

Macintosh

TROUBLE SHOOTER

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Mac OS 8



Macintosh TROUBLE SHOOTER

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Introduction

This guide gives you solutions to most of the problems you'll come across whilst emulating the Macintosh. I've also included information about the MacOS, so that you can understand it better.

I have not (and will not) be covering problems on setting up Mac emulation - that is where it's own documentation comes into play, so read it all thoroughly, first – you'll be glad you did!

Nor have I covered troubleshooting for individual Mac programs, or all the System versions, I don't own them all, although I do have experience with Systems 7.0 to 7.55, and 8.0 to 8.1.

If you find an error in this guide, a problem you cannot solve or even contribute to this guide, then by all means email me at; MadMike@blizzard.u-net.com. Or post your problem to one of these Newsgroups; comp.sys.amiga.emulations or comp.sys.mac.misc.

It may be a long while before I make another version of this Guide, so be patient!

Thanks to everyone who has downloaded my Mac Troubleshooter guide.

Disclaimer

I WILL NOT TAKE ANY RESPONSIBILITY FOR DAMAGE DONE TO YOUR DATA OR COMPUTER, WHILST UNDERTAKING GUIDANCE FROM THIS TEXT. IT IS UP TO YOU TO TAKE PROPER PRECAUTIONS, BEFORE YOU TRY TO REPAIR YOUR DISK OR FILES, IN WHATEVER SHAPE OR FORM THEY MAY TAKE. NOR CAN I GUARANTEE THAT ANY OF MY SOLUTIONS WILL COVER ALL EVENTUALITIES.

Finding & Recognising The Problem

Most problems occur when you introduce new applications onto your computer. 50% are usually software related, 48% for hard disk directory & file corruption and SCSI errors, and the rest are hardware faults, ie. hard drive failure, chips/RAM blown, battery and power supply problems.

The Cause of the Problem

General Crashes

This is a software related problem most of the time, no matter what anybody tells you, this is the first area you should try to resolve first. You may experience all manner of weird and spectacular crashes; freezes, system bomb messages, start-up crashes, odd behaviour or even pesky viruses. Whatever the cause, this is only a short term problem, so don't be alarmed.

Hard Disk Errors

This can be anything from a flashing question mark (at boot-up) to a full hard disk head crash. To recognise this type of error, you need to look out for; abnormal disk accessing, file corruption when copying files, default icons, programs not loading properly, and fragmentation (slow boot-up and loading of software).

A more serious problem is with directory errors, which causes; files/folders disappear, programs not to load, data corruption, copying corruption or even a total loss of the entire hard disk's contents (some viruses erase the directory structure).

Hardware Failure

A circuit board type problem can be easily spotted, your Amiga simply won't work. This is the case if it is intermittent or persistent. Only an qualified engineer can fix this.

Hunting Them Down

About nine times out of ten you will be able to sort it out by yourself. But before you dive into the problem, you need to know how to find it first.

What to Associate the Error With

- 1) If your Mac crashes:
 - Its a program error, Extension conflict, a virus or a SCSI problem.
- 2) If hard disks don't mount or boot-up:
 - Use a disk repair utility, don't reformat it.
- 3) If programs won't load
 - Its a PowerPC program, or the application is damaged.
 - 4) If a program crashes constantly.
 - The program and/or it's modules are damaged. A virus? Your 040/060 libraries need updating, on the Amiga side.
- 5) If your computer seems slow:
 - A System, network, printer problem, a highly fragmented hard disk, a nearly full HD or just a slow Amiga.
- 6) The MacOS crashes constantly:
 - It could be a virus, system corruption or both.
- 7) Disks & devices refuse to work:
 - A SCSI associated problem, or a virus has wiped the disk.
- 8) Your Mac freezes unexpectedly:
 - It's either a SCSI termination problem, a hard error, or the current program is buggy or corrupted (check for viruses).

Other weird problems (write down notes)...

- 1) What error message does it display?
 - Check the Error Code list, for the corresponding code.
- 2) What happens exactly?
 - Then check this with the "What to Associate It With" list above, to determine what caused it. Then check out possible solutions further on in this guide.

Hard Disk & SCSI Problems

My computer won't let me rename my hard disk, how come?

Turn off 'sharing' in the File Sharing Control Panel.

Can I setup a RAID drive on my emulated Mac?

In theory, yes, so long as you have the correct hardware and software. It will have to be a software based RAID, because there are no dedicated RAID controllers for Amigas, and the Mac RAID software would not be able to recognise the controller anyway. Recommended specifications:

- A 68040/060 CPU – it will not work on a slow computer.
- A SCSI 2, or faster controller.
- Two or more identical hard disks (the same manufacturer and capacity, ideally).
- The software; there are only a few commercial packages available at the moment (there aren't any shareware RAID programs as far as I know). I'll list some of the good ones;
 - **RAID Toolkit**, from FWB (www.fwb.com).
 - **Charismac RAID**, from Charismac (www.charismac.com).
 - **Remus**, from Adaptec (www.adaptec.com).

Will I be able to mount/format other external hard disks in Mac emulation?

Yes, in theory (haven't done this myself), if they are connected to the SCSI bus. You should be able to format it straight from the Mac side, and without formatting it on the Amiga side. However you might need 3rd party SCSI hard disk formatting software, if the System software doesn't come up with message asking you whether you want to initialise it. Also note that Apple's formatting utility **Apple HD SC Setup** will only accept Apple branded hard disks, so don't bother using it. However you might have better luck with **Drive Setup** which recognises quite a few hard disks, a copy of it can be downloaded off Apple's Tech Library web site: www.info.apple.com.

Remember that ShapeShifter and Fusion only needs the setup info for the bootup partition, and not necessarily for each and every device you have for your Mac, such as Zip drives, scanners etc.

Is it possible to repartition a volume without having to re-initialise it again?

No it is not possible. You **have to** reformat (high-level format = re-initialise) the hard disk again to setup the hard disk parameters properly, otherwise you will run the risk of trashing the entire contents of the hard disk, and you can forget about recovering any data.

If this affects the startup volume, then you'll have to repartition it on the Amiga side first, then format it again on the Mac.

What if I accidentally initialised my hard disk.. how can I retrieve my files?

- 1) If you installed Norton Utilities' **Filesaver** and set it up to actively scan your drives regularly, then you could use Norton's Volume Recover utility to restore the Directory structure back to how it was the last time Filesaver saved the Master Directory.
- 2) If however, the first option is not going to work for you, try using Norton's **Unerase** program, to undelete files individually, or all the ones it finds. Note: if your hard disk contains a lot of fragmented files, it will not be able to retrieve and merge the other fragments as it does not know where they are. **Tech Tool Pro** has a undelete feature as well, but with less features.
- 3) Try this rather good program, called **Data Rescue**, for more information go to; <http://www.wildbits.com/rescue/>
- 4) Restore from your last backup. Only do this if you are not bothered about losing any new files, as you are highly unlikely to recover any of those files, as they will now be overwritten.
- 5) You could go to a professional data recovery service, beware, they can be quite expensive – best if you get a quote off them first. Try these companies for starters:
 - **Advanced Data Solutions LLC** (USA), <http://www.adv-data.com>.
 - **Data Quest International** (UK), Tel/fax: (+44) 1705 671330, email: dataq@globalnet.co.uk.
 - **DNA Computer Services Ltd** (UK), Tel: 0831 295099 & 0385 261258.
 - Or look inside your Mac magazine for repair shops.

How big can a Mac disk be?

HFS volumes can go up to 9gig (safely), however I would recommend an upper limit of 4gig in HFS, otherwise it'll start to waste a lot of disk space due to massive block sizes, and because Amigas cannot access HD's bigger than this, without FFS patches. HFS+ can go up to 2 terrabytes (2000 gigabytes), and uses a standard 4k block size on all HDs/partitions above 1gigabyte.

However, it all depends on your Amiga setup, and what controllers (SCSI or IDE) you are using for the boot partition(s) and what filing system patches you have installed which can recognise sizes above 4gig. You may have to update FFS to **FFS TD64** from Aminet, to use 4gig+ IDE hard disks, or another filing system altogether, such as **Professional Filing System v2-3** (Great Effects Development, www.greed.nl), which can handle very large hard disks.

How can I format a PC formatted Zip disk, as a Mac disk?

As you may have noticed, you cannot format a PC Zip disk as Mac HFS disk via the Erase Disk feature, in the Finder's Special menu, if the PC Exchange Control Panel is activated. It will only reformat it as a PC disk again.

You can either switch off the aforementioned Control Panel and then use the Finder's **Erase Disk** or, use a hard disk formatting utility such as Iomega's Zip Tools, which can be downloaded from the Iomega's web site; www.iomega.com. The main Zip utility is called **Tools** and lets you set certain formatting parameters as well as update the current disk driver (Rigid Disk Block).

How can I tell if this volume is formatted as a HFS+ disk? For MacOS 8.1 users...

Highlight the disk's icon and press Amiga+i for 'Get Info'. Near the top of the panel is a subject called Format, it'll list the disk's format as; Mac OS Standard (HFS), or Mac OS Extended (HFS+). You may not see much difference in block size, for hard disks below 250mb.

For MacOS 7.x/8.0 users..

A HFS+ disk used on any system below 8.1 will only see a text file on the disk, with no other icons displayed, the Simpletext doc will be named "Where have all my files gone". It'll tell you that this disk is an HFS+ disk, and you cannot access any files except in OS8.1. However you will be able to see and use a HFS+ volume connected to a Macintosh FileServer.

The hard disk icon doesn't appear on the desktop, what happened?

Either the hard disk has not been formatted or an error has developed on the HD.

- 1) The Desktop File has become corrupted. To rebuild the Desktop, you need to press and hold any Amiga+Alt keys, just before the Finder loads up.
- 2) The Master Directory Block is damaged – run a repair program, to fix the directory structure.
- 3) The hard disk driver is not functioning properly. You may have to repair the disk or even re-initialise it (ShapeShifter uses it's own driver info).
- 4) There is a poor power/SCSI connection to the hard disk, check all cables are firmly in place (even internal drives).

General SCSI Problems

SCSI can cause a lot of problems, especially with Macintosh emulation. It mainly causes; a freeze, the watch spins forever, and inevitably causes data/directory corruption.

To avoid any unnecessary problems, check through this list first, then use your disk repair utility;

- 1) Make absolutely sure the SCSI bus is terminated on powered up devices only.
- 2) You can safely use some devices even though some have been switched off, and it'll still be usable – although it isn't recommended.
- 3) All SCSI devices need to be switched on **before** the computer is powered up. Otherwise the controller will not see these peripherals.
- 4) Make sure all SCSI device IDs have their own unique numbers. No more than one device can have the same ID number, otherwise you'll have all manner of problems.
- 5) Do not use very long SCSI cables. SCSI can only have a maximum chain length of about 10m or so (this is not accurate, only a rough guide).

My Mac displays a message saying it wants to initialise the disk I've just inserted, what can I do to get it to recognise the disk properly?

Again you need the services of your favourite disk repair program to recover the disk and its data, assuming of course, that it has already been formatted for the Mac.

If your utility was not able to repair the disk, you'll have to copy the files off the disk, then reformat it again.

If it is a PC disk (**PC Exchange** Control Panel should be active), then there's nothing you can do to repair the disk, only a PC can fix a PC formatted disk.

Note: many Macintosh disk repair programs cannot repair PC disks. However, if you have a PC emulator, you can repair the disk with the appropriate PC program.

How come I get random system errors and freezes when using a SCSI device?

These are in no particular order, although I'd recommend you check nos. 1, 2, 3, 6 and 10 first.

- 1) Check for viruses, from a clean **write protected** anti-virus floppy disk.
- 2) Check your SCSI setup for proper termination. This means that your entire set of devices, no matter how many there are, should be terminated at each end of the bus. One for the internal chain of devices (usually a CD drive or hard disk), and one for the external chain. Both **must** be terminated at the very end of the chain.
If your Amiga crashed while using a device, it can damage the Finder and/or the System file, this may cause it to boot up no further than the happy Mac screen. See the section called Crashing Problems, on page 13 for boot-up crashes, for a remedy to the problem.
- 3) Check all SCSI IDs have a different ID number. If any two or more have the same ID, it will either not be recognised by the controller, or it will cause a system freeze, depending on which devices are effected.
- 4) Check all SCSI cables are connected properly. Switch off all peripherals first. It could be that a cable is faulty, as in, the wire inside is broken. The only way to track this down is to use a working device as a benchmark, and then check all cables, by attaching them one at a time to it, and see what happens.
- 5) A removable hard disk, eg. optical, Zip, may have serious errors in it's directory, use the disk repair program.
- 6) It could be a Extension conflict. You'll have to disable a few at a time, to find out which one is causing the problem. You may have to reinstall the Extension/Control Panel again, if it worked fine before this problem occurred.

- 8) Rebuild the Desktop file on all regularly used HDs/removable disks.
- 9) Update the drivers on all regularly used disks, except for Finder formatted hard disks – you'll have to re-initialise it, to up-date it. It can have a drastic effect on the Mac's performance, if it is damaged. Do this via the utility that formatted the disk. All it is doing is updating the Rigid Disk Block with the correct information.
- 10) Check the hard disk with your disk repair program, the directory structure may be damaged.

When I copy files across to other disks, they become corrupted, what can I do?

This can be caused by one of two things; bad blocks or the hard disk's maximum transfer is set too high, a limit of 0X1FE00 = 128k is a normal setting. Use HDToolBox (Amiga) to key in a new value (activate the advanced options button). You won't need to reformat the drive.

It could also be caused by faulty SCSI cables (internal or external), or the Mac's directory structure is damaged – run your repair program on the disk, just to make sure. And while you're at it, rebuild the Desktop(s) of your Mac hard disks, and scan your disks for viruses as well, this may have caused some system damage.

Boot-Up Problems

Why is the desktop rebuilding itself on a certain disk after every restart?

- 1) You have a folder called **Desktop** located somewhere on that disk. It doesn't necessarily have to be on the root of the disk, it could be located several folders deep. Anyway, rename it to something else, eg. "Desktop Things", just so long as it is not called **Desktop**.
- 2) The Desktop DF & Desktop DB files are completely corrupted, and need to be binned. Just use a file editor to make those files visible (they're in the root directory), and place them in the trashcan/wastebasket, then restart the Mac, and it'll rebuild some brand new desktop database files.
- 3) If you have the Control Panel called **MacOS Easy Open** or **Macintosh Easy Open** installed, then it may be this that is giving the system conflicting file information. I suggest you restart with Extensions disabled (press Shift during reboot) and then manually rebuild the desktop file (press and hold Alt+Amiga keys, right at the end of the boot sequence). Then restart with your usual set of Extensions enabled, and rebuild the desktop once again, this should rectify the problem.

The Mac won't bootup after I've done a full restore from a backup program, why?

You have to 'bless' the System Folder again (as it is commonly referred to). To do this, all you have to do is to take the System file out of the System Folder, then put it back into it's System Folder again. This should give that folder the familiar System icon on that particular folder. Don't forget, you'll have to rebuild the Desktop File (Amiga+Alt during start-up) after a complete restore, otherwise the icons will not show up properly.

Where can I download a bootable Shapeshifter or Fusion filedisk?

There is a bootable 2mb filedisk from; www.blizzard.u-net.com – click on the link called **Program Archives** to download it. It also contains Stuffit Expander (v5.1 for Fusion and v4.0 for Shapeshifter users), for expanding MacBinary (BIN) files, Stuffit archives, HQX or Compact Pro archives. I also suggest you update this supplied version of Stuffit Expander to v5.5 (latest, so far), at you're earliest convenience. It has many bug fixes (one caused a

crash after decoding/expanding archives), and can expand Stuffit Deluxe v5 archives – these are getting more and more common in downloaded files.

Note that the System Folder on this bootfile was taken from a System 7.53 bootable floppy disk called Disk Tools.

The flashing "? disk" screen appears when I startup the Mac, why won't it boot?

This means that the Mac cannot find a bootable or valid System Folder on any local drives. You need a bootable floppy or CD-ROM disk, to get the Mac up and running. If the your main hard disk is not booting-up as it should, check out these possibilities:

- 1) Check that your hard disk icon is selected in the Startup Disk Control Panel.
- 2) Zap the PRAM (Parameter RAM); press and hold any Amiga key+Alt+P+R keys, right at the beginning of the boot-up sequence – before the happy Mac icon appears.
- 3) The System file is damaged, either re-install the entire System Folder again or just the System file, from either a backup or an archive of the System Folder.
- 4) You're trying to bootup with an incompatible System Folder. Reinstall the System again.
- 5) The hard disk's driver (Rigid Disk Block) needs updating/repairing. Use your disk repair utility to repair it, or load the formatting program that initialised the disk, and use **Update** to replace the current driver.
- 6) If none of the above works, then your hard disk needs repairing with Norton Utilities 3.5 or similar program. If that fails, you may need to re-initialise (high-level format) the hard disk.

Use the Finder's Erase Disk feature, found in the Special menu.

The Mac won't boot-up as normal, instead it displays the flashing "X disk", what gives?

This means that the bootable disk you've inserted, or the hard disk's System Folder is not compatible with this type of Macintosh (in emulation it's either a Quadra or Ilci). Again, you need a bootable floppy or CD-ROM disk, so that you can access the hard disk. If this happens when you've either just installed a new System Folder, or the current System now refuses to boot, then it maybe one of these listed errors...

- 1) The System file on that disk is damaged – reinstall a System file.
- 2) It can also be caused by a virus, corrupting the System file, therefore disabling your Mac. The solution is simple, get an anti-virus program immediately, to eradicate it.
- 3) The System Folder on the disk, will not work with your Mac. The wrong System was installed, or it is completely incompatible with your Mac, ie. a PowerMac System Folder. Use a universal System installer, ie. a System CD from any retailer, and not a System disk that came with a real Mac, as these are specific to that Mac only – especially floppy disk sets.
- 4) There is no System Folder on that disk, and it will be ejected or not used.
- 5) The boot block may be damaged (rigid disk block), try using a disk repair program first. If that fails, then you will need to reformat the disk. You can reformat any removable or external hard disk, which has not been specified by ShapeShifter or Fusion as the main boot disk, with a Macintosh formatting program, or by the Finder's **Erase Disk** feature.

If it is a specified hard disk, you'll have to format it as an Amiga FFS partition again, and then re-initialise it on the Mac side. Only do this as a last resort, because if you have any data which has not been backed up recently, you will not be able to get it back.

See **What if I accidentally initialised the hard disk..** for more information.

Why won't the new System I've just installed boot-up?

You have installed an incompatible version of the Operating System. ShapeShifter (up to v3.9) won't work with MacOS8, I KNOW, because I tried it myself.

The correct version to install, is a **Custom System Folder**, eg. "System for this Macintosh", not a universal one, as this might not have all of the necessary resources for it to work with your particular processor, eg. a 68060.

ShapeShifter 3.10, will now let you to startup with **System 8.0/8.1**, however, when you first install the System and reboot, you need to disable the Extensions (hold the Shift key down until it says "Extensions Disabled" in the **Welcome to Macintosh** screen), then take out the **AppleShare** Extension (and any other useless stuff) from the Extensions Folder, and reboot.

The computer totally froze when booting-up, why?

This is either a SCSI problem, or you have a corrupt System file. This can be caused by a virus, a crash that needed a hard reboot, or it crashed while the disk was active.

- 1) Check SCSI termination is correctly setup.
The SCSI chain must be terminated at **both** ends of the chain. That means one at the end of the internal chain and one at the end of the external chain.
- 2) Check all SCSI devices have a different ID number. If any two or more have the same ID, it will not be recognised by the controller, or it will cause a system wide freeze.
- 3) If it is not a SCSI problem, then try these:
 - Repair the disk.
 - Rebuild the desktop: press and hold the Amiga+Alt keys in the middle of the startup sequence.
 - Trash the Finder prefs.
 - Bin the **ShapeShifter PRAM** file.
- 4) If the Mac froze just before the Desktop icons appear, then the Desktop File (contains icon info) is severely damaged. Restart the Mac, then initiate a Desktop Rebuild (press Amiga+Alt).
If this does not work, then there will be no way to mount this disk, even from another startup disk. So what you'll have to do is to make a bootable floppy disk with a repair program on it (Norton Utilities has such a floppy or disk image). When this boots-up, it will bypass the Finder and load straight into the repair program – hopefully it should be able to make the disk usable again. Once the repair is complete, I strongly recommend that you rebuild the Desktop File, the next time you restart.
- 5) If it froze whilst loading the Extensions upon bootup, then one of the Extensions (inc. Control Panels) is damaged. Just bootup again with the Shift key pressed down to disable all Extensions, and then manually, take out any new or suspicious Extensions and restart the Mac.
You can find out more in **Crashing Problems**, under the heading "**The system 'bombed' or froze whilst booting up the Mac**".
- 6) If it froze before the Extensions start to load (no icons are displayed during bootup), then the System file and/or the Finder is damaged. This means either a System re-install, retrieve one from a previous backup, or from an archive, to overwrite the old one in the System Folder.

- 7) There is an Extension Conflict, or one of your Extensions is incompatible with your current System and/or the emulator you're using. Disable all Extensions, and then put a few back in at a time to see which one it is.

The Mac boots-up to the Happy Mac screen, but doesn't go any further, why?

I suspect that the last time you used the Mac emulation, it crashed. This normally corrupts the Finder preference file. In all cases, you need a bootable floppy, CD-ROM, another Mac hard disk/partition or a removable hard disk, eg. Zip disk.

- 1) Delete the Finder preference file, and reboot.
- 2) Zap the PRAM. Press any Amiga key+Alt+P+R before the Happy Mac screen appears, this will delete the previous semi-permanent System data (for certain Control Panels). Or delete the PRAM file in the ShapeShifter folder.
- 3) A directory error, use a disk repair program to fix it.
- 4) Improper SCSI termination, switch everything off and recheck your setup.
- 5) The System file is damaged, reinstall again (do this last, if nothing else works). I recommend, that you make an archive of a good system folder, so that you don't have to reinstall the whole lot from scratch again.
- 6) You have an incompatible Macintosh ROM image for the version of System software you're using..

