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NeXTstep 2.1J
The Japanese Operating System

by Tim Reed

During the past year I managed application development for the Tokyo office of a large international company. Throughout that time I had the opportunity to learn some Japanese, and to use Canon's version of *NeXTstep*, *NeXTstep* 2.1J. At that time, we ran 2.1J on a 68030 cube with 8 MB of memory and found the operating system software so slow that it was unusable. I recently had the opportunity to review a production copy of 2.1J on a faster 68040 NeXTcube with a 660 MB hard disk and 12 MB of memory.

Canon recently introduced *NeXTstep* 2.1J (somewhat erroneously referred to as "the Kanji operating system" since Kanji is just one part of written Japanese) in Japan; it is a faithful port of 2.1 – bugs and all – extended to include a Japanese user interface and programmer tools. Substantial modification of operating system software is necessary to support Chinese-derived languages like Japanese since they include thousands of characters. Unfortunately most computers targeted at Japan, the largest Asian computer market, suffer from significant limitation in value and convenience. *NeXTstep* 2.1J, however, is relatively easy to use and program for – even for non-Japanese-reading developers. Both NeXT and Canon offer some support for developers who wish to port existing applications to 2.1J. However developers should carefully consider options available to them in Japan and elsewhere in Asia.

Many Asian written languages are derived from Chinese. Both Korean and Japanese were borrowed from an older form of Chinese characters, or pictograms. Although many of the pictograms that make up Chinese characters recently were simplified, people who can read Japanese can also read some Chinese as well, since the Japanese pictograph system, called Kanji, was borrowed from Chinese centuries ago. Japanese includes two other written languages besides Kanji to represent sounds. The sounds can also be written with the alphabet used in English-speaking countries. These phonetic languages are unique to Japanese and do not appear in Chinese and related languages. Katakana is used mostly to represent loan words that originate outside Japan and China. The other phonetic language, Hiragana, is usually used to represent verbs, verb tense, and minor words like conjunctions and participles. Romaji is used to show Japanese pronunciations with the Western alphabet, and is often used by Japanese computer makers as the input method on standard keyboards. Hiragana can also be used to represent any word that has a Kanji equivalent. Kanji is often used to express nouns and "big ideas," and is the most difficult of the languages to learn. Katakana and Hiragana each include over 50 characters. The number of Kana is insignificant when compared to the thousands of Kanji characters, most of which have several pronunciations.

Current computers offer incompatible "standard" systems, multiple operating systems, and counter-intuitive user interfaces. DOS is the most widespread operating system software in Japan (PCs made by NEC are the most popular) but Japanese DOS – J-DOS – will not run software compiled on a standard-issue PC running MS-DOS – not even in native English mode. In fact, DOS machines made by different manufacturers are not compatible with each other; for instance, software compiled on a Fujitsu J-DOS computer will probably not run on a J-DOS machine made by NEC or IBM. Japanese PC keyboards resemble standard QWERTY keyboards, but have a very small space key (since spaces are not often used between characters in written Japanese) and several alternate keys that modify what characters or type of characters appear when keys are pressed; they often include different Kana keycaps to show what character will appear with different alternate key combinations.

Apple offers a slightly better interface. The Macintosh requires two separate operating systems – one for Western and one for Japanese software. When Mac users need to include some Japanese text in their *Illustrator* files, they must switch language environments – which actually reboots the computer with OS software supporting the language they want. If users run Western software in the Japanese environment, garbage appears in all areas of the screen where English text should be; Japanese software likewise displays interesting results on the English-language operating system where Japanese writing normally appears. Further, the Japanese Mac operating system frequently hangs and crashes. There is no fix or workaround available to Mac and PC users for any of this behavior; the software on Japanese computers just does not work very well. Japanese users have two choices: they can continue to ignore the problems and difficulties of their systems, or they can buy a NeXT.

NeXTstep 2.1J supports all the multi-language capabilities in 2.1, plus extensions and modifications for the Japanese user. All existing software runs on the Japanese system, and non-Japanese users can use a 2.1J system and not notice any difference; even third-party English fonts work (this is the fundamental and significant difference to users between *NeXTstep* 2.1J and other Japanese operating systems). Japanese users can select the language as their primary language in Preferences; Canon apparently used the rumored Preferences API to include their own Preferences module for modifying the Japanese users' environment. When in the Japanese environment, most system messages, main menus, and window title bars appear in Japanese. Users can also easily create files and folders with Japanese names, and edit files with English and Japanese in them. Four additional 16-bit fonts that include Kana and Kanji characters are included with the standard 8-bit fonts. Some of the UNIX programs were modified to support Japanese in files and filenames; *awk* and *sed* can handle two-byte characters, but *vi* cannot understand commands if the system's front end processor is enabled.

By default, characters typed on the keyboard are sent as is to an application's key window; however, hitting Command-Space turns on Kanji

conversion via the ClareServer front end processor. The ClareServer manages input between the user's keyboard and the key application; ClareServer converts Romaji as it's typed to Hiragana – the user may use the space bar to cycle through Katakana and Kanji representations of that Hiragana. The user may hit the Return key when the character on the screen is acceptable, and start typing the next character. Typing Romaji and selecting correct representations is very quick, and, according to native Japanese computer users, more natural and intuitive than other systems. The ClareServer[1] has enough smarts to guess more common Kanji first (since there are many different pronunciations, or yomi, for each Kanji, some lookup table must exist to prioritize more popular characters); when I type "Nan desu ka" in Romaji – which means "What is this?" – ClareServer converts my input to Hiragana. If I want to see Kanji representations of the Kana and hit Space, the Clare server guesses the most popular Kanji interpretation.

Developers must develop applications differently if they wish to support Japanese in the future. Canon has added several methods to the AppKit that handle strings on character-by-character rather than byte-by-byte basis, all preceded with a CN identifier to avoid namespace conflicts. Since characters in the standard operating system are one byte, developers can assume that moving one byte up will take them to the next character; this is not true with Japanese strings and streams, since Japanese characters occupy two bytes. I do not know why this great idea was not included with the original version of *NeXTstep*, but NeXT should include it in the future. Substituting Japanese strings for original strings in labels and alert panels is easy using the macros and methods available in the Localization kit (NeXT's Localization Kit is available free from GUN); examine the source code to the incredible BackSpace application for an excellent example of localization.

