
Macintosh® FAQ

Frequently Asked Questions
And Answers

by David Lerner



THE OLD RELIABLE MAC SERVICE SHOP

 Apple Specialist

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COMMAND KEY COMBINATIONS

I got the Mac because I like menus and hate using command keys. But some Mac actions require command keys. What are the common ones?

Ignore internal hard disk drive	⌘-option-shift-delete while booting
Rebuild Desktop	⌘-option (but read the question about this)
Zap PRAM—System 7.x–8.x	⌘-option-P-R while booting
Zap PRAM—System 6	⌘-option-shift while opening Control panel
Reset AppleVision Display (v1.52 or later)	⌘-option-A-V while booting
Original iMac—hard reset (after a crash if any, lose all unsaved work)	Use straightened paperclip in ◀ hole behind connector access door on the right side of iMac
Software reboot (lose all unsaved work) to restart after a crash on some Macs	⌘-control-power on (the triangle button)

VIRUS ALERT

The "Autostart" worm virus is nasty and pervasive. You NEED to use and update Virex (or NAM)! Disinfectant has been discontinued and is no longer sufficient.

PHONE NUMBERS FOR HELP AND SUPPORT

Who do I call...?

Tekserve (www.tekserve.com)	212 929-3645
Apple Hardware & Software Support (www.apple.com)	800-SOS-APPL (800 767-2775)
Apple Loan Program (borrow money to buy a Mac)	800-APPLE-LN (800 277-5356)
Apple Literature FaxBack service (www.apple.com)	800 510-2834
J&R Computer World Mac Dept.	212 238-9110
NovaWorks Apple VAR, on-site service	212 604-9999
MacConnection Mail-order	800 MAC-LISA (or 800-800-1111)
New York Macusers' Group (www.nymug.org)	212 473-1600 (BBS 212 220-4255)

Tekserve, New York's Old Reliable Mac Service Shop

What's Tekserve?

We are electronic engineers who use Macs to design products such as robust public access audio/video equipment, industrial controls and product simulators. When our Macs started breaking, we were shocked by the repair costs, so we learned how to fix them.

Tekserve focuses on Macintosh service, repair and upgrade, both in and out of warranty. We always give free estimates. Although we have a special emphasis on fast turnaround PowerBook repair and upgrade (frequently while you wait), we work on all Macintosh models (and clones too). We have a high success rate and reasonable prices for data recovery, and we only charge if we succeed. We stock memory, modems, drives and service parts for nearly all Macs, and we are also happy to install upgrades that you buy elsewhere.

We also stock new Macs, PowerBooks and printers at mail order prices, and we can frequently custom configure and deliver them the same day. We are open 9 to 6 weekdays, Tuesday evening until 8, and 10 to 4 on Saturdays, with free validated parking (at 101 West 23rd Street or at 170 West 23rd Street). No appointment is needed, just come on by.

Isn't one service place as good as another?

Every service shop is only as good as their last repair. What we think sets Tekserve apart is that service is our business—our prime focus is on repair, upgrade and custom configuration. We think that's reflected in our shop—no receptionist, no hidden service areas, just a bunch of well-equipped workbenches and technicians (and a huge inventory of parts).

Yes, we do sell Macs too, and in fact we can frequently configure a system (or five systems) and deliver the same day. But we see sales as an adjunct to our service, rather than the main event.

Our motto, copied from an old Walker Evans photo from the Library of Congress that we made into a postcard, is "Honest Weights, Square Dealings." And we mean it. If you are ever dissatisfied in any way with our service, please let us know and we'll make it right.

Do you really fix things, or just swap parts?

We've been humbled a little on this one. We started our business on the premise that we would always fix the broken part, not just

swap it. When someone had a floppy drive that was a little out of alignment, we aligned it. If a capacitor on an analog board was bad, we replaced it. But too many things came back with further problems and what seemed like a good policy backfired. People want their repair right now, but careful repair and testing takes time. So now we insist on swapping a bad floppy drive for a new or refurbished one.

So, yes, we actually fix things, but to get the customer in and out quickly we usually swap parts. We think it's the best of both worlds, because it allows us to stand behind all of our work with a full one-year warranty, and it reduces the need for people to use that warranty. (Note: our Apple warranty and AppleCare repairs are done with Apple Service Parts and carry a three-month Apple warranty.)

Don't most other dealers swap brand new parts?

No. Service swap parts are guaranteed (although usually only for three months) to work the same as new ones, but Apple prohibits dealers from claiming that service parts are new. The parts are usually repaired and refurbished at Apple's depot.

Do you provide a messenger service to pick-up and deliver stuff?

We'd love to, but the messenger services say that picking up broken equipment is too risky for them, because it's hard to prove what was already broken in the unlikely event that they break something else. If you send us stuff by messenger, please attach a note telling us who, what, when and why. You'd be surprised at the mystery parcels we receive. We do deliver new systems, cables and accessories by messenger.

Do you do corporate accounts?

Our low cost structure is geared toward payment by cash, check or credit card when the repair is completed. We are happy to accept corporate credit cards, including American Express & Diners Club. If your company's structure requires that you be billed, ask to talk to David and we'll send you a credit application. It's no problem for us to bill Fortune 500 companies, governmental entities and universities who issue a written purchase order.

HOW TO AVOID COMING TO TEKSERVE IN A PANIC

- 1 Save multiple copies of critical files on multiple disks, cartridges or tapes. In short, backup constantly and religiously, especially when you are under deadline pressure. Save early and often.
- 2 Don't save the only version of an important file on a floppy disk or a removable cart (really you should never have only one copy of an important file). Make multiple copies. Don't erase your last backup to make a new one—you may be backing up a corrupted file and will need the previous backup.
- 3 At least one of your backups should be in a different location (i.e. off-site).
- 4 Install and use the latest version of your preferred anti-viral software. Disinfectant has been discontinued and is no longer sufficient—you need to use one of the

commercial programs (we like Virex) and update it monthly (really).

- 5 Run the latest Apple Disk First Aid on your drives once a month or so (always backup first), and also after your computer crashes.
- 6 If you own a current version of Norton Utilities (4.04 came out in May 1999), (Norton 4.x only works on Power PCs, use Norton 3.5.2 on 68XXX Macs.)
- 7 Own the software you use, read the manuals, keep the original program disks or CDs in a safe place.
- 8 Minimize the number of gewgaws you add to your System, and never add two gewgaws with overlapping functions. (e.g. don't use SuperClock and the Apple menu bar clock, don't use Trashback and Undelete). "Screen savers" are mostly entertainment programs—by the time a color screen burns-in, it will probably be fuzzy too. To save your screen, dim the monitor or turn it off. All new monitors work with Apple's Energy Saver control panel to downshift to a dark low-power mode after a certain idle time. Some "screen savers" will interfere with that.

BEING PREPARED

Spend a little time getting ready to cope with a problem before you have one. All recent Macs come with a bootable CD-ROM with System software—keep it handy.

If you own a copy of Norton Disk Doctor, keep it up to date. If your hard drive is not an original Apple drive, or you have reformatted it with some other software (Drive7, FWB Hard Disk ToolKit, CharisMac Anubis, La Cie Silverlining, etc.), keep a copy of that formatter/driver software handy, preferably on a disk that will boot your Mac.

My hard drive has trouble getting going, but it always starts after a few tries.**Should I bother backing it up?**

No, your data is of no importance and you

can probably recreate it within a few months. After all, you have lots of paper printouts to recopy from and you're a fast typist. Sorry to be facetious, but we've had people come into Tekserve for urgent data recoveries with this story! If your computer or hard drive is doing anything unusual—squeaking, chirping, having trouble getting going, read/write errors, missing or damaged files—take it as a reminder to do a complete backup. Please!

CRISIS SITUATIONS

I turned on my computer and just see a little blinking picture of a floppy disk or a question mark.

- 1 If you have one of the many Macs with an IDE internal drive, this may be caused by an older version of Drive Setup. Get Apple's Drive Setup 1.3.1 or later (1.74 is current June 99) and follow the instructions. The affected models are Performa and Power Mac 5400, 5410, 5420, 5430, 5440, 5500, 6400, 6410, 6420, 6500, 6360 and Twentieth Anniversary Macintosh.
- 2 Try starting from the floppy or CD-ROM that came with your computer. If the disk is ejected, you may have a stuck button on your mouse or trackball (or it isn't really a startup disk and is lacking the software needed to boot your computer). With the Mac turned off, unplug the mouse or trackball and see if it now starts okay from the CD or your hard disk. If so, the mouse or trackball is the culprit.
- 3 If it starts up okay from the CD, and you see your hard disk icon below the CD icon, the System on your hard drive may have become damaged. If so, backup your important files, run Disk First Aid to repair any directory damage, and then reinstall the System. If that doesn't solve the problem, try a "clean System install" described in the next section.
- 4 If your hard disk drive icon doesn't show up under the CD or floppy icon, you can

try running Disk First Aid. (Warning: In some instances repair programs will make things worse. This is why we say to always backup everything; so that, if a repair fails, you have another recourse. If you have any doubts or cannot afford to lose the files on your hard drive, you may want to bring your computer to Tekserve before running any repair programs. We have ways of doing repairs without taking chances.) If Disk First Aid sees your hard drive, it may be able to fix problems in the directory. If it finds things to fix, run it again to be sure that everything is really fixed. If it keeps saying it fixed the same thing each time you run it, it's lying to you.