See **Mac 68k ROM Versions**, on page 111, for more information on supported Systems.

What is an Extension conflict, and how can I resolve it?

An Extension conflict is basically two or more Extensions that are attempting to use the same System resource. This usually results in no startup, a crash during bootup or even odd behaviour while using the computer. The only way to rectify the problem is to either boot-up with all Extensions disabled or (if your Mac is usable) by trial and error. This means remove some Extensions at a time to see if the problem goes away.

Now you need to know what all those Extensions do in the System Folder. The trouble with the MacOS installer, is that 50% of all the Extensions installed are not even necessary.

What you need is information about them, so that you know what you need and what you can safely bin. You can get it from two excellent shareware

documents; **Extension Overload** and **InformINIT**. Both cover Systems 7.x to 8.x, from Apple's standard set to all known third party Extensions and Control Panels – both have additional info concerning other topics as well. They can be downloaded from most Mac magazine CDs or from any good, Macintosh internet site.

If you have **Conflict Catcher** (commercial), this will make life much easier, as it does most of the work for you. It monitors what happens and is able to give you information on what is causing the problem. There is a copy of this utility on www.shareware.com, I think it is for evaluation purposes only.

Can I have two System Folders on a single partition?

This would be highly inadvisable, it would totally confuse your computer, especially if you copy a System by hand onto the main startup disk. It'll have difficulty booting-up next time, and will probably show you the flashing '? disk' screen. However you can install a system folder on a different partition, or onto as many disks as you like.

Will my Mac emulation ever display the Sad Mac bomb screen?

No, it can't possibly show this screen, as this is a hardware check feature for real Macs. Since Mac emulation is via software, and the host computer (Amiga) is a different animal altogether, a hardware diagnostic obviously cannot work, therefore you will never get this dreaded screen. The most you'll experience is a startup freeze.

CD-ROM Problems

How can I get the Apple CD driver to recognise all CD-ROM drives?

That's a good question, and as it happens there is a patch you can make to Apple's CD/DVD drivers. This will mount **most** third party drives (besides Apple's own drives). This modified driver will work with both Apple CD drives, and any other **SCSI** CD ROM drive.

The screenshots below are for the **Apple CD/DVD Driver 1.0.1** with additional descriptions (see the tables with instruction nos.5 & 6) for **Apple CD-ROM 5.4.2**, **Apple CD/DVD Driver 1.2**, **Apple CD/DVD Driver 1.2.2**, and **Apple CD/DVD Driver 1.3.1**. The modifications are done with **ResEdit**, which is an Apple utility. ResEdit and the fore mentioned CD drivers can be downloaded from Apple's Software Support Library:

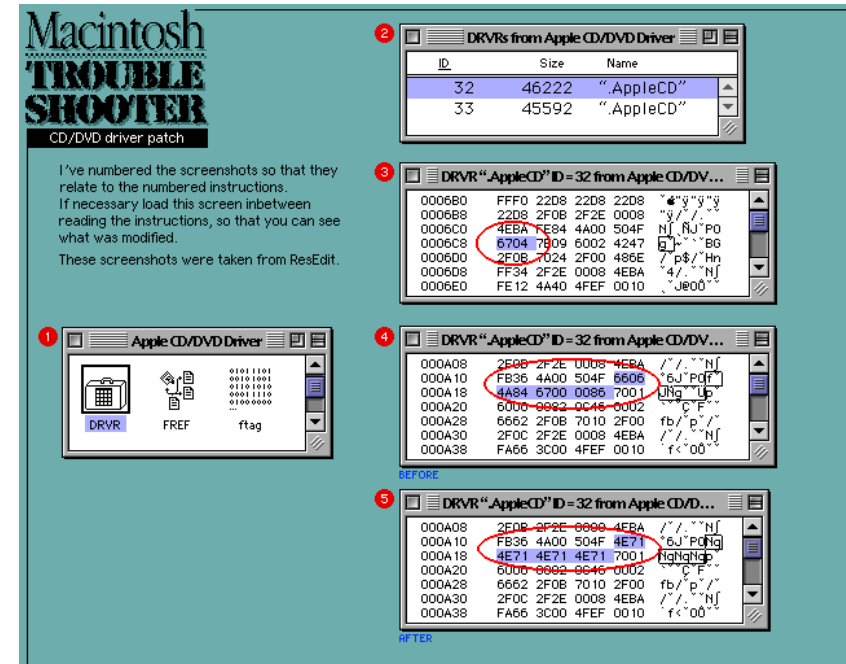
<http://asu.info.apple.com>

INSTRUCTIONS:

- 1) Open a copy of the CD Driver in ResEdit and find the resource icon called DRVR. Open it with a double-click. See pic 0.1, for screenshot no.1.
- 2) Open ID# 32 with a double-click. If you get an error about the resource size, open it using the menu item **Open using Hex Editor**. See pic 0.1, for screenshot no.2.
- 4) The screenshot (no.3) for the Apple CD/DVD Driver 1.0.1 is representative of the changes to be made in all the drivers. Find the original value at the appropriate row and offset, and change it to the new value. See pic 0.1, for screenshot no.3.
- 5) Below is a table for first change in the various AppleCD drivers.

CD Driver Name	Version	Row	Offset	Original Value	New Value
Apple CD/DVD Driver	1.3.1	06D8	06D8	6706	4E71
Apple CD/DVD Driver	1.2.2	06D8	06D8	6706	4E71
Apple CD/DVD Driver	1.2	06C0	06C6	6706	4E71
Apple CD/DVD Driver	1.0.1	06C8	06C8	6704	4E71
Apple CD-ROM	5.4.2	06B0	06B6	6704	4E71

- 6) Screenshot no.5, and the table below shows the second change to be made to the driver. BEFORE the modification (screenshot no.4), and AFTER the modification:



Picture 0.1 - Apple CD driver patch.

CD Driver Name	Version	Row	Offset	Original Value	New Value
Apple CD/DVD Driver 1.3.1		0AE8	0AE8	6604 4A84 6706	4E71 4E71 4E71
Apple CD/DVD Driver 1.2.2		0AE8	0AE8	6604 4A84 6706	4E71 4E71 4E71
Apple CD/DVD Driver 1.2		0AD0	0AD6	6604 4A84 6706	4E71 4E71 4E71
Apple CD/DVD Driver 1.0.1		0A10	0A10	6606 4A84 6700 0086	4E71 4E71 4E71 4E71
Apple CD-ROM	5.4.2	09C0	09C6	6606 4A84 6700 0086	4E71 4E71 4E71 4E71

- 7) When you're finished, replace the original driver with the new one and restart your computer. Your Apple supplied CD ROM driver will now mount most SCSI CD ROM Drives!

Unfortunately, the edit doesn't work with every combination of CD drive and computer, but of the thousands that have performed the edit, only a few have failed to work.

One reader wrote to say renaming the 'Toast CD Reader' by adding a SPACE as the first character in the name – forcing it to load first, allows CD burners to work with the new driver.

Why won't the CD-ROM disk eject?

There are two main reasons for this to happen:

- 1) You've run a program from the CD, and it's still in memory. You have to quit all applications you've launched directly off the CD, before it'll eject.
- 2) The File Sharing Control Panel has been activated, this will share all volumes that are mounted on your Mac, including CDs. To disable File Sharing, go to the Sharing Setup/File Sharing Monitor Control Panel, and click on the Sharing toggle button again, this should release the CD.

Can I create/burn CDs with Mac emulation, and what do I need?

So long as you have a SCSI2 or better controller in your Amiga, and of course the equipment to make them; a CD-R drive and a spare 650mb SCSI hard disk partition (remember, this includes the directory and desktop files). IDE/EIDE is not fast enough, and will corrupt data, as it is burnt onto the CD.

The hard disk partition with the data you wish to burn onto a CD, can be anything up to the capacity of the CD you're burning, which at the moment is 650 megabytes.

You may also require a fast 68k processor, depending on the software's requirements, say something like an 030 or better would be a safe bet!

As for the software, I suggest a program called **Toast CD-ROM Pro v3.54** (probably updated since) from Adaptec, see their web site: www.adaptec.com.

The CD drive won't eject the disk after the Mac crashed, how do I get it to eject?

MacOS always eject disks via the OS, so if the instruction to eject a disk didn't get to the drive, it will not eject it, no matter what (even after rebooting the Amiga). The only way to get the disk out is to either:

- 1) Power down the Amiga, wait several seconds, and power up again – then press the eject button.
- 2) Reboot Mac emulation again, and eject the disk – this will only work for other types of removable disks, such as Zip and magneto-optical disks).
- 3) Force eject the CD disk via the emergency eject pin-hole, with a paper clip.

I can't mount any Mac CDs in emulation, why?

ShapeShifter v3.9 & v3.10 now has the capability of recognising a CD-ROM

drive by using it's own built-in generic driver (in the SCSI setup window). Just go into the SCSI setup screen and switch on the button next to "Use generic CD-ROM driver". However you still need the CD filing system data files found in the Extensions folder, these are; **Foreign File Access**, **High Sierra File Access**, **Audio CD Access** and **ISO 9660 File Access**.

Fusion is very picky when it comes to SCSI, as you may know already, however some old SCSI CD-ROM drives may not be compatible with Fusion, or it cannot recognise it properly. In order to mount this drive, you'll require special Mac software, such as FWB's CDROM Toolkit, which supports a lot of CD drives. See their site for a list of supported drives (www.fwb.com).

Fusion also has a generic CD driver, go to the setup window, and set these options...

- 1) Under the heading Peripherals, select "CD-ROM"
- 2) The ROM type should be **HFS/PC**.
- 3) Device Driver = ATAPI.device or SCSI.device (whatever the driver is for your SCSI controller).
- 4) Unit = x (whatever it should be for ATAPI).

Don't forget those CD-ROM Filing System data files in the system Extensions folder, see above.

On Microcode Solution's web pages, there is a CD driver which is usually updated every so often, download it, if you still cannot mount any Mac CDs, the name of the archive is MSCD.LHA.

Go to: www.microcode-solutions.com/amiga/amiga.html – under the title "Latest Software Downloads".

Some older SCSI CD-ROM drives (1 to 4 speed units) have a major problem with Fusion, as in, they refuse to recognise any Mac CDs, in fact they flat out refuse to boot from a CD as well. A classic example is the **Toshiba** internal SCSI 4x speed **XM-5401B/S** unit, which I own. The only way to use these old drives is to buy a copy of FWB CD-ROM Toolkit. This means that you will not be able to use the System CD as an emergency bootup disk, you'll either have to use a floppy disk, such as the Disk Tools disk, or a hard file. Make sure you've made a backup emergency boot disk (of some kind) so that when your partition goes down, you are prepared for it.

For questions concerning IDE CD-ROM support, for ShapeShifter, see the AmigaGuide document **KSSFAQ13**, (Klaatu's ShapeShifter Guide & FAQ v1.3), which can be found on Aminet.

Why can't I boot up from my CD drive?

- 1) The CD contains a System Folder which is incompatible with your Amiga setup, eg. System 8 will not work with ShapeShifter.
- 2) Some real 68k Macintosh computers do not support booting from CD-ROM, this is to do with the ROM, so if you have one of these ROMs, you **may** be effected:
 - Macintosh 128k, 512k, 512ke
 - Macintosh Plus
 - Macintosh SE & SE/30
 - Macintosh Portable
 - Macintosh Mac II, IIx, IIcx
 - Macintosh Mac Classic

Why won't FWB CD-ROM Toolkit mount any CDs on my Mac?

CD Toolkit has certain minimum System requirements before it'll work on your computer, these are; System 7.01 or higher, an 020 or higher processor, a SCSI CD drive, and a hard disk.

Note that version 3.02 and above, requires System 7.53 or higher, and 4mb of free RAM. However it now supports ATAPI drives as well as SCSI.

Also note that FWB's web site has a updated list of all supported CD-ROM drives (SCSI & IDE): <http://www.fwb.com/>

I cannot seem to install MacOS from CD, using ShapeShifter/Fusion, what's wrong?

CDs with the Mac OS (7.5, 7.5.5 update, 7.6.1) are CDs with multiple data tracks. Under SS and using the generic CD-ROM driver fresh installs to an empty HD (and most likely updates as well) will FAIL because the later sections of the data cannot be read.

To install from CD it is best to BOOT with a Disk Tools floppy, and have EMPCD: enabled under Device Disks. The multiple data sessions will now be seen and the installs from CD will work OK. You can then change back from EMPCD: to whatever CD activation you require under SS once it has all gone through OK. NOTE: This may not be the rule, rather the exception.

by John Blyth, Australia

Where can I download Mac CD drivers?

- 1) There is a generic CD-ROM driver on Apple's web site, this works with some non-Apple CD drives:
www.apple.com/Apple_Support_Area/Apple_Software_Updates/US/Macintosh/Apple_CD-ROM_5.4.img.bin

This is a disk image, so you'll need **DiskCopy** or **Shrinkwrap** (this utility mounts the disk image onto the desktop). Both can be downloaded from any Mac shareware site.

- 2) Apple's System 7.x CD-ROM Setup software:
[ftp.info.apple.com/Apple.Support.Area/Apple.Software.Updates/US/Macintosh/Display.and.Peripheral.Software/CD-ROM.Setup.5.0.1.img.sea.hqx](ftp://ftp.info.apple.com/Apple.Support.Area/Apple.Software.Updates/US/Macintosh/Display.and.Peripheral.Software/CD-ROM.Setup.5.0.1.img.sea.hqx)
- 3) Alternatively, you could download a freeware generic driver called **CD-Sunrise** at: <ftp://mirrors.aol.com/pub/info-mac/cfg/cd-sunrise-22c.hqx>
- 4) Try these three, one from NEC and two from Pioneer web sites (for NEC or Pioneer drives only): <http://www.pioneer-eur.com/drivers/mac220.220> – <http://www.pioneer-eur.com/drivers/mac402.hqx>
<ftp://ftp.nectech.com/pub/peripherals/mac-cd/SPEEDYCD.HQX>
- 5) These are all the known Macintosh CD-ROM drivers available today;
 - **~CorelSCSI!**, from Corel (www.corel.com).
 - **Anubis CD-ROM**, from Charismac (www.charismac.com).
 - **CDROM Toolkit**, £53, from FWB (www.fwb.com).
 - **CD-ROM Extension**, from Charismac (www.charismac.com).
 - **CD Autocache**, \$79, from Charismac (www.charismac.com).
 - **CDTECH 1.x.x**, from CD Technology.
 - **Drive7Rem**, or **DriveCD**, from Casa Blanca Works.
 - **MetrooCD INIT 1.x.x**, from MetroCD.
 - **NecCDDrvr** or **DriveCD NEC**, from Charismac (www.charismac.com).
 - **CLD Access**, from Pioneer (www.pioneer-eur.com/drivers/).
 - **PLICDDrvr**, from Charismac (www.charismac.com).
 - **Rapid-CD**, £35, from Insignia Solution.
 - **RapidTrak-CD**, from MacPeak (www.macpeak.com).
 - **SCSI-CD driver**, from Corel (www.corel.com).
 - **SpiritTMCD**, from OAC.
 - **TSLCDDrvr**, from Trantor.
 - **Toshiba CD-ROM Driver 1.x.x**, from Toshiba (www.toshiba.com).
 - **TurboCD-ROM Init**, from Charismac (www.charismac.com).

Crashing Problems

Why is the Finder and icons disappearing then reappearing all the time?

The Finder has unexpectedly quit, therefore the MacOS reloads itself again. When this happens it is in an unstable state, so a reboot is required.

As for what causes it, usually an operation within the Finder, ie. trying to open a file you're not suppose to open, or an enhancement to the Finder (a Control Panel or Extension) is damaged, or not working as it should – reinstall it. Then again it could be that the Finder itself is just plain acting up, in which case a reboot will correct the problem. Or, the Finder's preference file is damaged/corrupted – bin it, and reboot again. However, if that doesn't fix it, then reinstall the Finder.

The wrist watch pointer spins round and round, what's going on?

When the watch spins round for a while, it means that the computer is thinking about an operation you've just invoked. However, if it spins round and around for ages, it means it has got itself into an eternal loop, which can only be solved by restarting the computer, if you're in Shapeshifter, or click on **Power Off** (left Amiga + M, first) in the Fusion control window.

Moreover, this type of delay could just as easily be caused by a certain operation taking a longer than expected time to complete, just be patient, after all you are using a fairly slow CPU, by today's standards anyway.

Why does my Mac crash when I disconnect from the internet with FreePPP?

If the setting **Hang up on Disconnect** is enabled, it will always cause a crash upon disconnection. To disable it, look in the Modem settings in the FreePPP Control Panel.

I can't seem to shutdown without it crashing?

First of all, check that the hard disk is OK, with your disk repair program. Then I suggest you use a little utility that came with System 7.5x, called **•Shutdown**, which was installed into the Apple Menu. This is remarkably safe to use, and will not cause a crash – strange but true.

What should I do when a crash occurs?

Go through this check list, just to make sure everything is alright;

- 1) Even if the program quits after a real crash (displays a System Error Message), you should reboot the Mac side, so that any instability in the OS is removed – otherwise it'll freeze later on, and cause even more problems (this may or may not happen, depending on the circumstances).
- 2) If it reboots successfully, run a disk repair utility on the System hard disk, there may have been some damage done to the directory.
- 3) If it doesn't bootup, then use your emergency boot disk (a filedisk, System CD, or the Disk Tools floppy disk), to get back into MacOS. Now find the file **Finder Preferences** and bin it – this should cure 90% of non-booting problems, otherwise look in the **Bootup Problems** section on page 7, for further troubleshooting suggestions, eg. use your disk repair utility.
- 4) After any crash, and you've rebooted the Mac, you may find some temporary files in the Wastebasket (the bin icon), which some programs tend to leave behind after a sudden crash. Select **Empty the Wastebasket** to get rid of them, they're virtually useless anyway.

Some of my Mac programs display a message "xxxx Unexpectedly Quit", what does this mean?

This type of crash often occurs when the application has run out of memory. All you need to do is to allocate more RAM to those programs that regularly cause this problem, a megabyte of allocated RAM should do it.

You will not need to restart the Mac emulation again, this type of crash doesn't cause the MacOS to be unstable in anyway, in fact you can re-launch the same program again, almost immediately.

Why are some programs suddenly quitting?

You've given too much memory for your application(s), and the System does not have any spare memory to expand into. If this is the case, then the best thing to do is to leave 1-3mb of free RAM for the System to 'grow'.

Or it could just be a case of the program not being able to access one of it's own files or a System Library, and it quit by itself – although it is more likely to crash.

See in **Jargon**, on page 120 for an explanation on customising a program's **Allocated Memory**.

Why doesn't Norton Utilities 3.5's Crash Guard work?

Because it is a PowerPC only application, and a good one as well. All it does, is to catch a crash, before it takes down the whole system, it'll keep a log of all crashes and when one happens, it will give you three choices: Fix It, Quit the Application or Reboot the Mac.

What causes my Mac to crash/freeze?

For starters, don't assume that the Mac emulation has frozen, it may be just taking it's time to complete an operation or loading up files – be patient. Remember your dealing with slow 68k apps not PowerMacs. A good sign that the Mac emulation is going Ok, is when you can still move the pointer about the screen. Here are some tips to help you with a crashy situation:

- 1) Bug ridden programs often cause regular crashes, eg. Shareware/Freeware applications.
- 2) MacOS is a single tasking OS, so don't try to do many things at once, it will crash or freeze. The best thing to do is let it complete a task before executing another one.
- 3) A damaged System file, caused by a major crash, or a virus. This may require a System re-install.
- 4) To get out of an infinite loop type situation, press Apple+. (period) keys (cancel operation) or Apple+Option+Escape keys (Force Quit out of emulation).
- 5) A corrupt preference file can often cause many a crash, just delete the application's preference file in the System Folder, and re-setup your prefs for that program.
- 6) The program could be accessing a damaged Library Extension, or trying to access a Library Extension that isn't in the System Folder – in either case, reinstall the Library file(s).
- 7) An Extension conflict is another common suspect when a Mac crashes. All you have to do is see what programs or other System enhancement utilities/Extensions you have, and take them out of the Extensions Folder, then restart the Mac, see if this cures it. It could also be damaged!
- 8) Document files may also become corrupted, and often causes instability in the MacOS/application. I'm afraid, if the file is far too gone to salvage, you'll have to recreate the file from scratch, assuming you haven't done a backup recently.
- 9) Viruses, can also reek havoc on your Mac, so be vigilant with

downloaded programs, scan them first before you execute it.

- 10) If your Mac hard disk is not looked after regularly, it could develop so many faults in the directory structure (or bad blocks) that files and applications will automatically cause crashes, due to the unstable state of the partition(s). Do regular hard disk checks to prevent this.

My Mac has started to crash a lot, how come, it was alright not long ago?