Developing and using on 2.1J is not without problems. Very limited English online documentation on the Canon extensions came with my review system; I do not know if this is shipped to all users. I pity any non-Japanese reader that has to set a 2.1J system up on an existing 2.1 network with such limited documentation. I understand from other users that 2.1J runs very slowly on color NeXTstations with 12 MB of memory, although the system seems very peppy in black and white for both Japanese users running the ClareServer and for American users running without. As far as I know there is no 2.1J tech support for non-Japanese users. Canon has a helpful and energetic staff in Japan that speaks some English and responds reasonably quickly to questions it receives via fax. Both *Interface Builder* and the Objective-C compiler do not support Japanese methods, class, functions, or variable names, nor may file modules include Japanese in the names. None of the /NeXTDeveloper/Demo applications support Japanese, nor is there a Japanese online dictionary. There is no easy way to switch between English and Japanese Workspace environments without using separate user accounts – a user inconvenience, administration hassle, and security nightmare (even the language selection list in Preferences doesn't offer Japanese as one of the choices). Alert panels and voice alerts brought up by the Workspace are always Japanese regardless of the language preference. Finally, we were unsuccessful in trying to halt the Japanese OS cleanly from the Workspace; it seems that some daemon or other process always hangs the system.

There is very little encouragement for developers and consultants, especially for non-Japanese, to start using and promoting the system, since there is no developers' program available from Canon. 2.1J costs about $2,000, an astounding cost for software with no English documentation. NeXT's success is a result of its close relationship with and encouragement of its developers. Computer manufacturers know that a good computer with one or two pieces of commercial software is useless; the number of developers supporting Japanese won't increase unless Canon adopts more reasonable developer prices. Further, their changes to the operating system won't be adequately end-user tested, nor will they properly evolve and mature, unless the developers whose suggestions helped mold *NeXTstep* are encouraged to do the same for Canon's 2.1J. Developers that consult to large corporations often promote what they use themselves; without a developers' program similar to NeXT's, most corporate consultants that might otherwise suggest 2.1J, won't.

The most serious missing component for developers eyeing the Japanese market are customers for third-party applications; there are none. The high price of the NeXT Computer in Japan is a good reason why – prices are a few thousand dollar above U.S. list price, with no discounting or secondary outlets available. Other than a large university sale, there are no announced large sites running the Japanese OS. Most NeXT users in Japan buy their computers from U.S. outlets at more reasonable prices and import them. Porting and sales are currently done by Canon, which saves developers from having to provide support to non-English-speaking users, but also cuts them off from potential customers for future direct sales or custom consulting.

2.1J should be viewed in the larger approach that NeXT has taken with its operating systems. 1.0 was targeted specifically towards higher education (I remember when NeXT said that they would only sell to university students). All developers I knew and their parents were running beta versions of 2.0, an operating system that was clearly designed to answer developer requirements. Now, the rumor mill says that only very large sites are running early versions of 3.0. The new OS should be seen as the operating system targeting the requirements of large installations; this must also true of the Japanese OS – developers should become familiarized with the *NeXTstep* development environment and Japanese market requirements now, in order to better sell their software in greater volume to end-users with release of 3.0J. Developers have received some help from Canon just as developers received help from NeXT – but only if that help would result in aiding Canon computer sales.

Conclusion

NeXTstep 2.1J goes beyond the expectations of the today's Japanese computer user, but falls short of meeting NeXT's own high standards. Japanese includes thousands of characters and four written languages, requiring modifications to standard English-language computer software. Personal computer makers responded to these requirements with non-standard, incompatible, and counter-intuitive operating systems. Canon and NeXT engineered 2.1J to run both Japanese and Western applications at the same time. The ClareServer sits between the keyboard and the rest of the system by converting Romaji to Japanese characters and sending them to applications that support Japanese. Support for international users is provided by the Localization Kit from NeXT, and the 2.1J AppKit includes important extensions that handle strings character-by-character instead of byte-by-byte. 2.1J is not a mature, "production" operating system since the Japanese environment and extensions are not fully integrated with the standard operating system. Fully debugging the OS may take longer to accomplish, since Canon has not instituted a developers program to encourage developers to program for it, and has not introduced low prices to encourage users to purchase it. Developers should not expect to recover their development costs until the number of Japanese end-users increases. Developers should modify their software to support *NeXTstep* 2.1J now, so that they have an understanding of the Japanese market and relationships with Japanese distributors and vendors when *NeXTstep* 3.0J goes on the market to end-users.

(*continued*)

For More Information

NeXT, Canon, and third parties offer some assistance to people interested in the Japanese operating system. Max Henry, who is in charge of NeXT's Pacific region, is extremely helpful in providing help and information to customers and developers, and can be reached at NeXT for more information. Arthur C. Kyle of Skylee Systems, a former Canon employee and now a writer, publisher, and independent consultant, can also put you in touch with the right people at Canon; his email address is ack@skylee.com. David Thompson organizes one of the NeXT user groups in Tokyo, and can probably offer you other insights and contacts; he can be reached at 81-3-3772-6129.

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[1] I have no idea what this stands for. *Clare* was apparently a trademark Canon already owned on an unrelated "Canon Language" product – hence the term *ClareServer* was born. On a related note, the acronym FEP – for front end processor – appears throughout the Canon AppKit extensions; FEP ranks with DASD on the list of "Most Annoyingly Inexplicable Acronyms." [I'd add CP/M to that list. –Ed.]