- 5 If you own Norton Utilities or Tech Tool Pro 2, you can try them now (but please read the next question first).
- 6 If this didn't solve your problem, call us.

Can I make things worse by doing repairs with Norton Disk Doctor, Tech Tool, DiskWarrior, or Disk First Aid?

Unfortunately, yes. In most instances these programs are good tools that help solve problems. But "repairing" certain problems can leave you worse off than before—in some cases, even take a disk from which a professional could easily recover data to a complete loss situation. Basically, when your drive's directory is scrambled, anything that writes to the disk has the potential to do harm. Running Norton Disk Doctor or Tech Tool Pro 2 actually writes to the directory that it's fixing, so occasionally it does damage. However, running a data recovery utility such as Data Rescue, Norton's Volume Recover or Unerase should be fine, if you copy the recovered files to a different drive. If you recover the files onto the damaged drive, you will be overwriting other data you wish to recover, compounding existing directory damage, and making things worse. You can also use DiskWarrior to recreate a disk directory, but don't write the new directory to

the disk. Instead, mount the volume using the new directory and backup your files to another drive. Check the files thoroughly before you write the new directory or reformat the old drive.

If you are well backed up you can use any repair utility with confidence. If you are not backed up and your data is essential to you, consider getting professional help. We're not trying to scare you into always hiring us—we're trying to scare you into always making lots of backups!

My keyboard doesn't work, and I get little beeps when I press a key.

You have probably accidentally enabled Easy Access, a special Apple control panel to help handicapped people use the Mac keyboard. Open the Easy Access control panel and turn off each of its features.

I turn on my computer and hear a series of musical notes (or what sounds like a car crash or broken glass), or I get a picture of an unhappy Mac on the screen with some numbers under it.

This can happen if you have certain older CD-ROMs in your drive when you boot, so first try removing any CD-ROMs. If that doesn't cure it, read on:

Every time you start your Mac it does some diagnostics on itself. With these symptoms, the Mac is telling you that those diagnostics failed.

- 1 Turn everything off, and disconnect any external SCSI devices (on newer Macs, disconnect USB and FireWire devices). These are things such as scanners, hard drives and external CD-ROM drives. Just unplug the cable plugged into the SCSI connector (with the diamond symbol) on the back of your Mac. On desktop and tower Macs you have to unscrew the two thumbscrews first. (If there is nothing plugged in there, skip this step.) Now that your external SCSI chain is disconnected,

start the Mac and see if the problem was caused by those external devices.

- 2 Zap the PRAM. This is special parameter memory that stores crucial startup settings for your Mac and can become corrupted. Zapping it means resetting it to the original defaults. On newer Macs, hold down **⌘-option-P-R** while turning on the Mac. Keep holding those keys down until you hear the startup bong two or three times. (On the PowerBook 190, 1400, 2300, 2400, 3400 and 5300, when you have successfully zapped the PRAM the screen may be blank and the green sleep LED may be steadily lit, and you will need to then press the reset button on the rear of the computer.) If this didn't help or didn't work, continue with the next step.
- 3 Restart holding down **⌘-shift-option-delete**. You have to hold down all four buttons together, and then, while keeping those buttons down, turn on the computer. This tells the computer to ignore the normal startup drive. If instead of getting the sad tones or sad Mac you now get a blinking picture of a floppy disk, then your disk driver (or the System file) is probably corrupted. The disk driver is special information on your hard drive that tells the Mac how to talk to the hard drive.

We're getting into dangerous territory if you aren't backed up. If you are backed up, or not concerned about anything on your hard drive, try restarting from a System CD-ROM or Disk Tools floppy while holding down those four buttons. If that works, run Apple Drive Setup and select "Update driver" from the Functions selection. Warning: Don't click "Initialize"—that will wipe out everything on your drive. If you have used a driver-level compression program such as eDisk, Times Two or Stacker, even updating the driver can wipe out your drive.

If Apple Drive Setup says that "drive selection failed" or "not supported," see the

next big section further on about formatting software.

- 4 If you recently added RAM to the computer, you may want to try removing it (if you are comfortable doing this and have the right anti-static equipment).
- 5 If you still get the sad Mac tones, your problems are more serious—either memory, the motherboard, the hard drive, or an add-on such as an accelerator, nuBus or PCI card. At this point if you still have trouble, you should probably bring the computer in for service.

I pushed the Power-on button on the keyboard, but my Mac won't start up.

If you have an original Macintosh, SE, LC, 605, 610, 660, 6100, or one of several other similar models, this is normal. Use the on/off switch on the back or front of the computer. On the Color Classic, MacTV and some Performas, you must turn on the switch on the back and then push the keyboard Power-on button.

If you have a 550, 575, 580, 5200, 5300, 6200, 6300 or another similar model, it is possibly just a dead square alkaline battery which is plugged into the motherboard and attached with Velcro.

My computer makes the normal bong, and the green light on the monitor comes on, but there is no picture.

This can be caused by a dead lithium battery on the motherboard of a Mac LC, Centris, Quadra or Performa 475, 605, 610, 660 or 61XX.



My Apple Color Plus Display is completely dead, and the green light doesn't come on.

This can be caused by a defective component soldered to the monitor's circuit board. We can probably repair it for about \$75. More serious problems with 14 & 15 inch monitors usually cost \$175 to fix (and that's more than they're worth).

My mouse or trackball is acting weird.

Shut down the computer, remove the bottom cover of the mouse (or the twist ring on the trackball), clean the rollers with a Q-tip and just a drop of alcohol. That black ring around the center of the rollers is not a special friction coating—it's congealed dirt and junk. On a PowerBook, here's the key thing: after cleaning, be certain that the little blue rollers are perfectly centered on their steel shafts. If they rub against one of the black walls on either side, the trackball won't move well in that direction. You can nudge the rollers sideways with your finger or a small implement. Be gentle.

My desktop Power Macintosh 5200, 5300 or Performa 5200, 5215, 5300, 6200, 6205, 6214, 6216, 6218, 6220, 6230, 6290, 6300 freezes several times a day, the mouse doesn't move and the menu bar clock stops. I have to reboot to use it again.

Several years ago, Apple found problems with certain components in these models that can cause freezing, and if your Mac has those specific component flaws, there is a free Apple Repair Extension program to fix it. Most of these computers have had the repairs by now. Freezing can also be caused by software problems on perfectly functioning hardware, so there is a diagnostic program called "5xxx/6xxx tester" available from the usual sources. Some 52xx or 53xx models may also suffer from sudden or intermittent changes in color hue. The specific repairs covered under this program are free. If your Mac has a little label on the back that says  REA or  VID, you've already gotten these repairs.

My mouse and keyboard stopped working.

Turn off the computer, and try plugging only the mouse into the back of the computer and restarting. If it works, your computer itself is okay, but there is probably a bad connection in the ADB jack in your keyboard (or on recent Macs, the USB jack). If it doesn't

work, and particularly on Mac SE and Mac II computers, there may be a blown ADB fuse on the motherboard. This usually occurs when you plug in a mouse or keyboard while the computer is on. Don't do that!

Note: Recent Macs and iMacs have USB, and it is fine to plug in USB devices (and FireWire devices) when the computer is on. USB devices have square or rectangular plugs and sockets. Older Macs use ADB ports with a round four pin plug and socket, and those can be damaged by hot-plugging devices. So you see, progress can be good.

A disk is stuck in my Mac.

Don't pull it out with pliers, that may destroy the floppy drive. Try ejecting it by pushing a straightened paper clip into the little hole alongside the floppy drive. You may have to push fairly hard on the paper clip. If that doesn't work, the Mac probably needs to be disassembled to get the disk out, and the drive may already be damaged.

My computer starts normally, but then the cursor freezes in the upper left corner of the screen when the Finder loads.

This can be a bad mouse connection (see previous question), or a software problem (try starting from the CD that came with the Mac), or a problem with a SCSI device (with the power off, disconnect all external SCSI devices). Try another mouse.

My Mac froze up. Now what?

First check for simple stuff, like the mouse connector came loose from the keyboard.

If you have unsaved work, there is a very slim chance of rescuing it. ⌘-option-escape will let you quit the current program (the one that froze) and you might be able to get to any other programs and save your work in them before quitting and restarting. But you will lose what you've done in the current program. When you restart, move the "rescued items" folder out of the trash (if there is one). It

might contain temporary files used by your crashed program, and your unsaved work might be partly there.

If the above didn't work, you've probably lost all your work since you last saved. If that's okay with you, restart with the power switch or the reset button or press these three buttons together: ⌘-control-Power-on (on Macs without a reset button).

