

TIPS & TECHNIQUES

Fun with booting

When you start up a PC with NEXTSTEP, you get the boot prompt, **boot**: This is your chance to send commands to the booter and change how the system starts. For example, you can select a different boot disk than the computer normally uses or load special drivers. Here's how to do it.

Booter syntax

The booter syntax for NEXTSTEP for Intel Processors is this:

```
xx[(d[,p])]kernel [-s] [options]
```

Items in square brackets are optional. There must be no spaces in the command, except within options. The command is not case-sensitive. (For a quick summary of the options while you're booting, type **?** at the prompt.)

- n **xx** is either **hd** for an IDE disk or **sd** for a SCSI disk.
- n **d** is the drive number, like **0**.
- n **p** is the partition letter, like **a**.
- n **kernel** is the name of the kernel you want to load; usually you'll use **mach_kernel**.
- n **-s** starts NEXTSTEP in single-user mode.

At the end of the command, you can specify additional options of the form *keyword=value*. Keywords that are made up of more than one word must be enclosed in quotation marks, and there can be no spaces between the keyword, the equals sign, and the value. The keywords are these:

- n **config** Specifies the configuration data to use to start up the computer. **Instance0** selects the current configuration you created with Configure; **Default** selects the configuration

from the installation CD-ROM, plus any drivers you loaded during installation.

- n **maxmem** Indicates the amount of memory in your computer in kilobytes. For example, for a computer with 20 megabytes of memory, use **maxmem=20480**.
- n **rootdev** Specifies the device containing the root file system. For example, if the root device is on partition **a** of SCSI disk number 1, use **rootdev=sd1a**.
- n **^aBoot Drivers^o** Specifies the drivers the computer should load when booting. Enclose the list in quotation marks, with no space between the = and the quotation mark. For example:
^aBoot Drivers^o= ^aAdaptec1542B PS2Keyboard PS2Mouse^o
- n **^aActive Drivers^o** Specifies the drivers to load during system initialization. These drivers can't operate a boot device, such as the hard disk containing the computer's root filesystem. The list must be in quotation marks, just like **^aBoot Drivers^o**.
- n **^aAsk For Drivers^o** Indicates whether the booter should ask while it's booting which additional device drivers it should load. The default is **No**. For example:
^aAsk For Drivers^o=Yes

Booting from an external SCSI drive

One common boot option is booting the computer from an external SCSI hard disk drive. How you do this depends on what other drives your computer uses.

If you have two SCSI disk drives with IDs 0 and 1 and want to boot from the SCSI drive 1, type this at the **boot:** prompt:

```
sd(1,a)mach_kernel rootdev=sd1a
```

If you have an internal IDE drive but want to boot from a SCSI drive, you have two options:

Use the floppy disk that comes with NEXTSTEP

Normally, the computer boots from the IDE disk, usually drive **C**. However, if there's a disk in the floppy disk drive (DOS drive **A**), and the floppy controller isn't disabled, the computer boots from the floppy disk drive.

Insert the NEXTSTEP boot floppy (labelled, *CD-ROM Installation Disk*) in the floppy disk drive and restart the computer. At the **boot:** prompt, type:

```
sd()mach_kernel
```

The computer boots the Mach kernel and the rest of NEXTSTEP from the SCSI disk.

Install a mini NEXTSTEP partition on the IDE disk

You can install a miniature NEXTSTEP partition on your IDE disk, one that your computer can boot from but that leaves plenty of space on the disk. However, following this procedure erases anything already on the disk:

- 1 Boot NEXTSTEP from the SCSI disk as described above.
- 2 Log in as **root**.
- 3 Start up the Terminal application and use **fdisk** to create a non-DOS partition on the IDE drive for NEXTSTEP:

```
/usr/etc/fdisk /dev/rhd0h
```

Note: It's **rhd0h**, not **rhd0a**!

- 4 Create a NEXTSTEP file system for this partition:

```
/usr/etc/disk -i /dev/rhd0h
```

This also creates the necessary NEXTSTEP boot blocks for the IDE drive. (See the UNIX manual page for **disk**.)

Now when you boot the computer, the NEXTSTEP boot manager on the IDE disk presents the **boot:** prompt. At the prompt, type this command:

```
sd()mach_kernel
```

As above, the computer boots the Mach kernel and NEXTSTEP from the SCSI disk.

New NeXTanswers e-mail commands

NeXTanswers keeps growing and growing. We've added new commands so you can search for files based on keywords, split large files so they're easier to mail, and more.