From the *Merriam-NeXT* Dictionary...

by Eric Rosenthal

The New Hacker's Dictionary, edited by Eric Raymond and published by the MIT Press in September, includes these definitions:

BiCapitalization n. The act said to have been performed on trademarks (such as NeXT, NeWS, *VisiCalc*, *FrameMaker*, *TK!solver*, *EasyWriter*) that have been raised above the ruck of common coinage by nonstandard capitalization. Too many marketroid types think this sort of thing is really cute, even the 2,317th time they do it. Compare *studlycaps*.

cube n. 1. [short for 'cubicle'] A module in the open-plan offices used at many programming shops. "I've got the manuals in my cube." 2. A NeXT machine (which resembles a matte-black cube).

insanely great adj. [Mac community from Steve Jobs; also BSD UNIX people via Bill Joy] Something so incredibly elegant that it is imaginable only to someone possessing the most puissant of hacker natures.

Objectionable-C n. Hackish take on "Objective-C", the name of an object-oriented dialect of C in competition with the better known C++ (it is used to write native applications on the NeXT machine). Objectionable-C uses a Smalltalk-like syntax, but lacks the flexibility of Smalltalk method calls, and (like many such efforts) comes frustratingly close to attaining the Right Thing without actually doing so.

ping [from the TCP/IP acronym 'Packet INternet Groper', prob. originally contrived to match the submariners' term for a sonar pulse] 1. n. Slang term for a small network message (ICMP ECHO) sent by a computer to check for the presence and aliveness of another. Occasionally used as a phone greeting. See ACK, also ENQ. 2. vt. To verify the presence of. 3. vt. To get the attention of. From the UNIX command ping(1) that sends an ICMP ECHO packet to another host. 4. vt. To send a message to all members of a mailing list requesting an ACK (in order to verify that everybody's addresses are reachable). "We haven't heard much of anything from Geoff, but he did respond with an ACK both times I pinged jargon-friends."

The funniest use of 'ping' to date was described in January 1991 by Steve Hayman on the USENET group comp.sys.next. He was trying to isolate a faulty cable segment on a TCP/IP Ethernet hooked up to a NeXT machine, and got tired of having to run back to his console after each cabling tweak to see if the ping packets were getting through. So he used the sound-recording feature on the NeXT, then wrote a script that repeatedly invoked ping(8), listened for an echo, and played back the recording on each returned packet. Result? A program that caused the machine to repeat, over and over, "Ping... ping... ping..." as long as the network was up. He turned the volume to maximum, ferreted through the building with one ear cocked, and found a faulty tee connector in no time.

New Element Discovered At Bellcore Research Center

by Anonymous

Red Bank, NJ (AP) The heaviest element known to science was recently discovered by physicists at the Bellcore Navasink Research Center. The element, tentatively called Administratium, has no protons, 125 assistant neutrons, 75 vice neutrons, and 111 assistant vice neutrons. This gives it an atomic mass of 312. These 312 particles are held together in a nucleus by a force that involves the continuous exchange of meson-like particles called morons.

Since it has no electrons, Administratium is inert. However, it can be detected chemically as it impedes every reaction it comes into contact with. According to the discoverers, a minute amount of Administratium caused one reaction to take four days to complete, when it would normally occur in less than one second.

Administratium has a normal half life of approximately two years, at which time it does not actually decay, but instead, undergoes a reorganization in which assistant neutrons, vice neutrons, and assistant vice neutrons exchange places. Some studies have shown that the atomic weight actually increases after each reorganization.

Research at other laboratories indicates that Administratium occurs naturally in the atmosphere. It tends to concentrate at certain points, such as government agencies, large corporations, universities, Telephone Companies, and Bellcore locations, and can actually be found in the newest, best maintained buildings. WINDOWLESS LAB OFFICES APPEAR ESPECIALLY SUSCEPTIBLE TO INFESTATION.

Scientists point out that Administratium is known to be toxic at any level of concentration and can easily destroy any productive reactions where it is allowed to accumulate. Attempts are being made to determine how Administratium can be controlled to prevent irreversible damage, but results to date are not promising.

NeXT In The News

by Eric Rosenthal

"The Ghost From the Grand Banks", Arthur C. Clarke [Bantam Books, 1990, p. 55]: The noted science fiction author described a character's activities in 2007: "Presently he sat up, switched off the music module,

and swung his seat around to one of his half-dozen keyboards. The NeXT Mark 4 which stored most of his files and information was hardly the last word in computers, but Bradley's business had grown up with it and he had resisted all updates, on the sound principle 'If it works, don't fix it.'" Readers of other editions can find the quotation in Chapter 10.

"NeXTstation's Future Hinges on Software", John Markoff [*New York Times*, August 11, 1991, Section C, p. 8]: "There is industry skepticism about NeXT, although the company has found a niche selling to education and risk-taking businesses and the hardware has some 'dazzling' specifications. Jobs's preference for totally new rather than ported applications has not yielded many products, and NeXT's isolation from industry alliances also fails to attract software developers. The NeXTstation is "one of the best deals in computing" whose features others try to copy. Although Lotus announced a spreadsheet and *WordPerfect* a word processor, database and communications software are missing. The NeXTstation can only be customized with powerful Unix tools which are harder to use than those of operating systems, because third-party utilities are not available. The NeXTdimension was shipped without the promised compression chip. The 88000 RISC chip which future systems were to use now has a questionable future. These other problems are solvable, but NeXT requires more software to do well."

"Your next step should be to this integrated OOP", Don Crabb [*InfoWorld*, August 12, 1991, pp. 71, 73]: Review of *NeXTstep* 2.1 emphasizes changes from release 1.0 and 1.0A which set "a new standard for ease of learning and ease of use in Unix-based workstation programming environments."

"N-e-x-t spells relief for IS", John Dunkle [*Computerworld*, August 26, 1991, pp. 35, 39]: NeXT already "deliver[s] information to the desktop that has been developed and stored on multiple architectures throughout the network." Financial and banking IS professionals are adopting NeXT because of its technical advantages.

"Jobs and Gates Together", Brenton R. Schlender [*Fortune*, August 26, 1991, pp. 50-51, 54]: This joint interview on the occasion of the tenth anniversary of the IBM PC is the cover story. "Beneath the conviviality, Jobs and Gates each had a business objective. Jobs lobbied for Gates to develop software for the NeXT computer. And Gates, whose company is being sued by Apple for allegedly pirating Macintosh software features, was hoping to learn more about the product's origin."

