)
- ["Error Handling Parameters" on page 207](#)
- ["Licensing Services Parameters" on page 209](#)
- ["Memory Parameters" on page 210](#)
- ["Miscellaneous Parameters" on page 213](#)
- ["Multiprocessor Parameters" on page 220](#)
- ["NCP Parameters" on page 221](#)
- ["Novell Storage Services Parameters" on page 226](#)
- ["Power Management Parameters" on page 227](#)
- ["Service Location Protocol Parameters" on page 229](#)
- ["Time Parameters" on page 233](#)
- ["Traditional File Parameters" on page 237](#)
- ["File Caching Parameters for the Traditional File System" on page 237](#)

- “Directory Caching Parameters for the Traditional File System” on page 239
- “Allocation of Directory Cache Buffers” on page 240
- “How Directory Caching and File Caching Work Together” on page 240
- “File Parameters for the Traditional File System” on page 243
- “Locks Parameters for the Traditional File System” on page 247
- “Error Handling Parameters for the Traditional File System” on page 249
- “Transaction Tracking Parameters for the Traditional File System” on page 250

Using SET

Although most default values of the server parameters don't need to be modified, you might increase the performance of your system by adjusting the values of certain parameters. Suggestions for improving server performance can be found in “[Optimizing the NetWare Server](#)” and “[Setting Server Parameter Values](#)” in the *NW 6.5 SP8: Server Operating System Administration Guide*.

Server parameter settings are persistent in NetWare. If the server goes down, any settings that you have made to tune your server for performance will not be lost.

Displaying and Changing Current Settings

- ♦ If you type SET without a parameter, a list of numbered categories appears. When you select a category, the current settings for the server parameters in that category appear along with a brief description of each parameter, the range of valid values, and the default value.
- ♦ If you type SET with a parameter but no value, the current setting, range of valid values, and a brief description of the parameter are displayed.
- ♦ If you type SET with a parameter and a value, the operating system is reconfigured according to the specified value.

You can also use the Monitor utility to modify server parameter values. See [Section 1.94](#), “[MONITOR](#),” on page 102.

Entering Parameters

- ♦ You can modify the values of most SET parameters at the console prompt. The system is immediately configured to that setting. Any setting in the `autoexec.ncf` file is overridden.
- ♦ You can enter SET commands that you execute at the console prompt in the `autoexec.ncf` file. When a parameter value is set in this file, the server configures itself to that setting each time the server is booted—unless the value is modified.
- ♦ Some commands can be also saved in the `startup.ncf` file. Use [NWCONFIG \(page 146\)](#) to edit both the `autoexec.ncf` and the `startup.ncf` file.

Parameters That Control the Allocation of Services

Some SET parameters control how the system dynamically allocates services. Three types of parameters interact to control the allocation of a service:

- ♦ Maximum limits control the amount of server resources the operating system can allocate for a particular service.
- ♦ Minimum limits allow the operating system to allocate a minimum amount of resources as soon as a request is received.

Low minimum limits slow the growth of a particular service. High minimum limits allow rapid growth.

For example, if the minimum number of directory cache buffers is set to 20, the system allocates another buffer resource as soon as a request is made—until 20 cache buffers have been allocated.

When 20 directory cache buffers are allocated, the system waits 2.2 seconds (default) when a request comes in, and then allocates another buffer if the request is still active.

However, if the minimum number of directory cache buffers is set to 40, the system allocates 40 directory cache buffers before it starts slowing the growth by waiting 2.2 seconds after each request.

- ♦ Wait time limits control how rapidly the operating system can allocate a new resource.

Common File System Parameters

Common File System Parameters contain parameters that apply to both the NSS file system and the NetWare Traditional file system. For a description of file system parameters, see the following table.

Table 1-3 *Common File System Parameters*

Parameter	Use to
Maximum Transactions <i>number</i>	Specify how many transactions can occur at the same time. Supported values: 100 to 10000 Default: 10000 Owning NLM: <code>filesys.nlm</code>
Maximum Concurrent Directory Cache Writes <i>number</i>	Specify how many write requests from directory cache buffers are put in the elevator before the disk head begins a sweep across the disk. Supported values: 5 to 500 Default: 75 A high number creates more efficient write requests. A low number creates more efficient read requests. Owning NLM: <code>filesys.nlm</code>
Minimum File Delete Wait Time <i>time</i>	Specify how long a deleted file remains salvageable on the volume. Supported values: 0 seconds to 7 days Default: 1 minute 5.9 seconds Files deleted for less than this minimum aren't automatically purged even if the volume is full and users can't create new files. Owning NLM: <code>filesys.nlm</code>
Immediate Purge of Deleted Files <i>value</i>	Supported values: On, Off Default: Off If this parameter is set to On, all files are purged immediately when they are deleted. Owning NLM: <code>filesys.nlm</code>

Parameter	Use to
Compression Daily Check Stop Hour <i>number</i>	<p>Specify the hour when you want the file compressor to stop scanning enabled volumes for files that need to be compressed.</p> <p>Supported values: 0 to 23Default: 6</p> <p>Hours are specified by a 24-hour clock: (0 midnight; 23 11 p.m.).</p> <p>This parameter can be set in the <code>startup.ncf</code> file.</p> <p>Owning NLM: <code>filesys.nlm</code></p>
Compression Daily Check Starting Hour <i>number</i>	<p>Specify the hour when you want the file compressor to start scanning enabled volumes for files that need to be compressed.</p> <p>Supported values: 0 to 23Default: 0</p> <p>Hours are specified by a 24-hour clock: (0 midnight; 23 11 p.m.).</p> <p>Note: If the Compression Daily Check Stop Hour parameter is the same as the Compression Daily Check Starting Hour, then the file compressor starts checking every day at the Compression Daily Starting Hour time and runs as long as necessary to finish all files that meet the compressible criteria.</p> <p>This parameter can be set in the <code>startup.ncf</code> file.</p>
Minimum Compression Percentage Gain <i>number</i>	<p>Set the minimum percentage a file must compress to remain in a compressed state.</p> <p>Supported values: 0 to 50Default: 20</p> <p>This parameter can be set in the <code>startup.ncf</code> file.</p> <p>Owning NLM: <code>filesys.nlm</code></p>
Enable File Compression <i>value</i>	<p>Specify whether file compression is suspended.</p> <p>Supported values: On, OffDefault: On</p> <p>On allows file compression on compression-enabled volumes.</p> <p>Off suspends compression; immediate compress requests are queued until the value is reset to On, when the files meeting criteria are compressed.</p> <p>This parameter can be set in the <code>startup.ncf</code>.</p> <p>Owning NLM: <code>filesys.nlm</code></p>
Maximum Concurrent Compressions <i>number</i>	<p>Specify the maximum concurrent or simultaneous compressions allowed.</p> <p>Supported values: 1 to 8Default: 2</p> <p>Concurrent compressions can occur only if there are multiple volumes.</p> <p>This parameter can be set in the <code>startup.ncf</code> file.</p> <p>Owning NLM: <code>filesys.nlm</code></p>

Parameter	Use to
Convert Compressed to Uncompressed Option <i>value</i>	<p>Specify what the file system does with an decompressed version of a file after the server has decompressed it.</p> <p>Supported values:</p> <p>0 Always leave the file compressed 1 Leave the file compressed until second access if it is read only once during the time specified by the Days Untouched Before Compression parameter 2 Always leave the file decompressed</p> <p>Default: 1</p> <p>This parameter can be set in the <code>startup.ncf</code> file.</p> <p>Owning NLM: <code>filesys.nlm</code></p>
Decompress Percent Disk Space Free to Allow Commit <i>number</i>	<p>Specify the percentage of free disk space required on a volume for file decompression to permanently change compressed files to decompressed.</p> <p>Supported values: 0 to 75Default: 10</p> <p>This parameter prevents newly decompressed files from filling up the volume.</p> <p>This parameter can be set in the <code>startup.ncf</code> file.</p> <p>Owning NLM: <code>filesys.nlm</code></p>
Decompress Free Space Warning Interval <i>number</i>	<p>Specify the time between alerts when the file system is not changing compressed files to decompressed because of insufficient disk space. Setting the interval to 0 turns off the alert.</p> <p>Supported values: 0 seconds to 29 days 15 hours 50 minutes 3.8 seconds Default: 31 minutes 18.5 seconds</p> <p>This parameter can be set in the <code>startup.ncf</code> file.</p> <p>Owning NLM: <code>filesys.nlm</code></p>
Deleted Files Compression Option <i>number</i>	<p>Specify whether and when deleted files are compressed.</p> <p>Supported values:</p> <p>0 Don't Compress deleted files 1 Compress deleted files the next day 2 Compress deleted files immediately</p> <p>Default: 1</p> <p>This parameter can be set in the <code>startup.ncf</code> file.</p> <p>Owning NLM: <code>filesys.nlm</code></p>
Days Untouched Before Compression <i>number</i>	<p>Specify the number of days the system waits after a file was last accessed before it is compressed.</p> <p>Supported values: 0 to 100000Default: 14</p> <p>This parameter can be set in the <code>startup.ncf</code> file.</p> <p>Owning NLM: <code>filesys.nlm</code></p>

Communications Parameters

Communication parameters control settings for communication buffers. Four parameters configure packet receive buffers; four control the watchdog.

- ♦ Packet Receive Buffers are areas in the server's memory that are set aside to hold data packets. The packets remain in the buffers while the server processes them.

You can monitor the current number of allocated packet receive buffers on Monitor's General Information screen.

- ♦ Watchdog Packets are used to make sure stations are connected. If the server doesn't receive a packet from a station within a set time (delay before first watchdog packet), a watchdog packet is sent to the station.

If the station doesn't respond within a configurable amount of time (delay between watchdog packets), another packet is sent.

If the station doesn't respond to a set number of packets, the server assumes that the station is no longer connected and clears the station's connection.

For a description of communications parameters, see [Table 1-4 on page 193](#).

Table 1-4 *Communications Parameters*

Parameter	Use to
IPX CMD Mode Routing <i>value</i>	Control whether IPX CMD Mode Routing is on or off. Supported values: On, Off Default: Off Owning NLM: <code>ipxspx.nlm</code>
IPMGMT Push Pull Interval <i>number</i>	Change the time (in seconds) between change in the configuration and its effect. Supported values: 1 to 5 Default: 2 Recommended: If you find that your configuration change is reverted to the old one after refresh, increase this time. Owning NLM: <code>ipmgmt.nlm</code>
IPMGMT Fetch Expiry Time <i>number</i>	Change the expiration time (in seconds) of IPMGMT Fetch operation. Supported values: 1 to 60 Default: 5 Recommended: If a lesser number of applications is shown on the IP Management page than the actual number of applications that are running on the server, increase the time. Owning NLM: <code>ipmgmt.nlm</code>
Maximum Pending TCP Connection Requests <i>number</i>	Change the maximum number of pending TCP connections. Supported values: 128 to 4096 Default: 128 Owning NLM: <code>bsdsock.nlm</code>

Parameter	Use to
PGM Socket Send Buffer Size <i>number</i>	<p>Set the PGM Socket default send buffer size (in bytes).</p> <p>Supported values: 102400 to 1073741824Default: 400*1024 bytes</p> <p>Owning NLM: <code>bsdsock.nlm</code></p>
BSD Socket default Buffer Size in Bytes <i>number</i>	<p>Set the BSD Socket default send and receive buffer size (in bytes).</p> <p>Supported values: 4096 to 1073741824Default: 32768 bytes</p> <p>Owning NLM: <code>bsdsock.nlm</code></p>
Discard Oversized Ping Packets <i>value</i>	<p>Specify whether or not to discard ping packets larger than the current setting of largest ping packet size.</p> <p>Supported values: On, OffDefault: On</p> <ul style="list-style-type: none"> ♦ On Discard ♦ Off Do not discard <p>Owning NLM: <code>tcpip.nlm</code></p>
Largest Ping Packet Size <i>number</i>	<p>Set the largest ping packet size that can be received.</p> <p>Supported values: 0 to 36992Default: 10240</p> <p>The upper limit is under assumption that MTU is 1500 (Ethernet).</p> <p>Owning NLM: <code>tcpip.nlm</code></p>
TOS for IP packets <i>number</i>	<p>Set TOS in the IP header for all outgoing packets for all interfaces.</p> <p>Supported values: 0 to 127Default: 0</p> <p>Owning NLM: <code>tcpip.nlm</code></p>
Arp entry update time <i>number</i>	<p>Change the update time (in seconds) of Arp Entries.</p> <p>Supported values: 240 to 14400Default: 300 (5 minutes)</p> <p>Recommended: The Arp entry update time should be greater than or equal to the Arp entry expiration time.</p> <p>Owning NLM: <code>tcpip.nlm</code></p>
Arp entry expiry time <i>number</i>	<p>Change the expiration time (in seconds) of Arp Entries.</p> <p>Supported values: 240 to 14400Default: 300 (5 minutes)</p> <p>Recommended: The Arp entry expiration time should be less than or equal to the Arp entry update time.</p> <p>Owning NLM: <code>tcpip.nlm</code></p>

Parameter	Use to
ICMP Redirect Timeout <i>number</i>	<p>Set the time period (in minutes) for expiring ICMP redirect learned routes.</p> <p>Supported values: 0 to 525600 (1 year)Default: 3</p> <p>A setting of 0 disables route learning from ICMP redirects.</p> <p>Owning NLM: <code>tcPIP.nlm</code></p>
Largest UDP Packet Size <i>number</i>	<p>Set the largest UDP packet size that can be received.</p> <p>Supported values: 0 to 36992Default: 16384</p> <p>The upper limit is under assumption that MTU is 1500 (Ethernet).</p> <p>Owning NLM: <code>tcPIP.nlm</code></p>
Discard Oversized UDP Packets <i>value</i>	<p>Specify whether to discard UDP packets larger than the current setting of Largest UDP Packet Size.</p> <p>Supported values: On, OffDefault: On</p> <ul style="list-style-type: none"> ♦ On Discard ♦ Off Do not discard <p>Owning NLM: <code>tcPIP.nlm</code></p>
TCP UDP Diagnostic Services <i>value</i>	<p>Start or stop diagnostic servers over TCP and UDP (Echo/Chargen/Discard).</p> <p>Supported values: On, OffDefault: Off</p> <p>Owning NLM: <code>tcPIP.nlm</code></p>
TCP Path MTU Black Hole Detection and Recovery <i>value</i>	<p>Enable or disable Path MTU Black Hole Detection and Recovery feature.</p> <p>Supported values: On, OffDefault: Off</p> <ul style="list-style-type: none"> ♦ On Enable ♦ Off Disable <p>Owning NLM: <code>tcPIP.nlm</code></p>
TCP Max Port Limit <i>number</i>	<p>Modify the upper limit of TCP ephemeral port range.</p> <p>Supported values: 4999 to 54999Default: 54999</p> <p>Owning NLM: <code>tcPIP.nlm</code></p>
TCP Sack Option <i>value</i>	<p>Enable or disable Sack support. This option does not change the behaviour of existing connections.</p> <p>Supported values: On, OffDefault: On</p> <ul style="list-style-type: none"> ♦ On Enable ♦ Off Disable <p>Owning NLM: <code>tcPIP.nlm</code></p>

Parameter	Use to
TCP Large Window Option <i>value</i>	<p>Enable or disable Large Window support. This option does not change the behaviour of existing connections.</p> <p>Supported values: On, OffDefault: On</p> <ul style="list-style-type: none"> ♦ On Enable ♦ Off Disable <p>Owning NLM: <code>tcPIP.nlm</code></p>
TCP Defend Land Attacks <i>value</i>	<p>Defend against TCP/UDP Land Attacks.</p> <p>Supported values: On, OffDefault: On</p> <ul style="list-style-type: none"> ♦ On Defend ♦ Off Do not defend <p>Owning NLM: <code>tcPIP.nlm</code></p>
TCP Secure ISN <i>value</i>	<p>Enable or disable the use of a secure algorithm for generating TCP Initial Sequence Numbers. This option does not change the behaviour of existing connections.</p> <p>Supported values: On, OffDefault: On</p> <ul style="list-style-type: none"> ♦ On Discard ♦ Off Do not discard <p>Owning NLM: <code>tcPIP.nlm</code></p>
Maximum RIP SAP Events <i>number</i>	<p>Specify the maximum number of RIP/SAP process time events (such as RIP/SAP consumption) allowed before guaranteeing that a thread switch will occur.</p> <p>Supported values: 1 to 100000Default: 100</p> <p>Owning NLM: <code>ipxSPX.nlm</code></p>
IPX Router Broadcast Delay <i>number</i>	<p>Specify how long (in ticks) the IPX router should delay between SAP/RIP broadcast packets.</p> <p>Supported values: 0 to 2Default: 0</p> <ul style="list-style-type: none"> ♦ 0 Adjust delay to size of SAP/RIP tables ♦ 1 Delay 1 tick ♦ 2 Delay 2 ticks <p>Owning NLM: <code>ipxSPX.nlm</code></p>

Parameter	Use to
IPX NetBIOS Replication Option <i>number</i>	<p>Control how the IPX router deals with NetBIOS replicated broadcasts.</p> <p>Supported values: 0 to 3Default: 2</p> <ul style="list-style-type: none"> ♦ 0 Do not replicate NetBIOS replicated broadcasts. ♦ 1 Replicate NetBIOS replicated broadcasts using the "old" algorithm (which causes duplicate broadcasts when there are redundant routes). ♦ 2 Replicate NetBIOS replicated broadcasts using the "new" algorithm (which squelches duplicate broadcasts but doesn't go as far). ♦ 3 Use the same replication as method 2, but do not replicate NetBIOS replicated broadcasts to WAN links. <p>Owning NLM: ipxspx.nlm</p>
Use Old Watchdog Packet Type <i>value</i>	<p>Use type 0 instead of type 4 for watchdog packets. Some old router hardware will filter out type 4 IPX packets that can cause a client to lose its connection to the sever when it sits inactive for a few minutes..</p> <p>Supported values: On, OffDefault: Off</p> <p>Owning NLM: ipxspx.nlm</p>
Reply to Get Nearest Server <i>value</i>	<p>Specify whether the server responds to GET NEAREST SERVER requests from workstations that are attempting to locate a server.</p> <p>Supported values: On, OffDefault: On</p> <p>Owning NLM: ipxspx.nlm</p>
Number of Watchdog Packets <i>number</i>	<p>Specify the number of unanswered watchdog packets that the server sends to a workstation before closing its connection.</p> <p>Supported values: 5 to 100Default: 10</p> <p>Owning NLM: connmgr.nlm</p>
Delay Between Watchdog Packets <i>time</i>	<p>Specify the amount of time between watchdog packets.</p> <p>Supported values: 9.9 seconds to 10 minutes 26.2 seconds Default: 59.3 seconds</p> <p>After a server sends out the first watchdog packet, it waits the specified time before sending out succeeding packets if it receives no reply.</p> <p>Owning NLM: connmgr.nlm</p>
Delay Before First Watchdog Packet <i>time</i>	<p>Specify the amount of time the server waits without receiving a request from a workstation before sending out the first watchdog packet to that station.</p> <p>Supported values: 15.7 seconds to 14 daysDefault: 4 minutes 56.6 seconds</p> <p>Owning NLM: connmgr.nlm</p>

Parameter	Use to
Console Display Watchdog Logouts <i>value</i>	<p>Specify whether a console message is displayed when a connection is cleared.</p> <p>Supported values: On, OffDefault: Off</p> <p>If your network is running smoothly, you don't need to display watchdog logouts.</p> <p>If your workstations are having connection problems, the watchdog logout messages can help you isolate which stations aren't receiving or sending watchdog packets.</p> <p>Owning NLM: <code>connmgr.nlm</code></p>
Maximum Packet Receive Buffers <i>number</i>	<p>Specify the maximum number of packet receive buffers the operating system can allocate.</p> <p>Supported values: 50 to 3303820Default: 10000</p> <p>Before increasing this parameter, use MONITOR to view the server's use of packet receive buffers and service processes.</p> <p>If the number of packet receive buffers is at maximum, increase this parameter in increments of 10 until you have one packet receive buffer per workstation.</p> <p>If you have EISA or microchannel bus master boards in your server, increase this parameter to provide at least five buffers per board.</p> <p>If the board is producing No ECB available count errors, provide 10 buffers per board. Use MONITOR (LAN/WAN Drivers) to determine whether the board is producing errors.</p> <p>If the number of allocated service processes is at maximum, you can increase the Maximum Service Processes parameter to decrease the need for more packet receive buffers.</p> <p>The value of this parameter should be greater than the value of the Minimum Packet Receive Buffers parameter. If it is less, the system increases the value to match that of the Minimum Packet Receive Buffers parameter.</p> <p>This parameter can be set in the appropriate startup file.</p> <p>Owning NLM: <code>ls1.nlm</code></p>

Parameter	Use to
Minimum Packet Receive Buffers <i>number</i>	<p>Specify the minimum number of packet receive buffers the operating system can allocate. The operating system allocates this number of buffers as soon as the server boots. You must add this command to the <code>startup.ncf</code> file. You cannot change the setting at the console prompt.</p> <p>Supported values: 10 to 32768Default: 2000</p> <p>Before increasing this parameter, use Novell Remote Manager or MONITOR to view the server's use of packet receive buffers.</p> <p>If you have EISA or microchannel bus master boards in your server and are receiving No ECB available count errors (see LAN/WAN Drivers in Section 1.94, "MONITOR," on page 102) right after the server boots, increase this parameter so that each board can have at least five packet receive buffers.</p> <p>If the allocated number is higher than 10 and the server doesn't respond immediately after booting, increase this parameter.</p> <p>The value of this parameter must be less than the value of the Maximum Packet Receive Buffers parameter. If it is greater, the system increases the value of the Maximum Packet Receive Buffers parameter to match that of the Minimum Packet Receive Buffers parameter.</p> <p>Owning NLM: <code>lsl.nlm</code></p>
Maximum Physical Receive Packet Size <i>number</i>	<p>Specify the maximum size of packets that can be transmitted on the network.</p> <hr/> <p>IMPORTANT: You must add this command to the <code>startup.ncf</code> file. You cannot change the setting at the console prompt or by using any other utilities.</p> <hr/> <p>Supported values: 618 to 65642Default: 4224</p> <p>The default allows 2 KB (data with the packet header). If you use token ring or Ethernet boards, the default is acceptable.</p> <p>If some of your network boards transmit more than 512 bytes of data per packet, set this parameter for the largest packet size.</p> <p>Owning NLM: <code>lsl.nlm</code></p>
New Packet Receive Buffer Wait Time <i>time</i>	<p>Specify how long (in seconds) the operating system waits after receiving a request for a packet receive buffer before granting a new buffer.</p> <p>Supported values: 0 seconds to 20Default: 0</p> <p>This parameter prevents the system from granting too many buffers during a sudden peak in usage.</p> <p>If you have an EISA bus master board in your server, don't change this parameter.</p> <p>Owning NLM: <code>lsl.nlm</code></p>

Parameter	Use to
Maximum Interrupt Events <i>number</i>	Specify the maximum number of interrupt time events (such as IPX routing) allowed before a thread switch is guaranteed to have occurred. Supported values: 1 to 1000000 Default: 10 Owning NLM: <code>lsl.nlm</code>

Directory Services Parameters

Directory services parameters allow you to do the following:

- ♦ Control the Novell eDirectory™ trace file.
- ♦ Set time intervals for maintenance processes that reclaim disk space, remove external references, and check the consistency of backlinks.
- ♦ Set eDirectory synchronization intervals and restrictions.
- ♦ Specify the number of NCP™ retries before timeout.
- ♦ Mark the status of other servers in the namebase as UP or DOWN.
- ♦ Specify bindery services contexts.
- ♦ Handle security issues.

For descriptions of directory services parameters, see the following table.

