

OS/2 Frequently Asked Questions List: User's Edition

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Release Notes:

The List continues to expand. In this release I have tried to provide more specifics. For example, note the new addition to the question dealing with SuperVGA support.

Readers should be aware that a Rich Text Format (RTF) version should accompany this List if you have retrieved it from a BBS or archive (usually as a ZIP file). The RTF version includes revision markings, so you can tell at a glance what has changed since the last release. If you did not receive the RTF version, please ask your system operator to try to obtain the correct package from now on. (Please contact me if you would like to volunteer to redistribute the FAQ List to BIX, GENie, or other major networks. You should be able to receive Internet mail. BIX, MCI Mail, America Online, GENie, and addresses for most other major networks are acceptable, since gateways exist. Note that I cannot entertain requests for subscriptions to a "mailing list.") An INF version (for use with OS/2's VIEW command) of the FAQ List may be released in the future (to replace the RTF version) so you will want to make sure you are getting the whole package.

Questions addressed herein:

- (1) What is OS/2?
- (2) What are the differences between versions?
- (3) What is Extended Services?
- (4) How good is OS/2 2.0's DOS and Windows compatibility?
- (5) Where can I buy OS/2, and how much does it cost?
- (6) What hardware do I need to run IBM OS/2 2.0? Do I need a PS/2?
- (7) What applications are available for OS/2?
- (8) Where can I obtain OS/2 shareware and freeware?
- (9) I am having trouble installing OS/2 2.0. What should I do?
- (10) Will OS/2 2.0 work with my SuperVGA adapter?
- (11) Will OS/2 2.0 work with my printer?
- (12) How do I access HPFS partitions on my hard drive without booting from the hard drive? I'm getting error messages now -- how do I "repair" my hard disk?
- (13) I can't install OS/2 from Drive B. What's wrong?
- (14) Is there a Norton Utilities for OS/2?
- (15) Sometimes OS/2 2.0 will freeze when I run an application. What do I do?
- (16) How can I get answers to my OS/2 questions?
- (17) Why should I use HPFS? What does it offer me? Does it work with DOS?
- (18) I'm a Unix wizard. How do I make OS/2 resemble Unix?
- (19) I prefer Windows. How do I make OS/2 2.0 resemble Windows (or

- OS/2 1.3)?
- (20) I would like to set up an OS/2 BBS. What is available?
  - (21) Can I use COM3 and COM4 in OS/2 2.0?
  - (22) How do I start a background process from the OS/2 command line?
  - (23) What are CSDs, how do I tell which I have, and where do I get them?
  - (24) How do I add new Adobe Type Manager typefaces?
  - (25) How do I tweak OS/2 2.0 for maximum performance?
  - (26) What networking products are available for OS/2 2.0?
  - (27) Should I worry about viruses when running OS/2 2.0?
  - (28) Are there any clever tricks that apply to OS/2 2.0?
  - (29) What do I need for OS/2 multimedia applications?
  - (30) How do I measure OS/2 performance and memory usage?
  - (31) What can I do to promote OS/2?
  - (32) My background bitmap does not display correctly. What's wrong?
  - (33) What is the best way to partition my hard disk for OS/2?

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(1) What is OS/2?

OS/2 is an advanced operating system for PCs and PS/2s with an 80286 processor or better. It was codeveloped by Microsoft and IBM and envisioned as the successor to DOS.

It was designed from the ground up with preemptive multitasking and multithreading in mind. It also protects applications from one another (a single misbehaved program will not typically disrupt the entire system), supports all addressable physical RAM, and supplies virtual memory to applications as requested, breaking DOS's 640K barrier.

As shipped, it does not support multiuser operation, although third parties have grafted multiuser capabilities onto the base operating system. Remote-OS (The Software Lifeline, 407-994-4466), OS2YOU (shareware; see Question 8), Citrix (Citrix Systems, 305-755-0559), and PolyMod2 (MemSoft) are four such products. PC/DACS (Pyramid, 203-257-4223) offers security (for multiple users, one at a time, in a lab setting for example).

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(2) What are the differences between versions?

IBM OS/2 Version 2.0 (CSD Level 06055, see Question 23) will run only on machines with an 80386SX processor or better. IBM is developing OS/2 (and its Intel and non-Intel-based successors) independently but is involving third party PC manufacturers in its testing. Improvements include an object-oriented Workplace Shell (WPS); a multiple operating system boot mechanism; better DOS and Windows support (see Question 4); new 32-bit programming interfaces; support for more than 16 MB of physical RAM (on all systems with appropriate BIOS support; memory above 16 MB on those systems which must rely on 24-bit DMA for disk access, e.g. AT bus systems with Adaptec 154x SCSI adapters, is used as swap space); and more third party device drivers. OS/2 1.x applications, unmodified, still run under OS/2 2.0.

IBM OS/2 Version 1.3 is the last release of OS/2 to operate on PCs with 80286 CPUs. This version introduced built-in Adobe Type Manager (ATM), providing

scalable typefaces for screen and printer. Procedures Language/2 (REXX), a powerful batch-oriented programming language, became a part of Standard Edition with this release. (A few OEMs are shipping Microsoft OS/2 Version 1.3, but Microsoft has all but abandoned OS/2 development.)

OS/2 Version 1.2 was the first to incorporate the High Performance File System (HPFS). With this release IBM OS/2 added a dual boot mechanism and IBM Extended Edition introduced REXX.

OS/2 Version 1.1 was the first to include the Presentation Manager (PM) GUI/API. Microsoft OEM versions added a dual boot mechanism with this release.

OS/2 Version 1.0, introduced in 1987, was the first release of OS/2. Task switching was accomplished using a character-based shell and limited DOS compatibility was provided.

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(3) What is Extended Services?

Prior to Version 2.0, IBM offered two separate packages with each release of OS/2: Standard Edition and Extended Edition. Extended Edition included extra, bundled software products: the Communications Manager (for communication with IBM mainframes, minicomputers, and other hosts), Database Manager (a full, network aware, relational database), and LAN Requester.

IBM has now unbundled the Extended Edition features, dropped LAN Requester from the package (now available separately, with IBM's LAN Server), updated it for OS/2 2.0, and renamed it Extended Services 1.0. ES, by itself, no longer includes the base operating system as Extended Edition once did.

This new arrangement makes it easier to update the base operating system with CSDs (see Question 23). And now ES 1.0 will run under OS/2 1.3 Standard Edition as well as OS/2 2.0. Also, ES 1.0, like OS/2 2.0 itself, is designed to operate on both IBM and non-IBM systems (see Question 6).

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(4) How good is OS/2 2.0's DOS and Windows compatibility?

OS/2 1.x justifiably earned a reputation for poor DOS compatibility. Since it was hampered by the 80286, it could not run more than one DOS application at a time.

The situation has changed dramatically with OS/2 2.0. Version 2.0 preemptively multitasks DOS and Windows (real and standard mode) applications in separate, protected sessions, without purchasing either environment.

OS/2 2.0 provides a complete DOS emulation equivalent to DOS 5.0. The operating system can provide each DOS application with up to 32 MB of EMS 4.0 (expanded memory), 16 MB of XMS 2.0 (extended memory), and/or 512 MB of DPMI 0.9 (DOS Protected Mode Interface extended memory), all from its pool of physical and/or virtual memory (meaning you do not have to have as much RAM in your system as your applications request). These limits are in addition to the up to 730K free conventional memory supplied to each DOS application, even

after mouse and network drivers are loaded. As in DOS 5.0, DOS code and device drivers may be loaded into high memory. A 386 memory manager like QEMM is not needed -- these features are provided by OS/2 2.0 directly.

The DOS emulation allows customization of device driver sets -- each DOS application shares a systemwide CONFIG.SYS and the equivalent of its own CONFIG.SYS. Also, there is a systemwide AUTOEXEC.BAT file; batch commands particular to each DOS application can be invoked using separate, application-specific batch files. And many DOS Settings are provided to fine tune each DOS/Windows application's behavior (e.g. IDLE\_SENSITIVITY). Most of the popular DOS/Windows applications on your hard disk will be migrated automatically when you install OS/2 2.0.

In addition, OS/2 2.0 will boot one or more specific versions of DOS in separate sessions, to assist in running particularly difficult applications (e.g. DOS networks, MSCDEX). So, for example, it is possible to multitask DOS 3.3, DOS 4.0, DOS 5.0, emulated DOS, and Desqview running atop DOS, all in separate sessions, either windowed or full screen, all with the same and/or separate device drivers, TSRs, environment variables, etc. DOS boot images may be stored on a hard disk. These procedures are described in the online Command Reference (under VMDISK), Master Help Index, and in the Installation Guide (Appendix E).