- 1) You may have installed a later version of the 040/060 libraries on the Amiga, this can certainly break some Mac programs, or at least cause some features to crash out on you. Try using an older version, eg. v41 to v43.0 are pretty stable. You may have to switch off SuperScaler (NS) and the Memory Buffer (NB), on an 060 computer using Fusion, but this would degrade performance by 25-50%. NS & NB are CPU settings; to use any of these commands, you can only do it through the Shell, as a temporary measure, or via the Startup Sequence script – preferably executed early in the script.
To use a certain setting, type **cpu040 xx** or **cpu060 xx** (Phase5 accelerators), OR **cpu xx** for 68000/020/030 CPUs. To call up a list of all available options/settings, type **cpu ?** (000/020/030s), OR, **cpu040 ? / cpu060 ?** (Phase5).
- 2) A program has installed additional/newer versions of system Extensions? Your Mac doesn't like them. Restart the Mac with all system Extensions disabled, then press the Shift key right away, until the message "Extensions disabled" appears, under "Welcome to Macintosh". Now remove any NEW Extensions and/or Control Panels, and reboot. This may render some program inoperable.
- 3) The program is very buggy. It could be a Beta version, best wait until the next official release for that particular application.
- 4) Run your disk repair utility over the system and application hard disks. It may have developed an error in the main Directory, which can cause instability.
- 5) The program has become corrupted, check for viruses, then reinstall the program.
- 6) Has the application got enough allocated memory? Highlight the program, while in the Finder, and press Amiga+i, this will show you, at the bottom of the information panel, the memory allocation fields. The

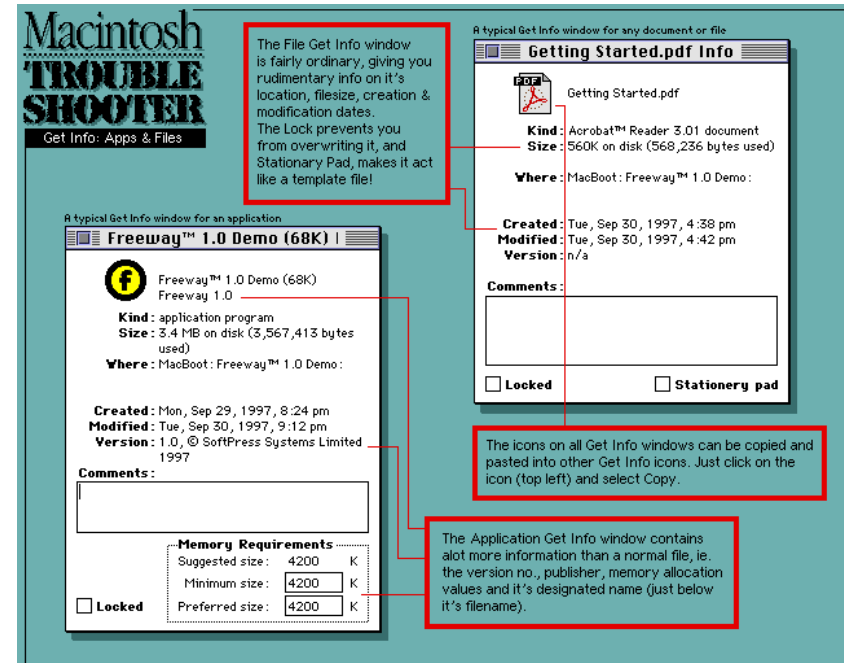
one you need to amend, is the **Preferred Memory** value, it needs to be bigger than the Suggested Memory figure (the numbers represent Kilobytes). See pic 1.1 opposite.

- 7) This new software requires an FPU, which you either don't have or it doesn't seem to like the one you've got. Install the freeware program **SoftwareFPU**. This Control Panel emulates an FPU extremely well. Download it from any shareware internet site.
- 8) Your Mac doesn't have enough memory to function properly, with or without additional programs loaded as well. You need a minimum of 8mb for the MAC, this will accommodate a bare bones system (2-3mb) and one medium-weight (3-4mb) program. OR you have not allocated enough RAM to a regularly used program. To use additional memory, select the program's icon and press Amiga+i keys, to access the Get Info panel. Now go down to the **Preferred Size** field and type in a number (1=1k), it has to be equal or more than the minimum value. The **About This Mac** picture (pic 1.2) will show you just how much memory you have left.
- 9) A bitmap or TrueType font has become corrupted in the System's Fonts folder, replace the suitcase with the master copy. See "**Some fonts don't appear to work..**", on page 22, for more info.
- 10) The program is incompatible with your emulated Mac or the System version you're using.
- 11) Check for viruses, these can easily cause sudden crashes and bootup failures. Eradicate the virus first, then see if any programs crash repeatedly, if they do, bin the whole application folder, because the virus has damaged it, and reinstall again.

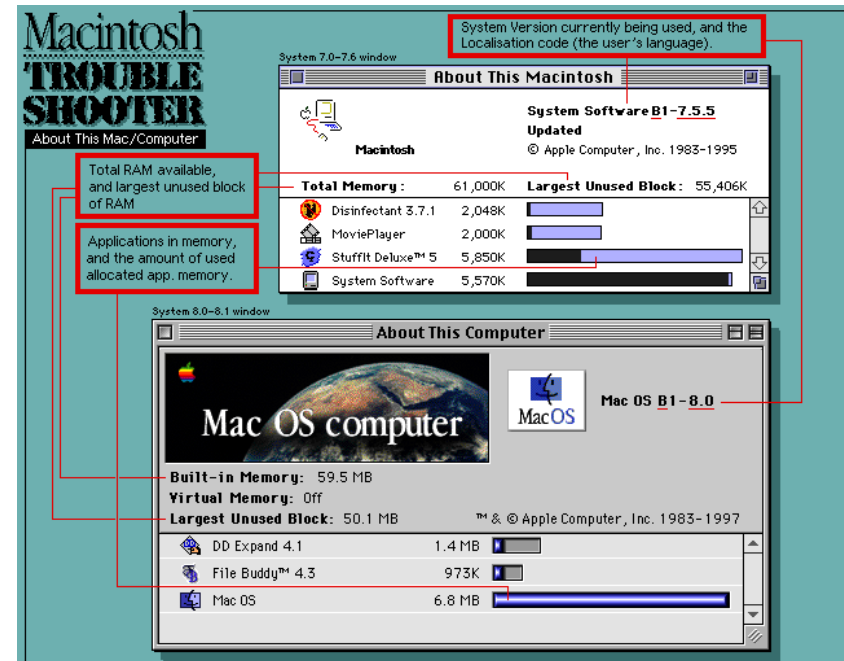
The system "bombed" or froze whilst booting up the Mac?

Make a note of when (during the boot procedure) it happened, this will differentiate between a duff System/Finder/Extension or an Extension conflict. To find out which one it is, is simple, all folders then Extensions, always load-up alphabetically:

- 1) The System and Finder Preference files
- 2) Then the Extensions
- 3) Then the Control Panels with it's preference file
- 4) Then the Finder
- 5) And finally, the Startup Item folder.



Picture 1.1 - Different types of 'Get Info..' dialogue boxes; program & document info.



Picture 1.2 - About This Mac window.

- 1) If it happened before any icons started to appear during boot-up, the System file or Finder preference file is damaged (bin the prefs first, leave the system for now).
- 2) If it froze or crashed whilst the Extensions are loading, then the last icon will give you a good idea as to which one is the troublemaker, because it is either the last Extension that loaded before the crash or the one after it. Remember that not all Extensions and Control Panels display it's icon at boot-up. Simply find and disable any suspect Extension, and continue to do this until the crashing stops.
- 3) If it shows a System Error message, freezes or just restarts, after the Extensions etc. have loaded, then the Finder program is damaged. Just reinstall it.
- 4) Beware of viruses, this is a symptom of infection, as they nearly always infect the System file or even the Finder, so scan the hard disk with a bootable CD (it cannot be infected) or a locked anti-virus diskette.
- 5) Another cause is a corrupt font suitcase, which can prevent the System from booting, by freezing on the Happy Mac screen. The only way out of this situation is to boot from a different disk, then look inside all the suitcases in the System's Font folder, and see if each suitcase opens and that each font size (when you double click on it) shows the correct font and style – if it shows a default font, ie. Geneva, it's damaged. Bin all corrupted fonts and restart the Mac again.
- 6) It may have been caused by a SCSI ID clash between the boot disk and another device, recheck the IDs on all external devices and change to a different number. Also check SCSI termination is switched ON, for the last device in the chain.
- 7) The disk's directory structure is damaged, use the disk repair utility to fix it.

The Mac is behaving erratically and files don't open – what's doing this?

- 1) THE most likely cause for a very unstable Mac, is the Master Directory and the Volume Bitmap on the hard disk has incorrect data concerning the number of files and space available on the disk.
Do not continue to use the hard disk, as this may cause damage to files and applications. Use a disk repair program to correct it.
- 2) The Desktop File has become corrupted – either use your repair utility, or

restart the Mac and hold down the Alt+Shift keys just after the Extensions have loaded, this will display the message “Do you want to rebuild the desktop of [disk name]”, click OK. The disk's directory structure could be corrupted, give it a scan, & repair any damage.

- 3) Also check your hard disk for viruses, and do not attempt to load any more programs, as this may cause further infection. The virus could be in the Desktop or System files. **CDEF** is the only virus that infects the Desktop file.
- 4) The Finder application is damaged – usually causes regular freezes and crashing. Reinstall it.

Memory/RAM Related Problems

Note that these problems have been taken out of **General MacOS Problems** section, since there were quite a few of them, and so I decided it was best to move them into this new Problem section.

How do I allocate more memory to a program?

Highlight the program's icon, and press Amiga+i, this will show you the Get Info (see pics 5.1 and 5.2 opposite) window. At the bottom of this window are the memory allocation boxes. Only amend the **Preferred Memory** field, it and your figure should be bigger than the Suggested Memory number (values in Kilobytes).

Should you need to alter a program's memory allocation parameters which is located on a CD, such as Norton's Speed Disk (a disk optimiser), then what you need is **AppSizer**. It can be downloaded from the any Mac web shareware site. It will allow you to edit the program's memory allocation.

Is it possible to use the RAM Disk feature in the Memory Control Panel?

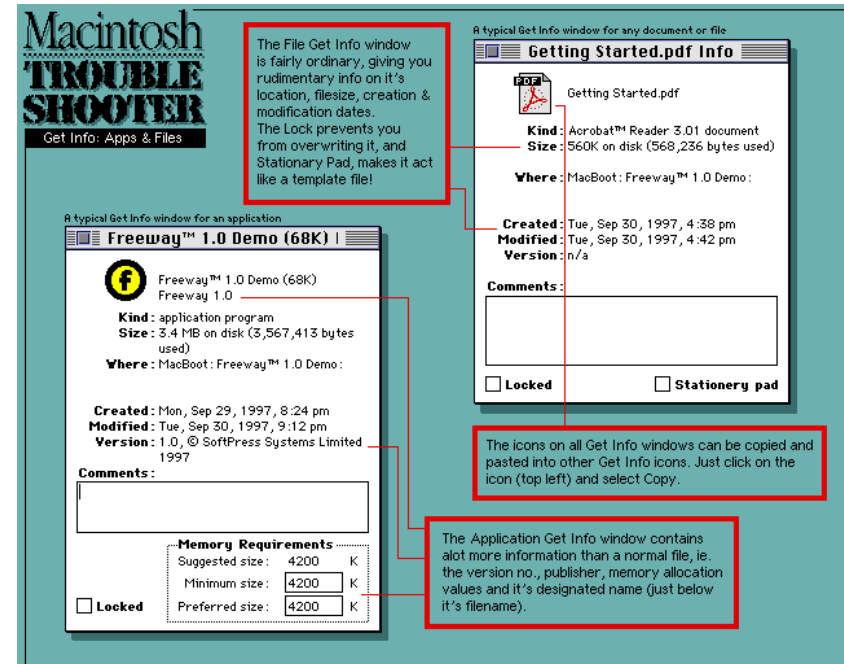
No, it doesn't work with emulation, certainly not with Shapeshifter anyway (not sure about Fusion). It will induce an immediate crash, and will reboot your Amiga. This could also cause Mac emulation not to work next time round. Don't worry, the RAM Disk is switched OFF after the System is installed. See pic 5.3 overleaf, for the Memory Control Panel.

How much memory does System 7.x & System 8.x take up?

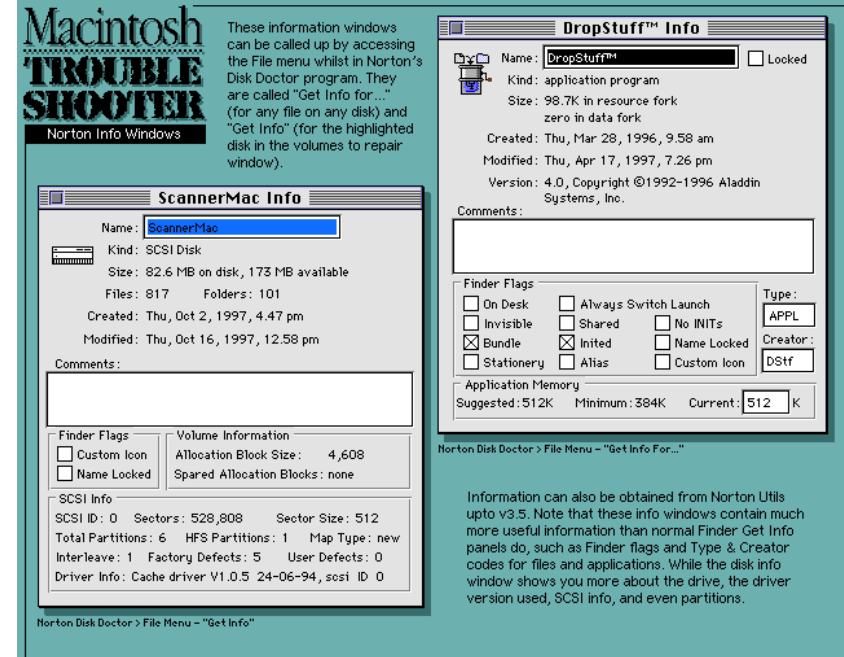
System 7.0 to 7.55 will take up between 4 and 5 megabytes of RAM – this is for an average to heavy use of system Extensions, of course, it could be slightly more, depending on your System setup.

System 8 and 8.1, will take up about 200-300% more memory than MacOS 7.x. A minimum System, that is using only 10-20 or so Extensions, will take up approximately 6-8mb, while a medium to heavy amount of system Extensions (including Control Panels) will be anywhere between 10 and 15mb of RAM!

So, if you're thinking of installing MacOS 8 at some point, it's best to upgrade your RAM as well – I think 16mb, allocated to Mac emulation, under System 8, is the bare minimum – 32mb **or more** (total memory in your



Picture 5.1 - Different types of 'Get Info..' dialogue boxes; program & document info.



Picture 5.2 - 'Get Info...' in Norton Utilities v3.5.

Amiga) is best for heavy Mac use. See the pic 1.1 on page 15, for a guide to memory usage on a typical Mac.

Will Mac emulation suffer from Memory Fragmentation, as real Macs do?

Yes and no. Although there will be a small amount of fragmentation (lost memory or 'memory leak'), you really shouldn't be that concerned, as the Amiga handles fragmentation very well. This means that you can quit any program, in any sequence, at will, and you'll still have 99% of your allocated memory available. Note that, in emulation, the amount of lost memory is measured in a few kilobytes, rather than megabytes on real Macs!

Is there a utility that can display exactly what is currently in memory, for the Mac?

Yes there is. What you need, is a utility called **Memory Mapper** from Street Logic Software. This neat program, displays all programs and the System currently in use, by name and by a coloured graph, try it!

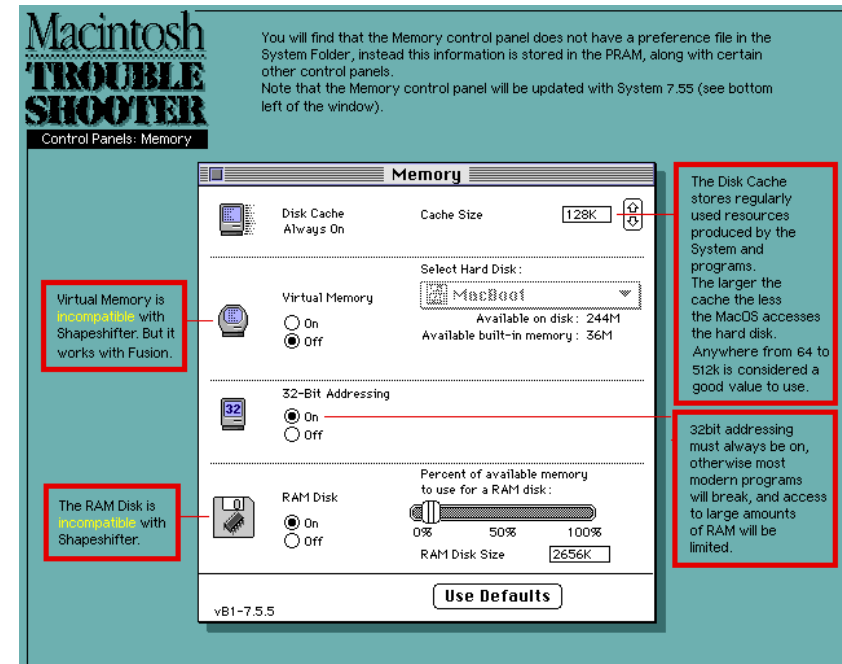
How come my Mac's System is taking up most of the memory now?

This affects older versions of 68k Amigas (68000/020EC) & all System 7 revisions. These processors can only access 24bit memory or 8mb of RAM. In order for it to automatically detect memory above 8mb, you need to open the Memory Control Panel (see pic 5.3) and switch **32bit Addressing** to **on**, then restart the Mac, that's it.

Is it possible to use virtual memory or RamDoublor in Mac emulation?

Not in **any** version of ShapeShifter. But you can use the System's own virtual memory feature in Fusion, however I'm not sure whether RamDoublor works on either of those emulators, any comments?

RAM costs less these days, so i suggest you go out and buy more memory, ie. 16mb will be quite cosy on the Mac with Workbench running, this is assuming you're not going to run any large programs. If you are going to use Mac emulation for serious work, then I recommend you have at least 32mb of RAM, the more the merrier – remember Mac programs are memory hungry beasts.



Picture 5.3 - The Memory Control Panel. The RAM Disk, Disk Cache and 32 bit Addressing features can be accessed via this window.

General File, Fonts & Icon Problems

The Mac freezes every time I try to list a folder with over 1000+ files in it, why?

This is due to memory restrictions, and the amount of files you can have in one folder at a time. I suggest no more than 500 files & folders in a single folder, it'll take it forever to list (puts it in memory first) all of those files. Also, avoid saving custom icons onto files, eg. with Photoshop. Next, temporarily increase the size of the Disk Cache in the Memory Control Panel to 4-8mb (you may need to restart Mac emulation to enable it). This should give the System enough memory to list the contents of the folder in question.

If that didn't work, then I suggest you create a backup (or archive) of that file, and then restore only parts of the folder into more manageable sub-folders.

However if you still have no joy, then there is a utility that can fix very large folders, it's called **Fat Folder Fixer** from Alsoft: <http://www.Alsoft.com/AskAI/download.html>

How can I convert PC truetype fonts to Mac truetype fonts?

Use a shareware program called **TTconverter**, this utility will convert PC TTF fonts to Mac, and Mac TrueType fonts to PC format. It can be downloaded from any shareware internet site.

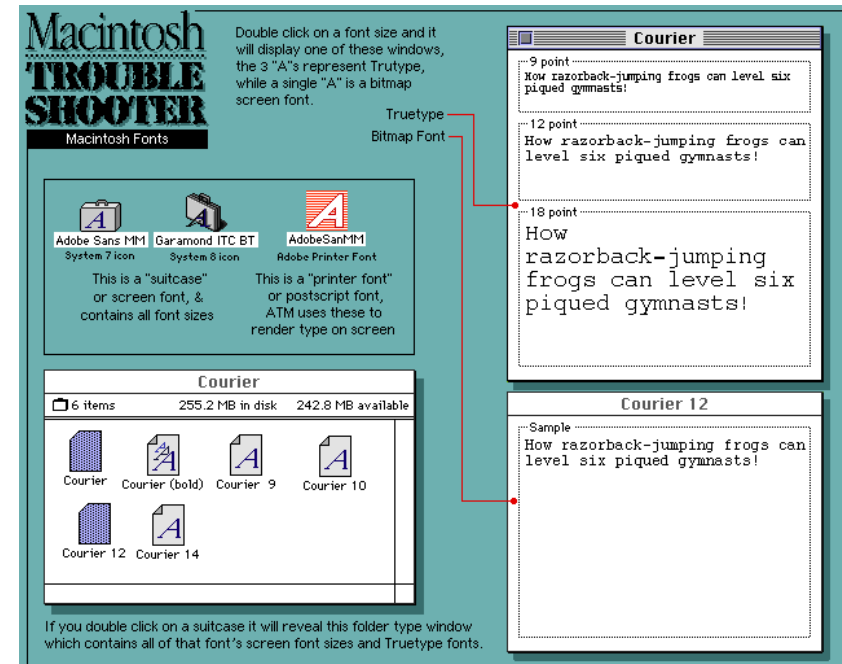
When I double click on a iconified document, it loads the wrong program, what's happening?

This happens when either:

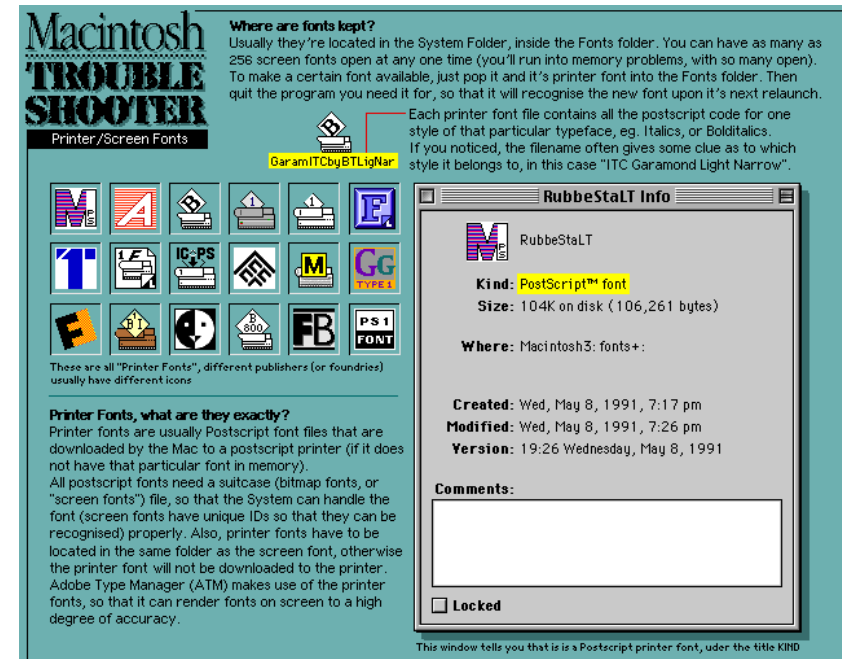
- 1) The desktop file has lost track of it's file association with some the applications. In which case you need to rebuild the Desktop File again, in order to rectify the problem.
- 2) Or.. You don't have the latest version installed on any local partitions or disks. Just re-install the program you require and then load the file up again.