"The NeXT *Illustrator*", Tom Yager [*BYTE*, September 1991, p. 52]: "Adobe *Illustrator* 3.0 for the NeXT is everything it is on the Mac – and then some.... The availability of *Illustrator 3.0* for the NeXT is another clear sign that the NeXT is not only competing as a Unix workstation, but has the potential to woo away high-end Mac users as well."

"FORTRAN Compiler for NeXT" [*BYTE*, September 1991, p. 78]: Product announcement for Absoft Corp.'s *Object-Oriented FORTRAN 77* for NeXT.

"Sleeping with the Enemy", Guy Kawasaki [*MacUser*, September 1991, pp. 29-30]: "Apple is afraid of the inroads NeXT is making in higher education." The enemy mentioned in the title is Microsoft.

"*Improve*: Users happy, but others are unsure", Mark J. Minasi [*Computerworld*, September 2, 1991, p. 70]: Users of Lotus Development's like its data pivoting, but competitors do not seem worried.

"NeXT unbundles *WriteNow* as third-party apps pick up" (item in Pipeline) [*InfoWorld*, September 2, 1991, p. 34]: The new bundled version of the *WriteNow* word processor will only read documents.

"The NeXT Book of Jobs" (letter), Eduardo H. Sulit [*InfoWorld*, September 9, 1991, p. 54. Response to the theological allegory in Tom Quinlan's August 19 column.

"Sun gambles with *Solaris* product", Lisa Picarille [*InfoWorld*, September 9, 1991, p. 134]: Sun's decision to sell versions of its operating system for Intel processors is compared to NeXT's porting *NeXTStep* to Macintoshes or Sun workstations.

"Objects of Curiosity", Don Crabb [*InfoWorld*, September 16, 1991, pp. 53-55]: The movement toward hardware-independent, object-oriented operating systems is analyzed. "About the only existing object-based system, although it does not conform to the above definition, is NeXT Inc.'s *NeXTstep* operating environment."

"Objectively Speaking" (item in Notes from the Field), Robert X. Cringely [*InfoWorld*, September 16, 1991, p. 113]: "I'm told that Microsoft spent two years looking at Objective-C before rejecting it as too proprietary (which it is)."

"Software Made Simple: Will Object-Oriented Programming Transform the Computer Industry?", John W. Verity and Evan I. Schwartz [*Business Week*, September 30, 1991, pp. 92-95, 98, 100]: This cover story on object-oriented programming opens by comparing traditional C programming with NeXT programming at Objective Technologies. Object programming "is the first real technological shift we've had in the industry since the Macintosh" according to Steven P. Jobs. NeXT's workstations, which come with an object-oriented programming language and a library of objects has become a favorite of developers. Brad Cox, the creator of Objective-C, compares object technology to the use of interchangeable parts in manufacturing.

"An Industry Guru, A Top User & The Firing Line", Paul Krill and Philip Gill [*UNIX Today*, September 30, 1991, pp. 13, 72]: "For the industry celebrity, Unix Expo turns to Steven Jobs, president/CEO of NeXT, as the keynote speaker. While Jobs rarely decides what he will speak about until he reaches the podium, he said in a recent interview that he'll likely talk about object-oriented programming, and how, through superior software, NeXT is establishing itself as a true contender in the workstation derby. Jobs contends that NeXT, which he says has turned slightly profitable, is actually moving more Unix workstations out the door than any Unix vendor other than Sun Microsystems and Digital Equipment – and he says NeXT has basically tied with DEC. But the head of the privately held company refused to release specific sales figures. 'Every time we get a chance to suit up against Sun, we're winning,' Jobs said, adding NeXT does not always get that chance. While he belittles the differences between today's RISC and CISC architectures, Jobs will likely tease the audience with a promise of RISC workstations from NeXT for 1992."

"Antivirus Program Scans Unix, PCs & Macs", Evan Schuman [*UNIX Today*, September 30, 1991, p. 13]: CyberSoft's *Vfind* virus scanner for many platforms, including NeXT.

"New in the Resource Center", LuAnn Vitalis [*BCS Update*, October 1991, p. 22]: Boston Computer Society Resource Center has Insignia Solutions's *Soft PC* for NeXT Computers 2.05.

"The View from the BCS", Tracy Robnett Licklider [*BCS Update*, October 1991, pp. 23-24]: "The BCS NeXT Group's August meeting celebrated Macworld by showing a soon-to-be-released public-domain program that lets NeXT machines run Macintosh software."

"Three More Inexpensive Workstations", David Wilson [*UNIX Review*, October 1991, pp. 49-50, 52, 54, 58, 60, 62]: Review of the Amiga 3000, HP 9000/425E, and NeXTstation. "We rate the NeXTstation as good overall, with an outstanding rating for installation and average ratings for support and expandability. We find the system substantially more to our liking than the previous NeXT Cube product we reviewed, and the 68040 processor provides enough performance to make it a reasonable workstation. We still would like a NeXT-supported X11 for in-

teroperability reasons and have concerns about the support (hardware and software) available for the system. We like the inexpensive laser printer and especially like the selection of popularly priced software for the system."

"The Death of Leisure", Witold Rybczynski [*New York Times*, October 8, 1991, p. A25]: "Just look at the exalted tradition of the individual, untutored inventor. The popular admiration bestowed upon figures from Thomas Edison to Steve Jobs reflects a national fondness for self-improvement. And, of course, a delight in technical achievement, whether it's going to the moon or devising a lighter surfboard."

"NetWare 3.11: Revising the Standard", Witold Rybczynski [*PC Magazine*, October 15, 1991, pp. 323-325, 328, 330, 334, 343-346, 349]: Some of the networks used as examples include NeXT computers.

"This Way to 1992", Nicholas Baran [*BYTE*, *Special Edition OUTLOOK '91*, pp. 16-20, 22, 24]: NeXT asked developers to support foreign languages because it expects 30% of its sales in Europe. The introduction to the special issue mentions that Tom Yager predicts NeXT "may finally start to make some big sales in 1992."

"Getting to Know You", Andy Reinhardt [*BYTE*, Special Edition OUTLOOK '91, pp. 32-33]: Mentions *NeXTstep* as one of the graphical user interfaces which have simplified Unix.