Standard graphics modes (generally up to the resolution of the desktop; see Question 10) are supported in DOS windows, as are selectable text mode fonts. Cut/paste to/from windowed DOS applications is supported (to/from other DOS, OS/2, and Windows applications), including graphics cut/paste. Theoretically, OS/2 2.0 will run up to 240 simultaneous DOS/Windows sessions; the practical maximum depends on system resources.

OS/2 2.0 will, in fact, run virtually all DOS applications in existence, including notorious ones such as Microsoft Flight Simulator, Wing Commander, Maple, MatLab (Ver. 3.5k or later), and others. Those that do not run generally fall into the following categories:

(a) Programs that use Virtual Control Program Interface (VCPI) memory extenders or other extenders which require direct access to 80386 control registers. Since such applications are also all but incompatible with Windows, most vendors have updates for DPMI compatibility;

(b) Applications which attempt to directly address the physical sectors of an OS/2 managed nonremoveable hard disk drive. Such programs include UnErase in Norton Utilities. Fortunately OS/2 2.0 has a built-in UnDelete feature which is more robust than Norton's approach. (Consult the online Command Reference for information on how to enable UNDELETE);

(c) Timing sensitive DOS applications. Certain DOS programs that generate digitized sound through the PC's internal speaker may have distorted sound. High speed, real time data collection may be compromised. These problems can often be minimized or even eliminated using OS/2 2.0's DOS Settings.

(d) Certain DOS programming debuggers. DOS applications running under OS/2 2.0 are not permitted to access debug registers DR0-DR7 from a DOS session. Also, DOS debuggers will not be able to set hardware breakpoints, and all read/write operations to debug registers in virtual 8086 mode will be ignored.

Generally DOS backup programs will work under OS/2 2.0, but they may not capture some OS/2 data (especially extended attributes) on the hard disk without the assistance of utilities such as EABackup (available from sources listed in Question 8). OS/2 backup tools are available, notably IBM's PMTape and PS2Tape (for IBM and Irwin tape systems), Sytos Plus (Sytron, 508-898-0100), EZTape (Irwin, 313-930-9000), DMS/Intelligent Backup (Sterling, 916-635-5535), FileSafe (Mountain, 408-438-2665), KeepTrack Plus (Finot, 800-748-6480), NovaBack (NovaStor, 818-707-9900), OBackup (from sources listed in Question 8), BackMaster (MSR, 409-560-5970), and MaynStream (Maynard, 407-263-3500). The OS/2 BACKUP utility is best used from an OS/2 diskette boot (see Question 12). DOS-based disk caching software is not required since OS/2 includes a built-in, highly configurable, efficient disk cache.

DOS programs running under OS/2 2.0 are extremely fast. A single DOS application (no other applications open) running full screen under OS/2 2.0 typically achieves 95-97% of the performance it would have under native DOS. If the DOS application performs any disk I/O it can actually operate up to several times faster than it would if running under native DOS.

If pure DOS is absolutely required, OS/2 2.0 includes a utility called the Boot Manager. The Boot Manager can provide a listing of all the operating systems available on the system and will allow selection of any one at startup, with a default after timeout. The OS/2 1.x DualBoot method is still available as well. Consult the Installation Guide for instructions on how to use Boot Manager or DualBoot. Note that OS/2 2.0 need not be installed on Drive C -- it can reside on other volumes.

Compatibility with Windows, a popular DOS extender, is provided by Win-OS/2, an environment based on Microsoft's Windows source code. It runs Windows 2.x and 3.0 real mode and standard mode applications under OS/2 2.0, either on a full screen Windows desktop (with the familiar Program Manager and one or more Windows applications) or "seamlessly," alongside OS/2 applications on the WPS desktop. "Seamless" operation is available in VGA, Tseng 4000 SuperVGA, and XGA resolutions with OS/2 2.0 as it ships; see Question 10 for information on third party drivers.

Several icon conversion utilities, available from sources listed in Question 8, can convert Windows icons for use by the OS/2 Icon Editor and/or OS/2-specific programs. (No conversion is necessary if the icons are to be used with Windows programs running under OS/2 2.0.)

OS/2 2.0 directly provides Windows enhanced mode features save one: services included in WINMEM32.DLL. Windows applications which utilize this DLL (e.g. Mathematica 2.0, Omnipage Professional 1.0) will not run under OS/2 2.0. Fortunately the number of WINMEM32 applications is few, and apparently the vendors of such applications will be shipping OS/2 2.0 compatible updates.

Windows applications are well integrated into the overall OS/2 WPS environment with DDE and Clipboard hooks, and OLE 1.0 is supported among Windows applications. ATM for Win-OS/2 comes with OS/2 2.0 (see Question 24). Windows screen (for a full screen desktop) and printer device drivers will work under Win-OS/2. Such notorious Windows applications as Word, Norton Desktop (save portions described above), Toolbook, and After Dark work fine under Win-OS/2. Even the Windows Multimedia Extensions (and programs which utilize them) operate under Win-OS/2. (For information on the OS/2 2.0 multimedia extensions see Question 29.)

Win-OS/2 departs from Microsoft Windows in that it allows more than one Windows desktop and can preemptively (rather than cooperatively) multitask Windows applications in separate, robust, protected sessions. Also, while many Windows 3.1 enhancements are functionally incorporated into Win-OS/2, Win-OS/2 is not technically Windows 3.1 compatible. IBM has demonstrated 3.1-level Win-OS/2, and a 3.1-level update should be available in early 1993. Fortunately there are few Windows 3.1-specific applications. Win-OS/2 will run the Windows 3.0 applets, but it does not include them. Instead, true OS/2 2.0 spreadsheet, database, communications, time planning/scheduling, and other applets are provided.

Some Windows applications require OLE DLLs or custom settings in WIN.INI. If such a Windows application has been installed under the DOS version of Windows, Win-OS/2 may not be able to find the appropriate files or configuration. Try reinstalling the Windows application under Win-OS/2.

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(5) Where can I buy OS/2, and how much does it cost?

In the U.S. IBM OS/2 Version 2.0 is available from most software dealers (including Corporate Software, 800-677-4000) and directly from IBM (800-3-IBM-OS2, or 800-222-7257 for educational inquiries). Upgrades are \$99 from any version of DOS (\$149 without an upgrade). Discounts are available for multiple licenses and educational purchases. (Call for details on upgrades from OS/2 1.x. In Canada call 800-465-1234 to order. In the U.K. call the OS/2 User Group at 0285-655888 or IBM at 0800-181182. In other countries, contact any IBM dealer.)

OS/2 2.0 on 3.5 inch diskettes is part no. 84F7586. For 5.25 inch diskettes, 10G2991. Media are high density. For compact disc, 10G2992. IBM OS/2 Version 1.3 is still available and may be ordered through many IBM dealers.

IBM is trying to make OS/2 2.0 available everywhere DOS is purchased. If your dealer does not stock OS/2 2.0, take your business elsewhere (and explain why). IBM bundles OS/2 2.0 with some PS/1, all but one ValuePoint, and all 386SX (and above) PS/2 systems; Dell will preload OS/2 2.0 on request.

IBM offers two money back guarantees in the U.S.: a 30-day, no questions asked, money back guarantee, and a 90-day compatibility guarantee (see Question 6).

Microsoft versions of OS/2 1.x are available only through OEMs (e.g. Compaq, Dell) or by purchasing Microsoft's LAN Manager 2.1a or SQL Server products. Microsoft has all but ceased OS/2 development, working instead on Windows and the future NT (formerly OS/2 3.0).

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(6) What hardware do I need to run IBM OS/2 2.0? Do I need a PS/2?

You need any PC compatible with at least an 80386SX CPU, 4 MB (6 MB or more strongly recommended) of RAM, a 60 MB or larger hard disk (with 15-30 MB free), a supported video adapter (CGA, EGA, VGA, Tseng 4000 SuperVGA, 8514/A, XGA, or third party driver) with appropriate display, and a high density 3.5 or 5.25 inch floppy drive for installation. A mouse or other pointing device

is strongly recommended. Allow extra RAM and hard disk space for OS/2-based networking, ES, and/or extra system loads (i.e. an extraordinary number of large applications running simultaneously). When calculating hard disk space requirements, subtract space occupied by files already on the hard disk which are functionally included in OS/2 2.0 and may be deleted, e.g. DOS, a 386 memory manager, Windows, Adobe Type Manager with base typefaces, etc.

The WPS will not operate with the Monochrome Display Adapter or the Hercules Monochrome Graphics Adapter. Usually the WPS will fail to work with monochrome EGA. However, some EGA adapters (e.g. Paradise Monochrome EGA Card, ATI EGA Wonder) will emulate all color EGA modes on TTL monochrome monitors and, thus, will work with the WPS. Certain dual monitor configurations are supported; consult IBM for advice.

