Can You Run All This On A NeXT: NeXTstep, Mac, IBM, X-windows, Motif?

rmNUG NeWS

June, 1991
$3.95

INSIDE:

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What's NeXT? Highlights

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Super Summer Seminar

Changes At NeXTWORLD

Floppy Drive Sources

Process Management

NeXTmail Simplified

Classic

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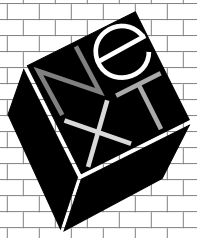


CONTENTS

FEATURES

3 New Apps At The Archive Site
There are two new apps on the archive sites.

3 DAT Backup Drive
An excellent, dependable DAT backup drive that works fantastic with the NeXT.

3 Running Mac On NeXT
Yes, it is now possible to run Mac software on the NeXT.

3 Modem Cables
A good source for modem cables. Remember Mac modem cables are not meant for NeXTs.

3 NewsGrazer
This is a fantastic new app for reading news sources.

4 NeXT OS 2.1
Most asked Q&A about Update 2.1.

5 NeXT Tech Alert 91-2
There is a bug that causes problems with personal fonts. Description of the problem and solutions offered.

6 Thanks
Conrad Geiger gives a special thanks to rmNUG.

6 BaNG April Meeting
Canon, NeXT and the Asian market. Also NeXT developing, workspace manage, and the changes at NeXTWORLD.

8 Process Management And Pipes
An exclusive, in-depth article written by our own Darren Hardy.

12 From The President
Dave reflects on "What's NeXT?" event in Boulder. One of the most successful events that has ever been put on for NeXT products.

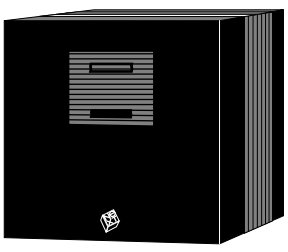
13 From The Board
The latest & greatest from the executive board.

14 April rmNUG Meeting
The highlights of our April meeting. Also, a summary of Kelly Mattson's demonstration of Framemaker 3.0.

14 Off The Net
Floppy-less 2.1 Upgrading, 4.0 Floppies and Drives, 96/96 Fax Modem for the NeXT, Adobe Licensing, SIMMs for the Color NeXT's, Opening a Compressed File, Washington D.C. Super Seminar, Conner Releasing Inexpensive Hard Drives, Booting from an External Disk, Archived Font Collections, Free Floppy Drive Fiasco, NeXT FTP Sites, Fujitsu Pricing, Installing g++, Printing to an HPIII, ImageMagick, Impact Award and Contest, Improv API Tools, Job Opportunity, JPEG Compression, Renderman, Maple Software, Modem Locks Up, How To Make Money, Monitor Specifications, Music Source for the NeXT, New Postscript Book, NeXTmail Made Simpler, NeXT Plotter, NeXT to PC Connection, Printer Print Times, SCSIInquirer, Slat-1, Printing Bug, Getty Solution, Objective-C Book.

30 Latest Product Listing
The list of NeXT product's shipping as of April 11th.

34 From The Editor
Forbes misguided article, announcing the impending death of NeXT, prompts NeXT sales to move to an even higher level.



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If you wish to submit an article or letter to the editor we ask that it be sent by email in the following format:

ASCII format, Headline words should be capitalized, No paragraph indents, No Tabs or side by side columns, Empty line between paragraphs, Make sure spelling is correct, especially names.

Any submissions of letters, artwork, articles, etc. will constitute implied permission for rmNUG to publish (in whole or in part) in print or electronically. Sorry, but with our budget we can only afford to offer our sincerest thanks for any contributions you may send. Special thanks to all who contributed to this publication.

New Apps On The Archive Servers

Conrad Geiger

2.0 compatible version of **NLoad** on cs.orst.edu NeXT archive. NLoad is a very simple 'load' monitoring tool (ala xload) that runs in its application icon. Though much simpler than the 'Monitor' application, the 2.0 version of NLoad does have the ability to monitor remote hosts (and not just NeXTs) using the Sun RPC-based 'rstat' call. Remote hosts to be monitored can be added using a 'dwrite' default or at run time using a 'NetInfo OpenPanel' to select hosts out of the NetInfo database.

And **IComm**, a communication software, on sonata.cc.purdue.edu. IComm features zmodem file transfer protocol, vt100 emulation, autodialing, phone list, and make use of NeXTStep interface.

Two versions are available, one for system 1.0 and the other for system 2.0. IComm is shareware.

DAT Backup Drive

Conrad Geiger

Maynard/Archive makes an excellent DAT drive that has proven to be "plug and play" on the NeXT[*]. Maynard designed the drive mechanism themselves from the ground up, engineered specifically for computer systems, so the drive is FAST. In short, this is an excellent choice for a tape backup/restore system.

One of the great things about the DAT drives is that with a 90 meter tape, you can back up an entire 1.2 Gigabyte drive without any hassle[*]. The computer grade Archive 90 meter tapes are reliable but still relatively expensive. However, high quality DAT tapes should perform be satisfactory for the job.

To order the drives, you can call Maynard/Archive at 800 821-8782 ask who the local distributors are. One such distributor, Avnet Computers (1 800 345-3870) was recently quoting the following prices:

ST2000E Maynard SCSI DAT drive, list $4475, w/discount$3025
32000 Archive 90 meter DAT tape, list $75 w/discount$50

Running Mac On NeXT

Brad Green & Steve Dyer

Perfect Products' new XPort package turns the Apple Macintosh into an X Window System Client. Adding XPort to your X Windows environment now makes it possible to execute all Macintosh O/S applications (such as Excel, Hypercard, Microsoft Word, etc.) from any X workstation or X terminal. It is compatible with all workstations (IBM, SUN, DEC, HP, etc.) that support X Windows via TCP/IP.

To use XPort, you telnet into the Macintosh and logon just like any other system. The Macintosh screen appears on your workstation and you can run it just like any other X client application. No workstation software is required (other than telnet and X11 server capabilities). XPort is available now from:

Mac apps on unix boxes! Pretty spiffy! Let's give these folks a buzz.

Perfect Products
1015 Creighton Rd.
Papillion, NE 68128
(402) 339-5507

Anyone interested in pursuing this?

Modem Cables

Bob Masterson

Marble has arranged for Altex Electronics of Austin Texas to supply cables for connecting both 68030 and 68040 NeXT machines to modems. Altex's number is (800) 531-5369.

Altex's current price for either cable is $8.95 in quantity one. Customers can ask for them by name ("NeXT 68030 Modem Cable" or "NeXT 68040 Modem Cable") rather than having to specify their pin-outs.

The cables are wired according to the information in SerialPorts.-rtf in the Next User Manual. Note that cables designed to hook a Macintosh to a modem will not work on a 68040 cube, and they will also fail on a 68030 cube, as the modem control signals are wired incorrectly.

Bob Masterson
bob@marble.com

NewsGrazer

Jayson Adams

I've placed NewsGrazer, a NeXTstep news reader app, out on the archives. At the moment it's available from sonata.cc.purdue.edu (download /pub/next/submissions/NewsGrazer.52.1.tar.Z). It's also in the /pub/\temp folder at umd5.umd.edu. Here's a brief description:

NewsGrazer gives the news reading and manipulation process a graphical interface. You can select groups by clicking on them, which displays a list of the group's articles (optionally sorted by title and time). You can read an article by clicking on it; articles can be exported to other apps via Services (if they accept files). NewsGrazer allows users to post messages and to reply to posters by mail. NewsFolders (similar to Mailboxes) allow easy storage and retrieval of news articles. Filters have similar functionality to rn kill files.

NewsGrazer requires NeXTstep 2.0 and supports both mounted and nntp news sources. NewsGrazer does not configure a system to retrieve news from a news feed or to run nntp.

Please let me know about any bugs you run across. You can also ask me for features, but don't expect them any time soon. If you have questions about how something works, or it looks like a feature is missing, please be sure you've checked the on-line documentation and Preferences panel before you send me mail. Thanks in advance. The following two paragraphs should also help answer a couple questions most people will have:

When NewsGrazer starts, it displays a browser of the available news groups. If you switch to List mode, you'll just get a list all of your subscribed groups (unless you explicitly ask for all groups). You can set the default mode (Browser or List) in NewsGrazer Preferences.

When replying by mail, NewsGrazer will open a new Mail Send window and attempt to place the article, etc. into that window. If you have another Send window on-screen, this info will get blasted into that send window (this is a Mail bug).

Enjoy!!!

NeXT Software Release 2.1

Conrad Geiger

Q: What is Release 2.1?

A: Release 2.1 is a minor revision of Release 2.0, NeXT's second major system software release.

Q: Why is there a Release 2.1?

A: The primary objective of Release 2.1 is to support NeXT's new color platforms, NeXTstation Color and NeXTdimension; however, some Release 2.0 customers may want the software improvements in Release 2.1. This release contains no new features, and most Release 2.0 users won't need to update to the new release.

Q: Should I upgrade to Release 2.1?

A: This release contains no new features over Release 2.0, and users of monochrome systems won't need to update to the new release. NeXT usually recommends that users upgrade to each major software release, i.e., from Release 1.n to 2.n to 3.n. However, if you are running Release 2.0, Release 2.1 is a minor update which isn't generally required.

Some third-party products may require Release 2.1; for example, some fax modems require Release 2.1, although most modems will work perfectly with Release 2.0. Aside from color support, Release 2.1 contains the following improvements over Release 2.0:

Q: What Release 2.0 bugs does Release 2.1 fix?

A: Fully supported internationalization of NeXT applications. This affects users who require nationalized versions of software to run in a foreign country's native language.

Improved reliability of very long (an hour or more) sound or music sequences.

A more robust serial port driver, especially for high baud rates (9600 baud or greater). This will affect customers who use NeXT computers as dial-in servers or UUCP sites.

More robust handling of very large font folders (containing thousands of fonts) or Font folders shared over the network. For casual use of Font folders on an individual computer, Release 2.0 is sufficient.

Printing support to non-NeXT PostScript printers over the serial port.

Fix to LoginHook (although the standard NeXT login window is not affected). The fixed function only applies to sites that force a customized login sequence to occur when users log in.

Fix to the tanh (hyperbolic tangent) function. It now produces the correct results in all cases.

Performance improvement (by more than an order of magnitude) of the floor function. This may be important to developers who frequently use this function.

Fix to the system constant HUGE. It has been set to the correct value (it was set to -Infinity in 2.0).

An improved gdb debugger that's able to kill processes more reliably.

Q: How can I get Release 2.1 for my system?

A: There are two software products both of which provide you with Release 2.1: The Software Upgrade (N5507) and the Update Set (N7022). The Upgrade Kit (Retail Price: $195) includes an optical disk which upgrades Release 1 (Extended) or Release 2.0 Extended systems to Release 2.1 Extended. The Update Set (Retail Price: $50) includes five floppy disks which update Release 2.0 and 2.0 Extended to Release 2.1 and 2.1 Extended, respectively.

Q: Why doesn't NeXT just send me the Release 2.1 updates?

A: NeXT will not automatically send the Release 2.1 updates to all users. This release is not required, thus most people will not need it. These updates are readily available as products, and are priced at NeXT's cost.

Q: May I simply borrow a friend's Update Set to update my system to Release 2.1?

A: All machines within the same organization may use a single Update Set to update to Release 2.1. In other words, as long as the purchaser of all the machines and the single Update Set are the same, legal updates to these machines may be made. Unless your

friend's machine, your machine, and the update set were all purchased by the same organization, you would be updating illegally. Thus a corporation and a university need only buy a single Update Set for all their employees. Individual purchasers who happen to work at a corporation or university, will need to buy individual Update Sets.

The reason for this restriction stems from the fact that this update software contains code from several of our third party partners, for example AT&T and Adobe. Our legal agreements with these third parties permit a single copy of the update product to be distributed amongst persons only if they are in the same organization. Please note that this does not hold for all software products in general.

Q: Will the Update Set software ever appear on archive servers?

A: No - although we would like to make our bug fixes available, we regret to say that NeXT is unable put the update software on archive servers due to the above-mentioned legal restrictions by our third-party partners.

NeXT Technical Alert 91-2

NeXT Release

Summary

When a user with many personal fonts logs out, the next person to log into the same computer may not be able to start applications.

Description

After a user with many personal fonts logs out, the pasteboard server, the program that distributes information about the available fonts, sometimes crashes. The most visible indication that the pasteboard server has crashed is that the next person to log in can't start applications. This problem doesn't arise if the same user is the next person to log into the computer.

Information from the .afmcache file in the Library/Fonts folder of a user's home folder is loaded into the pasteboard server when that user logs in. After that user logs out and the next user logs in, the pasteboard server's copy of the previous user's .afmcache information is disposed of, but not properly. The larger the .afmcache file is, the more likely this is to cause the pasteboard server to crash. Since the file size is directly related to the number of fonts a user has, a user with 500 fonts is much more likely to cause this problem than one with, say, twelve.

If you think you have this problem, open the Console window in Workspace Manager by choosing Console from the Tools menu. If you see any messages like the one shown below, the pasteboard server has crashed:

Mar 13 17:24:35 machineName pbs: msg_send error: -101, with msg_id = 324

Workaround

One way to solve this problem is to restart the computer after users with many fonts log out. When the machine is restarted, the pasteboard server is restarted too, and users will be able to start applications. However, the next time the offending user logs out, the problem may reappear. There are two alternative solutions to this problem that are more permanent than simply restarting the computer.

Solution One

Move the fonts from the Library/Fonts folder in the user's home folder to the /LocalLibrary/Fonts folder. Since the .afmcache in /LocalLibrary/Fonts isn't associated with a single user, it isn't disposed of when new users log in. However, the fonts in this folder are available to users of all computers that have access to that /LocalLibrary folder, so there may be font licensing issues that prevent this approach on networked systems.

Solution Two

Have the user remove the .afmcache file in the Library/Fonts folder of the user's home folder. When the .afmcache file is not there, the pasteboard server gets the information another way, and properly disposes of that information when the next user logs in.

Note: To perform this procedure, you need to be logged in as the user or as root.

1. In Workspace Manger, select the folder Library/Fonts in the user's home folder.

2. Select the .afmcache file. Since the file name begins with a period, it isn't normally visible in Workspace Manager's File Viewer. Choose Finder from the Tools menu, type *.afmcache:, and click the Find button. The .afmcache file will appear at the end of the icon path.

3. Drag the file to the recycler.

This solution isn't perfect: If the user later adds or removes fonts in the Library/Fonts folder, the next time that user starts an application that needs fonts, a new .afmcache file will be created. To prevent the problem from reappearing, the user should start an application that uses fonts, such as *WriteNow*, after installing or removing personal fonts. A panel appears that says *Incorporating information about new fonts. Please wait (this may take up to 60 seconds).: After a minute (or more, if there are many fonts in the folder Library/Fonts) the user should remove the new .afmcache file by performing the above procedure again, then log out and restart the computer.

For More Information

Contact your NeXT Authorized Support Provider for more information about this problem. Or, if you have access to NeXTanswers, see NeXTanswer Workspace.704

Thanks

Conrad Geiger

Dave, Dave, Barb, Jacob, Terry, and everyone else:

I want to thank you all for the hospitality that you showed me on my recent visit to Colorado. Both the user group meeting and the CU event were successful events. NeXT really appreciates all that you are doing for users and furthering our (and your) success.

I look forward to future visits!

conrad

BANG 17-Apr-91 Meeting Review

Dick Benster - La Honda Software
(San Francisco Bay Area NeXT Group)

April's meeting began with the following announcements:

1) Boss Logic is looking for a couple of software engineers (the Company number is 414-472-7740 in Fairfield Iowa)

2) Pages Corp of San Diego is looking for one software engineer (619) 492-9050 bwebster@pages.com

3) Software Ventures is looking for Beta testers of its MicroPhone 2 communications software (415-644-3232) - they want only parties with communications expertise and specific purposes!

4) Agog is looking for Beta testers for its Squeeze data compression software (agog!squeeze@next.com)

5) Please note that the NeXT developer SIG will be held Tuesday 23-Apr-91 at NeXT (600 Galviston in Redwood City). Avi Tevanian, head of the Mach group, will be speaking on Mach.

7) Steve Scharbach of Computer Attic announced that Computer Attic and NeXT will be exhibiting both NeXT and third-party software and hardware at a special exhibit May 1, 1991 from 8:30am - 1pm at the Santa Clara Convention Center. Steven Jobs will be giving the keynote address. The emphasis will be on existing and emerging NeXT-based software/hardware solutions to your computing needs - there will *LOTS* of products being demo'ed. You *MUST* RSVP to attend. Call Computer Attic at 415-322-4800x66 for more details and to RSVP. This looks very promising, and seems to be a terrific opportunity to see in a half-day show what's happening in the NeXT commercial world.