Table 1-5 *Directory Services Parameters*

Parameter	Use to
NDS Trace to Screen <i>value</i>	Enable the DS trace screen; this displays information about eDirectory events on the monitor. Supported values: On, Off Default: Off Owning NLM: <code>ds.nlm</code>
NDS Trace to File <i>value</i>	Send messages about eDirectory events to the eDirectory trace file on volume <code>sys:</code> . The default file is <code>system:\dstrace.dbg</code> . Supported values: On, Off Default: Off The file path and name can be changed with the eDirectory Trace Filename parameter. The file is circular; it grows to a maximum length of approximately 500 KB and then starts to overwrite itself at the beginning of the file. If this parameter is set to On, the trace information is also scrolled on the screen. Owning NLM: <code>ds.nlm</code>

Parameter	Use to
NDS Trace Filename <i>path\name</i>	<p>Specify the path and name of the DS trace file on volume <code>sys:</code>.</p> <p>Maximum length: 254</p> <p>Default: <code>system:\dstrace.dbg</code></p> <p>Owning NLM: <code>ds.nlm</code></p>
Bindery Context <i>context;context</i>	<p>Specify one or more containers to be used by eDirectory when it provides bindery services.</p> <p>Maximum: 2047 characters, 16 contexts</p> <p>Multiple contexts are separated by semicolons (;). Whatever string it specified is set. To make that string effective for all valid contexts, make sure the container you specify in the context is present on that server.</p> <p>Example: <code>set bindery context ou=sales_la.ou=sales. o=novell_us;ou=accounting.o=novell</code></p> <p>This parameter can be set in the <code>startup.ncf</code> file.</p> <p>Owning NLM: <code>server.nlm</code></p>
NDS External Reference Life Span <i>number_in_hours</i>	<p>Specify how long (in hours) unused external references are allowed to exist before being removed.</p> <p>Supported values: 1 to 384Default: 192</p> <p>External references are local IDs assigned to users when they access other servers. When users no longer have access, the external references should be removed.</p> <p>Owning NLM: <code>ds.nlm</code></p>
NDS Inactivity Synchronization Interval <i>number_in_minutes</i>	<p>Specify the maximum elapsed time (in minutes) between exhaustive synchronization checks. As soon as you change this value, the system executes the synchronization check. Synchronization checks then recur at the specified interval.</p> <p>Supported values: 2 to 1440Default: 60</p> <p>If the system has replicas across a WAN link, this value should be set as high as 240 (4 hours) to reduce WAN traffic.</p> <p>Owning NLM: <code>ds.nlm</code></p>

Parameter	Use to
NDS Synchronization Restrictions <i>value, version_number_list</i>	<p>Specify which versions of eDirectory the server can synchronize with.</p> <p>Supported values: Off; On, <i>list of version numbers</i> (Maximum length of version number list: 131 characters)</p> <p>Default: Off</p> <p>To determine what version is currently loaded on a server, enter <code>modules</code> at the server prompt. The eDirectory version number is displayed under the heading <code>ds.nlm</code>.</p> <p>If this parameter is set to Off, the server synchronizes with all versions available.</p> <p>If this parameter is set to On, the server synchronizes only with those versions specified as parameters to the On value.</p> <p>Example: On,420,421</p> <p>Owning NLM: <code>ds.nlm</code></p>
NDS Servers Status <i>value</i>	<p>Mark the status of all Server objects in the local namebase as up or down.</p> <p>Supported values: Up, Down</p> <p>Use this parameter to reset the status of all the servers if the status of one server isn't accurately recognized by the system.</p> <p>For example, if a server is up but the system recognizes it as down, set this parameter to mark all servers as up.</p> <p>Subsequently, the system would reassess the status of all servers and change the status to down for those servers that were truly down.</p> <p>Owning NLM: <code>ds.nlm</code></p>
NDS Janitor Interval <i>number_in_minutes</i>	<p>Specify the interval (in minutes) at which the janitor process is executed. The janitor process is executed as soon as you change this value and then recurs at the specified interval.</p> <p>Supported values: 1 to 10080Default: 720</p> <p>The janitor process cleans up unused records, reclaims disk space, and purges objects flagged for deletion.</p> <p>Owning NLM: <code>ds.nlm</code></p>

Parameter	Use to
NDS Distributed Reference Link Interval <i>number_in_minutes</i>	<p>Specify the interval (in minutes) at which distributed reference link consistency checking is performed. Distributed reference link consistency checking is executed as soon as you change this value. It then recurs at the specified interval.</p> <p>Supported values: 2 to 10080Default: 780</p> <p>A distributed reference link indicates that an object in a partition has an ID in that partition where the actual object doesn't exist.</p> <p>This process creates needed distributed reference links and deletes unnecessary ones.</p> <p>Owning NLM: <code>ds.nlm</code></p>
NDS Bindery QOS mask <i>number</i>	<p>Select which objects should be subject to bindery QOS delay. This switch should be used with the NDS Bindery QOS delay switch.</p> <p>Supported values: 0 to 4294967295Default: 8</p> <p>Owning NLM: <code>ds.nlm</code></p>
NDS Bindery QOS delay <i>number_in_milliseconds</i>	<p>Set the delay (in milliseconds) after successfully finding bindery objects. This switch should be used with the NDS Bindery QOS mask switch.</p> <p>Supported values: 0 to 60000Default: 150</p> <p>Owning NLM: <code>ds.nlm</code></p>
NDS Backlink Interval <i>number_in_minutes</i>	<p>Specify the interval (in minutes) at which backlink consistency checking is performed. Backlink consistency checking is executed as soon as you change this value. It then recurs at the specified interval.</p> <p>Supported values: 2 to 10080Default: 780</p> <p>A backlink indicates that an object in a replica has an ID on a server where the replica doesn't exist.</p> <p>This process creates needed backlinks and deletes unnecessary ones.</p> <p>Owning NLM: <code>ds.nlm</code></p>
NDS Trace File Length to Zero <i>value</i>	<p>Delete the contents of the trace file. This parameter does not delete the file itself. As soon as the file is cleared, the value of the parameter resets to Off.</p> <p>Supported values: On, OffDefault: Off</p> <p>To use this parameter, you must also set the eDirectory Trace to File parameter to On, because the trace file must be open for the system to delete its contents.</p> <p>Owning NLM: <code>ds.nlm</code></p>

Parameter	Use to
NDS Bootstrap Address <i>address</i>	<p>Allow eDirectory to operate properly in the absence of SLP. When SLP is not available to advertise servers and partitions, the local server uses this value to set the bootstrap address that the server would use to find its tree and authenticate to it.</p> <p>Format for IP Address: Use the standard IP format of four decimal values delimited by periods.</p> <p>Example: 123.45.67.89 <:524> or 137.65.62.144 (port number is optional) This number is used for both TCP and UDP connections.</p> <p>Format for IPX Address: Use the standard IPX format of hexadecimal digits representing Network, Node, and Socket.</p> <p>Example: 12345678:23456789ABCD:0451 or 01010480:00001B1E983A:0451</p> <p>Defaults apply to any field not present, where the default is current value.</p> <p>Owning NLM: <code>ds.nlm</code></p>
Check Equivalent to Me <i>value</i>	<p>Enforce checking of the Equivalent To Me attribute on eDirectory authentication.</p> <p>Supported values: On, OffDefault: Off</p> <p>If this parameter is set to On, DSRepair must be used to synchronize the Equivalence attribute and the Equivalent To Me attribute.</p> <p>Setting this parameter to On might adversely affect communication performance.</p> <p>Owning NLM: <code>ds.nlm</code></p>

Disk Parameters

Disk parameters control aspects of disk reads and writes.

For a description of disk parameters, see the following table.

Table 1-6 *Disk Parameters*

Parameter	Use to
Auto scan for devices <i>value</i>	<p>Automatically scan for devices when a HAM is loaded. If turned off, operator must issue a Scan for New Devices on the command line before the devices will be seen.</p> <p>Supported values: On, OffDefault: On</p> <p>Owning NLM: <code>nwpa.nlm</code></p>

Parameter	Use to
Auto load of CDM modules <i>value</i>	<p>Automatically scan and load defined generic Custom Device Modules (CDMs). If turned off, the desired CDMs must be loaded manually or added to the <code>startup.ncf</code> file.</p> <p>Supported values: On, OffDefault: On</p> <p>Owning NLM: <code>nwpa.nlm</code></p>
Sequential Elevator Depth <i>number</i>	<p>Set the maximum elevator depth for sequential requests.</p> <p>Media Manager sends the number of sequential requests up to this value to the same device. When the device contains this number of requests and another device in the mirror group is empty, Media Manager begins sending requests to the idle device.</p> <p>Supported values: 0 to 4294967295Default: 8</p> <p>You can set this parameter in the <code>startup.ncf</code> file.</p> <p>Owning NLM: <code>mm.nlm</code></p>
Enable IO Handicap Attribute <i>value</i>	<p>Enable drivers and applications to inhibit read requests from one or more devices.</p> <p>Supported values: On, OffDefault: Off.</p> <p>Setting this parameter to On enables the Inhibit attribute to function. Setting this parameter to Off prevents the attribute from functioning.</p> <p>Do not set this attribute to On unless instructed to do so by a device manufacturer.</p> <p>You can set this parameter in the <code>startup.ncf</code> file.</p> <p>Owning NLM: <code>mm.nlm</code></p>
Mirrored Devices Are Out of Sync Message Frequency <i>time</i>	<p>Set the frequency (in minutes) for checking out-of-sync devices.</p> <p>Supported values: 5 to 9999Default: 28</p> <p>You can set this parameter in the <code>startup.ncf</code> file.</p> <p>Owning NLM: <code>mm.nlm</code></p>
Remirror Block Size <i>number</i>	<p>Set the remirror block size in 4 KB increments. (1=4 KB, 2=8 KB, 8=32 KB, etc.)</p> <p>Supported values: 1 to 8Default: 1</p> <p>Owning NLM: <code>mm.nlm</code></p>
Concurrent Remirror Requests <i>number</i>	<p>Set the number of remirror requests per Mirror object.</p> <p>Supported values: 2 to 32Default: 32</p> <p>Owning NLM: <code>mm.nlm</code></p>

Parameter	Use to
Ignore Partition Ownership <i>value</i>	<p>Specify whether partitions owned by other servers in a cluster can be activated on this server.</p> <p>Setting this parameter to On allows partitions owned by other servers in the cluster to be activated on this server.</p> <p>Supported values: On, OffDefault: Off</p> <p>Owning NLM: mm.nlm</p>
Ignore Disk Geometry <i>value</i>	<p>Create nonstandard and unsupported partitions.</p> <p>Supported values: On, OffDefault: Off</p> <p>If you set this parameter to On before modifying or creating a partition, the software ignores disk geometry when creating the partition. This allows you to create nonstandard partitions.</p> <p>Caution: Setting this parameter to On might harm other file systems contained on the disk.</p> <p>You can set this parameter in the <code>startup.ncf</code> file.</p> <p>Owning NLM: mm.nlm</p>
Multi-path Support <i>value</i>	<p>Enable or disable support for multipath devices or adapter failover.</p> <p>Supported values: On, OffDefault: Off</p> <p>Owning NLM: mm.nlm</p>
Enable Hardware Write Back <i>value</i>	<p>Enable hardware write back, if supported.</p> <p>Hardware write back means that I/O write requests might be cached at the device and succeeded before data is committed to the media. Hardware write back usually improves write performance.</p> <p>Supported values: On, OffDefault: Off</p> <p>You can set this parameter in the <code>startup.ncf</code> file.</p> <p>Owning NLM: mm.nlm</p>
Enable Disk Read After Write Verify <i>value</i>	<p>Control whether information written to disk is read back and compared with the original data.</p> <p>Supported values: On, OffDefault: Off</p> <p>Setting this parameter to On might decrease performance significantly.</p> <p>To set this value for currently loaded disks, use the Storage Devices option of MONITOR (page 102).</p> <p>You can set this parameter in the <code>startup.ncf</code> file.</p> <p>Owning NLM: mm.nlm</p>

Parameter	Use to
Auto LFVMount	<p>Control whether any local FAT volumes not recognized by DOS are automatically mounted and assigned a local drive letter when they are detected.</p> <p>Supported values: On, OffDefault: Off</p> <p>On automatically mounts and assigns a local drive letter when the drive is detected.</p> <p>When set to Off, you must use the LFVMOUNT comand to manually mount local FAT volumes.</p> <p>Owning NLM: fatfs.nlm</p>

Error Handling Parameters

Error handling parameters control the size of error logs and specify what happens when logs exceed the specified size. They also control how the server responds to an abend or to an NLM that does not unload from a protected address space.

For descriptions of error handling parameters, see the following table.

Table 1-7 *Error Handling Parameters*

Parameter	Use to
Server Log File State <i>number</i>	<p>Control what happens when the <code>sys\$log.err</code> file is larger than the size specified by the Server Log File Overflow Size parameter.</p> <p>Supported values:</p> <p>0 Leave <code>sys\$log.err</code> as is 1 Delete <code>sys\$log.err</code> 2 Rename <code>sys\$log.err</code></p> <p>Default: 1</p> <p>You can set this parameter in the <code>startup.ncf</code> file.</p> <p>Owning NLM: server.nlm</p>
Server Log File Overflow Size <i>number</i>	<p>Specify the maximum size of the <code>sys\$log.err</code> file before the action specified by the Server Log File State parameter occurs.</p> <p>Supported values: 65536 to 4294967295Default: 4194304</p> <p>You can set this parameter in the <code>startup.ncf</code> file.</p> <p>Owning NLM: server.nlm</p>

Parameter	Use to
Boot Error Log File State <i>number</i>	<p>Control what happens when the <code>boot\$log.err</code> file is larger than the size specified by the Boot Error Log Overflow Size parameter.</p> <p>Supported values:</p> <p>0 Leave <code>boot\$log.err</code> as is 1 Delete <code>boot\$log.err</code> 2 Rename <code>boot\$log.err</code> 3 Start a new log file whenever the server is restarted</p> <p>Default: 3</p> <p>You can set this parameter in the <code>startup.ncf</code> file.</p> <p>Owning NLM: <code>server.nlm</code></p>
Boot Error Log File Overflow Size <i>number</i>	<p>Specify the maximum size to which the <code>boot\$log.err</code> file can grow before the action specified by the Boot Error Log File State parameter occurs.</p> <p>Supported values: 65536 to 4294967295Default: 4194304</p> <p>You can set this parameter in the <code>startup.ncf</code> file.</p> <p>Owning NLM: <code>server.nlm</code></p>
Boot Error Log <i>value</i>	<p>Specify which error messages from the console will be saved in the <code>boot\$log.err</code> file.</p> <p>Supported values: On, OffDefault: On</p> <p>If you set this parameter to On, all error messages displayed on the console will be saved in <code>boot\$log.err</code>.</p> <p>If you set this parameter to Off, only error messages displayed during the boot procedure will be saved in <code>boot\$log.err</code>.</p> <p>You can set this parameter in the <code>startup.ncf</code> file.</p> <p>Owning NLM: <code>server.nlm</code></p>
Hung Unload Wait Delay <i>number</i>	<p>Specify the amount of time the server waits for an NLM program to be unloaded from a protected address space after the unload address space command is executed. If the NLM is not successfully unloaded within this interval, the server displays a prompt to kill the address space.</p> <p>Supported values: 0 seconds to 1 minute 58.3 secondsDefault: 30 seconds</p> <p>You can set this parameter in the <code>startup.ncf</code> file.</p> <p>Owning NLM: <code>server.nlm</code></p>
Auto Restart Down Timeout <i>number</i>	<p>When the server tries to go down after an <code>abend</code>, it sets a timeout just in case there is a problem going down. Specify the amount of time (in seconds) that the server waits before automatically restarting.</p> <p>Supported values: 0 to 600Default: 180</p> <p>Owning NLM: <code>server.nlm</code></p>

Parameter	Use to
Auto Restart After Abend Delay Time <i>number</i>	<p>Specify the amount of time (in minutes) before the server is brought down after an abend, if the Auto Restart After Abend parameter is in effect.</p> <p>Supported values: 2 to 60Default: 2</p> <p>Regardless of what time is set, the server sends a message every two minutes to warn users that the server will be brought down.</p> <p>Owning NLM: <code>server.nlm</code></p>
Auto Restart After Abend <i>value</i>	<p>Specify the system's automatic response to an abend.</p> <p>Supported values:</p> <ul style="list-style-type: none"> ♦ 0 The system does not respond to the abend. ♦ 1 After an abend, the system determines the source of the abend. Based on findings, the system either keeps the computer running or shuts down the computer and attempts to restart it. ♦ 2 After an abend, the system attempts to recover from the problem and restart the computer after the time specified by the Auto Restart After Abend Delay Time parameter. ♦ 3 After an abend, the system immediately restarts the computer. <p>Default: 1</p> <p>For values 1, 2, or 3 to take effect, the Developer Option parameter described in "Miscellaneous Parameters" on page 213 must be set to Off.</p> <p>If the server is to be shut down, the system sends a message every two minutes to warn all connections.</p> <p>To configure the amount of time the system waits before shutting down the server, use the Auto Restart After Abend Delay Time parameter.</p> <p>After an abend, the screen displays information about the abend. This information is sent to the <code>abend.log</code> file on the c: drive. After the server is shut down and restarted, the <code>abend.log</code> file is transferred to <code>sys:system</code>.</p> <p>Important: Because the server can abend and be restarted automatically, you should determine whether any abends have occurred. Periodically check either the <code>abend.log</code> file or the Server Up Time field on MONITOR's General Information screen.</p> <p>Owning NLM: <code>server.nlm</code></p>

Licensing Services Parameters

Licensing service parameters control Novell Licensing Service diagnosis features.

For a description of licensing parameters, see [Table 1-8 on page 210](#).

Table 1-8 *Licensing Service Parameters*

Parameter	Use to
NLS Search Type	Specify the scope of a license certificate search. Supported values: 0 Search to the root of the tree 1 Search to the root of the partition Default: 0 You must set this parameter in either the <code>startup.ncf</code> or <code>autoexec.ncf</code> file for the changes to be persistent. Owning NLM: <code>nlsisp.nlm</code>
Store NetWare 5 Conn SCL MLA usage in NDS	Supported Values: On, Off Default: On Owning NLM: <code>nlsisp.nlm</code>

Memory Parameters

Memory parameters control garbage collection, corruption checking, the amount of memory below 16 MB available to device drivers, and aspects of protected and virtual memory.

For a description of memory parameters, see the following table.

Table 1-9 *Memory Parameters*

Parameter	Use to
Restart Server on Address Space Cleanup Failure <i>value</i>	Specify which actions to take during a server cleanup. Supported Values: On, Off Default: Off When this parameter is On and the server is unable to completely clean up an address space after a memory protection error, then the server reacts according to the Auto Restart settings. (See the Auto Restart parameters in “Error Handling Parameters” on page 207.) When this set parameter is Off, address spaces with cleanup failures will be isolated. Owning NLM: <code>server.nlm</code>

Parameter	Use to
Memory Protection Abend After Restart Count <i>value</i>	<p>This parameter works in conjunction with the Memory Protection No Restart Interval and Memory Protection Restart Count parameters.</p> <p>Supported Values: On, offDefault: Off</p> <p>If this parameter is On, then the server abends if an address space has restarted more than the number of times specified in the Memory Protection Restart Count parameter in the time interval specified by the Memory Protection No Restart Interval parameter.</p> <p>Owning NLM: <code>server.nlm</code></p>
Memory Protection Restart Count <i>number</i>	<p>Specify the number of restarts allowed during the Memory Protection No Restart Interval.</p> <p>Supported Values: 0 to 1000Default: 1</p> <p>This parameter works in conjunction with the Memory Protection No Restart Interval parameter.</p> <p>The default value is 1, meaning that if more than one protection fault occurs in an address space, then the address space will be restarted only once.</p> <p>If you want to configure NetWare to allow two restarts during a three-minute period, then you should set the Memory Protection Restart Count to 2 and the Memory Protection No Restart Interval to 3.</p> <p>Owning NLM: <code>server.nlm</code></p>
Memory Protection No Restart Interval <i>value</i>	<p>Prevent a server from restarting a protected address space that continues to fault.</p> <p>Supported Values: 0 to 60 minutesDefault: 1</p> <p>If the address space faults but has already been restarted within the time period specified by this parameter, the server will not restart the address space. Restart functionality is disabled for the address space.</p> <p>A restartable address space that continues to fault consumes server resources because the server is forced to continually shut down and restart the space.</p> <p>Setting the value to 0 disables the parameter so that the address space will always be restarted if it faults.</p> <p>You can set this parameter in the <code>startup.ncf</code> file.</p> <p>Owning NLM: <code>server.nlm</code></p>

Parameter	Use to
Memory Protection Fault Cleanup <i>value</i>	<p>Enable the server to clean up a protected address space that has faulted.</p> <p>Supported Values: On, OffDefault: On</p> <p>If this parameter is on and a protected address space faults, the server removes the address space and its NLM programs and returns the resources to the system.</p> <p>If this parameter is off and a protected address space faults, the server does not remove the address space or return resources to the system. The situation is left to the abend recovery mechanism.</p> <p>You can set this parameter in the <code>startup.ncf</code> file.</p> <p>Owning NLM: <code>server.nlm</code></p>
Average Page In Alert Threshold <i>value</i>	<p>Specify the point at which the server sends an alert to the console because excessive memory swapping indicates the server might be low on memory.</p> <p>Supported values: 0 to 4294967295Default: 2000</p> <p>The value of the parameter is the average number of pages swapped from disk to memory per second, calculated over the last five seconds.</p> <p>If the average page-in rate is high, it means a large amount of data is being swapped to and from disk, indicating that the server might be running low on memory.</p> <p>You can set this parameter in the <code>startup.ncf</code> file.</p> <p>Owning NLM: <code>server.nlm</code></p>
Garbage Collection Interval <i>number</i>	<p>Specify the maximum time between garbage collections.</p> <p>Supported values: 1 minute to 1 hourDefault: 5 minutes</p> <p>You can set this parameter in the <code>startup.ncf</code> file.</p> <p>Owning NLM: <code>server.nlm</code></p>
Alloc Memory Check Flag <i>value</i>	<p>Specify whether the server will check for corruption in the alloc memory nodes.</p> <p>Supported values: On, OffDefault: Off</p> <p>You can set this parameter in the <code>startup.ncf</code> file.</p> <p>Owning NLM: <code>server.nlm</code></p>

Parameter	Use to
Reserved Buffers Below 16 Meg <i>number</i>	<p>Specify the number of file cache buffers reserved for device drivers that can't access memory above 16 MB.</p> <p>Supported values: 8 to 2000Default: 300</p> <p>You must set this parameter in the <code>startup.ncf</code> file. You cannot set the value at the command line. Callback may be called at startup time.</p> <p>Owning NLM: <code>server.nlm</code></p>

Miscellaneous Parameters

Miscellaneous parameters do not fit aptly or neatly into other categories. The functionality is listed below and described in [Table 1-10](#).