My trackpad is jumping around.

Brushing a second finger against the trackpad can cause this, but trackpads respond to the capacitance of your finger and are affected by moisture. Try washing and drying your hands. Apple has a "Trackpad Climate Control" extension that may help, and there are plastic overlays to reduce the sensitivity of the trackpad.

I just spilled beer/tea/cough syrup on my keyboard (well, my cat threw up on it).

Shut down, unplug the keyboard from the computer, and turn it upside down. Wait a day or few for it to dry. It may be all okay now. If not, bring it for service. (Byte columnist Jerry Pournelle says just take it in the shower with you and rinse it thoroughly and then dry it for a few days, but he's also in favor of Star Wars missile defenses.) If it's a PowerBook, remove the battery and the power cord and bring it in for service immediately. Don't turn it on! The internal backup battery can cause electrolytic corrosion and lead to an expensive motherboard replacement.

Every five to thirty minutes my computer slows down to a crawl and there is a lot of disk activity. What's wrong?

It could be the Autostart worm virus. See "Viruses" later in this FAQ.

FORMATTING HARD DISK DRIVES, CARTRIDGES & DEFRAGMENTING

SCSI Probe and some formatting programs don't see the drive in my Power Mac/Performa/LC/Quadra 63X, 5xxx, 6xxx, 4400, G3, PowerBook G3, 150, 190, 1400, 2300, 2400, 3400, 3500, or 5300 series, now what?

The internal hard drive on these Macs is not a SCSI drive, it is an IDE or EIDE (enhanced integrated drive electronics, also called ATA) drive, more popular in the PC world than the Mac world. These are good drives, just different. Use Apple's Drive Setup utility to format these drives and to check for bad blocks.

Should I partition my drives?

Maybe. Larger drives have larger minimum file sizes. Even if a file has just one word in it, the larger the drive's partition, the larger the space that tiny file will occupy. For instance, on a 250 Meg drive, the smallest file will take up 4K. On a two-Gigabyte drive, the smallest file will take up 64K. Partitioning the drive reduces this minimum file size.

Apple's OS 8.1 (and up) allows you to reformat your drive with a new file system (MacOS Extended Format, also called HFS plus) that solves the problem of wasted space on larger drives without partitioning. New Macs sold after August of 1998 come pre-formatted with Extended Format.

With Systems below 7.5, the largest partition the Mac can recognize fully is two gigabytes. System 7.5 can handle partitions up to four gigabytes. 7.6 goes higher. Unless you are dealing with large graphic, video or sound files, it may be a good idea to partition any drive over two GB into several smaller partitions. Each one will show up on the Mac desktop as a separate disk icon.

Apple's old HD SC Setup software doesn't allow you to put multiple Mac partitions on

drives, but Apple's newer Drive Setup can partition drives. Warning: changing partitions will wipe out all data on your drive, so make at least two backups first.

MacOS Extended Format gotcha: Norton Utilities 3.51 and earlier don't recognize MacOS Extended Format and will try to "fix" the drive, rendering it unusable. (Disk First Aid 8.2 or later, Symantec Tech Support or MicroMat's Tech Tool Pro 2 may help you recover from this). Norton Utilities 3.52 will recognize MacOS Extended Format volumes and will basically ignore them. You should upgrade to Norton Utilities 4.04 or later, which properly recognizes and works with Extended Format volumes. (Note that Norton 4.x is only for Power PC Macs, for 680X0 Macs you must stick with Norton 3.52).

I'm trying to update my hard disk driver, but Apple Drive Setup or HD SC Setup says "drive selection failed" or "no suitable drive" or "unsupported drive."

Apple's formatting software is basic reliable software that works on every drive that Apple ships in their computers. Apple doesn't manufacture hard drives, so their drives physically look like other Seagate, Quantum and IBM (yes, really) brand hard drives, but always with an Apple label on them and special code in the drive's ROM so Drive Setup can tell that they are Apple drives. There are so many types of drives out there that Apple only wants their setup software to work with drives it knows all about. (This mainly applies to SCSI drives—Drive Setup supports most non-Apple IDE drives, and versions above 1.4 support many non-Apple SCSI drives as well).

When we sell a drive at Tekserve that is not supported by Apple Drive Setup, we provide FWB's Hard Disk ToolKit PE, CharisMac Anubis, Drive7 or LaCie's Silverlining. There are a number of other popular programs with which we have had good experiences, including recent versions of APS PowerTools.

It's always a good idea to have a floppy, zip or CD-ROM disk or with your drive's formatting software that will boot your computer (or that you can use along with a bootable CD-ROM) in case of trouble. Recent versions of FWB Hard Disk Toolkit come on a bootable CD. Apple Drive Setup is on the CD that comes with new Macs.

What's defragmenting, and should I bother?

As files are written to your hard disk, they are usually put in the first empty space that is big enough for the whole file. If you open an old file, make some changes, and save it, it may not fit into its old space anymore, so the System automatically saves part in the old place and the rest in the next available empty space. When you open the file the next time, the System has to get those two "fragments" of the file and put them back together. Sometimes a file that you work on often can get fragmented into three or more pieces. Disk operations get slower the more fragmented files you have. Defragmenting your drive puts all the pieces back together.

Defragmenting involves moving all or most of the files on your disk. You must backup before you defragment. You can use Norton's Speed Disk (part of Norton Utilities) to defragment your drive, but be sure that your Norton is up to date. Copying all of your files to another drive, erasing the first drive, and copying them back will also completely defragment them. But please have an extra backup before you do this!

PRINTERS

When I try to print to my Epson printer, I get an error message that the printer is not responding. What's wrong?

When you turn on your Epson inkjet printer, it performs a self-test before it enters normal operation mode. If one of the components fails the startup test, the printer

enters an error mode in which it will not respond to any commands from the computer. Normally it will indicate the error with a flashing light or error light. The first things to check are that the paper is properly seated in the sheet feeder, and that there is ink in the ink cartridge. When the printer is ready you should see a steady green light.

I chose my printer in the Chooser, and it forgot my choice.

The Chooser is counterintuitive, because you can use it to make several simultaneous choices (printer, network drives, etc.). As a result, it doesn't display what's chosen. Once you select a specific printer, it will remain chosen until you select a different printer (unless your backup battery is dead, see below). To confirm what printer is chosen, select "Page Setup" from the file menu—at the top of the window that's displayed you'll see the name of your printer.

Early Epson Stylus printer software can cause the printer choice to be forgotten—update to a more recent version.

To choose a different Laser printer (or other AppleTalk printer) click on the appropriate driver icon on the left side (such as "LaserWriter" or "LaserWriter 8"). Sometimes you have to scroll down to see the correct icon. The specific LaserWriter you have chosen will show up on the right side highlighted. If it's not highlighted, you need to click on the printer name on the right side to choose it. If you are using LaserWriter 8 or newer, there will be a little printer icon in front of the printer's name to show that you have already "Setup" for that printer. If not, after highlighting the printer click the "Setup" or "Create" button to select options for that printer. Then close the Chooser with the close box in the upper left corner.

If you have a LaserWriter IISC, choose "Personal LaserWriter SC" on the left side and don't look for anything in the right side of the Chooser (but this printer is not really

compatible with System 8 and up). If you have a Personal LaserWriter LS, you can select “PLW 300”.

I just upgraded to the latest OS and I can't find my printer's icon in the Chooser. Where did the driver go?

If you own a LaserWriter Select 300, a Personal LaserWriter 300, or a Personal LaserWriter LS, don't sweat. Apple doesn't include the driver for these models with the OS because they have decided not to provide support for these machines. In other words, these printers do work with OS 8.6, but Apple doesn't guarantee that future versions of the OS will be compatible with the driver. You may download the driver for this printer from Apple's website. The driver is called “LaserWriter LS/300.” But to use these printers with a new Mac that lacks a serial port, read the USB questions in the next section.

If you own a LaserWriter Select 310, a LaserWriter II SC, or a Personal LaserWriter SC, the driver for your printer is completely incompatible with recent MacOS. You must either downgrade your OS or replace the printer. The SC models are incompatible with anything beyond MacOS 7.6.1. The Select 310 is incompatible with anything beyond OS 8.1.

If you have a Stylewriter 2200 or 2400, use the StyleWriter 2500 icon. If you have a StyleWriter, StyleWriter II or 1200, use the StyleWriter 1500 icon.

USB, PRINTERS AND SERIAL DEVICES, OR WHO TOOK THE SERIAL PORT?

Should I avoid new Macs because they lack regular serial ports?

No, the new Universal Serial Bus is faster and better. Using USB hubs, you can theoretically connect over 100 devices to a single USB port. And, because the USB port is a standard in the Windows world, there will

be more and more peripherals that you can use with your Mac (the vendor usually still has to write a special driver for the Mac, but they no longer have to make special hardware too).

What printers does Tekserve recommend for my new USB Mac?