8) A new NeXT users group has started in San Francisco, called FOGNUG. Please email:

<FogNUG-request@sutro.sfsu.edu> for more information.

After a few questions, we went into the evenings presentations:

Arthur Kyle Speaks of Canon and NeXT in Asia

Arthur Kyle of Canon, Inc. spoke first about his experiences of working in Tokyo as a an employee of Canon working as a third-party liaison, primarily with NeXT. Arthur gave some background information, pointing out that Canon owns 16.67% of NeXT, which it purchased for $100 million. When Arthur first heard that Canon would sell NeXT in Asia, he viewed it as the "kiss of death" for NeXT, as Canon sells 60% - 70% of all Macs in Japan, and thought that this would block NeXT's success. This has not turned out to be true, and Arthur has turned into a "true believer" in both the NeXT machines as well as the NeXT/Canon relationship.

The Canon name we hear really represents two distinct companies: Canon, Inc. is more the scientific and engineering side, producing cameras, photocopiers, optical disks, etc., as well as selling the NeXT machines; Canon Sales is more the sales and distribution arm, including the Mac computers as well as the NeXT machines in smaller volumes. Canon Inc. is currently selling NeXT in about 10 Asian countries (Japan, Korea, Singapore, Taiwan, etc.) with about 1,000 older cubes in place, and about 1,280 '040 processors placed in the first quarter (an unknown amount of these were '030 - '040 upgrades). The main purchasers are universities and research centers, with software developers also being significant customers.

Steve Jobs is a folk hero in the Japanese computer industry given his success at Apple, which was important in his developing a strong partnership with Canon. In Arthur's opinion, NeXT has an excellent chance to really succeed in Asia when Kanji is finally fully supported - NeXTstep 2.1J is currently in beta, and supports mail, edit, IB and ".rtfj" (for Japanese) files. Each character requires two bytes. Programming in Kanji cleanly requires use of the text objects, with the English shared libraries replaced by Kanji ones. The basic programming model is for developers to keep strings separate, and to have English translated into Kanji where needed, keeping separate English/Kanji string modules.

Canon is very serious about its partnership with NeXT, and has committed outstanding in-house talent to the partnership, and provided expertise in the software necessary for the Kanji/multi-lingual support. Additionally, Canon provides NeXT with a sales, distribution, and technical support capability throughout Asia that would be otherwise beyond NeXT's limited resources to achieve.

Randy Nelson Waxes Philosophical Upon Aspects of NeXT Development

To Randy Nelson, head of Developer Training for NeXT, the company's evolution can be split into pre- and post-Improv worlds. Improv represents a true milestone, now just being realized, in that it represents a new potential for users to customize a shrink-wrapped application, and to in turn connect it to other programs. Lotus is just now releasing its API which will allow developers and sophisticated users to tap into the underlying technology of Improv. Lotus itself worked on the interface of Improv until very late in the product development cycle - the plastic nature of the interface allows for many ways to access and utilize the core algo-

rithms - future users will be able to develop there own interfaces layered on top of or horizontally to what currently exists.

Randy also sees enormous potential and opportunities in the building of quality objects. Rather than building huge programs that do enormous amounts of things adequately, and a central task very well, he sees the future lying in "building one high quality brick, rather than a thin wall," and in "making great tools, not panaceas." An example of this that will hopefully come from NeXT itself is DBkit, which is a set of objects to access SQL data bases.

His background is an unusual one, having come from a Fine Arts (painting) education into the world of computing, and an excellent one from which to perceive the emerging need in programming for changing from ground-up approaches to "providing linkages between great-working things." Randy is insistent that we must focus on providing quality tools and interfaces that other people can leverage off of to create other tools. NeXT IB, palettes, speaker/listener, and standard objects are the underlying technologies that NeXT provides to realize this.

On the developer's training front, Randy stated complete agreement that a "developer-camp-on-a-disk" would be highly desirable, but also stated that there is no current commitment to do so.

Also, for those contemplating development on the NeXT machines, or new to it, Randy highly recommends getting a copy of "The NeXTstep Advantage" from NeXT, which shows the development of a plotting application and is very informative about creating software on NeXT computers.

Randy was very receptive to feed-back from BANG, and promised to take back two requests to NEXT for further consideration:

1) Developers need access to more NeXT training materials, so that they can do in-house training of their colleagues to share what has been learned at developers camp;

2) Everyone developing wants self-paced courses!

Randy also announced that the 2.0 documentation is complete (including the Concepts manual!), and being printed. Distribution is now the key issue - hang on!

Lee Boynton Speaks on the Workspace Manager

Request the "Info Panel" on your Workspace Manager (WSM), and "Lee Boynton" greets you as one of the authors of this excellent application. Lee gave a high-speed overview of the app (he was squeezed for time due to a fire-alarm that cut 15 minutes of content from our meeting).

Here are some highlights of what he covered:

* you can change the icons for a directory easily. There are two icons - one for the standard directory display, and one for the "open" directory (one that is having a file moved, copied, or linked to it).

To change the standard icon, place your tiff icon into a file called ".dir.tiff"

To change the open icon, place your tiff icon into a file called ".opendir.tiff"

* The Workspace inspector (invoked via the tools menu) is new and uses multi-tasking. For instance, under the Attributes Inspector you have the "Compute" button. This fires up a separate task to compute the disk usage of the specified directory.

* The inspector is actually extensible - NeXT needs to release the API for this. No word on when this might happen.

* The WSM was rewritten to "dekernalize" it, so its now more modular and multi-tasked - before it was one giant program. Specifically, the WSM starts up a File Mover, a File Sizer, a Finder, or a Disk Mounter as directed by user requests.

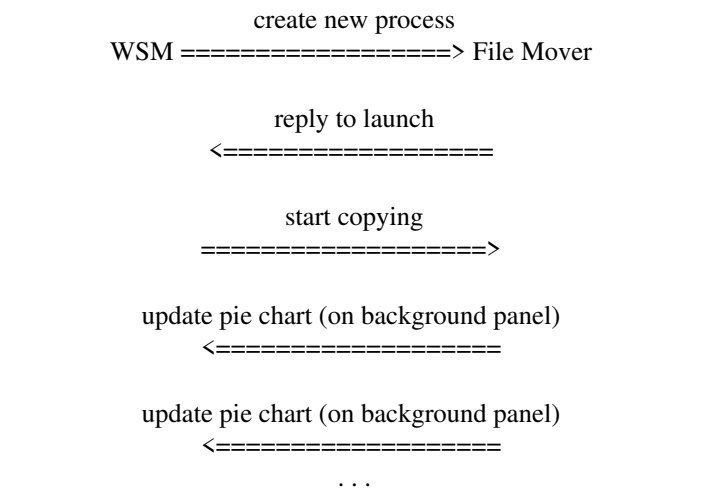
* You can now use a Find panel to find a program and launch it via double-click on the file name in the panel.

* The Process panel allows you to inspect either background or application programs. Again, you choose by double-clicking. Copy/move are examples of background processes.

* A key problem the WSM group had to deal with in development was the asynchronous nature of giving the results of a completing parallel task (say File Mover). Error messages presented similar problems: how do you notify the user, who may be making a cursor-driven selection, about something when the notice might inadvertently change the selection? For instance, you would not want the WSM to insert a new file name into a file list during a copy right as you were double-clicking another file name. Here the solution was to not allow updates while the cursor was in the window with the file list, so that the list is not updated until the cursor leaves the window (so as a consequence, if you want faster feedback, move the cursor from the window during WSM copies and moves!).

*) Here is a typical multi-tasked transaction history by the

WSM in copying a file:



copy complete
<==========

*) Lee's conclusions regarding dealing with asynchronous processes are:

1) provide immediate feedback to the user when possible

2) avoid moving controlling pixels asynchronously

3) don't make the user wait for something to complete before other requests can be made

*) If you want to make a link to a file (versus copy or move), control-drag it to the desired directory.

Dan Lavin Clarifies Changes at NEXTWORLD

Dan Lavin, NEXTWORLD's Technical Editor, briefly outlined changes that have occurred at the magazine:

*) Former Editor in Chief Michael Miley is writing a book, and has been replaced by Dan Ruby, previously with MacWeek and InfoWorld.

*) The magazine will now be published on a quarterly basis, every 3 months instead of every two months. Dan is hopeful (not certain!) that current subscribers will still receive a total of 6 issues of the magazine for their subscription, since that what a year's subscription meant when they subscribed.

*) Subscribers will additionally receive monthly newsletter (which will not include advertising) so hotter news will reach subscribers more quickly - the newsletter will be publish even during the months the magazine is published. NEXTWORLD believes this format will better serve the existing NeXT community given its current size.

*) Simpson Garfinkel of MIT Media Lab fame is joining NEXTWORLD to add to the magazine's already considerable technical depth.

*) Please contact NEXTWORLD if you have useful information regarding NeXT/NeXT community, which, besides obvious kinds of topics, includes:

1) fun mystery photos

2) actual code names used during the development of NeXT (and 3rd party) products

3) new shrink-wrapped software announcements

4) rumors!

Please contact Dan at:

dlavin@nextworld.com or
415-922-NEXT

Join us at our next BANG meeting

Please come to our next meeting (meetings are always the third Wednesday of every month and begin at 7pm):

15-May-91 at 7pm Stanford University Termin Auditorium

Process Management and Pipes

Written by Darren R. Hardy
hardy@cs.colorado.edu

This article is intended for C programmers who have little or no experience with process-management system calls (e.g., fork(2), execv(2), wait(2), wait3(2)) and pipelining (eg. pipe(2)). A rudimentary understanding of C is assumed. This tutorial is intended to give an overview of many of the basic UNIX concepts at the programmers' level; it is not intended as an example of how to write good systems programs.

Process Management

One of the most powerful features of UNIX is its multitasking environment, which allows programs to spawn off other programs. In operating systems lingo, a "program" is called a process, task, or thread of execution. To get a list of all of the processes running on your machine, use the ps(1) command. For example, typing 'ps a' will give you a list of all the processes that are associated with terminals (eg. a user logging in). Typing, 'ps auxgw' gives you almost all of the information about the processes.

In a C program, the easiest way to create a new process is with the system(3) library routine. system() simply passes a command line to the UNIX Bourne shell (sh(1)) where it is then executed. However, this method has its limitations, including inflexibility and the overhead of spawning a Bourne shell in order to execute the command.

A more efficient and flexible way is to use the fork(2) system call to duplicate the current process' resources or context and create a new process which starts executing in the duplicated context (process' context will be discussed further when the wait3(2) system call is introduced) The process which calls the fork() is called the parent process; the newly spawned process is called the child. The child process is exactly the same as the parent process with the following exceptions: a different process ID, its own copies of the parent's file descriptors (eg, stdin, stdout, and stderr), and its resource utilizations are set to zero. fork() returns 0 to the child process and the child's process ID to the parent process. If an error occurred, then -1 is returned and the child process is not created.

Once the child process is created it starts executing after the fork() call. Therefore, the program must check the return value of fork() to determine which code should be executed by the parent and child. A standard fork() call might look like this:

```
if ((pid = fork()) == 0) {
   /* Code for the Child to execute */
} else {
   /* Code for the Parent to execute */
}
```

The parent process might want to check that pid is not -1 to insure that the child process was created.

Typically, the child process is created to execute another program using execve(2) system call or one of the many library routines (eg. execv(3), execl(3), etc.). An exec() call will not return if it the call succeeds, otherwise it returns a -1 and sets errno. The interface to these routines vary; the two discussed here are execl(3) and execv(3). execl() takes as its first argument the path of the program to execute and then a variable number of strings which make up the argument list (or command line) for the program. execv() also takes as its first argument the path of the program to execute, however, its second argument is a NULL-terminated list of strings which is the program's argument list. This "argument list" is the same as char **argv which is passed to a program's main().

While the child process is executing a program, sometimes the parent process needs to wait for the child to complete execution. The parent process can call the wait(2) system call to achieve this functionality. wait() delays its caller until a signal from the child process is received or the child terminates.

The following example shows how to integrate fork(), execv(), and wait() into a simple shell program, like the UNIX Bourne shell. A shell is simply a program that forks off child processes to execute other programs. In SimpleShell, the user is prompted for a command, the command line is parsed, and if it is valid it forks off a child process to execute the command. The parent waits for the child to finish executing before it prompts the user for another command.

```
/*
**  SimpleShell
**
**  A Simple Shell Example using fork(), execv(), and wait().
**  Adapted from "Using C on the UNIX System" by David A. Curry
*/

#include <stdio.h>
#include <ctype.h>
#include <sys/wait.h>

int ParseCommand(char *, char **);
void ExecuteCommand(char **);

int main(int argc, char **argv)
{
    char buf[8096], *args[64], *prompt = "SimpleShell> ";

    while (1) {
        printf("%s", prompt);
        if (fgets(buf, sizeof(buf), stdin) == NULL) {
            printf("\nExiting the SimpleShell\n");
            break;
        }
        if (ParseCommand(buf, args) == 0) {
            ExecuteCommand(args);
        }
    }
    return(0);
}

#define RemoveWhiteSpace(b)    \
            while (isspace(*(b))) *(b)++ = '\0';
#define SkipNonWhiteSpace(b)   \
            while (*(b) != '\0' && !isspace(*(b))) (b)++;

/*
**  ParseCommand parses command line stored in "buf"
**  and creates a NULL-terminated list of its arguments
**  in "args."  Returns 1 if the command line is invalid;
**  returns 0 otherwise.
*/
int ParseCommand(char *buf, char **args)
{
    int i = 0;

    while (*buf != '\0') {
        RemoveWhiteSpace(buf);
        args[i++] = buf;
        SkipNonWhiteSpace(buf);
    }
    if (i == 1) {
        return(1);  /* No arguments were found */
    }
    args[--i] = (char *) 0; /* Terminate the argument list */
    return(0);
}

/*
**  ExecuteCommand() creates a process to execute the command
**  and then waits for it to finish.
*/
void ExecuteCommand(char **args)
{
    int pid;
    union wait status;

    if ((pid = fork()) == 0) {  /* Child Process */
        execv(*args, args);
        /*
        **  Child turned into a zombie,
        **  kill it by calling exit(1).
        */
        perror(*args);
        exit(1);
    } else {                    /* Parent Process */
        while (wait(&status) != pid) {
            /* do nothing */
        }
        /*
        **  If child had problems print diagnostics.
        */
        if (WIFSIGNALED(status)) {
            fprintf(stderr, "Child terminated by signal %d\n",
                    status.w_termsig);
        }
        if (WIFEXITED(status) && (status.w_retcode != 0)) {
            fprintf(stderr, "Child exited with value %d\n",
                    status.w_retcode);
        }
    }
    return;
}
```

Notice that if the execv() call returns, then the child had a problem so it prints out an error and exits. This code prevents zombie processes from occurring. A zombie process is a process that has terminated but whose exit status has not yet been received by its parent process. Also, note that after the parent process waits for the child, it checks the status code of the child to insure that nothing went wrong. The wait() is in a while loop to make sure that the parent waits for the correct child process.

File Redirection

A nice feature of shells is the redirection of stdin, stdout, and stderr to/from files. For example, in csh "cat foo > bar" redirects the stdout of cat to the file "bar". Similarly, "cat < foo > bar" accomplishes the same thing by redirecting the contents of the file "foo" to the stdin of cat.