On (E)ISA bus machines, OS/2 specifically supports hard drive adapters which conform to the Western Digital chipset interface standard (nearly all MFM, RLL, IDE, and ESDI adapters) and Adaptec, Future Domain, and IBM SCSI adapters. (True OS/2 2.0 drivers for most SCSI adapters, e.g. Trantor, DPT, Rancho, Procomp, Corel Systems, BusLogic, Mylex, CE Infosys, Ciprico, and others are available directly from the adapter manufacturers. A driver for the Always IN-2000 adapter is available by calling 818-597-1400.) In addition, "generic" INT13 support is provided for all other hard disk adapters. This "generic" support even embraces such devices as Iomega's Bernoulli and SyQuest's removeable media products (but for best results contact Iomega or SyQuest for an OS/2 2.0 driver).

CD-ROM support (for IBM CD-ROM drives; Hitachi models CDR-1650S, CDR-1750S, CDR-3650, and CDR-3750; NEC models CDR-36, CDR-37, CDR-72, CDR-73, CDR-74, CDR-82, CDR-83, and CDR-84; Panasonic models CR-501 and LK-MC501S; Texel models DM-3021, DM-3024, DM-5021, and DM-5024; Toshiba models 3301T, TXM3301, 3301B, and XM-3201; and Sony models CDU-541, CDU-561, CDU-6111, CDU-6211, and CDU-7211; only when attached to IBM, Future Domain, Adaptec, or other SCSI adapters with native OS/2 2.0 support) is available from sources listed in Question 8, and others (e.g. Mitsumi) will follow. This support includes single session Kodak Photo CD services for those drives which support the standard. (Storage Devices and other companies offer OS/2 CD-ROM drivers for their products. Corel Systems offers a set of drivers for many more CD-ROM drives and adapters.) The DOS device drivers, when installed using a specific DOS session, will still provide CD-ROM services to DOS/Windows programs for the remainder. See Question 11 for information on printer and plotter support.

Version 2.0 is explicitly supported on PC compatibles. IBM is offering a money back compatibility guarantee in the U.S. Should OS/2 2.0 fail to work on your compatible within the first 90 days of use, and should IBM be unable to fix the problem, your purchase price will be refunded. To date over 400 non-IBM models have been tested in IBM's own labs.

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(7) What applications are available for OS/2?

In addition to the thousands of applications available for DOS and Windows, there are a couple thousand OS/2-specific applications representing almost every category imaginable.

The DOS/Windows applications with 16-bit OS/2-specific counterparts include Lotus 1-2-3, Freelance, Notes, cc:Mail; Microsoft Word, Excel, Multiplan, Mail; Aldus Pagemaker; Ventura Publisher; Corel Draw; WordPerfect; DisplayWrite; DeScribe; Micrografx Designer; AutoCAD; Oracle; RBase; SAS; SPSS; HyperAccess/5; DynaComm; Pro-YAM; Borland Sidekick, Paradox, Brief; Wingz; QEdit; 4DOS; and many others. In some cases DOS and OS/2 versions ship together (e.g. Microsoft Word 5.5, Lotus 1-2-3 3.0, Wingz).

OS/2 2.0 provides an attractive, 32-bit, Workplace Shell environment for new applications; many do not have DOS/Windows predecessors. This new class of 32-bit applications will (or does) include Lotus 1-2-3, Freelance, cc:Mail, Notes, AmiPro; WordPerfect 6.0; N/Joy; DeScribe; Publisher's Paintbrush; PFS:Works; CorelDraw; HyperAccess; BitFAX; FAX/PM; all Micrographx applications; RBase; Advanced Revelation; Norton Commander; and many more. Over 1000 new 32-bit OS/2 2.0 applications have been released to date.

OS/2-specific versions of popular utilities include ZIP/UNZIP, ARC, LH2, Zoo 2.1, many GNU tools, tens of different file finders, desktop clocks, calculators, and many more. Programming languages include Assembler, C++, COBOL, Pascal, C, Fortran, BASIC, REXX (included with every copy of OS/2 2.0), Smalltalk, Modula-2, LISP, Forth, and still more, from vendors such as Borland, Clarion, Watcom, Symantec (through its Zortech subsidiary), IBM, Microway, and many more. Two ports of the 32-bit GNU C/C++ compiler, GCC/2 and EMX/GCC, are available from sources listed in Question 8. Fortran to C (f2c) and Pascal to C (p2c) translators are also available. (See the Programmer's Edition of this List for more information.)

The IBM NSC BBS (404-835-6600) provides an online product database of OS/2-specific software. A directory of OS/2 applications, IBM document number G362-0029-02, is published by Graphics Plus (800-READ-OS2). TINF is an applications directory (for use with the OS/2 VIEW facility) available from the sources listed below.

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(8) Where can I obtain OS/2 shareware and freeware?

Many BBSes, including Fernwood (203-483-0348), OS/2 Shareware (703-385-4325), Bay Area OS/2 (510-657-7948), Gateway/2 (314-554-9313), Greater Chicago Online (708-895-4042), OS/2 San Diego (619-558-9475), OS/2 Las Vegas (702-433-5535), IBM Germany (049-711-785-7777), IBM Denmark (45-42-88-72-22), OS/2 UK (0454-633197), IBM UK (0256-336655), IBM Norway (47-2-999450), and OS/2 Australia (61-2-241-2466) hold large OS/2 libraries. (The monthly Worldwide OS/2 BBS Listing, available from these BBSes, lists others.) The IBM NSC BBS has some shareware/freeware as well, along with CSDs (see Question 23) and the PS/2 Assistant (an invaluable resource for locating almost any sort of information on OS/2). For information on IBM's new OS/2 BBS call 800-547-1283. IBM Canada maintains several support BBSes (416-946-4255, 514-938-3022, 604-664-6464, and 416-946-4244).

The Usenet conference comp.binaries.os2 carries OS/2 software. And several sites are available via anonymous ftp. (No ftp? Send a single line message with the word HELP to bitftp@pucc.bitnet or ftpmail@decwrl.dec.com to learn about ftp mail servers.) Some are (with Internet node numbers and subdirectories):



<a href="ftp-os2.nmsu.edu">ftp-os2.nmsu.edu</a>	128.123.35.151	pub/os2
<a href="software.watson.ibm.com">software.watson.ibm.com</a>	129.34.139.5	pub/os2
<a href="mtsg.ubc.ca">mtsg.ubc.ca</a>	137.82.27.1	os2:
<a href="access.usask.ca">access.usask.ca</a>	128.233.3.1	pub/archives/os2
<a href="luqa.latrobe.edu.au">luqa.latrobe.edu.au</a>	131.172.2.2	pub/os2
<a href="funic.funet.fi">funic.funet.fi</a>	128.214.6.100	pub/os2
<a href="pdsoft.lancs.ac.uk">pdsoft.lancs.ac.uk</a>	148.88.64.2	micros/ibmpc/os2
<a href="ftp.uni-stuttgart.de">ftp.uni-stuttgart.de</a>	129.69.1.12	soft/os2
<a href="src.doc.ic.ac.uk">src.doc.ic.ac.uk</a>	146.169.2.1	computing/systems/os2

The ftp-os2.nmsu.edu library is available on CD-ROM from Walnut Creek (510-947-5996).

Other sources include CompuServe ("FIND OS/2") and archive servers (send a single line message with the word HELP to listserv@ccl.kuleuven.ac.be or mail-server@rus.uni-stuttgart.de for more information, or use ftp).

IBM has been releasing freely distributable employee written software (e.g. Visual REXX) and OS/2 patches to these sites.

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(9) I am having trouble installing OS/2 2.0. What should I do?

First consult the Installation Guide and other materials accompanying OS/2 2.0. Make sure your PC meets the system requirements in Question 6.

And if the following instructions do not help, fall back on IBM's toll free technical support (800-237-5511 in the U.S.) and/or consult IBM's Tips and Techniques file, available from sources listed in Question 8.

Certain PC compatibles have difficulty accepting OS/2 2.0 (CSD level 02000 only; see Question 23), particularly AT bus systems with RLL, MFM, or ESDI adapters. The problem usually appears in the form of FDISK errors, extremely slow copying to the hard disk, or a whining/grating noise emanating from the hard disk. A replacement IBM1S506.ADD file, available from sources listed in Question 8, alleviates the problem.

