BSD/OS Operating System Version 1.1

Questions and Answers

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BSD/OS
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BSD/OS Version 1.1 is the second production release of BSDI's ground-breaking UNIX-like operating system for your PC or compatible. It is based on the Net2 release of the Computer Systems Research Group at University of California, Berkeley and includes Net2's features and capabilities. Additionally, it includes MIT's X Window system and other software from a wide variety of sources. BSDI has augmented these software bases with all the modules needed to provide a complete operating system and set of utilities.

BSDI's operating system releases are unique in their offering of supported base systems software with almost complete source code. We invite you to read these questions and answers to clarify the many features and benefits of BSDI's BSD/OS.

Question: What is BSD/OS?

Answer: BSD/OS is an IEEE POSIX-compliant operating system for 386, 486, and Pentium PC-compatibles. It includes a wide range of functionality, a rich set of utilities, and the X11R5 Window System. BSD/OS can be purchased as a ready-to-boot binary-only system and, if desired, one can additionally purchase the sources that generate those binaries.

BSD/OS's strengths include its ability to act as a gateway to the Internet (no external router is required), its complete software development system, and its low license fees when used as a software distribution platform or embedded system.

As of October, 1994, BSDI has garnered over 2,000 customers around the world.

Question: Tell me about BSD/OS's utility packages.

Answer: For ease of installation, the system is broken into two dozen different sections; an installation program enables you to select those you wish to install from a menu.

The operating system and utilities sizes break down as follows (grouped here by common selection; most individual sections range from 5 to 15MB):

Package Set	Size
Base OS, Utilities, Networking, Development tools	52MB
Contributed Software (GNU and other)	26MB
Games, MH, Ghostscript, Emacs, TeX, ISODE	49MB
X11R5 Server, Fonts, X11 Clients, X11 Development tools	68MB

The source package sizes are as follows:

Packages	Size
BSD/OS Kernel sources	7MB
Library and Utilities sources	222MB
X11R5 sources	116MB

Question: What hardware is required to run BSD/OS?

Answer: BSD/OS runs on 386, 486, and Pentium PC-compatible systems with ISA or EISA bus architectures (localbus versions of supported cards work also). You'll need at least 4 MB of memory for the base operating system or at least 8 MB if you intend to use the X Window System. Any console display will work for text mode. If you wish to run the X Window System, your PC will need a color SVGA- or VGA-compatible display for its console. You'll also need a standard PC/AT keyboard and a 1.44MB 3.5" floppy drive and controller to install the system.

BSD/OS does not currently support Micro-Channel Architecture (MCA) machines or peripherals.

You will need a hard-disk drive on which to install the operating system. You can use IDE, ESDI, RLL, MFM or SCSI disk drives. BSD/OS supports the Adaptec 154xB, 154xC, 154xCF, and 174xA SCSI adapters, and the BusLogic (BusTek) BT-542B and BT-445S VLB SCSI adapters. Just about any SCSI disk will work with the supported adapters on BSD/OS, including SCSI disks much larger than 1 GByte (e.g., the new Seagate 9GB drive).

The operating system requires some disk space to be allocated for swap space. This is used to increase the memory available to applications beyond the actual memory installed in machine (aka virtual memory). A typical system requires 16 or 32MB of swap space (or larger on systems with heavy usage).

A full install of all binaries and sources requires a total of 540MB. CD-ROM users have access to all the sources and binaries directly from the CD-ROM. Most of the software packages can be compiled directly from the CD-ROM.

BSD/OS is distributed on CD-ROMs, QIC-150 cartridges, Exabyte 8mm tapes, and 4mm DAT tapes. For installation, you will need access to a device that supports one of the distribution media types. We do not currently ship BSDI on 200 floppy disks because we think the size of the release in that format would be cumbersome.

Most SCSI CD-ROM and tape drives (e.g., Maynard/Archive 2150S, Exabyte 8250) work with BSD/OS when attached to a supported SCSI controller.

For non-SCSI tape or CD-ROM installation, the choices are limited to the devices that BSD/OS directly supports. BSD/OS has drivers for the WangTek 5150PK QIC-02 tape drive and controller (which, despite its name, supports the QIC-150 tapes) and the Everex EV-811, EV-831, and EV-833 tape drives and controllers. For non-SCSI CD-ROM, BSD/OS supports the Mitsumi LU002, LU005, and FX001 ISA-based CD-ROM readers (available from BSDI and elsewhere) with their own controllers.

With BSD/OS, you can also load the distribution over your PC's Ethernet (or even a serial SLIP link) from a remote system that supports the *rsh* protocol and has the required hardware (QIC-150/8mm/4mm tape drive or CD-ROM drive with support for ISO9660/Rock Ridge CD-ROMs).

Question: What hardware is supported under BSD/OS?