By adding some code to ParseCommand and Execute Command and adding a couple of global variables, file indirection can be im-

plemented. Note that standard csh syntax is used (eg. '>' redirects stdout, '<' redirects stdin, and '>&' redirects both stdout and stderr.

```
/*
**  Simple Shell that has indirection.
**  Adapted from "Using C on the UNIX System" by David A. Curry
*/
#include <stdio.h>
#include <ctype.h>
#include <sys/wait.h>
#include <sys/file.h>

int ParseCommand(char *, char **);
void ExecuteCommand(char **);

char *RedirectFiles[2]; /* Files to redirect: 0(stdin) 1(stdout) */
int SetStandardError;   /* Should stderr be the set to stdout? */

int main(int argc, char **argv)
{
    char buf[8096], *args[64], *prompt = "SimpleShell> ";

    while (1) {
        printf("%s", prompt);
        if (fgets(buf, sizeof(buf), stdin) == NULL) {
            printf("\nExiting the SimpleShell\n");
            break;
        }
        if (ParseCommand(buf, args) == 0) {
            ExecuteCommand(args);
        }
    }
    return(0);


#define RemoveWhiteSpace(b)    \
            while (isspace(*(b))) *(b)++ = '\0';
#define SkipNonWhiteSpace(b)   \
            while (*(b) != '\0' && !isspace(*(b))) (b)++;

/*
**  ParseCommand parses command line stored in "buf" and
**  creates a NULL-terminated list of its arguments in "args."
**  Returns 1 if the command line is invalid; 0 otherwise.
*/
int ParseCommand(char *buf, char **args)
{
    int i = 0;

    RedirectFiles[0] = RedirectFiles[1] = (char *) 0;
    SetStandardError = 0;
    while (*buf != '\0') {
        RemoveWhiteSpace(buf);
        args[i++] = buf;
        while (*buf != '\0' && !isspace(*buf)) {
            if (*buf == '<') {  /* Redirect Stdin */
                *buf++ = '\0'; i--;
                RemoveWhiteSpace(buf);
                RedirectFiles[0] = buf;
                SkipNonWhiteSpace(buf);
                continue;
            } else if (*buf == '>') {   /* Redirect Stdout */
                *buf++ = '\0'; i--;
                if (*buf == '&') {
                    SetStandardError = 1;
                    *buf++ = '\0';
                }
                RemoveWhiteSpace(buf);
                RedirectFiles[1] = buf;
                SkipNonWhiteSpace(buf);
                continue;
            }
            buf++;
        }
    }
    if (i == 1) {
        return(1);  /* No arguments were found */
    }
    args[--i] = (char *) 0; /* Terminate the argument list */
    return(0);
}

/*
**  ExecuteCommand() creates a process to execute the command
**  and then waits for it to finish.
*/
void ExecuteCommand(char **args)
{
    int pid, rfd;
    union wait status;

    if ((pid = fork()) == 0) {  /* Child Process */
        if (RedirectFiles[0] != (char *) 0) {
            /*
            **  Need to redirect stdin, so open a file
            **  descriptor to the file to be used as
            **  stdin and dup2() it.
            */
            if ((rfd = open(RedirectFiles[0], O_RDONLY, 0)) < 0) {
                perror("open");
                exit(1);
            }
            if (rfd != 0) {
                dup2(rfd, 0);
            }
        }
        if (RedirectFiles[1] != (char *) 0) {
            /*
            **  Need to redirect stdout, so open a file
            **  descriptor to the file to be used as stdout
            **  (and possibly stderr) and dup2() it.
            **  If a '&' was given after the '>', then redirect
            **  stderr to the same file descriptor.
            */
            if ((rfd = open(RedirectFiles[1],
                            O_WRONLY | O_CREAT, 0644)) < 0) {
                perror("open");
                exit(1);
            }
            if (rfd != 1) {
                dup2(rfd, 1);
            }
            if (SetStandardError && rfd != 2) {
                dup2(rfd, 2);
            }
        }
        execv(*args, args);
        perror(*args);
        exit(1);
    } else {                    /* Parent Process */
        while (wait(&status) != pid) {
            /* do nothing */
        }
        /*
        **  If child had problems print diagnostics.
        */
        if (WIFSIGNALED(status)) {
            fprintf(stderr, "Child terminated by signal %d\n",
                    status.w_termsig);
        }
        if (WIFEXITED(status) && (status.w_retcode != 0)) {
            fprintf(stderr, "Child exited with value %d\n",
                    status.w_retcode);
        }
    }
    return;
}
```

Note that a new system call dup2(2) was used. dup2() simply duplicates an existing file descriptor. The call "dup2(fd, 0)" causes the file descriptor 0 to be closed if it's in use and then joined to the fd file descriptor. Note that stdin, stdout, and stderr are file descriptors 0, 1, and 2 respectively. Therefore, the call in Execute-

Command(), “dup2(rfd, 1)” sets the stdout to the file descriptor rfd which is the file that is being redirected.

Pipelining

Another very useful facility that the UNIX environment provides is pipelining which allows for simple, efficient communication between multiple processes. A pipe is an interprocess communication channel which connects one process' standard output to another process' standard input. Many pipes can be connected together to form a pipeline. Shells provide facilities to form pipelines. For example, in csh “cat foo | wc” will connect the standard output of ‘cat’ to the standard input of ‘wc’. “cat mydir.tar.Z | uncompress | tar tf -” will form a pipeline in which the standard output of ‘cat’ is connected to the standard input of ‘uncompress’ and the standard output of ‘uncompress’ is connected to the standard input of ‘tar’. The net effect of this command is to print the table of contents of the compress tar file ‘mydir.tar’.

UNIX provides the system call pipe(2) for the creation of pipes. pipe() takes as its argument an array of two integers and sets them to two file descriptors. The first file descriptor is used to read from the pipe and the second file descriptor to write to the pipe. pipe() returns -1 if an error while creating the pipe occurred. The following program shows how to use pipe() to communicate between two processes. The program mails the contents of a file to one or more people. Note that execl(3) is used rather than execv(3); remember that execl() takes a variable number of strings which in turn forms the argument list and its last argument must be 0. This is useful when the number of arguments is known at compile-time.

```
/*
**  FormLetter.c
**
**  Simple example using pipe(), execl(), wait(), dup2(), and
fdopen().
**  Mails the same file to multiple logins.
*/
#include <stdio.h>
#include <string.h>
#include <sys/wait.h>

int main(int argc, char **argv)
{
    int fd[2], pid;
    union wait status;
    char *ProgName;
    FILE *InputFile, *PipeWrite, *fdopen();

    ProgName = ((ProgName = strrchr(argv[0], '/')) ?
                ++ProgName : argv[0]);
    argv++; argc--;
    if (argc < 2) {
             fprintf(stderr,  "Usage:  %s  LetterFilename  user-
r1..userN\n",
                 ProgName);
        exit(1);
    }
    if ((InputFile = fopen(*argv, "r")) == NULL) {
        fprintf(stderr, "Couldn't open file %s\n", *argv);
        exit(1);
    }
    while (--argc > 0) {
        ++argv;
        if (pipe(fd) < 0) {
            perror("pipe");
            exit(1);
        }
        if ((pid = fork()) == 0) {  /* Child Process */
                /*
                ** Set stdin to the read side of the pipe. Close the
pipe.
                */
                dup2(fd[0], 0);
                close(fd[0]);
                close(fd[1]);
                execl("/usr/ucb/mail", "mail", *argv, (char *) 0);
                perror("execl");
                exit(1);
            } else {                    /* Parent Process */
                char buf[8096];

                 close(fd[0]); /* don't need the read side of the
pipe */
                /*
                **  Get a FILE * for the write side of the pipe.
                */
                PipeWrite = fdopen(fd[1], "w");
                if (fseek(InputFile, 0L, 0) < 0) {
                    perror("fseek");
                    exit(1);
                }
                while ((fgets(buf, sizeof(buf), InputFile)) != NULL) {
                    fputs(buf, PipeWrite);
                }
                fclose(PipeWrite);
                while (wait(&status) != pid) {
                    /* do nothing */
                }
            }
            close(fd[0]);
            close(fd[1]);
        }
        return(0);
}
```

Note that fdopen(2) is used so that the stdio I/O functions can be used. fdopen() simply converts a file descriptor to a FILE *.

Process Resources

All process have limited resources which are managed by the kernel. A process can examine, and limitly modify its own resources via the getrlimit(2) and setrlimit(2) system calls. Among the restricted resources for processes are the maximum amount of CPU time that a process can use, the maximum size of its data and stack segment, and the maximum amount of physical memory the process may use at a time. Processes can also examine how much of a process' resource it has used via the getrusage(2) system call. Among the information returned by getrusage() is the amount of user and system time the process used, the number of page faults, and the number of I/O blocks operations. Sometimes a parent process wants to know how much resources its child used; the wait3(2) system call returns a summary of resource usage to the parent process.

The following example shows how to use wait3() to examine the resource utilization of a child process. The program is similar to time(1) which reports the user and system time that a process consumed. csh(1) also has a built-in time command that provides more information about a child process' resource utilization.

```
#include <stdio.h>
#include <sys/wait.h>
#include <sys/time.h>
#include <sys/resource.h>
 int main(int argc, char **argv)
{
 void PrintResourceUsage(struct rusage *);
 char *ProgName, *strrchr();
 int pid;
 union wait status;
```

```
 struct rusage ru;
 ProgName = ((ProgName = strrchr(argv[0], '/')) ?
 ProgName++ : argv[0]);
 argv++; argc--;
 if (argc < 1) {
 fprintf(stderr, "Usage: %s command...\n", ProgName);
 exit(1);
 }
 if ((pid = fork()) == 0) { /* Child Process */
 execv(*argv, argv);
 perror(*argv);
 exit(1);
 } else { /* Parent Process */
 while (wait3(&status, 0, &ru) != pid) {
 /* do nothing */
 }
 /*
 ** Check to see how the child terminated
 */^[
 if (WIFSIGNALED(status)) {
 fprintf(stderr, "Child terminated by signal %d\n",
 status.w_termsig);
 }
 if (WIFEXITED(status) && (status.w_retcode != 0)) {
 fprintf(stderr, "Child exited with valud %d\n",
 status.w_retcode);
 }
 PrintResourceUsage(&ru);
 }
 return(0);
}
 /*
** PrintResourceUsage() prints out the rusage structure.
*/
void PrintResourceUsage(struct rusage *r)
{
 double UserTime = 1.0,
 SystemTime = 1.0,
 usecScale = 0.000001;
 UserTime *= r->ru_utime.tv_sec;
 UserTime += usecScale * r->ru_utime.tv_usec;
 SystemTime *= r->ru_stime.tv_sec;
 SystemTime += usecScale * r->ru_stime.tv_usec;
 printf("\n----------------------------------------\n");
 printf("Resource Usage of Child Process:\n");
 printf("\tTime in User and System Mode: %f %f\n",
 UserTime, SystemTime);
  printf("\tMaximum Resident Set Size: %d KBytes\n", r->ru_-
maxrss);
   printf("\tIntegral Shared Text Memory Size: %d\n", r-
>ru_ixrss);
 printf("\tIntegral Unshared Data Size: %d\n", r->ru_idrss);
 printf("\tIntegral Unshared Stack Size: %d\n", r->ru_isrss);
 printf("\tPage Reclaims: %d Page Faults: %d Swaps: %d\n",
 r->ru_minflt, r->ru_majflt, r->ru_nswap);
 printf("\tBlock Operations: %d Input %d Output\n",
 r->ru_inblock, r->ru_oublock);
 printf("\tMessages: %d Sent %d Received\n",
 r->ru_msgsnd, r->ru_msgrcv);
 printf("\tSignals Received: %d\n", r->ru_nsignals);
 printf("\tContext Switches: %d Voluntary %d Involuntary\n",
 r->ru_nvcsw, r->ru_nivcsw);
 printf("----------------------------------------\n");
 return;
}
```

Acknowledgments

In the writing of this article I extensively used the following references, all of which provide excellent documentation about this subject and further related topics:

Curry, David A., Using C on the UNIX System, O'Reilly & Associates, Inc., Sebastopol, CA, 1988.

Leffler, McKusick, et al., The Design and Implementation of the 4.3BSD UNIX Operating System, Addison-Wesley Publishing Company, Reading, MA, 1989.

Kernighan, Brian and Ritchie, Dennis, The C Programming Language, 2nd Revision, Prentice Hall, Englewood Cliffs, NJ, 1988.

Various UNIX Manual pages from the NeXT 2.0 Extended Release.

From the President

David Hieb - rmNUG President

Last month on April 18th the "What's NeXT" event was held at the University Memorial Center on the CU campus. This pilot marketing program, under the direction of Professor Margaret Wright of the CU Marketing Department, and Garrett Rice, a NeXT Campus Consultant, was actually materialized by a very enthusiastic group of volunteer business students [see the April 1991 rmNUG NeWS article entitled "The NeXT Educational Marketing Project" for more information].

The entire event was a total class act. The decorating was done in black and white with lots of banners, signs and balloons. NeXT had shipped 1700 pounds of literature and documents that the students had packaged into "grab bags". These packages were readily available for the >7000 people that came by the event. Pepsi and Dominos had donated drink and food for all that stopped at a booth and had a NeXT sticker placed on their ID card. Many other companies and service providers donated their time/money/services as well.

Each vendor and/or logical group that was demonstrating had their own booth area and hardware/software. NeXT Inc. had sent out several people and machines and were demonstrating fun things like CD quality music, color graphics on the NeXTstation color and real-time full-color video display on a NeXTDimension machine. The NeXTDimension was truly the clear winner in overall head-turners. At one point when "Return of the Jedi" was blasting away, at least 25 people had their eyes glued to the one small monitor. An impressive site for the mind, ears and eyes.

WordPerfect and Lotus represented the big professional vendors that had booths and were at the event the entire day presenting their wares. One of our local developers (Doug Simons, Thoughtful Software) was there presenting his latest development; Hypercube. Andrew Stone of Stone Design sent a representative to cover his latest products; DataPhile and Create. And last but not least, rmNUG brought about 10 machines and 10 bodies to cover booths, answer questions and generally get lost in the crowd.

Jacob Gore and Karl Sierka had a Free Software Foundation (FSF) booth. Mike Friedel demonstrated his own port of X-windows to his color NeXTstation. We set up a 8 host network that provided good demonstrations of email, NFS mounting and TCP/IP networking. We even hooked up a video camera to one of the machines and were able to take a video image of a bystander and

email it across the room where another innocent soul could see the seamless transmission of data and images.

rmNUG's support role to the "What's NeXT" event was a significant contribution and was felt (and appreciated) by NeXT Inc. themselves and all the organizers and students of the event. Thanks to all of you that were able to attend and demonstrate: Bob Gregory, Darren Hardy, Jacob Gore, Dave Bowdish, Karl Sierka, Demetrius Johnson, Barb Dyker, Denny Kelleher and Mike Friedel (I hope none were missed).

Throughout the day, NeXT seminars were conducted in a private lounge area that had been equipped with a video projection monitor, seating and food/drinks. Here is the schedule of what seminars were presented:

11:00am Mathematica for Math, Engineering and Physics
12:00pm Lotus Improv for Business and Number Analysis
1:00pm Sound and MIDI for Music
2:00pm Object Oriented Programming w/ the Interface Builder
3:00pm Graphics and Multimedia for Fine Arts and Business.
4:00pm Wordprocessing and Desktop Publishing.

These presentations were quite popular and provided attendees a chance to relax and have a snack while hearing detailed information about a certain topic.

At 5:00pm that evening, Dr. Ronald Weissman, Director of Higher Education for NeXT Computers, gave a keynote address entitled; "The Scholar's Workstation". Dr. Weissman's inspiring talk started out by defining what scholars do, what they really want and methods of managing scholarly information. He enumerated the specifics that make a NeXT the appropriate hardware/software platform for scholarship in the 1990's. And in closing he showed where scholarly computing has come from, where its going and just how the NeXT paradigm fits into the big picture.

This event was an enormous success and really demonstrated what a bunch of hardworking bodies can accomplish. If your looking for a media blitz that will have a significant impact on the visibility (and sales) of NeXT, I encourage you to think about doing something like this in conjunction with your local University and NeXT user group. I suspect the most logical contact would be Conrad Geiger, 'Conrad_Geiger@NeXT.COM'.

davehieb...

From The Board

Barb Dyker - rmNUG Administrator

The executive committee met Apr 29th, 7pm, at room CR1-16, Engineering Center, University of Colorado, Boulder. In attendance were Dave Hieb, Karl Sierka, Jacob Gore, Barb Dyker, Bob Gregory, and Terry Tautz.

Executive Committee meetings are held the last Tuesday of every month at 7pm and are open to all members. Meetings in odd numbered months are held at the University of Colorado, Boulder, Engineering Center, room CR1-16.

Meetings in even numbered months are held at the University of Denver, Business Administration Building, Mountain Bell Conference Room 421. Please contact any member of the executive committee if you are interested in helping with organization of any event or project.

Old business

Treasurer's report: The balance of accounts is $1272.74 with $937.20 left from the original Golden Nugget award being used for NeXTworking. That does not include the $720 in annual NeXTworking telephone fees. That leaves just enough to cover the cost of the second modem.

Membership report: There are 46 members and an additional 155 on our mailing list.

Newsletter: There have been requests to mail our Newsletter out. We agreed that we would do that upon request only to paying members with the additional charge of postage and handling. Barb will do the mailing and determine the charge.

NeXTworking: Karl is going to verify the flow control on the modem before we purchase the second one. [Everything works fine.] There was discussion about a potential problem with employees of companies that own NeXT computers taking advantage of NeXTworking with non-NeXT machines. We agreed that the NeXTworking terms and conditions will be modified to allow users of NeXTs at work rather than employees of NeXT owners. Installer type apps need to be developed for client setup and configuration of: uucp, sendmail, news, and archive server access including uudecode/uncompress/untar. We plan to get TIFF images of users to archive so they can appear in mail.

Compuserve NeXT Forum: Approximately May 15th, there will be a new forum on Compuserve for NeXT users. Dave Bowdish will be the main sysop for that forum.

May meeting: Tim Carlin was going to do the presentation for the May meeting. It has been changed to Brad Green.

Incorporation & ByLaws: Bob has a meeting with a lawyer this week about the incorporation. Karl turned over the task of By-Laws draft to Bob.