When installing, the Logitech Mouse selection should be chosen only if you have a Mouse Systems PC Mouse (or compatible, e.g. certain Genius models) or a Logitech C7 or C9 serial mouse. (If you have another Logitech pointing device, it is likely Microsoft compatible when powered up, so select the appropriate Microsoft driver, e.g. "Serial Pointing Device.") If you are using a Logitech C7 or C9 serial mouse and have been using native DOS, be sure to issue the command MOUSE PC (or MOUSE 2 PC if your mouse is attached to COM2) before booting into or installing OS/2. Alternatively, turn off the system (to reset the mouse) before booting or installing OS/2.

Some PCs have trouble printing under OS/2 2.0. This problem can often be traced to an interrupt conflict, a substandard cable, an interfering software security "dongle," or a faulty printer adapter. LPT1 uses IRQ 7, and LPT2, if installed, uses IRQ 5. Interrupts should not be shared on AT bus machines. The SoundBlaster, for example, comes set to IRQ 7. Reset it to an unused interrupt.

Make sure adapters with onboard ROMs are not conflicting with other adapters. For example, many SuperVGA adapters use large segments of upper memory, and

many hard disk adapters have onboard ROMs which can be mapped into the same areas. Adapters must not share address space or interrupts. Check your product manuals for more help.

Be sure adequate free disk space is available before installing, including space for a swap file. Drives compressed using Stacker or similar utilities should be uncompressed before installing (unless access to these drives from OS/2 is not needed). An OS/2 2.0 version of Stacker is forthcoming, and Proportional Software's DCF/2, a Stacker-like utility, is now available (303-484-2665).

Do not select HPFS when installing if your machine has 6 MB of RAM or less, or diminished performance will likely result. Change the IFS=...HPFS line in your CONFIG.SYS to REM IFS=... if necessary.

Automatic migration of your DOS CONFIG.SYS and AUTOEXEC.BAT files is not recommended. If you have Windows 3.1 installed on your system do not migrate your Windows desktop.

Be sure your CMOS setup parameters are set correctly, especially those relating to floppy drives. RAM should be given sufficient wait states and precharge cycles. Test with cache memory and/or shadow RAM disabled if necessary. The AT bus should run at 8 MHz.

If you are using the IBMINT13.I13 driver to access an MFM, RLL, or ESDI hard drive, and the hard drive has more than 1024 cylinders, be certain your hard disk adapter's sector translation mode is enabled.

Some Quantum LPS105AT IDE hard disks require a free ROM update (to Ver. 2.6) from the manufacturer to work with OS/2.

If your AMI keyboard BIOS is below Rev. F you may need an update. Contact Washburn & Assoc. (716-248-3627).

Check to make sure keyboard DIP switches are set correctly. For example, if the keyboard is attached to a system with an AT bus it should typically be switched to "AT" mode.

"Autoswitching" on non-IBM EGA adapters should be disabled (usually with a DIP switch or jumper setting). In rare cases it may be necessary to switch third party VGA/SuperVGA adapters into 8-bit mode and/or disable "autosense." See Question 10 for more SuperVGA advice.

OS/2 is particularly sensitive to bad RAM or cache memory (often reflected in TRAP 2 error messages). Use a thorough RAM testing utility, and try not to mix 9 chip and 3 chip SIMMs/SIPPs.

A driver for HP DeskJet printers, including color models, is available for download from sources listed in Question 8.

Allow several minutes for OS/2 2.0 to build your desktop (and display icons) at the end of installation -- take the Tutorial offered to you in the meantime. Select Shutdown and reboot once after installation completes to ensure that DOS/Windows applications will operate properly. Avail yourself of the "Start Here" icon, the Welcome folder (if applicable), the other online help, and the README file located in the root directory. They will help in getting started with the WPS and in properly configuring your system.

When installing over a beta version of OS/2 (except OS/2 2.0 level 6.177H, the Limited Availability release) be sure to reformat.

To install the Upgrade Version of OS/2 2.0, DOS or OS/2 must already reside on the hard disk. If Diskette 1 is not write protected then the installation program will record a file indicating that upgrade terms have been satisfied and, in the future, will not require DOS or OS/2 on the hard disk to install.

OS/2 uses the same diskette format as DOS, so use DISKCOPY to backup the installation diskettes and verify that none have been corrupted.

Owners of IBM PS/2s should make sure that any applicable ECAs (engineering changes) have been performed and that the most recent Reference Diskette is in use. Reference Diskettes are available from the IBM NSC BBS.

Try disconnecting any tape backup device if "Cannot find COUNTRY.SYS" messages are encountered when booting OS/2.

Contact IBM for a fix to install OS/2 2.0 (CSD level 02000 only) on certain Zeos notebooks.

An Always IN-2000 SCSI adapter with BIOS 3.06A or 3.20 requires an updated version from the manufacturer. A companion 8-pin serial PROM chip may also need to be updated. Contact Always at 818-597-9595. Also ask about non-IBMINT13.I13 driver support.

The TI TM4000 notebook may require a BIOS update to run OS/2 2.0; call 817-771-5856 for help.

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(10) Will OS/2 2.0 work with my SuperVGA adapter?

If you have a SuperVGA adapter, OS/2 2.0 should initially be installed using the standard VGA driver. Then consult the README file OS/2 copies to your root directory for more information on SuperVGA support.

OS/2 2.0 comes with basic mode switching capabilities to handle applications which utilize SuperVGA modes. If OS/2 2.0 detects a SuperVGA adapter it will list two SuperVGA support files, VSVGA.SYS and BVHSVGGA.DLL, in your CONFIG.SYS file. (A replacement VSVGA.SYS file, dated April 20, 1992, or later, fixes Tseng 4000 and TRAP E problems. A replacement BVHSVGGA.DLL file, dated April 21, 1992, or later, fixes C0000005 errors involving Western Digital/Paradise chipset adapters. Both are available from sources listed in Question 8.)

To enable this mode switching support, available for most SuperVGA adapters, you must start a DOS full screen session, issue the command SVGA ON, EXIT, Shutdown, and reboot. (In the same DOS full screen session and prior to SVGA ON you may run utilities which customize refresh rates. The new refresh rates will take effect after you reboot. You may also wish to run such a utility from AUTOEXEC.BAT.) SVGA ON creates a text file called \OS2\SVGADATA.PMI which describes your SuperVGA adapter to the system. Then you may install high resolution drivers.

Aside from DOS applications (which may require their own drivers), OS/2 2.0 requires up to three high resolution support files:

```

\OS2\DLL\DISPLAY.DLL           Workplace Shell display driver
\OS2\MDOS\WINOS2\SYSTEM\VGA.DRV   Win-OS/2 full screen driver
\OS2\MDOS\WINOS2\SYSTEM\SWINVGA.DRV Win-OS/2 "seamless" driver

```

You may replace any one of these individually for high resolution operation in each given mode, but be sure to keep a backup copy of the original file(s). The "seamless" Win-OS/2 and WPS desktop driver files must match (in terms of resolution and number of colors) if you wish to run Windows programs "seamlessly." Any suitable Windows SuperVGA driver will work as a Win-OS/2 full screen driver, but be sure to use the EXPAND utility (as described in README) when installing.

OS/2 1.3 SuperVGA drivers often serve, with some limitations, as WPS desktop drivers. Use the command DDINSTALL to replace DISPLAY.DLL. Setting IOPL=YES in CONFIG.SYS may be required with a SuperVGA adapter.

(For OS/2 2.0 CSD level 06055 or later, \OS2\DLL\DISPLAY.DLL should not be replaced, using DDINSTALL or otherwise. Instead, create a separate directory (e.g. \DISPLAY) and copy the vendor supplied DLL file to \DISPLAY\DISPLAY.DLL. In CONFIG.SYS, place the \DISPLAY pathname, including drive letter, before \OS2\DLL in the LIBPATH line. The exception to this procedure is Tseng 4000 SuperVGA. To install any of the available 256 color Tseng 4000 SuperVGA drivers, use OS/2 System -> System Setup -> Selective Install. Check the Primary Display box, reselect SuperVGA, then proceed.)

Drivers for the following SuperVGA adapters (or adapters based on these chipsets) are available (A=all modes supported; B=most or some modes supported; C=one mode supported; S=supports "seamless" Win-OS/2 in at least one mode; X=experimental or beta). In most cases the drivers are available from the sources listed in Question 8.

Trident series	B S
Tseng Labs ET4000	B S
Compaq QVision	B
Genoa 7000	B
ATI VGA Wonder series	B S X
ATI Ultra and Vantage series	B
Lava Computer (416-674-5942 or FAX 416-674-8262)	B S
Orchid Fahrenheit 1280 (S3)	B
Paradise/Western Digital	B S X
Video7/Headland VRAM II	B S X
Cirrus Logic	C (B?)
Actix Systems (408-986-1625)	?
Number Nine (617-674-0009)	?
Portacom (415-390-8507)	?
"Generic" 800x600 16 color (VGA800-1)	C

In addition, several vendors, notably Ahead (510-623-0900) and Radius (???-???-????), are readying XGA-2 compatible display adapters for market.