Is there a Mac utility that can convert Amiga IFF images to standard picture formats?

Yep! I recommend a shareware program called **GraphicConverter**, it is capable of converting many different types of image file formats (SGI, Mac,



Picture 6.1 - Macintosh fonts consist of a Suitcase files and Printer Font files.



Picture 6.2 - There are many different makers of Printer Fonts.

PC and Amiga formats, to name a few). It also has image editing, slide show and batch conversion features.

Also note (to those who can afford it) that Photoshop 4.0 (last version that supports 68k CPUs) also caters for Amiga's IFF format – Photoshop 4 came out in the last quarter of 1997!

How do I make fonts available?

There are two methods; a simple way – for the occasional user; and one for managing a large number of fonts via 3rd party software.

First, the simple method: gather up all the fonts you want to use, they must be either Macintosh Type1 fonts with it's suitcase (screen fonts), or Truetype fonts. Then move them into the System's Font folder, there is no need to restart the Mac, but you will need to quit and reload the programs you wish to use them with.

Second method is to buy a commercial or shareware utility that will manage your fonts for you. These programs often allow you to open fonts that are not even on the same volume as the System Folder, so you can open and close them at the same time you are using a program.

Here are a few products available; Symantec's **Suitcase** (commercial), **Master Juggler** (commercial), Adobe's **ATM Deluxe** (commercial), or **Font Manager** (shareware).

For an explanation of what Macintosh fonts consist of, see pics 6.1 and 6.2 on the previous page.

How can I secure data on my Mac?

You can either buy a commercial package, such as **Norton Disklock**, **FileGuard** or **Private File**, OR download a shareware program – these can take the form of a disk lock-out or a file encryption utility with a password protection. For 100% protection of sensitive data, I'd suggest you buy a commercial product (such as the one mentioned).

To **erase data** completely, you need a utility that overwrites the file with random binary so as to make it completely unreadable, as well as remove it from the disk's directory. Such as **Norton Utilities' WipeInfo**, or by simply saving unimportant text/data of similar size or more over the original file via any program, but **not** by placing a file of the same name over the original in the Finder. This will only delete the file from the hard disk's directory, and the confidential data will still be recoverable.

I cannot get a file to open, how can I get it to load?

It is most likely a default dog-eared icon, which you won't be able to open by double clicking on it.

Instead, load up the program you know can access it (if you know what type of file it is), THEN load-up the file via the Open dialogue box.

If it does not load at all, then it may be damaged. However you could;

- 1) Restore a previous version from your backups.
- 2) If the file is text based, then you can recover most of the text by using Norton Disk Doctor's Recover File (only text can be recovered) feature.

This will save the text into a separate file.

Or, use this useful program called **CanOpener** from Abbott Systems. It can open any corrupted file, and has filters to remove most of the rubbish. See their web site for more info: www.abbottsystems.com

- 3) If it is a Quark Xpress document, then you can buy a repair program from Markzware, called **MarkzTools2**. See their web pages: www.markzware.com.

When I copy files across to other disks, they become corrupted, what can I do?

This can be caused by one of two things; bad blocks or the hard disk's max. transfer is set too high, a limit of 0X1FE00 = 128k is an average setting. Use HDToolBox (Amiga) to reset the limit, in the advanced options window.

It could also be caused by faulty SCSI cables (internal or external), or the Mac's directory structure is damaged – run your repair program on the disk, just to make sure. And while you're at it, rebuild the Desktop(s) of your Mac hard disks.

Scan your disks for viruses as well, it may have damaged the system file.

How can I transfer files (large or small) from a PC to a Mac?

To physically transport the files from the PC to a Mac;

- 1) Email the file(s) to your self.
- 2) PC formatted Zip disk (use the PC Exchange Control Panel to mount it).
- 3) Syquest removable disks (use the PC Exchange Control Panel to mount it).
- 4) High density floppy disks (use the PC Exchange Control Panel to mount it). If the file(s) are very big, you could split the archive over a number of floppy disks, then rejoin them once you've copied it onto the Mac.

To make sure they are not corrupted, when copied onto alien filing systems:

- 1) Copy them as they are, without modification. These type of files are cross platform compatible, such as, image file formats; JPEG, GIF, EPS, PCX and TIFF; text in ASCII format; and some program documents; Quark Xpress, MS Word, MS Excel, Pagemaker, Freehand, Adobe Illustrator, to name a few. However the file must have a 3 character extension, on the end of the file, for easy recognition.
- 2) As a hexadecimal encoded archive, known as a HQX file (this is it's dot file extension). This archive type uses ASCII characters to encode the data, which is also a universally recognised format, and therefore totally safe to store it until you can copy it to the destination computer. It usually necessary to compress the file first, because a HQX archive can and often does, increase the size of the original file by as much as 30%. It might be a good idea to encode large individual files so that they'll fit on a 1.4mb PC disk.
Here are some programs that can encode and/or decode HQX files:
 - **Stuffit Lite** (shareware)
 - **Stuffit Deluxe** (Commercial)
 - **Stuffit Expander** (freeware – expands; .cpt .sit .hqx .uu & .bin files)
 - **ZipIt** (shareware)
 - **Compact Pro** (shareware)
 - **BinHex 4&5** (freeware, expands/encodes HQX files only).
- 3) Use a cross platform compatible archive program, such as;
 - **pkZip** (PC) and **Zipit** (Mac)
 - **LHA** archive program (Mac shareware programs are available)
 - **Stuffit** (both for PC & Macs).

What type of compression formats are there for the Mac, and how can I recognise them?

There are 10 common archive formats for the Macintosh, and they usually add a 3 character extension onto the end of the filename, eg. archive.sit.

Stuffit Expander (now called **Aladdin Expander**) is THE program to have, it can expand 2 common Mac archive types, SIT & CPT, and 3 file conversion types, BIN, HQX & UU. You can download a free expander for all the other compression types, either from the publisher of the software or from any shareware site.

<u>Extension</u>	<u>Type code</u>	<u>Compression program that created it</u>
xxxx.bin	MB2P	MacBinary format (combines the resource and data forks into one file)
xxxx.dd	DD??	Disk Doubler (??=other various characters).
xxxx.cpt	CPCT	Compact Pro.
xxxx.gz	Gzip	MacGzip
xxxx.hqx	ASCII	BinHex (there are lots of other HQX creation programs on the internet)
xxxx.pit	PIT	PackIt
xxxx.sea	APPL	Self Expanding Archive (expands itself, when you double click it)
xxxx.sit	SIT!	Stuffit Deluxe/Lite
xxxx.uu	UU??	UUencoded file, a bit like HQX archives in nature
xxxx.zip	ZIP	Zipit (is PC pkZIP compatible)

How can I tell what type of file this dog eared icon is?

As you may have already found out, it is useless to double click on a file which has reverted back to a default document icon, it simply won't launch any program.

This is what you can do to correct the problem; rebuild the entire desktop or use Norton Utilities v3+ to update a single file or files. This feature can be found in the menu of Norton's Disk Doctor, under the heading "Add file to Desktop".

If this does not produce an icon, then either you don't have the program that created the file (see **File Types & Creators** on page 77, on how icons are created), or the file in question has no Creator code in it's Finder flags. However, you can view it's codes by using **Norton Utilities**, on the main menu screen, look in the File menu for **Get Info For..** and highlight it, now find and select the file. Or you could find out via **FileBuddy's** Get Info screen, see pic 6.3 on on page 22.

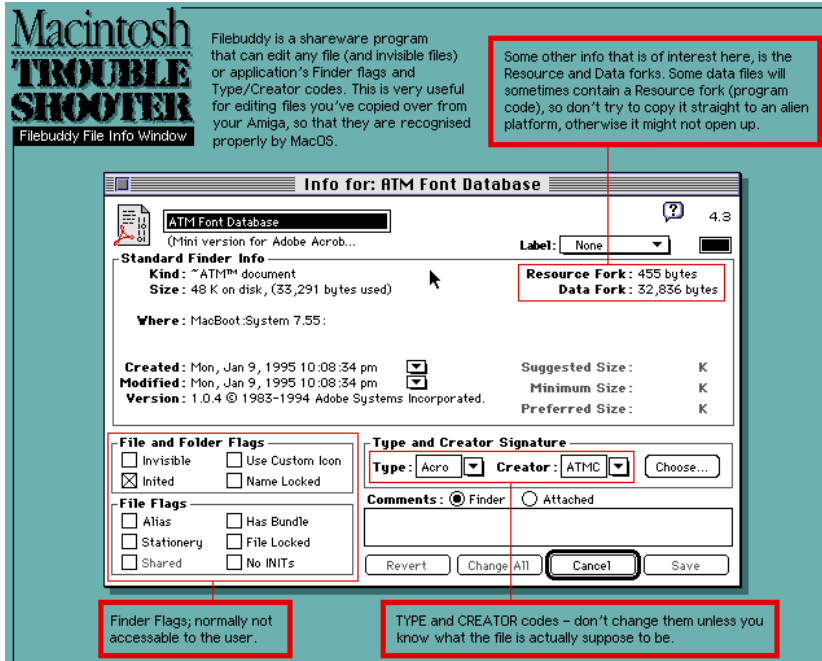
The Creator or file Type may give you a good indication as to what it is, for example, File Type = JPEG, this means that the file is an image format.

There is a database document for the Mac, called **Type/Creator Database** which can be found on any Macintosh shareware internet site, or go to the authors site: www.anglefire.com/il/szekely/index.html

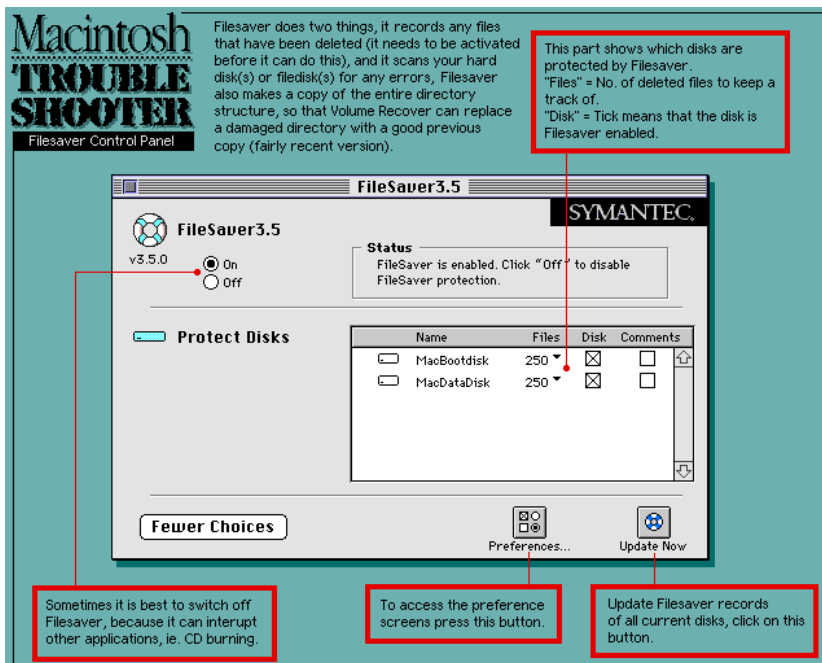
How come all of the icons on my hard disks have defaulted to generic icons?

The Desktop file which stores information about all the icons on that hard disk has either become corrupted or it cannot update it any more, due to a bad block or bad Desktop file.

All you need to do is to rebuild the Desktop file. To do this, you have to



Picture 6.3 - FileBuddy's 'Get Info..' window.



Picture 6.4 - Norton Utilities' FileSaver Control Panel.

restart the Mac and then hold down the Alt+Amiga (any combination) keys just before the last Extension is loaded. The Finder will detect this key combination, and will ask you if you want to rebuild the desktop for the main system disk and then for any other mounted volumes, everything should be back to normal.

If the Desktop fails to rebuild, you need to make the current invisible **Desktop DB** and **Desktop DF** files visible, these are located in the root directory. Use a File editor such as Norton Disk Doctor or FileBuddy to switch off the invisibility Finder flag, and then put them into the Trashcan. Then restart, the Finder should generate the Desktop file automatically. Now, empty the Trashcan.

TIP: If an application defaults to a generic form, you do not need to rebuild the entire desktop. Use any program that can add a file to the desktop, such as Norton Disk Doctor 3.5x, and update just the application with this feature. The rest of the apps associated files and documents will appear properly upon the next reboot.

Some fonts don't appear to work, or I cannot move them out of it's suitcase or folder?

It is more than likely that the bitmap or truetype font(s) in the suitcase (commonly known as a screen font if used in conjunction with Postscript Type-1 fonts, or Printer fonts) are damaged or do not work properly. This type of error does not effect the Printer fonts, they are separate files. There or two manual ways to find out if a font does not work; **a)** Try to move the suitcase to another folder, if an error message appears, then the suitcase is corrupted, or it won't let you move individual font sizes out of the suitcase – both good indicators that the suitcase is damaged, and usually cannot be repaired. **b)** Look inside every suitcase that is normally loaded up, including the System's Font folder, then double click on each font size icon to view the font style & size. Now see if all of the fonts inside the suitcase show the proper font. A bad font will always display a default font, such as Geneva. A dead give-away is that an italicised font is not only a generic font but also not in italics.

There is a way to get rid of any suitcases that refuse to be moved, simply create a file with the same name as the suitcase and move it into the same folder as the damaged file, it should overwrite it. Just in case the System does not allow you to do this, you can use a file eraser utility, ie. Norton

Utilities-Wipe Info. You may have to startup with all Extensions disabled first.

On a further note: check that the **Adobe Type Manager** (ATM) Control Panel (if you are using it) has enough allocated memory for rendering text, something like 256k or above is usually adequate.

While I'm on the subject of ATM, is it functioning properly? This is another possible as to why fonts are not displaying properly. The only way to tell, is that large on-screen type is not being rendered accurately. Extremely blocky type means that ATM has been switched off or it is damaged, you may have to reinstall ATM again.

How can I make an invisible file, visible?

You need a utility to edit the file's Finder flags, such as **File Buddy** (shareware) or **Norton Utilities** (under File menu **Get Info for..**). I suggest you only switch on/off the 'invisible' flag only, the meddling with any of the other flags could damage the file.

See **File Characteristics** on page 77, for more info concerning Finder flags and what they do.

How can I retrieve deleted files?

Use **Norton Utilities** Filesaver and Unerase features, to manage deleted files. Filesaver remembers up to 500 files that have been erased. However, over a period of time, ie. up to 2 days of constant use, the oldest binned files will be over-written by the Mac, so if you need recover a trashed file, you better rescue it soon. If a directory search does not recover the entire file, you'll have to revert to a backup. See pic 6.4 on page 22, for Norton's Filesaver.

TechTool Pro v2.5 has an file retrieval feature, which has a better implementation than Norton Utilities – it redirects the deleted file into an invisible folder on the hard disk it was deleted from. You can specify how big the files can be, and how many files it can store.

I recommend buying TechTool Pro v2.5 as a upgrade from Norton Utilities v3.5 (the last 68k compatible version), as TechTool still supports the 68k CPUs.

How can I convert a special text document, eg. Word, into another format?

You need a text file type converter program, such a **MacLink+** from Dataviz (which can be found on the System 7.53 CD) or similar program. This

program will convert any supported word processor formatted doc into a similar Mac format.

The only other way, is for the person who sent it, to resave it as an ASCII text file. This would remove any text formatting, or you could open this document with a text editor and remove the junk surrounding the text by hand, and then resave it.

Virus Related Symptoms & Problems

What is the safest way to eradicate a virus on my Mac?

First you need a good, up-to-date virus checker. There are about 3 commercial packages:

- **Norton Anti Virus**, from Symantec.
- **Dr Soloman's AntiVirus**, from Dr Solomans.
- **Virex**, from Datawatch (now McAfee).

And two shareware programs:

- **Disinfectant 3.71**, is freeware, but was discontinued in July 1998. OK for starters, but it doesn't recognise all viruses.
- **VirusScan** from McAfee, this is shareware, and recognises most viruses.

There are quite a few virus specific eradicators on the internet.

While you wait for the anti-virus software, there are a few simple steps you can take to prevent any further damage (remember, you could have a really nasty virus that could either destroy files, or format the disk). You can; not use your Mac emulator, full stop, or use a boot disk that cannot be infected by a virus, eg. a bootable CD-ROM disk.

If you do use your Mac this way, don't launch any programs on the infected disk, as all of the executable software will no doubt be infected, and will cause further damage/infection. Do not copy any files off the infected disk either, some viruses infect documents/files as well. If you really need them, make sure the destination Mac has a virus scanner on it, so that the diskette can be repaired.

Once you have it, you need to create an anti-virus bootable floppy disk, and it has to be **write protected**, otherwise the virus will infect the floppy disk and all software on it, making it ineffective. Do this on a 'clean' Mac, in other words one that you **know** is free from any virus. Then scan **all** other floppy disks and removable hard disks.

All you have to do now, is to set up the software, to make regular checks of the hard disk and to automatically check any disks that are mounted on the desktop.

SYMPTOMS

What do viruses infect?

Normally they infect the System file and the Finder, and any programs that you either launch (if it is already in the System file) or any that are located on the hard disk. Of course, some viruses don't infect anything, but prefer to destroy files, the hard disk's directory, or just reformat the hard disk!

I'm experiencing; unexpected delays; some of my files have disappeared or won't open; and long disk accesses. What the hell is going on?

There is a destructive virus on your Mac. Get an anti-virus program immediately. If you don't have an up-to-date virus detection program, all you can do is to switch off the Mac, until you receive the software. This will render the virus inoperable for the duration. When you have the anti-virus utility, make sure the emergency disk is write protected, so that the virus cannot infect it, otherwise it'll be completely pointless trying to repair files with an infected disk/program.

Check all your Macintosh disks, so that it is utterly eradicated. Don't forget to use your backups with caution, as these may also contain infected programs/files, depending on when the virus got onto the hard disk.

You may need to re-install the System file and Finder again, if you're experiencing a lot of crashes.

What does "This disk needs minor repairs" mean, and what should I do?

It could be a virus misinforming you to write enable it, so that it can infect the disk, sneaky or what! Instead, cancel the requester and eject the disk, then restart the computer with all Extensions disabled (this will not disable the virus, but will reduce further infection just a bit). Now scan your main hard disk with an anti-virus program. Also scan the floppy disk for good measure.

If you know for definite, that a virus is not the cause, then repair it with the Finder (iffy method), or use your disk repair utility (recommended method).

Some applications refuse to launch, or crashes, how come?

Some old programs may not work with later Mac operating systems, or the program is incompatible with the Amiga's processor, particularly 68000/040/060s. I strongly recommend you get an up-to-date version of that software.

It could be a virus attack. Most viruses change or damage the code in every program it infects, rendering it either unusable or unstable. Once you have completely eradicated the infection, I suggest you bin the useless applications, then install them again.

VIRUS FACTS & INFORMATION

The European Institute for Computer Anti-Virus Research (EICAR)

<http://www.eicar.org/>

Mac Viruses FAQ

<http://www.cis.ohio-state.edu/hypertext/faq/usenet/computer-virus/macintosh-faq/faq.html>

<http://www.faqs.org/faqs/computer-virus/macintosh-faq/>

<http://emt.doit.wisc.edu/macvir/macvir.html>

<http://www.macvirus.com/reference/>

<http://webworlds.co.uk/dharley/>

Symantec Antivirus Research Centre – Virus Encyclopedia

<http://www.symantec.com/avcenter/vinfodb.html>

Mac Virus

<http://www.macvirus.com/reference/viruses.html>

Network Associates (was McAfee Associates) – Virus Information Library

<http://www.nai.com/vinfo/>

http://www.nai.com/vinfo/f_13707.asp

University of Hamburg, Virus Test Centre, Macro Virus List (THE definitive listing)

<ftp://agn-www.informatik.uni-hamburg.de/pub/texts/macro/>

<http://agn-www.informatik.uni-hamburg.de/vtc/eng.htm>

OR

<ftp://ftp.informatik.uni-hamburg.de/pub/virus/texts/viruses/>

<ftp://agn-www.informatik.uni-hamburg.de>

Dr Solomon's Mac Viral Zoo – Virus Encyclopedia

<http://www.drsolomon.com/products/virex/zoo/maczoopg.html>

Dr Solomon's Software Ltd

<http://www.drsolomon.com/vircen/enc/>

Central Command

<http://www.avpve.com/viruses/macro/>

Data Fellows

<http://www.datafellows.com/macro/>

Internet Connection Problems

To find out more information on Open Transport, Classic Networking and where to download relevant files and software updates, go to page 29.

What software do I need to connect to the internet?

You have two choices, **Classic Networking** (CN) or **Open Transport** (OT). Both require certain Control Panels and Extensions, as listed below:

CLASSIC NETWORKING...

Control Panels: **MacPPP**: ConfigPPP (see pics 7.1, 7.2, 7.3 and 7.4 on page 26); or **FreePPP** (see pic 7.8 on page 28), **MacTCP** (see pic 7.5 on page 27).

OPEN TRANSPORT...

Control Panels: Open Transport's **PPP** (see pic 7.6 and 7.7), or **FreePPP** (see pic 7.8 on page 28); **Modem** (see pic 7.9 on page 28); and **TCP/IP** (see pics 7.10 and 7.11 on page 28).