New Business

Upcoming meetings: The June meeting will feature a NeXTworking demo and presentation by at least Dave Hieb, Jacob, Barb and probably Darren Hardy. They'll discuss and demonstrate the features and present modems available. Lotus has committed to present at the August meeting. Adobe has committed to present at the September meeting. No commitment yet for July. We need to confirm a handful of available sites for the future so we don't have to scramble for locations each month. This is the list of sites and who will be working to confirm them: Random Access (S Denver), Dave Hieb; Auraria, Terry; CU-Boulder Marine St., Karl;

DU, Bob; CSM, Jacob; CU-Boulder Engineering, Barb; U S WEST AT, Bob. Requirements are room for 50-100 people and projection system is preferred.

Projection System: The need for a NeXT projection system at the meetings was discussed. We can not rely on the Extron equipment from the local NeXT office to be available at all our meetings. Extron has offered the equipment to rmNUG at their cost (about 75% of list). However, it is over $1000 that we don't have. The survey of meeting locations will help us know what projection equipment is available so we can determine what interface hardware is necessary.

Developer's Camp: Dave Hieb presented the idea of rmNUG sponsoring a Developer's Camp in the Denver area. He will coordinate the idea with John Pierce, NeXT regional sales rep. [Feedback from NeXT is positive.]

Regional Meeting: Barb suggested rmNUG sponsor a regional event covering multiple days and topics. She will discuss feasibility with Conrad Geiger.

Big Green Disk: Lighthouse Design has decided to discontinue the BGD. They are willing to make all of their BGD resources available to any other organization willing to commit to taking over this endeavor. It is a compilation of free software from the net on optical and sells for about $250. Both Karl and Dave Bowdish expressed interest in rmNUG taking over this project with the possibility of distribution on floppies and/or CD-ROM. Since the compilation is at least 200mb, floppy distribution is very inefficient. Karl and Dave will pursue this further.

April rmNUG Meeting

Barb Dyker - rmNUG Administrator

The April meeting of rmNUG was held on the 17th at the Auraria Campus in Denver.

Dave Hieb discussed the What's NeXT event to be held 4/18 at CU, Boulder. More volunteers were needed to demonstrate software and bring their NeXT machines.

Conrad Geiger, the user group coordinator for NeXT, discussed his role and the possibility of a national level user group meeting in the Bay area next year. He also announced a regional level user group meeting in Washington, DC, June 11-13.

Barb Dyker discussed the NeXTworking project, it's benefits and restrictions, and fielded questions. Initially uucp type connections are available so users can receive NeXT mail and netnews directly on their own systems. A public netnews reader application is being tested. Slip and other connectivity solutions will be supported as they are possible. Point & click installation and configuration type applications will be made available.

Kelly Mattson, Frame Technology, demonstrated a beta version of the new 3.0 release of FrameMaker for the NeXT. The new features of this version are support for tables, conditional text, and expanded interchange filters. This product is scheduled to be available in the fall. Anyone that is interested in a demo evaluation copy should contact Barb Dyker, 492-2545, barb@labyrinth.com.

The new tables capability allows users to easily integrate statistical and financial data, schedules, comparison charts, spreadsheet and database information into attractive tables within their FrameMaker documents. Tables, from simple ruled charts to complex multi-page charts containing a combination of text and graphics, can be easily created using the familiar FrameMaker interface. The formatting options for tables are extensive including: auto or fixed definable height and width adjustment, mixed text and graphics within cells, full character formatting within cells, horizontal and vertical justification, user definable ruling and shading, periodic ruling, reverse (white on black) text, table format catalog, and conversion to and from plain text.

Conditional text capabilities allow authors to create multiple variations of documents from a single, base document. For example, rather than creating and maintaining different versions of a software user manual for different hardware platforms, the author creates on document and uses conditional text to "show" only the information needed for a particular platform. Common information stays the same, and platform-specific information can be "shown" or "hidden" on demand. This can eliminate unneeded updates to content that is common to both documents. The features of conditional text include: unlimited number of condition tags, range of document can be in any set of condition tags, keyboard shortcuts, anchored frame condition is that of accompanying text, can search on condition tags, and warnings if conditionals are inconsistent or hidden text will be deleted.

Expanded and improved Interchange Filters allow users to import and export a wider range of text, diagrams and information created by other software packages into FrameMaker. These features are part of the FilterPak that is available at an additional cost. NEW or enhanced features include: Import of WordPerfect 5.0/5.1, Interleaf including tables, PICT2, Mac Microsoft Word 4.0, DCA(RFT), troff (unix typesetter), CGM (CALS std), CCITT group 4 (CALS std), IGES (CALS std), HPGL (HP graphics), DXF (AutoCAD), CalComp 960, and MacDraw; and export of WordPerfect 5.0/5.1 and CCITT group 4.

Off The Net

Compiled by David Bowdish

This is a compilation of articles, messages, complaints, answers, and whatever that appeared recently on Usenet and BBS's. Hopefully, you will find most of it entertaining or informative.

Floppy-less 2.1 Upgrading

Izumi Ohzawa

Thanks NeXT, I got our 2.1 Update set floppies TODAY.

However, your write-up is pretty cruel to your old customers who has floppy-less cubes. It doesn't mention at all how one can com-

bine "chunked" install packages into one, so you can transport this combined file to a floppy-less cube and install it there.

In any case, I did this, and this is how:

Copy contents of all 5 floppies to separate directories. You have 2 disks for 2.1 standard edition, and 3 floppies for Extended edition files.

For standard edition, all you need to do is to copy Update_2.1.tar.Z.2 file of the 2-nd floppy into the *.pkg directory from the 1-st disk, and then in the 1-st *.pkg directory do:

cat Update_2.1.tar.Z.1 Update_2.1.tar.Z.2 > Update_2.1.tar.Z

This simply concatenates the split tar files into a single file. All other files such as *.bom, etc. are simply duplicated on the two floppies.

*.tar.Z.1 and *.tar.Z.2 files can then be deleted. You can also delete the 2-nd package now.

Now you can click on "DoubleClick ME" file to proceed with the installation.

Do the same thing for Extended Update package. Here you have to combine 3 pieces of tar.Z.? into one:

cat UpdateExtensions_2.1.tar.Z.1 ...Z.2 ...Z.3 > UpdateEntension_2.1.tar.Z

4.0 Floppies and Drives

Sulistio Muljadi

Yesterday, I got US Mail from Toshiba about their 4MB diskette Here are the list of the distributor for 4MB Floppy Disks, subsystems, and controllers. I have no connection to Toshiba and those distributor. I won't be able to answer any question since this is all the information that I have!

The pamphlet starts!

Toshiba 4MB Floppy Disks

Thank you for your interest in Toshiba Extra-high Density (ED) floppy disks. The new 2.88MB (formatted) capacity of the ED disk is a significant improvement over conventional floppy disk technology. As the patent holders of barium ferrite recording media technology -- the basis of the new 4MB disk and drive -- Toshiba has licensed the technology to virtually all the well known flexible disk drive manufacturers and floppy disk manufacturers. As a result, 4MB disks and drives are currently available from a variety of sources. In addition, there are several subsystems available that incorporate the 4MB drive and a compatible controller. There are also several sources for 4MB controllers IC's.

Toshiba offers the following information on 4MB disk drives, subsystems, and controllers for those interested in adding the convenience of the ED disk to their present computer system. While we have attempted to include as many suppliers as possible, this list may not be comprehensive. We welcome suggestion on appropriate additions to this list.

4MB Floppy Disks

Toshiba America Electronic Components
One Parkway North, Suite 500
Deerfield, IL 60015-2547
(800) 843-2108
(708) 945-1500
Fax (708) 945-1044

Sales Contacts:

Mr. Jay A. Heinecke - OEM
Mr. Philip C. Potasiak - Distribution
Technical Contact: Mr. T. Miyazaki
Model: PMF-2ED <--- The one supplied from NeXT

Distributors:

Azerty, Inc.
13 Centre Drive
Orchard Park, NY 14127
(800) 888-8080
Fax (716) 662-7616

Digital Storage Incorporated
921 Eastwind Drive, #124
Westerville, OH 43081
(800) 232-DISK
Fax (614) 895-6705

Intec & Company, Inc.
2611 Waterford Pkwy. E. Drive, Suite 305
Indianapolis, IN 46214
(317) 290-0500
Fax (317) 290-0070
(Note: This is the Intec HQ; the Intec group is comprised of 29 independent dealers with 48 locations nationwide)

Neamco Office Products
10 E. Second Street South
Boston, MA 02127
(800) 225-2478
(Note: I called this company, and they did not know about 4MB diskette. She may not know, but others may know...)

4MB Disk Drive Subsystems

MicroSolutions
132 W. Lincoln Hwy.
DeKalb, IL 60115
(815) 756-3411
Fax (815) 756-2928

Pacific Rim Systems, Inc.
2570 Barrington Court
Hayward, CA 94545

(415) 782-1013
Fax (415) 782-1017

Practical Computer Technologies, Inc.
5405-B Port Royal Road
Springfield, VA 22151
(703) 321-3003
Fax (703) 321-3053

4MB Floppy Disk Drives

Toshiba America Information Systems, Inc.
9740 Irvine Blvd.
Irvine, CA 92713-9724
(714) 583-3000
Fax (714) 583-3133
Contact: Disk Product Support
Model: PD-211
(Note: I have specification and characteristic of this product (sent by Toshiba) If you are interested, send me e-mail)

Chinon America, Inc.
660 Maple Avenue
Torrance, CA 90503
(213) 533-0274
Fax (213) 533-1727
Model: FX-358

Citizen America Corporation
2450 Broadway, Suite 600
Santa Monica, CA 90404-3060
(213) 453-0614
Fax (213) 453-2814
Model: OSDF

Epson America, Inc.
3415 Kashiwa Street
Torrance, CA 90505
(213) 534-4500
Fax (213) 534-4449
Model: SMD-1060

Mitsubishi Electronics America, Inc.
Information Systems Division
991 Knox Street
Torrance, CA 90502
(213) 515-3993
Fax (213) 324-6466
Model: MF356C

Panasonic Industrial Company
1600 McCandless Drive
Milpitas, CA 95035
(408) 262-2200
Fax (408) 262-4214
Models: JU-259A; 1" height JU-239A; 3/4" height

Sony Corporation of America
Magnetic Storage Products Division

Computere Peripherals Products Company
655 River Oaks Parkway
San Jose, CA 95134
(408) 432-0190
Fax (408) 943-0740
Model: MP-F40W

TEAC America, Inc.
7733 Telegraph Rd.
Montebello, CA 90640
(213) 726-0303
Fax (213) 727-7621
Models: FD-235J; 1" height FD-335J; 3/4" height

YE Data America, Inc.
3030 Business Park Drive, Suite I
Norcross, GA 30071
(404) 446-8655
Fax (404) 446-0152
Model: YD-742

4MB Floppy Disk Controllers IC

Toshiba America Electronic Components, Inc.
9775 Toledo Way
Irvine, CA 92718
(714) 455-2000
Fax (714) 859-3963
Model: TC8569AF FP80 FDC Combo VFO (CMOS)

Intel Corporation
3065 Bowers Ave.
Santa Clara, CA 95051
(408) 987-8080
Model: 82077 PLCC68 FDC Combo VFO

National Semiconductor
2900 Semiconductor Dr. P.O. Box 58090
Santa Clara, CA 95052-8090
(408) 721-7973
Fax (408) 749-9071
Model: PC8477 PLCC68 FDC Combo VFO
(pin compatible with i82077)

Use this information at your own risk. This is copied exactly from the pamphlet that I received from Toshiba.

-- Mul
sulistio@sutro.sfsu.edu

96/96 Fax Modem

Jon Joshua - President - Central New Jersey NUG

At the last meeting of the Central New Jersey NeXT Users Group the following product was demonstrated by a local developer. The following information is from a spec sheet that was distributed.

I though that you might be interested in this one.

Neuron Fax96+ Package

The Neuron Fax96+ Package is a hardware/software combination designed for the NeXT computer. It provides integrated fax and high speed data communications, with all the software and hardware included.

The Neuron Fax96+ Package consists of:

* Neuron Fax96+ modem (capable of data speeds up to 38,400 bps, as well as 9,600 bps send/receive group 3 fax)
* All necessary cables
* Fax driver with installer
* UUCP installation software, which includes an option for an instant connection to Portal Communications with just one key Click
* A fifty dollar credit for Portal Communications
* Synapse, our state of the art terminal emulation and file transfer software.
* Marble Teleconnect, SLIP for the NeXT Computer.

Synapse:

Synapse is software that provides NeXT users with fast, efficient and reliable terminal emulation software with the latest in file transfer capabilities. It includes a rich set of features for terminal emulation as well as file transfer without sacrificing user interface or performance. Some of the key features are:

* Simple point and click building of login scripts
* Customized phone books
* Automatic cursor sensitive help throughout the entire program
* Lightning fast VT102, VT100 and VT52 terminal emulation
* Xmodem, Ymodem, and Zmodem file transfer with automatic receive.
* New virtual memory algorithms tailored to NeXT Step to make it one of the most memory efficient applications around.

All of these features and more, plus an ergonomically designed user interface move Synapse far ahead of ordinary terminal emulators.

Neuron Fax96+ Modem Specs:

* Full CCITT V.32bis, V.32, V.22bis, V.22 and Bell 212A Compatibility - 14.4Kbaud, synchronous/asynchronous, Trellis Coded Modulation - 12Kbaud, synchronous/asynchronous, Trellis Coded Modulation
* Automatic speed negotiation to 1200 baud. (TCM)
* CCITT V.42bis and MNP Class 5 data compression - V.42bis at 14.4K/12K/9600/4800/2400 and 1200 baud - MNP 5 at 14.4K/12K/9600/4800/2400 and 1200 baud
* CCITT V.42 (LAPM, MNP class 4) and MNP Class 2,3 and 4 error correction * Maximum speed up to 38,400 bps
* XON/XOFF, RTS/CTS, HP ENQ/ACK flow control
* Asynchronous or synchronous dial-up operation
* Originate, Answer and Auto-Answer
* Call back security
* Non-volatile memory stores user configurations
* AT command compatible
* 9600 baud send and receive group 3 fax
* Built in diagnostics and test options
* Two year warranty

The price for the entire package will be around $1,000 with educational and developer discounts.

All Specifications subject to change.

For more detailed Specs call Daniel Gittleman at Neuron, Inc. (609) 243-7538.

Adobe Licensing

Jeff Wasilko

After I received my Font Company CD ROM and read their license (more on that later), I called Adobe and asked about their license.

Anyway, I rec'd the info in the mail from Adobe today, and this is their multiple printer license structure:

Retail price per package

Printers	$95		$145	$185	$275	$370	
2-5		$95		$145	$185	$275	$370
6-10	$190	$290	$370	$550	$740		
11-15	$285	$435	$555	$825	$1110		

The Font Folio (various packages grouped on a hard disk) are sold as follows:

Packages Retail Price
1-69 $9,600
1-105 $14,200
1-150 $16,900
CD-ROM $15,900

The Font Folio comes with a 2 printer license, and the same price buys a 3-10 printer license. Additional hard disks are $2,000 each.

The Font Company licenses their fonts for 1 high res printer (over 600dpi), 2 low res printers (below 600 dpi) and 10 rendering stations.

Disclaimer: This is what the droid at Adobe told me...

SIMMs for Color NeXTs

Brian Boonstra

Having received my NeXTstation color recently, a friend and I opened the case to obtain part numbers for the 4 MB SIMMs used by the color machines. I believe the same RAM is used for the new Cubes. Anyway, thanks to William Pietri, those quirky 72 pin dual ported 4 MB SIMMs have been found to be identical to the 4MB SIMMs used by the PS/2 Model 70 (IBM part no. 2933). In addition, and again thanks to William, the best deal on these babies is from South Coast Electronics, (800) 289-8801 [or (213) 208-3260 for you international types]. They're out of LA, and I can recall having been satisfied when I bought Mac memory from them a couple years back. Apparently they even KNOW they're stocking

NeXT RAM - but only if you speak with one of the sales reps named Hani. Otherwise just say you're looking for PS/2 Model 70 RAM. William says they're asking about $300 for 4MB SIMMs. I hope this is some help to those who are looking to upgrade their color machines.

Opening a Compressed File

Patrick W. Hayes

I wrote this little csh script to open files that end in .Z, not in Edit, but rather what they would be opened in if they had been uncompressed:

```
zcat $1 > ‘basename $1 .Z‘
open ‘basename $1 .Z‘
rm ‘basename $1 .Z‘
```

I call it zopen. I'm new to csh scripts so I can't say its robust or anything, but when I type for instance:

zopen Buzz12.ps.Z

it opens the Buzz12 issue of the NeXT User's Journal automatically in Preview, and zopen balls.tiff.Z will open balls.tiff in Icon, etc. without keeping the uncompressed file around after I'm done. Actually, I guess the uncompressed version gets removed before I'm done reading it or looking at it or whatever, but it doesn't seem to matter as (so far anyway) it's been read into a tmp file upon opening.