- ♦ Default response to optional commands
- ♦ Adding the server's name to the console prompt
- ♦ Configuring alerts
- ♦ Controlling alerts for lost or spurious interrupts
- ♦ Specifying response when invalid parameters are detected
- ♦ Enabling developer options
- ♦ Controlling allocation of service processes
- ♦ Password security
- ♦ Enabling execution of `secure.ncf` at startup
- ♦ Controlling aspects of the kernel, scheduler, and threads

Table 1-10 *Miscellaneous Parameters*

Parameter	Use to
Display Incomplete IPX Packet Alerts <i>value</i>	<p>Specify whether alert messages are displayed when IPX receives incomplete packets. This parameter can be used as a debugging tool.</p> <p>Supported values: On, OffDefault: On</p> <p>You can set this parameter in the <code>startup.ncf</code> file.</p> <p>Owning NLM: <code>ipxspx.nlm</code></p>
Enable SECURE.NCF= <i>value</i>	<p>Execute the <code>secure.ncf</code> file at server startup.</p> <p>Supported values: On, OffDefault: Off</p> <p>You can set this parameter in the <code>autoexec.ncf</code> or <code>startup.ncf</code> file.</p> <p>Owning NLM: <code>filesys.nlm</code></p>

Parameter	Use to
Allow Audit Passwords <i>value</i>	<p>Specify whether passwords can be used to identify auditors.</p> <p>Supported values: On, OffDefault: Off</p> <p>Owning NLM: <code>filesys.nlm</code></p>
Command Line Prompt Default Choice <i>value</i>	<p>Specify a default response to an optional command in an <code>.ncf</code> file.</p> <p>An optional command in an <code>.ncf</code> file is preceded by a question mark (?). The question mark causes the file to prompt you to execute the command. For information about optional commands in <code>.ncf</code> files, see “Using Server Batch Files” in the <i>NW 6.5 SP8: Server Operating System Administration Guide</i>.</p> <p>Supported Values: On, OffDefault: On</p> <p>On means the default response to the command prompt is Y (Yes). If the user does not respond to the prompt within a specified time period, the command is executed by default.</p> <p>Off means the default response to the command prompt is N (No). If the user does not respond to the prompt within a specified time period, the command is not executed.</p> <p>To specify the time period before the response is executed, use the Command Line Prompt Timeout parameter.</p> <p>Owning NLM: <code>server.nlm</code></p>
Command Line Prompt Time Out <i>time</i>	<p>Specify how long (in seconds) an <code>.ncf</code> file waits before executing the default response to an optional command.</p> <p>An optional command in an <code>.ncf</code> file is preceded by a question mark (?). The question mark causes the file to prompt you to execute the command. For information about optional commands in <code>.ncf</code> files, see “Using Server Batch Files” in the <i>NW 6.5 SP8: Server Operating System Administration Guide</i>.</p> <p>Supported Values: 0 to 4294967295Default: 10</p> <p>Owning NLM: <code>server.nlm</code></p>
Sound Bell for Alerts <i>value</i>	<p>Control whether a bell sounds when an alert message appears on the console.</p> <p>Supported values: On, OffDefault: On</p> <p>Owning NLM: <code>server.nlm</code></p>
Replace Console Prompt with Server Name <i>value</i>	<p>Control whether the console prompt is replaced with the NetWare server name.</p> <p>Supported values: On, OffDefault: On</p> <p>You can set this parameter in the <code>startup.ncf</code> file.</p> <p>Owning NLM: <code>server.nlm</code></p>

Parameter	Use to
Alert Message Nodes <i>number</i>	<p>Specify the number of alert message nodes that have been previously allocated.</p> <p>Supported values: 10 to 256Default: 20</p> <p>You can set this parameter in the <code>startup.ncf</code> file.</p> <p>Owning NLM: <code>server.nlm</code></p>
Classic Work to do Pre-check Flag	<p>When a classic work to do is scheduled, this flag causes the scheduler to verify if the work to do is scheduled. If it's on the scheduled list, the operating system will trap.</p> <p>Supported values: On, OffDefault: Off</p> <p>Owning NLM: <code>server.nlm</code></p>
Worker Thread Execute In a Row Count <i>number</i>	<p>Specify the number of times the scheduler consecutively dispatches new work before allowing other threads to run.</p> <p>Supported values: 1 to 20Default: 10</p> <p>Worker threads are created by the kernel to perform work for the kernel itself.</p> <p>Owning NLM: <code>server.nlm</code></p>
Halt System on Invalid Parameters <i>value</i>	<p>Specify whether to stop the system when invalid parameters are detected.</p> <p>Supported values:</p> <p>On You want the system to stop when an invalid parameter or condition is detected</p> <p>Off You want the system to display an alert and continue running when an invalid parameter or condition is detected</p> <p>Default: Off</p> <p>You can set this parameter in the <code>startup.ncf</code> file.</p> <p>Owning NLM: <code>server.nlm</code></p>

Parameter	Use to
Display Relinquish Control Alerts <i>value</i>	<p>Control whether messages about processor control are sent to the server console. This parameter can be used as a debugging tool.</p> <p>Supported values:</p> <p>On Use if you're writing your own loadable modules Off Use if you're not writing your own loadable modules</p> <p>Default: Off</p> <p>If a module uses the processor for more than 0.4 seconds without relinquishing control to other processes, the following types of messages appear:</p> <p><i>process_name</i>: Process did not relinquish control frequently Module: <i>module_name</i> Code offset in module: <i>memory_address</i></p> <p>You can set this parameter in the <code>startup.ncf</code> file.</p> <p>Owning NLM: <code>server.nlm</code></p>
Display Old API Names <i>value</i>	<p>Control messages about outdated API functions from earlier versions of NetWare. This parameter can be used as a debugging tool.</p> <p>Supported values: On, Off</p> <p>On Use if you write your own modules and you are upgrading your NetWare modules to use newer APIs</p> <p>Off Use if you aren't upgrading modules</p> <p>Default: Off</p> <p>The following types of messages appear when a module is loaded that uses the obsolescent APIs:</p> <p>Module is using old API: SetInterruptVector Module is using old API: ReturnPermanentMemory Module is using old API: AllocateReturnablePermMemory</p> <p>If you receive messages such as these, contact the vender of the module.</p> <p>You can set this parameter in the <code>startup.ncf</code> file.</p> <p>Note: Outdated API functions are those that have been replaced with newer, more efficient functions. These functions still work—they are not obsolete—but they work more slowly. Outdated API functions are not limited to NetWare 3 versions.</p> <p>Also, not all older API functions have been replaced—many of them are still in use.</p> <p>Owning NLM: <code>server.nlm</code></p>

Parameter	Use to
CPU Hog Timeout Amount <i>number</i>	<p>Specify the amount of time (in seconds) to wait before terminating a thread that has not relinquished control of the processor.</p> <p>Supported values: 0 to 3600 (1 hour)Default: 60</p> <p>A value of 0 (zero) disables this option.</p> <p>You can set this parameter in the <code>startup.ncf</code> file.</p> <p>Owning NLM: <code>server.nlm</code></p>
Developer Option <i>value</i>	<p>Control whether options associated with a developer environment are enabled.</p> <p>Supported values: On, OffDefault: Off</p> <p>You can set this parameter in the <code>startup.ncf</code> file.</p> <p>Owning NLM: <code>server.nlm</code></p>
Display EOI Threshold <i>number</i>	<p>Specify the number of spurious interrupts that are allowed to happen before inserting a delay before the End of Interrupt (EOI).</p> <p>The delay before the EOI is added only if the threshold is reached and the Delay EOI SET parameter value On.</p> <p>You can set this parameter in the <code>startup.ncf</code> file.</p> <p>Supported values: 1 to 1000000Default: 200</p> <p>Owning NLM: <code>server.nlm</code></p>
Display EOI <i>value</i>	<p>Control whether a delay is inserted before the End of Interrupt (EOI). Specify the number of spurious interrupts that are allowed to happen before inserting a delay before the EOI.</p> <p>Setting this parameter to On allows a delay to be inserted prior to the EOI. The delay is inserted only if the number of spurious interrupts reaches the value set by the Delay EOI Threshold SET parameter.</p> <p>You can set this parameter in the <code>startup.ncf</code> file.</p> <p>Supported values: On, OffDefault: On</p> <p>Owning NLM: <code>server.nlm</code></p>
Display Spurious Interrupts Threshold <i>number</i>	<p>Set the minimum number of spurious interrupts per second that must be detected before a spurious interrupt alert message is displayed on the system console.</p> <p>Supported values: 1 to 1000000Default: 200</p> <hr/> <p>NOTE: The Set Display Lost Interrupt Alerts parameter must also be set to On.</p> <hr/> <p>You can set this parameter in the <code>startup.ncf</code> file.</p> <p>Owning NLM: <code>server.nlm</code></p>

Parameter	Use to
Display Lost Interrupts Threshold <i>number</i>	<p>Set the minimum number of lost interrupts per second that must be detected before a lost interrupt alert message is displayed on the system console.</p> <p>Supported values: 1 to 1000000Default: 10</p> <p>Note: The Set Display Lost Interrupt Alerts must also be set to On.</p> <p>You can set this parameter in the <code>startup.ncf</code> file.</p> <p>Owning NLM: <code>server.nlm</code></p>
Display Spurious Interrupt Alerts <i>number</i>	<p>Control alert messages displays when a spurious hardware interrupt is detected.</p> <p>Supported values: On, OffDefault: Off</p> <p>A spurious interrupt occurs when hardware in the server creates an interrupt that is defined and reserved for another device.</p> <p>Spurious interrupts generate the following message: <code>Spurious hardware interrupt number detected.</code></p> <p>This message indicates a serious error in the hardware.</p> <p>If your server console displays this message, remove all add-on boards and run SERVER.</p> <p>If the message doesn't appear, add the boards one at a time to determine which hardware is creating the spurious interrupt. Then contact the vendor.</p> <p>Set the parameter to Off while you are waiting for a resolution.</p> <p>You can set this parameter in the <code>startup.ncf</code> file.</p> <p>Owning NLM: <code>server.nlm</code></p>
Display Lost Interrupt Alerts <i>value</i>	<p>Control alert messages about lost interrupts.</p> <p>Supported values: On, OffDefault: Off</p> <p>A lost interrupt occurs when a driver or board requests a service with an interrupt call and then drops the request before the processor can respond.</p> <p>Lost interrupts generate the following message: <code>Interrupt controller detected a lost hardware interrupt.</code></p> <p>This message indicates a hardware or driver problem that could degrade performance.</p> <p>Unload all drivers and then reload them one at a time to determine which driver has a problem. Then contact the vender of the driver.</p> <p>Set the parameter to Off while you are waiting for a resolution.</p> <p>You can set this parameter in the <code>startup.ncf</code> file.</p> <p>Owning NLM: <code>server.nlm</code></p>

Parameter	Use to
Pseudo Preemption Count <i>number</i>	<p>Specify the number of times threads are allowed to make file read or write system calls before a relinquish is forced.</p> <p>Supported values: 1 to 4294967295Default: 40</p> <p>If you increase the value too much, the thread could run for its lifetime.</p> <p>If you decrease the value too much, every read or write call that normally would not block might, in fact, end up blocking.</p> <p>Owning NLM: <code>server.nlm</code></p>
Global Pseudo Preemption <i>value</i>	<p>Specify whether or not all threads on the server that use the Traditional File System will also use pseudo pre-emption.</p> <p>Supported values: On, OffDefault: On</p> <p>Set this parameter to On if you rely on pseudo pre-emption to enforce blocking for threads.</p> <p>Owning NLM: <code>server.nlm</code></p>
Minimum Service Processes <i>number</i>	<p>Specify the number of service processes that the server will retain as it frees unneeded service processes. Service process are freed after 5 minutes of inactivity.</p> <p>Supported values: 10 to 3000Default: 300</p> <p>Owning NLM: <code>server.nlm</code></p>
Maximum Service Processes <i>number</i>	<p>Specify the maximum number of service processes that the operating system can create.</p> <p>You can view the number of service processes in Novell Remote Manager or MONITOR.</p> <p>Supported values: 50 to 5000Default: 750</p> <p>Decrease this parameter value temporarily if the server is low on memory. If the server is always low on memory, add more RAM for memory.</p> <p>Increase this parameter value if the number of service processes is at the maximum.</p> <p>Increasing this number helps only if more than 20 requests are being delayed simultaneously for a disk I/O to be completed.</p> <p>Owning NLM: <code>server.nlm</code></p>

Parameter	Use to
Allow Unencrypted Passwords <i>value</i>	<p>Control the use of unencrypted passwords. This parameter provides for backward compatibility with network services that do not support encrypted passwords in the NetWare authentication protocol.</p> <p>Supported values: On, OffDefault: Off</p> <p>We strongly recommend that you retain the default Off setting.</p> <p>NetWare 3.1x and later versions support encrypted passwords. If servers on your network run earlier versions of NetWare, set the value of this parameter to On.</p> <p>Warning: Because the use of unencrypted (plaintext) passwords represents a significant security risk, you should update your servers, utilities, print servers, and NetWare clients to versions that support encrypted passwords. If you cannot update or upgrade to a newer version and are willing to assume the security risk, use the On setting.</p> <p>Owning NLM: <code>server.nlm</code></p>

Multiprocessor Parameters

Multiprocessor parameters allow you to

- ♦ Set the threshold for load balancing across multiple processors.
- ♦ Start secondary processors automatically on startup.
- ♦ Control whether interrupt statistics are removed from memory when a processor is taken offline or an interrupt handler is removed.

Multiprocessor parameters are described in the following table.

Table 1-11 *Multiprocessor Parameters*

Parameter	Use to
System Threshold <i>number</i>	<p>Adjust the load balancing threshold for multiprocessor servers.</p> <p>This number controls the main value used in calculating thread shedding for load balancing across multiple processors. The optimum value has been preset by Novell.</p> <p>Supported values: 0 to 102400Default: 1536</p> <p>Important: The default value is the optimum value. We recommend that you retain it. If after careful consideration you decide to change the setting, experiment only in a nonproduction environment.</p> <p>You can set this parameter in the <code>startup.ncf</code> file.</p> <p>Owning NLM: <code>server.nlm</code></p>

Parameter	Use to
Auto Clear Interrupt Statistics <i>value</i>	<p>Specify whether interrupt statistics are removed from memory at the time a processor is taken offline or an interrupt handler (ISR) is removed.</p> <p>Supported values: On, OffDefault: On</p> <p>To retain per-processor interrupt handler statistics for offline processors or to retain the total interrupt contribution from a previously loaded handler (ISR), set the parameter to Off.</p> <p>This parameter is preferably set in the <code>startup.ncf</code> file.</p> <p>Owning NLM: <code>server.nlm</code></p>
Auto Start Processors <i>value</i>	<p>Start secondary processors on startup.</p> <p>Supported values: On, OffDefault: On</p> <p>On Secondary processors are automatically started when the Platform Support Module (PSM) is loaded.</p> <p>Off Secondary processors are not automatically loaded on bootup. When this is the case, the command START PROCESSORS must be used at the console prompt to activate secondary processors.</p> <p>This parameter is preferably set in the <code>startup.ncf</code> file.</p> <p>Owning NLM: <code>server.nlm</code></p>

NCP Parameters

With NetWare Core Protocol™ (NCP™) parameters, you can

- ♦ Control NCP packets
- ♦ Control boundary checking
- ♦ Assign the NCP Server Packet Signature levels

For a description of NCP parameters, see the following table.

Table 1-12 *NCP Parameters*

Parameter	Use to
NCP Exclude IP Addresses values	<p>Specify IP addresses over which NCP is disabled. All other IP addresses on this server will accept NCP traffic.</p> <p>Supported values: None, AllDefault: None</p> <ul style="list-style-type: none"> ♦ None Indicates that no bound IP addresses on this server will disable NCP ♦ All Disables NCP on all bound IP addresses on this server <p>Addresses listed in this setting have priority over the values set in the "Set NCP Include IP Addresses" command.</p> <p>You can set this parameter in the startupfile.</p> <p>Owning NLM: ncpip.nlm</p>
NCP Include IP Addresses values	<p>Specify IP addresses over which NCP is enabled. All other IP addresses on this server will ignore NCP traffic.</p> <p>Supported values: None, AllDefault: All</p> <ul style="list-style-type: none"> ♦ None Disables NCP on all IP addresses ♦ All Enables NCP over all bound IP addresses on this server <p>You can set this parameter in the <code>startup.ncf</code> file.</p> <p>Owning NLM: ncpip.nlm</p>
NCP over UDP values	<p>Enable or disable NCP over UDP.</p> <p>Supported values: On, OffDefault: On (Enable)</p> <p>You can set this parameter in the <code>startup.ncf</code> file.</p> <p>Owning NLM: ncpip.nlm</p>
NCP TCP keep alive interval number	<p>Set the delay before TCP keep alive closes idle NCP connections.</p> <p>Supported values: 0 seconds to 15 hours 59 minutes 53.6 secondsDefault: 9 minutes 53.2 seconds</p> <p>0 Never time out idle connections</p> <p>You can set this parameter in the <code>startup.ncf</code> file.</p> <p>Owning NLM: ncpip.nlm</p>
Minimum NCP TCP receive window to advertise number	<p>Set the minimum receive window to advertise on NCP connections.</p> <p>Supported values: 256 to 16384Default: 4096</p> <p>You can set this parameter in the <code>startup.ncf</code> file.</p> <p>Owning NLM: ncpip.nlm</p>

Parameter	Use to
NCP TCP receive window <i>number</i>	<p>Set the advertised receive window on NCP connections.</p> <p>Supported values: 1400 to 65535Default: 23360</p> <p>You can set this parameter in the <code>startup.ncf</code> file.</p> <p>Owning NLM: <code>ncpip.nlm</code></p>
Enable UDP Checksums on NCP Packets <i>number</i>	<p>Enable checksumming of NCP UDP packets</p> <p>Supported values: 0, 1, 2Default: 1</p> <p>0 No checksums 1 Checksum if enabled at client 2 Require checksums</p> <p>You can set this parameter in the <code>startup.ncf</code> file.</p> <p>Owning NLM: <code>ncpip.nlm</code></p>
Enable IPX Checksums <i>number</i>	<p>Enable checksumming of IPX™ packets.</p> <p>Supported values: Default: 1</p> <p>0 No checksums 1 Checksum if enabled at the client 2 Require checksums</p> <p>You can set this parameter in the <code>startup.ncf</code> file.</p> <p>Owning NLM: <code>ncpipx.nlm</code></p>
Enable Task Zero Checkings <i>number</i>	<p>Enable zero task checking. Enable packet checking for valid use of task zero.</p> <p>Supported values: On, OffDefault: Off</p> <p>Owning NLM: <code>ncpipx.nlm</code></p>

Parameter	Use to
NCP Packet Signature Option <i>number</i>	<p>Control the NCP packet signature level on the server.</p> <p>Supported values:</p> <p>0 Server doesn't sign packets (regardless of the client level)</p> <p>1 Server signs packets only if the client requests it (client level is 2 or higher)</p> <p>2 Server signs packets if the client is capable of signing (client level is 1 or higher)</p> <p>3 Server signs packets and requires all clients to sign packets (or logging in will fail)</p> <p>Default: 1</p> <p>NCP Packet Signature prevents packet forgery on servers and clients using NCP by requiring server and client to sign each NCP packet.</p> <p>Note: Because Packet Signature consumes processor resources and slows performance on both client and server, NCP Packet Signature is optional.</p> <p>After starting the server, you can only increase the level of packet signature. To decrease the level, you must add the SET command to the <code>startup.ncf</code> file and restart the server.</p> <p>You can set this parameter in the <code>startup.ncf</code> file.</p> <p>Owning NLM: <code>ncp.nlm</code></p>
Level 2 OpLocks Enabled <i>value</i>	<p>Allow or disallow level 2 (shared) oplocks.</p> <p>Supported values: On, OffDefault: On (Allow)</p> <p>You can set this parameter in the <code>startup.ncf</code> file.</p> <p>Owning NLM: <code>ncp.nlm</code></p>
Client File Caching Enabled <i>value</i>	<p>Allow or disallow the client-side caching of opened files.</p> <p>Supported values: On, OffDefault: On (Allow)</p> <p>This parameter is also settable in the <code>startup.ncf</code> file.</p> <p>Owning NLM: <code>ncp.nlm</code></p>

Parameter	Use to
NCP Protocol Preferences <i>value</i>	<p>When multiple protocols are supported, specify the order in which eDirectory™ selects a protocol to use when communicating with other servers in the replica.</p> <p>Supported values: IPX, TCP, UDP, noneDefault: None</p> <p>For example, the following command instructs eDirectory to try TCP first and IPX second when it communicates with another server:</p> <pre>SET NCP PROTOCOL PREFERENCES TCP IPX</pre> <p>If only one protocol is supported, that protocol is used by eDirectory, no matter what values are specified for this parameter.</p> <p>If multiple protocols are supported but no value is specified for this parameter, eDirectory uses the protocols in the order in which they are loaded.</p> <p>Owning NLM: <code>ncp.nlm</code></p>
NCP File Commit <i>value</i>	<p>Control whether applications can flush pending file writes to disk.</p> <p>Supported values: On, OffDefault: On</p> <p>If the value is set to On, then when a File Commit NCP is issued, a file is sent from cache to disk immediately instead of waiting for the cache manager to send it to disk later.</p> <p>Owning NLM: <code>ncp.nlm</code></p>
Display NCP Bad Component Warnings <i>value</i>	<p>Control whether NCP bad component alert messages are displayed.</p> <p>Supported values: On, OffDefault: Off</p> <p>You can set this parameter in the <code>startup.ncf</code> file.</p> <p>Owning NLM: <code>ncp.nlm</code></p>
Reject NCP Packets with Bad Components <i>value</i>	<p>Specify whether NCP packets that fail component checking are rejected.</p> <p>Supported values: On, OffDefault: Off</p> <p>You can set this parameter in the <code>startup.ncf</code> file.</p> <p>Owning NLM: <code>ncp.nlm</code></p>
Display NCP Bad Length Warnings <i>value</i>	<p>Control whether or not to display NCP bad length alert messages.</p> <p>Supported values: On, OffDefault: Off</p> <p>You can set this parameter in the <code>startup.ncf</code> file.</p> <p>Owning NLM: <code>ncp.nlm</code></p>

Parameter	Use to
Reject NCP Packets with Bad Lengths <i>value</i>	<p>Specify whether to reject NCP packets that fail boundary checking. This parameter can be used as a debugging tool.</p> <p>Supported values: On, OffDefault: Off</p> <p>You can set this parameter in the <code>startup.ncf</code> file.</p> <p>Owning NLM: <code>ncp.nlm</code></p>
Maximum Outstanding NCP Searches <i>number</i>	<p>Specify the maximum number of NCP directory searches that can be processed simultaneously.</p> <p>Supported values: 10 to 1000Default: 51</p> <p>Normally, only one NCP directory search occurs at a time.</p> <p>Increase the default only if you use applications that support multiple outstanding directory search operations and you have problems with corrupted or invalid directory information.</p> <p>Owning NLM: <code>ncp.nlm</code></p>
Allow Change to Client Rights <i>value</i>	<p>Control whether a job server can assume the rights of a client for NCP packet signatures.</p> <p>Supported values: On, OffDefault: On</p> <p>Note: Some job servers and third-party applications can't function without changing to client rights.</p> <p>Using Off might prevent some job servers from getting access to the files they need, but it prevents the forging of a packet through the job or print server.</p> <p>You can set this parameter in the <code>startup.ncf</code> file.</p> <p>Owning NLM: <code>ncp.nlm</code></p>
Allow LIP <i>value</i>	<p>Set Large Internet Packet (LIP) support.</p> <p>Supported values: On, OffDefault: On</p> <p>You can set this parameter in the <code>startup.ncf</code> file.</p> <p>Owning NLM: <code>ncp.nlm</code></p>

Novell Storage Services Parameters

The following are the default settings in NetWare 6.5 for the NSS file system SET parameters.

Common File System SET Parameters for NSS and Traditional File Systems	Default Value
NSS Auto Locks HFS CD-ROM Disc in device	Off
NSS Auto Update CDHFS Volume Objects To NDS	Off
Mount ISO 9660 multi disc set as one CD9660 volume	Off
NSS Auto Locks CD-ROM Disc in device	Off
NSS Auto Update CD9660 Volume Objects To NDS	Off

Common File System SET Parameters for NSS and Traditional File Systems	Default Value
Emulate Classic NetWare Directory Quotas	Off
NSS Work To Do Count	50
(This parameter can be set only in the <code>nssstart.cfg</code> file.)	
NSS Maximum Cache Balance Buffers Per Session	1024
NSS Cache Balance Timer	30
NSS Cache Balance Percent	60
NSS Cache Balance Enable	On
NSS Buffer Flush Timer	1
NSS Minimum OS Cache Buffers	256
NSS Minimum Cache Buffers	256
NSS File Flush Timer	10
NSS Closed File Cache Size	50000
(This parameter can be set only in the <code>nssstart.cfg</code> file.)	
NSS Open File Hash Shift	16
NSS Auth Cache Size	1024
(This parameter can be set only in the <code>nssstart.cfg</code> file.)	
NSS ASCII Name Cache Enable	On
(This parameter can be set only in the <code>nssstart.cfg</code> file.)	
NSS Name Cache Enable	On
(This parameter can be set only in the <code>nssstart.cfg</code> file.)	
NSS Name Cache Size	2111
NSS Low Volume Space Alerts	On
NSS Low Volume Space Warning Reset Threshold	15
NSS Low Volume Space Warning Threshold	10

Power Management Parameters

Power Management parameters let you control the behavior of the Power button and the Down and Reset options on a server running the ACPI power management driver.