Consult adapter vendors for up-to-date information on driver availability.

Some SuperVGA adapters cause problems with DOS/Win-OS/2 sessions. Try turning VIDEO\_ROM\_EMULATION off, HW\_ROM\_TO\_RAM on, and/or DOS\_RMSIZE to 624 in DOS Settings.

If you have an ATI Ultra, Vantage, or other 8514/A hardware compatible adapter, install OS/2 using the 8514/A driver.

IBM was unable to test all SuperVGA adapters, so if you are experiencing problems report them through IBM's toll free support (800-237-5511 in the U.S.) and to the adapter manufacturer.

If SuperVGA continues to cause problems the stock VGA driver may be used (preventing DOS/Windows applications from using SuperVGA modes, however). In CONFIG.SYS change DEVICE=...VSVGA.SYS to ...VVGA.SYS and SET VIO\_VGA... (BVHVGA,BVHSVGA) to ...(BVHVGA). This procedure may be required for first generation SuperVGA adapters based on Trident 8800 and Tseng 3000 chipsets, for example.

OS/2 2.0's installation program (CSD level 02000 only) has difficulty with certain Oak video adapters. Temporarily replace the video adapter to install OS/2, or contact IBM for a patch.

-----

(11) Will OS/2 2.0 work with my printer?

OS/2 2.0 includes support for Hewlett-Packard LaserJets, DeskJets (see Question 9), and PaintJets; IBM/Lexmark ExecJets, InkJets, Proprinters, Quickwriters, Quietwriters, Pageprinters, and Laserprinters; Epson dot matrix and laser printers; Postscript devices; and other printers (e.g. Panasonic) compatible with these families. A variety of IBM and HP plotters is also supported.

DOS/Windows printer drivers continue to work for DOS/Windows applications. OS/2 2.0 includes a large assortment of Windows printer drivers for Win-OS/2. If necessary install Windows printer drivers using the Win-OS/2 Control Panel. OS/2 2.0 and OS/2 1.3 printer drivers are interchangeable quite often.

If your printer is not compatible with one of the drivers supplied with OS/2, check with the printer manufacturer first then with sources listed in Question 8. If you own an IBM printer, check with the Lexmark BBS (606-232-5653).

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(12) How do I access HPFS partitions on my hard drive without booting from the hard drive? I'm getting error messages now -- how do I "repair" my hard disk?

With IBM OS/2 2.0, insert the Installation Diskette, Shutdown (if necessary), and reboot. When prompted insert Diskette 1 and press ENTER. When prompted, press ESC. You will be given an OS/2 command line prompt. From there you can make necessary changes to your hard disk -- an OS/2 character mode text editor on diskette is handy for such changes. (Make sure you backup CONFIG.SYS before making any changes so that you can easily revert to the old version should things go wrong.)

You may use this diskette boot method to run CHKDSK on your FAT or HPFS volumes. After you reach the command line, insert Diskette 2. Do not log to another drive. Type CHKDSK X: /F to repair most kinds of damage to your hard disk, replacing X with the appropriate drive letter. (If you are checking a HPFS disk, use /F:3 if you have the time.) OS/2 CHKDSK will also mark your

hard disk as accessible, if possible, should OS/2 "lock it out" for some reason.

"Errors" may be reported by CHKDSK if OS/2 was booted from the hard disk. These "errors" are normal. Since the hard drive is in use by OS/2 itself (and files are open) CHKDSK is unable to accurately report errors.

The best way to avoid the need to perform CHKDSK is to always select Refresh then Shutdown. Click on the Workplace Shell desktop background using mouse button two to bring up the appropriate menu. Also, avoid manipulating OS/2-related files when using native DOS. Finally, enable autochecking for all your hard disk volumes. For HPFS volumes use the /AUTOCHECK parameter in the IFS=...HPFS line in your CONFIG.SYS. For FAT volumes use the AC parameter in the DISKCACHE line of your CONFIG.SYS. See the online Command Reference for details.

Several utilities (including SE20BOOT), available from sources listed in Question 8, can create a single, bootable OS/2 diskette (as a convenience). Preloaded versions of OS/2 2.0 can create a bootable diskette pair from the Welcome folder. (This step, along with a full BACKUP after a diskette boot, should be performed immediately upon receipt of any IBM preloaded OS/2 2.0 system.)

IBM has released a patch (UHPFS) which remedies "CPS: Extent" errors on HPFS volumes. This patch is available from sources listed in Question 8.

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(13) I can't install OS/2 2.0 from Drive B. What's wrong?

IBM OS/2 2.0 can only be installed from Drive A, like DOS (unless your BIOS supports booting from Drive B), or across a network (see "Remote Installation and Maintenance," IBM Pub. No. GG24-3780-00). If you have the wrong disk size go back to your dealer and obtain the correct media. Otherwise you could open your machine and swap floppy drive cable connectors, use your system's setup utility to set the new CMOS parameters, and then install OS/2 from the "new" Drive A. Sometimes the floppy drive cable connectors will not be the same. If so you can obtain an adapter plug.

You may also use IBM's twin "bootstrap" diskette images, available from sources listed in Question 8, to boot from a 5.25 inch Drive A and install using 3.5 inch OS/2 diskettes inserted into Drive B. However, this procedure is not recommended.

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(14) Is there a Norton Utilities for OS/2?

Not yet, although Norton Desktop, Norton Utilities, and Norton Commander all work under OS/2 2.0's DOS/Windows sessions (with limitations noted in Question 4). Also, Norton Commander is now available for OS/2 2.0.

However, the GammaTech Utilities should fill the role. Contact their publisher at 405-359-1219. Note that OS/2 2.0 has a built-in UnDelete utility (see the README file or online help), and HPFS is resistant to fragmentation (see Question 17).

-----  
(15) Sometimes OS/2 2.0 will freeze when I run an application. What do I do?

Before rebooting with CTRL-ALT-DEL, try CTRL-ESC. Do not hit additional keys, do not move the mouse. Wait up to a minute. Either the Window List or an error message should pop up. You may close the offending application at that point; allow some time for it to close. (Try ALT-ESC if you have disabled CTRL-ESC in that application's DOS Settings.) Note that the WPS can recycle, independent of running applications, if it crashes.

If the system is badly disabled, sometimes pressing CTRL-ALT-NUMLOCK twice will result in a prompt to create a dump diskette. You may do so (the online Command Reference describes dump diskettes), or at that point you may reboot with CTRL-ALT-DEL.

To prevent applications from automatically restarting, see Question 28. To restore the desktop to "factory defaults," use ALT-F1 when OS/2 2.0 starts. See the README file in your OS/2 root directory for details.

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(16) How can I get answers to my OS/2 questions?

If your question is not answered in this List, post a note to the appropriate Usenet conference: comp.os.os2.apps carries discussions related to finding or using any application running under OS/2, comp.os.os2.networking looks at networking issues, comp.os.os2.advocacy deals with opinions and speculation, comp.os.os2.programmer addresses anything related to OS/2 programming, and comp.os.os2.misc is for any other OS/2-related discussion. These groups are watched closely by OS/2 experts from IBM. Also, comp.lang.rexx discusses REXX programming. A LISTSERVER distributes its own OS/2 conference by mail; send a single line message with the word HELP to listserv@ccl.kuleuven.ac.be for full instructions; or send the same message to listserv@frors12.circe.fr for information on an unedited mailing list. To subscribe to the Multimedia Presentation Manager/2 mailing list, send a single line message with the phrase SUBSCRIBE MMOS2-L to mail-server@knex.gwinnett.com.

Your local FidoNet BBS may carry OS/2 echo conferences and/or OS2NET. If not, ask your system operator to join them. CompuServe ("FIND OS/2") and Prodigy are also excellent resources.

The IBM NSC BBS's message areas, product database, and PS/2 Assistant file(s) are invaluable resources. Information on the new OS/2 BBS is included in the OS/2 2.0 package. In the U.S. IBM has toll free technical support (800-237-5511), an OS/2 Hotline (general information, orders, upgrades, 800-3-IBM-OS2), the HelpWare Center (800-PS2-2227), a software order line (800-IBM-CALL), two FAX information services (800-IBM-4FAX and 800-IBM-3395), and an educational inquiries line (800-222-7257). In Canada call IBM Personal Systems Software at 800-465-1234.