So, what I want to know is, can I give a script an icon, and a document icon, so that I can click on a .Z file from the browser and have it do the same thing (without writing any code)?

Or does 2.0 do this for you (I'm still on 1.0.)

Washington D.C. Super Seminar

Conrad Geiger

First Announcement of the Super Seminar: NeXT Applications P4: Present, Planned, Projected, Potential, sponsored by the Washington, D.C. Area NeXT User Group (WaNUG).

To be held: June 11-12-13, 1991 at: The American University Washington, D.C.

There will be exhibits each day from 11 a.m. to 3 p.m.; these will include showings by:

Light House Design, Ltd. -- Diagram!
Lotus Development Corp. -- Improv
Objective Technologies, Inc. -- OT Palettes (these include SmartFields, Chooser, MathPalette, GraphPalette)
Wolfram Research, Inc. -- Mathematica
WordPerfect Corp. -- WordPerfect
SAS Institute, Inc. -- The SAS System

There will be tutorial sessions each day at various times; subjects will include:

"Using Mathematica" by Dr. Alfred Gray
"Using PhaseScope" by its author, Dr. Michael Mezzino

There will be poster papers each day from 11 a.m. to 2 p.m. Send abstracts to:

Dr. Larry Medsker, Chair
Computer Science and Information Science
The American University
Washington, D.C. 20016
(202) 885-3306

You may use his e-mail address: medsker@auvm.bitnet
for short messages but not for abstracts or papers, use the conventional mail address for those.

There will be a variety of talks and panel discussions, including the following:

Tuesday, June 11, 1991

9:30 a.m. - 10:45 a.m.
Panel on NeXT Applications at Goddard Space Flight Center
Chair: Dr. Henning Leidecker: NeXT Scientific Visualization
* Mr. Timothy VanSant: Imaging Solar Panels on the Hubble Space Telescope
* Dr. Robert Cahalan: Simulation of Clouds by Fractals

11:00 a.m. - 12:15 p.m.
Lotus Development Corporation, Lotus
Advanced Technology Group: Advantages of NeXT Step
* Theoretical
* Actual Case History of Improv

2:00 p.m. - 3:15 p.m.
Panel on Mathematica
Chair: Dr. Alfred Gray, Professor of Mathematics, University of Maryland
* Dr. Michael Mezzino, chair of the Mathematics Department, University of Houston-Clear Lake (Author of ''PhaseScope'')
* a representative from Wolfram Research, Inc.
* Dr. Henning Leidecker

3:30 p.m. - 4:45 p.m.
Panel on NeXT Music
Chair: Douglas Scott: Graphics-based Sound Editing Programs for Digital Music
* Peter Yadlowsky, University of Virginia: Music Synthesis Programs Using the NeXT Step Interface
* Brad Garton, Director of Computer Music, Columbia University: Automated Sound Generators - ''Looching'' and Its Siblings

Wednesday, June 12, 1991

9:30 a.m. - 10:45 a.m.
Panel on NeXT Interpersonal Computing
Chair: Michael O'Neill, MITRE Corporation

* ESL Incorporated
* Boss Logic, Inc.

11:00 a.m. - 12:15 p.m.
Session 1: NeXT Developer's Panel
Chair: Roger Rosner, Director of Engineering, Light House Design, Ltd. Session
2: Panel on NeXT Applications at the Naval Research Laboratory
Chair: John Michopoulos

2:00 p.m. - 3:15 p.m.
Presentation: NeXT Wall Street Applications by Alex Cone, President of Objective Technologies, Inc. Applications for the following companies will be discussed:
* First Boston Company
* Union Bank of Switzerland
* Lehman Brothers

3:30 p.m. - 4:45 p.m.
Presentation: "NeXT Health Care Professionals' Workstation" by Kent A. Speckman, M.D., Ph.D., Associate Director for R & D, Biomedical Information Communication Center at Oregon Health Sciences University (Invited, but not yet able to confirm)

Thursday, June 13, 1991

9:30 a.m. - 10:45 a.m.
"Vision One: Keynote for the Future" by Dr. Ronald F. E. Weissman, Director of Higher Education for NeXT Computer, Inc.

11:00 a.m. - 12:15 p.m.
Panel on NeXT User Groups: Addressing user's concerns
Chair: Conrad Geiger, NeXT Computer, Inc.

2:00 p.m. - 3:15 p.m.
"Vision Two: Three Vital Advances"
Chair: Hugh O'Neill, President of WaNUG
* Charles Wayne, DARPA Program Manager: Speech Recognition
* Brian Bosch, DARPA Program Manager: T-Mach -- Trusted and Secure Mach
* Kristofer A. Younger, Senior Technical Consultant, NeXT Computer, Inc.: Object Orientation: From Applications to Environments

3:30 p.m. - 4:45
Panel on NeXT and Higher Education
Chair: Dr. Ronald F. E. Weissman

The expected format for each of the above sessions is that 15 minutes of the announced time is reserved for floor-discussions; panel chairs are responsible for the selection of their speakers.

Pre-Registration is $10.00 for any combination of days paid in advance, or $15 paid at the door.

To send in pre-payment, give name, organization, postal address, telephone number, and e-mail address (if available). Make check payable to:

Washington, D.C. Area NeXT Group
and send to:
Hugh O'Neill
President of WaNUG
P.O. Box 39036
Washington, D.C. 20016
(301) 224-3116 (after 8 p.m. EDT)

In addition, any general messages may be addressed to Mr. Hugh O'Neill, or to Mr. Chris Walters at walters@grebyn.com.

There are some dormitory rooms available at The American University for $25 per person per night for double occupancy and $40 per person per night for single occupancy.

There are many hotels and motels available; the Holiday Inn at Chevy Chase, MD has offered discount rates of $75 per room (this includes single, double, or triple occupancy). Call Holiday Inn directly: (301) 656-1500 or 1-800-458-3800.

(When making reservations, please identify the organization as "NeXT Conference for American University: Code Number SM2108." There are ten such rooms reserved at this rate until June 1, 1991.

Conner Releasing Inexpensive Hard Drives

Dave Carlton

Connor Peripherals is readying release of an entire line of SCSI products.

There will be a 500 Meg drive for around $1,100 U.S. (suggested) and also a 200 Meg Drive for around $500 U.S. (suggested).

These drives are all 3.5" in size.

I've seen the product sheets and they compare well with any of the others out there. I certainly like the pricing... I guess we'll see the drive distributors hacking away at the salable price soon enough.

Booting From An External Drive

Kent L. Shephard

All internal drives in NeXT machines should be shipped with the internal at SCSI address #1 what you need to do is changed your external device to SCSI address #0. It should then boot from the external by just giving the command bsd.

Device numbers (/dev/sdxx) are assigned to SCSI devices by starting with the lowest SCSI # and naming it /dev/sd0a the next would be /dev/sd1a. The device number does not equal SCSI #.

Archived Font Collections

Doug Brenner

A few folks have mailed me directly and a few have posted about various problems, etc., with Font Collection 1.0 and 2.0. I just

wanted to send out a general note with a few fixes (I hope) in case others are having similar problems.

1. Don't install the fonts in /NextLibrary/Fonts. I believe you will find trying to do so painful, but this is only my opinion.

2. If you install the fonts as root, make sure you change the INSTALLDIR macro in the Makefile to /LocalLibrary/Fonts. If it is not changed, the fonts will be installed in /Library/Fonts and only root will be able to see the fonts. (The Makefile has $(HOME)/Library/Fonts by default and what does $(HOME) turn into for root?) I'm sorry I didn't check for this condition and it has caused problems.

3. If you install the fonts in /LocalLibrary/Fonts, make sure they are accessible by everyone. This was something I should have included in the Makefile, sorry. These commands should help:

chmod -R a+rX /LocalLibrary/Fonts
chmod a+r /LocalLibrary/Fonts/.afmcache
chmod a+r /LocalLibrary/Fonts/.fontdirectory
chmod a+r /LocalLibrary/Fonts/.fontlist

4. Several people have told me BenjaminCaps is broken. I thought I tried all the fonts prior to sending them out, but this one seems to have escaped me. (It still seems to work for me, but I believe those who have reported problems with it. Delete it.)

5. A few folks have asked about using these fonts with non-NeXT PostScript printers. My access is currently limited to a NeXT printer, hence I cannot give you good information. You might, however, look at the 'fontloader' utility. (It has a UNIX manual page, so either man or the Digital Librarian will find it for you.)

6. Some versions of FrameMaker (under NeXTStep 2.0) don't seem to work with these fonts; FrameMaker core dumps. This has been verified with my demo copy (2.0B2-V) and by David Randall who is using FrameMaker 2.0d.

I believe FrameMaker does not "play by the rules". I support this by pointing out that:

* Edit, WriteNow and other applications seem to work with these fonts.
* FrameMaker does not use the standard Font Panel.
* The Lexi font shows up in FrameMaker as a valid font choice. (At least in my demo version it does.)
* The "fix" below seems to make FrameMaker happy. (This duplicates what NeXT did in /NextLibrary/Fonts.)

(I do not want to start a flamefest over this issue. As far as I know, FrameMaker is a very nice and usable product. It just has a problem here.)

Save this shell script into a file (say FixFrameMaker), make it executable (chmod +x FixFrameMaker), and run it AFTER the fonts have been installed (FixFrameMaker).

Doing this will make it difficult to run buildafmdir against the location where you installed the fonts. I don't have a better solution if you wish to run FrameMaker with these fonts.

I hope that clears up any problems you may have had. Good luck!
-dcb == Doug Brenner <dbrenner@umaxc.weeg.uiowa.edu>

----------cut here----------

```
#! /bin/sh
# ------------------------------------------------------------------------
-
# FixFrameMaker -- create afm and outline font links so FrameMaker works
#
# Copyright (c) 1991 Doug Brenner
#
#    This program is free software; you can redistribute it and/or modify
#    it under the terms of the GNU General Public License as published by
#    the Free Software Foundation; either version 1, or (at your option)
#    any later version.
#
#    This program is distributed in the hope that it will be useful,
#    but WITHOUT ANY WARRANTY; without even the implied warranty of
#    MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE.  See the
#    GNU General Public License for more details.
#
#    You should have received a copy of the GNU General Public License
#    along with this program; if not, write to the Free Software
#    Foundation, Inc., 675 Mass Ave, Cambridge, MA 02139, USA, or send
#    electronic mail to the the author.
#
# FrameMaker doesn't seem to "play by the rules" when it comes to using
# fonts under NeXT Software Release 2.0.  The new font structure seems
# to work for everything except FrameMaker.  (At least I have no reports
# of other problems yet.)
#
# This procedure seaches for font directories within INSTALLDIR (see below)
# and creates links to the enclosed outline and afm files.  The links are
# placed in ${INSTALLDIR}/outline and ${INSTALLDIR}/afm.
#
# This procedure assumes you installed FontCollection-1.0 or 2.0 using the
# 'make install2.0' procedure.  (If you typed 'make install' and you are
# running Software Release 2.0, install2.0 should have been done for you.)
#
# Please note this procedure only does the afm and outline files.  It does
# not do screen bitmaps or screen afm files.  Only one font (TechPhonetic)
# had these components anyway.
#
# Doug Brenner <dbrenner@umaxc.weeg.uiowa.edu>
# ------------------------------------------------------------------------
-

# Where the fonts were installed.  Valid choices are /LocalLibrary/Fonts and
# ~/Library/Fonts.  (Again, I'd suggest against using /NextLibrary/Fonts.)

INSTALLDIR=~/Library/Fonts

# Command to collect all the font names in INSTALLDIR.  DO NOT CHANGE.
FONTS=`(cd ${INSTALLDIR}; ls -d *.font | sed 's/\.font$//')`

mkdirs ${INSTALLDIR}/afm ${INSTALLDIR}/outline

echo "Creating afm and outline links so bad FrameMaker will work..."

for i in ${FONTS}; \
   do echo $i; \
   cd ${INSTALLDIR}/outline; ln -s ../$i.font/$i $i
   cd ${INSTALLDIR}/afm; ln -s ../$i.font/$i.afm $i.afm
done

echo ""
echo "FrameMaker should now work.  You may find, however, that running"
echo "buildafmdir ${INSTALLDIR} will cause errors."
echo "This is not a problem unless you install new fonts again."
```

Free Floppy Drive Fiasco

Dave Paulson

Just so there is no confusion about this, I'd like to reiterate the part about this having been a *special promotion*: the extras mentioned here are available ONLY to people who purchased one of a

limited number of cubes, who paid a special price, and agreed to various other restrictions. In particular, no Businessland cubes were included in the promotion.

Please do not inundate NeXT with requests for free floppy drives.

NeXT FTP Sites

Gerhard Moeller

cs.orst.edu
sonata.cc.purdue.edu
aeneas.mit.edu princeton.edu
sumex.stanford.edu
cs.ubc.ca
umd5.umd.edu
ftphost.cac.washington.edu
ftp.ncsa.uiuc.edu
budapest.math.macalstr.edu
greyrock.mso.colostate.edu

Have joy and fun, Gerhard.

Fujitsu Pricing

Trent Lange & Fredrik Nyman

>I've read in various places here that people were able to find 600MB +
>drives for around $1300 or so, but I haven't been able to find such
>a low price in normal advertisements (lowest I've seen is about $1650
>in MacWeek). Does anybody know about such low-priced beasts?

Several people (including me) have bought Fujitsu 2263SA's from Fast Access in Elmhurst, Ill. I get the impression that it's a really small outfit with low overhead, so they can sell disks with just a small markup.

Current price on a 2263SA (770 MB unformatted, ~660 MB formatted) is $1,413. Shipping is about $15.

You want to talk to Mal Steadman. Their # is 1-708-530-7749

Installing g++

Mark Adler

How I installed the Gnu C++ library (your mileage may vary):

1. Got libg++-1.39.0.tar.Z from prep.ai.mit.edu via anonymous ftp.
2. In /me/tmp, I did: "zcat libg++-1.39.0.tar.Z | tar xvf -". Did a "cd libg++-1.39.0".
3. Created /usr/gnu, and /usr/gnu/lib (writable from me).
4. Changed Makefile(32) to "PWD=/me/tmp/libg++-1.39.0", commented out Makefile(31) (inserted "#" in first column).
5. Uncommented Makefile(93) to leave out the gnu malloc routines.
6. Changed "GXX = g++" to "GXX = cc++" in Makefile(120).
7. Changed "CC = gcc" to "CC = cc" in Makefile(124).
8. Commented out Makefile(148) to kill verbosity flags.
9. Did "make src" (takes a while--ignore the warnings).
10. Did "make install-lib" (puts libg++.a in /usr/gnu/lib).
11. Added these lines after line 2 in g++-include/time.h:

```
#ifdef NeXT
#define _TIME_H 1
#endif
```

12. Did "make install-include-files" (this puts the include files in /usr/gnu/lib/g++-include).
13. Did "make tests" (this takes rather a lot of disk space). There were differences from the expected output, but they appeared to just be precision problems. I didn't investigate further.
14. Removed the directory in tmp ("cd .. ; rm -rf libg++-1.39.0").
15. Made a test program, x.cc, containing:

```
#include <stream.h>
main() {
  cout << "Hello world!\n";
}
```

and compiled it using:

```
cc++ -I/usr/gnu/lib/g++-include -O x.cc -L/usr/gnu/lib -lg++
```

and then:

```
a.out
```

printed:

```
Hello world!
```

How about that.

And then you can merrily cc++ to your heart's content. Have fun.

Printing To An HPIII

Phillip Tokumaru

1) Next and HP don't agree on the RS-232 standard. Here's the correct "null modem" cable. Don't use the one from NeXT because you will lose data and get all sorts of errors. This is because the HP sets the RTS(4) pin whenever it's powered up. The Next thinks this means it's always ready for data. Instead, the HP sets the DTR(20) pin whenever it's ready for data. The Next basically ignores this for /dev/ttya,b and /dev/ttyfa,b. (It's basically the same as Next's with the 4 and 20 pins reversed on the DB-25 side). I only discovered this discrepancy after reading both the Next's and the HP's handshaking descriptions, many times. If I learned anything it's: Never, Never, Never, take a "standard" for granted!