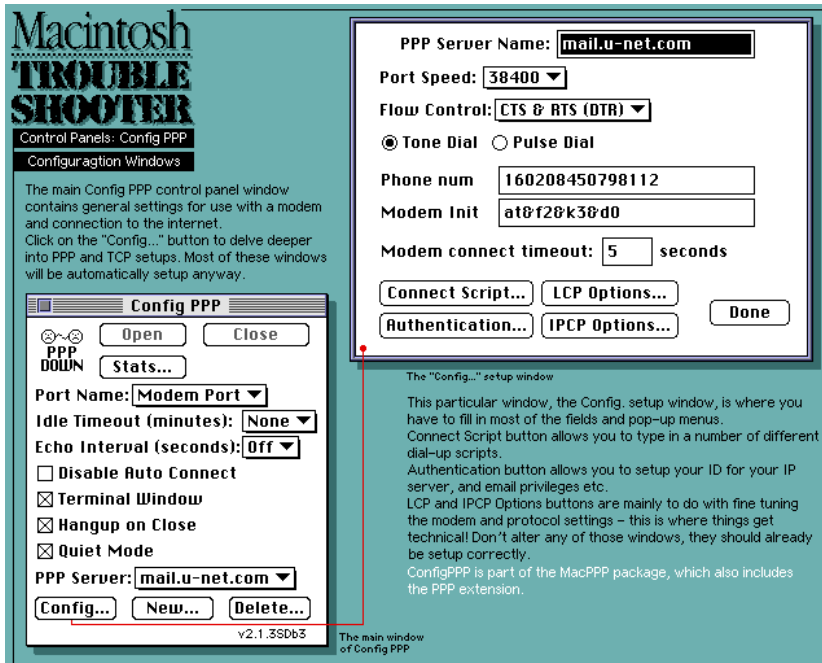
Open Transport v1.1 Extensions: **Open Tpt AppleTalk Library**, **Open Tpt Internet Library**, **Open Transport Library**, **OpenTptAppleTalkLib**, **OpenTptInternetLib**, **OpenTransportLib**.

How do I get my modem 'on-line'?

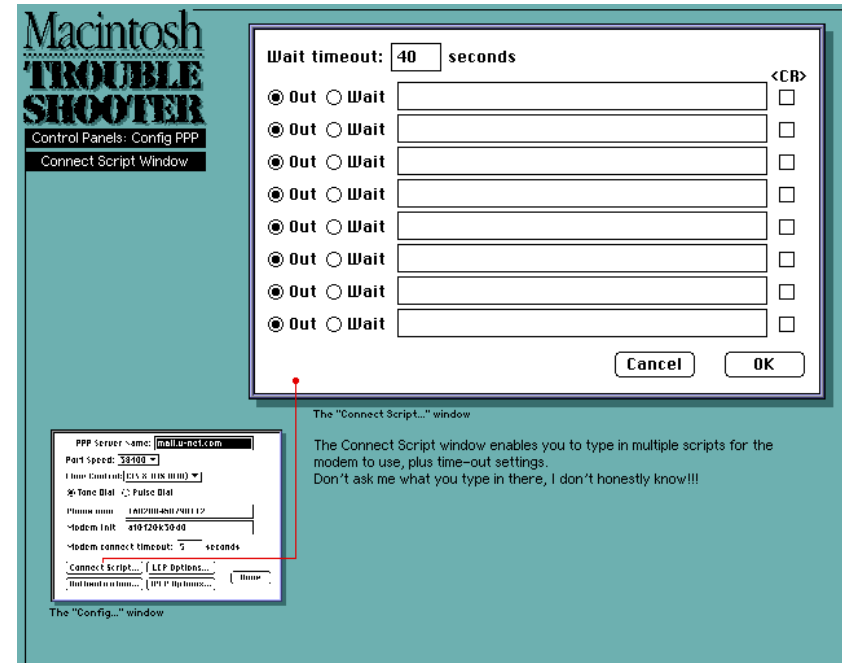
You will find that **Classic Networking** will work much better than Open Transport, but only on some early versions of MacOS. For example, System 7.5x likes Classic Networking, while MacOS 7.6 to 8.1 will tend to like using Open Transport better than CN. It all depends on what works smoothly for you!

Go to the PPP Control Panel (whatever it is you're using), and press the **Connect** button. Now you can use your internet browser, email or newsgroup program, that's it! Assuming of course that you have setup the PPP Control Panel correctly, ie. you've supplied all the relevant data into it.

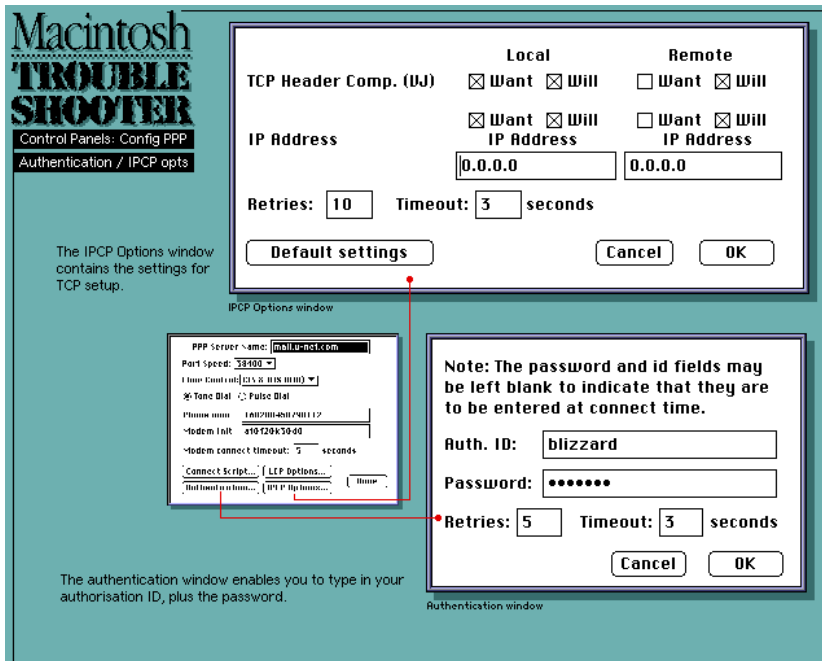
Also make sure that the modem port is free, as in, the printer is not currently setup to use that port at the moment – if it is, switch off the printer and plug in the modem and switch it on, then retry connecting via the PPP Control Panel.



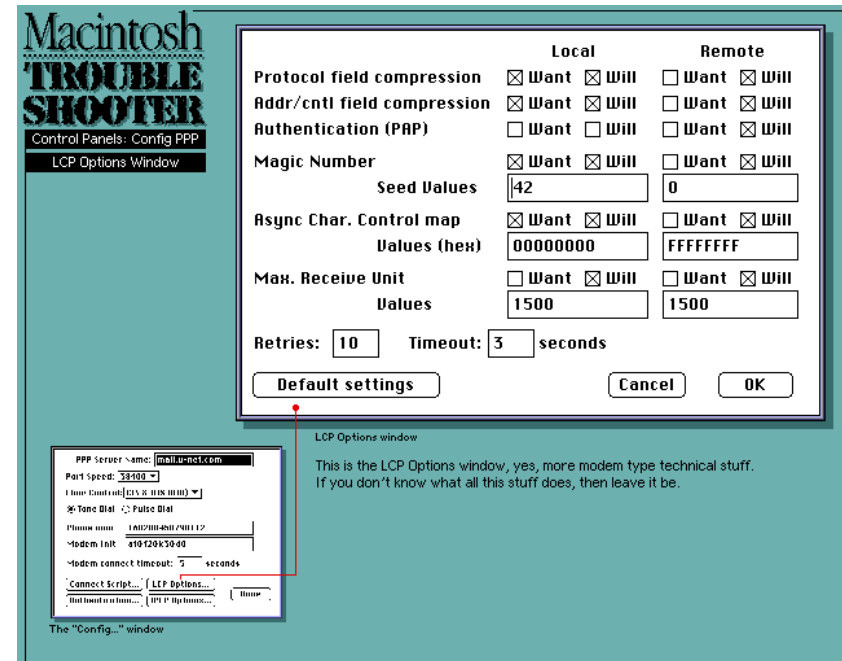
Picture 7.1 - The ConfigPPP main Control Panel window (also known as MacPPP).



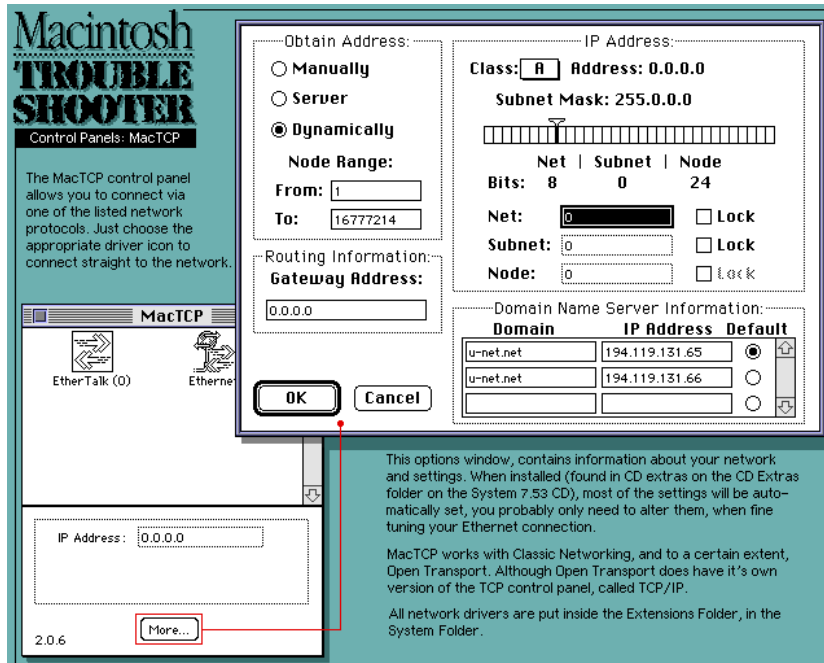
Picture 7.3 - ConfigPPP's Connect Script window.



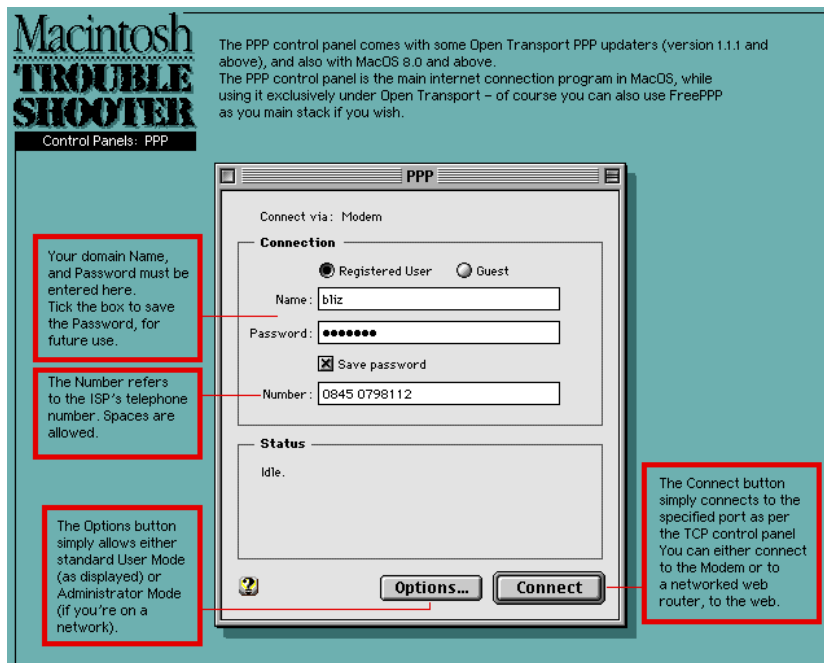
Picture 7.2 - ConfigPPP's IPCP Options window and the Authentication window.



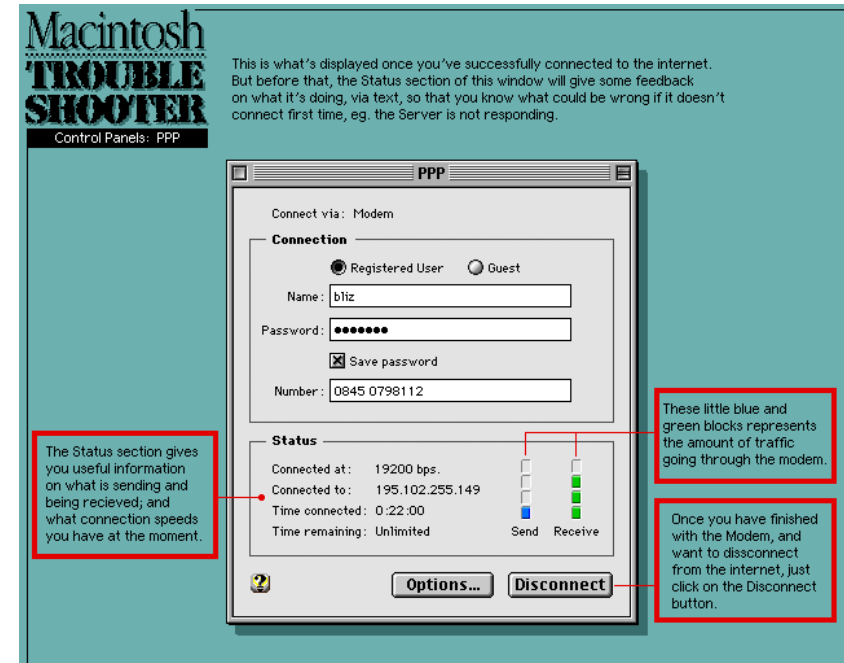
Picture 7.4 - ConfigPPP's LCP Options window.



Picture 7.5 - The MacTCP Control Panel.



Picture 7.6 - The PPP Control Panel, unconnected.



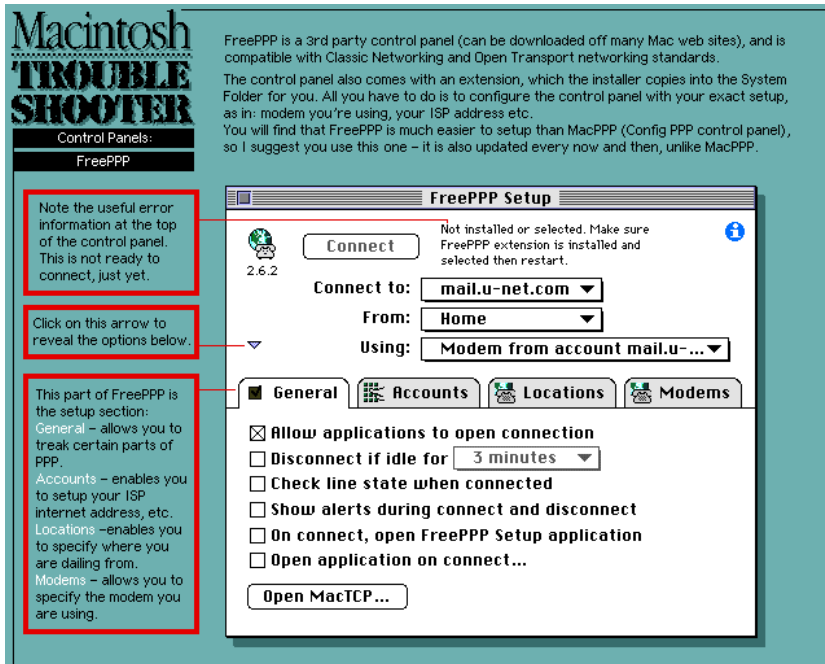
Picture 7.7 - The PPP Control Panel, connected to the internet.

Where do I type in the settings for internet access?

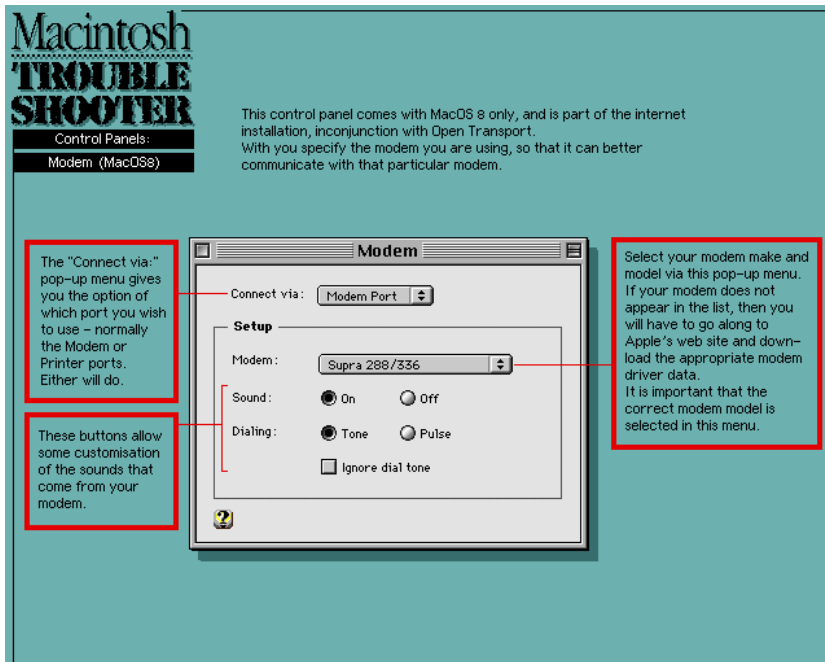
The two Control Panels you'll need to setup are the TCP/IP (Transport Control Protocol/Internet Protocol) and PPP (Point of Presence Protocol). All settings are saved in these two, however in OT, it has a modem Control Panel, which stores information on the exact modem you're using.

Please note that FreePPP will work with both CN and OT standards, except that it will be a little slower under OT, due to it not being fully OT optimised.

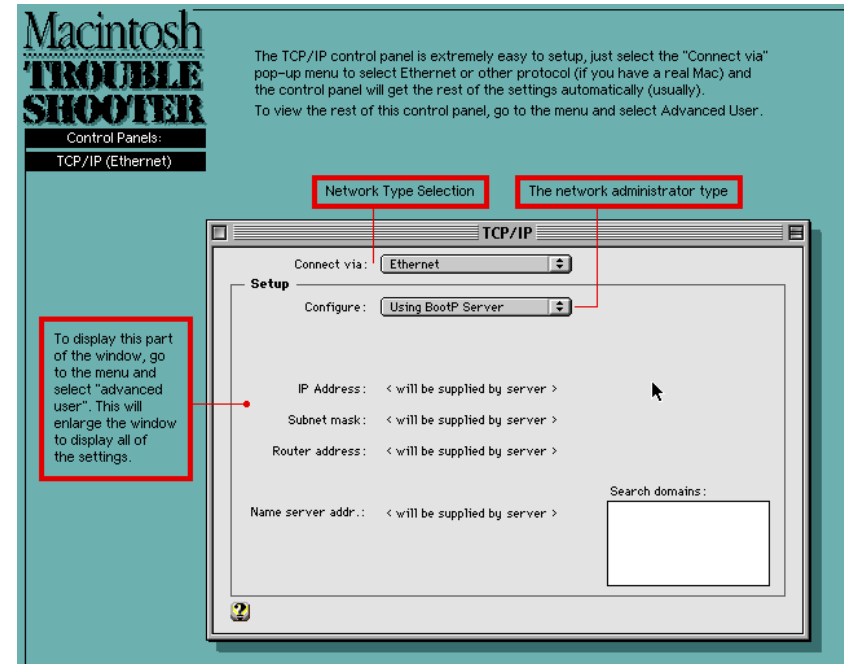
Don't forget that in MacOS 8, it has a program that will take the hassle out of setting up internet access, it is called **Internet Setup Assistant**, and can be found in the Apple menu (or do a search via the Find command in the File menu, in the Finder). You still need to know information about your Internet Provider and your modem etc, so that you can type it in the relevant boxes.



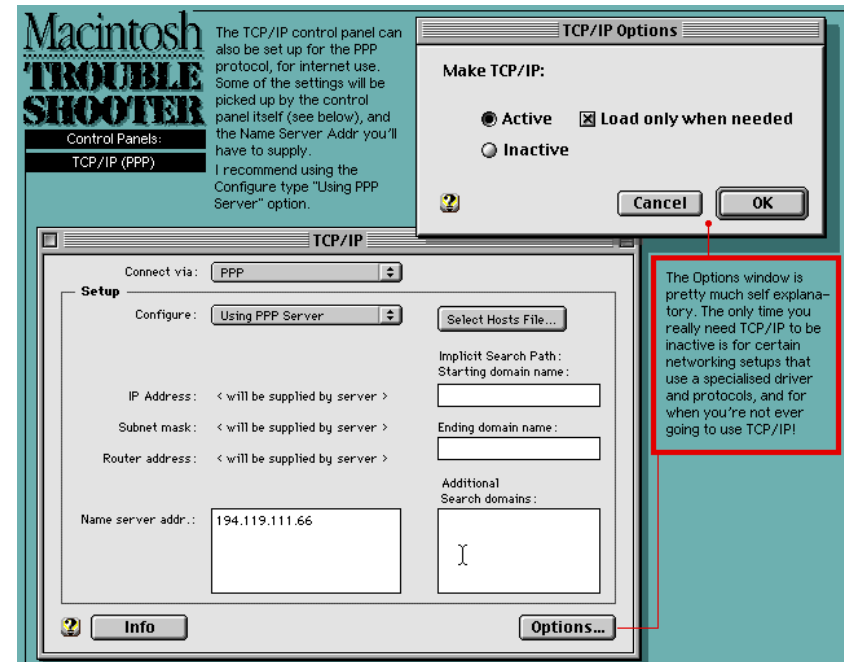
Picture 7.8 - FreePPP's Control Panel window.



Picture 7.9 - The Modem Control Panel.