"The Future of Software Technology", Barry Nance [*BYTE*, *Special Edition OUTLOOK '91*, pp. 69-72, 74, 76]: David Nanian, one of the authors of the Brief editor, calls Lotus *Improv* a product "where the approach is rethought, rather than just adding a new function or feature." Patrick Wood, coauthor of several UNIX books, is skeptical of multimedia despite statements by Jobs and Gates. David Nanian calls *Interface Builder* "a terrific program."

"Operating Systems Now and Beyond", Nicholas Baran [*BYTE, Special Edition OUTLOOK '91*, pp. 93-95, 97-98]: Pito Salas, the architect of Lotus *Improv*, thinks *NeXTstep*'s development tools surpass the competition's. Mark Linton, author of the dbx debugger, agrees *NeXTstep* is ahead but expects other Unix platforms to offer similar C++-based tools. "The problem with NeXT," says Linton, 'is that they have a kind of an Apple mentality – they don't care about portability or standards." NeXT's market penetration does not match the acknowledged superiority of its software. Robert Carr, vice president of the Go Corporation, says "NeXT is doomed to be a niche market. They're fighting an entrenched desktop market."

"Unix: Status and Speculation", Tom Yager [*BYTE, Special Edition OUTLOOK '91*, pp. 161-164, 168]: "The other workstation vendor to watch is NeXT. It's left the sluggish, disappointing cube in the dust in favor of a fast, sleek design. The new unit (the NeXTstation) has speed, a much improved operating system, and, at long last, color. While everyone else is figuring out how to build ease of use into their systems, NeXT will be filling orders. I see the NeXTstation as the only workstation that can, starting now, draw users away from *Windows*-based PCs and the Mac. The other thing that the NeXTstation has going for it is not so obvious: Developers positively love it. Every NeXTstation comes with a complete set of development tools, and there is simply no better environment for building graphical applications. Even if a company cannot define a clear NeXTstation market for its new product, chances are that the development staff will browbeat management into letting it build something on the NeXT. People who are now using the NeXT are nothing short of gaga over it, and their lust is justified. I think 1992 will be the year that NeXT lands solidly on the map, and it'll be leading a pack of workstation vendors that will make trouble for PCs and Macs."

"Business plans for the millennium", Subrata N. Chakravarty and Kathleen K. Wiegner [*Forbes*, October 21, 1991, pp. 86, 88-89, 92, 95-96]: "Eight entrepreneurs who've earned their way onto The Forbes Four Hundred talk about the opportunities they see in the years ahead." Steve Jobs believes in the future of computers with better graphics, sound, and video. "For $250 you can buy a CD player that produces better sound than any computer except NeXT. Why should a $300 VCR outperform a several-thousand-dollar computer? There is something wrong with that." He also pushes "interpersonal computing," linking groups of people working together. "I am convinced that [interpersonal computing] is the third big thing in desktop computing, spreadsheets being the first and desktop publishing the second."

"Steven Paul Jobs" [*Forbes*, October 21, 1991, pp. 253-254]: Entry in The Forbes Four Hundred states Jobs founded NeXT Computer, Inc. in 1985 with $7 million, "trying to get it right."

"PC Intrigues" (letter), Brad Nelson [*MacUser*, November 1991, p. 16]: "I'm aware that there's pain in progress – adapting to new operating systems, hardware, and so on – but if Apple continues to kludge up the Mac's elegant simplicity with giant leaps of incompatibility instead of thoughtful, gradual improvement, I will surely pause to consider what's NeXT."

"FontMonger and *Metamorphosis Professional*", Aileen Abernathy [*MacUser*, November 1991, pp. 81-83, 85-86]: This review of two font conversion utilities mentions that Altsys Corp.'s Metamorphosis Professional, which runs on Macintoshes, can produce PostScript fonts for the NeXT.

"Nuthin' Plus Nuthin'", Jeff Duntemann [*PC Techniques*, October/November 1991, p. 6]: "I expect the machine [from Apple and IBM] to strongly resemble the technologically admirable NeXT – which after three years has accrued so little market share as to be down in the noise."

"Beetles and Laptops", David Gerrold [*PC Techniques*, October/November 1991, pp. 15-16, 18, 20]: Mentions that Playroom Software's *OSFrame* can make *Windows 3.0* look like Macintosh, NeXT, or *Motif*.

"Why I Need Objective-C", Christopher Lozinski [*Journal of Object-Oriented Programming*, September 1991, pp. 21-28]: "This article examines the limitations of C++ as compared to Objective-C. The differences in the programming philosophy underlying each of the languages is explored and the application development advantages of Objective-C are presented."

"Apple/IBM Reaction" (letter), Kirk Chase [*MacTutor*, September 1991, p. 5]: "Apple/IBM have the advantage of looking at the lessons of NeXT."

"Play the Waiting Game with *Windows* vs. *OS/2*", William Zachmann [*PC Week*, September 9, 1991, p. 68]: "Microsoft is pushing *Windows*. IBM touts *OS/2*. Of course, they aren't the only voices, either. Unix advocates urge that we wish a plague upon both their houses and embrace Unix. Apple suggests that we make our next PC a Macintosh. NeXT claims that it is still next. Vendors involved in the ACE initiative will soon try to convince us to drop Intel-architecture systems in favor of systems based on the MIPS architecture."

"Rumor Central: Top-Seeded Compaq and IBM Volley for Product Advantage" [*PC Week*, September 9, 1991, p. 130]: "With all the celebs at the Open last week, Spencer figured that chances were good he'd run into Steve Jobs. No such luck, as the barefoot boy wonder is busy plotting to decrease NeXT's dependence on Motorola. The sporting Katt overheard a Wall Street analyst say that NeXT is testing four prototype workstations, all based on different RISC processors."

"A Radical Transformation Lies Ahead for IBM" (editorial), Sam Whitmore, [*PC Week*, September 16, 1991, p. 66]: "Yes, you [IBM] trusted Microsoft too much, but you wisely diversified your portfolio. You invested in Metaphor, then bought it outright. You now have a say in the affairs of NeXT, Go, Lotus, Novell, Borland, Xyquest, Bachman and Delrina, to name just a few."