NeXT 68040 to HP LaserJet III Cable (not a Null-modem cable):

Mini-Din		HP DB-25	
1	(DTR)	nc	
2	(DCD)	4	(RTS)
3	(TXD)	3	(RXD)
4	(GND)	7	(GND)
5	(RXD)	2	(TXD)
6	(RTS)	5	(CTS)
7	(RTXC)	nc	
8	(CTS)	20	(DTR)

2) Use hardware flow control for reliability, i.e., /dev/ttyfa for serial port a and /dev/ttyfb for serial port b (What I'd really like is a /dev/appletalk, then I could get up to 230kb)

Next and printer configurations follow:

My printcap from my ni database: (note that 19.2kb work just fine)

```
LaserJet_III: \
   :note=LaserJet_III:ty=HP LaserJet III PostScript: \
```

```
   :sd=/usr/spool/NeXT/LaserJet_III:lp=/dev/ttyfa: \
       :lf=/usr/adm/lpd-errs:af=/usr/adm/lp.acct:br=19200:rw:-
fc#0000374: \
      :fs#0000003:xc#0:xs#0040040:mx#0:sf:sb:if=/usr/lib/tran-
script/psif: \
   :of=/usr/lib/transcript/psof:gf=/usr/lib/transcript/psgf: \
   :nf=/usr/lib/transcript/psnf:tf=/usr/lib/transcript/pstf: \
   :rf=/usr/lib/transcript/psrf:vf=/usr/lib/transcript/psvf: \
   :cf=/usr/lib/transcript/pscf:df=/usr/lib/transcript/psdf:
```

HP printer configuration:

auto cont = off (doesn't matter)
I/O = serial
serial=rs-232
baud rate = 19200 (same as in ni database/ printcap)
robust xon = on (doesn't matter)
dtr polarity = hi
startpage = off (doesn't matter)
language=english
ret = med (you choose)

About the printer: After downloading the fonts, it prints up to it's rated speed (7-8ppm) for text and simple graphics. Because of it's pea (68000) brain, complex ps graphics take longer. The consolation you get is that there is virtually no performance hit on the Next. Except for very thin lines, the resolution enhancement looks as good as the Next's 400 dpi. In addition, the quality of construction is typical HP, high.

ImageMagick

John Cristy

I just received Pencom's X11 server for the Next. I fixed a few minor bugs in ImageMagick so it now works correctly with the Pencom server. ImageMagick can be obtained via anonymous FTP as contrib/ImageMagick.tar.Z from export.lcs.mit.edu.

For those that do not know, ImageMagick is a machine architecture independent image processing and display program. It can display any image in the MIFF format on any workstation display running an X server. Display first determines the hardware capabilities of the workstation. If the number of unique colors in the image is less than or equal to the number the workstation can support, the image is displayed in an X window. Otherwise the number of colors in the image is first reduced to match the color resolution of the workstation before it is displayed.

cristy@dupont.com

Impact Award And Contest

Company Release

Daniel Hung The top prize for IMPACT's second software contest has been awarded to Mr. Jean-Christophe Dhellemmes (jcd@-maps.cs.cmu.edu) and Mr. Frederic Perlant.

Mr. Dhellemmes and Mr. Perlant have recently founded Teledia, Inc., a software company located in Pittsburgh, Pennsylvania. They submitted a program called PhrasePlayer which is a voice-controlled digital dictation machine that can be used to play back a recorded message with varying speed and pauses. PhrasePlayer plays back the phrases in a message step by step instead of continuously. It does this by automatically recognizing and segmenting a message into a series of phrases.

PhrasePlayer can be activated to play each phrase by a mouse click or by voice control. And it can be adapted to a user's typing speed, play a user's voice mail faster, or help a user rehearse a speech. NeXT mail voice attachments can be dragged directly into the application.

In addition to PhrasePlayer, Teledia, Inc. has also developed BackupMaster, an automated software backup system onto floppies or optical disks, and is developing other voice-controlled applications. IMPACT Software Publishing is currently seeking distribution rights for these programs.

As the top prize winner, Teledia, Inc. received a $1000 award and will be offered a contract to have PhrasePlayer published by IMPACT Software Publishing, Inc.

Starting in June 1991, IMPACT Software Publishing will be distributing PhaseScope, PhrasePlayer, BackupMaster, and other software written by independent developers from all over the country. If you have developed or plan on developing a NeXT program which you would like to have distributed by IMPACT, please send your name, address, and a brief description of the program to l3my@vax5.cit.cornell.edu.

We are subsequently sponsoring a third software contest this year with a software submission deadline of October 15, 1991. All programmers who have access to a NeXT computer are invited to develop and submit a NeXT program. (We will also be sponsoring a fourth software contest with a tentative submission deadline of April 15, 1992.)

The winner of the third contest will be announced on this net on October 25, 1991. The writer of the best submitted program will be awarded a $1000 prize and offered a contract to have the software published. In addition, IMPACT will offer a publishing contract for any other submitted program which shows creativity, originality, and marketability.

To submit a program, copy the executable codes onto a floppy disk and send the disk to:

IMPACT Software Publishing, Inc. 306 College Avenue Ithaca, NY 14850

Or else, send a NeXT-mail with the program attached to mlee@c-s.cornell.edu. In addition to the executable codes, please add a README file with a brief description of how to use the software and where to find additional documentation (if any).

Improv API Tools

Izumi Ohzawa

Thank you Lotus!!!

I just found out that there is Improv.API.tar (also tar.Z) file (800k to 1MB) on the Purdue archives submissions directory.

It will probably moved to somewhere appropriate later, and someone will announce it then. But, I just wanted to let some of you folks know that you can get it now. It comes with a WriteNow readme file, and an Installer package (826kb).

Making the API toolkit via FTP is really a good idea.

Job Opportunity

Bruce Webster

The Banzai Research Institute (aka Pages) is looking for a really great NeXT programmer to join an existing team (Bruce Webster, Bruce Henderson, Greg Kostello and others) working on next-generation page layout technology. Great salary, beautiful location, loyal companions, much fun, your own office, and a chance to change the software industry--not a bad combination. Reply to Bruce Webster at any of the addresses below.

Bruce F. Webster Director
Banzai Research Institute
(VP of Product Development, Pages/KVM, Inc.)
3914 Murphy Canyon Road, Suite A-160
San Diego, CA 92123
619) 492-9050
(FAX: 492-9124)
bwebster@pages.com
uunet!pages!bwebster

JPEG Compression

Tod Rieger & Eric P. Scott & Bill Edney

A passage from 'Communications of the ACM' April 1991, volume 34, number 4, page 45:

NeXTstep 2.1 is currently shipping: this includes all video NeXTdimension capabilities with the exception of JPEG hardware support. JPEG hardware support will not be available until the NeXTstep 2.2 release in the fourth quarter of 1991.

More current information:

On April 23, Avie Tevanian, speaking before the BANG Developer SIG, said that "as of today" [this past Tuesday] there were *no* plans for a 2.2 release. NeXTdimension owners would merely receive a floppy disk with new drivers.

From Bill Edney:

The problem of the C-Cubed JPEG compression chip has been solved. My relatively well informed sources tell me that NeXT will indeed put the JPEG chip on a daughterboard. This daughterboard will clip onto the NeXTdimension board. We should see prototypes of this daughterboard in June or July time-frame with quantity shipping in August or Sept. NeXTdimension has already started shipping in VERY LIMITED QUANTITY, with large quantities shipping by June/July. This might actually turn out to be a benefit for NeXT (putting the compression chip on a daughterboard). This will allow them to sell a "hardware-compression version" and a "non-hardware-compression version" of the NeXTdimension at two different prices. It will also allow users to swap daughterboards 3 years down the road when a new compression chip hits the market (MPEG possibly).

Sorry I forgot this last point in my message about NeXTdimension. I talked with Alvy Ray Smith (one of the higher ups at Pixar) last week in Santa Fe at a presentation he was giving. He said that Renderman (including NeXT's "Interactive Renderman") were to be BUNDLED with 3.0. It seems to me that he would know what he was talking about.

OK, folks, here's the current scoop (which made me feel like a stoop). I just talked to a Lola Gill at Pixar (415-215-3480). Pixar will be releasing Renderman for the NeXT in June. It is with extreme disappointment that I must tell you all that, contrary to my previous messages, Renderman will NOT be bundled with OS 3.0 (at least for the time being). It will cost $2500 from Pixar. The only bright side to this is that if you have a NeXTdimension board, the i860 will indeed be able to shade in real-time (in what is to be called Interactive Renderman). I thought that bundling it would sell a LOT of NeXT machines, but I guess Steve decided differently.

Down and out (another $2500) in Los Alamos

Renderman

Jonathan Tilley

A friend of mine has heard via a NeXT employee that Steve Jobs has announced at the launch of NeXT France that Pixar will release a version of Renderman for the NeXT. According to my source, it will run on all flavors of NeXT and will use the i860 on the dimension board to give real time shading! Also the jpeg chip lock up has been fixed - NeXT are making a daughter board containing a compression chip for the dimension board.

Ernest N. Prabhakar,

I called Pixar on the phone, and they said they would have a version for the NeXT in June that I could buy for $2,500 (plus 50% off educational). I haven't

gotten written confirmation, but that seems to be the current situation. Oh yes, they said it would run on my '040 monochrome.

I have the brochure from Pixar in front of me. "Developer's RenderMan" is the all-purpose 3D rendering tool based on the "RenderMan Interface 3-D scene description specification" and the "PhotoRealistic" renderings. The two together (modeling + rendering) form a complete package.

Just to make you drool: - texture - reflectivity - multiple light sources - shadows - shading - motion blur - antialiasing - depth-of-field - transparency

Maple Software

William Gilbert

From the Kitchener-Waterloo Record on April 13, 1991 from an interview with the Maple software group:

And Next, the new educational computer developed by Apple co-founder Steve Jobs, has asked Maple to produce a Next-compatible version of its software. The worldwide marketplace for symbolic math software is currently a two-horse race between Maple and Mathematica, a product of the larger Wolfram Research Inc., of Champagne, Ill.

"I see us actually passing the (market) leader, Mathematica, in two and a half to three years" [Neumann said]

Modem Locks Up

Andrew Duchowski

A while back I posted a problem with /dev/cua locking. The problem is now being fixed, and I thought I'd summarize the solution

(note that this may not apply to modems other than the DoveFax, also, if you have a DoveFax and are not interested in using its data [as opposed to fax] capabilities, i.e. dialing out via /dev/cua, this may not interest you):

The components:

DoveFax 2400 data/9600 fax modem -NeXT '040 cube (NS 2.0)

The symptom:

Using the modem for data (as opposed to fax), couldn't get a hold of /dev/cua (device busy)

(there was no problem with using the modem for faxes - it worked "out of the box", according to the manual setup)

The problem identified:

The getty on the serial port captured the line and wouldn't let go. It does this when it sees a DCD signal on the line. Now, normally, some modems turn this signal on by default, but one can force the signal off (for hayes-compatible modems, with the AT&C1 command). The DoveFax modem has a problem in that it puts on the CTS signal on the same pin where the computer looks for the DCD. And so, the getty will always get the port, hence /dev/cua busy.

Workarounds:

Basically, the modem works fine unless you need to open cua/b while there is a getty on the line (ttyda/b).

To dial out, one can manipulate the getty on the serial port, depending on whether you want to dial in or out.

The solution:

Send the modem back to Dove and they'll fix the problem at the hardware level so that the signals go to the right pins

If you opt for the hardware solution, you'll also have to obtain the upgraded DoveFax driver, so that the modem, when in fax mode, will know where the right signals are (on which pins).

Thanks for the prompt action on diagnosing and solving the problem go to:

Craig Goss at B&W Software who originally wrote the DoveFax driver and who did most of the diagnosing/solving/putting_up_-with_ impatient_users_such_as_myself

Trey McStravick at Dove Tech Support for fixing the pin/signal problem on my modem and getting my modem back to me in record time

General _personal_ impressions:

Overall, I'm impressed. My problem got fixed promptly, with minimal hassles.

The modem works great, I'm real impressed with the fax driver - done in true NeXT spirit, nice interface.

As an aside, I have to tell somebody - thank heavens for multitasking. What a joy it is to dial out/fax in one window and do other stuff in another. Anybody wanna buy an old PC?

Disclaimer:

I recall once seeing a person in Vancouver who has a DoveFax who said that while in beta test (s)he couldn't divulge any secrets on the modem. Why, I don't know. I also don't know what the legal aspects are with putting people's names on comp.sys.next, or their email addresses/phone numbers, but I did obtain permission from Craig for putting up this solution.

I will refrain from putting up his email address and the Dove tech support guys' phone numbers though. I imagine they're pretty busy and may not necessarily appreciate getting extra mail/calls.

Besides that, assume the standard blurb: this isn't at all official :-)

andrewd@cs.tamu.edu

How To Make Money

John H. Osborn

I'll make it plainer: Despite what I've been told in the past, and what I may have posted, NeXT isn't going to fix this problem. It is up to somebody who wants to make lots of money to write the damn driver, bundle it with a cable, and sell it though NeXTconnection for $100. That way, I just phone up NeXTconnection, buy the driver, and buy a DeskJet 500 from my local CompuAdd. The next morning, I'll be printing. WHOEVER DOES THIS WILL

MAKE MONEY. Students and poor NeXT owners everywhere will thank you and throw money at you.

John H. Osborn

osborn@cs.utexas.edu

Monitor Specifications

John Graves

I hate to see almost but not quite correct information posted to comp.sys.next. Regarding the video timing and color monitor specs, here are some numbers:

* The file /usr/include/nextdev/video.h defines the number of visible pixels in a horizontal line and the size of a horizontal line in VRAM (1120 and 1152, respectively). Similarly, there are 832 visible vertical lines, but physically 910 fit into VRAM. This file does not have anything to do with horizontal or vertical sync or blanking times (front and back porch).

* The horizontal and vertical timing is:

Horizontal Period = Horz Back Porch + Active Video + Horz Front Porch + Horz Sync 16.32 us 2.88 11.20 0.961.28

Vertical Period = Vert Back Porch + Active Video + Vert Front Porch + Vertical Sync 14.62 ms 0.783 13.578 0.1306 0.1306

* The pixel clock is 100 MHz.

* The important specs for the color monitor are: Horz Scan Rate: 61 KHz Vertical Scan Rate: 68 Hz NON-INTERLACED

* All of the above information is in the data sheets or can be easily measured with an oscilloscope.

* Many people don't realize that NeXT also sells a 21" monitor in addition to the17" monitor which most people have seen. Both monitors use 1120 by 832 pixels and can be used with NeXTstation Color or NeXTdimension.

Music Source For The NeXT

Paul Lansky

Winnie.princeton.eduismentionedinseverallocationsasasourcefor NeXTmusicsoftware.Winnieisgone,forever.NeXTmusicsoftwareisavailableinpub/musicatprinceton.edu.

Paul Lansky

Music

Princeton University

New Postscript Book

Jess Anderson

I've been asked by a correspondent to supply more information about Glenn Reid's book. My correspondent also asks whether the posting of book reviews might be appropriate for these newsgroups, an idea with which I enthusiastically agree.

Glenn is a frequent poster here (Usenet), and has delicately not referred to his book. For a long time, he has been a major source of reliable and useful information about PostScript. He's currently at RightBrain software, makers of TouchType (apparently as a consultant). Before that he was at NeXT, before that at Adobe. It seems reasonable to conclude he knows what he's talking about.

He is unfailingly a pleasant person who seems genuinely committed to the idea that it's good to help people who want to learn useful things.

He's also the author of PostScript Language Program Design, published by Adobe/Addison-Wesley.

I can't review the book, which I've only just obtained and have only skimmed. But for those who are interested in PS programming, here's the publication data.

Reid, Glenn C.
Thinking in PostScript
ISBN 0-201-52372-8
Addison-Wesley (list $22.95 in the US)
xiii+221p.

From the Preface:

"This book is intended to provide a practical, intriguing, and fresh look at the PostScript programming language.... This book helps you build a solid foundation of understanding for the PostScript language. It teaches you to become an expert programmer and to have confidence that you have written the best possible PostScript program. It shows you how to combine the elements of the language into a strong, well-designed, modular program that is easy to develop and maintain. It is not a problem-solving book, nor simply a reference to the language; it is a guide to developing programming techniques and to learning how to use the PostScript tool kit, which is filled with hundreds of operators."

NeXTmail Made Simpler

Varun Mitroo

Here's a really simple way for people who have a NeXT at home (connected through a modem using kermit) to receive and store their e-mail on their NeXT.

Instead of typing "mail" or "elm" or whatever from your mail account, type: cat /usr/spool/mail/login_name (login_name is the name of your account, of course) Then, just highlight your entire mail file with the mouse and copy it to the clipboard - command-c.

Then, open up a new document in Edit and paste in the text from the clipboard. Save this file into your /usr/spool/mail directory on your NeXT with the name of the file being the name of your account on your NeXT. (You could also type "cat > /usr/spool/mail/login_name" command-v control-d)

When you run Mail, your e-mail will show up on your NeXT (you may have to select "New Mail" from the menu.) This will also receive NeXTmail correctly. Now you can create mailboxes and store your mail with the nice features of the NeXT! (including pictures of people)

I know this may seem really simple to some people, and I know there are better ways to do this, but I'm tired of hearing USER GROUP LEADERS for the NeXT complaining that they do not want to receive NeXTmail as they have no way of interpreting it.