Table 1-13 *Power Management Parameters*

Parameter	Use to
Power Button Mode <i>number</i>	<p>Control the behavior of the Power button on a server running the ACPI power management driver.</p> <p>Supported values: 0, 1Default: 1</p> <ul style="list-style-type: none"> ♦ 0 Disables the Power button ♦ 1 Enables the Power button for shutdown <p>This setting uses the Power Down Delay setting before shutting down and powering off the server.</p> <p>You can set this parameter at any time. The changes will be saved (persistent).</p> <p>You can set this parameter in the <code>startup.ncf</code> file.</p> <hr/> <p>WARNING: Without the ACPI power management driver loaded, pressing the Power button immediately removes power from the system.</p> <p>Pressing and holding the Power button for four seconds removes system power regardless of this setting.</p> <hr/> <p>Owning NLM: <code>acpipwr.nlm</code></p>
Power Down Delay <i>time</i>	<p>Control the fixed delay on a server running the ACPI power management driver before the server begins shutting down in response to pressing the Power button or entering SHUTDOWN at the System Console prompt.</p> <p>If you need to cancel a pending shutdown, you must enter SHUTDOWN ABORT before the delay time expires.</p> <p>Supported values: 0 seconds to 10 minutesDefault: 30 seconds</p> <p>You can set this parameter at any time. The changes will be saved (persistent).</p> <p>Owning NLM: <code>acpipwr.nlm</code></p>
Server Power Down Options <i>value</i>	<p>Control the behavior of the DOWN and RESTART SERVER console commands on a server running the ACPI power management driver, .</p> <p>Supported values: On, OffDefault: On</p> <ul style="list-style-type: none"> ♦ On Executing DOWN shuts down and powers off the server. Executing RESTART SERVER shuts down the server and performs a system reset. ♦ Off Executing DOWN shuts down server and leaves the power on. Executing RESTART SERVER shuts down and then restarts the server. <p>You can set this parameter at any time. The changes will be saved (persistent).</p> <p>Owning NLM: <code>acpipwr.nlm</code></p>

Service Location Protocol Parameters

The service location protocol parameters define how SLP locates and distributes information about services that are available on the network.

For descriptions of service location protocol parameters, see the following table.

Table 1-14 *Service Location Protocol Parameters*

Parameter	Use to
SLP Exclude IP Addresses <i>value</i>	<p>Specify IP addresses over which SLP is disabled. All other IP addresses on this server will accept SLP traffic.</p> <p>Supported values: None, AllDefault: None</p> <ul style="list-style-type: none">♦ None Indicates that no bound IP addresses on the server will disable SLP.♦ All Disables SLP on all bound IP addresses on the server. Addresses listed here have priority over the Set SLP Include IP Addresses command. <p>This parameter can be set in the <code>startup.ncf</code> file.</p> <p>Owning NLM: <code>slptcp.nlm</code></p>
SLP Include IP Addresses <i>value</i>	<p>Specify IP addresses over which SLP is enabled. All other IP addresses on this server will ignore SLP traffic.</p> <p>Supported values: None, AllDefault: None</p> <ul style="list-style-type: none">♦ None Indicates that SLP is disabled on all IP addresses.♦ All Enables SLP over all bound IP addresses on this server. <p>This parameter can be set in the <code>startup.ncf</code> file.</p> <p>Owning NLM: <code>slptcp.nlm</code></p>
SLP Agent IP Address <i>value</i>	<p>Specify the IP address of the SLP SA/DA on the server.</p> <p>Supported values: First, FollowDefault: First</p> <ul style="list-style-type: none">♦ First Use the first bound NON-Excluded IP address.♦ Follow Use the IP address of the received SA/DA service request. <p>This parameter can be set in the <code>startup.ncf</code> file.</p> <p>Owning NLM: <code>slptcp.nlm</code></p>
SLP API Handicap <i>value</i>	<p>Set the maximum number of UA requests before SLP starts slowing them down.</p> <p>Supported values: 1 to 100000Default: 50</p> <p>This parameter can be set in the <code>startup.ncf</code> file.</p> <p>Owning NLM: <code>slp.nlm</code></p>

Parameter	Use to
SLP Maximum Memory Percent <i>number</i>	<p>Set the maximum memory percentage that sends can allocate before rejecting future allocations and purging UA cache.</p> <p>Supported values: 5 to 70Default: 15</p> <p>This parameter can be set in the <code>startup.ncf</code> file.</p> <p>Owning NLM: <code>slp.nlm</code></p>
SLP Cache Timeout <i>number</i>	<p>Specify how long (in seconds) the UA cache will retain information. Zero disables cache.</p> <p>Supported values: 0 to 4294967295Default: 120</p> <p>This parameter can be set in the <code>startup.ncf</code> file.</p> <p>Owning NLM: <code>slp.nlm</code></p>
SLP Enable UA Multicast <i>values</i>	<p>Enable or disable the use of User Agent General Multicast packets. Disabling requires full dependency on the directory agent.</p> <p>Supported values: On, OffDefault: On</p> <p>This parameter can be set in the <code>startup.ncf</code> file.</p> <p>Owning NLM: <code>slp.nlm</code></p>
SLP Register nwserver <i>values</i>	<p>Enable or disable the nwserver.novell service registration.</p> <p>Supported values: On, OffDefault: On</p> <p>This parameter can be set in the <code>startup.ncf</code> file.</p> <p>Owning NLM: <code>slp.nlm</code></p>
SLP nwserver NLM names <i>values</i>	<p>Enable or disable the nwserver.novell service to include NLM names as an attribute.</p> <p>Supported values: On, OffDefault: Off</p> <p>This parameter can be set in the <code>startup.ncf</code> file.</p> <p>Owning NLM: <code>slp.nlm</code></p>
SLP Maximum WTD <i>number</i>	<p>Specify the maximum number of controlled work-to-do threads.</p> <p>Supported Values: 1 to 256Default: 32</p> <p>This parameter can be set in the <code>startup.ncf</code> file.</p> <p>Owning NLM: <code>slp.nlm</code></p>
SLP Maximum WTD Queue <i>number</i>	<p>Specify the maximum number of work-to-do threads allowed to be queued before dropping packets.</p> <p>Supported Values: 0 to 1048575Default: 15000</p> <p>This parameter can be set in the <code>startup.ncf</code> file.</p> <p>Owning NLM: <code>slp.nlm</code></p>

Parameter	Use to
SLP Reset <i>values</i>	<p>Force SA to send new service registers. Force DA to send DA Advertise. Flag will be reset to off.</p> <p>Supported values: On, OffDefault: Off</p> <p>This parameter can be set in the <code>startup.ncf</code> file.</p> <p>Owning NLM: <code>slp.nlm</code></p>
SLP Scope List <i>number</i>	<p>Specify scope list using a comma-delimited string.</p> <p>Max Length: 185Default: ...</p> <p>This parameter can be set in the <code>startup.ncf</code> file.</p> <p>Owning NLM: <code>slp.nlm</code></p>
SLP Static Scope List <i>number</i>	<p>Use SLP Scope List as the only source of scopes. The SA/UA will only use scopes listed in the SLP Scope List. Otherwise, the SA will use scopes listed in the SLP scope list and filtered scopes from <code>slp.cfg</code> and the UA will use scopes listed in the SLP scope list, filtered scopes from <code>slp.cfg</code>, and scopes discovered from DAs.</p> <p>This parameter has no effect when SLP Scope List is not set or is set to the default.</p> <p>Supported values: On, OffDefault: On</p> <p>This parameter can be set in the <code>startup.ncf</code> file.</p> <p>Owning NLM: <code>slp.nlm</code></p>
SLP Close Idle TCP Connections Time <i>value</i>	<p>Specify the amount of time (in seconds) to wait before idle TCP connections should be terminated.</p> <p>Supported values: 0 to 86400Default: 300</p> <p>This parameter can be set in the <code>startup.ncf</code> file.</p> <p>Owning NLM: <code>slp.nlm</code></p>
SLP DA Heart Beat Time <i>value</i>	<p>Specify the amount of time (in seconds) to wait before sending the next Directory Agent heartbeat packet.</p> <p>Supported values: 0 to 65535Default: 10800</p> <p>This parameter can be set in the <code>startup.ncf</code> file.</p> <p>Owning NLM: <code>slp.nlm</code></p>
SLP DA Event Timeout <i>number</i>	<p>Specify the amount of time (in seconds) to wait before timing out Directory Agent packet requests.</p> <p>Supported values: 0 to 128Default: 15</p> <p>This parameter can be set in the <code>startup.ncf</code> file.</p> <p>Owning NLM: <code>slp.nlm</code></p>

Parameter	Use to
SLP MCA Timeout <i>number</i>	<p>Specify the amount of time (in seconds) to wait before timing out multicast packet requests.</p> <p>Supported values: 0 to 128Default: 16</p> <p>This parameter can be set in the <code>startup.ncf</code> file.</p> <p>Owning NLM: <code>slp.nlm</code></p>
SLP SA Default Lifetime <i>number</i>	<p>Specify the default lifetime (in seconds) on service registers.</p> <p>Supported values: 129 to 65535Default: 3600</p> <p>This parameter can be set in the <code>startup.ncf</code> file.</p> <p>Owning NLM: <code>slp.nlm</code></p>
SLP Retry Count <i>number</i>	<p>Specify the maximum number of retries.</p> <p>Supported values: 0 to 128Default: 3</p> <p>This parameter can be set in the <code>startup.ncf</code> file.</p> <p>Owning NLM: <code>slp.nlm</code></p>
SLP Debug <i>number</i>	<p>Enable SLP debug mode.</p> <ul style="list-style-type: none"> ♦ Bit 0x01 COMM ♦ Bit 0x02 TRAN ♦ Bit 0x04 API ♦ Bit 0x08 SA_DA ♦ Bit 0x10 ERR ♦ Bit 0x20 SA ♦ Bit 0x40 UA_DA <p>Supported values: 0 to 4294967295Default: 0</p> <p>This parameter can be set in the <code>startup.ncf</code> file.</p> <p>Owning NLM: <code>slp.nlm</code></p>
SLP Rediscover Inactive Directory Agents <i>number</i>	<p>Specify the minimum time period (in seconds) that SLP will wait to issue service requests to rediscover inactive Directory Agents.</p> <p>Supported values: 0 to 86400Default: 60</p> <p>This parameter can be set in the <code>startup.ncf</code> file.</p> <p>Owning NLM: <code>slp.nlm</code></p>
SLP Multicast Radius <i>number</i>	<p>Specify the multicast radius. SLP v2 is administratively scoped in accordance with RFC 2365.</p> <p>Supported values: 0 to 255Default: 255</p> <p>This parameter can be set in the <code>startup.ncf</code> file.</p> <p>Owning NLM: <code>slp.nlm</code></p>

Parameter	Use to
SLP DA Discovery Options <i>number</i>	<p>Use multicast DA advertisements.</p> <ul style="list-style-type: none"> ♦ 1 (0001b) Dynamic discovery via multicast ♦ 2 (0010b) Use DHCP discovery ♦ 4 (0100b) Use static file <code>sys:etc\slp.cfg</code> ♦ 8 (1000b) Always disable dynamic discovery when DHCP or static file bits are set. <p>Bits can be added together for multiple values and are specified as decimal numbers.</p> <p>Example: To enable DHCP discovery and static file discovery, you would add 2 and 4 then specify the decimal value 6 (2 + 4 6).</p> <p>These bits can be ordered together for multiple values.</p> <p>Supported values: 0 to 15Default: 15</p> <p>This parameter can be set in the <code>startup.ncf</code> file.</p> <p>Owning NLM: <code>slp.nlm</code></p>
SLP MTU Size <i>value</i>	<p>Specify the maximum transfer unit size.</p> <p>Supported values: 0 to 24682Default: 1450</p> <p>This parameter can be set in the <code>startup.ncf</code> file.</p> <p>Owning NLM: <code>slp.nlm</code></p>
SLP Broadcast <i>value</i>	<p>Use broadcast packets instead of multicast packets.</p> <p>Supported values: On, OffDefault: Off</p> <p>This parameter can be set in the <code>startup.ncf</code> file.</p> <p>Owning NLM: <code>slp.nlm</code></p>
SLP TCP <i>value</i>	<p>Use TCP packets instead of UDP packets when possible.</p> <p>Supported values: On, OffDefault: Off</p> <p>This parameter can be set in the <code>startup.ncf</code> file.</p> <p>Owning NLM: <code>slp.nlm</code></p>

Time Parameters

Time parameters control time synchronization, the `timesync.cfg` file, and time zone settings to ensure that the time reported by all servers is consistent, or synchronized. For more information, see the *NW 6.5 SP8: Network Time Synchronization Administration Guide*.

For a description of time parameters, see the following table.

Table 1-15 *Time Parameters*

Parameter	Use to
start of daylight savings time <i>date_and_time</i>	<p>Specify a local date and time when the switch to daylight savings time should occur. Formats include a simple date and time or rules introduced by a open paren "(".</p> <p>For example: April 4 1993 2:0:0 am, (April 4 2:0:0 am), (April Sunday < 1 2:0:0 am), or (April Sunday First 2:0:0 am).</p> <p>Only rules can reschedule for the next year. You must set both the start and end dates before either will be scheduled.</p> <p>The settings will not be saved in the NetWare Registry.</p> <p>Owning NLM: <code>server.nlm</code></p>
end of daylight savings time <i>date_and_time</i>	<p>Specify a local date and time when the switch off of daylight savings time should occur. Formats include a simple date and time or rules introduced by an open paren "(".</p> <p>For example: October 31 1993 2:0:0 am, (October 31 2:0:0 am), (October Sunday < 31 2:0:0 am), or (October Sunday last 2:0:0 am).</p> <p>Only rules can reschedule for the next year. You must set both the start and end dates before either will be scheduled.</p> <p>The settings will not be saved in the NetWare Registry.</p> <p>Owning NLM: <code>server.nlm</code></p>
daylight savings time offset [+ -] <i>hour:minute:second</i>	<p>Specify the offset applied in time calculations when daylight savings time is in effect.</p> <p>Issuing this command causes UTC time to be recalculated from local time.</p> <p>The offset applied in time calculations when daylight savings time is in effect. The default is +1:00:00 (one hour). Issuing this command causes UTC time to be recalculated from local time. +0:00:00 to +0:00:00</p> <p>Supported values: +0:00:00 to +0:00:00Default: +1:00:00 (one hour)</p> <p>The settings will not be saved in the NetWare Registry.</p> <p>Owning NLM: <code>server.nlm</code></p>
timesync configured sources on off	<p>Specify whether the server listens to the advertising time sources.</p> <p>When On, this server does not listen to advertising time sources. Instead, it contacts only sources explicitly configured with the Time Sources parameter.</p> <p>Supported values: On, OffDefault: Off</p> <p>Owning NLM: <code>timesync.nlm</code></p>

Parameter	Use to
timesync debug flag <i>number</i>	<p>Specify whether Timesync opens or logs a debug screen to view or log debug information.</p> <p>To enable the debug screen and log it to <code>timesync.log</code> (located in <code>sys:\system</code>), use</p> <pre>set timesync debug=15</pre> <p>To enable the debug screen only and disable the log, use</p> <pre>set timesync debug=7</pre> <p>To disable both the debug screen and logging, use</p> <pre>set timesync debug=0</pre> <p>For more information, see Section 1.56, “FLAG,” on page 59.</p> <p>Supported values: 0, 7, 15 Default: 0</p> <p>Owning NLM: <code>timesync.nlm</code></p>
timesync polling count <i>number</i>	<p>Specify the number of time packets to exchange while polling with the time provider.</p> <p>Supported values: 1 to 1000 Default: 3</p> <p>Owning NLM: <code>timesync.nlm</code></p>
timesync polling interval <i>number</i>	<p>Specify the time interval (in seconds) before the next polling begins.</p> <p>Supported values: 10 to 2678400 Default: 600</p> <p>Owning NLM: <code>timesync.nlm</code></p>
timesync reset <i>value</i>	<p>Specify whether Timesync resets the previous internal values and reads the new values on the configured server list.</p> <p>Supported values: On, Off Default: Off</p> <p>Owning NLM: <code>timesync.nlm</code></p>
timesync restart flag	<p>Specify whether Timesync restarts.</p> <p>When set to On, Timesync restarts.</p> <p>Supported values: On, Off Default: Off</p> <p>Owning NLM: <code>timesync.nlm</code></p>
timesync service advertising on/off	<p>Specify time source advertising.</p> <p>When On, this time source advertises itself using SAP/SLP. Secondary time servers never advertise.</p> <p>Supported values: On, Off Default: Off</p> <p>Owning NLM: <code>timesync.nlm</code></p>

Parameter	Use to
timesync synchronization radius value_in_seconds	<p>Specify the maximum tolerance (in seconds).</p> <p>If the offset is less than this value (in milliseconds), Timesync remains in synchronization.</p> <p>Supported values: 0 to 2147483647Default: 2000</p> <p>Owning NLM: <code>timesync.nlm</code></p>
timesync time adjustment [+ -] hour:minute:second[at month/day/ year hour:minute:second [AM or PM]]	<p>Schedule a time adjustment. Can be issued only from a Single, Reference, or Primary type server.</p> <p>Single and Reference time servers do not accept adjustments from Primary time servers.</p> <p>Supported values: A date in the format of [+ -]hh:mm:ss [AT [date and time]] or CancelDefault: Six polling intervals or one hour (whichever is longer) from now.</p> <p>Using the word cancel instead of a date cancels a previously scheduled adjustment.</p> <p>Owning NLM: <code>timesync.nlm</code></p>
timesync time source IP_address	<p>Specify that this server contacts the servers in this list as time providers.</p> <p>Each time server (IP address, DNS name) in this list is separated by a semicolon (;).</p> <p>For example:</p> <pre>MyServer:123;</pre> <p>where the semicolon (;) clears the MyServer list and specifies that MyServer is the NetWare (NTP) time source.</p> <p>Supported values: A server list (IP address or DNS name, each separated by a semicolon) or an empty listDefault: Empty list</p> <p>Owning NLM: <code>timesync.nlm</code></p>
timesync type value	<p>Specify the Timesync server type.</p> <p>Supported values: Single, Reference, Primary, SecondaryDefault: Single</p> <p>Owning NLM: <code>timesync.nlm</code></p>
standard time offset time zone IST [Time_offset_from_IST]	<p>Offset (in hours) from Universal Time Coordinated (UTC).</p> <p>The time zone string indicates the abbreviated name of the time zone, the offset from UTC, and the alternate abbreviated time zone name to be used when daylight savings time is in effect.</p> <p>Issuing this command causes UTC time to be recalculated from local time.</p> <p>Supported values: On, OffDefault: Off</p> <p>Owning NLM: <code>timesync.nlm</code></p>

Parameter	Use to
timesync max log file size <i>number</i>	<p>Specify the largest size (in KB) of the <code>sys:\system\timesync.log</code> file.</p> <p>Supported values: 500 to 1,073,741,824Default: 1048576</p> <p>Owning NLM: <code>timesync.nlm</code></p>
timesync NTP Client port number	<p>Specify the port that the NTP Client uses to make an NTP Time Request.</p> <p>Supported values: 0 (Dynamic Port) and values greater than 1024 up to 32768Default: 0</p> <p>Owning NLM: <code>timesync.nlm</code></p>
Time Zone value	<p>Specify a time zone string that indicates the abbreviated name of the time zone.</p> <p>Supported values: The offset from Universal Time Coordinated (UTC), and the alternate abbreviated time zone name to be used when daylight savings time is in effect. Default: <></p> <p>Issuing this command causes UTC time to be recalculated from local time.</p> <p>Owning NLM: <code>server.nlm</code></p>
default time server type primary single secondary reference	<p>Specify the default time synchronization server type.</p> <p>This parameter can be overridden by separate time synchronization parameters.</p> <p>Supported values: Secondary, Primary, Reference, Single Can be overridden by separate time synchronization parameters.</p> <p>Default: Secondary</p> <p>Owning NLM: <code>server.nlm</code></p>

Traditional File Parameters

Traditional file parameters now contain parameters that were previously designated as Directory Caching, File Caching, Error Handling, File System, Locks, and Transaction Tracking

File Caching Parameters for the Traditional File System

File caching allows faster access to frequently used files by holding a file (or a portion of it) in disk cache memory. Files being read from or written to are kept in file cache buffers. When the requested data is already in cache, disk reads are unnecessary.

The number of files kept in memory depends on the number of file cache buffers allowed. This is determined by the amount of disk cache memory available and the value of the Minimum File Cache Buffers parameter.

Disk cache memory not only speeds up access to file data, it is also used to cache portions of the eDirectory database. If you want to tune your NetWare server in general, or eDirectory in particular, tune the file caching parameters. The key to optimizing cache utilization is to monitor both Long

Term Cache Hits and LRU Sitting Time statistics. Both parameters are found in MONITOR's Available Options > Disk Cache Utilization. (File caching parameters can also be set in MONITOR's Available Options > Server Parameters.)

File caching and directory caching work together, however. In tuning the server, directory caching and file caching need to be balanced for maximum performance. See [“How Directory Caching and File Caching Work Together”](#) on page 240.

Remember also that the file and directory caching parameters in SET apply only to NetWare servers using the Traditional File System. In contrast, the NSS file system provides improved resource use, requiring less memory to mount multiple volumes.

For information about NSS directory caching parameters, see [“Overview of NSS”](#) in the *NW 6.5 SP8: NSS File System Administration Guide*.

For a description of file caching parameters, see the following table.

Table 1-16 *File Caching Parameters for the Traditional File System*

Parameter	Use to
Read Ahead Enabled <i>value</i>	<p>Specify whether the system conducts background reads to cache in advance of blocks soon to be requested.</p> <p>Supported values: On, OffDefault: On</p> <p>Read-aheads can happen only when sequential file accesses are occurring.</p> <p>Owning NLM: filesys.nlm</p>
Read Ahead LRU Sitting Time Threshold <i>number</i>	<p>Specify the minimum cache LRU (least recently used) sitting time for read-aheads to take place.</p> <p>Supported values: 0 seconds to 1 hourDefault: 10 seconds</p> <p>Owning NLM: filesys.nlm</p>
Minimum File Cache Buffers <i>number</i>	<p>Set the minimum number of cache buffers the operating system can allow for file caching.</p> <p>Supported values: 20 to 2000Default: 20</p> <p>All memory not allocated for other processes is given to disk cache memory to use for file and directory caching. As memory is requested for other processes, the server gives up cache buffers.</p> <p>This limit specifies when the server must stop giving file cache buffers to other processes.</p> <p>If you set the minimum too high, other processes might not be able to allocate necessary memory resources.</p> <p>For example, a module could fail to load because the server is out of available memory.</p> <p>Owning NLM: filesys.nlm</p>

Parameter	Use to
Maximum Concurrent Disk Cache Writes <i>number</i>	<p>Specify the number of write requests for changed file data that can be put in the elevator before the disk head begins a sweep across the disk.</p> <p>Supported values: 10 to 4000Default: 50</p> <p>A high number creates more efficient write requests. A low number creates more efficient read requests.</p> <p>Monitor the number of Dirty Cache Buffers displayed on the Cache Utilization Statistics screen in MONITOR or in Novell Remote Manager > View Memory Config > File System Cache.</p> <p>If this number is above 70 percent of total cache buffers, optimize the write speed by increasing this parameter.</p> <p>Owning NLM: filesys.nlm</p>
Dirty Disk Cache Delay Time <i>time</i>	<p>Specify how long (in seconds) the system keeps a write request (that does not fill a cache buffer) in memory before writing the request to disk.</p> <p>Supported values: 0.1 second to 10Default: 3.3</p> <p>Increasing the time makes disk writing more efficient if your users make many small write requests.</p> <p>Decreasing the time can reduce performance drastically and reduces the chances of losing data only slightly.</p> <p>Owning NLM: filesys.nlm</p>
Minimum File Cache Report Threshold <i>number</i>	<p>Specify how few cache buffers can be available before the operating system warns you that the number of buffers is getting low.</p> <p>Supported values: 0 to 2000Default: 20</p> <p>For example, if the value of the Minimum File Cache Buffers parameter is set to 20 and this parameter is set to 25, you are warned when all but 45 cache buffers are allocated for other processes.</p> <p>Regardless of how this parameter value is set, the operating system will issue a warning when it reaches the minimum number of cache buffers. You receive the following message: Cache memory allocator exceeded minimum cache buffer left limit.</p> <p>Owning NLM: filesys.nlm</p>

Directory Caching Parameters for the Traditional File System

Directory caching allows fast access to frequently used directories. A directory cache buffer is a portion of NetWare server memory (disk cache memory) that holds entries from the directory table.

A directory entry stays in a cache buffer as long as it is accessed frequently (default=33 seconds). The system can overwrite the directory entry if the allocated directory cache buffers are accessed more frequently.

Directory caching and file caching work together, however. In tuning the server, directory caching and file caching need to be balanced for maximum performance.