"Rumor Central: At Comdex, the Pen's Going to Be Mightier than the Squabble" [*PC Week*, September 16, 1991, p. 15]:. "'Great. Now I've got a new assignment for you,' Spencer snapped. The Katt grabbed Cal by the shoulder and led him to the door. 'Go find out what Steve Jobs and John Sculley are cooking up. They've been seen doing lunch in the Valley, with no ensuing food fights. If it's an IBM/Apple/NeXT deal, I want it first.'"

"Dr. Watson Add-On Detected on CompuServe", Carole Patton [*PC Week*, September 23, 1991, p. 76]: "Have you ever wondered how operating systems compared to cars? I skipped over to Ziffnet to track such burning questions on the PC Week forum. Here's what a think-in among myself and several PC Week readers produced recently.... NeXT/*Motif* is a red Lamborghini – sleek, sensual and designed for the future. The big question: When will the future arrive?"

"Editor's Choice" [*Publish*, October 1991, p. 27]: Adobe has released *Illustrator 3.0* for the NeXT, which allows editing in any display mode, and *TouchType*.

"No More Armies, Just Rock Bands", Stuart Silverstone [*Publish*, October 1991, p. 15]:. Design consultant Roger Black, in interview, calls NeXT and Sun platforms "the most interesting challenge to the Macintosh" for publishing.

"NeXT's Revenues Strong, But What About Profits" (item in Industry News) [*UNIX World*, October 1991, p. 20]: NeXT reports second quarter revenues increased to $46 million, but does not release earnings or shipments. Afterthoughts (editorial), Computerworld, October 7, 1991, p. 24. Editorial about IBM/Apple alliance. "And then there's the matter of getting hundreds of third-party software developers to commit limited research and development funds to support the promise of the next generation of desktop computing. As Steve Jobs and his NeXT company discovered, it can be might lonely in the market without a lot of this support."

"Graphics vendors stand up for NeXT", Elizabeth Eva [*InfoWorld*, October 7, 1991, p. 3]: NeXT products introduced at Seybold Computer Publishing Conference and Exposition included Lighthouse Design's *Concurrence*, Computer Support's *Arts & Letters Graphics Composer*, Media Logic's *Top Draw Version 2.0*, Altsys's *Virtuoso*, and RightBrain Software's *PasteUp*.

"Adobe brings news page to PC screen", Mark Stephens [*InfoWorld*, October 7, 1991, p. 6]: Adobe demonstrates "Carousel" technology for displaying PostScript images on NeXT and other platforms at Seybold Conference. The technology for displaying the same image on "nearly any computer" overcomes font substitution problems with a special multiple-master font that can imitate any Type 1 font. Adobe chairman John Warnock said a product would be available in 1992.

"Laser Printers Head List of Expo Debuts", Kelley Damore [*PC Week*, October 14, 1991, p. 2]:. NeXT to integrate Pantone color simulations into Color Panel.

Untitled [*Computerworld*, October 21, 1991, p. 73]: Product announcement for SAS Institute, Inc.'s *SAS System* for NeXT.

"Improv adds dimensions to spreadsheets", John Walkenbach [*InfoWorld*, October 21, 1991, pp. 154, 156, 160]: "For developing complex budgets and other hierarchical models, *Improv* is perhaps the best tool on the market. It's a significant improvement over 3-D spreadsheets and even Excel's outlining feature.... We're impressed with *Improv.* It's one of the most innovative programs we've seen in some time. Unfortunately, most users don't have access to a NeXT system. Let's hope Lotus develops a version for *Windows* so this technology can reach a wider audience. It's well worth its $695 price tag; we rate it an excellent value."

"Ray Charles Will Not Play This Xmas Party" (item in Notes from the Field), Robert X. Cringely [*InfoWorld*, October 21, 1991, p. 206]: "Even Steve Jobs, a guy who never paid attention to the odds before, is having to make shrewd moves. Look for NeXT to shift its manufacturing offshore – probably having it done by Canon in exchange for another capital infusion. The incredible automated 300,000-unit-per-year NeXT factor in California will probably go on the block. Don't look for any deals between NeXT and Apple. People keep calling me about sighting Sculley at NeXT HQ, but as long as Jobs continues to ban Pepsi from the premises, nothing will happen."

"SAS Targets NeXT with *Stat*, DBMS Software" [*PC Week*, October 21, 1991, p. 65]: Product announcement for SAS Institute Inc.'s *SAS System*.

Untitled item in News Briefs [*PC Week*, October 21, 1991, p. 69]: Brief mention of Altsys Corp.'s *Virtuoso* drawing program for NeXT.

"IDB Object Database Gains Mac, HP Support" (item in News Briefs) [*PC Week*, October 21, 1991, p. 112]: Product announcement for Persistent Data Systems Inc.'s *IDB Object Database* version 1.1 for several platforms, including NeXT.

Barry Nance [*BYTE*, November 1991, pp. 187-188, 190, 192, 194, 196]: Discussion of presentation layer of OSI model states "When IBM, DEC, Apple, NeXT, and Burroughs computers all want to talk to each other, some translation and byte reordering is needed."

"Forget Hype and Beware the Siren Song of SCSI", Chris DeVoney [*Computer Shopper*, November 1991, pp. 136-137, 144]: History of SCSI standards recounts difficulties of chaining SCSI devices and mentions NeXT.

"Programmer's Bookshelf: Making Contact with Computers", Ray Duncan [*Dr. Dobb's Journal*, November 1991, pp. 131-132, 134-135]: "Until very recently, the architects of human-machine interfaces have been unsung heroes (and villains) in a rarely visible and even-more-rarely appreciated specialty. For example, if you look inside the case of a classic black desk telephone, you don't find the names of the patient designers and researchers at AT&T who spent years refining the ergonomics of that humble instrument. There was no equivalent of Steven Jobs at Bell Labs to immortalize these fellows!... I'm happy to stipulate that the Apple System 7 is the best GUI on a mass-market computer today, but there are certainly worthwhile innovations in *NeXTstep*, *Motif*, and even (heaven help us) *OS/2 Presentation Manager* that could have been discussed [in the review of *The Art of Human Computer Interface Design*, edited by Brenda Laurel and published by Addison-Wesley], not to mention the stylus-oriented platforms such as *PenPoint* that are looming on the horizon."