OS/2 2.0 developers should contact the IBM Developer Assistance Program (407-982-6408); membership is free. (You may also join on CompuServe with GO OS2DAP.) The OS/2 Professional Developer's Kit CD-ROM, containing a wide selection of development tools and code, and the OS/2 2.1 Beta CD-ROM are both

available from IBM (800-3-IBM-OS2 to order in the U.S. for \$15 each; in Canada, call 800-465-1234; in Australia, call Rohaini Cain or Mike Voris at 13-2426 ext. 7684; elsewhere, contact your local IBM office).

IBM offers classes worldwide to help in using and programming OS/2 2.0; call your local IBM branch office (or the OS/2 Hotline) for more information. OS/2 has its own magazines as well: OS/2 Developer Magazine (800-WANT-OS2), OS/2 Monthly (72550.2440@compuserve.com or 800-365-2642), Inside OS/2 (502-491-1900), OS/2 Professional (???-???-????), and OS/2 Newsletter (714-495-3757).

OS/2 2.0 books include The Design of OS/2 (Addison-Wesley, 617-944-3700), 10-Minute Guide to OS/2 (Alpha, 317-573-2634), OS/2: User's Guide and Tutorial (Computer Information Assoc., 708-766-4677), Inside OS/2 (New Riders, 317-571-3259), OS/2 Inside and Out (Osborne/McGraw-Hill, 800-227-0900), OS/2 Application and Development Tools (Premier, 203-378-6200), Using OS/2 2.0 (Que, 317-573-2500), OS/2 2.0 Complete (Abacus, 616-698-0330), and various titles from Van Nostrand Reinhold (212-254-3232) and QED (800-343-4848).

IBM's OS/2 "redbooks" (power user guides) are IBM No. GBOF-2254. (To order IBM publications phone your local IBM office and ask for the Librarian or call 800-7654-IBM.) The redbooks are also available in electronic form from sources listed in Question 8.

Any of the regular DOS or Windows resources (e.g. books, magazines, shareware/freeware sources) will be useful since both environments come with OS/2 2.0.

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(17) Why should I use HPFS? What does it offer me? Does it work with DOS?

HPFS offers long file names (up to 254 characters including the path, greatly exceeding the "8 dot 3" limit in DOS's FAT file system), contiguous storage of extended attributes (without the EA DATA.SF file used by FAT), resistance to file fragmentation, improved media error handling, smaller cluster size, support for larger file storage devices (up to 512 GB), and speedier disk operation, particularly on large hard disks, on systems with more than 6 MB of RAM. HPFS is not case sensitive, although it does preserve case in file names.

However, HPFS is not currently supported on removeable media, although some programs (e.g. BACKUP) preserve long file names on such FAT disks. Also, native mode DOS cannot access a HPFS partition. However, DOS/Windows sessions running under OS/2 can use all files that conform to the "8 dot 3" naming conventions, even if they are stored on HPFS volumes.

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(18) I'm a Unix wizard. How do I make OS/2 resemble Unix?

A great number of GNU and Unix utilities have been ported to OS/2 native mode and are available from sources listed in Question 8. A uucp package, UUPC/Extended, is available via anonymous ftp from sun.soe.clarkson.edu, directory pub/uupc; mail help@kew.com with questions.



In addition, the Hamilton C Shell is available from Hamilton Labs (508-358-5715 or mail 3890321@mcimail.com). The Thompson Toolkit, a Bourne-like shell, and awk are published by Thompson Automation (206-224-1639). MKS (519-884-2251 or mail pat@mks.com) publishes a number of standard Unix utilities for OS/2. For OS/2-specific X Windows server support, IBM provides an optional package available with its TCP/IP 1.2.1 for OS/2. The TCP/IP 1.2.1 base package includes a news reader as a sample application.

DOS and Windows based utilities and aids still work fine under OS/2 2.0.

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(19) I prefer Windows. How do I make OS/2 2.0 resemble Windows (or OS/2 1.3)?

Spend some time with the WPS first. Browse the online Tutorial, Master Help Index, and Start Here facilities. Consult the Unofficial Guide to the Workplace Shell, available from sources listed in Question 8.

If you still prefer Windows-like behavior, follow the instructions beginning on p. 29 in the "Migrating to the OS/2 Workplace Shell" booklet.

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(20) I would like to set up an OS/2 BBS. What is available?

OS/2 is an excellent environment for BBS operation (even using DOS/Windows software), including large multiline facilities. Related software will enable FidoNet capabilities, gateways to Usenet/UUCP, nodelist processing, additional file transfer protocols, and more.

Five popular OS/2-specific BBSes are Maximus and Simplex (available from sources listed in Question 8), Omega Point/2 (BBS 404-564-1961), Magnum (818-706-9800, BBS 818-706-9805), and Multi-Net (503-883-8099, BBS 503-883-8197).

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(21) Can I use COM3 and COM4 in OS/2?

COM3 and COM4 are supported on most PS/2s without any additional effort. On (E)ISA machines, some additions are required to CONFIG.SYS. Using a text editor, include "(port number, base address, interrupt number)" parameters next to the COM.SYS and VCOM.SYS filenames. One example:

DEVICE=C:\OS2\COM.SYS (3,3E8,5) (4,2E8,10)

DEVICE=C:\OS2\MDOS\VCOM.SYS (3,3E8,5) (4,2E8,10)

Parameters for COM1 and COM2 need not be included (unless they are somehow nonstandard). OS/2 must end up with sequentially numbered logical COM ports, if possible. For example, if (physical) port two is not installed but port three or port four is installed start numbering using (2,...) in the DEVICE lines. If these efforts fail, try IBM's patched COM drivers or the SIO drivers (available from sources listed in Question 8).

Note that AT bus COM ports cannot be used at the same time if they share interrupts because of bus design limitations (cf. "Under the Hood: How Interrupts Work," Byte, February, 1992). An adapter which provides more flexibility in interrupt selection (e.g. the 16-bit model from Boca Research)

may prove helpful. Also, PolyCom, a replacement driver available from sources listed in Question 8, supports up to eight ports with the right hardware.

"Smart" (coprocessor controlled) multiport communication adapters should be used when installing more than four ports. Such an adapter will work with OS/2 if the manufacturer has written an appropriate driver. Examples include IBM's ARTIC products, Digiboard (612-943-9020), Stargate (216-349-1860), Arnet (615-834-8000), Computone (404-475-2725), Comtrol (612-631-7654), CTC Systems (415-966-1688), Equinox (305-255-3500), I-Concepts (214-956-7770), Specialix (408-378-7919), and Stallion (408-395-5775) adapters.

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(22) How do I start a background process from the OS/2 command line?

Look up the START and DETACH commands in the online Command Reference.

If you wish to start a DOS session with nondefault settings, use a utility such as STARTD. If you wish to start an OS/2 session from a DOS session, try OS2EXEC. Both (and several others) are available from sources listed in Question 8.

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(23) What are CSDs, how do I tell which I have, and where do I get them?

CSDs are Corrective Service Diskettes, or bug fixes (Service Paks), periodically issued by IBM. The OS/2 CSD level number may be obtained using the command SYSLEVEL from an OS/2 command line prompt. CSDs are cumulative, i.e. only the most recent CSD is required to bring a system up from any previous CSD level. However, CSDs only apply within a major version number. For example, an upgrade, not a CSD, would bring OS/2 Version 1.3 up to Version 2.0. Note also that each national language (e.g. French, U.K. English) uses a distinct CSD.

CSDs may be ordered at 800-3-IBM-OS2. Customers with IBM customer numbers (usually large sites) should call 800-237-5511 or order through IBMLink. Outside the U.S., ask an authorized IBM dealer or representative for the CSD. CSDs may also be downloaded from the IBM NSC BBS, CompuServe ("FIND OS/2"), or from sources listed in Question 8. And CSDs may be ordered through IBM's new OS/2 BBS.

The latest, current OS/2 2.0 CSD level will be listed in this List and in the PS/2 Assistant files.

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(24) How do I add new Adobe Type Manager typefaces?

OS/2 2.0 comes with built-in ATM for OS/2 and Win-OS/2. A basic set of typefaces comes with OS/2 2.0 and is installed (if selected) for use under OS/2's ATM. To install these same typefaces for use under Win-OS/2's ATM, go to the Win-OS/2 ATM Control Panel and install the typefaces from the last Printer Diskette. (Note that certain foreign language characters, German particularly, do not display correctly when using these typefaces. To remedy

this problem edit each of the INF files on this diskette so that the line "Pi true" reads "Pi false" and then proceed with installation under Win-OS/2.)

Each typeface should come with three separate files with PFB, AFM, and PFM extensions. To install a typeface for use under Win-OS/2, use the ATM Control Panel. To install a typeface for use with OS/2-specific applications, select OS/2 System -> System Setup -> Font Palette -> Edit Font -> Add.