An e-mail message to NeXTanswers (**NeXTanswers@next.com**) can contain more than one command. The current commands are these:

- n **ascii** Tells NeXTanswers to send all mail as plain Internet mail, not NeXTmail, and to try to convert all files into ASCII.
- n **help** Requests the help file.
- n **index** Requests the current file index.
- n **index by date** Requests the current index, sorted newest item to oldest item.
- n **reply-to address** Causes NeXTanswers to send replies to *address*, rather than to the address in the request message's From or Reply-To lines.
- n **search [keywords]** Requests all the files that contain all the keywords.
- n **split** Splits any large outgoing e-mail into 95- kilobyte chunks. Mail is split and tagged according to the MIME Message/Partial specification. The NeXTmail application doesn't automatically rejoin these messages, but some other mail programs do.
- n **number** Sends file *number* as NeXTmail. Remember to include the **ascii** command if you don't use NeXTmail.

By the way: Using the right return address

NeXTanswers sends mail to the address in the From line of your request message. If your From line isn't correct, NeXTanswers can't reply to you. If you have this problem, you should set your Reply To line to an address NeXTanswers can use.

Soon to come: The NeXTanswers BBS!

Filling your NEXTSTEP library

If you're looking to add to your library of system administration references, or are just starting

to acquire one, here's a list of excellent texts to consider. The list was compiled by Bob O'Connor, an independent consultant. He's included comments on many of the books.

Anderson, Gail, and Paul Anderson. *The UNIX C Shell Field Guide*. Englewood Cliffs, NJ: Prentice-Hall, 1986. ISBN 0-13-937468-X.

An excellent step-by-step tutorial on scripting.

Comer, Douglas. *Internetworking with TCP/IP, Volume I: Protocol and Architecture*, 2nd edition. Englewood Cliffs, NJ: Prentice Hall, 1991. ISBN 0-13-468505-9.

A good conceptual overview; useful for non-programmers.

Comer, Douglas. *Internetworking with TCP/IP Volume III: Client-Server Programming and Applications*. Englewood Cliffs, NJ: Prentice Hall, 1991. ISBN 0-13-474222-2

A more advanced discussion of these topics than is in Volume I.

Garfinkel, Simson, and Gene Spafford. *Practical UNIX Security*. Sebastopol, CA: O'Reilly & Associates, 1991. ISBN 0-937175-72-2.

Hunt, Craig. *TCP/IP Network Administration*. Sebastopol, CA: O'Reilly & Associates, 1992. ISBN 0-937175-82-X.

*Includes a discussion of **sendmail** files.*

Krol, Ed. *The Whole Internet: User's Guide and Catalog*. Sebastopol, CA: O'Reilly & Associates, 1992. ISBN 1-56592-025-2.

Provides both an excellent big-picture understanding of the Internet and a great discussion of tools and resources to be productive.

Lamb, Linda. *Learning the vi Editor*. Sebastopol, CA: O'Reilly & Associates, 1990. ISBN 0-937175-67-6.

Part of the "Nutshell Handbook" series. Short and concise, an excellent reference.

Includes a useful quick reference card.

Nemeth, Evi, Garth Snyder, and Scott Seebass. *UNIX System Administration Handbook*. Englewood Cliffs, NJ: Prentice-Hall, 1989. ISBN 0-13-933441-6.

An excellent introduction for beginners.

Specialized Systems Consultants. *UNIX System Command Summary for Berkeley 4.2 and 4.3 BSD*. Seattle, WA: Specialized Systems Consultants, 1986. ISBN 0-916151-17-4.

A very useful quick reference guide.

Stern, Hal. *Managing NFS and NIS*. Sebastopol, CA: O'Reilly & Associates, 1992. ISBN

0-937175-75-7.

Describes how NFS works and is loaded with diagnostic and problem-solving tips.

Todino, Grace, and Dale Dougherty. *Managing UUCP and Usenet*. Sebastopol, CA: O'Reilly & Associates, 1992. ISBN 0-937175-93-5.

Another in the ^aNutshell Handbook^o series. Choppy, but informative as a reference.

Todino, Grace, and Dale Dougherty. *Using UUCP and Usenet*. Sebastopol, CA: O'Reilly & Associates, 1991. ISBN 0-937175-10-2.

Part of the ^aNutshell Handbook^o series. Choppy, but an informative reference.

Other lists of books

Others have compiled lists of useful texts as well. One to check out is Samuel Ko's *A Concise Guide to UNIX Books*. To get it, contact him at **sko@wimsey.bc.ca**.

For another extensive list of more general UNIX and C books, see *YABLD* Yet Another Book List. It's available via anonymous ftp at **ftp.rahul.net:pub/mitch/YABL/yabl.Z**.

*Special thanks to Bob O'Connor for this list and the accompanying comments! Bob is an independent consultant specializing in a variety of operating systems. He welcomes comments and additions to this list and can be reached at **justbob@andi.org**.*