Picture 7.10 - TCP/IP Control Panel's Ethernet options window.



Picture 7.11 - TCP/IP Control Panel's PPP options window.

What type of files can I download from the internet?

You have two choices; as an archive, or as 'is' (unarchived and unencoded). There are many different types of archive that are pretty much standard on Macs: HQX, MacBinary, Zip, Compact Pro, Stuffit, UUencoded and Disk Doubler being the most common.

Some files can be transported as they are, because they do not have a resource fork, only a data fork, therefore they cannot be damaged when transported onto different platforms. The type of files I've managed to download from the net, onto my Amiga, and then onto my Mac, are: PDF (Adobe Acrobat) files; SIT (Stuffit), GZIP, ZIP and LHA archive files; all types of image files (they really need a 3 character extension on the filename, for file type recognition). There may be others, but you're best sticking to these file types, and archiving any files your not sure about, before you upload them.

See page 20, **General File Problems**, for further information on transferring files to/from a foreign platform, and about archive types that are used on the Mac today.

USEFUL INTERNET INFORMATION

Downloadable Software

FreePPP and MacPPP can be obtained from:

- <ftp://ftp.tibits.com/pub/tidbits/tisk/tcp/com/mac-ppp-201.hqx>
- **FreePPP** can be obtained from any shareware web sites, eg. www.tucows.com.
- **MacPPP & ConfigPPP** is on the System 7.53 CD (v1.1).
- <http://www.info.apple.com/> – Most of the CN Extensions/Control Panels can be found here, or in the System 7.0/7.01 disk image sets.

Open Transport can be found at/in:

- The System 7.53 CD (v1.1).
- The System 7.6 CD (v1.11).
- The System 8.0/8.1 CD (v1.2).
- <http://www.info.apple.com/> – Open Transport v1.x installer + associated files.
- <http://www.tucows.com/> – OT updaters to v1.11 & v1.12.

Internet browsers:

- **Internet Explorer.**

- **Netscape Navigator.**
- **Netscape Communicator** all can be downloaded from many Mac internet sites, and from mag CDs.

Emailers:

- **Outlook Express** – free to download from most shareware sites, it's very good.
 - **Endora Lite** – from most internet sites, this is the shareware version (I think).
 - **Endora** – is the commercial version, much more features than Endora Lite.
- Other commercial software:
- **CE Quickmail Pro** (£53) – commercial only.
 - **CE Quickmail LAN** (£116) – commercial only.
 - **Claris Emailer v2** (£45) – commercial only.

Modem Compatibility:

Download an updater program called **Modem Updater v1.3**, this contains the profiles of all modems known modems (v1.21 is for USA users), however you need the updater for your particular country: ftp://ftp.info.euro.apple.com/Apple_Support/Area/Apple.Software.Updates/English-British/Macintosh/Modem/ – the last few parts is obviously for us Brits!

Open Transport PPP

System requirements: **Open Transport v1.11** or above, and Systems **7.1, 7.11, 7.12, 7.53** or later (Systems 7.5, 7.51 and 7.52 are **not compatible**), and only TCP/IP Control Panel with work with OT PPP.

Open Transport PPP can be downloaded from Apple's web site (www.info.apple.com) or from Tucows web site (www.tucows.com).

Internet Config Extension

This Extension comes as part of System 8, it is also freely downloadable from many Mac shareware sites. What this useful utility does (comes with a small program to setup your preferences) is to allow access to your personal internet setup to all other internet applications, saving you the hassle of having to setup each program individually. Most browsers, email etc, accept Internet Config as standard now a days.

Printing Problems

For more info on printing, see page 32.

For internet links to manufacturers printer driver web pages, see page 33.

Pic 8.1 is of a typical printer driver Page Setup window and Print screen.

While pic 8.2 is of the Chooser and printer driver selection.

Why are my Desktop Printer icons all crossed out on the desktop?

You are using an older version of the Postscript printer driver, than the one used to create the Desktop Printers. Restart or reinstall the version of printer driver you used to make the Desktop Printers. Also note that the Desktop Printers will be crossed out if you booted up with all system Extensions disabled, or when the Desktop Printer Extension is disabled.

How come all of a sudden, an error message has come up telling me there's a Library not found and it cannot use the Desktop Printer?

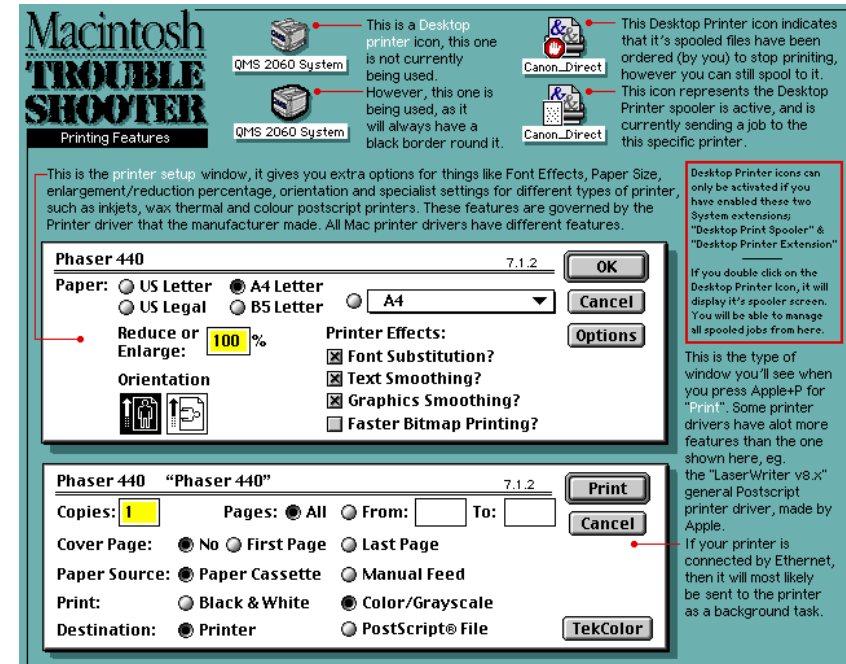
The MacOS has got confused along the way (who knows why!) and has forgotten that you already have these libraries installed (these are stored in the System file). Just reboot your Mac and it will print again.

How do I use the Desktop Printing feature?

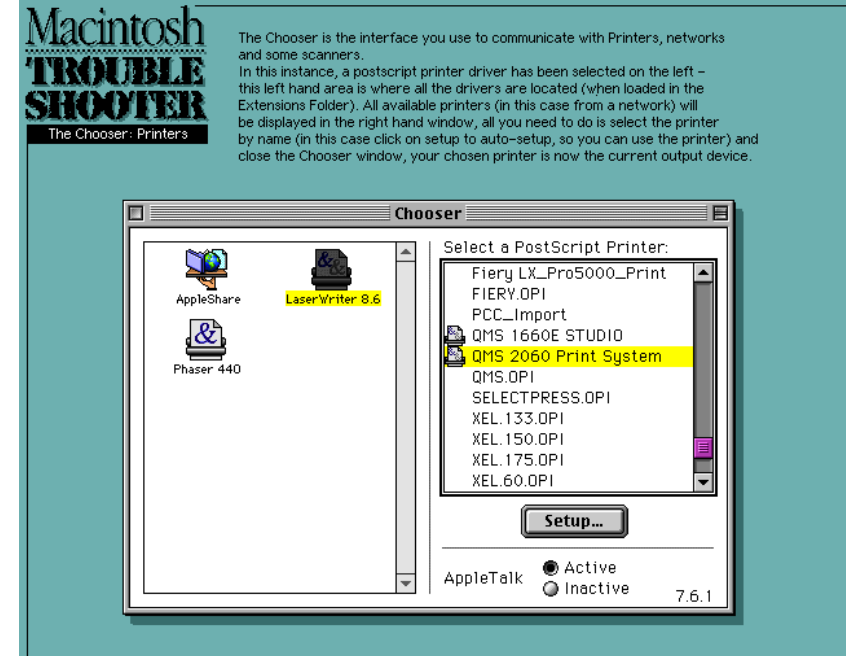
This feature came with System 7.5 upwards, and requires two system Extensions: **Desktop Printer Spooler** and **Desktop PrintMonitor**. Both can be installed individually by the System installer.

To create any Desktop Printer icon, go to the Chooser and select the printer driver, and the connection type (network or printer/modem port), then close the Chooser. Immediately after you've done that, an icon will appear on the desktop.

To view the contents of the Desktop Printer spooler, just double click on the Desktop Printer icon and it will display a list of current (if any) spooled documents. Also note that when you highlight the Desktop Printer icon or the you have Desktop Printer window is displayed, an extra menu is visible. This is called 'Printer', and is located between the 'View' and 'Special' menus. This menu controls the spooler.



Picture 8.1 - A typical printer driver Page Setup window and Print screen.



Picture 8.2 - The Chooser and printer driver selection dialogue screen.

Why won't my printer print anything?

It is a known fact that printing in ShapeShifter is at best a lost art, it is very picky about how you've setup your System – Classic Networking will have better success than Open Transport will. If you have OT installed but not Classic, then I'd recommend you to reinstall your System Folder again, this time without OT (it stores OT code in the System file, which may interfere with the connection process to the printer, and a modem).

I've tried OT and printing, and it doesn't work with my Epson Stylus 500, at all! As for Fusion, well, this is much less hassle to setup and get working.

- 1) You might need a bi-directional parallel cable (PCs use them).
- 2) Check that the printer is switched on, cabled up properly, and the parallel port is selected in ShapeShifter's/Fusion's setup window, before you select the driver icon in the Chooser.
- 3) If it is a dot matrix printer, then you can try **Chucks Printer Driver**, it can be downloaded from any internet site. It is basically a generic printer driver – it does work.
- 4) Did you get a Macintosh printer driver disk supplied with the printer? If you did, then all you need to do is to install/copy it into the System's Extensions folder. You should see it in the Chooser after you have restarted the Mac. It is imperative that you use a driver for your model of printer, otherwise it will not work properly.
Many manufacturers supply their printer drivers on their web sites, so you may need to download the latest version. See their documentation for the web address, or go to Peter's Amiga Homepage at www.blizzard.u-net.com, which contains a wide selection of printer driver links/URLs to either the manufacturer's web site or to 3rd party web pages.
- 5) Try an **older** version of the driver. The one you're using could be incompatible with Mac emulation, or your particular version of MacOS.
- 6) Is the correct printer driver and the Printer Port, selected in the Chooser? If you don't select these in the Chooser, the data cannot be directed through the parallel port.
Or you could try **Power Print v4.0**, from Infowave, it allows you to use parallel printers – it's a lot like the Amiga's TurboPrint package.
- 7) Make sure AppleTalk is Inactive. If it is On, switch it off via the Chooser, and restart the Mac.
- 8) Are you using the correct version of Laserwriter, version 7.x is Postscript Level 1 compatible, while Laserwriter 8.x is Postscript Level 2 compatible.

- 9) You can only use Ethernet or parallel port compatible printers.

I'm trying to print a document, but it keeps giving me error messages, or crashing?

It is highly likely that there is something wrong with the file that you're trying to print;

- 1) The doc is using a corrupt font – see page 22, **General File Problems**, for; **“Some fonts don't appear to work..”** for info on how to find a damaged font suitcase.
- 2) Check the **Page Setup**, has the correct printer settings. If you're using a PS printer, make sure the correct PPD (or whatever description file you're using) is selected.
- 3) If you are using Background Printing, the spooled print job file may be damaged – delete it and try it again. If this still doesn't work, run a disk repair program on the System hard disk.
- 4) You may be trying to use PostScript fonts on a non PostScript printer, only TrueType fonts work with bitmap and PostScript printers.
- 5) There may be a corrupt element in the document you're trying to print. Resave the doc with a different filename, or copy all elements out and into a brand new document, now try and print it.
- 6) There maybe a picture in the document that the printer is having trouble rendering. Try simplifying the image, ie. reduce the resolution/file size of the pic, and/or reduce the number of colours it is using, say, to 256 colours.
- 7) Have you setup the Print options correctly... such as the proper paper size eg. A4 (sometimes called Letter), and the correct printer dpi.

Can you print using an Ethernet card and compatible printer, in SS/Fusion?

Yes, provided you have set up all the networking equipment correctly (the Amiga Ethernet card, the Amiga driver software, plus cables), for ShapeShifter and Fusion.

You should be able to set up Ethernet software from 7.1 with the Tune-up updater, up to 7.55 with classic networking (no Open Transport).

Open Transport requires System 7.5 and above, this is probably much easier to setup, than classic network software.

By John Blyth (Australia)

As for Ethernet compatible printers, most of them are Postscript (PS) laser printers, although they are quite hard to find they are gradually growing in number. I'll list a few:

- Apple Laserwriter IIG
- Epson Stylus Colour1520 (1440dpi A2 PS colour inkjet),.£451 ex VAT
- GCC Elite 12/600.(600dpi B&W A4 PS laser printer),.£849 ex VAT.
- GCC Elite 1212.(1200dpi B&W A4 PS laser printer),.£999 ex VAT.
- GCC ELite XL616.(600dpi B&W A3 PS laser printer),.£1299 ex VAT.
- Lexmark SC1275.(600dpi Colour A4? PS laser printer),.£2419 ex VAT.

NOTE: It is impossible to print via LocalTalk, on a standard Amiga.

Do I need any special software for Ethernet printing to work?

Yes, just the printer driver software for your make of printer.

Postscript printing via an Ethernet card to either a directly connected printer, or even a networked printer, all work as per standard Mac OS printing procedures; everything is handled by the driver. It will also work with Desktop Printer icons.

By John Blyth (Australia)

Do I require a PPD file for my printer?

No. Only Postscript Level 2 printers use PPDs, all other types of printer just require it's printer driver. The printer driver always affects how the Print window will look, it is different for all makes of driver, in layout and what options are available to you.

POSTSCRIPT PRINTING PROBLEMS

Laserwriter 8.x doesn't work with System 7.6x, how come?

All 68k Macs cannot use Laserwriter v8.43 in System 7.6 without the **CFM-68k Runtime Enabler v4** Extension installed in the System Folder. This applies to all versions of Laserwriter v8.4 and upwards. This Extension may also be worth while installing for older versions of Laserwriter v8.x, it'll reduce crashing to an absolute minimum. Look in Apple's web site (www.apple.com) to download some later versions of Laserwriter 7 and 8.

Note: System 8.x does not require this extra Extension, as it is now built into the System file.

Nothing will output from my laser printer, or the Mac crashes regularly when printing, why?

Some programs may not like your current version of Laserwriter 8 or PSPrinter, in which case use an older version. The oldest (but non buggy) versions I'd recommend using, are; Laserwriter v8.43 and/or PSPrinter v8.31. As for Laserwriter 7, use v7.2 or later.

USEFUL PRINTING INFORMATION

The Chooser

Allows you access to devices connected to a normal Mac's Modem or Printer ports (parallel or serial ports to you and me). It is also the only way to choose a printer as the current output device – you have to select a printer driver in the Chooser, before you can print anything.

This is also where Background Printing and AppleTalk can be turned off or on. Amigas cannot support AppleTalk, because it is a hardware feature of real Macs.

The left hand side of the Chooser window lists all available **Printer Drivers, Network Drivers, and all other driver icons** that'll use the Printer and/or Modem Ports, except for modems, which only requires the PPP and TCP/IP Control Panels. Just click on any driver icon to activate it – now go to the right hand side of the window. This panel should list either the Modem or Printer port icons, if your printer is connected directly to your mac, or any networked printers, it should appear as a list. All you have to do is to highlight the printer name or the port it is currently connected to.

If your network has **Zones** (individual network groups that are connected together), then these will appear underneath the printer and network driver panel. To select a Zone, simply highlight the Zone name, and then go the right hand side again to make your printer or server selections again.

Printer Drivers

All Mac compatible printers come with a floppy disk, with the printer driver on it (usually with an installer present). The Printer Driver always goes in the System Folder/Extensions, and is accessed via the Chooser (via the Apple icon menu). For every model of printer, there is usually a different printer driver for it, don't assume one will work with another similar make, because it won't.

At the moment there are two Postscript (PS) Level 2 printer drivers that

work with every PS printer, and they are Apple's **Laserwriter 8** and Adobe's **PSPrinter**. Laserwriter v7.x will only work with Postscript Level 1 printers. Also note, that some programs prefer PSpriinter rather than Laserwriter, such as Pagemaker (also from Adobe).

The best versions of these two postscript printer drivers, are: Laserwriter v7.2 upwards, Laserwriter v8.34 upwards and PSpriinter v8.31 and above (Laserwriter 8.4+ requires the **Finder Scripting Extension**, in order to work properly) – these have most of the bugs ironed out of them. To get the latest version, visit Apples web site: www.info.apple.com/

Printing Software

PowerPrint v4.0 (\$99) is a software package that is similar to the Amiga's TurboPrint package, basically what it allows the Mac to print to serial or parallel port compatible printers. See Infowave's web site: www.infowave.net.

Note that the latest version (4.5) **requires** that you use the Mac to PC cable converter, this will not work on the Amiga, instead try and get v4.0.

Another useful utility from Infowave is **StyleScript** (£70). This program allows you to use Postscript with Postscript incompatible inkjet printers – it basically converts the PS language into a bitmap image before it goes to the printer.

Background Printing

This spools the print job to the hard disk and then proceeds to send the data to the printer as a background task, allowing you to do other things. The program that usually handles this is **Print Monitor** (an Apple program), which is located in the Extensions folder.

To enable background printing, either call up the Chooser in the Apple menu, and click the **On** button under the title **Background Printing**. Or, when using Laserwriter 8.x, go to the Print window in any application, and select Background Printing, in the pop-up menu and activate it from there.

PPDs

These are Postscript Printer Description files, and are used in conjunction with Postscript Level 2 printers and the Laserwriter 8 printer driver. PPDs contain device specific information, so that you can setup certain options in any application, such as paper and resolution. Other types of printers do not require PPDs, just the printer driver in the Chooser window.

Desktop Printer Icons

These are introduced in System 7.6 upwards, they allow easier access to printer selection and printing of documents via drag and drop.

PostScript

Is an industry standard printer language. It describes an entire document (when sent to the printer) as a list of instructions, which explains how the page(s) should be printed. This means it is Resolution Independent, as in it can be scaled and output in any number of different ways and still retain it's **exact** layout without any loss what's so ever.

Printer Fonts

This term actually refers to the Postscript fonts (stored on your hard disk). These are downloaded to the printer, at the same time you send your document. You can always tell if a file is a Postscript font, by the icon, and by it's 'kind' in the Get Info window.

PRINTER DRIVER WEB PAGES

This is a complete list of manufacturers, and where you can download their printer drivers.

Apple	http://www.apple.com/laserwriter/
Atari	http://www.lapd.demon.co.uk/
Brother	http://www.brother.com/eu-printer/dlupdate.html
Canon	http://www.europe.canon.com/drivers/printers/
Citizen America	http://www.citizen-america.com/drivers/index.htm
C.ltoh	ftp://www.citoh.com/
Dataproducts	http://www.dpc.com/market/tec_drvr.html
Digital	http://www.pc.digital.com/~ftp/options/printer/digital/
Epson Printer	http://www.epson.co.uk/support/download/
Fargo	http://www.fargo.com/support/driver_list.html
GCC Technologies	http://www.gcctech.com/support/swol.html
Hewlett Packard	http://www.hp.com/cposupport/nonjsnav/prhome.html Freeware printer driver: HPDJ 3.1 (by Marius Lichte (Germany))
IBM	http://www.printers.ibm.com/driver.html
Kyocera	http://www.kyocera.co.uk/htdocs/drivers.htm

LaserMaster<http://www.lasermaster.com/tech/arch.html>
Lexmark<http://drivers.lexmark.com/drivers.nsf>
Microsoft Printer<http://www.microsoft.com/uk/>
NEC Printer<http://cssweb.nectech.com/drivers/printers.htm>
Okidata<http://www.okidata.com/drivers/drv-main.html>
Panasonic<http://www.panasonic.com/host/support/drivetop.htm>
Olivetti<http://www.olivettilexikon.com/uk/software/index.html>
Olympus Printer<http://www.olympusamerica.com/printers/downloads/download.html>
QMShttp://www.qms.com/www/QMS_Soft.html
Star Micronics<http://www.starmicronics.com/>
Radio Shack<http://support.tandy.com/soft.htm>
Tektronicshttp://www.tek.com/Color_Printers/
Texas Instruments<http://www.ti.com/printer/docs/p20a.htm>
Toshiba<http://www.toshiba.com/>
Xerox<http://www.xerox.com:80/soho/drivers.html>

Networking Problems

CONNECTING TO A MAC NETWORK

To find out more information on Open Transport, Classic Networking and where to download network related software updates, see page 38.

Can I use Amiga Ethernet with Mac emulation?

Yes, as long as you don't want to use any TCP/IP based programs simultaneously, because the hardware doesn't appear to be able to discern between the Mac & the Amiga (they both want the same hardware address for the same sort of packets). AppleTalk/Ethertalk, AMIGA TCP/IP and the Mac based Novell (nds) client will all happily co-exist. The Novell client for the Mac does require ShapeShifter 3.9 to work fully (its fairly sensitive to the internal Ethernet calls).

You also have to manually choose the right protocol in the MacIPX Control Panel (it sometimes gets stuck – just delete the MacIPX prefs and start again).

By John Blyth (Australia)

What software do I need for networking?

You have two choices, **Classic Networking (CN)** or **Open Transport (OT)**. Both require the standard MacOS Ethernet driver Extensions, and Open Transport or Classic Networking Control Panels;

CLASSIC NETWORKING...

Control Panels: **MacPPP+ConfigPPP** or **FreePPP**, **MacTCP**, **Users & Groups**, and **Sharing Setup**.

Extensions: **Ethertalk Phase 2**, **Network Extension**, **File Sharing Extension** and **AppleShare**.

OPEN TRANSPORT...