Color Inkjets: The Hewlett Packard DeskJet 810C connects to USB. It prints black text admirably, and can also print color. The 810C is the least expensive printer we sell. The Epson Stylus 740, 750, 900, and 1200 all have USB (and serial and parallel too). The Epsoms print photos the best and they cost less than laser printers. If you want a network ready color inkjet, use the Epson Stylus 900N. Some other Epsoms can be networked with the Axis 1440 printer server or an internal Epson MultiProtocol card.

Black & White Laser Printers:

The Lexmark Optra E310 is a good, inexpensive laser printer that connects to a single Mac via USB.

If you have more than one Mac, you will want a networkable Ethernet printer. All new Macs and most Power Macs have Ethernet, which will connect to the following printers (and you can network many Macs to one or more printers):

- NEC Superscript 870—Economical. Doesn't have a LocalTalk port so it's incompatible with old LocalTalk networks. Fine for text, forms and letters. Lacks Postscript, not recommended for graphics.
- HP LaserJet 2100 TN—midrange.
- NEC 1800N—midrange but faster and with a duplexer for double-sided printing.
- HP LaserJet 4050 N or 4050 TN—the most robust. Good for an office.

How do I connect my old Epson printer to my USB Mac?

The \$39 Epson USB adapter supports the Stylus Color 440, 600, 640, 800, 850, 1520, Photo 700 and Stylus Color Photo EX.

How do I connect any serial or LocalTalk or MIDI device, or my serial LaserWriter LS, LW 300, Select 300 to a USB Mac?

Griffin's iPort board can be installed inside a 233 MHz iMac (not compatible with 266 or faster iMacs). The iPort offers one normal serial port which will work with nearly all Mac serial devices and LocalTalk devices. The iPort must be installed inside the iMac by a technician.

Griffin's gPort can be installed inside a Blue and White G3. The gPort offers one normal serial port, which will work with nearly all Mac serial devices and LocalTalk devices. It must be installed in the internal modem slot by a technician. Unfortunately, if the G3 has an internal modem it has to be removed (but you can use an external USB modem instead).

If you have older networked Macs, you can also share these printers for free. See "How do I share my printer?" at the end of this section.

How do I connect my serial LaserWriter Select 310, LaserWriter IISC or Personal LaserWriter SC to a USB Mac?

Sorry, you need to buy a new printer.

How do I connect my StyleWriter I, II, 1200, 4100 or 4500 to my USB Mac?

Keyspan's USB to Serial adapter will connect these printers to any USB Macintosh. The Keyspan adapter also works with most HP DeskJets that have a serial connector. The adapter has two serial ports and may be used to connect a PalmPilot, a modem, or a digital camera at the same time, although it doesn't support most other serial devices. For an exact list of supported devices, go to Keyspan's web site: www.keyspan.com.

If you have older networked Macs, you can also share these printers for free. See "How do I share my printer?" at the end of this section.

How do I connect my Color StyleWriter 1500, 2200, 2400 or 2500 to my USB Mac?

These Color StyleWriters may be

networked with Farallon's EtherMac iPrint SL to any Mac's Ethernet port. Once the printer is connected to the iPrint, it uses the same software driver that it used before and is accessible by all Macs on the same Ethernet network.

If you have older networked Macs, you can also share these printers for free. See "How do I share my printer?" at the end of this section.

How do I connect my LocalTalk printer to my USB Mac? Printers like the LaserWriter IINT, NTX, E, Personal LaserWriter NT, NTR, 320, LaserWriter Pro 600, 4/600 PS, Select 360, Color StyleWriter 6500 or an HP Laserjet with "M" or "MP" in it's name?

To connect these printers to a new Mac, you must use an Ethernet to LocalTalk Bridge:

1. The AsanteTalk Ethernet to LocalTalk Bridge includes everything you need to connect a LocalTalk printer to a new Mac. It works with existing drivers.
2. If the printer is already connected to a LocalTalk network, you can use Farallon's iPrint LT. The iPrint LT is similar to the AsanteTalk, except that it has a PhoneNet jack instead of a LocalTalk Din 8 jack. If your existing LocalTalk network has more than eight LocalTalk devices on it, you will need a much more expensive bridge. It might be time to upgrade to Ethernet.

How Do I connect my PC parallel port printer to a USB Mac?

Virtually any PC printer may be connected to a USB Mac, using Infowave's "PowerPrint USB-to-Parallel" adapter and software. The exception is the HP DeskJet 700 series.

Most parallel printers may also be connected with the Belkin USB Parallel Printer Adapter. Any parallel printer that has PCL capabilities will work with this adapter and its bundled MacJet software. Check your printer's manual because this adapter does the same thing as Infowave's PowerPrint for about half the price.

Most HP DeskJets and LaserJets are compatible with this product except the DJ 700 series.

How do I share my StyleWriter, Personal LaserWriter LS, 300 or Select 300 printer?

Printer Sharing is an inexpensive way to connect an older printer to a network. The disadvantage is that the printer must be permanently connected to another Mac with a serial port, the serial Mac must be networked (via Ethernet) to the new Mac(s), and the serial Mac must be turned on all the time. Also, the serial Mac will slow down whatever else it is doing while it is printing a job.

1. Connect a serial Mac to the printer.
2. Connect the serial Mac to the new Mac via an Ethernet crossover cable, or through an Ethernet network.
3. On the older Mac, go to the Chooser and select the printer's driver.
4. On the right side of the Chooser window select the serial port to which the printer is connected.
5. Click the "Setup" button.
6. Click the check box next to "Share this printer"
7. Click the name box and give the printer a name. Give the printer a password if desired.
8. Click "OK." to close the setup dialog box.
9. Open the Chooser on the USB Mac.
10. Select the icon for the printer.
11. On the right side of the Chooser window under "Connect to:" you should see an item called "Shared Printer." Click on it.
12. Close the Chooser window.

You can now print from the new Mac. Steps 9-12 may be repeated on several networked Macs.

The printer will only be accessible to Macs on the network when the older Mac to which the printer is connected is turned on.

How do I share my Epson printer without buying an Ethernet print server?

Epson printers may be shared to newer Macs much in the same way as Apple printers, except that the feature isn't included in Epson's software. The software necessary is a shareware extension called EpsonShare, which may be downloaded from the Internet at www.epsonshare.com. The shareware fee varies based on how many Macs are connected to the printer. One user costs \$24, but you can try before you buy.

How do I connect a PalmPilot to my USB Mac?

If your Palm has infrared and you have a PowerBook or an original 233 MHz iMac, use infrared. The instructions and files you need are in the "IRDA" folder in the "Extras" folder on the MacPac CD. Palm is expected to ship a USB cradle real soon, but you can also use the original Palm Cradle (or Palm V travel kit) with a Keyspan PDA Adapter or Keyspan Serial Port adapter.

SCSI (SMALL COMPUTER SYSTEM INTERFACE)

Is it true that the newest G3s have no SCSI?

Apple removed SCSI from the motherboard of the Blue & White G3s, but one model ships with an Ultra2 SCSI drive and PCI card already installed. You (or we) can also add a PCI SCSI card to any of these models.

I got the Blue & White Model with an Ultra2 SCSI card. What adapter do I use to connect my regular narrow scanner and Jaz drive?

It is a bad idea to connect regular narrow SCSI devices to an Ultra2 SCSI bus. The SCSI card will switch to a low speed compatibility mode, slowing down the hard drive too, and you may have problems with proper termination and cable length. If you need to

use regular narrow SCSI devices, add a narrow PCI SCSI card such as the Adaptec 2930U. We stock and install a wide variety of SCSI cards at Tekserve.

I added an Adaptec 2906 SCSI card to my Blue & White G3. Why can't I boot from my Zip or Jaz drive?

The AVA-2906 card is not bootable (it's not even recognized unless its extension loads). Boot from a CD or trade up to a bootable SCSI card like the AHA-2930U.

I just added a new hard drive/scanner/optical drive to my SCSI chain, and the computer won't boot at all, or if it does I don't see the new drive.

SCSI has some seemingly simple rules:

- 1 Each device must have a unique ID between 0 and 7 (on wide SCSI buses, between 0 and 15). The Mac itself (or the SCSI card) is always 7, if the Mac uses SCSI drives, the internal hard drive is usually 0, and the internal CD-ROM is usually 3 (G3 Macs and PowerBooks use IDE drives instead of SCSI). A second internal hard drive or the hard drive in a Duo Dock is usually ID 1. So external devices should normally use the numbers 2, 4, 5 & 6. The order of devices doesn't have to match the ID numbers. Before adding any devices, use the free SCSI Probe control panel to quickly identify all the devices in your chain and their ID numbers. Some Macs have two SCSI buses, in which case SCSI Probe will have a tiny pop-up menu to choose them. Be sure to use the latest SCSI Probe, 5.1 as of this writing.
- 2 Always make sure all devices, including the Mac, are turned off before connecting or disconnecting anything on the chain. Failure to do so can result in serious damage to your Mac's logic board and any other SCSI device.
- 3 All devices in the SCSI chain should be turned on before you turn on the Mac, and

all devices should only be turned off after you shut down the Mac.