Remember also that the directory and file caching parameters in SET apply only to NetWare servers using the Traditional File System. In contrast, the NSS file system provides improved resource use, requiring less memory to mount multiple volumes.

For information about NSS caching parameters, see “[Cache Balancing Commands \(NetWare\)](#)” on [page 132](#) and “[Overview of NSS](#)” in the *NW 6.5 SP8: NSS File System Administration Guide*.

For a description of directory caching parameters, see [Table 1-17 on page 241](#).

Allocation of Directory Cache Buffers

When the server boots, the system allocates a minimum number of directory cache buffers (default=20). It creates these buffers immediately when it receives a request for a new buffer.

The server obtains directory cache buffers by removing a minimal set of file cache buffers from the file cache during server startup. Additional directory cache buffers are obtained from the file cache later on if they are needed.

When the minimum number of buffers is allocated and another is needed, the system must wait a specified amount of time before allocating another buffer.

If necessary, the system allocates buffers until it reaches the maximum. If enough directory cache buffers are allocated and enough memory is available for directory caching, all directory tables can be cached in memory.

How Directory Caching and File Caching Work Together

As directory cache buffers increase, file cache buffers decrease. Thus, a tradeoff exists between directory caching and file caching, and directory caching and file caching must be balanced for maximum performance.

If you adjust the system to use too much memory for directory caching, you can leave too little memory for file caching, and vice versa.

For a description of file caching parameters, see [Table 1-16 on page 238](#). For a description of directory caching parameters, see the following table.

Table 1-17 *Directory Caching Parameters for the Traditional File System*

Parameter	Use to
Dirty Directory Cache Delay Time <i>time</i>	<p>Specify how long (in seconds) the system keeps a directory table write request in memory before writing it to disk.</p> <p>Supported values: 0 to 10Default: 0.5</p> <p>Increasing the delay time gives slightly quicker performance but increases the probability of the directory tables becoming corrupted.</p> <p>Decreasing the delay time slightly reduces the chance of directory tables becoming corrupted, but can reduce performance slightly.</p> <p>A setting of 0 reduces performance dramatically.</p> <p>Owning NLM: <code>filesys.nlm</code></p>
Directory Cache Allocation Wait Time <i>number</i>	<p>Specify how long the system must wait after allocating a new directory cache buffer before it can allocate another buffer.</p> <p>Supported values: 0.1 second to 2 minutesDefault: 2.2 seconds</p> <p>During this time, all requests for a new directory cache buffer are ignored.</p> <p>If the wait time is too low, peak usage requests cause more resources than necessary to be allocated to directory caching.</p> <p>If the wait time is too high, the system is very slow in allocating the directory cache buffers necessary to service the usual number of directory requests.</p> <p>If directory searches seem slow even after the server has been running for 15 minutes, you should decrease this parameter.</p> <p>Owning NLM: <code>filesys.nlm</code></p>
Directory Cache Buffer NonReferenced Delay <i>time</i>	<p>Specify how long a directory entry must be cached before it can be overwritten by another directory entry.</p> <p>Supported values: 1 second to 1 hourDefault: 5.5 seconds</p> <p>Increasing this parameter speeds up directory access. The system allocates more directory cache buffers, and a directory is more likely to be cached in memory.</p> <p>Decreasing this parameter slows directory access but also reduces the need for directory cache buffers.</p> <p>Owning NLM: <code>filesys.nlm</code></p>

Parameter	Use to
Maximum Directory Cache Buffers <i>number</i>	<p>Specify the maximum number of cache buffers that the system can allocate for directory caching.</p> <p>Supported values: 20 to 200000Default: 2000</p> <p>This parameter keeps the system from allocating too many directory cache buffers so that memory is available for other server processes.</p> <p>Increase this limit if the server responds slowly to directory searches.</p> <p>Decrease this limit if too much memory is being allocated for directory caching.</p> <p>If users are warned that the server is low on memory, this parameter should be one of the first to be reduced. (Reboot the server to return the memory to the cache buffer memory pool.)</p> <p>When a directory cache buffer is allocated, the allocation is permanent until the server reboots; the buffers don't return to file caching when the need for directory cache buffers decreases.</p> <p>This parameter can be set in the <code>startup.ncf</code> file.</p> <p>Owning NLM: <code>filesys.nlm</code></p>
Minimum Directory Cache Buffers <i>number</i>	<p>Specify the minimum number of cache buffers that the system can allocate for directory caching.</p> <p>Supported values: 10 to 100000Default: 500</p> <p>The number needs to be high enough that directory searches can be done quickly, but no higher than necessary.</p> <p>If the system doesn't need the minimum number of directory cache buffers, the buffers can't be reallocated to file caching. The unneeded portion remains unused.</p> <p>If the server responds slowly to directory searches after it is booted, monitor the number of directory cache buffers usually allocated for directory caching.</p> <p>If the number is significantly higher than this limit, consider increasing the limit to remove the delay time that normally occurs while the server is self-configuring. Use MONITOR to view the current statistics.</p> <p>This parameter can be set in the <code>startup.ncf</code> file.</p> <p>Owning NLM: <code>filesys.nlm</code></p>

Parameter	Use to
Maximum Number of Internal Directory Handles <i>number</i>	<p>Specify the maximum number of directory handles available for internal NLM programs that use connection 0.</p> <p>Supported values: 40 to 1000Default: 100</p> <p>A directory handle is a version of the directory access rights that is held in cache memory. Caching the access rights speeds mapping to the rights.</p> <p>Connection 0 (zero) is the connection number reserved for use by the server itself and by NLM programs operating within the server.</p> <p>Each time an NLM using connection 0 accesses a file or directory, a directory handle is allocated (up to the total specified by this parameter). This value represents the total number of handles available to be shared by all NLM programs using connection 0.</p> <p>Owning NLM: <code>filesys.nlm</code></p>
Maximum Number of Directory Handles <i>number</i>	<p>Specify the maximum number of directory handles available for each connection.</p> <p>Supported values: 20 to 1000Default: 20</p> <p>A directory handle is a version of the directory access rights that is held in cache memory. Caching the access rights speeds mapping to the rights.</p> <p>Each time a connection accesses a file or directory, a directory handle is allocated (up to the total specified by this parameter).</p> <p>Owning NLM: <code>filesys.nlm</code></p>

File Parameters for the Traditional File System

- ♦ Three parameters control warnings about volumes that are almost full.
- ♦ Three parameters control file purging. File-purging parameters influence other parameters which, in turn, control warnings about almost-full volumes.

All deleted files remain on the disk for a specified minimum amount of time. The system calculates a volume's remaining space by subtracting the following from the total space:

- ♦ Actual files
- ♦ Salvageable files that can't be purged because their Minimum File Delete Wait Times have not expired
- ♦ One parameter controls the reuse of turbo FATs.
- ♦ Ten parameters control file compression.

For a description of file system parameters, see the following table.

Table 1-18 *File Parameters for the Traditional File System*

Parameter	Use to
Automatically Repair Bad Volumes <i>value</i>	<p>Specify whether VREPAIR runs automatically on a volume that fails to mount.</p> <p>Supported values: On, OffDefault: On</p> <p>You can set this parameter in the <code>startup.ncf</code> file.</p> <p>Owning NLM: <code>filesys.nlm</code></p>
File Delete Wait Time <i>time</i>	<p>Specify when a salvageable file can be purged to create free space on a volume.</p> <p>Supported values: 0 seconds to 7 daysDefault: 5 minutes 29.6 seconds</p> <p>Set this parameter as high as is useful for your users, but this parameter doesn't guarantee that a file remains salvageable.</p> <p>The system tries to keep at least 1/32 of available space on the volume free for new files.</p> <p>This parameter guarantees only that files aren't purged to maintain this free disk space.</p> <p>Files that haven't met this time limit are purged if the volume is full and the system needs space for a user to create a new file.</p> <p>When a deleted file remains on the server longer than the File Delete Wait Time parameter setting, the system marks the file as purgeable.</p> <p>When the volume is full of purgeable files and needs free space, the oldest purgeable files are purged.</p> <p>Owning NLM: <code>filesys.nlm</code></p>
Allow Deletion of Active Directories <i>value</i>	<p>Specify whether a directory can be deleted when another connection has a drive mapped to it.</p> <p>Supported values: On, OffDefault: On</p> <p>Owning NLM: <code>filesys.nlm</code></p>
Maximum Percent of Volume Space Allowed for Extended Attributes <i>percentage</i>	<p>Limit the portion of volume space used for extended attribute storage. The setting takes effect only when the volume is being mounted.</p> <p>Supported values: 5 to 50Default: 10</p> <p>Owning NLM: <code>filesys.nlm</code></p>
Maximum Extended Attributes per File or Path <i>number</i>	<p>Limit the number of extended attributes that can be assigned to a file or path (subdirectory). This limit applies to all volumes on the server.</p> <p>Supported values: 4 to 512Default: 16</p> <p>Owning NLM: <code>filesys.nlm</code></p>

Parameter	Use to
Purge Files On Dismount <i>value</i>	<p>Have the system purge deleted files on a volume when it is dismounted.</p> <p>Supported values: On, OffDefault: Off</p> <p>Owning NLM: filesys.nlm</p>
Fast Volume Mounts <i>value</i>	<p>Increase the speed at which volumes are mounted.</p> <p>Supported values: On, OffDefault: On</p> <p>The operating system checks only the most important fields during the mounting process. Use this parameter only if volumes were dismounted normally.</p> <p>This parameter can be set in the <code>startup.ncf</code> file.</p> <p>Owning NLM: filesys.nlm</p>
Maximum Percent of Volume Used by Directory <i>percentage</i>	<p>Limit the portion of a volume that can be used as directory space.</p> <p>Supported values: 5 to 85Default: 13</p> <p>Owning NLM: filesys.nlm</p>
Maximum Subdirectory Tree Depth <i>number</i>	<p>Specify how many levels of subdirectories the system supports.</p> <p>Supported values: 10 to 100Default: 25</p> <p>This parameter can be set in the <code>startup.ncf</code> or in the <code>autoexec.ncf</code> file, or at the server console.</p> <p>Increase the number if your applications support trees deeper than 25.</p> <p>Decrease the number if your applications support only shallow tree structures.</p> <p>(Some DOS applications can't support more than 10 levels if the subdirectories have 11-character names.)</p> <p>Owning NLM: filesys.nlm</p>
Volume Low Warn All Users <i>value</i>	<p>Have the system notify users when a volume is almost full.</p> <p>Supported values: On, OffDefault: On</p> <p>If you choose not to have your server warn users, monitor volume statistics at least daily with MONITOR or Novell Remote Manager > Volumes > Volume Inventory Report.</p> <p>Owning NLM: filesys.nlm</p>

Parameter	Use to
Volume Low Warning Reset Threshold <i>number</i>	<p>Control how much disk space (in blocks) must be freed up before a second warning is issued that the volume is almost full. (The first warning is controlled by the Volume Low Warn All Users parameter.)</p> <p>Supported values: 0 to 1000000Default: 256</p> <p>When a volume is almost full, it can hover at its warning threshold as users create and delete files.</p> <p>This parameter controls the minimum amount of space that must be made available above the threshold before the warning message disappears.</p> <p>Example: Assume the volume block size is 4 KB, the Volume Low Warning Reset Threshold is set to 256, the Volume Low Warning Threshold is set to 256, and the volume has less than 1 MB of free space.</p> <p>Given these conditions, the volume must gain at least 1 MB of free space (for a total of 2 MB of free space) and then dip below the 1 MB threshold before the system sends another warning that the volume is almost full.</p> <p>Owning NLM: <code>filesys.nlm</code></p>
Volume Low Warning Threshold <i>number</i>	<p>Specify how much free disk space (in blocks) can remain on a volume before the system issues a warning.</p> <p>Supported values: 0 to 1000000Default: 256</p> <p>Consider the following: A block is the minimum space allocated to a file; a file can grow only in multiples of the block size.</p> <p>The block's physical size is determined when the volume is created. A volume can be assigned these block sizes: 4 KB, 8 KB, 16 KB, 32 KB, or 64 KB.</p> <p>For example, if you specify 256 blocks for this parameter and the volume's block size is 4 KB, the system warns you that the volume is full when about 1 MB of space is left.</p> <p>If your volumes are assigned different block sizes, each volume has a different amount of free space when the warning is issued.</p> <p>Owning NLM: <code>filesys.nlm</code></p>

Parameter	Use to
Turbo FAT Re-Use Wait Time <i>time</i>	<p>Specify how long a turbo FAT buffer remains in memory after an indexed file is closed.</p> <p>Supported values: 0 to 7 daysDefault: 5 minutes 29.6 seconds</p> <p>Once the wait-time value has passed, the system can allocate the buffer to another indexed file.</p> <p>Increase the wait time if</p> <ul style="list-style-type: none"> ♦ You want the turbo FAT index to remain in memory for long periods of time, even when the file is closed. ♦ You frequently reopen the same file after a specific delay and know that another file opened during that delay will reuse the index. <p>Decrease the wait time if you want the memory released immediately to service the next file that needs to be indexed.</p> <p>When a program randomly accesses a file that contains more than 64 FAT entries, the system builds a turbo FAT index for the file so that information is accessed quickly. (NetWare indexes any randomly accessed file with 64 FAT entries.)</p> <p>The system doesn't immediately delete the index from its buffer when the file is closed.</p> <p>Having the turbo FAT index in memory makes reopening the file and accessing information faster.</p> <p>Owning NLM: <code>filesys.nlm</code></p>
Allow Unowned Files To Be Extended <i>value</i>	<p>Specify whether files can be modified when the owner has been lost or deleted.</p> <p>Supported values: On, OffDefault: On</p> <p>This parameter can be set in the <code>startup.ncf</code> file.</p> <p>Owning NLM: <code>filesys.nlm</code></p>
Auto Mount Mirrored Volume Containing Inactive Device <i>value</i>	<p>Specify whether to automatically mount a volume detected to have a mirrored partition and an inactive device associated with it.</p> <p>Supported values: On, OffDefault: On</p> <p>This parameter can be set in the <code>startup.ncf</code> file.</p> <p>Owning NLM: <code>filesys.nlm</code></p>

Locks Parameters for the Traditional File System

Locks parameters control

- ♦ How many open files each workstation can have
- ♦ How many open files the system can handle

- ♦ How many record locks each connection can have
- ♦ How many record locks the system can handle

There are three types of locks:

- ♦ File locks secure the file and prevent other stations from accessing it.
- ♦ Physical record locks control data access by multiple users. They prevent other users from accessing or changing a range of bytes (a record) in a file. They are sometimes referred to as byte-range locks.

Physical record locks are enforced by the system. If a user tries to access a range of bytes that is physically locked, the user receives an Access Denied error message.

- ♦ Logical record locks also control data access by multiple users. The application assigns a name to each section of data that needs to be locked. The application then locks this name whenever it accesses the data.

Logical locks are enforced only to the extent that the application checks the name each time it needs access to data.

For a description of locks parameters, see the following table.

Table 1-19 *Locks Parameters for the Traditional File System*

Parameter	Use to
Maximum Record Locks Per Connection <i>number</i>	<p>Control how many record locks a client connection can use at one time. (Use MONITOR to view how many record locks each connection is using.)</p> <p>Supported values: 10 to 100000Default: 500</p> <p>Increase the value of this parameter when an application can't lock enough records and fails.</p> <p>Decrease the value of this parameter if one or more client connections are using an excessive amount of server resources.</p> <p>Owning NLM: filesys.nlm</p>
Maximum File Locks Per Connection <i>number</i>	<p>Control how many opened and locked files a client connection can use at one time. (Use MONITOR to view how many opened and locked files a connection is using.)</p> <p>Supported values: 10 to 1000Default: 2500</p> <p>Increase the value of this parameter when an application can't open enough files and fails.</p> <p>Decrease the value of this parameter if client connections are using an excessive amount of server resources.</p> <p>Owning NLM: filesys.nlm</p>

Parameter	Use to
Maximum Record Locks <i>number</i>	<p>Control how many record locks the operating system can handle. (Use MONITOR to view how many record locks each client connection is using on that server.)</p> <p>Supported values: 100 to 400000Default: 20000</p> <p>Increase the value of this parameter if users have problems running applications and receive messages indicating that not enough record locks are available.</p> <p>Decrease the value of this parameter if client connections are using an excessive amount of server resources.</p> <p>Owning NLM: filesys.nlm</p>
Maximum File Locks <i>number</i>	<p>Control how many opened and locked files the operating system can handle. (Use MONITOR to view the number of files that are open during peak usage.)</p> <p>Supported values: 100 to 2000000Default: 200000</p> <p>Increase the value of this parameter if the number of open files is near or equal to the default.</p> <p>Decrease the value of this parameter to restrict the amount of available server resources.</p> <p>Owning NLM: filesys.nlm</p>

Error Handling Parameters for the Traditional File System

Error handling parameters control the size of error logs and specify what happens when logs exceed the specified size. They also control how the server responds to an abend or to an NLM that does not unload from a protected address space.

For descriptions of error handling parameters, see the following table.

Table 1-20 *Error Handling Parameters for the Traditional File System*

Parameter	Use to
Volume Log File State <i>number</i>	<p>Control what happens when the <code>vol\$log.err</code> file is larger than the size specified by the Volume Log File Overflow Size parameter.</p> <p>Supported values:</p> <p>0 Leave <code>vol\$log.err</code> as is</p> <p>1 Delete <code>vol\$log.err</code></p> <p>2 Rename <code>vol\$log.err</code></p> <p>Default: 1</p> <p>You can set this parameter in the <code>startup.ncf</code> file.</p> <p>Owning NLM: filesys.nlm</p>

Parameter	Use to
Volume TTS Log File State <i>number</i>	<p>Control what happens when the <code>tts\$log.err</code> file is larger than the size specified by the Volume TTS Log File Overflow Size parameter.</p> <p>Supported values:</p> <p>0 Leave <code>tts\$log.err</code> as is 1 Delete <code>tts\$log.err</code> 2 Rename <code>tts\$log.err</code></p> <p>Default: 1</p> <p>You can set this parameter in the <code>startup.ncf</code> file.</p> <p>Owning NLM: <code>filesys.nlm</code></p>
Volume Log File Overflow Size <i>number</i>	<p>Specify the maximum size of the <code>vol\$log.err</code> file before the action specified by the Volume Log File State parameter occurs.</p> <p>Supported values: 65536 to 4294967295Default: 4194304</p> <p>You can set this parameter in the <code>startup.ncf</code> file.</p> <p>Owning NLM: <code>filesys.nlm</code></p>
Volume TTS Log File Overflow Size <i>number</i>	<p>Specify the maximum size of the <code>tts\$log.err</code> file before the action specified by the Volume TTS Log File State parameter occurs.</p> <p>Supported values: 65536 to 4294967295Default: 4194304</p> <p>You can set this parameter in the <code>startup.ncf</code> file.</p> <p>Owning NLM: <code>filesys.nlm</code></p>

Transaction Tracking Parameters for the Traditional File System

- ♦ A *transaction* is a set of write operations that must be completed together to maintain file and database integrity.
- ♦ *Write operations* consist not only of data and data records, but also of changes to the index and the key structures that are important to an application's continual operation.
- ♦ Transaction Tracking System™ (TTS™) software guarantees that a transaction is written to disk in its complete form or is backed out if incomplete. This ensures database integrity in case a failure occurs before a transaction is completed.

For a description of transaction tracking parameters for the Traditional File System, see the the following table.

Table 1-21 Transaction Tracking Parameters for The Traditional File System

Parameter	Use to
Auto TTS Backout Flag <i>value</i>	<p>Specify whether a server with transactional files will automatically back out of incomplete transactions when the server is restarted.</p> <p>Supported values:</p> <p>On The server backs out incomplete transactions when booting Off The server waits for you to answer a prompt before it backs out of transactions</p> <p>Default: On</p> <p>You must set this parameter in the <code>startup.ncf</code> file. You cannot set the parameter at the command line.</p> <p>Owning NLM: <code>filesys.nlm</code></p>
TTS Abort Dump Flag <i>value</i>	<p>Specify whether a file is created to log transactional backout data.</p> <p>Supported values:</p> <p>On The information is saved in <code>tts\$log.err</code> Off The information backed out is not saved</p> <p>Default: Off</p> <p>If the parameter is set to On, the backed-out information is written to file <code>tts\$log.err</code> on volume <code>sys:.</code> You can print the file or view it with a text editor.</p> <p>Owning NLM: <code>filesys.nlm</code></p>
TTS UnWritten Cache Wait Time <i>time</i>	<p>Specify how long a block of transactional data can be held in memory.</p> <p>Supported values: 11 seconds to 10 minutes 59.1 seconds Default: 1 minute 5.9 seconds</p> <p>Some blocks of transactional data wait for other transactional blocks to be written first.</p> <p>If one of these blocks reaches its maximum time limit, other write requests are held up and this block is written to disk.</p> <p>Owning NLM: <code>filesys.nlm</code></p>
TTS Backout File Truncation Wait Time <i>time</i>	<p>Specify how long allocated blocks remain available for the TTS backout file when these blocks are not in use.</p> <p>Supported values: 1 minute 5.9 seconds to 1 day 2 hours 21 minutes 51.3 seconds Default: 59 minutes 19.2 seconds</p> <p>Owning NLM: <code>filesys.nlm</code></p>

Additional Information

Topic	See
Using Novell Remote Manager to set server parameters	Server Parameters option in the <i>NW 6.5 SP8: Novell Remote Manager Administration Guide</i> .
Using MONITOR to set server parameters	Server Parameters option in Section 1.94, "MONITOR," on page 102 .
Improving server performance	<i>NW 6.5 SP8: Server Operating System Administration Guide</i> "Optimizing the NetWare Server" in the <i>NW 6.5 SP8: Server Operating System Administration Guide</i>
Editing .ncf files	"Using Server Batch Files" in the <i>NW 6.5 SP8: Server Operating System Administration Guide</i>
Time synchronization and the timesync.cfg file	<i>NW 6.5 SP8: Network Time Synchronization Administration Guide</i> .

1.155 Showscreen

Purpose

Use this command at the System Console prompt to restore a screen that has been hidden by the [Hidescreen \(page 67\)](#) command.

You can also restore a screen by pressing Ctrl+Esc to view the Current Screens list and entering the number for the screen you want to restore. Hidden screens are indicated by an asterisk before the screen name in the Current Screens list.

Syntax

```
SHOWSCREEN screen_name
```

Examples

To restore the Monitor screen after it had been hidden, enter

```
SHOWSCREEN netware 6 console monitor
```

1.156 SHUTDOWN NETWORK INTERFACE

Purpose

Use this command at the System Console prompt to shut down a logical board without removing its resources. (A logical board is an instance of one frame type associated with one LAN driver.)

After you shut down the logical board, you can restart the board, if needed, without reloading and binding the LAN driver. See *** 'RESET NETWORK INTERFACE' on page 170 ***.

Syntax

SHUTDOWN NETWORK INTERFACE *board_number* | *board_name*

Parameter	Use to
<i>board_number</i>	Specify the logical board number. Find the logical board number in MONITOR by selecting LAN/WAN Drivers and highlighting the driver name. The information window at the top of the screen displays information about the driver, including Logical Board Number.
<i>board_name</i>	Specify the logical board name. A name can be assigned to a logical board when the board is loaded using the LOAD command. If no name was assigned to the board, use the logical board number.

1.157 SPEED

Purpose

Use this command at the System Console prompt to display the speed at which the processor is running.

TIP: The CPUCHECK command provides additional information as well as processor clock speed. See *** 'CPUCHECK' on page 39 ***.

Syntax

SPEED

About Processor Speed

- ♦ Processor speed rating is determined by
 - ♦ Processor clock speed (90 MHz, 100 MHz, 200 MHz, 233 MHz, etc.)
 - ♦ Processor type (80486, Pentium*, Pentium Pro, Pentium II, etc.)
 - ♦ Number of memory wait states (0, 1, 2, etc.)
- ♦ If your computer has a slower rating than you expected, use SPEED to check the processor's speed rating.

For example, entering SPEED for a Pentium II processor running at 333 MHz got the following rating:

Processor speed: 26288

- ♦ Some computers have an Auto or Common processor speed mode that can reduce the clock speed to as little as 6 MHz.
- ♦ For NetWare® 6 or later operation, the processor or processors should be set to the highest speed. If your machine has a slower rating than expected, check the processor speed setting. For instructions on how to set the processor speed, see your computer's documentation.