Control Panels: **PPP** or **FreePPP**, **Modem**, **TCP/IP**, **Users & Groups**, and **Sharing Setup**.

Open Transport v1.1 Extensions: **Open Tpt AppleTalk Library**, **Open Tpt Internet Library**, **Open Transport Library**, **OpenTptAppleTalkLib**, **OpenTptInternetLib**, **OpenTransportLib**.

Other Extensions: **Ethertalk Phase 2, Network Extension, AppleShare,** and **File Sharing Extension,** and **Printer Share** (if you plan to share the printer connected to your Amiga).

***Do not** use these Extensions: Ethernet CS, Ethernet NuBUS or Ethernet LC. Also, AppleShare versions **3.64** and **3.65** in System 7.6x, it will cause ShapeShifter (any version) to freeze, use v3.62 from System 7.53-7.55.

***By John Blyth (Australia)**

How do I connect to a network, via Classic Networking?

Make sure that you have installed the CN Control Panels, the Ethernet driver, and network server Extensions (if you need it), and that your Ethernet card is working.

Now go and open the **Network** Control Panel, you should see the Ethernet/Ethertalk icon, select it should tell you that the previous network connection is now unavailable, press OK (CN allows you to use only one type of network at any one time).

Now open the **MacTCP** Control Panel, and select the protocol you wish to use, Ethernet in this case (note that some internet settings are located here as well), click on the more button to fine tune your settings. You are now connected to the Ethernet network.

If you get a message saying that you cannot connect to an Ethernet network, then check;

- 1) The Ethernet card is functioning properly.
- 2) ShapeShifter/Fusion, has the correct Ethernet driver is selected.
- 3) That you have all the appropriate Extensions in your System Folder (see above).
- 4) The File Sharing Control Panel, it should have an Owner Name, and a Computer Name, if they don't, then filled them in (any name you like) – networking will not work without these user names.

How do I connect to a network, via Open Transport?

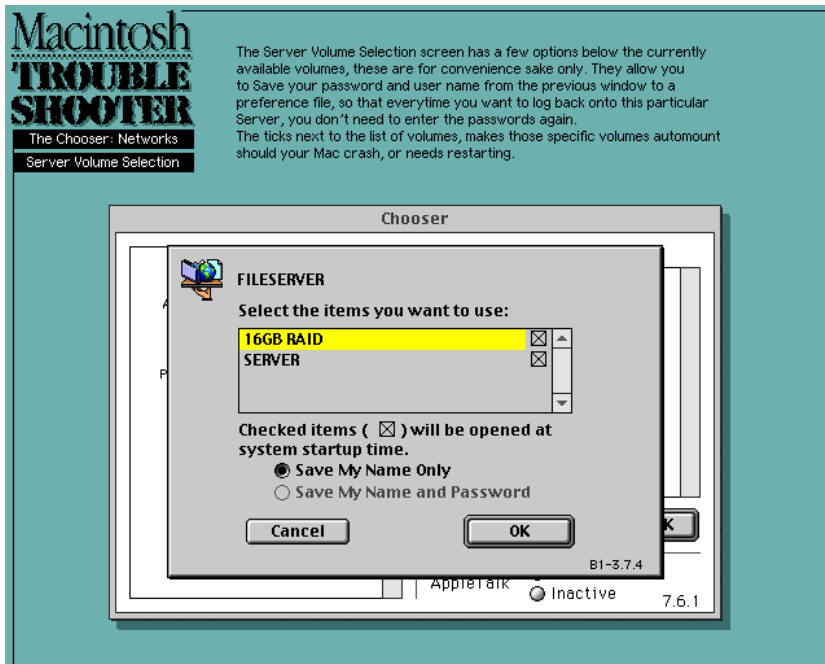
Open the AppleTalk Control Panel, and select Ethernet from the pop-up menu (this will display all available communication ports open to you), now go into the Options screen and make any additional settings. Also check that the TCP/IP Control Panel's settings for Ethernet are also correct. You may need to get some information from your Network Administrator, such as passwords, and the current protocol that is in use.



Picture 9.1 - Selecting a Fileserver - Choose the server by name.



Picture 9.2 - Selecting a Fileserver - Type in the password, or be a guest.



Picture 9.3 - Selecting a Fileserver – Select the volumes to mount.

Check the File Sharing Control Panel has an Owner Name, and a Computer Name, if they don't, then fill them in with your name and the computer's name (it doesn't need to be anything specific). All you need to do now is to select a network service (Server or Printer etc) from the Chooser.

Select a Fileserver via the chooser, see pics 9.1, 9.2 and 9.3 on page 35.

Should I use Open Transport or Classic Networking software?

This depends on the emulator you're using. If you're using ShapeShifter, then Classic Networking will work – Open Transport just refuses to play along. However, if you're using Fusion, then you should be able to use both OT and CN. Again CN is much more compatible in emulation than OT.

How do I connect to a single Mac?

This is done via the **File Sharing** Control Panel. Check that AppleTalk is enabled (in the Chooser). Open the Control Panel called **Network**, you have two choices, Localtalk or Ethertalk, select Ethertalk (it should display the AppleTalk and Ethertalk versions, also in this window).

Your next port of call is the **Sharing Setup** Control Panel. Enter the owner

of the Mac and give it an unique name. This name will later be shown in the list of available Mac servers in the Chooser. All you have to do now is to click on the Start button in File Sharing, then restart the Mac. Note: whenever you disable or re-enable AppleTalk, you **have to** reboot the Mac again.

In the **Users & Groups** Control Panel, give the guest account full access. Now enter the Chooser again and select the AppleShare Icon. In the right window there should be the other Mac Servers. Select the one you want to connect to and change the log-in from 'registered user' to 'guest'. Now you have a list of all the volumes on this server that you can connect to. Now choose the volume you want to mount. The selected hard disk should immediately show up on the desktop.

If all has gone to plan, you should be able to copy files to and from the 'shared' volume or load programs directly from the other Mac. If you want to disconnect from the shared hard disk, all you need to do is to drag the volume's icon into the trashcan.

By Marius Lichte (Germany)

What is the best way to get it up and running, without much trouble?

- 1) *Use the latest version of your emulation program, eg. ShapeShifter 3.10 or Fusion 3.1.
- 2) *Make sure your Ethernet setup is connected, and terminated.
- 3) You should be able to install OT on top of your present System, provided you do it via the installer, it will not work by simply copying the Extensions over, since the System file needs modifying as well. CN just requires the appropriate Control Panels and Ethernet drivers. If you still have problems, especially with System 7.53/7.55, reinstall the System software again except this time install both OT and CN – don't forget that you need the Network Software Selector program, to switch between Open Transport or Classic Networking (which is also installed with OT).
- 4) *Don't use the AppleShare Extension that comes with System 7.61 – if you propose to use your emulated Mac on a network under ShapeShifter up to 3.9, it'll freeze your Amiga when you bootup. To stop it from loading, press the SHIFT key right at the beginning of the startup sequence to disable all Extensions. Take out MacOS7.61's AppleShare and put in an older version, eg. from System 7.55, and reboot.

***By John Blyth (Australia)**

CONNECTING TO A PC NETWORK

How do I connect my Mac emulator to a Windows '95/98 PC?

The problem here is to make both computers speak the same language. Macs use AppleTalk, while Windows uses SMB (Server Message Block). There are two ways to get these computers to talk:

- 1) Make Windows speak AppleTalk, by installing **PC MacLAN** on the PC. PC MacLAN is a commercial software available from Miramar (info at: www.brainworks.de). There is also a time limited demo version you can download (it works with SS).
- 2) Make the Macintosh speak SMB, by installing **Dave** on the Mac. Dave is a commercial software available from Thursby, (info at: www.thursby.com or www.prismaexpress.de). Unfortunately **Dave doesn't work** very well in SS, it crashes a lot.

Networking with Shapeshifter:

I have two Amigas here, both equipped with Ethernet Boards, and have successfully tried some networking between Shapeshifter and a Windows'95 PC with Novell Netware. These setups work:

- Connect ShapeShifter with System 7.5 to Netware 4 via the Mac Client.
- Connect ShapeShifter with System 7.1 to Netware 4 via the Mac Client.
- Connect ShapeShifter with System 7.5 to a Win95 PC via PC-MacLAN.
- On a real Mac, running SoftPC, connect to a Netware 4 Server – this may work on ShapeShifter too!
- Dial into BBS via a modem connected to a Multiface III serial port.
- Print on my laser printer attached to the parallel port of the Multiface III.

Things that I have tried and that gave trouble:

- Use Dave (SMB Client) on Shapeshifter = it crashes!
- Connect to the internet with the modem = hangs on configuring PPP!

By Marius Lichte (Germany)

Is it possible to connect to another PC while running PC emulation in Mac emulation?

It does work, honest!! Start a PC emulation like SoftPC 3.0 or SoftWindows 1.0.1 under Shapeshifter, this should work quite smoothly. You need:

- **LSL.COM** – Version 2.14 or higher; found on your PC NIC driver disk.
- **etherspc.com** – From Softwindows 1.0.1 or 2.0.
- **IPXODI.COM** – Also found on your PC NIC driver disk.

- **NET.CFG** – Editable file to load the etherspc and set the right ipx frame.
- A client program like **NETX** or **Netware Lite**.

You can connect to a Netware Lite Server or an old Netware 3.x Server this way. Basically every DOS based IPX Network solution should work. This is a really nice feature, as it is not possible with Amiga PC emulators – PC Task and PCx do not have Ethernet support.

By Marius Lichte (Germany)

How do I connect my Mac emulator to a Windows NT4 Server?

This only works with the NT4 Server version. The Volume to be exported should be in NTFS Format because of the long filenames.

Windows NT has Macintosh support already built-in. This can be installed under Network/Properties. Click Services and then **add**, then choose **Services for Macintosh** in the upcoming list view. After the installation is complete, the NT Server shows up in Chooser/AppleTalk on the Mac. NT Volumes can be exported via the FileManager (MacFile/Create new volume) They are accessible in the same manner as MacVolumes.

By Marius Lichte (Germany)

How do I connect my Mac emulator to a Novell Netware Server?

I won't explain the installation of the Server here. This is recommended for advanced users as the installation is quite difficult. You'll want to connect to an existing Netware Server. Ask your Netware administrator if the Mac Namespace is enabled on the Server.

First you need the Netware Installation CD. Insert it while ShapeShifter is running. Open the CD Icon and start the MacOS Clients Installer. Select **Netware Client for MacOS**. After the Installation has completed restart the Mac. Check the status of MacIPX is running on Ethernet. The title bar should have a new symbol (the tree). Select configure to find your favourite Netware Server. Ask your Netware administrator about the entries in the context field. You can mount the Netware volumes on the Mac with the **Netware Volume Mounter** in the folder **Netware Client Utilities**. With the **Netware Directory Browser** you can search the whole NDS tree for volumes and printers to mount. I have used this and it works very well, even under System 7.1.

By Marius Lichte (Germany)

How do I connect my Mac emulator to a Linux box?

I can't tell you anything about installation or usage, but only the required software for Linux. The software is called **Netatalk**, it is part of many Linux distributions. Netatalk is, as with most Linux software, free to use.

By Marius Lichte (Germany)

USEFUL NETWORKING INFORMATION

About Ethernet

There are two types of Ethernet (usually supplied on separate cards), they are; 10Base-T (10 megabits per second) standard Ethernet, and 100Base (100 megabits per second) fast Ethernet.

Ethernet is just a type of hardware networking, it doesn't effect standard network protocols. Also, you only require the MacOS installed network Extensions, and the Amiga's own drivers for the card, then all you have to do is set it up in Fusion or ShapeShifter.

About Classic Networking

This can be installed on all Systems up to MacOS 7.55, it is still possible to use it in 7.6 to 8.1 (Open Transport (OT) is standard in these OSs), and you need the **Network Software Selector** program, to switch between one or the other, you cannot use both OT & Classic Networking (CN) at the same time.

It consists of two Control Panels and Ethernet system Extensions (Apple drivers). Classic Networking is biased towards AppleTalk as it's main communications protocol, this meant that all other protocols were translated into AppleTalk, before being sent over the network.

About Open Transport

Requirements: a 68030 processor or higher; compatible with Systems 7.1, 7.11, 7.12, 7.53 and above, and a minimum of 5mb of total RAM.

Open Transport is much faster than Classic Networking, and is not biased towards any one protocol, instead, it supports them all. OT uses two Control Panels, AppleTalk instead of Network, and TCP/IP instead of MacTCP, plus all the OT library files (you may have less libraries with later versions of OT). Note that you cannot use OT and CN Control Panels at the same time, the System will remove both of the CN Control Panels after the next restart, permanently! Also note that you can use FreePPP with OT, instead of Open Transport PPP, but not both at the same time – do not mingle the two

standards of networking, it'll cause a lot of crashing.

The latest version that can be downloaded from the internet is v1.12 (this is only an updater), you need an installed version of Open Transport 1.1 or 1.11, to begin with. It can be obtained from, www.tucows.com or www.info.apple.com, and can be installed from these System CDs: System 7.53 CD (**OT v1.1**), System 7.6 CD (**OT v1.2**) and System 8.0/8.1 CD (**OT v1.3**).

The Chooser

Is the only application that allows access to any networked printers and Server volumes. You can also turn Background Printing and AppleTalk on or off (Amigas do not support AppleTalk, because it is a hardware feature of real Macs).

The left hand side of the Chooser window lists all available Printer and Network drivers, just click on the AppleShare driver icon to activate it – now go to the right hand side of the window. This panel should list all network Servers and any 'shared' hard disks/volumes in your particular zone. To select a Server volume or shared hard disk, double click on the Server's name (the one that owns the volume you want to mount on your desktop), it will show another window with a list (assuming it is not password protected) of all the Server or Mac's partitions and hard disks. Highlight the ones you want (Shift+click) and press OK. They will now appear on your desktop, and should be fully accessible.

If your network has more than one **Zone**, eg. different departments with their own network, then these will appear underneath the printer and network driver panel. To select a Zone, simply highlight the Zone name, and then go the right hand side again to make your printer or server selections.

File Sharing

This term actually describes an individual user enabling his Mac's hard disk to be accessed over a network, by all other networked users. This is NOT a File Server, but more of a temporary way to gain access to a specific hard drive.

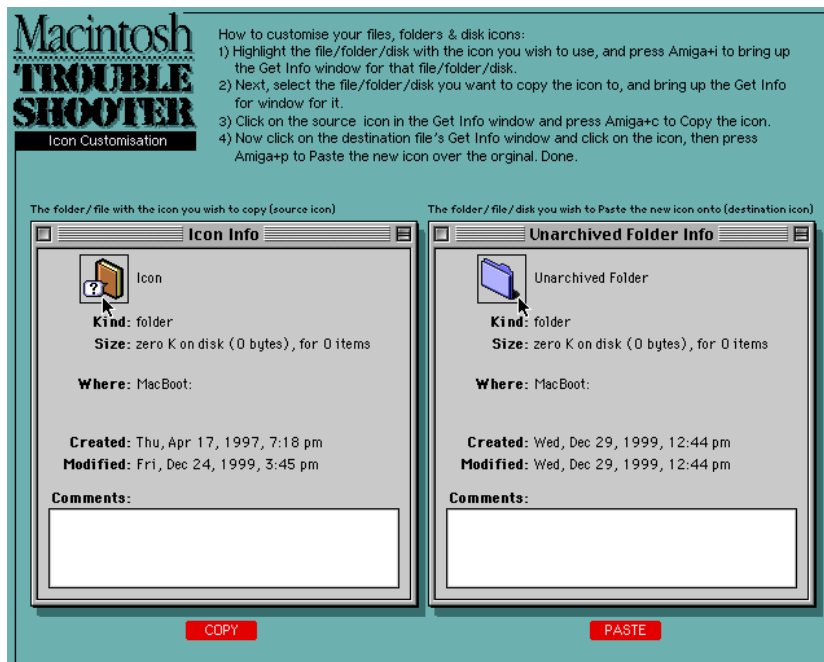
Also note, that when you share a disk (any local volume on that Mac), you can set certain privileges that other users have to use, eg. read-only, access to a specific folder or read & write to any part of the disk. This is all accomplished via the File Sharing Control Panel.

General Mac OS Problems

How can I customise files and folder icons in MacOS?

It is very simple to copy icons from one icon to another. All you need to do is highlight the file with the icon you wish to copy, and type **Amiga+i** to bring up the Get Info window, then click on the icon in the top left corner, and press **Amiga+c** keys, to copy the icon. Then bring up the Get Info window on the file, folder, or disk you wish to copy the icon onto. Simply highlight the destination file (or whatever) and bring up it's Get Info window, then click it's icon on the top left and press **Amiga+p**, to paste the new icon over the destination file's original icon. Don't worry, the destination file's original icon will be kept – if you wish to Clear or Cut the custom icon from file/folder/ disk the original icon will re-appear.

This pic (10.1) will explain it a bit better.



Picture 10.1 - How to copy icons using the Get Info windows.

The Mac is slowing down considerably, when booting up, accessing menus, and programs take ages to load up – what's causing this, and how can I get it back to it's normal speed?

There are any number of reasons why this phenomenon occurs. However the main reasons are;

- 1) The PRAM's data (Parameter RAM) is corrupted – zap the PRAM via the usual key combination (press **Amiga+Shift+p+r** right at beginning of the startup process).
- 2) The Finder's preference file is corrupted – bin it and restart (you may need to bin some other system related preference files also, eg. the Control Panels' prefs).
- 3) The System and the Finder are damaged, and needs replacing. Perhaps reinstall the System?
- 4) Your Mac has an active virus on the hard disk, which is busy causing havoc with your files. Run a anti-virus program on all your disks to eradicate it completely.
- 5) The hard disk is 99% full, and there's barely enough room to create temporary files, and save your documents. Or the free space on the hard disk is highly fragmented. A full optimisation of the hard disk will solve that problem, or a full backup then a restore.
- 6) Your Mac emulation does not have enough RAM given to it for to run smoothly.
- 7) You've switched on virtual memory – this can slow down 680x0 Macs, due to the lack of sufficient speed of the CPU and the size and version of your current system configuration. Switch it off.
- 8) Finally, if all else fails... reinstall your System Folder again. No doubt your old System has got so bloated with rubbish, and conflicting Extensions, that it has overloaded your computer. Before you do a reinstall, restart with the Extensions disabled (hold Shift key during bootup), and see if the slow down still occurs. If it doesn't, then you'll either have to have a major sort out of your System Folder (disable some Extensions & Control Panels), and any loose files in the System Folder, or do a clean installation of the MacOS again.
- 9) The system you have installed is too demanding for your CPU. You're probably better off going back a version, eg. System 7.53/7.55, so that your CPU can handle it better.

Contextual Menus have stopped working in MacOS 8, why?

This can be caused by the Finder preference file being damaged, in which case find the file and put it in the bin, then reboot. Or it could be that the Contextual Menu Extension is damaged, was disabled, or it was deleted, in any case you're going to have to reinstall the Extension again.

How do I turn off the empty trash warning?

Go to the wastebasket/trashcan, highlight it and press Amiga+i to bring up the Get Info window. At the bottom of the window will be a tick box and a message next to it saying "Warn me when emptying the wastebasket/trashcan". Click on the tick box so that the X does not show anymore, it is now disabled. See pic 10.2.

I recently started to get this message; "Cannot open: too many files are open", and it won't let me open any files... Why is this happening?

You've opened up too many files – 'files' mean: documents and screen-font suitcases. Close down some of the documents that you've kept open, and disable some fonts, via a font manager or take them out of the System Folder's Font folder, then re-launch the program you were using.

Note: you can have a maximum of 346 documents open, and a maximum of 128 font suitcases open. A font suitcase is recognised as a single file – so you could combine some fonts together, by dragging the 'A' (bitmap size) or 'AAA' (TrueType) files out of one suitcase and into another.

Some programs are displaying fonts incorrectly, or on-screen text and menus don't appear to work properly?

You have a font clash. Probably between the fonts in the System Folder and your font manager program (if you have one).

You see, fonts use a (so called) unique number for each font style, so as MacOS can differentiate between them. If two bitmap fonts styles (in the suitcase) have the same ID number, then all hell breaks out. Usually, programs are more susceptible to this kind of problem than MacOS.

To rectify the problem, you need to find which suitcase file is actually causing the clash. Start off by deactivating all fonts that have been opened in your font manager (eg. ATM Deluxe), then quit all your opened applications. Now, take out all fonts from the System Folder's Font folder, except: Geneva,



Picture 10.2 - About the trashcan/wastebasket.

Chicago. Now load up a program to see if the problem has gone. If it has, then one of the fonts you had previously opened is either clashing with another suitcase file or the problem suitcase is corrupted. In which case, you'll have to replace that suitcase, or create a blank suitcase (copy a good working one, and bin it's contents into the Trashcan), and move the files inside the duff suitcase to the good suitcase you just prepared.

For fonts that are clashing, you need a font utility or a commercial font manager program (I know that Suitcase v3 and above, will do it), that can renumber the ID of the clashing suitcase. You may be able to find a shareware utility in the Mac shareware scene.

Why can't I install a System Update, or even optimise my System volume... it complains that there are files in use! What's all this about?

The trouble with Macintosh System software is that it will not allow you to change any fundamental parts of either the System or any files that are on that System volume while they are active. This means that you cannot optimise, defragment [certain files only] or even update your System

Folder/hard disk (reformat it) while they are in use. The only way round this, is to bootup from another hard drive, CD or floppy disk, in order for you to carry out whatever it is you wish to do.

What is the minimum System configuration you can have for any Mac?

For **System 7.0 to 7.6**, all you need is the System Folder, the Finder and the System file. All other Control Panels and Extensions are 'extras' – don't forget items that are loose in the System Folder as well (if you need them), they will also load upon bootup.

While **MacOS 8.0 to 8.1**, requires the same as System 7.x, however it needs the Appearance Extension, otherwise it will not boot up at all. If you are using HFS+ hard disks, the system also requires the Text Encoding Converter Extension and the Text Encoding folder.