- 4 There must be one terminator at each end of the chain. Normally the hard drive inside the Mac (or on the 900/950 and a few others, the hard drive cable) is terminated, so that's one end. The only other terminator should be on the very last device on the chain. For long chains with many devices it is sometimes necessary to break the rules and put a third terminator in the middle. A \$59 voodoo marketing terminator is in most cases no better than a \$29 active terminator. Both are much better than a \$12 passive terminator. Always use an active terminator with Power Macs and Quadras.
- 5 SCSI cable quality matters. There are rules about where certain pairs should be within the cable, how the wires should be twisted, and so forth. Apple, Hammer, APS, Granite and Tekserve SCSI cables meet these rules. Many other cables, particularly older ones, don't.
- 6 The entire SCSI chain, including the computer, should be no more than 10 feet long (although some people get away with up to 18 feet). Each device has up to a foot of cable within it, and that counts. Use the shortest cables that are practical. We stock them in lengths of 1, 2, 3 and 6 foot. Avoid the six-foot cables if you can. If you have an Ultra-Wide SCSI chain, all cables together should total less than five feet. If you have an Ultra2 LVD chain and all your devices are Ultra2 LVD, you can use very long cables (up to 40 feet), but be certain that all your cables (and your terminator) are specified for Ultra2 LVD.

If you've followed all the rules above, verified your connections and terminator, used SCSI Probe to check IDs (sometimes the switch on the drive is mislabeled), and it still doesn't work, you're in SCSI voodoo land. First try connecting only the new device directly to

the Mac to be sure that both are okay. Then try anything—swap the location of two devices, swap two SCSI cables, use a longer or shorter cable, swap the two SCSI ports on the back of the drive, replace the passive terminator on the end with an active terminator, add an active terminator in the middle of the chain, and so on. A few Power Macs have a bug that can cause trouble with SCSI ID 5; System 7.5.3 and above fix that problem.

What's SCSI-2, Fast SCSI and Ultra2 SCSI?

SCSI-2 is a protocol for communications, but it also refers to a type of high-density 50-pin connector sometimes used instead of the more common "Centronics" 50-pin connector. SCSI Jaz drives use this connector. We stock SCSI-2 cables at Tekserve, including PowerBook to SCSI-2 cables.

SCSI-2 "Fast" means that the drive supports new software protocols that allow it to work faster with computers (such as AV Macs and Power Macs) that also support the new standard. All currently manufactured SCSI drives are "Fast" or "Ultra" or better. Apple's SCSI Manager 4.3 extension that comes with System 7.5 gives many older Macs some of these SCSI-2 features (and can sometimes introduce new problems on older Macs). In System 7.5.3 and up, this extension is built-in to the System file.

SCSI-2 "ultra-wide" means the data bus is 16 bits wide instead of 8 bits wide. Twice as wide should move twice as much data in the same time. Wide drives are recommended for audio and video applications. You must add a wide SCSI card to your Mac in order to take advantage of a wide drive. Wide drives use high-density 68-pin connectors.

SCSI differential means that each data signal is on a balanced pair of wires, one going negative when the other goes positive. This increases immunity to interference and allows very long SCSI cables (up to 50 feet), but requires special drives and special cards.

Ultra2 LVD SCSI (not to be confused with Ultra SCSI-2) is the current standard, and it uses new wide LVD (low-voltage differential) SCSI cards, drives and cables. Again, the differential part means that you can have very long SCSI chains. Most Ultra2 SCSI drives automatically switch to Ultra SCSI single-ended (SE) mode if you connect them to a regular wide SCSI bus. Although LVD uses standard 68-pin wide SCSI connectors, it requires different terminators and special cables built to more rigid standards. Ultra3 SCSI is just emerging and potentially doubles the speed of Ultra2.

THE SYSTEM

What's the big deal about the System folder?

System software is what makes your Mac smile when you turn it on, allows it to run, read and write floppies and hard drives, copy files, run other programs, and all sorts of other goodies. The Finder is part of the System software and is usually the program that runs first when the computer starts up. The System software lives in a folder that is usually named "System Folder" and which contains the critical files "System" and "Finder" as well as many related files. In System 7 and above, these related files are mostly in folders in the System Folder, such as "Extensions," "Control Panels," "Preferences" and with System 7.1 and up, "Fonts."

If everyone just used the System Folder the way it comes from Apple, there would be many fewer crashes, bombs and conflicts. But many programs add files or even folders to the System Folder, and most of us have added various system enhancements ("screen savers" that are really eyewash, anti-virus programs, security programs, font management programs such as Suitcase, FileSaver and so on).

When your system is operating flawlessly, make a backup of your System Folder.

What System should I use?

If you have a PowerPC with a 133 MHz or faster processor and at least 32 Megs of RAM, we suggest that you use System 8.6 (with less RAM or a slower processor, use System 8.1). Both of these Systems are more stable and reliable than previous systems. On older Macs, if your system is stable and happy and you don't need any new features, stick with it.

I have a 68040 Mac—should I upgrade to System 7.6 or OS 8?

Newer system software will use more RAM and will operate more slowly, but may enable you to use newer programs. It's your call. Note that 8.1 is the last system release that supports 680X0 (non-Power PC) Macs.

What's a clean System install and how do I do it?

As a System folder grows top heavy with extra stuff, your System can become less stable. Sometimes parts of the System files get damaged or corrupted and you don't know exactly which ones are damaged. Many times Apple, software vendors, or Tekserve will insist that any problem you are having with your computer is due to all the junk in your System folder, and will suggest that you do "a clean System install." That means making a brand new System folder just like Apple would put on a new computer. This new folder will be lacking all your added fonts, custom doodads and preferences, including your Internet access setup, so after you solve your problem you'll need to "dirty" the new System folder again and hope that your problem stays gone (which is why some people first try a much simpler dirty install, which basically means deleting only your Finder, System and Finder Prefs file and then running the System installer).

- 1 With System 7.6 and up, use the "options" button in the main installer window to bring up the choice of a clean install. With System 7.5, when you get to the install

dialog, press ⌘-shift-K, and in the box that comes up click "clean System install." Your old System Folder will be renamed "Previous System Folder" and the new one will be called just "System Folder."

- 2 With Systems below 7.5 (or above if your System file is damaged), it is a little more complicated. We suggest that you take the Finder out of your System Folder (put it on the desktop) and then rename the System folder "Old System Folder." Then restart your computer. You should get a blinking disk or question mark icon, because there is no System folder on the disk. If it starts up anyway, you have an extra System folder on your disk, and you need to find it (use the Find command and look for "Finder"—any folder with a System and a Finder in it is a System Folder, no matter what the folder is actually named). You need to "unbless" that folder too by moving the Finder somewhere else, like into the Trash. Restart again to be sure all System folders are gone. Remember that you want it to fail to boot, to prove that you have eliminated all old System Folders.
- 3 Now restart the computer with the Install Me First disk from your System software, and do an "Easy Install." If you have an Apple brand CD-ROM drive you can usually boot from the Apple System CD-ROM that came with your computer. The System 7.5.3 and later upgrade CD-ROMs are bootable, but the earlier System 7.5 upgrade CD-ROMs are not bootable—they came with a bootable floppy disk with the CD-ROM software on it, so you insert that floppy, boot from it, and then insert the CD-ROM and run the installer.
- 4 Now restart and thoroughly test to see if your problems are solved.
- 5 If everything is okay, you can start dirtying your new System with all your old fonts, preferences, control panels and extensions. It is always better to reinstall stuff like fax software from the original floppy disks

rather than using the old versions.

However, you will want to move over any fax folders and preferences, which contain your address books, old faxes and so on. You'll also want to move folders such as "Claris" and "Aldus" that various programs may have placed in your System Folder.

We suggest doing this very slowly—move a few items, restart and see if things are okay, move a few more, and so on. This is a great time to do housecleaning—anything you don't need or don't recognize can be moved into a holding folder until you are sure you don't need it. The point is that anything that was freshly installed by the System install should not be replaced—only move unique stuff that you know you need from the old System Folder to the new one. Remember that less is more. More speed, more reliability, more peace of mind.

You can automate the clean install process with Conflict Catcher if you like.

VIRUSES

I think I have a virus. What should I do?

Buy the latest version of Virex (our favorite) or Norton AntiVirus for Macintosh and get the latest update for the program you bought (updates are released online monthly, new shrink-wrapped boxes are usually many months old). Install the program, update it and run it. Disinfectant, our former recommendation, is no longer being updated, and there are a number of very distracting and damaging new viruses about.

BOMBS AND CRASHES

My computer bombs whenever I launch my MajorSoft WorksWellEnough program.

If your problems only occur with one particular program or action, and are fairly repeatable, they should be easy to fix.