Answer: BSD/OS supports a wide variety of hardware. BSD/OS supports a floating point coprocessor (like a 387, or the built-in coprocessor on a 486DX, or other equivalent hardware). If floating point hardware is not available the operations are automatically emulated in software.

BSD/OS supports almost all SCSI disks, tapes, and CD-ROM drives via the Adaptec 154xB, 154xC, 154xCF, and 174xA SCSI controllers, or the BusLogic (BusTek) BT-542B or BT-445S VLB SCSI controllers.

BSD/OS supports 256MB of extended memory installed on ISA and EISA bus machines.

BSD/OS supports most Ethernet controllers: Western Digital (WD)/Standard Microsystems Corp. (SMC) 8003/8013 EtherCard PLUS/Elite series/Ultra, SMC Ultra, 3COM 3C501 (EtherLink), 3C503 (EtherLink II), 3C505 (EtherLink Plus), 3C507 (EtherLink 16), 3C509/3C579 (EtherLink III), the Novell NE1000 & NE2000, the TNIC 1500, the Allied Telesys RE2000/AT-1700 Series (experimental), HP EtherTwist (experimental), the Xircom PocketEthernet II and III, and the Intel EtherExpress 16 (experimental).

BSD/OS supports the SDL Communications RISCom/N1 and RISCom/H2 high-speed synchronous interface cards. These provide a point-to-point bit-synchronous serial connection with speeds up to 4 Mb/s using HDLC frame format. BSD/OS supports Cisco HDLC encapsulation (for connecting to Cisco routers) and PPP (Point-to-Point Protocol) over these connections. These can also be used to network over standard 56K DDS leased lines. BSD/OS's WAN routing capability may enable you to use your PC as a server and a router – thus removing the requirement to buy an expensive dedicated router.

BSD/OS supports standard COM and LPT ports and most serial mice. The SDL RISCom/8, MAXpeed, Digiboard, Specialix (experimental), and AST-4 multiport serial cards are supported. The MAXpeed and Digiboard drivers can only be supplied in binary form. Call BSDI for availability of the Digiboard PC/16Em.

BSD/OS supports any standard monochrome or color display controller in text mode. For screens larger than 640x480, the X Window System requires color SVGA or VGA cards and enough memory for the virtual screen size desired (usually about 1 MB). If you want a good middle-of-the-road card, the ATI Graphics Ultra and its higher-performance kin, the ATI Graphics Ultra Pro are both nice. The X Window System now supports VGA-size screens, but they are quite small for multiple windows, of course. See the configuration checklist for supported video chips.

Question: What about Ethernet adapters for laptops?

Answer: BSD/OS supports the Xircom PocketEthernet II and III parallel port ethernet controllers which can be used in general operation and for installation.

Question: Does BSD/OS require special hardware configurations?

Answer: BSD/OS includes an autoconfiguration facility that attempts to probe your system to determine which peripherals are present. Booting from the floppy uses a 'generic' kernel which has a large selection of devices—but not all of them.

The BSD/OS kernel supports the floating point coprocessor or automatically emulates the hardware if none exists.

Question: Can I run SCO UNIX applications on BSD/OS?

Answer: BSDI plans to ship SCO UNIX application support in the 2.0 release. Lotus 1-2-3 and Word Perfect are currently up and running in our testing laboratories. Several popular databases are running at some beta sites.

Question: Can I run DOS applications on BSD/OS?

Answer: BSD/OS supports an environment for running many DOS applications. This environment uses the 8086/8088 emulation mode and supports up to 4MB of RAM in extended memory. Most applications that don't require special hardware or Microsoft Windows should run.

Question: How is BSD/OS installed? How long does it take?

Answer: BSD/OS boots to single user mode via a boot floppy. The running operating system then copies files from tape or CD-ROM to the hard disk. Once the hard disk is loaded, BSD/OS boots from there. Installation speed varies with the speed of peripherals, particularly the tape drive. The fastest tape drives reduce loading time for the base system and the X Window System to under one hour; CD-ROM installs go even faster.

Question: Can I share a disk between BSD/OS and other operating systems?

Answer: BSD/OS supports co-residency so that one hard disk can support as many as four different operating systems, the DOS limit.

Question: Can I share disk files between BSD/OS and MS-DOS?

Answer: BSD/OS supports mounting MS-DOS filesystems directly into your BSD/OS directory hierarchy. BSD/OS also supports the popular mtools package for reading and writing DOS format filesystems (on both floppies and hard disks). With doscmd, some MS-DOS applications can access BSD/OS files.

Question: Does BSD/OS support floating point operations?

Answer: BSD/OS supports floating point operations in hardware or, if no floating point hardware is available, through emulation in software.

Question: What standards does BSD/OS support?