Untitled item in Hardware & Software Support [*UNIX World*, November 1991, p. 160]: Brief listing for Morning Star Technologies' *SnapLink X.25* communications subsystem.

"WordPerfect for *Windows*: The Best Graphical Word Processor Yet?", Edward Mendelson [*PC Magazine*, November 12, 1991, p. 187]: "WordPerfect Corp. learned by writing *WordPerfect* for the Macintosh and NeXT platforms: The *Windows* version looks like a native *Windows* product rather than an accomplished immigrant."

"Not an Edison" (letter), Chia-teh Wu [*MacWorld*, December 1991, p. 40]: Response to Steven Levy's September column about Bill Gates. "If anyone is to be credited for the PC/digital revolution, it should be Steve Jobs. Steve Jobs at least had the following to his credit: the first successfully mass-marketed microcomputer, the Apple II, and the first successfully mass-marketed GUI microcomputer, the Macintosh."

NeXTstep Configuration Vulnerability

CERT Advisory
January 20, 1992

The Computer Emergency Response Team/Coordination Center (CERT/CC) has received information concerning a vulnerability in release 2 of *NeXTstep's* NetInfo default configuration. This vulnerability will be corrected in future versions of *NeXTstep*.

I. Description

By default, a NetInfo server process will provide information to any machine that requests it.

II. Impact

Remote users can gain unauthorized access to the network's administrative information such as the passwd file.

III. Solution

Ensure that the trusted_networks property of each NetInfo domain's root NetInfo directory is set correctly, so that only those systems which should be obtaining information from NetInfo are granted access. The value for the trusted_networks property should be the network numbers of the networks the server should trust.

Note that improperly setting trusted_networks can render your network unusable.

Consult Chapter 16, "Security", of the "NeXT Network and System Administration" manual for release 2 for details on setting the trusted_networks property of the root NetInfo directory.

The CERT/CC wishes to thank NeXT Computer, Inc. for their cooperation in documenting and publicizing this security vulnerability.

If you believe that your system has been compromised, contact CERT/CC via telephone or email.

Internet email: cert@cert.sei.cmu.edu
Telephone: 412-268-7090 (24-hour hotline)

CERT/CC personnel answer 7:30a.m.-6:00p.m. EST(GMT-5)/EDT(GMT-4), on call for emergencies during other hours.

Computer Emergency Response Team/Coordination Center
(CERT/CC)
Software Engineering Institute
Carnegie Mellon University
Pittsburgh, PA 15213-3890

Past advisories and other information related to computer security are available for anonymous ftp from the cert.sei.cmu.edu (192.88.209.5) system.

Thanks From Conrad Geiger

As many of you may already know, the NeXTWORLD Expo was held in San Francisco January 22-24, 1992. There were over 250 volunteers that helped contribute over 1500 hours of service at this first NeXTWORLD Expo. I wish to express my special thanks to the following few NeXT User Group leaders, advocates, and NeXT enthusiasts whose volunteer efforts helped make the 1992 NeXTWORLD Expo a memorable event for the thousands of attendees:

Dan Lavin
Al Willis
Kristin Kueter
Steve Weissberg (co-hosted the NeXT User Group reception)
Carolyn Coughlin (co-hosted the NeXT User Group reception)
Mary McNamaman
Alwyn Stewart
John Van Heteran (did two maps locating all 260 NeXT user groups)
Joe Barello
Jennifer Woodward
Dave Kerkorian
Jim Chan
Eric P. Scott
Thomas Gewecke
Kristin Dyer
Robert Nielsen
Greg Burd
Charles Perkins
Mike Tatsugawa
Elizabeth Mezias
John Glover
M. Carling
Tim Reed
David Pollak
Cynthia Closkey
Rick Reynolds
Kazunori Shioya
Michael Mahoney
Paul Lynch
Paul Beaumont
Brian Dear
Steve Costa
Marcus Brueggemann
Arthur C Kyle
Shuichi Tashiro
Hironobu Suzuki
Paul Murphy
Alex Cone
Jiro Nakamura
Joseph Chin
Jon Rosen
...and to the scores of FOGNUG and BANG members

There were over 100 NeXT User Groups representing 22 countries at this year's NeXTWORLD Expo. The award for the NeXT User Group that travelled the most miles with the most members to attend this year's event was shared by the Tokyo group (NeXus) and the United Kingdom group (UK NeXT User Group). Both of these groups had in excess of 35,000 member-miles. This was in spite of the largest out-of-town representation of 27 members from the Vancouver, British Columbia NeXT group (VNUS) and the 18 Albuquerque, New Mexico group members in attendance.

ABOUT GUN...

Board

Paul Murphy, president	Paul_Murphy@gun.com
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Tim Reed, founding	Timothy_Reed@gun.com
David Bressler	David_Bressler@gun.com
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The BULLETin

The GUN BULLETin is produced monthly (more or less) using *FrameMaker* 3.0 on a Color NeXTstation, with headlines created by Adobe *TouchType*. Article text is written directly in *FrameMaker*, with *WordPerfect*, or imported from other platforms (ugh!).

If you are interested in working with the newsletter crew, contact Robb Allan or Jim Cornacchia at the email addresses above.

Pulled From The Net

Pulled From The Net is a service designed to provide a synthesis of important NeXT-related Usenet information to those without network access and to those too busy to keep up with Usenet. Usenet, or Net News, is a bulletin board service available free of charge to anyone with Internet access. It includes hundreds of special-interest posting areas (groups), read by hundreds of thousands of people across the planet.

All GUN members receive *Pulled From The Net* with their membership. It is emailed to those capable of reading Next Mail as soon as it is available; ASCII copies are sent to those capable of reading only ASCII mail; paper copies are sent to everyone else, along with the newsletter.