PFM files may be converted to AFM files using the PFM2AFM utility, available from sources listed in Question 8. (However, these converted AFM files sometimes produce unusual results.) For information on obtaining AFM files for Adobe commercial typefaces send a single line message with the word HELP to ps-file-server@adobe.com. Many public domain typefaces for OS/2's ATM are available from sources listed in Question 8.

With the exception of the basic set of typefaces that comes with OS/2 2.0, typeface files may be shared by OS/2 ATM and Win-OS/2 ATM. To do so, install the typefaces using both the Font Palette and Win-OS/2 ATM Control Panel, specifying the target path each time (most conveniently \PSFONTS).

Note that IOPL=YES should appear in CONFIG.SYS; the modules WPPWDRV, BVHSVG, and PMATM are marked as requiring I/O privilege.

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(25) How do I tweak OS/2 2.0 for maximum performance?

For OS/2 overall, the CONFIG.SYS parameters MAXWAIT, TIMESLICE, PRIORITY, PRIORITY\_DISK\_IO, PROTECTONLY, and cache settings (in the DISKCACHE line, for FAT; or IFS line, for HPFS) can be tweaked. The swap file should be placed on the most used partition on the least used hard disk, and its location is controlled by the SWAPPATH line. See the online Command Reference for details.

FAT partitions should be periodically defragmented. A shareware defragmenter for DOS called DOG (Disk OrGanizer) works well, as do many others. (You can boot DOS from a floppy disk to run such a utility.)

For the Workplace Shell, drag shadows of most often used items to the desktop or folders closer to the "surface" -- opening folders takes time. Drag shadows of program objects you use often (e.g. the Win-OS/2 full screen Program Manager) to the Startup folder. Disable animation (go to OS/2 System -> System Setup -> System -> Window). Use the faster Details View when opening drive and folder objects; to set Details View as the default, open the settings notebook for the object, select the Menu tab, click on ~Open, then the Settings button, then select the Default Action.

Try reducing the number of on screen colors or dropping down in screen resolution to enhance speed. Close (not just minimize; check the Window List) unnecessary objects and applications. Consider adding more RAM.

For DOS programs, run full screen instead of windowed if speed is important. In DOS Settings for each application: reduce conventional, XMS, DPMS, and EMS memory allocations to the bare minimums required for maximum performance; turn off VIDEO RETRACE EMULATION unless necessary; adjust IDLE SENSITIVITY; turn off DOS BACKGROUND EXECUTION if not needed; change the HW TIMER setting (particularly for games); enable VIDEO FASTPASTE if possible; turn on

HW ROM TO RAM. Communications programs should use hardware handshaking where possible (use OS/2's MODE COMx command if necessary), and a buffered UART can prove helpful. (DOS programs running under OS/2 will not be aware of a buffered 16550AF UART. OS/2 virtualizes the serial port and manages the buffer itself.) For faster printing set the DOS program's output port to LPTx.OS2 (where x is the printer port number) -- use a "print to file" option if necessary. Disable any DOS print spoolers; rely on OS/2's spooler instead. Increase CONFIG.SYS's PRINTMONBUFSIZE values. Other, standard steps to enhance DOS performance (e.g. increasing BUFFERS in CONFIG.SYS) of course apply.

For Windows programs, run using a full screen desktop if speed is vital. The Win-OS/2 Full Screen icon set up by the installation program has poor Settings. For better performance perform some of the same steps outlined in the preceding paragraph, including VIDEO\_RETRACE\_EMULATION off. The same printer output advice also applies. In addition, the Print Manager should be disabled (OS/2 provides a systemwide spooler). From the Win-OS/2 desktop close the Print Manager, uncheck the "Use Print Manager" box from the Win-OS/2 Control Panel -> Printers section, then, using a text editor, edit the \OS2\MDOS\WINOS2\SYSTEM.INI file, removing the ",!printman" entry from the MAVDMApps line. (This last step will keep a warning dialog box from appearing each time you start the Win-OS/2 desktop.) Consider disabling the Public setting in the Clipboard. If available, set VIDEO\_8514A\_XGA\_IOTRAP to off and VIDEO\_SWITCH\_NOTIFICATION to on (unless mouse control is lost).

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(26) What networking products are available for OS/2 2.0?

In addition to DOS/Windows products, OS/2-specific TCP/IP support is available from IBM (800-IBM-CALL), Essex Systems (508-532-5511), FTP Software (send mail to info@ftp.com), and others. (A freeware SLIP implementation, KA9Q, is available via anonymous ftp from ucsd.edu.) NetWare Requester for OS/2 is available from Novell (800-873-2831) and IBM; NetWare Server (atop OS/2 2.0) has been demonstrated by IBM. IBM offers both NetWare and LAN Server 3.0 (Basic and Advanced) with LAN requesters. Microsoft sells LAN Manager 2.1a (which comes bundled with OS/2 1.3). An OS/2 2.0 LAN Manager Requester, part no. 96F8359, is available from IBM; Microsoft offers a similar requester with LAN Manager 2.1a. DEC sells Pathworks for OS/2. A Banyan Vines OS/2 2.0 requester is due shortly, and the current DOS requester works in a specific DOS session.

NDIS MAC drivers for most network adapters are available from sources listed in Question 8, as well as vax.ftp.com via Internet anonymous ftp. Drivers for 3Com adapters are available via anonymous ftp from ftp.3com.com, from the 3Com Support BBS, or from CompuServe ("GO THREECOM").

Peer-to-peer networking under OS/2 2.0 is best accomplished (at the moment) with a TCP/IP product, like IBM's. TCP/IP (with NFS) is available for nearly all platforms, so it is a particularly good choice in a mixed environment. Artisoft is reportedly working on an OS/2 version of LANtastic; contact the company for details. IBM may have its own offering in the near future (beyond the peer-to-peer support now in LAN Server 3.0).

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(27) Should I worry about viruses when running OS/2 2.0?

At present there are no OS/2-specific viruses. However, DOS/Windows viruses can conceivably infect an OS/2 2.0 system. DOS/Windows antivirus tools are just as useful in preventing such infection. Also, IBM has an antivirus package which runs under OS/2 directly (without DOS/Windows emulation), McAfee's OS/2 SCAN and CLEAN have been released, and others (Dr. Solomon and Dr. Cohen) are in development.

But OS/2 2.0 is likely to be much more resistant to viruses because of its design. Viruses running in one virtual DOS/Windows session are likely to be confined to that session. Low level disk access is curtailed under OS/2 2.0, thus preventing most virus infection at that level. And when a DOS/Windows virus does trigger, it is far less likely to disrupt the entire system.

OS/2 2.0 is by no means virus proof -- no system is. But it should prove more resistant to virus infection.

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(28) Are there any clever tricks that apply to OS/2 2.0?

If you have installed the optional bitmaps, try clicking on the WPS desktop background once with mouse button one and pressing CTRL-ALT-SHIFT-O.

If you have a color monitor, try editing your CONFIG.SYS file so that  
SET PROMPT=\$e[32;40m\$e[1m[\$P]\$e[0m  
to obtain a more colorful OS/2 command line prompt. You can do the same for your DOS sessions if you edit PROMPT in AUTOEXEC.BAT, assuming you have ANSI.SYS loaded.

To force DIR to display your directories in alphabetical order, with the subdirectories listed first, add the line

```
SET DIRCMD=/O:GN
```

to CONFIG.SYS; and, if you wish the same for your DOS command line sessions, use DOSKEY (see the online Command Reference) in AUTOEXEC.BAT. DOSKEY also enables command history. (Shutdown and reboot for changes to CONFIG.SYS to take effect.)

Hold down SHIFT while resizing text windows to make size changes permanent.

While running a DOS graphics program in a window, use the graphics cut and paste feature to clip a picture and paste it into the Icon Editor. You can then quickly and easily create custom icons for your applications.

To disable the automatic application restart feature, create a STARTUP.CMD file in the root directory of your OS/2 boot drive with the following REXX script:

```
/* */  
call RxFuncadd 'SysLoadFuncs', 'RexxUtil', 'SysLoadFuncs'  
call SysLoadFuncs  
call SysIni 'USER', 'PM_WorkPlace:Restart', 'DELETE:'  
'exit'
```

or add the line SET RESTARTOBJECTS=STARTUPFOLDERONLY to your CONFIG.SYS. To manually disable automatic application restart when booting OS/2, hold down the left CTRL, left SHIFT, and F1 keys simultaneously from the time the mouse pointer appears until icons are displayed on the desktop.

Use the Alarms applet to automatically start programs at specified times.