1.158 SPFCON

Purpose

The SPFCON utility enables you to monitor Sequenced Packet Exchange™ (SPX™) spoofing statistics.

Spoofing is the process of preserving the transport end point connection by imitating keep alive packets and responding to watchdog request packets without passing this traffic across on-demand WAN links.

Using SPX spoofing can help you maintain lower costs over on-demand WAN links.

1.159 SPXCONFIG

Purpose

Use at the server console to configure certain SPX™ parameters.

NOTE: These parameters can also be configured from the INETCFG utility.

Syntax

```
[LOAD] SPXCONFIG [option[=value]]
```

Parameter	Use to
(no parameter)	Load SPXCONFIG and display configuration menu.
<i>option</i>	Replace option with any available option. See “SPXCONFIG Options” on page 254 .
<i>value</i>	Specify a numerical value for an option. For information on setting these values, see *** 'INETCFG' on page 71 ***.

SPXCONFIG Options

Option	Use to
A=	Specify SPX Watchdog Abort timeout (in ticks).
V=	Specify SPX Watchdog Verify timeout (in ticks).

Option	Use to
W=	Specify SPX Ack Wait timeout (in ticks).
R=	Specify SPX Default Retry count.
S=	Specify maximum concurrent SPX sessions.
Q=1	Specify quiet mode (suppresses display of changed settings).
H	Display SPXCONFG help screen.
I=	Specify IPX™ maximum socket table size.

Using SPXCONFG

- ♦ You can use SPXCONFG in your `autoexec.ncf` file, as a console command, as a menu utility, or as a configuration file that is invoked by INETCFG.
- ♦ If you don't specify a parameter, the following menu appears:

```
SPX Configuration Control Program
```

```
1. SPX Watchdog Abort timeout 540
```

```
2. SPX Watchdog Verify timeout 54
```

```
3. SPX Ack wait timeout 108
```

```
4. SPX Default Retry count 10
```

```
5. Maximum concurrent SPX sessions 2048
```

```
6. IPX maximum socket table size 1200
```

You can then select parameters to change.

- ♦ SPXCONFG changes the configuration of SPX as well as the STREAMS-based SPXS (SPXII).
- ♦ If you enabled TCP/IP or AppleTalk* on the server, you can use either INETCFG or SPXCONFG to set SPX parameters.

When you set the parameters using INETCFG, a load line for SPXCONFG is automatically added to the `netinfo.cfg` file so it runs each time you bring up the server.

- ♦ If you have only IPX/SPX™ enabled on the server (and not TCP/IP or AppleTalk) and you want to use the SPXCONFIG parameters each time you boot the server, place the following command in your `autoexec.ncf` file:

```
[LOAD] [path]SPXCONFIG [option[=value]]
```

Examples

To set SPX options to 1000 ticks for the SPX Watchdog Abort timeout and suppress the display of changed settings, type

```
[LOAD] SPXCONFIG A=1000 Q=1
```

Additional Information

Topic	See
Setting SPX parameters with INETCFG	Section 1.65, "INETCFG," on page 71

1.160 SPXS

Purpose

Use at the server console to provide STREAMS-based SPX™ protocol services.

Syntax

```
[LOAD] [path]SPXS [LDFILE = [path]filename[ext]]
```

Parameter	Use to
<i>path</i>	Specify the path to SPXS if you moved it from the default directory.
LDFILE = <i>[path]filename[ext]</i>	Load the data file that contains the SPX timer defaults and physical packet size tables. If you don't specify a filename, SPXS sets the parameters defined in the <code>ipxspx.cfg</code> file. If you don't specify a file extension, the default is <code>.cfg</code> .

Using SPXS

- ♦ When you load SPXS, the parameters in the `ipxspx.cfg` file are set, unless you specify an alternate configuration filename.

NOTE: The `ipxspx.cfg` file is modified from the INETCFG utility when you set SPX/IPX parameters.

- ♦ You can create multiple configuration files in addition to `ipxspc.cfg`. Use this feature if you frequently alternate between two or more IPX/SPX configurations.

To create multiple configuration files, copy the `IPXSPX.CFG` file to a new filename (`ipxspc2.cfg`, for example). Then you can change the `ipxspc.cfg` file (by using `INETCFG`) and still preserve the original configuration in the `ipxspc2.cfg` file.

- ♦ To load a configuration file other than the default `ipxspc.cfg` file, use the `LDFILE` option.

For example, if you have a second configuration file called `ipxspc2.cfg`, you can load that configuration by typing

```
[LOAD] SPXS LDFILE = IPXSPX2
```

- ♦ When you load `SPXS`, `STREAMS` is autoloading.

Additional Information

Topic	See
Setting SPX parameters using <code>SPXCONFIG</code>	Section 1.159, "SPXCONFIG," on page 254
Setting SPX parameters using <code>INETCFG</code>	Section 1.65, "INETCFG," on page 71

1.161 START PROCESSORS

Purpose

Use this command at the System Console prompt to start one or more secondary processors when the server is running on a multiprocessor computer.

NOTE: Because NetWare® is running on processor 0, the boot processor, `START PROCESSORS` affects only secondary processors.

Syntax

```
START PROCESSORS [n...]
```

Parameter	Use to
(no parameters)	Start all secondary processors.
<i>n...</i>	Specify by processor number the secondary processors to start.

Using START PROCESSORS

- ♦ To bring a specific secondary processor online, enter at the console prompt:

```
START PROCESSORS 1
```

A confirmation message is displayed:

```
Processor 1 is ONLINE.
```

- ♦ To bring all secondary processors online, enter at the console prompt:

```
START PROCESSORS
```

A confirmation message is displayed:

```
Processor 1 is ONLINE.
```

```
Processor 2 is ONLINE.
```

```
Processor 3 is ONLINE.
```

- ♦ If you choose to start secondary processors when NetWare boots, use Set Auto Start Processors = Off in the `startup.ncf` file (see [“Multiprocessor Parameters” on page 220](#)).
- ♦ To stop secondary processors, see [Section 1.162, “STOP PROCESSORS,” on page 258](#).
- ♦ For more information, see [“Starting and Stopping Processors” in the NW 6.5 SP8: Server Operating System Administration Guide](#).

1.162 STOP PROCESSORS

Purpose

Use STOP PROCESSORS at the server console prompt to stop one or more secondary processors in a multiprocessor computer.

NOTE: Because Processor 0, the boot processor, cannot be taken offline while the server is running, STOP PROCESSORS affects only secondary processors.

Syntax

```
STOP PROCESSORS [n...]
```

Parameter	Use to
(no parameters)	Stop all secondary processors.
<i>n...</i>	Specify by number the secondary processors to stop.

Using STOP PROCESSORS

Run the DISPLAY PROCESSORS command before stopping a secondary processor to determine the processor's status and its number. (See *** 'DISPLAY PROCESSORS' on page 49 ***)

When you stop a processor, the threads that were running on the processor are automatically migrated to another processor.

If you run STOP PROCESSORS without specifying the identifying number or numbers of the processors, all secondary processors will be stopped.

For more information, see “Starting and Stopping Processors” in the *NW 6.5 SP8: Server Operating System Administration Guide*.

Examples

- ♦ To stop secondary processors 1 and 3, enter

```
STOP PROCESSORS 1 3
```

A confirmation message is displayed:

```
Processor 1 is OFFLINE.  
Processor 3 is OFFLINE.
```

- ♦ To start secondary processors , see *** 'START PROCESSORS' on page 257 ***.

1.163 SWAP

Purpose

Use this command at the System Console prompt to display information about swap files, to add or delete swap files, and to specify the parameters of swap files.

Syntax

```
SWAP [ADD vol_name [parameter = value]] [DEL vol_name] [PARAMETER vol_name  
parameter = value]
```

Parameter	Use to
(no parameter)	Display a screen containing information about swap files.

Parameter	Use to
ADD <i>vol_name</i> parameter = value	<p>Create a swap file on the designated volume.</p> <p>You can specify the following optional parameters when you create a swap file: MIN=, MAX=, and MIN FREE=.</p> <p>These parameters specify the minimum and maximum size of the swap file and the minimum free space that must be left on the volume. Values are in millions of bytes.</p> <p>If parameters are not included, the following default values are used:</p> <p>MIN = 2</p> <p>MAX = Free volume space</p> <p>MIN FREE = 5</p>
DEL <i>vol_name</i>	<p>Delete a swap file from the designated volume.</p> <hr/> <p>IMPORTANT: If you are using protected address spaces, the Novell® JVM for NetWare® product, or any other application that uses virtual memory, be sure to keep at least one swap file.</p> <hr/> <p>By default a swap file is created on the Sys volume whenever you start the server. If you do not want a swap file on Sys, place the SWAP DEL command in the <code>startup.ncf</code> file before the command to mount volumes.</p>
PARAMETER = <i>vol_name</i> parameter = value	<p>Change the parameter values for a swap file on the designated volume.</p> <p>You can specify the following parameters: MIN=, MAX=, and MIN FREE=.</p> <p>These parameters specify minimum and maximum size of the swap file and the minimum free space that must be left on the volume. Values are in millions of bytes.</p>

Using SWAP

- ♦ If a swap file is being used when it is deleted, then the swapped data is moved to another swap file. If there is no other swap file, an error message is displayed and the file is not deleted.
- ♦ You can create one swap file per volume. The swap file for the Sys volume is created by default; you can delete it if necessary.
- ♦ Data moved to disk by virtual memory will be stored in any available swap file; it does not matter which volume the swap file is on. Generally, you will place swap files on the fastest volume or the one with the most available space.
- ♦ You can add a swap file to a volume by executing the SWAP ADD command, even if the volume is not mounted. Once you've added the swap file, the file will be created when you mount the volume.
- ♦ When you dismount a volume, the swap file is deleted. To keep a swap file on that volume, you must create the swap file again. The exception is the `sys:` volume swap file, which is created by default. For convenience, place the commands to create swap files into the `autoexec.ncf` file so the files will be created each time the server is started.
- ♦ Swap files are dynamic; they change size as data is swapped in and out of memory.

Additional Information

Topic	See
Other options for managing the Swap files in NetWare	"Viewing Memory Configurations" in the <i>NW 6.5 SP8: Novell Remote Manager Administration Guide</i>
Virtual Memory	"Virtual Memory" in the <i>NW 6.5 SP8: Server Memory Administration Guide</i>
Using swap files	"Using Swap Files" in the <i>NW 6.5 SP8: Server Memory Administration Guide</i>

1.164 TCPCON

Purpose

Use at the server console to

- ♦ Monitor activity in the TCP/IP network segments of your internetwork
- ♦ View configuration and statistics information about the following TCP/IP protocols: IP, ICMP, UDP, TCP, OSPF, and EGP
- ♦ View IP routes known to a TCP/IP node
- ♦ View network interfaces supported by a TCP/IP node
- ♦ Access the trap log maintained by SNMPLOG (local systems only)
- ♦ Use Simple Network Management Protocol (SNMP) over TCP/IP or IPX™ to access TCP/IP information in any remote protocol stack supporting the TCP/IP Management Information Base (MIB)

Syntax

[LOAD] TCPCON

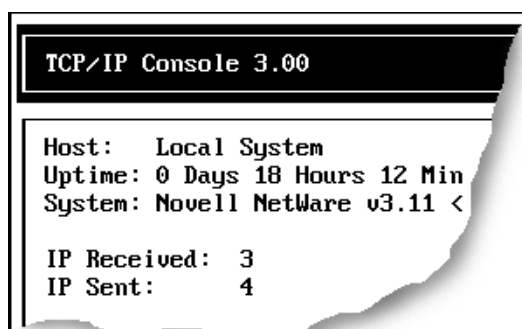
Using TCPCON

- ♦ By default, TCPCON monitors and gathers information from the local NetWare® TCP/IP node.

You can, however, access another TCP/IP node on your internetwork if you know the symbolic hostname or host IP address of that node.

- ♦ When you load TCPCON, the TCPCON main screen appears.

Figure 1-9 TCPCON Main Screen



- ♦ The top of the main screen displays a summary of statistics for the selected host, as follows:

Field	Explanation
Host	Symbolic host name or IP address of the selected TCP/IP host (or server name if accessing a remote node using IPX™) being queried. This is the host specified in SNMP Access Configuration in the Available Options menu.
Uptime	Amount of time that has elapsed since the selected host was last initialized.
System	Brief description of the selected host.
IP Received	Number of IP datagrams received from all interfaces, including those received in error.
IP Sent	Number of datagrams sent to IP for transmission. This number does not include datagrams forwarded by this host.
IP Forwarded	Number of IP packets forwarded from one node to another. This field displays the value Disabled if this host is not configured to be an IP router.
TCP Received	Number of TCP segments received, including those received in error.
TCP Sent	Number of TCP segments sent, excluding those containing retransmitted data.
TCP Connections	Number of currently established TCP connections.

- ♦ The Available Options menu on the main screen allows access to additional features of TCPCON, as follows:

Option	Use to
SNMP Access Configuration	View and modify TCPCON options.
Protocol Information	View protocol information for the selected host.
IP Routing Table	View IP routers known to the selected host.
Statistics	View TCP/IP statistics.

Option	Use to
Interfaces	View the network interfaces supported by the selected host.
Display Local Traps	View the local SNMP trap log maintained by <code>snmplog.nlm</code> .

1.165 TECHWALK

Purpose

Use this command at the System Console prompt to record NetWare® configuration information.

Syntax

```
[LOAD] TECHWALK [console_NLM_name]
```

Parameter	Use to
(no parameter)	Record configuration information for the NetWare MultiProtocol Router 3.1 INETCFG NLM™ program.
<i>console_NLM_name</i>	Record configuration information for the specified NLM program.

Using TECHWALK

TECHWALK saves the configuration information for INETCFG (or the specified NLM program) to a file named `sys:etc\techwalk.out`. All enabled items and summary lists are recorded.

You might prefer to exit INETCFG (or the specified NLM program) before you run TECHWALK. Running TECHWALK takes from 5 to 60 minutes, depending on your configuration and the network traffic, and dedicates your machine to the process during that period.

1.166 TIME

Purpose

Use this command at the System Console prompt to display

- ♦ Date and time kept by the NetWare® server's clock
- ♦ Daylight saving time status
- ♦ Time synchronization information

Syntax

```
TIME
```

Using TIME

When you execute TIME, information similar to the following appears on the console screen.

NOTE: The output is formatted according to your locale configuration.

Figure 1-10 TIME Output

```
SALES:time
Time zone string: "MST7MDT"
DST status: OFF
DST start: Sunday, April 4, 1993 2:00:00 am MST
DST end: Sunday, October 31, 1993 2:00:00 am MDT
Time synchronization is active.
Time is synchronized to the network.
Monday, June 11, 1993 7:06:59 pm UTC
Monday, June 11, 1993 12:06:59 pm MST
```

1.167 TIMESYNC

Purpose

Use at the server console to monitor the internal time on a server to ensure that the time reported by all servers across the network is consistent, or synchronized.

TIMESYNC autoloads when the server boots. Under very few circumstances will you ever load or unload TIMESYNC. You may, however, want to load TIMESYNC to use an alternate configuration (.cfg) file.

Syntax

[LOAD] [path] TIMESYNC

Parameter	Use to
path	Specify the path to timesync.nlm if you moved it from the default directory.

You can set TIMESYNC parameters in the configuration file (timesync.cfg) or with the SET utility.

Additional Information

Topic	See
Setting time synchronization parameters	SET “Time Parameters” on page 233.
Network time synchronization	“Guidelines for Time Synchronization” in the NW 6.5 SP8: Network Time Synchronization Administration Guide

1.168 TLI

Purpose

Use at the server console to provide Transport Level Interface (TLI) communication services.

Syntax

```
[LOAD] [path]TLI
```

Parameter	Use to
<i>path</i>	Specify the path to <code>tli.nlm</code> if you moved it from the default directory.

Using TLI

- ♦ To use TLI, you must have one or more protocol service modules loaded, such as SPXS or IPXS.
- ♦ TLI also requires STREAMS, CLIB, and CLIB-related modules and autoloads them if they are not already loaded.

1.169 TPING

Purpose

Use this command at the System Console prompt to send an Internet Control Message Protocol (ICMP) echo request packet to an IP node on your internetwork.

TPING is a command line utility that determines whether an IP target node on your internetwork is reachable.

Syntax

```
[LOAD] TPING host [packet_size [retry_count]]
```

Parameter	Use to
<i>host</i>	Specify the symbolic host name or IP address of a TCP/IP system on the network.
<i>packet_size</i>	Specify the size, in bytes, of the ICMP packet.
<i>retry_count</i>	Specify the number of times you want to resend an ICMP packet to the host system if a reply is not received (default = 5).

Using TPING

TPING sends an ICMP echo request packet to the IP target node. If the target node receives the request packet, it sends back a reply packet.

If TPING doesn't receive a reply, it resends the request packet the specified number of times.

When TPING receives a reply, it stops sending requests and displays a message indicating that the target node is reachable. (If it doesn't receive a reply, TPING also notifies you.)

1.170 TRACK OFF

Purpose

Use this command at the System Console prompt to prevent the server from displaying the RIP Tracking Screen. This screen displays Router Information Protocol (RIP) traffic on the server.

Syntax

TRACK OFF

Additional Information

Topic	See
RIP Tracking Screen	Section 1.171, "TRACK ON," on page 266

1.171 TRACK ON

Purpose

Use this command at the System Console prompt to view the RIP Tracking Screen and make it the active screen. This screen displays Router Information Protocol (RIP) traffic on the server.

Syntax

TRACK On

Using TRACK ON

- ♦ TRACK On signals the router to display all server and network routing (RIP) packets that are received or sent.
- ♦ TRACK On displays information about servers, networks, and connection requests.

This information is formatted according to whether the NetWare® server is

- ♦ Receiving incoming information (IN)
- ♦ Broadcasting outgoing information (OUT)
- ♦ Receiving a connection request

Incoming Information

Incoming information looks similar to the following:

```
IN [00D0C200:00001B026C09] 10:53:01am 010123C5 11/22 5300DEEF 3/4 00001EF0 5/365
```

```
FADE2401 12/98 00001EEE 2/3 C9008617 5/11
```

The packet is incoming from network address 00D0C200 and from the server at node address 0001B026C09. The packet was sent at 10:53 a.m.

The columns of data that follow the line labeled IN are network numbers that the sending server knows about. For example, 010123C5 and 5300DEEF are the network numbers recognized by the server at address 00001B026C09.

The numbers 11/22 and 3/4 indicate routing information about that network. For example, the 11/ and 3/ indicate the hop count, or number of hops (gateways or routers) from the sending server to this network.

NOTE: The maximum number of hops a RIP packet travels is 16.

The /22 and /4 indicate the number of ticks (1/18th of a second) that a packet took to reach this network from the sending server.

Outgoing Information

Outgoing information looks similar to the following:

```
OUT [1986DAD0:8941A801] 11:00:01am
```

```
00001EEE 2/3 5300DEEF 3/4 00001EF0 5/365
```

```
FADE2401 2/3 FEED00BB 4/5 ACCCDDD 5/11
```

The packet is outgoing from network address 1986DAD0 and from the server at node address 8941A801. The packet was sent at 11:00 a.m.

The columns of data that follow the line labeled OUT are network numbers that the sending server knows about. The associated hop and tick count information is listed after each network. For an explanation of these, see [“Incoming Information” on page 266](#).

Connection Request

When a client boots and loads a NetWare® Requester™ (such as DOS Requester or OS/2* Requester), a Get Nearest Server request is broadcast on the network the station is cabled to.

Any connected server can receive the message and respond to the station with a Give Nearest Server response.

The station initially attaches to the first server that responds to the Get Nearest Server request.

Additional Information

Topic	See
Turning off the RIP Tracking Screen	Section 1.170, "TRACK OFF," on page 266
Displaying advertised networks (SAP traffic)	Section 1.42, "DISPLAY IPX NETWORKS," on page 45
Displaying advertised servers (SAP traffic)	Section 1.43, "DISPLAY IPX SERVERS," on page 46
Resetting routers	Section 1.143, "RESET ROUTER," on page 171

1.172 UNBIND

Purpose

Use this command at the System Console prompt to

- ♦ Remove a communication protocol from the LAN driver of a network board
- ♦ Disable communication on a specific board

Syntax

```
UNBIND protocol [FROM] LAN_driver | board_name [[driver_parameter/]]
```

Parameter	Use to
<i>protocol</i>	Specify the name of the protocol you want to unbind.
<i>LAN_driver</i> <i>board_name</i>	Specify the name of the LAN driver or the network board from which you are unbinding the protocol.
<i>driver_parameter</i>	Specify one or more driver parameters if you have more than one network board of the same type in your server. See "Parameters" on page 268 .
NOTE: Enclose driver parameters in square brackets.	

Parameters

Driver parameter	Use to
[DMA= <i>number</i>]	Specify the DMA channel for the board. Use the same channel you did when you loaded the driver.
[FRAME= <i>number</i>]	Specify the frame type for the board. Use the same frame type you did when you loaded the driver.

Driver parameter	Use to
[INT= <i>number</i>]	Specify the interrupt for the board. Use the same interrupt you did when you loaded the driver.
[MEM= <i>number</i>]	Specify the memory address for the board. Use the same memory address you did when you loaded the driver.
[PORT= <i>number</i>]	Specify the I/O port for the board. Use the same I/O port you did when you loaded the driver.
[SLOT= <i>number</i>]	Specify the network board by the slot that it was installed in. Use this parameter with microchannel and EISA computers. Use the same slot number you did when you loaded the driver.
[NODE= <i>number</i>]	Specify the node number of the board.

Using Driver Parameters

- ♦ You must tell the operating system which network board or LAN driver to unbind the communication protocol from.
- ♦ If you have multiple boards or LAN drivers, you must unbind each one separately.
- ♦ If your server has more than one instance of the LAN driver loaded, use one or more driver parameters to specify the particular board you are unbinding.
- ♦ To prevent a driver from binding automatically when the server boots, delete the following line from the `autoexec.ncf` file:

```
BIND IPX TO LAN_driver NET=number
```

Examples

- ♦ To unbind IPX™ from an NE3200™ driver that has been loaded only once, type

```
UNBIND IPX FROM NE3200
```

- ♦ To unbind IPX from an NE3200 driver that has been loaded more than once, using driver parameters to specify the particular network board, type

```
UNBIND IPX FROM NE3200 [SLOT=3, FRAME=ETHERNET_II]
```

Additional Information

Topic	See
Viewing a list of communication protocols	Section 1.124, "PROTOCOL," on page 152

1.173 UNLOAD

Purpose

Use this command at the System Console prompt to

- ◆ Unload a module that was previously loaded with the LOAD command
- ◆ Unload outdated NLM™ programs so that updated modules can be loaded

You can also use UNLOAD at workstations running Novell® Client™ software for client modules that have been previously linked with LOAD.

Syntax

UNLOAD *NLM_name*

UNLOAD ADDRESS SPACE=*address_space* [*NLM_name*]

UNLOAD KILL ADDRESS SPACE=*address_space*

Parameter	Use to
<i>NLM_name</i>	Specify the module you want to unload.
ADDRESS SPACE= <i>address_space</i>	Specify the address space you want to unload. This command unloads all modules from the address space, removes the space, and returns its resources to the system.
ADDRESS SPACE= <i>address_space NLM_name</i>	Specify the module you want to remove from the designated address space. This command unloads the specified module from the address space, but does not remove the address space.
KILL ADDRESS SPACE= <i>address_space</i>	Remove the specified address space, but without unloading modules from it first. Use this command only if you know the address space can't be unloaded any other way.

IMPORTANT: Before you unload a module, be sure to read the next section, “[Unloading Modules](#)” on page 270.

Unloading Modules

The UNLOAD command unlinks a loadable module from the operating system that was previous linked to the operating system with the LOAD command. (See [Section 1.82, “LOAD,”](#) on page 87.) When you unload a module, all resources are returned to the system.

To unload a module from an address space, you can specify its address space.

NOTE: If an address is specified without a module, all modules in that address space will be unloaded.

Keep the following information in mind when unloading LAN drivers, name space modules, or disk drivers.

- ♦ LAN Drivers

When you unload a LAN driver, the driver is unbound from all communication protocols and removed from all network boards it was linked to.

After a LAN driver is unloaded, users with network boards that require the unloaded driver receive the following error message:

```
Network error on Server <fileserver>: Error receiving from network. Abort,
Retry?
```

If this occurs, do the following:

- ♦ Retry once to see if an alternate route to the NetWare server is available on another network.
- ♦ If the retry fails, retry again after the LAN driver is reloaded and bound to the communication protocol.