- 1 Try giving the program more memory. Be sure the program is not running, then, click once on the icon of the program and press ⌘-I (Get Info). On newer systems then choose "Show: Memory" from the pop-up list. Increase the "preferred" memory size by 25-100% and try the program again.
- 2 Try starting without extensions. The vendor will tell you to do this, so try it first. Under System 7 and up, just hold down the shift key while the Mac starts up. It should say "Welcome to Macintosh (or MacOS), Extensions disabled." If you are running System 6, you must manually remove System Extensions and Control Panels from the System folder by dragging them to another folder—holding down shift won't do it. If the problem is gone, see the next major question below.
- 3 Quit the program, delete any preferences files used by the program (if they are complicated preferences, copy them to another folder or a floppy disk in case they prove not to be the problem and you want to restore them). The preferences file is usually in the Preferences folder in the System folder, but it could be somewhere else, such as in the folder with the program (or in the "Claris" or "Aldus" or "your software brand name here" folder). Then reinstall the program from the original floppy disks.
- 4 Many problems can be traced to corrupted, damaged or compressed fonts. Under System 7.1 or greater, remove the Fonts Folder from your System Folder (if you are using Suitcase or MasterJuggler, also use it to close all your fonts), restart the computer, and see if the problem is solved. If so, you need to work your way through your fonts and see which one is the culprit. Older versions of Suitcase came with a utility called Font & Sound Valet to compress, or "pack," fonts. Fonts thus compressed don't work well with System 7

and up, so use the latest version of the same program to “unpack” them. A corrupted ATM cache file can also cause grief, you can safely delete it.

- 5 If these steps don't solve the problem, contact the company that publishes the program. Many vendors offer good free tech support, and sometimes you will have a standard problem that they can quickly identify and tell you how to fix. Many vendors also have support forums online. This is especially useful for those vendors that charge for telephone tech support, as their online support is still free. You also get the benefit of the input from other users, who may have encountered the same problems and have workarounds you can use until the vendor fixes the bug. Some companies also have decent support on their web site.

All my icons are generic with folded corners. Where are all the regular icons?

Your hidden “Desktop” files are damaged or corrupted. See the next question.

I double-clicked on a file and the computer said, “the application that created it cannot be found.” Will rebuilding the desktop help?

The invisible “Desktop” file(s) keep track of which applications are used to open which files. If that gets corrupted, these problems occur, and the answer is to rebuild the desktop. Restart your computer and press ⌘-option. When you see a message saying “Are you sure you want to rebuild the desktop,” click yes.

My computer bombs when I turn it on.

Many bombs can be traced to extensions and control panels that modify system behavior (and sometimes each other's behavior). Under System 7 and up, holding down the shift key while booting will disable all of them. If that solves the problem, use

Extensions Manager (included in System 7.5 and up or freeware for use with earlier Systems) to disable specific control panels and extensions. The usual suggestion is to try turning off half your extensions, and if the problem doesn't go away try the other half. When you find the half that cause the problem, disable half of those, and so on until you isolate the problem.

There are commercial programs like Conflict Catcher that automate extension troubleshooting.

If disabling extensions doesn't solve the problem, it may be a hardware or a System problem. Try booting from a Disk Tools floppy or CD. If that solves things, try a clean System install.

MEMORY AND VRAM

My Mac has oodles of RAM installed, but one program gives me “out of memory” error messages. What's wrong?

See the next question and answer.

What speed memory do I need for my particular Mac, and how much can I add? Should I add it in pairs?

This has become so complicated that we suggest you call us or use one of the references online (Apple's Memory Guide or NewerTech's “GURU”). Before calling, please check your exact Macintosh model and also write down the memory information shown in “About this Macintosh” or “About this Computer” under the Apple menu.

I get “out of memory” errors in a certain program, even though I just added more memory to my computer. How do I get the program to know about the extra memory?

When you launch a program, it asks the system only for the amount of RAM set as its “Preferred Size.” You need to set the program in question to ask for more RAM. To do this,

quit the program, and highlight the program icon. Then select "Get Info" from the File menu or type $\mathbb{⌘}$ -I. At the bottom of the Info window you should see a section called "Memory Requirements." (With OS 8.5 and up, select "Show: Memory" from the pop up first.) Then increase the "Preferred Size" by 50 or 100%. If it says 4096, try 8000 (or 8192 if you like base2).

Before increasing a program's preferred memory setting, it's a good idea to check "About this Mac" or "About this Computer" under the Apple menu in the Finder to check how much "built-in" memory you have. This will also show you how much memory is being used by MacOS and other programs that are running. Don't set a single program to use more memory than is available. If you want to be able to run several programs at one time, be sure that the preferred memory of all the programs you will run simultaneously, plus the memory used by MacOS, is less than the total built-in memory.

What's the cache in the memory control panel and how big should it be?

The computer uses a little bit of memory to save things it guesses you will soon need to get from the hard drive. It's faster to get it from memory than from the hard drive. With System 7.5.3 and up click the "Use Defaults" button in the memory control panel and let Apple set the cache size (that may also turn on virtual memory, which you may want to turn back off). With System 7.5 and down, Set the cache to 128K or 256K and leave it alone.

What's virtual memory and how much should I have?

Virtual memory uses some clever programming and some hard drive space to simulate more RAM than you really have. It's main virtue is that it's free, and that PowerPC programs load a little faster and require a little less memory when virtual memory is on. The downside is that it's slower than real

RAM, uses up hard drive space and shortens battery run time on PowerBooks. We prefer adding real RAM and turning off virtual memory. However, if you need to have three or four programs open at once so you can jump between them, virtual memory is okay. You'll get no benefit if you try to use virtual memory to give one program more RAM than you actually have physically installed, and your computer will slow dramatically. PhotoShop is faster with virtual memory turned off.

With MacOS 8.1 and higher, Apple recommends always leaving Virtual Memory on, but you might want to try it both ways and decide for yourself.

What about RamDoubler from Connectix?

RamDoubler works sort of like virtual memory, but it's more clever (borrowing free RAM from all over), so it is also faster. On an old Mac with less than 12 Meg of RAM, RamDoubler will have to use the hard drive a lot and will slow down quite a bit, so we don't recommend it. If you have at least 32 Meg of real RAM, RamDoubler won't have much speed impact and will let you open more programs at the same time.

Bottom line: RAM upgrades are very affordable. You will get much better performance with more real RAM and without RamDoubler.

Will more VRAM make my Mac faster?

No, except on a Power Mac 7200 which will interleave VRAM if you add a second Meg. Some Macs, including the IIsi, IICI and 630 series, use the regular RAM (DRAM) to store information for the video display as well. Other Macs have special dedicated "VRAM" (Video RAM) or SGRAM (static graphics RAM) for this purpose. On Macs with VRAM or SGRAM, you can sometimes add more to increase the number of different colors that the computer can display. (8 bit, or 256 colors is standard, 16 bit or thousands of colors is

more photo-realistic, and graphics professionals preparing color items and photos for reproduction insist on 24 bit, or millions of colors). Adding VRAM or SGRAM lets you set the Monitors control panel to more colors. In some cases this will actually slow the computer, as it must process more information to display all those colors. You can spend a lot on a separate video card to accelerate this.

My PowerBook 190, 5300 or 3400 sometimes loses the extra memory I installed.

In these PowerBooks it is possible for the memory module to come loose. When we install RAM at Tekserve we install a thin strip of foam to hold it in place. Apple now has official foam strips for this purpose and instructs that they be put on the back of the keyboard. Be certain that you don't have foam on both the keyboard and the RAM.

Suddenly my System is using up 15 Meg of RAM. What happened?

With OS8 and lots of doodads, a 15 Meg or larger RAM footprint for the System is normal. Setting a large Disk Cache or RAM Disk in the Memory Control panel will also increase the RAM shown as used by the System.

On older Macs, this usually means that you need to turn 32-bit addressing back on in the Memory control panel and restart the computer. If you don't see that choice in the Memory control panel, you may have a Mac II, IIX, IICx or SE/30. If so, you need to install a free extension called MODE32 version 7.5 and turn it on, then go to the Memory control panel and turn on 32-bit addressing. Power Macs always use 32-bit addressing, so this may point to an excessive disk cache setting in the Memory control panel. On newer Macs, you may have set a large disk cache or RAM disk in that same control panel.

POWERBOOK SPECIFIC ITEMS

Should I get AppleCare for my PowerBook?

PowerBooks are manufactured to closer tolerances, get rougher handling than desktop computers and are expensive to fix. We think that Apple's own extended warranty program, called AppleCare, is usually a good investment for PowerBooks. Of course Apple is betting that you won't need it and that they'll come out ahead, but many of us would rather spend \$200 on insurance to avoid the chance of a \$400 or \$1,400 repair. At Tekserve we sell AppleCare at a discount, and if your computer needs service, any authorized service provider in the USA can fix it (or Apple will pay round-trip shipping to their depot). It doesn't cover broken plastic or physical damage from dropping or abuse. AppleCare can now only be purchased before your original warranty expires, and it cannot be renewed on Macs that are over four years old.