If you wish to dispense with the WPS (and its overhead), particularly on low memory systems, change the line SET RUNWORKPLACE... in CONFIG.SYS to read SET RUNWORKPLACE=C:\OS2\CMD.EXE (replacing "C," if necessary, with a different drive letter). In fact any program with job control (e.g. Enhanced Editor, HyperAccess/5) can be used as the shell.

To implement a small scroll back buffer for your OS/2 command line windows, use the command MODE CO80,102. This procedure may be automated by adding "/K MODE CO80,102" in the Optional Parameters section of the OS/2 Window program object settings.

A clever way to manipulate files that are locked when the WPS is running (e.g. display drivers) is to add the line CALL=CMD.EXE at the end of CONFIG.SYS. Then Shutdown and reboot. The system will restart with an OS/2 command line prompt. Type EXIT to proceed into the WPS. Using CALL is also a convenient way to configure OS/2's serial ports using the MODE command. For example:

CALL=C:\OS2\MODE.COM COM2:38400,N,8,1,OCTS=OFF,RTS=ON,BUFFER=ON  
configures COM2 for high speed RTS handshaking and buffered I/O. You can also use either CDD2 or SHIFTRUN; both utilities are available from sources listed in Question 8.

Another way, which works well with display drivers, is to copy the new DISPLAY.DLL to its own directory (say, C:\NEW), then place that directory name first in LIBPATH in CONFIG.SYS. Shutdown and reboot. OS/2 will use that DISPLAY.DLL before it attempts to use the one located in \OS2\DLL. (This method is required when using a 16-bit OS/2 2.0 display driver with OS/2 2.0 CSD level 06055 or later; see Question 10.) To switch back to the old driver, edit CONFIG.SYS and remove C:\NEW from LIBPATH, then Shutdown and reboot.

To shutdown without a mouse, press CTRL-ESC, select the Desktop, then press the spacebar (to deselect any icons, if necessary), SHIFT-F10, and select Shutdown.

If your video driver does not support "seamless" Windows, try running the Win-OS/2 Program Manager in a DOS window.

Selective Install should be used with caution when changing mouse or display drivers. Verify that proper changes have been made to CONFIG.SYS.

If your settings notebooks do not display but are listed in the Window List, click on the name of the settings notebook in the Window List (brought up with CTRL-ESC) with mouse button two and select Cascade.

If you wish to force a program object to start an OS/2 application minimized, temporarily change the program name to introduce an error (e.g. LOTUS.EXE to LOTUS.EX), turn to the second page of the notebook, check Start Minimized, then turn back to the first page and correct the program name.

If your \OS2\\*.INI files have grown large, use the CopyINI or WPSBackup utilities to shrink them. Both are available from sources listed in Question 8.

To run Framemaker for Windows under Win-OS/2 3.0, patch the file MAKER.EXE (using PATCH or DEBUG). Around offset \$1DDD1C in the file you should see a

series of bytes as follows: 9A FF FF 00 00 A8 20 75 17. Change the second to last byte from \$75 to \$EB.

To restart the Workplace Shell (without saving desktop settings, perhaps after an accidental Arrange), use a utility such as psPM (available from sources in Question 8) to terminate PMSHELL.

To get rid of a WPS object that cannot be deleted, try one of the following:

(a) click on the object with mouse button two, select Open -> Settings, select the General tab, uncheck the Template box, close, and delete;

(b) drag a folder template from the Templates folder, drag the stubborn object to this folder, then drag the folder to the Shredder;

(c) from the OS/2 command line, delete the object directly using the RD command. (Many objects are actually represented as subdirectories below "\"OS! 2 2.0 Desktop" or similar);

(d) insert a blank diskette in Drive A, drag the object to the Drive A disk object, then format the diskette;

(e) use the WPSTools or Black Hole, available from sources listed in Question 8. (The WPSTools can also recreate desktop objects that have been lost.)

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(29) What do I need for OS/2 multimedia applications?

Information on IBM's OS/2 multimedia extensions (MMPM/2) and tools, multimedia hardware, and IBM multimedia titles (e.g. Illuminated Manuscript) is available through IBM's Multimedia Office (800-426-9402 ext. 150). Drivers for the SoundBlaster are available through sources listed in Question 8. VideoLogic's (617-494-0530) DVA-4000 supports video capture and video display in OS/2 windows as does New Media Graphics's (508-663-0666) Super VideoWindows. Tecmar (216-349-0600) offers various OS/2 multimedia products.

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(30) How do I measure OS/2 performance and memory usage?

OS/2 does not treat system resources like DOS. Memory is treated as a virtual resource, used intelligently. For example, OS/2 will retain unused, "dormant" code in memory if that memory is not otherwise required, on the assumption that that code may be used again. Also, all but a small portion of OS/2 (and most applications, no matter how many are running) may be paged to disk should a large amount of physical memory be required. Utilities which display "free" memory, then, are only useful for rough, relative measurements.

Similarly, utilities which purport to measure system load (e.g. Pulse) should not be relied upon for definitive performance measurement. Subjective assessments are often much more reliable. Pulse (and similar utilities) rely on a measurement of processor time allocated to a thread running at OS/2's lowest priority. This method is sometimes subject to erroneous results.

That said, more rigorous system performance optimization and monitoring tools include SPM/2 (IBM), BenchTech (Synetik, 303-241-1718), and Performance 2.0 (Clear & Simple, 203-658-1204).

Note that OS/2's swap file is designed to behave with hysteresis. It will not shrink in size as easily as it grows, under the assumption that swap space needed once may be needed again. It should shrink given enough time and continued, less intense system loads.

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(31) What can I do to promote OS/2?

OS/2 is selling well, but there are steps you can take to assure that hardware devices and software will be available for OS/2 in the future. Customer requests do matter.

Politely, firmly, and repeatedly request driver support from printer, video adapter, and other hardware manufacturers.

When you receive a mailing for DOS/Windows software with a postpaid envelope, return the order form marked "Please send information on your OS/2 version."

Start a users' group at your location. Contact Gene Barlow (214-402-6456) at IBM for assistance.

Correspond with members of the computer trade press. Ask for reviews of OS/2 software, hardware compatibility testing with OS/2, OS/2 benchmarking, etc. Respond politely but forcefully to press you think unfair; praise good reporting.

When you purchase a new system, ask the vendor to install OS/2 2.0, and to offer credit for dropping DOS and Windows. If the vendor refuses, you may wish to take your business elsewhere.

Make sure your company (or yourself) specifies OS/2 compatibility when purchasing new products.

Demonstrate OS/2 to friends, relatives, and associates.

Ask your computer store to stock OS/2 software titles, have OS/2 demonstration machines, etc.

Pass along useful OS/2 shareware and freeware to your local BBS. Be sure to register OS/2 shareware.

Write an outstanding piece of shareware or freeware (see Question 16 for details on joining DAP). IBM has been known to recognize such work with rewards. Also, ask authors of DOS/Windows shareware and freeware if they would port to OS/2, or volunteer.

Recommend products that work well under OS/2; dissuade people from purchasing products that do not.

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(32) My background bitmap does not display correctly. What's wrong?



Color bitmap images used for the WPS screen or folder backgrounds may not display correctly (may have distorted or missing colors) due to incorrect matching with OS/2's default palette. Unlike Windows, OS/2 does not adjust the palette to accommodate background bitmaps (to keep the rest of the desktop from experiencing color distortions). (Palette control is now available to applications running under the 32-bit graphics engine with an appropriate display driver, however.)

To remedy the problem you may use the numerous background images which have been specifically prepared for the WPS (so-called "BGA images," available from sources listed in Question 8) or you may use an image editing/conversion utility which can create a proper, palette-matched bitmap file. For example, FracInt 17.2 (available from sources listed in Question 8) may be used to import noninterlaced GIF, Windows BMP, and PCX files and save them as palette matched OS/2 BMP files.

Note that background bitmap images impose some additional overhead, taking up RAM and disk resources. You should probably use them sparingly.

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(33) What is the best way to partition my hard disk for OS/2?

[Answer under construction; suggestions welcome.]

There is no single best way to partition your hard disk for OS/2. For some advice on the subject you should consult the IBM OS/2 Installation and Planning Guide, available for download from sources listed in Question 8, and the OS/2 Installation Guide in the OS/2 package.

It can be useful to place OS/2 by itself in a separate partition of about 40 or 50 MB. If you then elect to experiment with beta releases of OS/2, you can reformat that particular partition quite easily to erase all old code. The swap file can be placed on another partition; its location is determined by the SWAPPATH line in CONFIG.SYS.

Partitioning should be performed by booting the OS/2 Installation Disk. Executing FDISK from the command line will not allow certain functions to be performed.