A user who receives the error message must reestablish a connection within 15 minutes. If the connection is broken for more than 15 minutes, the server watchdog terminates the station's connection.

If the LAN driver will be unloaded for 15 minutes or longer, have users log out before unloading the LAN driver.

- ♦ Name Space Modules

Before unloading name space modules, dismount all volumes that are using the module. These volumes cannot be remounted until the module is loaded again.

To permanently delete a name space from a Traditional volume before you unload the name space module, use VREPAIR.

- ♦ Disk Drivers

Before unloading a disk driver, dismount all volumes stored on the hard disks connected to the controller or host bus adapter.

If you don't dismount the volumes, the system warns you that the driver is in use and lists the volumes using the driver.

If you override the warning and unload the driver without dismounting the volumes, the server dismounts the volumes and notifies those who are using the volumes.

Examples

- ♦ To unload MONITOR, enter

```
UNLOAD MONITOR
```

- ♦ To unload the CLIB module from the address space for GroupWise®, enter

```
UNLOAD ADDRESS SPACE=GRPWISE CLIB
```

- ♦ To unload all modules from the GroupWise address space and shut down the address space, enter

UNLOAD ADDRESS SPACE=GRPWISE

- ♦ To shut down an address space that cannot be unloaded any other way, enter

UNLOAD KILL ADDRESS SPACE=ADDRESS_SPACE1

1.174 UPS_AIO

Purpose

If your uninterruptible power supply (UPS) is connected to the server through a serial port, use UPS_AIO to provide the software link between your server and the UPS.

Syntax

[LOAD] [*path*]UPS_AIO [*parameter...*]

Parameter	Use to
<i>path</i>	Specify the path to UPS_AIO if you moved it from the default directory.
DOWNTIME= <i>number</i>	<p>Specify the amount of time to run on battery before system shutdown. If power is restored before this time elapses, no shutdown will occur. If a low battery condition occurs before this time elapses, an immediate shutdown will occur.</p> <p>Supported values: 30 seconds minimum, no practical maximum limit.</p> <p>Default: 300 seconds</p>
MSGDELAY= <i>number</i>	<p>Specify the elapsed time before a broadcast message is first sent to users.</p> <p>Supported values: 0 seconds minimum, no practical maximum limit.</p> <p>Default: 5 seconds</p> <p>The broadcast message states the time remaining until shutdown. This message is generated automatically by UPS_AIO.</p>
MSGINTERVAL= <i>number</i>	<p>Specify the time interval between broadcast messages sent to users.</p> <p>Supported values: 20 seconds minimum, no practical maximum limit</p> <p>Default: 30 seconds</p> <p>The broadcast message states the time remaining until shutdown. This message is generated automatically by UPS_AIO.</p>

Parameter	Use to
DRIVERTYPE= <i>number</i>	<p>Specify the AIO device driver type.</p> <p>Supported values: 1, 2, 3</p> <p>Default: 1</p> <p>The default value of 1 represents the AIOCOMX driver, which comes with NetWare®. Other drivers might be represented by other driver type numbers. Refer to the documentation that came with the driver.</p>
BOARD= <i>number</i>	<p>Specify the AIO board number.</p> <p>Supported values: Determined by the driver manufacturer</p> <p>Default: 0</p> <p>To determine the board number, read the driver information when the AIOCOMX driver is loaded. This information includes both the board and port numbers.</p> <p>If you do not use the AIOCOMX driver, refer to the driver documentation to determine the board number.</p>
PORT= <i>number</i>	<p>Specify the port number.</p> <p>Supported values: Determined by the driver manufacturer</p> <p>Default: 0</p> <p>To determine the port number, read the driver information when the AIOCOMX driver is loaded. This information includes both the port and board numbers.</p> <p>If you do not use the AIOCOMX driver, refer to your driver documentation to determine the port number.</p>
SIGNAL_HIGH	<p>Specify the signal_high parameter to set the normal RS232 signaling state to high.</p> <p>Supported values: SIGNAL_HIGH or no value</p> <p>Use this parameter only if your UPS system uses high values, instead of low values, to determine if power is off or the battery is low. Most UPS systems use low values. Refer to your UPS hardware documentation to determine whether you need to use the parameter.</p>
?	<p>Display a help screen that explains these parameters. When you use this parameter, the UPS_AIO module is not loaded. To load UPS_AIO, you must execute LOAD UPS_AIO again, without the ? parameter.</p>

Using UPS_AIO

NOTE: The serial cable between the UPS and the server must be designed for use with the UPS. Contact the manufacturer of your UPS for information on the correct cable to use for your system.

- ♦ You must load an AIO device driver before loading UPS_AIO; the driver is not loaded automatically. The AIOCOMX driver is included with the NetWare operating system. If you want to use a different driver, consult the UPS hardware and driver documentation.
- ♦ The UPS_AIO module does not allow you to change parameter settings after loading the module. If you want to change the settings, reload the module with the new parameter values.
- ♦ Place the commands to load the device driver and UPS_AIO in your `autoexec.ncf` file to load them each time the server comes up.
- ♦ After you load UPS_AIO, a status screen displays messages about the current status and activities of the UPS. To toggle between this and other screens, press Alt Esc. These messages are also logged to `sys:system\sys$log.err`.

1.175 VERIFY

Purpose

Use VERIFY to validate all blocks in an NSS pool. The Verify option fixes an NSS pool and its volumes by searching for inconsistent data blocks or other errors. This utility indicates if there are problems with the file system. If there are no problems with the pool, it is safe to activate the pool.

NOTE: This utility protects against system failures only, not hardware failures.

Syntax

The PoolVerify command is a read-only assessment of the pool. At the server console, enter

```
nss /poolverify=[pool_name]
```

If you do not enter the NSS pool name parameter, you will be prompted to select it.

During the verification process, the NSS pool and its volumes are placed in maintenance mode. This means the NSS pool and the volumes on it are unusable until this process is finished, and the pool is activated and mounted.

If errors are found, they are reported to the screen, and the NSS pool is left in maintenance mode. Run REBUILD until no errors are found.

Starting and Using VERIFY

Use VERIFY at the command line.

NOTE: Always back up your data. If an NSS pool uses several hard disks and one of the hard disks becomes corrupted, you must create a new NSS pool, then restore its NSS volumes from backup.

- 1 Load NSS.
- 2 Verify your rebuilt NSS pool, by entering

```
nss /poolverify=[pool_name]
```

If you do not enter the NSS pool name parameter, you will be prompted to select it.

Verifying a pool can take a up to a few hours, depending on the size of the pool.

- 3 Check the output screen.

This screen indicates the time elapsed, the time remaining, the total elapsed time, the number of objects processed, etc.

Additional Information

Topic	See
NSS volumes	<i>"Managing NSS Volumes" in the NW 6.5 SP8: NSS File System Administration Guide</i>

1.176 VERSION

Purpose

Use this command at the System Console prompt to view the file server version, license information, and copyright notice from the System Console prompt. This command also shows the version of the server Support Pack and Novell eDirectory that are running on the server.

Syntax

```
VERSION
```

1.177 VIEW

Purpose

Use to view a file from the NetWare® server console.

NOTE: VIEW does not let you create or modify files. To create or modify a file, use [Section 1.52](#), "EDIT," on page 56.

Syntax

```
[LOAD] VIEW [filename]
```

Parameter	Use to
<i>filename</i>	Specify a file to view.

Using VIEW

If you do not specify a filename, VIEW prompts you for the name.

1.178 VOLUME

Purpose

Use this command at the System Console prompt to list mounted volumes.

Syntax

```
VOLUME [name]
```

Parameter	Use to
(no parameter)	List general information about all mounted volumes.
<i>name</i>	Specify the volume you want to display information about.

Using VOLUME

When you execute VOLUME without the *name* parameter, a message similar to the following appears:

```
Mounted Volumes   Name Spaces      Flags
SYS               DOS              Cp Sa Mg
```

The output lists each mounted volume, its name spaces, and the flags that are set for that volume. The three possible flags are:

Cp—indicates that file compression is enabled on the volume

Sa—indicates that block suballocation is enabled on the volume

Mg—indicates that migration is enabled on the volume

When you execute `volume name`, the screen displays more detailed information about the specific volume, such as the following:

Figure 1-11 Volume Information

Volume SYS information:

Block Usage: 4 FAT blocks, 34 Directories blocks, 0 EDS blocks
Blocks: 1569 used of 4084 Directory Entries: 1314 used of 2176
EDS: 0 used of 0 extants Extended Attributes: 0
Data Streams: 590, 668 (Cp), 9 (Cp Limbo), 242 (Cant Cp)
Sub Alloc Blocks: 321
NameSpaces: DOS Flags: Cp Sa

1.179 VREPAIR

Purpose

For NetWare Traditional volumes, use this command at the System Console prompt to

- ♦ Correct volume problems
- ♦ Remove name space entries from Directory Entry Tables

NOTE: You cannot use VREPAIR on a mounted volume.

Also, VREPAIR is not used to repair NSS volumes. For NSS volumes, you must use the REBUILD utility. See [Section 1.129, “REBUILD,” on page 158](#).

Syntax

```
[LOAD] [path] VREPAIR [volume_name] [log_filename]
```

Parameter	Use to
<i>path</i>	Specify the path to <code>vrepair.nlm</code> if you moved it from the default directory.
<i>volume_name</i>	Specify the name of a volume to repair.
<i>log_filename</i>	Specify a text filename to log errors into.

Using VREPAIR

- ♦ For an explanation of the VREPAIR main menu, see [“Main Menu Selection” on page 279](#).
- ♦ If a volume fails to mount when the server is brought up, VREPAIR loads automatically and tries to repair the failed volume.

If you don't want VREPAIR to automatically repair a volume that won't mount, load MONITOR, select Server Parameters > File System, and set the Automatically Repair Bad Volume parameter to Off. (For more information, see [Section 1.94, “MONITOR,” on page 102](#).)

- ♦ Use the version of VREPAIR that matches the operating system.
- ♦ The majority of all problems fixed by VREPAIR are caused by hardware failures. If a volume frequently needs repair, consider replacing the hard disk or controller.

TIP: Copy `vrepair.nlm` and the VREPAIR name space support modules (`v_namespace.nlm`) to the boot partition of your server. Then, if volume `sys:` fails to mount, you can load and run VREPAIR from the DOS boot directory.

Minor problems can occur on a volume if the primary File Allocation Table (FAT) or Directory Entry Table (DET) becomes corrupted.

VREPAIR compares the primary tables with their mirrored counterparts. (The operating system keeps two copies of all tables. If hard disks are mirrored, then four copies are kept.)

VREPAIR checks the sets of mirrored tables for errors. If it finds inconsistencies, it uses the most correct table entry as the corrected entry. VREPAIR then writes the corrected entry to both the primary and mirrored tables.

VREPAIR may have to delete some corrupted files or tables. For more information, see [“Viewing Deleted Files” on page 281](#).

VREPAIR will log bad block information into a file if you specify a log filename when you load VREPAIR. You can also specify a log filename after you load VREPAIR, when VREPAIR displays an error.

VREPAIR can repair a bad volume that you have dismounted while other NetWare server volumes are functioning. After you finish running VREPAIR, you can mount the repaired volume (in most cases).

Use VREPAIR when

- ♦ A hardware failure either prevented a volume from mounting or caused a disk read error.

NOTE: Although VREPAIR can't fix hardware problems, it can sometimes fix related volume damage.

- ♦ A power failure corrupted a volume.
- ♦ The server displays memory errors and can't mount a volume after a name space (such as Macintosh*) is added to the volume.

For this type of problem, either add more memory to the server or use VREPAIR to remove the newly added name space.

- ♦ The volume has bad blocks.

The following kinds of errors in FATs or Directory tables signal bad blocks:

- ♦ Read errors
- ♦ Data mirror mismatch errors
- ♦ Multiple allocation errors
- ♦ Fatal DIR errors
- ♦ Write errors

TIP: This information is reported in the log file.

The VREPAIR main screen displays the following menu:

Options:

1 - Repair a volume

2 - Set VRepair options

3 - Exit

Main Menu Selection	Use to
Repair a volume	Begin or continue with volume repair. You can also use this option to stop a volume repair in process or change the method of displaying errors during the repair.
Set VRepair options	Set VREPAIR configuration options.
Exit	Exit VREPAIR.

In the Set VRepair Options menu, there are two settings for each option, a default option and an alternate option. When VREPAIR autoloads and tries to repair a volume that will not mount, the default settings are used.

You can configure the VREPAIR alternate options by selecting the associated option number to toggle between the alternate and default options.

For example, Option 2 settings are Write All Directory and FAT Entries Out to Disk and Write Only Changed Directory and FAT Entries Out to Disk.

The default for Option 2 is Write Only Changed Directory and FAT Entries Out to Disk. If you select Option 2, your current VREPAIR configuration reflects the change from the default to the new setting: Write All Directory and FAT Entries Out to Disk.

The VREPAIR configuration options are described in the following table.

Table 1-22 VREPAIR Configuration Options

Default Option	Alternate Option	Explanation
1. Quit if a VREPAIR Name Space Support NLM™ Is Not Loaded	Remove Name Space Support From The Volume	<p>These options control whether name space support for non-DOS files is retained in the volume tables.</p> <p>If you add a name space to a volume and the system doesn't have enough memory, select Remove Name Space Support From the Volume. Then select a name space to delete.</p> <p>If you remove a name space, the accompanying extended file information is destroyed.</p> <p>For example, if you remove Macintosh name support, the Macintosh long names, the finder icons, and the resource forks are destroyed.</p> <p>(The DOS name and its data file are kept and are accessible from DOS workstations.)</p> <p>Important: To repair a volume with non-DOS name space entries, VREPAIR must find the corresponding name space support modules. (For example, to repair a volume with the Macintosh name space, you need to load <code>v_mac.nlm</code>; to repair a volume with the OS/2* or Windows* name space, load <code>v_long.nlm</code>.)</p> <p>For more information, see “Repairing a Traditional Volume” in the <i>NW6.5 SP8: Traditional File System Administration Guide</i>.</p>
2. Write Only Changed Directory And FAT Entries Out To Disk	Write All Directory And FAT Entries Out To Disk	<p>These options control the changes that are made to the FATs and Directory tables.</p> <p>If you repair a mirrored or duplexed volume, select the alternate option to force an update of all tables on both hard disks.</p>
3. Write Changes Immediately To Disk	Keep Changes In Memory For Later Update	<p>NetWare defaults to writing changes immediately to disk. In most cases, this default option speeds the repair.</p> <p>Disks requiring very few changes will repair faster if the alternate option is used.</p>
4. Retain Deleted Files	Purge All Deleted Files	<p>These options control whether deleted files are purged or retained.</p> <p>If a file is deleted, but not purged, it can be salvaged.</p> <p>Purge deleted files if you are concerned about the amount of disk space being used to retain deleted files or if you don't want users to salvage files (for example, for security reasons).</p>

Default Option	Alternate Option	Explanation
5. Return to Main Menu		After you select the VREPAIR configuration options, press menu item 5 to return to the VREPAIR main menu.

Displaying Errors during Repair

There are run-time options you can modify during the VREPAIR process to change the way errors are displayed. To view the options, select the main menu option, Repair a Volume.

- ♦ Select Option 1 if you do not want VREPAIR to pause after each error.
- ♦ Select Option 2 if you want VREPAIR to log errors in a text file.
- ♦ Select Option 3 to stop the repair of the volume.
- ♦ Select Option 4 to continue with a volume repair after you have temporarily suspended the repair.

Viewing Deleted Files

The repair operation can create new files containing data that VREPAIR deleted. You can access these files if you select the default configuration option, Retain Deleted Files. The files are numbered and named `vrnnnnnn.fil` where *n* is any number.

These numbered files are created in any of the following circumstances:

- ♦ VREPAIR found a filename that has an invalid DOS name. The filename might contain invalid characters or might be too long.
- ♦ VREPAIR found that the filename is not unique. (Another file exists with the same name.)
- ♦ VREPAIR found a FAT chain without a file showing ownership of it.

NOTE: A file is divided into a series of data blocks that are linked together in a FAT chain.

- ♦ No files in the Directory Entry Table (DET) claimed ownership of the data, so a new filename was generated to point to this data.

VREPAIR might create as many as several thousand of these files. These numbered files are created in the directory where they were found during the volume repair operation.

You might be able to recover some or all of the files deleted by VREPAIR. Contact Technical Support for more information.

Additional Information

Topic	See
Repairing a NetWare traditional volume or NSS pool	(For NetWare Traditional volumes) “ Repairing a Traditional Volume ” in the <i>NW6.5 SP8: Traditional File System Administration Guide</i> (For NSS pools on NetWare) “ Verifying and Rebuilding an NSS Pool and Its Volumes ” in the <i>NW 6.5 SP8: NSS File System Administration Guide</i>

1.180 WAN Traffic Manager

WAN Traffic Manager allows you to manage how and when traffic is sent across WAN links, thus reducing network costs. It consists of three elements:

- ♦ `wtm.nlm`, which resides on each server in the eDirectory™ tree. Before eDirectory sends server-to-server traffic, `wtm.nlm` reads a WAN traffic policy and determines whether that traffic will be sent.
- ♦ WAN traffic policies, which are rules that control the generation of eDirectory traffic. WAN Traffic Policies are text stored as an eDirectory property value on the NetWare® Server object, the LAN Area object, or both.
- ♦ WANMAN ConsoleOne™ snap-in which is the interface to WAN Traffic Manager. It allows you to create or modify policies, create LAN Area objects, and apply policies to LAN Areas or to servers.

When WAN Traffic Manager is installed, the schema will include a LAN Area object and three new detail pages on the Server object:

- ♦ LAN Area Membership
- ♦ WAN Policies
- ♦ Cost

A comprehensive Help system is built into the utility. For addition information and procedures, refer to the Help system.

1.181 XLOG

Purpose

Use the XLOG utility to help diagnose ISDN-related connection problems with Eicon* Technology ISDN adapters.

1.182 XNTPD

Purpose

XNTPD is the implementation of Network Time Protocol Version 3 (NTPv3) on NetWare 6.5 based on RFC 1305. It is the new time synchronization service that is used to synchronize time with servers that are NTPv3 compliant.

Syntax

```
XNTPD [-aAbdm] [-c conffile] [-f driftfile] [-k keyfile] [-l logfile] [-p pidfile] [-r broadcastdelay] [-s statsdir] [-t key] [-v variable] [-V variable] [-T slp/noncp] [-S]
```

Table 1-23 XNTPD Parameters

Parameter	Use to
-a	Enable authentication mode. By default, authentication is enabled.
-A	Disable authentication mode.
-b	Synchronize using NTP broadcast messages.
-c <i>conffile</i>	Specify the name and path of the configuration file.
-d	Specify the debugging mode. This flag might occur multiple times, with each occurrence indicating greater detail of display.
-f <i>driftfile</i>	Specify the name and path of the drift file.
-k <i>keyfield</i>	Specify the name and path of the file containing the NTP authentication keys.
-l <i>logfile</i>	Specify the name and path of the log file.
-m	Synchronize using NTP multicast messages on the IP multicast group address 224.0.1.1. Requires multicast kernel.
-p <i>pidfile</i>	Specify the name and path to record the daemon's process ID.
-r <i>broadcastdelay</i>	Specify the default propagation delay from the broadcast/multicast server to your server. This is used only if the delay cannot be computed automatically by the protocol.
-s <i>statsdir</i>	Specify the directory path for files created by the statistics facility.
-t <i>key</i>	Add a key number to the trusted key list.
-v <i>variable</i>	Add a system variable.
-V <i>variable</i>	Add a system variable listed by default.
-T <i>slp</i>	Provide Timesync migration or backward compatibility options. Enables NTP to automatically discover SLP advertising Timesync Single server on the network and add that server's IP address to the <code>ntp.cfg</code> configuration file as a time provider.

Parameter	Use to
-T <i>noncp</i>	Stop the NCP engine on XNTPD, which serves all NCP time requests from NetWare 4, Novell clients, and DSREPAIR.
-S	Step synchronization. XNTPD sets the clock to the time of the best available server, then sets the clock status to "nearly in sync." Basically, it helps speed synchronization.

Using XNTPD

- ◆ XNTPD is an operating system service that sets and maintains the system time-of-day in sync with Internet standard time servers.
- ◆ XNTPD reads the `ntp.cfg` configuration file at startup in order to determine the synchronization sources and operating modes.
- ◆ XNTPD can operate in any of several modes, including client-server and broadcast/multicast mode, as described in RFC-1305.
- ◆ A broadcast/multicast client can discover remote servers, compute client-server propagation, delay correction factors, and configure itself automatically. This makes it possible to deploy a fleet of workstations without specifying configuration details specific to the local environment.

Examples

- ◆ To start XNTPD normally, enter

```
XNTPD
```
- ◆ To start XNTPD with debug level 4, enter

```
XNTPD -D 4
```
- ◆ To start XNTPD with fast synchronization enabled, enter

```
XNTPD -S
```
- ◆ To start XNTPD with auto discovery of Timesync time sources, enter

```
XNTPD -T slp
```

LAN Driver Statistics

A

This appendix contains information on both common and custom LAN driver statistics.

A.1 Monitoring Network Traffic

By comparing information about LAN drivers installed on your server, you can tell which cabling system is handling the most traffic.

If errors occur frequently on a high-traffic system, you may want to switch some of the stations on the busy system to a new or less busy cabling system.

To view LAN driver statistics:

- 1 At the server console prompt, enter
[LOAD] MONITOR
- 2 Select *Available Options > LAN/WAN Drivers*.
- 3 Select a LAN driver from the *Available LAN Driver* menu.

The statistics for the selected LAN driver are displayed. Press Tab > PageUp or PageDown to scroll through the information in the window.

For more information, see [Section 1.82, “LOAD,” on page 87](#).

A.1.1 Common LAN Driver Statistics

The generic statistics common to most of the drivers are maintained by two modules in the NetWare® operating system that are autoloaded by LAN drivers. The modules are:

- ♦ The Media Support Module™ (msm.nlm)
- ♦ The Topology Specific Module™ (tsm.nlm)

There are three TSM™ modules. The one that is autoloaded will depend on your server's LAN driver. The three are ETHERTSM (Ethernet), TOKENTSM (token-ring), and FDDITSM.

These common LAN driver statistics can be viewed with MONITOR. Select *Available Options > LAN/WAN Drivers*, and then select a driver. The system displays a window containing both the generic and custom statistics for the selected driver.

Brief descriptions of the statistics maintained by the MSM module and each of the TSM modules are found in the following tables:

- ♦ [Table A-1 on page 286](#)
- ♦ [Table A-2 on page 289](#)
- ♦ [Table A-3 on page 290](#)
- ♦ [Table A-4 on page 291](#)

A.1.2 Custom LAN Driver Statistics

Custom statistics describe LAN activity for specific LAN device drivers.

The custom LAN driver statistics can be viewed with MONITOR. Select *Available Options > LAN/WAN Drivers*, and then select a driver, then press Tab. The system displays a window containing both the generic and custom statistics for the selected driver.

Brief descriptions of statistics for selected drivers are found in the following tables:

- ♦ [Table A-5 on page 291](#)
- ♦ [Table A-6 on page 295](#)
- ♦ [Table A-7 on page 297](#)

NOTE: Custom statistics vary, depending on the LAN driver installed. For statistical information about third-party drivers not listed in the custom statistics section, check the documentation that comes with the driver.