Answer: BSD/OS supports the IEEE POSIX 1003.1 standard (though certification has not yet been completed). BSDI has tracked the IEEE POSIX 1003.2 standard and is modifying utilities to conform. BSD/OS networking includes both the OSI and TCP/IP standards. The BSD/OS C compiler (gcc) supports ANSI C; all system headers comply with ANSI-C's requirements. The X Window System (Version X11R5) is an industry standard window system based on software from MIT.

Question: What happens when U. C. Berkeley releases new software?

Answer: BSDI tracks Berkeley's releases very closely (including the upcoming 4.4-Lite release). All Berkeley features will be incorporated into future releases of BSD/OS. BSDI's 4.4-Lite release is expected in December, 1994.

Question: What filesystems does BSD/OS support?

Answer: BSD/OS supports the UFS filesystem (also known as the Fast Filesystem) and a memory-based filesystem (known as MFS). The filesystems support long file names and symbolic links. BSD/OS also supports the ISO-9660 and Rock Ridge filesystems, now in popular use for CD-ROMs. MS-DOS filesystems can also be mounted under BSD/OS.

Additionally, BSD/OS includes a re-implementation of Sun's NFS, the industry standard for network file sharing. For reliable use over low-speed or long-haul links (where traditional NFS fails), you can use our TCP/NFS.

Question: How fast is BSD/OS?

Answer: BSD/OS's speed depends, of course, on the underlying hardware. A 486-based system with 33 MHz clock and reasonable SCSI disks performs at about the same speed as a SPARCStation 1+; with a 50 MHz clock, the 486 processors seem to benchmark at about 25 MIPS. A 486/50 can rebuild the entire kernel from scratch in just seven minutes.

Question: What compilers are included?

Answer: BSD/OS currently includes the GNU 1.42 gcc, and the GNU 2.5.8 gcc2 and g++ compilers.

Question: How can a full source license cost so little? What about the USL license costs?

Answer: BSD/OS is not System V UNIX. BSDI can pass the royalty savings along to you.

Question: Is BSD/OS System V compatible?

Answer: Beyond IEEE POSIX standards, the X11 Window System, and the upcoming SCO compatibility mode, no special System V compatibility is supplied. BSD/OS is very compatible with other Berkeley-based software environments (e.g., SunOS, Ultrix, and OSF/1) for compilation of source code and general system administration.

Question: Can I redistribute BSD/OS to my friends for free?

Answer: No. Right now, BSDI distributes most domestic copies of BSD/OS directly through BSDI. Special licensing arrangements are available for VARs, OEMs, distributors, and educational institutions.

The BSD/OS source code contains a number of modules written by BSDI to glue together the various components of the release. It also contains a large amount of freely redistributable code. You are free to redistribute those modules which are not marked as proprietary.

Question: Can I redistribute BSD/OS to customers of my business?

Answer: Vertical marketers and others may wish to distribute binary copies (or, very rarely, source copies) of BSD/OS as part of their product. Contact BSDI for pricing information, which ranges from $250 per unit down to very low prices when large quantities are pre-purchased.

Question: What about using more than one copy at my site?

Answer: Binary right-to-use licenses are available for your site after you have purchased a full-function binary license or a source license. These licenses cost $250, though generous quantity discounts are available. Contact BSDI for details.

Question: Can I share modifications to BSD/OS code with my friends or customers? Can I post the modifications on Usenet?

Answer: Any software you develop using BSD/OS is yours to own, share, and/or sell as you choose. Of course, if it includes software which is proprietary to BSDI, we must ask you not to make the source available to anyone not having a BSDI source license. We feel that it's in everyone's best interests to make bug fixes and improvements available to the entire community. Therefore, customers are free to post reasonable diff's to the net (as long as the post doesn't contain too much BSDI proprietary code).

Question: Is Motif available?

Answer: Motif is available from the ACC Bookstore. Contact them by telephone at 800-546-7274 or +1 203-454-3242.

Question: What documentation is provided with BSD/OS?

Answer: Complete release and installation documentation is supplied. The man pages are supplied online in both formatted and unformatted forms.

Question: How does BSDI help me if I have trouble?

Answer: BSDI prides itself on providing outstanding support. Our telephone service desk is available toll-free five days a week from 9 am to 5 pm Mountain Standard Time (and sometimes after hours). If you are still on your initial 60-day full service period or have a telephone support contract then you can call our 1-800 number for assistance. If you have an e-mail/fax support contract, you can contact us via either of those methods.

Question: How do I report bugs if I don't have support?

Answer: Report bugs by sending electronic mail to problems@bsdi.com (the sendbug program uses this mechanism for bug reporting). If you do not have network access to send mail, call or Fax our support personnel.

Question: What if I buy BSD/OS and decide I don't need it?

Answer: BSD/OS comes with a 60-day money-back guarantee.