NeXT Plotter

Dennis Jespersen

We have released version 1.0 of our plotting package nxyplot for the NeXT. This is for NeXT machines running 2.0 or higher. This program does two-dimensional plots, reading ASCII data from a file or files. Major differences over the previous release: can now plot data from multiple files on the same plot; support for changing fonts; better formatting of tic mark labels on the axes.

Look for the file nxyplot1.0.tar.Z on sonata.cc.purdue.edu and cs.orst.edu; it was put into the pub/next/submissions directory on each of those sites. Presumably it will migrate to the 2.0 sources directory on sonata.cc.purdue.edu and the sources directory on cs.orst.edu. All source code, an executable, and a sample data file are included.

We solicit suggestions for improvements and enhancements, and especially bug reports. Send email to jesperse@rft28.nas.nasa.gov or pulliam@rft29.nas.nasa.gov.

This program carries no warranty, express or implied. Use at your own risk, and remember: you get what you pay for.

NeXT to PC Connection

Ken Birdwell

Well, I've received quite a number of requests for this, so I've decided to post it.

>From: uw-coco!yoda.eecs.wsu.edu!eric (Eric Schneider)

If you want to be to access files on your AT from the NeXT, and you aren't using the AT at the same time, then you might look into SOSS (Son of Stan's Server) a Copylefted NFS server for MS-DOS. Now lets see if I can remember were to find it!. Ah yes, it's spdcc.com. Let me know if this is something you are looking for. BTW, you will need a network card on the AT, like a WD8003E (about $179), and you should be able to copy files from the NeXT to the AT for backup to tape also.

Eric Schneider

>From: uw-coco!cobalt.cco.caltech.edu!madler (Mark Adler)

The hardware to do it should only run about $200 for an ethernet card. As for the software, you need NFS on the PC. I've seen it from Sun (and that should work with the NeXT since NFS on Suns works with the NeXT), but I don't know how much it costs. If you can find someone who has it, maybe you can pilfer a copy. (I didn't say that. I've never even heard of Sun's, really your honor.)

Mark

>From: uw-coco!sdcc14.UCSD.EDU!ph600fbj (james dehnert)

My neighbor hooked his pc up as a terminal. I don't know for sure, but i think he could have transferred files between the two machines. Try a serial to serial terminal set up and use a ps comm package with kermit. That should do the trick.

>From: uw-coco!csn.org!datran2!smb (Steven M. Boker)

Its really, really easy and much less expensive than you've been told. Buy a WD8003 or WD8013 (western digital ethernet card). ~$180 to $250 depending on your supplier. Get NCSA telnet from ftp land and you're done. If you want to get fancy and you have another $300 to blow you can get PCNFS from Sun or Beame and Whitesides and you can have the NeXT act as an NFS server for your AT. Shared filesystems and all that for $550 tops and less that $200 if you're willing to live with FTP transfers.

Steve

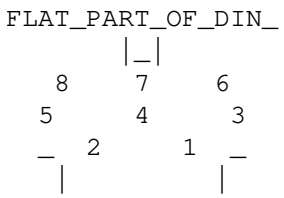
>From: uw-coco!PSUVM.PSU.EDU!DWN2

It sounds like you want a solution similar to what Jess Anderson recommends. Right now, this is probably the best/cheapsest. At some time if SLIP is running on the NeXT you can connect the machines via the serials ports. If you'll settle for file transfers, for the time being, what follows is a note I sent someone on making a cable. If you want a copy of SLIP and are able to do what's necessary to transform it to a NeXT version, it can be found at emu.utexas.edu I haven't the time or the knowledge to get it up on the NeXT

If you want to know how to run a cable between the two and use something like kermit, I have this set-up on my NeXT <-> 386SX. [I assume that the AT serial ports are the same as the 386SX, or modify accordingly.] You need to get a connector for the NeXT serial port - 8 pin din - this was the hardest part for me as Radio Shack doesn't sell them. My uncle in California got one at some computer warehouse. The info on cables is in /NextLibrary/Documentation/NextUser/SerialPorts.rft The cable looks like this (for 040):

function	mini-din	RS-232
DTR	1	20
DCD	2	8
TXD	3	2
GND	4	7
RXD	5	3
RTS	6	4
CTS	8	5

The pins on the mini-din look like this:



So just wire together the cable (no one seemed to have one made, e.g. NeXTConnection) and connect the machines. I use kermit, which I have to use as root to get to work, newer versions may work better, also the kermit version for NeXT I have only goes to 9600 baud, too bad because the PC kermit goes to 19200.

My .kermrc file in the root directory looks like: set line /dev/cua set speed 9600 and the PC kermit is set to 8 N 1.

Transfers work well, but 19200 would be great. BTW kermit for NeXT is at most ftp sites. Hope this is what you were looking for.

Oh, total cost is about $6.00

Dave

+ Dave Norton email to dwn2@psuvm.psu.edu +

>From: uw-coco!faraday.clas.Virginia.EDU!pts (Paul T. Shannon)

I suggest you look at PC-NFS. This allows your AT to use the NeXT disk. Sun first marketed this. I think Novell has a version out now. Sun sold us a copy for < $200. It worked great for me.

Paul

>From: "Adrian Goldman, WIM, Rutgers" <uw-coco!ocelot.RUTGERS.EDU!GOLDMAN>

Well, at work, I've connected up a Compaq 386/20 running os/2 (which I like) and my NeXT (which I also like). The solution I'm using is an ethernet card (with an NDIS driver) and pc/tcp for os/2 from ftp software in MA. They also make pc/tcp for dos. It includes (eg) nfs client (& server I think), so should solve your problem. It should cost ca 500-1k, because a card will run you say 200-300, and the software is, I think, around 300.

>From: uw-coco!ee.tamu.edu!cantrell (Pierce Cantrell)

How about a $250 solution. Just buy an Ethernet card for the PC-At ($250 or less) and get a copy of NCSA telnet (Free). Then put both machines on thinwire or twisted pair ethernet. If you don't have a network to put them both on just put an 8 ft. thinwire cable between them. Then ftp as much as you like.

pierce

>From: uw-coco!wimsey.bc.ca!jchin (Joseph Chin)

You didn't mention which OS you're running on the AT. But I assume you are running MSDOS on the AT. This makes it a bit more troublesome ... but there is definitely no shortage of possibilities:

1) I have a 386SX networked to my NeXT. The 386SX has a Western Digital WD8003e ethernet card and runs Sun's PC-NFS software (which I got for peanuts from a local university's PC support centre because the version was an older one, but it works). I can mount file directories on the NeXT from the PC. I can even do user authentication, but I haven't been able to access the NeXT printer from the PC yet. I'll figure that out when the need arises. Total cost: approx. $200US for the WD8003e and $400-$500 for the PC-NFS (new, not too sure about this one).

2) I've heard of a public domain TCP/IP package for MS-DOS PC. This will not give you NFS, but you'll still be able to FTP files to/from the NeXT to the PC.

3) Serial connection. You can always use a $10 serial cable to connect the NeXT serial port to the PC's serial port. You'll then use file transfer programs such as rz/sz (Zmodem protocols) on the NeXT side and a communication program of your choice (it must support the protocol used on the NeXT side) on the PC.

4) PLI or DIT floppy drives. For less than $500, you can hook one of these babies to your NeXT. Then you can read/write 1.44MB MS-DOS floppies! These drives also support 2.88MB NeXT floppies.

Hope this info is useful. Usual disclaimers.

>From: Will Raymond <uw-coco!cs.unc.edu!raymond>

Do you have Unix running on the AT - if so - just use NFS, FTp or rsh. If not, maybe what you need is pc/tcp from FTP Solutions - or some other package that allows DOS to Unix transfers.

You'll need an ethernet card of course.

I have a '386 running Interactive 5.3 2.2 with NFS - TCP extensions - cost about $643 hooked into my cube - runs great on the 386 end. OS 2.0 has some hosed up nfs type progs. - and it doesn't like it if the '386 rlogins from anything but csh.

If you need any more details - please email me.

Will

>From: Michael D. Callaghan <uw-coco!wam.umd.edu!mikec>

I have my AT-compatible on an ethernet LAN with my NeXT-Cube. I typically use my 1.44meg disk drive on my AT, since I don't have a floppy drive on the Cube.

I purchased a 3-Com 3C-503 ethernet board, and some nfs client software. Now I have my NeXT /client partition mounted as G:\ on the AT.

For what it's worth, I'm thinking of selling the whole set up, since I have SoftPC on my Cube now. It's actually faster than my AT.

I should warn you, though, that unless you have a 386, you'll run into a memory problem. I cannot run a lot of my accounting packages when I have the nfs TSRs loaded. I have reboot to update my acct. system!

It is really wonderful to be able to telnet from the AT, though. There are typically two people in my computer room. One of us can usually get by on a single-window vt-100!

Lastly, I've heard that there exists a piece of software that runs under Windows 3.0 that will allow multiple telnet sessions, each in its own window. Or you could purchase the new X-Client software soon to be released (don't know the name) for DOS, and get Mouse-X for the NeXT, and the AT could be an X-Windows Client! I want to try that!

>From: uw-coco!oddjob.uchicago.edu!oconnor!op (Operations)

My own personal advice would be to buy a nice ethernet card for your PC and PC-NFS software from FTP software, therefore you have FTP, NFS, and all that nice stuff (fujitsu, printers, etc.) available to both systems. you could get really fancy and have the NeXT mount the PC drives and vice versa. although that probably really wouldn't work.

No guarantees.

Worst case with an ethernet card and Phil Karn's KA9Q software would be ftp'ing back and forth everything you want to x-fer. of course this solution would involve stringing thin-net or twisted-pair (whatever both the NeXT and the PC e-net card both support) between the two.

In my mind this would be the cheaper, smart thing to do.

Reply to: oddjob.uchicago.edu!oconnor!mjt

>From: uunet!wang.com!ice (Fredrik Nyman)

Whee... Absolutely easiest: get an Ethernet board for the AT. An 16 bit Ethernet card would be good, but an 8bit card is fine too. I've used 3Com's 3c503 boards extensively, and these puppies are pretty good.

Now you'll need software. I'd recommend that you get NCSA Telnet and the Clarkson packet drivers. This will give you FTP, which should be a good start as it's free and lets you transfer files quickly.

If you need to *share* files, it becomes a tad trickier. NFS should be *the* way to go, but I'm not aware of any public domain implementations. If you're willing to shell out some money, check out FTP software's PC-FTP and Interdrive package (e-mail to info@ftp.com). You may also want to check with Sun about their PC-NFS package. They recently came out with a new version. The previous version was a dog, but they might have improved it.

Let me know if you need info about where to grab NCSA Telnet and Clarkson's packet drivers. I could even e-mail them to you, it's no biggie.

>From: uunet!galileo.govt.shearson.com!nwc (Nick Christopher)

I hooked my NeXT to my PC using:

3Com 3C501 board in PC (501 is an old card model 503 or etherlink II are newer) 8' segment of thin net Sun's PCNFS

The 3Com and cable segment would fit into your $$ range but I have a feeling the PCNFS is expensive (mine was a leftover from work). But there are public domain and/or cheaper software packages than PCNFS - ask around after these and if you could forward me any useful answers.

PCNFS lets the PC use NeXT's disk and provides telnet and ftp. Most packages offer similar setups. Few if any let the UNIX box access the PC's disk.

>From: uw-coco!gibbs.physics.purdue.edu!murphy (William J. Murphy)

The $500 solution is this. Buy an ethernet card ~$250. Call Beame and Whiteside about their Telnet and NFS packages (416) 648-6556. The telnet costs $97.50 to educational discount, the nfs is ~$200. I have played with the telnet and find it works quite well. The NFS hasn't been ordered, but if it is any help, the Purdue University Computing Center (PUCC) has decided that this is the package that they will use for the PC to Unix system file sharing. They tested a variety of the NFS/telnet packages. B&W came out on top.

I don't work for PUCC, I am just passing on their advice which I've been given. Don't buy a 3C501 ethernet card from 3COM, it sucks.

Bill Murphy
murphy@physics.purdue.edu

>From: anderson@dogie.macc.wisc.edu (Jess Anderson)

I have a (so far) $200 solution: a Western Digital Ethercard Plus (16-bit, thin wire) and ten feet of thin wire. Using NCSA packet drivers and version 2.3beta15, I can telnet to the NeXT from the AT and ftp in both directions. So far, it's just a little LAN consisting of the two machines. Still to be tried is PC NFS (or something) to share file systems. Still to be tried is SLIP to connect to the office (I'm real interested in TeleConnect in that [ha ha] connection). The ultimate goal is that my little LAN will join the Internet, und zen za vorld! :-)

Alex Woo

Printer Print Times

Various

Here are the results of a PostScript benchmark we recently posted to comp.laser-printers and comp.periphs.printers.

As you can see, the new NeXT is pretty fast. Perhaps we should drop this NeXT Terminal discussion and the monitor altogether and suggest that NeXT just sell a printer... :-)

LaserDoctor Results

PRINTER VERSION TIME SUBMITTER

Agfa P3400PS 48.1 23.886 martin@typeset.ulcc.ac.uk
Apple LaserWriter Plus 38.0 113.474 martin@typeset.ulcc.ac.uk
Apple LaserWriter Plus 38.0 115.064 Carmicha@pioneer.arc.nasa.gov
Apple LaserWriter II NT 47.0 62.006 Carmicha@pioneer.arc.nasa.gov
Apple LaserWriter II NT 47.0 81.798 glewis@fws204.intel.com
Apple LaserWriter IINTX 47.0 21.856 jjwcmp@ultb.isc.rit.edu
DEC Printserver 40 48.3 9.29 Carmicha@pioneer.arc.nasa.gov
DEC Printserver 20 48.3 25.9 glewis@fws204.intel.com
DEC Scriptprinter 47.2 59.33 kosower@fnal.fnal.gov
DEC Scriptprinter 47.2 59.432 dayhoff@ddnvx1.af.mil
DEC VAXStation 3100 1006.5 20.864 dayhoff@ddnvx1.af.mil
Ghostscript Sparc 2 2.1.1 13.6 jknowles@trident.arc.nasa.gov
Ghostscript SUN 3/280 2.1 16.34 russ@artsci.toronto.edu
HP LJ II 52.3 81.832 jcm@naperville.att.com
HP LJ IIP w Adobe PS 70.035 lilianstrom@fnal.bitnet
HP LJ III w Pac CE270 2.28 345.8 panda%dad@whgsu.att.com
HP LJ III w Adobe PS 52.2 73.765 dbraun@ira.uka.de
HP LJ III w Adobe PS 52.2 65.49 ericrot@rosevax.rosemount.com
HP LJ IIIsi 5.614 lilianstrom@krang.fnal.gov
HP PS Jet+ 46.1 84.56 colsa,inc. Huntsville
Imagen Ultra 5.0TIP/II 14.1 50.864 thomas@wk213.nas.nasa.gov
Lino L300/RIP II(1270) 51.8 25.646 martin@typeset.ulcc.ac.uk
Lino L300/RIP 4 (1270) 51.8 20.745 jjwcmp@ultb.isc.rit.edu
Newgen TurboPS 400 47.0 8.53 dbraun@ira.uka.de
NeXT 1.0a '030 1006.24 9.344 Woo@ames.arc.nasa.gov
NeXT 2.0 '040 2000.6 2.272 jchin@van-bc.wimsey.bc.ca
QMS-PS 2000 52.4 1.903 qmsseq!lyle
QMS-PS 800 II 47.0 44.766 woo@ames.arc.nasa.gov
QMS-PS 810 47.2 43.074 ssmullen@utcvm.bitnet
QMS-PS 810 Turbo 51.7 15.421 woo@ames.arc.nasa.gov
QMS-PS 820 51.7 15.512 qmsseq!lyle
QMS-PS 820 47.0 44.652 larryp@sco.com
QMS-PS 2210 51.0 17.223 jjwcmp@ultb.isc.rit.edu
Qume CrystalPrint Pub 200.0 7.66 sysnmc@chron.com
Ricoh PC Laser 6000/PS 50.5 43.057 koga@ames.arc.nasa.gov
SUN SPARC I printer 2.1 25.680 kubicar@sun.com
Talaris 1590-T(firmware) 1.3 38.94 dstivend@cmsa.gmr.com
Talaris 1590-T 1.3 77.69 kosower@fnala.fnal.gov
TI Omnilaser 2115 47.0 57.572 sullivan@alw.nih.edu
TI Microlaser 52.1 55.45 sysnmc@chron.com

P.S. This is not a great benchmark since these times represent internal postscript time to print a wheel of text. But they are the only ones we could find.