Table A-1 LAN Driver Statistics

Statistic	Description
Driver Name	The driver name and parameters that correspond to the hardware settings on the network board.
Version	The current version of the driver.
Logical Board Number	The number which uniquely identifies each time a driver is registered with the system.
Board Instance Number	The number assigned to each physical adapter for which the driver has been loaded..
Node Address	The station or node address of the network board in the NetWare server.
Protocols	The communication protocols bound to the driver with BIND.
Network	The network number assigned to the cabling system the LAN driver is operating on. Appears only if the IPX™ protocol has been bound to the board.
Total Packets Transmitted	<p>The number of packets sent from the NetWare server through this LAN driver since the driver was loaded.</p> <p>(By comparing this figure with the figures for other LAN drivers, you can see which driver is handling the most traffic.)</p> <p>This value is maintained by the TSM module.</p>
Total Packets Received	<p>The number of packets received by the NetWare server since the driver was loaded. This includes file service requests, packets routed to another network, and packets sent to other IPX sockets in the NetWare server.</p> <p>This value is maintained by the TSM module.</p>

Statistic	Description
Transmit failed, packet too big	<p>A counter that is incremented when the NetWare server tries to transmit a packet that is too large for the hardware to handle.</p> <p>This value is maintained by the TSM module.</p>
Transmit failed, packet too small	<p>A counter that is incremented when the NetWare server tries to transmit a packet that is too small.</p> <p>This value is maintained by the TSM module.</p>
Receive discarded, no available buffers	<p>A counter that is incremented when a device sends a packet to your NetWare server, but no packet receive buffer is available.</p> <p>The server allocates more packet receive buffers after each incident until it reaches its maximum limit (configured with a SET parameter).</p> <p>If you are using an EISA or microchannel bus-master board (such as the NE3200™ board), you will probably need to increase both the minimum and maximum number of packet receive buffers.</p> <p>See Minimum Packet Receive Buffers and Maximum Packet Receive Buffers in SET "Communications Parameters" on page 193.</p> <p>No ECB Available Count messages can also indicate that the driver is not configured correctly or that the TSM module and the Hardware Specific Module™ (HSM™) are incompatible.</p> <p>This value is maintained by the TSM module.</p>
Receive failed, packet too big	<p>A counter that is incremented when the NetWare server receives a packet that is too big for the provided receive buffers.</p> <p>This value is maintained by the TSM module.</p>
Receive failed, packet too small	<p>A counter that is incremented when the NetWare server receives a packet that is too small.</p> <p>Currently only the RX-Net™ TSM module maintains this counter.</p>
Receive failed, adapter overflow	<p>A counter that is incremented each time the adapter's private receive buffer pool was exhausted. This causes subsequent incoming packets to be discarded. This value is maintained by the HSM module.</p>
Transmit failed, Miscellaneous Error	<p>A counter that is incremented when errors with send packets occur.</p> <p>This value is maintained by the HSM module.</p>
Receive failed, Miscellaneous Error	<p>A counter that is incremented when errors with receive packets occur. This value is maintained by the HSM module.</p>
Transmit failed, retried	<p>A counter that is incremented when the NetWare server tries to send a packet but fails because of a hardware error.</p> <p>The server tries to send the packet until either it succeeds or the retry setting is reached.</p> <p>This value is maintained by the HSM module.</p>

Statistic	Description
Receive failed, checksum error	<p>A counter that is incremented when the checksum byte at the end of the packet does not match the sum of the bytes contained in the packet.</p> <p>This indicates a data error.</p> <p>This value is maintained by the HSM module.</p>
Receive failed, packet length	<p>A counter that is incremented when the packet length received by the hardware and the length specified by the packet do not match.</p> <p>Currently only the Ethernet TSM module maintains this counter.</p>
Bytes transmitted modulo 4 GB	<p>The number of bytes, including low-level headers, successfully transmitted.</p> <p>This value is maintained by the TSM module.</p>
Bytes transmitted rollover <times 4 GB>	<p>Upper 32 bits of the Total Send OK Byte Count Low. The Total Send OK Byte Count High statistic is incremented to 1 when the Total Send OK Byte Count Low counter reaches 4 GB.</p> <p>This value is maintained by the TSM module.</p>
Bytes received modulo 4 GB	<p>The number of bytes, including low-level headers, successfully received. This value is maintained by the TSM module.</p>
Bytes received rollover <times 4 GB>	<p>Upper 32 bits of the Total Receive OK Byte Count Low.</p> <p>The Total Receive OK Byte Count High statistic is incremented to 1 when the Total Receive OK Byte Count Low value reaches 4 GB.</p> <p>This field is maintained by the TSM module.</p>
Transmitted to a group address	<p>The number of packets transmitted with a group or multicast destination address. This field is maintained by the TSM module.</p>
Received from a group address	<p>The number of packets received with a group or multicast destination address. This field is maintained by the TSM module.</p>
Adapter resets	<p>The number of times the adapter was reset because of internal failures or other calls to the Driver Reset routine.</p> <p>This field is maintained by the HSM module.</p>
Adapter state change time stamp	<p>The time stamp indicating when the adapter last changed operational state (such as load, shutdown, or reset).</p> <p>This value is maintained by the MSM module.</p>
Packets queued for transmission	<p>The number of transmit packets (transmit ECBs) that are queued for the adapter.</p> <p>This is an indication of throughput overload on transmits.</p> <p>This field is maintained by the TSM module.</p>

Table A-2 *Generic Statistics for Ethernet Drivers That Use Ethertsm.nlm*

Statistic	Description
Transmit succeeded, single collision	<p>The number of frames involved in a single collision that are subsequently transmitted successfully.</p> <p>When the Ethernet controller detects a collision, it backs off and then retries the transmission.</p>
Transmit succeeded, multiple collisions	<p>The number of frames involved in more than one collision that are transmitted successfully.</p> <p>This happens if the Ethernet controller had to back off more than once due to collisions.</p>
Transmit succeeded, deferred	<p>The number of frames whose transmission was delayed because of a busy medium.</p> <p>This happens if another station is transmitting on the wire when the adapter receives the command to transmit a packet.</p>
Transmit failed, late collision	<p>The number of transmits that had a collision after 512 bits of the packet were transmitted.</p> <p>This can be caused by faulty adapters, faulty network equipment, cables that are too long, or faulty terminators.</p>
Transmit failed, excessive collisions	<p>The number of transmits that were aborted because of too many collisions.</p> <p>This usually indicates that a board in the network is bad or jabbering. (Jabbering means the board has been on the channel longer than the time needed to transmit the maximum size packet.)</p> <p>This condition could also occur in very heavy traffic conditions.</p>
Transmit failed, carrier sense missing	<p>The number of transmits aborted because of loss of carrier sense while transmitting without any collisions.</p> <p>This is usually caused by a faulty adapter in the network, faulty cabling, an unterminated cable, or a faulty repeater.</p>
Transmit failed, excessive deferral	<p>The number of transmits aborted because of excessive deferrals.</p> <p>This is usually caused by a faulty adapter or repeater in the system that is jabbering on the wire.</p> <p>It can also occur under very heavy traffic conditions.</p>
Receive failed, bad frame alignment	<p>The number of received frames that were misaligned.</p> <p>This occurs when the number of octets in the frame is not correct or the frame does not pass the FCS check.</p> <p>These bad packets are usually caused by a faulty adapter or repeater in the system. They can also be caused by a collision.</p>

Table A-3 *Generic Statistics for Token Ring Drivers That Use Tokentsm.nlm*

Statistics	Description
AC Errors	This counter is incremented when a ring station receives a Standby Monitor Present MAC frame with the A/C bits in the Frame Status field equal to zero without first receiving an Active Monitor Present MAC frame.
Transmit failed, abort delimiter sent	<p>This counter is incremented when a ring station transmits an abort delimiter.</p> <p>An abort delimiter is transmitted when a ring station receives a frame in which the token bit of the access control field is set to show Token and not Frame.</p> <p>A ring station can also transmit an abort delimiter if an internal hardware error has occurred.</p>
Burst errors	<p>This counter is incremented when a ring station detects the absence of five half-bit times (a burst-five error).</p> <p>Other stations will detect a burst-four error followed by idles.</p>
Frame copied errors	This counter is incremented when a ring station recognizes (receives or repeats) a frame addressed to its specific address and detects that the FC field A bits are set to 1, indicating a possible line hit or a duplicate address.
Frequency errors	This counter is incremented when the frequency of the incoming signal differs from the expected frequency by more than that specified in Section 7 of IEEE Standard 802.5-1989.
Recoverable internal error	This counts the times a ring station has a recoverable internal error, which means a ring station is probably marginal.
Last ring status	<p>This code changes each time the ring status changes. Status codes are reported by the physical hardware.</p> <p>See the IBM* Token-Ring Network Architecture Reference for the status code, function, and meaning.</p>
Line errors	<p>This counter is incremented when a frame or token is repeated by the ring station.</p> <p>A frame is repeated when a Frame check Sequence error occurs or a code violation exists between the starting and ending delimiters of the frame.</p>
Transmit failed, lost frame	<p>This counter is incremented when a ring station transmits a frame that does not return to the station.</p> <p>The active monitor sends a new token.</p>
Error tokens transmitted	<p>This counter is incremented when a station acting as the active monitor recognizes an error condition that needs a token transmitted.</p> <p>This occurs when the TVX time expires.</p>
Upstream node address	The twelve digits of the upstream node address of the next node up stream on the ring.

Statistics	Description
Last ring ID	This contains the value of the local ring ID.
Last beacon type	This contains the value of the last beacon type.

Table A-4 Generic Statistics for FDDI Drivers That Use *Fdditsm.nlm*

Statistic	Description
Configuration State	The attachment configuration for the station or concentrator: 0=isolated; 1=local_a; 2=local_b; 3=local_ab; 4=local_s; 5=wrap_a; 6=wrap_b; 7=wrap_ab; 8=wrap_s; 9=c_wrap_a; 10=c_wrap_b; 11=c_wrap_s; 12=thru
Upstream Node Address	The upstream neighbor's MAC address (0 if unknown).
Downstream Node Address	The downstream neighbor's MAC address (0 if unknown).
Receive failed, frame error	The number of frames that were detected in error by this MAC that had not been detected in error by another MAC.
Receive failed, lost frame	The number of instances that this MAC detected a format error during frame reception such that the frame was stripped.
Ring Management State	Indicates the current state of the Ring Management state machine: 0=Isolated; 1=Non_Op; 2=Ring_Op; 3=Detect; 4=Non_Op_Dup; 5=Ring_Op_Dup; 6=Directed; 7=Trace
Consecutive LCT failures	The count of the consecutive times the link confidence test (LCT) has failed during connection management.
LEM, link rejected	The link error monitor (LEM) count of the times that a link was rejected
LEM, total errors	The aggregate link error monitor (LEM) error count.
Connection state	The state of this port's Physical Connection Management (PCM) state machine: 0=Off; 1=Break; 2=Trace; 3=Connect; 4=Next; 5=Signal; 6=Join; 7=Verify; 8=Active; 9=Maint

Table A-5 Custom Statistics for *NE2000*, *NE2*, *NE2_32*, *CNE2_32*, and Other Ethernet Drivers

Statistic	Description
UnderrunErrorCount	This counter is incremented when the RAM buffer on the network board is full; the board cannot accept any more packets until the RAM buffer is cleared.
TransmitTimeoutCount	This counter is incremented when a network board interrupts the file server with the message that the send bit is lost. This is a hardware problem caused by faulty cabling, a bad network board, or a missing terminator.

Statistic	Description
RxPagingErrorCount	This is a count of the errors that occur when internal buffers on the board are corrupted.
ReceiveFIFOOverrunErrorCount	This counter is incremented when an incoming packet causes an overflow because FIFO was not serviced.
ReceiverMissedPacketCount	This counter is incremented when a packet is sent to a network board that cannot accept the packet because all its receive buffers are full.
GotNothingCount	<p>This counter is incremented when the file server receives an interrupt from a network board that is not transmitting or receiving anything.</p> <p>This is not serious.</p>
UnsupportedFramePacketCount	This counter is incremented when a packet is received by the LAN driver with a frame type that hasn't been loaded for the given board.
UnsupportedMulticastCount	This counter is incremented for each multicast packet received by the board that is not registered with the driver.
BackToBackSendCount	<p>This counter is incremented each time the driver can buffer a send packet onto the network board while the board is sending a previous buffer.</p> <p>Use this counter to track congestion on the network board.</p> <p>See also EnqueuedSendsCount.</p>
EnqueuedSendCount	<p>This counter is incremented when the driver is unable to transmit a packet and must put the packet in a queue until the transmitter is available.</p> <p>Use the counter to track congestion on the network board.</p> <p>See also BackToBackSendCount.</p>
HeartBeatError	<p>(NE2100™, NE1500T™, or CNEAMD™) This counter is incremented when there is a signal quality error.</p> <p>This function is also known as the heartbeat or Signal Quality Error (SQE) test.</p> <p>This counter indicates a hardware problem.</p>
MemoryTimeout	<p>(NE2100, NE1500T, or CNEAMD) This counter is incremented when there is contention on the bus.</p> <p>If this counter is incremented, there may be multiple boards in the server or another bus-mastering device in the server, such as a LAN or disk channel device.</p>

Statistic	Description
TxBabblingError	<p>(NE2100, NE1500T, or CNEAMD) This counter is incremented when there is excessive length in the transmit buffer.</p> <p>It will increment after 1,519 data bytes have been transmitted from the buffer.</p> <p>It indicates that the transmitter has been on the channel longer than the time required to send the maximum length packet.</p> <p>If this counter is incremented, it indicates a hardware problem with the network board in the server.</p>
TxUnderflowError	<p>(NE2100, NE1500T, or CNEAMD) This counter is incremented when something else on the bus takes control of the bus while the LAN driver is putting the data on the wire.</p> <p>If this occurs, the packet must be retransmitted.</p>
TXBufferError	<p>(NE2100, NE1500T, or CNEAMD) This counter is incremented when there is a problem with the transmit buffer.</p> <p>This counter is usually incremented when TxUnderflowError is incremented; it indicates a hardware problem in the server.</p>
RxECBsOver16MegCount TxECBsOver16MegCount	<p>(NE2100, NE1500T, or CNEAMD) One of these counters is incremented when either a transmit or receive occurs and the driver has double buffered the ECB in the reserved buffers below 16 MB in memory.</p> <p>These boards require double buffering because they have a physical limitation that prevents them from accessing memory above 16 MB.</p> <p>Therefore, if the operating system issues an Event Control Block (ECB) with a memory address above 16 MB, the board uses some of the reserved buffers below 16 MB to queue the request.</p> <p>These are not errors. This value tracks how many ECBs are redirected to the buffers below 16 MB.</p> <p>In many cases, this counter can be as high as the total packets sent and received. This double buffering decreases performance.</p> <p>If you have more than 16 MB of RAM and a board that is bus-mastering or using DMA that is not a 32-bit adapter, performance might be degraded.</p>
PacketUsed2ECBs	<p>(NE2100, NE1500T, or CNEAMD) This counter is incremented if the Server Maximum Physical Receive Packet Size is set to 1514 bytes (default for NetWare 3.11 servers), and you need to receive a near-full-size packet. For NetWare 3.12 and 4.x, the default Maximum Physical Receive Packet Size is 4202.</p> <p>In this instance, two ECBs are used instead of one, since the CRC on the end of the packet requires an extra four bytes.</p> <p>Using two ECBs instead of one may decrease performance slightly.</p>

Statistic	Description
TransmitRetryCount	<p>(NE3200™) This counter is incremented when the driver is unable to transmit a packet after a specified number of times.</p> <p>This may indicate a hardware problem.</p>
TxClearToSendsErrors	<p>(NE3200) This counter tracks an 82586 error.</p> <p>There are some conditions when the Clear to Send signal from the 82586 chip is incorrect.</p> <p>This counter indicates the number of times the corrective code on the adapter was executed to work around this condition in the 82586.</p>
TxDMAUnderrunErrors	<p>(NE3200) This counter tracks an 82586 error.</p> <p>Contention among the BMIC, 80186, and 82586 can occur on the adapter, causing the 82586 to assume it did not receive all of the packet for transmission. The transmit operation must then be retried.</p> <p>This counter indicates the number of times the corrective code on the adapter was executed to work around this condition.</p>
RxDMAOverrunErrors	<p>(NE3200) This counter tracks an 82586 error.</p> <p>If two packets are received back-to-back at close to 9.6 microseconds (the minimum Ethernet interframe spacing), then the chip may report an overrun.</p> <p>If so, the frames are lost by the chip and the source must retransmit.</p> <p>This counter indicates the number of times this error has occurred.</p>
RxPacketSlideErrors	<p>(NE3200) This counter tracks the number of instances of an 82586 anomaly.</p> <p>In some conditions, the 82586 might be off by two bytes in the receive packet descriptors. In this case, the sending station must retransmit the packet.</p> <p>This counter indicates the number of times this condition has occurred.</p>
RxDummyRCBUsedErrors	<p>(NE3200) This counter tracks an 82586 error.</p> <p>In some cases, the 82586 may attempt to receive data into a nonexistent receive buffer at the end of its receive buffer list.</p> <p>To catch this condition and avoid internal data corruption, a dummy receive buffer is added to the end of the list.</p> <p>This variable counts the number of times the 82586 attempted to write into the dummy buffer.</p>

Statistic	Description
InternalAdapterReset	<p>(NE3200) This counts the number of resets (by the 80186) that occurred on the adapter due to failures on the adapter.</p> <p>This counter is incremented when the software corrects itself for minor problems or if the adapter is in an unknown state.</p> <p>It is common for this counter to be incremented.</p> <p>Under normal conditions, more of these errors should occur during idle time than when the driver is busy.</p> <p>This counter would only indicate a hardware problem if it registered thousands of these errors when the network is busy.</p>
MondoFragmentLengthErrors	<p>(NE3200) This counter tracks the number of instances in which an NLM™ on the server has passed the NE3200 driver an ECB whose logical memory address could not be translated to a physical memory address.</p> <p>You should check other NLM programs on the system and upgrade them.</p> <p>If you are still experiencing problems, identify which NLM is causing the problem and contact the third-party manufacturer of the NLM.</p>
PollingTimeout	<p>(NE3200) This counter tracks the number of times the adapter's request was put on the queue but was not serviced within 800 nanoseconds (default).</p> <p>After this occurs, the adapter fires an interrupt.</p>
ResetBecauseHardwareDiedErrors	<p>(NE3200) If the adapter is in an unknown state or stops transmitting on the host side, the driver increments this counter and resets or restarts the adapter.</p>
NumberOfInterruptsFired	<p>(NE3200) This counter is incremented each time the adapter had to fire an interrupt to service a request because the polled request wasn't serviced.</p>

Table A-6 Custom Statistics for Token Ring Drivers

Statistic	Description
Bad Correlator Count	<p>(CNTR2000™, NTR2000™) This counter is incremented when a network board responds with a request for data from the file server that the file server does not have.</p> <p>The ECB or some other code may be corrupted. Eventually, this error will abend the server.</p> <p>If this counter is non-zero, you should try to find the software that is corrupting the data.</p>

Statistic	Description
Unknown ARB requests	<p>(CNTR2000, NTR2000) This counts bad Adapter Request Blocks (ARBs).</p> <p>Normally the network board (adapter) uses one of four known commands to communicate with the driver.</p> <p>If a network board sends a command that is not one of the four, the driver does not recognize the request.</p> <p>This error is not a catastrophic error.</p> <p>Sometimes old adapters send bad ARB requests because of software problems on the board.</p> <p>NetWare responds to the network board so that the board will not hang.</p>
MicroChannel Error Count	<p>(TOKENDMA) This counter tracks the number of times the adapter had a problem transmitting on the bus.</p> <p>The adapter interrupt occurred from the firmware on the board.</p>
ECBs Over 16 MB	<p>(TOKENDMA) This counter tracks the number of packets received that had to use an ECB over 16 MB.</p> <p>This number should increment only when more than 16 MB of RAM is used in the server.</p>
DMA Bus Errors Count	<p>(TOKENDMA) This counter is incremented when a DMA transfer completes with a bus error.</p> <p>If this counter is incremented, it could indicate a hardware problem.</p>
DMA Parity Errors Count	<p>(TOKENDMA) This counter is incremented when a DMA transfer completes with a parity error.</p> <p>If this is incremented, it could indicate a hardware problem.</p>
Command Reject Count	<p>(TOKENDMA) This counter is incremented when the driver sends a command to the board and the command is either invalid or the board is still busy processing the previous command.</p> <p>This number should be zero or a low number.</p>
Tx Timeout Count	<p>(TOKENDMA) This counter is incremented and the adapter is reset if two seconds elapse before the driver learns from the firmware that the transmit was or wasn't successful.</p> <p>This counter shows the driver is successfully recovering from the lost hardware transmit.</p> <p>It isn't a problem if this number is incremented.</p>
Transmit Late Count	<p>(TOKENDMA) This counter is incremented when the firmware reports that the board transmitted more than it actually did.</p> <p>After this event occurs, the data that wasn't transmitted will be sent in the next packet.</p> <p>This problem is more likely to occur on busier networks.</p>

Statistic	Description
Transmit Defragment Count	<p>(TOKENDMA) This counter tracks how many ECBs are redirected to the buffer below 16 MB.</p> <p>The IBM Token-Ring DMA LAN boards are not able to access memory above 16 MB. Therefore, if the operating system issues an Event Control Block (ECB) with a memory address above 16 MB, the board uses some of the reserved buffers below 16 MB to double buffer the ECB.</p> <p>These are not errors. In many cases, this counter can be as high as the total packets sent and received. However, this double buffering decreases performance.</p> <p>If the system has more than 16 MB of RAM and a board that is bus-mastering or using DMA that is not a 32-bit adapter, performance may decrease.</p>

Table A-7 Custom Statistics for IBM Baseband PCN2L Drivers

Statistic	Description
HotCarrierInterruptCount	<p>(PCN2L) This counter is incremented when the board detects a carrier longer than expected without a transmit.</p> <p>This indicates that some board on the network has failed or is beginning to fail.</p>
No82588InterruptCount	<p>(PCN2L) This counter is incremented each time the server receives an interrupt from the board, but not from the 82588 chip.</p> <p>This should happen very seldom, if ever.</p>
WeirdInterruptCount	<p>(PCN2L) This counter is incremented when the server has received an interrupt from the board, but the board claims not to have sent one.</p> <p>This should happen very seldom, if ever.</p>
BadTransmitComplete-InterruptCount	<p>(PCN2L) This counter is incremented for each complete transmission with no transmit active.</p>
HardTransmitErrorCount	<p>(PCN2L) This counter is incremented when a transmit fails and the driver retries the transmit.</p>
GotNothingCount	<p>(PCN2L) This counter is incremented when the driver receives an interrupt from the board indicating that it has completed a receive but there is no data in the board's receive buffer.</p> <p>This is not serious.</p>
ReceiveUnderrunErrorCount	<p>(PCN2L) This counter is incremented when the driver finds less data in the board's buffer than the board reported.</p>
ReceivedShortPacketCount	<p>(PCN2L) This counter is incremented when a packet of fewer than 17 bytes is received.</p>

Statistic	Description
BadReceiveConditionCodeCount	(PCN2L) This counter is incremented when the buffer is flushed because the board hasn't received the incoming packets properly.

Documentation Updates

B

The *Utilities Reference* has been updated on the following dates:

- ♦ [Section B.1, “November 9, 2009,” on page 299](#)
- ♦ [Section B.2, “December 2008,” on page 299](#)
- ♦ [Section B.3, “October 25, 2006 \(NetWare 6.5 SP6\),” on page 299](#)
- ♦ [Section B.4, “December 23, 2005 \(NetWare 6.5 SP5\),” on page 299](#)
- ♦ [Section B.5, “August 19, 2005 \(NetWare 6.5 SP4\),” on page 300](#)

B.1 November 9, 2009

This guide has been modified for publication on the NetWare 6.5 SP8 Documentation Web site.

B.2 December 2008

This guide was updated to documentation standards for NetWare 6.5 SP7.

B.3 October 25, 2006 (NetWare 6.5 SP6)

Changes were made to the following sections:

Location	Change
Multiple utilities	Information was added to the following utilities: <ul style="list-style-type: none">♦ Health (page 65)♦ SWAP (page 259)

B.4 December 23, 2005 (NetWare 6.5 SP5)

Changes were made to the following sections:

Location	Change
Entire guide.	Page design reformatted to comply with revised Novell documentation standards.
Multiple utilities	Information was added to the following utilities: <ul style="list-style-type: none">♦ FILER (page 58)♦ NCOPY (page 115)♦ NDIR (page 116)♦ RIGHTS (page 172)

Location	Change
Multiple utilities	The information about Linux utilities have been removed from this book. This includes Attrib (Linux), metamig, iprintcmd, iPrint Driver Store, ravsui, and ravview. For information on these utilities, see their associated MAN page or corresponding documentation.

B.5 August 19, 2005 (NetWare 6.5 SP4)

Changes were made to the following sections:

Location	Change
Multiple utilities	The information about several utilities in this book has been updated including Section 1.129 , "REBUILD," on page 158 , and Section 1.175 , "VERIFY," on page 274 .