Does a battery drain when not in use? Are new batteries fully charged?

All batteries have some "self-discharge," usually 1% to 3% per day. That means that the battery will be dead in a month or two sitting on the shelf and will need a full charge. Brand new batteries are always shipped without much charge, and must be charged before use. The PowerBook 500 series uses "intelligent" batteries that can get dumb if left uncharged for more than a month. This means that even if you don't use your PowerBook at all, you should plug it in for at least 24 hours every week so the batteries can charge. It's okay to leave your PowerBook plugged in all the time.

Is it okay to run my PowerBook without a battery?

If you have to, but it's not recommended. PowerBooks have an internal rechargeable backup battery that saves your PRAM settings

(printer, AppleTalk, clock, etc.). If you leave a PowerBook unplugged for a week or two without a regular battery installed, that internal battery will be depleted, your settings will be lost, and you may have trouble booting the computer. The regular battery also acts as a ballast, maintaining smooth voltages to run your PowerBook.

The first G3 Series PowerBooks were designed to run on AC power without any battery, so you can have a CD-ROM and a floppy drive (or zip) installed at the same time. We've already seen several customers who grabbed their batteryless G3 PowerBook and wondered why it didn't work on the airplane, so if you usually run with two drives and no battery, don't forget the battery when you unplug.

What's resetting the Power Manager, when should I do it, and how?

The Power Manager is software in the PowerBook that works to maximize battery life. It stores some special information for itself in the PRAM, and if that information gets corrupted you may have trouble running on batteries. When you have battery problems it's frequently a real problem with the battery or the computer, but sometimes it's just a software problem with the Power Manager. Here's how to reset the Power Manager on different PowerBooks:

PowerBook 100: Flip the battery switch on the back down, and then hold down both the reset and interrupt buttons (on the left side) for 15 seconds.

PowerBook 140-180c (except 150): Unplug the AC Adapter, take out the battery and leave it alone unplugged for 5 minutes. That's probably all you need for the 160-180c. On the 140, 145 and 170 (and just to be sure on the 160-180c), then use two paper clips (or one paper clip bent into a U shape) to hold in both the interrupt and reset buttons on the back for 10 seconds.

PowerBook 150: Disconnect AC adapter,

remove battery, use a paper clip to press the recessed reset button on the back for 10 seconds. Then attach the AC adapter and press that recessed reset button momentarily—you will hear a small pop from the speaker. Now use the regular power button to turn on the unit. Insert the battery and charge it for at least 8 hours before trying to run on battery alone.

PowerBook Duo 200 Series: Remove power and battery, then press and hold the power/reset button on the back for 45 seconds.

PowerBook 500 Series: Press ⌘-Option-Control-Power On all at once. If the computer is on it will go off (losing all unsaved work). If the computer is off you won't notice anything, but you have still reset the Power Manager.

PowerBook 190, 1400, 2300, 2400, 3400, G3 and 5300: Shut down the PowerBook (Shut Down, not restart). Then turn on the PowerBook and immediately press ⌘-Option-P-R. The Mac should chime once, the screen will go dark, and the green sleep light will be on steady. Now press the reset button on the rear. You may then need to use the regular Power-on button to turn the machine on.

Original G3 Series PowerBooks: If the PowerBook is on, turn it off. Then use the key combo (shift-fn-ctrl-power-on) that is printed on the back of the machine. Wait at least five seconds, then press the power button to restart.

G3 Series PowerBooks with Bronze Keyboard: If the PowerBook is on, turn it off. Unplug the AC adapter from the PowerBook. Then press the reset button on the rear of the computer (find it between the video and modem jacks). Wait at least five seconds, then reconnect the AC adapter and press the power button to restart.

What's with the PowerBook 190 and 5300? Are they reliable? The plastic housing at the bottom of my display just broke, and I know I didn't drop it or anything.

Apple discovered some design problems (we hear that they were sold a bad batch of plastic by an American conglomerate) in these models, and they have a free Repair Extension program to fix them. The problems covered include failure of the plastic housing, loose or inoperative DC power connector, system hanging when using high-power PC cards, and with 5300s only, problems dropping off of AppleTalk networks or with slower boot times when running on AC compared to booting on battery. If you have any of these problems, please backup your computer and then bring it in so that we can send it to Apple for service. PowerBooks already repaired under this program have an "AA" sticker at the end of the serial number and a date stamp on the top and bottom foil inside the battery compartment.

UPGRADES, ACCELERATORS AND POWER MACS

I do graphics for a living. Is a used Power PC 8100 good enough?

If you will be competing in the world at large, no. Graphics programs are some of the greediest in terms of storage, RAM and speed, and you usually need to use the latest versions in order to be compatible (once you save a file in the latest version of a program, you usually cannot go back and open that file with an older version). Get a G3 PowerPC. New G3s are usually better values than older used Macs.

Should I stick to my old Mac, or upgrade?

If your existing Mac does what you need it to, is fast enough, and the software you use now meets your needs, stick to it, even if you are offered upgrades to newer and presumably better versions of programs.

Upgrading is a spiral—if you get the latest upgrades to all your programs, you will probably find that your hard drive is too small, that you need more RAM, and that it all runs more slowly. More features usually means less speed. If your Mac isn't fast enough, or won't run software you need to be compatible with co-workers or clients, by all means get a new one, but plan on upgrading your software too.

Will Speed Doubler really make my Power Mac twice as fast?

No, but Speed Doubler does noticeably improve the speed of older "non-native" programs running on Power Macs. Be sure to update to the latest version—early versions corrupted data when copying. Version 1.1 of Speed Doubler's Speed Copy can corrupt data with certain AppleShare client software, including System 7.5.3. For System 7.6.1, you need version 2.03 or later, for OS 8 you need Speed Doubler 8 (and a minor update for 8.1). Speed Doubler must always be kept up to date for compatibility.

I just installed Word 6.01, and it is unbearably slow on my Mac Quadra.

Word 6.01 is generally considered to be a dog running on non-Power Macs. Microsoft promised that Mac Office 98 would be great, and we think it's fine, but it only runs on Power Macs. Microsoft has a free translator to allow Word 5.1 to open Word 6 and Word 98 files. Word 6 and Word 98 allow you to save files in Word 5.1 format.

Should I get an accelerator for my current Mac, or buy a new one?

If you are using the Mac in a business, it usually makes sense to plan on it lasting two to three years for graphics and power intensive uses, and three to five years for word processing and simple database work. Again, if your old software is good enough, stick to it. But rather than sinking \$6,000 into upgrades

to an old Mac over four years, it might make more sense to buy a new Mac for \$2,500 every two years. Remember that computer prices are constantly dropping (or performance is increasing for the same cost). Newer computers tend to be more reliable and have fewer problems than older Macs (and come with a one-year warranty, saving one year of potential repair costs).

The downside of replacing your computer instead of upgrading is that you may lose most of your investment in RAM, expansion cards and peripherals, since the latest Power Macs use a different type of RAM, a faster, better PCI bus instead of the old nuBus, and different external ports.

G3 Processor upgrades can be very cost-effective for PCI Power Macs like the 7500 to 9600. We're not so sure that upgrades for 6100, 7100 and 8100s are cost effective, but they will definitely give you a huge performance boost.

What do you think about the iMac?

The iMac is a great home machine, a great college dorm machine, and a great office workstation for word processing, database, Internet, web browsing, etc. If you are seriously into graphics or audio or video, you need a more expandable machine like a G3.

I bought a Power Mac, but it won't run IBM (DOS, Windows) programs!?

Although IBM developed the PowerPC chip with Motorola and Apple, it doesn't automatically run DOS or Windows programs. Virtual PC 2.0 or SoftWindows let you do this, but they're somewhat slow, so best for occasional use.

COMMUNICATIONS & THE INTERNET

How do I save my Internet settings or switch among different service providers?

Apple's TCP/IP and PPP control panels both have a "Configurations..." item under the file menu. Once you have your Internet

stuff setup, go to each of these control panels and export your current settings. You can also name and save configurations for several different Internet setups (one at home, one at the office, one on the road) and use the Configurations menu, control strip, or Apple's Location Manager to easily switch among them.

Why did my MacTCP control panel disappear or become invisible?

When Open Transport is active, the Network and MacTCP control panels are disabled and made invisible. You use the TCP/IP and AppleTalk control panels instead. You may be able to use the "Network Software Selector" to switch to "Classic" networking, in which case those are hidden and the others revealed. We prefer Open Transport, and it's the only choice if you are running System 7.6 or later.

What's your favorite Mac web site?

Ric Ford's Macintosh home page at www.macintosh.com, although he can sometimes be cantankerous. O'Grady's Power Page at www.ogradey.com is great for PowerBook information, and Ted Landau's MacFixit site (www.macfixit.com) is good for keeping up with Mac support and troubleshooting issues.

OTHER QUESTIONS

How do I clean my screen?