SCSIInquirer

Jiro Nakamura

Folks - I've just released SCSIInquirer v1.3 (r5). It should take a couple of days to migrate to its proper place in cs.orst.edu and nova.cc.purdue.edu. As you might not know, SCSIInquirer is Yet-Another-SCSI-Bus-Inquirer Program (YASBIP). In short, it tells you the device numbers, sizes, etc. of the SCSI peripherals on your bus. It's handy when you add new devices and need to know the ID numbers, but not much else. Source is included and is a good reference for people interested in connecting SCSI devices to their NeXT's.

Best of all: it's free. ;-)

- jiro nakamura

Slat-1

Paul Hammond

We at Uninet have just finished our port of the SLAT-1 to the NeXT workstations. The SLAT-1 provides additional serial and parallel ports to the NeXT. The SLAT-1 attaches to the NeXT on the SCSI bus, co-exists with all other SCSI devices and requires NO modifications to either the system or applications software. Serial ports can be set up at speeds to 57.6k while the parallel port provides output at 28,000 cps.

For more information please email at:
sales@cpd.com or call 714-546-1100

Printing Bug

Mike Fraase/Arts & Farces

It seems that the NeXT printing problem I asked for help with the other day (printing pages larger than 8.5 x 11) is a known bug in the NeXT operating system.

The NeXT Print Panel ignores any setting larger than 8.5 x 11 and subsequently crops anything outside of that size. NeXT acknowledges the problem and NeXT representatives have assured me that the problem will be addressed in a future operating system update.

Here's a temporary workaround that seems to do the trick. Save the pages as a PostScript file and use Separator to edit the page definition within the PostScript file. Then dump the file to the imagesetter. If you open the NeXT Print Panel again, the page definition will be reset to 8.5 x 11, no matter what settings you define within the panel.

This is a serious limitation and I hope it is addressed soon.

Getty Solution

Christos Pyrros

Thanks to Jos Vermaseren <t68@nikhef.nl> for passing along the solution to my problem with getty hogging cpu. The solution is quite simple:

login as root, or su
vi /etc/ttys
edit the file and:
turn off ttyb (or ttya)
turn on ttydb (or ttyda)
save the new file
then type:
kill -1 1

Those of you who have terminals hanging off your machine might want to double-check you aren't wasting CPU!!

Objective-C Book

David Carpenter

The following book is scheduled to be released in May:

Objective-C: Object-Oriented Programming Techniques by Pinson and Wiener (Addison-Wesley). The catalog says that the book presents basic concepts, an accurate description of Objective-C (both Stepstone's and NeXT's) and illustrates programming in Objective-C through examples.

Latest Product Listing

Conrad Geiger

Here are the products that are shipping for NeXT as of April 11, 1991:

Business Productivity

Adamation, Inc.
Who's Calling?
Telephone tracking system with multiuser access, plus voice response; allows you to track calls, schedule meetings, keep yourself organized.
415-452-5252

HSD Microcomputers, Inc.
OCR Servant-Limited Edition
Optical Character Recognition software available to users only through the Services menu.
415-964-1400

Informix
Wingz
Spreadsheet with 3D graphics and powerful Hyperscript language.
415-926-6651
913-599-7330.

Lighthouse Design
Diagram!
A drawing package that makes creating org charts, labeled diagrams, etc. easy and which supports links to other NextStep apps.
1-800-366-2279
301-907-4621

Lotus Development Corporation
Lotus Improv
Next generation spreadsheet offering English formulas, multiple views on the data, linked tables, and presentation graphics.
617-577-8500

Stained Glass Software
Calendoscope
Networked day/week/month/year calendar for individuals and groups.
415-636-5100

Visual Understanding Systems (VISUS)
PaperSight Lite 1.2
A personal digital file cabinet.

PaperSight 1.2
A complete image management system which handles document scanning, viewing, organizing, searching, and archiving.
412-488-3600

WordPerfect, Inc.
WordPerfect for NeXT
The first true WYSIWYG version of this powerful, full-featured wordprocessor which dominates the PC word processing market.
801-225-5000

Connectivity, Communications and Emulation

Active Ingredients, Inc.
Communicae 2.0
A communication package that includes both DEC VT220 and Tektronix 4010/4014 terminal emulation, and standard file transfer protocols.
617-576-2000.

Cayman Systems, Inc.
GatorBox
Intelligent LocalTalk (TM)-to-Ethernet gateway; connects NeXT and Mac networks.Also, GatorShare, software for file sharing between Macintosh and NeXT Computers and GatorMail-Q, for linking Macintosh QuickMail users with NeXT e-mail system.
617-494-1999

Conextions, Inc.
3270Vision and **3270Vision Coax**
3270 emulation via TCP/IP over ethernet or via coax.
508-475-5411

Digital Instrumentation Technology, Inc.
FloppyWorks
Software that enables floppy drives for NeXT to read and write

1.44 MB Macintosh disks and to translate data between the Mac and NeXT machines.
505-662-1459

DataViz Inc.
MacLinkPlus/PC
File transfer and translation between the NeXT and Macintosh environments.
203-268-0030

Insignia Solutions, Inc.
SoftPC
DOS emulation at roughly the speed of a 10 Mhz AT. Supports CGA and EGA.
408 522 7600

Morning Star Technologies
Serial Port X.25/Daemon-S
Provides flexible X.25 connectivity via the serial port.
614-451-1883

Pencom Software
Co-Xist
Full X11r4 client and server support within NeXTstep.
1-800-PENCOM-4
or 512 343 1111

Touch Communications, Inc.
WorldTalk/400
Provides access to other mail systems (e.g. IBM Profs, DecTalk) via X.400 gateway support.
408-374-1680

Transarc Corporation
AFS 3.0
A distributed file system for large, multi-location networks. There are no local or user dependencies in the system.
412-338-4400

Database and Information Management

Imagine, Inc.
MediaStation 1.5
Archival, retrieving and processing of multimedia information.
313-487-7117

INGRES
INGRES Relational Database Management System (v 5.0)
4GL, SQL and visual programming methods for relational database management.
415-748-3427

Toltec Human Services
UNIX MUMPS Version 3.1
Standard database and programming language for the interactive manipulation and storage of large volumes of medical and business data.
405-840-4254

Virginia Tech Library System, Inc.
VTLS InfoStation 2.0
A hypermedia information access and authoring system for electronic libraries.
1-800-HOT-VTLS
703-231-3605

Mathematics and Statistics

Halchin and Fleming
Orbit
Tool for exploring the dynamical system of periodic orbits.

Rubik Algebra
Uses Rubik's cube as a tool for exploring elementary group theory.

Spring
Animates motion of a spring with an attached mass; for exploring differential equations.

Groups
Description of mathematical objects known as groups.
217-348-0917

Triakis, Inc.
DAN-The Data Analyzer
Interactive data analysis system with 2D plotting support.

Math++
C-language numerical analysis source code math library.
505-672-3160

Wolfram Research, Inc.
Mathematica 1.2
A comprehensive software application for mathematical computation, symbolic manipulation, graphing, and high level programming.
1-800-441-MATH
217-348-0917

Medical

(see also Toltec under Database)

Toltec Human Resources
TranScriber 1.0
A NEXT network or NeXT to central service medical record transcription tool.
405-840-4254

Publishing and Graphics

(see also Lighthouse Design and WordPerfect under Business Productivity)

Adobe Systems Inc.
Adobe Type Library Plus Pack
Contains 26 popular typefaces, (plus sample pages and keycap access charts for easy access through the Digital Librarian.)
800-344-8335

Frame Technology Corp.
FrameMaker 2.0d
Technical publishing software, including word processing, graphics, page layout, equation editing and book-building tools.
408-433-3311

Media Logic, Inc.
TopDraw
Page-based graphics software providing object-based graphics, text processing, continuous tone painting and page layout.
213-453-7744.

MicroMaps Software
MapArt
A presentation quality set of EPS maps - world, continents and regions, and 22 country maps.
609-397-1611

RightBrain Software
TouchType
A power tool designed expressly for typesetting at large sizes where every character is important.
415-851-1786

Stone Design Corp.
TextArt
Easy, intuitive access to the full range of text effects Display Postscript makes possible.
505-345-4800

The Font Company
The Font Company Font Library
Over 1500 PostScript Type 1 format typefaces.
602-998-7964

T/Maker Company
Click Art
Nearly 400 illustrations of Encapsulated PostScript EPS artwork.
415-962-0195

Sound

Metaresearch, Inc.
SoundWorks 2.0
A powerful,.easy to use sound recording and editing program.
503-238-5728

Tools and Languages

Absoft Corp.
Absoft FORTRAN 77
Object Oriented FORTRAN compiler; fully compatible w/ NeXT's Interface Builder toolkit, allows programmers to add a graphical i/f to any FORTRAN program.
313-853-0050

ACUCOBOL
ACUCOBOL-85
VT-100 version of High 1974 /Intermediate 1985 ANSI COBOL standard.
619-566-3071

Adobe Systems Inc.
DisplayTalk
A development environment for Display PostScript programming.
800-344-8335

Franz, Inc.
Allegro-CL
Full featured Lisp programming environment compatible with Objective C.
415-548-3600

Highland Software, Inc.
Flexible License Manager
A package that allows a software application to be licensed on a concurrent usage basis rather than a per-computer basis.
415-493-8567

Motorola, Inc.
Macro Cross Assembler (ASM96000)
Simulator Programs 9SIM56000 and SIM96000)
Tools for DSP programmers.
512-891-2030.

OASYS
OASYS Native Compilers
OASYS Optimizing 680x0 Cross Compliers
OASYS Optimizing 88000 Cross Compilers
(C, C==, Fortran, Pascal available for each)
Highly optimized Fortran, Pascal., C and C++ compilers and cross compilers.
617-862-2002.

Objective Technologies, Inc.
OT Palettes:2.0
Custom palettes for IB. Smartfields, Chooser, MathPalette, and GraphPalette are currently available.
212-227-6767

Visual Understanding Systems, Inc.
PaperSight Developers' Toolkit
More than 70 code and data modules for image management.

Visus Voice Commander Toolkit
Advanced speaker-independent speech recognition toolkit.
412-488-3600

Young Minds, Inc.
Makedisc
CD-ROM formatting software for creating a CD-ROM disc image.
714-335-1350

Peripherals

Data Acquisition and Sound

Ariel Corp

DM-N Digital Microphone

High-fidelity stereo microphone with lab-quality data acquisition capabilities.

QuintProcessor

Five 27MHz DSP5001 ‘s on a single board for the cube. Pro-Port APAnalog I/) interface with 2 channels of 16 bit analog in and 20 bit analog out with programmable sample rates.

ProPort A

Analog I/O interface with 2 channels of 16 bit analog in and 20 bit analog out with programmable sample rates.
201-249-2900

Dazzl, Inc.

Model 16/12 Analog to Digital Converter

Data acquisition for 16 single ended or 8 differential channels; overall sampling rate of 200 kHz.
309-674-9317

IOtech, Inc.

SCSI1488/N

A SCSI-based IEEE interface plus software that lets a NeXT Computer control up to 14 IEEE instruments. The following require the SCSI 488/N:

Serial488/4

A 4 channel IEEE to serial converter.

Digital488/80

An 80 bit IEEE to digital I/O interface. DAC488PA digital to analog convertor in either 2 or 4 channel versions.

DAC488

A digital to analog convertor in either 2 or 4 channel versions.

ADC488 A/D Convertors

Supports 16 single ended or 8 differential analog channels.
216-439-4091

Metaresearch, Inc.

Digital Ears

Audio input device and control software for entering and recording compact-disc quality sounds.

Digital Eye

Video input device and control software for capturing still and moving NTSC video images.
503-238-5728

Singular Solutions

A/D64x

Hardware and software for high-quality sound recording and capture.
818-792-9567

Fax and Data Modems

Abaton (Everex)

Interfax 24/96NX

2400 baud data and 9600 baud fax modem
1-800-444-5321
415-683-2226

Dove Computer Corporation

DoveFax

9600 baud fax modem and 2400 baud data modem.
1-800-622-7627
919-763-7918

Visual Understanding Systems, Inc.

Fax Modem VS-24

9600 baud fax modem that can vector call to a fax machine if busy.
412-488-3600

Scanners and Printers

Abaton (Everex)

Scan 300 G/S

An 8-bit scanner that scans halftones, line art, and grayscale images.
1-800-444-5321
415-683-2226

AGFA Compugraphics Division

ProSet 9400

A mid-range laser imagesetter that offers both true PostScript and PCL languages.

ProSet 9800

A high-speed laser imagesetter ideal for producing color separations.

SelectSet-5000

A fast and easy-to-operate color laser imagesetter.

StudioSet- 2000

A compact and versatile imagesetter that offers a variety of resolutions up to 2400 dpi.
(508) 658-5600

Canon U.S.A., Inc.

IX-30F Image Scanner

An 8-bit flatbed scanner with a maximum scan resolution of 300 dpi.
1-800-848-4123

HSD Microcomputer, Inc.

Scan-X Professional

An 8-bit grayscale, desktop flatbed scanner that supports resolutions of up to 1500 dpi.

Scan-X Color

24 bit true color scanner supporting up to 300 dpi for grayscale 24 bit color images and up to 2400 dpi for line art.
415-964-1400

Oce Graphics

OceColor

An Adobe PostScript, color printer that uses the latest thermal transfer technology, and supports the full range of PANTONE colors.
1-800-545-5445
415-964-7900

Visus, Inc.

Personal Page Scanner

Up to 3 legal pages per minute scanner.

Departmental Scanner
Up to 11" by 17" at up to 12 pages per minute.
Large Format Scanner
Up to 24 by 60 inches, up to 400 dpi.
Industrial Scanner
up to 2000 dpi resolution, accurate to .002 of an inch over 24 inches.
412-488-3600

Storage

The Cube Route, Inc.
Cube Route Hard Drives
Seagate Wren Hard Drives. 330MB, 660MB, 1 GB.
1-800-CUBE-RTE
617-344-6061

Dayna Communications, Inc.
DaynaFile
External disk drive that lets NeXT Computers read and write to MS-DOS and NeXT-formatted floppy disks.
801-531-0600

Digital Instrumentation Technology, Inc.
Cube Floppy Plus
External floppy that lest NeXT users read and write MS-DOS (720KB and 1.44 MB) disks, Mac (400K, 800K and 1.44MB) disks and UNIX disks.

Cube Floppy 2.9
External floppy that lest NeXT users read and write MS-DOS (720KB and 1.44 MB) disks, Mac (1.44MB) disks and (1.44 MB and 2.88MB) UNIX disks.
505-662-1459

EMAC
Metro CD
CD-ROM drive that also plays audio CD's. Metro DATP1.3 GB digital audio tape backup system.

Metro Series Hard Drives
in 170MB, 335MB and 670MB capacities.
1-800-821-0806, ext. 2155
415-683-2155.

Epoch Systems, Incorporated
Epoch-1 InfiniteStorage Server
Platform independent network server designed to handle the need for quick access times to large off-line storage.
508-836-4711

Microtech International, Inc.
Eclipse 1.2T
1 GB digital audio tape backup system.

Eclipse 50R
Removable hard drive. Eclipse CDPCD-ROM drive with dual SCSI ports and a universal input power supply.

Eclipse Series Hard Disk Drives
Ranging from 200MB to 1GB.
203-468-6223

Personal Computer Peripherals Corporation
JETSTREAM
A tape backup system capable of archiving up to 2.3 gigabytes of data per tape at speeds up to 14.4 megabytes/minute.
813 884 3092

Pacific Micro
PM 1.44
External SCSI floppy disk drive for data transfer between NeXT computers and both MS/DOS and Macintosh computers.

PM-HDE
External SCSI enclosure for 1 or 2 NeXT hard disk drives.
408-356-5001

Peripheral Land, Inc.
PLI SuperFloppy 2.8
External floppy that lest NeXT users read and write MS-DOS (720KB and 1.44 MB) disks and UNIX (1.44MB and 2.88MB) disks.

PLI CD-ROM
380 ms access time with Sony's newest mechanism.

PLI Infinity 40 Turbo
Removable cartridges store up to 42 MB.

PLI Turbo Drives
Very fast 300MB and 600MB hard drives.
1-800-288-8754

Other Peripherals

Extron Electronics/RGB Systems, Inc.
RGB 111 and RGB 63/31 Scan Board
Respectively a NeXT video interface and a NeXT video to "normal scan rate" converter.
800 633 9876
213 802 8804.

Software Engineering Solutions
At the Beep
Phone answering hardware and software.
(512)343-2828

From The Editor

David Bowdish

As long as they spell your name right!

Forbes recently ran an article on NeXT that was so anti-NeXT and so inaccurate that it prompted responses from several computer periodicals. Infoworld said "Jobs has got his third winner", PC Week said "NeXT systems represent an important milestone in personal computing". Sales are booming as a result. Don't be surprised if NeXT sells more computers in the second quarter than Forbes say's NeXT has sold in it's entire history. Remember, you heard it here first. Thanks Forbes!