Pulled From The Net tracks the following groups:

comp.sys.next.misc
Miscellaneous NeXT related information

comp.sys.next.announce
NeXT related announcements

comp.sys.next.admin
NeXT administrative information

comp.sys.next.programmer
NeXT programming information

Discounts

Many vendors are willing to give user group members discounts on their hardware and software. GUN does everything possible to ensure that its members have access to these savings. Every month, GUN compiles a list of currently available discounts. If you are interested in an unlisted item, write to discounts@gun.com or call GUN at 718-260-9848 and ask for the person in charge of group discounts. If possible, we will add the item to the list. Vendors are encouraged to contact GUN to participate in this program.

Membership & Sponsorship

Individual Dues

- $25 per year (tax deductible)
- newsletter
- email alias
- inclusion in group email list
- eligible for group discounts (contact Ed Wright)
- eligible for individual UUCP services
- eligible for individual Internet connectivity
- NeXTWORLD disount

Corporate Sponsorship

- $100 per year (tax deductible)
- newsletter
- email alias
- inclusion in group email list
- employees are eligible for group discounts
- eligible for corporate UUCP services
- eligible for corporate Internet connectivity
- employee NeXTWORLD disount
- sponsorship is recognized in every issue of the newsletter

GUN Sponsors

Corporate Benefactors

Organizations who have contributed materiel or equipment to GUN:

Lighthouse Design
Diagram! design software, Concurrence presentation software

Marble Associates, Inc.
Consulting Services, Marble Teleconnect communication software, Designer Labels labeling software

Stone Design
DataPhile database software

Telebit Corporation
T3000 Modems, NetBlazer Router

Uninet Peripherals, Inc.
SLAT Adapter

Corporate Sponsors

Organizations who have contributed $100 or more this year:

American General Information Services, Inc.

CS First Boston (Japan) Limited

Marble Associates, Inc.

NorthStar Technologies, Inc.

Nova Works Computer Systems, Inc.

Communications

GUN maintains a list of all members who can be reached via email. All mail sent to gun-members@gun.com is redistributed to everyone on the list. In addition, GUN assigns an alias to every member of the list making it possible for that person to be reached by sending mail to Firstname_Lastname@gun.com.

Individual UUCP

GUN maintains a server connected to the Internet. UUCP service allows members' machines to transparently connect to this host in order to send and receive email. Mail from the outside world can be addressed to user@gun.com. Mail you send appears to originate from the gun.com domain. It can be addressed as if you were directly on the Internet (i.e., user@next.com). Mail volume is not limited. A GUN volunteer will help you set up and maintain the UUCP connection.

Accounts will be given on a first-come, first-served basis. Once our current maximum capacity is reached, we will need to purchase additional lines and modems. This could cause a slight delay in obtaining service.

Cost
$10/month.

Timetable
2,400 bps (v.22) -- Available immediately.
9,600 bps (v.32) -- Available Q1 '92.
19,200 bps (PEP) -- Available immediately.
19,200 - 57,600† bps (v.32bis w/ v.42 & v.42bis) – avail. Q1 '92.

Individual Internet Connectivity

The gun.com domain is a wide are network (WAN). Machines are connected via the Serial Line IP protocol (SLIP). Any machine on the network can connect to any other as if it lived on the local ethernet. Machines on the network can share resources, mount each other's file systems, etc. Best of all, becoming a member of the GUN WAN gives you complete, unrestricted access to all Internet resources. This includes access to Internet mail services, News (which includes thousands of special interest groups), hundreds of archive servers, Archie (a database of software/documents stored on the archives), hundreds of library card catalogues, the Internet White Pages (X-Windows based email directory service), and a fast growing numbers of value added services (providing things like AP news feeds, stock market data, databases of vertical market information, etc.). Finally, GUN will maintain a local archive that will mirror the most important NeXT related sites in the world.

Cost
$80/month.

Timetable
We hope to begin offering this service during Q1 '92. Hardware and software purchases will be made as soon as we have a list of members committed to joining the WAN. If you are at all interested, let us know as soon as possible. Write to postmaster@gun.com or call Paul Murphy at 718-260-9848 (10 am - 7 pm).

We plan on using the v.32 and v.32bis protocols throughout the WAN. If people absolutely want PEP, we will provide it. Note, however, that the PEP protocol does not meld nicely with the SLIP protocol. Running SLIP over PEP modems yields circa 2,400 bps throughput (for interactive sessions).

Corporate Email

Corporations can request either a corporate alias or ten individual aliases. The corporate alias allows an unlimited distribution of GUN mail within the organization. The ten individual aliases allow the individuals to be reached by sending mail to Firstname_Lastname@gun.com. All corporate sponsors with email access are eligible for this service.

Cost
Included in sponsorship.

Timetable
Available immediately.

Corporate UUCP

Identical to Individual UUCP. Limited to ten employees. All corporate sponsors are eligible for this service.

Cost
$15/month.

Timetable
2,400 bps (v.22) -- Available immediately.
9,600 bps (v.32) -- Available Q1 '92.
19,200 bps (PEP) -- Available immediately.
19,200 - 57,600† bps (v.32bis w/ v.42 & v.42bis) -- Available Q1 '92.

Accounts will be given on a first-come, first-served basis. Once our current maximum capacity is reached, we will need to purchase additional lines and modems. This could cause a slight delay in obtaining service.

Corporate Internet Connectivity

Identical to Individual Internet Connectivity. All corporate sponsors are eligible for this service.

Cost
$80/month. $500 sign-up fee.

Timetable
We hope to begin offering this service during Q1 '92. Hardware and software purchases will be made as soon as we have a list of members committed to joining the WAN. If you are at all interested, let us know as soon as possible. Write to postmaster@gun.com or call Paul Murphy at 718-260-9848 (10 am - 7 pm).

We plan on using the v.32 and v.32bis protocols throughout the WAN. If people absolutely want PEP, we will provide it. Note, however, that the PEP protocol does not meld nicely with the SLIP protocol. Running SLIP over PEP modems yields circa 2,400 bps throughput (for interactive sessions).