Never spray anything onto the screen. Spray a little Windex onto a lint free cloth and use it to wipe the screen clean. Don't drip Windex down into the screen bezel. Don't use scratchy paper towels. My partner Dick thinks that "Kleer Screen" is the greatest, so we sell it.

The clock on my computer keeps going back to 1904, or 1956 or something.

This means that the backup battery on your computer's logic board needs

replacement. We stock the batteries. In most flat-shaped Macs it is pretty easy to do it yourself, in the Classic and Ilci/cx and tower Macs you should let a professional do it. If we sell you a battery we install it for free. On a PowerBook, your internal PRAM battery may be dead, leave the PowerBook plugged in for two or three days to recharge it. After four or five years a PowerBook may need its internal PRAM battery replaced by a technician.

What should I do about the year 2000 problem I keep reading about?

The Mac itself has no year 2000 problem—since its inception it has properly handled dates through February 2040, and System 7.6 extends that through 29,940 A.D. Some old or poorly written applications may have trouble—to be safe you should enter dates with all four digits for the year (enter 5/21/2003 rather than 5/21/03). Also check the web sites of your software vendors to see if they have any Y2K updates or warnings. Apple's web site is also helpful, at www.apple.com/about/year2000.

Why can't I eject this disk or CD-ROM?

The CD-ROM eject button on the front of newer Macs only works to open the tray when there is no CD-ROM in it. If there is already a CD in the drive, you eject it by dragging the CD icon to the trash or highlighting it and selecting put away (⌘-Y) from the File menu. If the computer is shared or the CD was already inserted when File Sharing was enabled, and you are running a System before 7.5.1, you won't be able to eject it unless you turn off file sharing.

Why can't I rename this disk?

If file sharing is enabled you won't be able to rename disks. Turn off file sharing. If that doesn't solve it, run Apple's Disk First Aid.

I got an error-XXX. What does it mean?

Frequently your Mac has gone through so

many gyrations before it put up the error message that it may not be helpful at all. But the shareware "System Errors" or "Apple Error Codes" desk accessories can help answer the question. For instance, -34 means your disk is full. Bus Error and Type 11 errors can be almost anything.

How do I save a file on a disk that a DOS computer can read, or read a DOS disk on the Mac?

MacOS 8.5 and up have the File Exchange control panel (called PC Exchange in System 7.5 to 8.1). This allows the Finder to recognize and mount (and even format) DOS and Windows disks. For full compatibility, it's best to format interchange disks as PC disks on the Mac rather than on a PC.

With System 7.1 and down, the Apple File Exchange program is included and will let you copy files to and from DOS floppy disks.

To actually use Mac files on a PC, or PC files on a Mac, you need a compatible application (like similar Mac and PC versions of WordPerfect or Excel) or else a file translator. Many Claris and Microsoft programs come with limited built-in translators, but MacLink Plus is a good universal translator. Microsoft Office 98 on the Mac is file compatible with Microsoft Office 97 for Windows. Microsoft Office 2000 is now available on the Windows side, with hundreds of complicated new features you don't need, but it opens Mac Office 98 files without problem, and Office 98 can open Office 2000 files (although you may lose a few new-in-Office-2000 features in a document).

I have a Wintel machine. What's Tekserve's equivalent on the dark side?

For the last nine years we've asked people to let us know when they find a good service shop for Windows machines. Only one person has ever called us back (we referred the next two callers to that place, one was pleased and one thought the place was dreadful). Either

there is no such place, or Wintel users are inconsiderate folks who think everyone else should have as much trouble as they do. If you find a great place to service Wintel stuff, please let us know.

FILE SHARING

How do I use file sharing to transfer files from my PowerBook (or roommate's computer) to mine, and back again?

First, network the two Macs together:

- Recent Macs—use an Ethernet network, hub, or simply an Ethernet crossover cable.
- Older Macs, the easiest way is with a standard printer cable (Apple's M0197) between the printer port on each Mac. That's the same cable you use to connect a StyleWriter printer. (Unless you are using Open Transport you can't use the modem port for AppleTalk.) Other methods are with PhoneNet or ModuNet (the same cables you use to share a printer among several Macs).

Now you have to "share" one computer so that other computer(s) on the network can see it. A shared computer is also sometimes called a personal file server. Although there are many steps, you only have to do them once.

To share your computer:

- 1 In the Chooser (under the Apple menu), turn on AppleTalk. (You also may need to set AppleTalk to the Printer port or to Ethernet in either the AppleTalk control panel or the Network control panel).
- 2 In Control Panels (under the Apple menu or in the System Folder), double-click on File Sharing (in OS 7.61 and down, it's called Sharing Setup). If you haven't entered an owner name, password, and Mac name, do so now. My owner name is David, my Mac's name is "David's G3." Let's say my password is "Backupmoreoften". If you are on a corporate or school network

or using a cable modem, be sure to use a serious password, not "pass" or "please" or "chocolate."

- 3 Under file sharing, press the Start button. If it says Stop, then file sharing is already on, so leave it alone. Close the File Sharing window by clicking in the close box. Don't worry about Program Linking — you can leave it off.
- 4 Now you have to decide who can access your Mac. If you never connect to a network outside your home, it's easiest to open the Users and Groups control panel, double-click on Guest and click on "Allow guests to connect." If you are on a public or corporate network, using a cable modem, or just paranoid, while in Users and Groups go to the File menu and select New User. Name the new user and give him or her a password. If it's just you, you've already given yourself a password in File Sharing. When you are done, close the Users and Groups control panel.
- 5 Now you have to select what to share. If it's just you, or you and your loved ones, you probably want to share your entire hard drive. If you are on a network with many other Macs, you want to retain control, so you may want to make a new folder called "Shared" and only share that.
- 6 With OS8.5 and up, click on the icon of your hard drive or the folder you want to share and highlight it. Select "Get Info" from the File Menu (or press ⌘-I), then in the Info window select "Show:Sharing" from the pop-up menu, and check the box "Share this item and its contents." You can then adjust privileges for any users you created.
With OS8.1 and down, click on the icon of your hard drive or the folder you want to share and highlight it. Go to the File menu and select Sharing. . . , then check the top box "Share this item and its contents." You can then adjust privileges for any users you created.

- 7 That was a lot of work, but you only had to do it once. In the future you only need to use the File Sharing (or Sharing Setup) control panel (or the control strip) to turn sharing on and off.

Now that you've shared a computer, you can access it from any other computer connected to the same network.

- 1 Go to one of those computers and open the Chooser under the Apple menu. On the left side should be a bunch of icons. Click on the one that says AppleShare.
- 2 On the right side you should see a window that says "Select a file server:", and if you have successfully shared and networked your computer, you'll see it listed there. Highlight the name of the shared computer and click OK.
- 3 If you took the trusting approach, click on Guest, otherwise enter a user name and password that you previously set on the other computer. Then click OK. Next you'll see a list of the shared drives or folders on the other computer (probably just one). Highlight the one you want and click OK. In a few seconds the icon of that drive or folder should appear on your desktop. You can copy files to and from it as though it was another drive on your computer (but it will be much slower).
- 4 To avoid ever having to repeat steps one to three, click on the icon of the shared volume and select Make Alias from the File menu. Next time you want to "mount" that shared volume on your Mac, just double-click on the alias.

What if I tried to follow these instructions and didn't find the control panels or choices I expected?

You may not have all the file sharing items installed in the System on your computer, or you may have used an Extensions Manager to get some of them out of the way because you didn't need them. Find your System installer

disks or CD-ROM, open the installer, select "Custom Install" from the drop down menu, and reinstall Open Transport (on older Macs, reinstall File Sharing). Although you need System 7 or higher to enable file sharing, you can access a shared Mac from a computer running System 6—you just need to use the System 6 installer disk to install "AppleShare Client" software on the System 6 Mac.

File sharing works well, but now my Mac is very slow to start up and takes an awfully long time to shut down after I tell it to.

If file sharing is turned on, your Mac goes through an elaborate private ritual every time it boots up, checking the sharing status of every folder on your drive. When you shut down, your computer carefully unshares every folder on your drive before it will shut down. So, when you aren't using file sharing, turn it off. If you have a control strip, there is an icon for disabling file sharing. There's also an icon for AppleTalk, and if you turn off AppleTalk, file sharing will go off too (unless you are using AppleTalk remote access). AppleTalk uses extra battery power, so leave it off when you are "on the road" with your PowerBook.

How come it didn't work when you asked your wife to read this and follow your instructions?

Because I use AppleTalk Remote Access on my computer, my Network (or AppleTalk) control panel was set to Remote Only instead of LocalTalk Built-in. That meant that her shared PowerBook didn't show up in my Chooser. It was very embarrassing and I started pulling cables every which way before I figured it out.

WHY DIDN'T YOU ANSWER MY MOST IMPORTANT QUESTION?

Sorry, we ran out of room. Please email help@tekserve.com and we'll try to help. If you notice any errors in this FAQ, please send us a note by mail or email. Thanks!

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