Can I mix different System version components?

Yes and no. You can incorporate individual Extensions eg. a later AppleGuide Extension from MacOS 8 into System 7.55, but not individual Open Transport Extensions. I would advise against mixing the System file and the Finder from different OS versions, as this would cause major System instability. It probably won't boot up, either.

Why has the Mac suddenly decided to rebuild the Desktop File, should I stop it?

No, let it complete the rebuild process, otherwise all the icons on that particular drive will become generic icons. You could call this automatic 'house keeping', sometimes the Desktop File may become unreadable by the Finder, so it rebuilds it again, but only for that affected disk.

Remember all Macintosh formatted disks has it's own Desktop File, so that it can keep a record of what file belongs to which program.

Why do some folders in MacOS 8.x list files in reverse order, ie. Z to A?

All folder windows in MacOS 8 contain an extra gadget on the right hand side of the title bar, it looks like an up-side-down pyramid, made up of horizontal lines, this displays the List view in reverse order. To toggle it back to alphabetical order (top to bottom), just click on this triangle gadget

once and it will flip itself back to the proper position, pointing up!

Where can I download free Macintosh System software?

You can download System 7.01 and 7.53, as self mounting disk images (SMIs) from Apple's web site: <http://asu.info.apple.com/> – Apple site search engine.

All you have to do is to type "System 7.0" or "System 7.5" in the search field, this should give you the full set of System 7.0/7.53 related downloadable files, including most of the MacOS 7.x updaters. Note that, System 7.53 consists of twenty 1.3mb SMIs. Also, **make sure you select the correct language** in the pop-up menu (on the search engine page), before you start to download any files, otherwise you'll be using a System catered for the USA (the default language).

The disk images come in two flavours; HQX and BIN. Both can be safely downloaded onto any computer and then transferred to the Mac side without any corruption (use Stuffit Expander to decode them). Also note that these disk images do not need to be copied onto floppy disks.

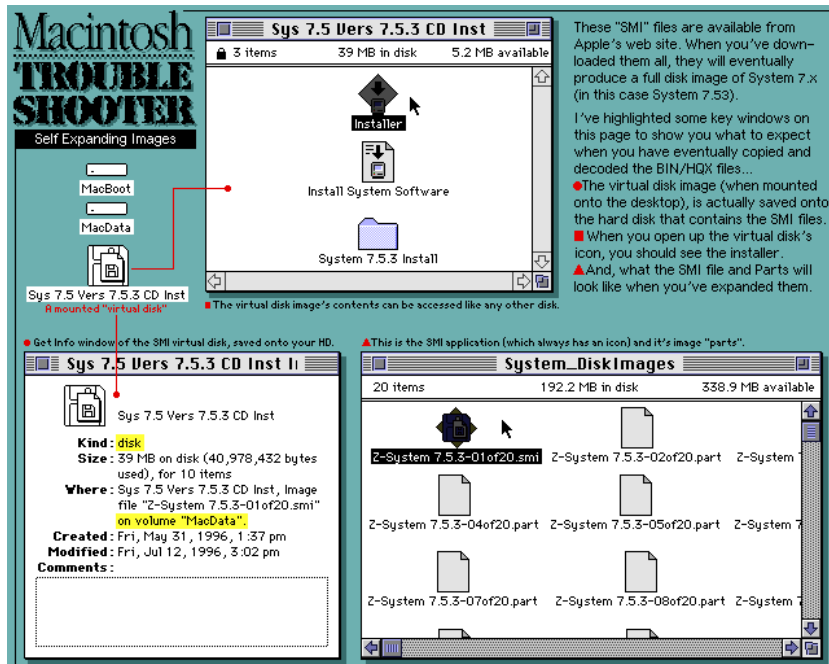
You can also copy a whole set of SMI files of System 7.53 from Amiga Format magazine's cover CD No39. Look in: Seriously Amiga / Emulation / – I believe it is the International English or British version.

How do I use the System 7.x 'SMI' disk images, supplied on Apple's web site?

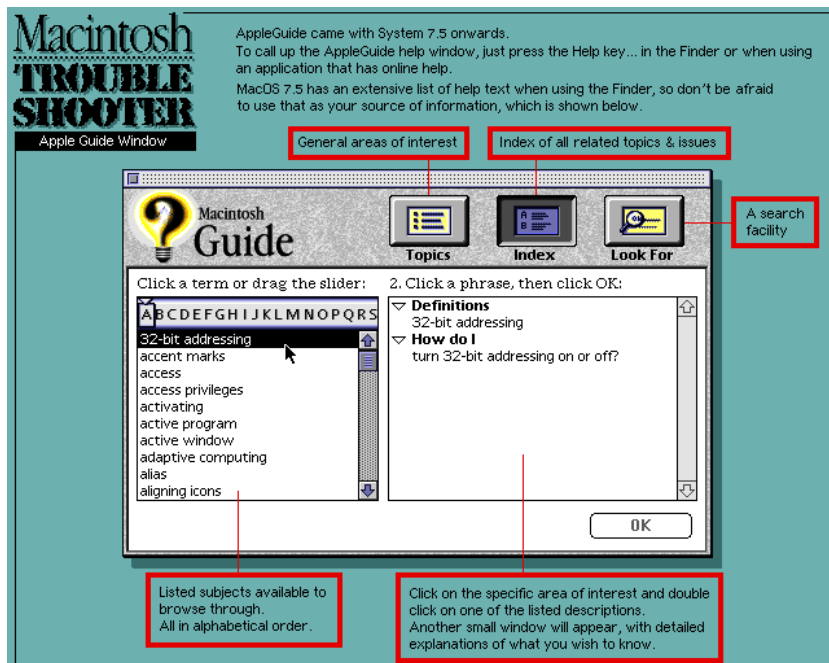
SMIs (Self Mounting [disk] Images) are real easy to use, the only thing you need to check, is that the downloaded SMI data files are not corrupted. The SMI application (usually the first disk image) will automatically verify all files (for corrupted files) before it proceeds to mount the 'virtual disk' onto the desktop. All YOU have to do, is to double click the "[name].smi" application, it will do the rest. See pic 10.3 on page 42, for what you should see when you've copied them to your Mac and when it is mounted.

Once it has mounted the System disk image onto the Mac's Desktop, you can now access this virtual disk as if it was a real disk. Just double click on the System Installer program to begin the installation of System 7.0 or 7.53.

File sizes: All 20 SMI parts = 25mb of HD space. The virtual disk = 41mb of HD space (it is saved onto the same HD as the SMI files). A full System installation = 40-55mb of HD space.



Picture 10.3 - Self Mounting Disk images, and how to use them.



Picture 10.4 - Macintosh help Guide window can give lots of useful tips and help.

How can I install MacOS in ShapeShifter or Fusion, if I don't have a bootable disk in the first place?

- 1) First, I suggest you buy a copy of System 7.53, 7.6, 8.0 or 8.1, then you can boot off the CD and install the System. Note: Only **Fusion v3.1** and **Shapeshifter v3.10** can use System 8.x.
- 2) You can download a bootable filedisk from: www.blizzard.u-net.com/ – look in the “Program Archives” link for the Filedisks (for Shapeshifter & Fusion). The System Folder on each Filedisk is compatible with all 68k Amigas, and includes Stuffit Expander, so that you can decode BIN or HQX files. The filedisks are 2 megabytes, uncompressed.
- 3) Or you could ask a friend for his/her disks, so that you can do a temporary installation, until you can get hold of your own copy, or unarchive those HQX/BIN files, of MacOS.
- 4) You can download a disk image of System 7.0 or 7.53's Disk Tools (high density floppy disk), from Apple's web site: asu.info.apple.com/
- 5) Any bootable disk would be preferable, such as Norton Utilities v3.5 CD or it's emergency floppy.
- 6) If you have a PC, then you can create a Mac disk using this disk image creator, called **WinImage**. Download the PC utility from: <http://www.winimage.com/>
WinImage is not compatible with Self Mounting Images (.smi files), so download this disk image: ftp://ftp.apple.com//Apple_Support_Area/Apple_Software_Updates/English-North_American/Macintosh/Utilities/Network_Access_Disk_7.5.sea.bin
You'll need Aladdin's Stuffit Expander v5.x for Windows to fully expand the file. See Aladdin's web site to download the Expander: www.aladdinsys.com/

How come there isn't a manual for MacOS 7.5 to 8.x?

A manual came with MacOS 7.0, all other OSs are in fact updates of this – even MacOS8 could be considered an update of System 7. After all, OS8 shares a lot of its appearance and features with System 7, so therefore it doesn't really need a manual – either way, this is what Apple have done, to the annoyance of it's users. However there is on-line help, in the form of an Apple Guide, look under the '?' menu for **Macintosh Guide** in MacOS 7.5x, and under the Help menu in MacOS 8.x. Pic 10.4 is a typical example of a AppleGuide window.

Is it possible to 'de-activate' a System Folder, manually?

Yes, just place the **Finder** program in the Trashcan (you won't be able to bin it). Unfortunately you won't be able to boot-up from that partition anymore, so you'd better make sure you have a bootable disk to hand, just in case it crashes.

This is the manual version of doing a 'Clean Install' (a feature in System 7.6 to 8.1), this can be useful, if you want to keep all your previous 3rd party Extensions while a new System is installed!

AppleTalk can cause problems.

This is a hardware feature in real Macs, and may cause delays a first, especially during startup. Best to switch off AppleTalk as soon as you bootup from a newly installed System. You can do this by calling up the Chooser (in the Apple icon menu) and click on the Off button, under AppleTalk.

Which MacOSes work with ShapeShifter & Fusion?

You have a few choices, but all of them start from System 7 upwards.

- **System 7.0**
- **System 7.01** – to update it, use System 7 Tuner and Sound Manager v3.
- **System 7.1**
- **System 7.1P, 7.1P1, 7.1P2, 7.1P3, 7.1P5, 7.1P6** – for Performas only.
- **System 7.11 & 7.11(Pro)**
- **System 7.12** – for **PowerPC Macs** only.
- **System 7.5, 7.51, 7.52**
- **System 7.53** – only works with ShapeShifter v3.5 and above.
- **System 7.55** – works very well with all 68k processors.
- **System 7.6/7.61** – this can be troublesome, otherwise it's alright.
- **System 8.0/8.1** – will only work with **Fusion 3.1** and **ShapeShifter 3.10**.
- **System 8.5 and above** – will only work with **PowerPC Macs**.

System 7.0 & 7.01, plus all updates; 7.11, 7.51, 7.52, 7.53, 7.55, 7.61 and 8.1 can be downloaded from Apple's web site; <http://asu.info.apple.com/> – make sure you download the Update in your **language**.

See the section on **68k Mac ROMs**, on page 111, for the entire list of 68k Macintoshes, and supported System versions.

How should I go about installing a new Mac System over my old one?

Installing a MacOS7.6 or 8.x

I recommend you do a 'clean installation' of any radically new MacOS, eg. from Systems 7.0 to 7.5, or 7.6 to 8.0. However, you do not need to perform a clean installation for System patches, ie. System 7.5 to 7.55, all it does is upgrade the System file, Finder and some Extensions.

If you're installing System 7.6 or 8.x, the installer will do all the hard work for you, but only if you select "Custom Install" or "Install new System Folder" (in Options). It simply deactivates the old System, and installs a new System8/7.6 Folder next to it.

Installing MacOS7 to 7.55 next to an old or damaged System Folder

Do not install directly into an old System Folder, I strongly recommend you install it as a completely new System Folder, so that all your 3rd party Extensions and Control Panels do not load up the first time round (some of them may be incompatible with the new OS).

Before you perform installation, you'll have to put the old System Folder into the Trashcan – but do not empty it. Then install the new MacOS onto the same hard disk as the old one, and 'bingo!', you now have a new, and upgraded System.

Pic 10.5 on page 44, is an example of the System 7.5x custom installation window.

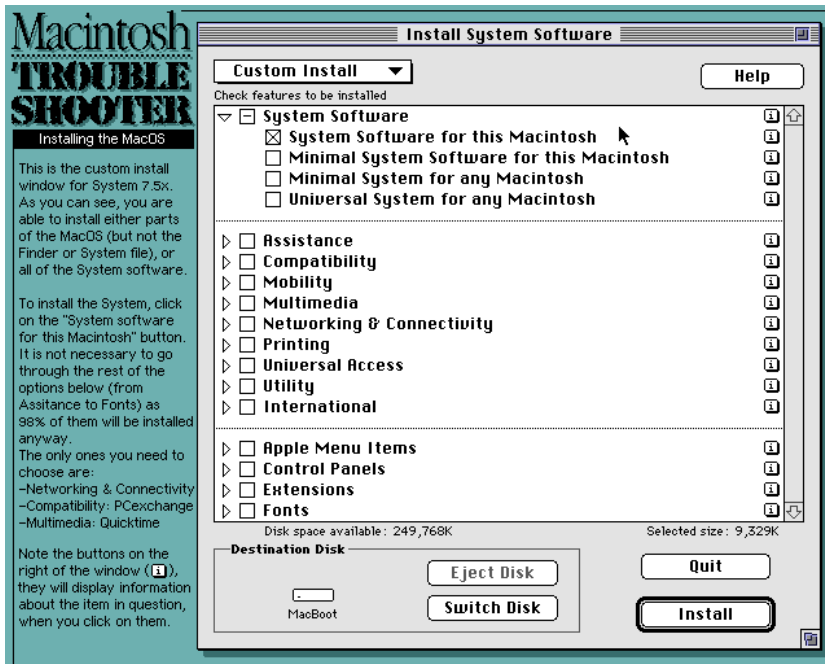
Do I need an FPU for all Macintosh programs?

About 70% of 68k Macs have an FPU built-in. Most Mac software will use the FPU in some way, and may cause some programs to crash a lot.

If your Amiga doesn't have an FPU, you can download a freeware Control Panel called **SoftwareFPU** from the internet, this will emulate an FPU for you.

All Macintosh Systems work with all Macs, right?

Wrong. All badges of Macintoshes are different – ROM versions are different, all Mac motherboards are different, and most Mac 68k processors are different. In order for the System to work on your Mac, you need to install a custom **System for this Macintosh**, for every version of the MacOS, from System 7.0-8.1.



Picture 10.5 - System 7/5's System installation window.

Miscellaneous Problems

Do Macs have Linux?

Yep. You can find versions/information on Linux for Macintosh at:

<http://www.linuxppc.com>

<http://www.yellowdoglinux.com>

<http://www.mklinux.apple.com>

Where can I download a free C/C++ compiler & documentation?

You can download a free copy of **Macintosh Programmer's Workshop** (MPW) from Apple's web site: <http://developer.apple.com/tools/mpw-tools/> It'll probably be easier to download the image files, as the whole thing comes to about 18mb.

I don't know much about programming, but from what a newsgroup poster said... "MPW has a lot of flexibility, and you can do a tremendous amount of stuff once you get under the hood."

The manual is in the Documentation folder, it is called **Getting Started**.

Where can I find instructions for making AppleScript scripts?

You can get a fair bit of information from Apple's extensive AppleScript web site, at; <http://www.apple.com/applescript/>

Or download a 2 megabyte PDF file; <http://developer.apple.com/techpubs/macos8/pdf/ApplescriptLanguageGuide.pdf>

Which gives the complete details on how Applescript works and what all the commands do etc.

On a different note, you may like to use a different Script editor, other than Apple's own **Script Editor**, in which case check out **Scripter** from Main Event Software (www.mainevent.com), or **Script Debugger** from Late Night Software (www.latenightsw.com).

What if I don't have a high density floppy drive, can I use disk images?

Yes you can use images, although you may find this to be inconvenient and only a short term solution, so I suggest you save up for an external high density floppy drive for your Amiga.

There are two popular Macintosh programs available at the moment, one is called **Disk Copy v6.1** from Apple, and the other is **Shrinkwrap v3.x** from Aladdin Systems – both are available from the internet. Try these sites: www.shareware.com (Shrinkwrap) and www.apple.com/support/ (Disk Copy).

These two programs can create, duplicate, lock/unlock and even mount any disk image onto the Desktop, this fools the Finder into believing they are real disks! They can also create disk images of CD-ROM disks, and just about any other disk type for that matter, just make sure you have enough hard disk space.

Where can I get Adobe Type Manager (ATM)?

You can get ATM with Adobe Acrobat Reader v1 to v3.x. The latest is v4.0.

Certain Adobe software, such as Illustrator v6/v7, and Pagemaker v5 to v6 will have a copy of ATM included on the CD-ROM or floppy disks. Or simply buy **ATM Deluxe**.

Note: ATM is a Control Panel. The Acrobat Reader installer usually installs it in it's Fonts folder. Simply place it in the Control Panels folder to make it available for System wide use.

How do I know which Mac programs are 68k compatible?

When you are about to buy any Mac software, make absolutely sure that it still supports 68k Macs. Some of the top packages are now switching over to PowerPC code only, such as **Photoshop 5**, **Norton Utilities v4**, **Freehand 8**, **Illustrator 8** and **System 8.5**. I suggest you ring up the retailer or look in the software house's web site for confirmation of 68k compatibility.

As for knowing which programs are PowerPC and which are 68k compatible, that's whole new ball game! To find out if it is a PPC application, is simple, just launch it. If it is PowerPC only, it will immediately display an error message, usually, error code -192, or an error message will be displayed telling you that this application is for PowerPC Macs only.

Some Mac software is often (but not always) handed to the public as a 'Fat' application – this means it has PowerPC and 68k code in the same file, so that it'll work on all Macs.

As for seeing what type of code the program uses, externally, the only way to visually tell, is either via it's filename, eg. "Quark Xpress 4.0 PPC", or via the About window/loading screen, these may display information as to whether it is 100% 68k or Fat coded.

I'm having problems with Norton Utilities 3.2 and System 7.6/8.x, is it incompatible?

Version 3.2 on it's own is not fully compatible with System 7.6x, you need to update it. Use the v3.24 updater, or use Norton v3.5, there is an updater on Symantec's web site: www.symantec.com

Norton Utilities 3.5 will need to be updated to version 3.54, in order to be System 8 compliant. Search for "updater" and this will give you a list of all updaters for all versions.

If you intend to use the HFS+ filing system, then you must not use Norton Utils. (any version up to v3.5 (all of which are 68k compatible)) on that HFS+ partition or disk, otherwise it'll destroy the disk's directory structure. However, TechTool Pro v2 will repair HFS+ disks, and it is 680x0 compatible.

Where's the Norton Utilities 3.5 manual?

Unfortunately Norton Utilities 3.5 does not have a physical manual, however you can download a PDF (Acrobat's Portable Document File) version of Norton Utilities 3.2 manual, from: ftp://ftp.symantec.com/public/english_us_canada/products/norton_utilities/ver3.5_mac/updates/num-manual.pdf.hqx – this is 6mb, and covers everything you'll need to know for v3.5.

Is it possible make floppy based install disks to work on a hard disk?

Yes, just make sure that you drag the entire disk onto the hard disk, so that all invisible files are copied also. Note that, some install disks only work from floppy disks, but it is always a good idea to make a backup copy of the disk, just in case it goes bad. This especially goes for anyone who has their only copy of the System software on floppies – make sure you have a master backup copy of the whole System disk set, you'll be glad you did, believe me!

System Installation Guide

Can you give me some guidance to the actual installation procedure?

Certainly, below I have concentrated on MacOS 8 as the main example. Don't worry, System 7.0 to 7.5x has the same installer as the MacOS 8 Alternative installer program, minus some text screens and an option to update the disk driver. Anyway, just follow the instructions below, and all should be well.

The Standard Installer for MacOS 8.x

I've included pictures with these instructions to show you (in loading order) what windows that'll appear, and so that you know what to expect:

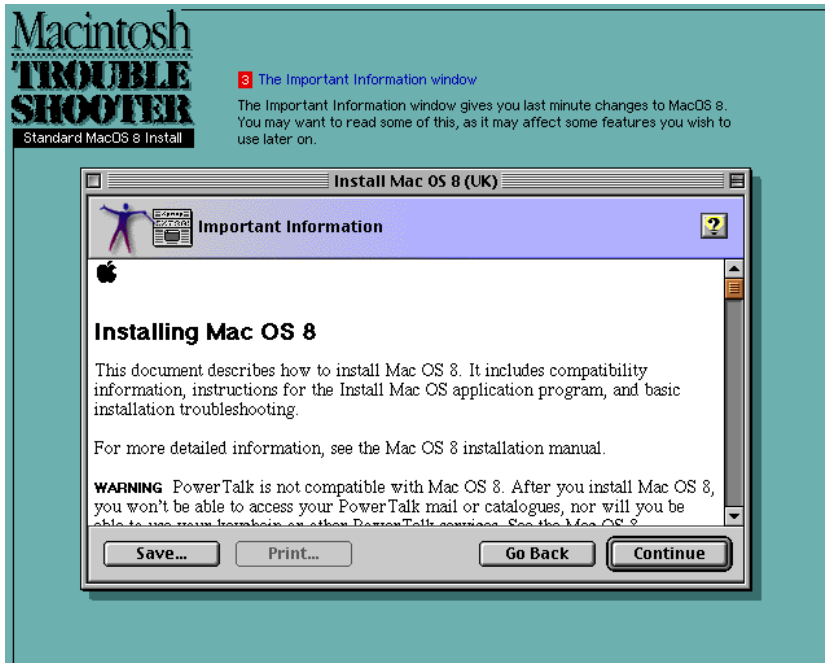
- 1) Bootup from either a high density floppy disk (System's Disk Tools boot disk); System CD; or from a bootable Fusion/Shapeshifter hardfile (look in **General MacOS Problems** for the problem called "How can I install MacOS in ShapeShifter or Fusion, if I don't have a bootable disk in the first place?", this will tell you where to download one).
- 2) See pic 11.1 – Load the standard installer – brightly coloured icon on the root of the System CD. The first thing you'll see is the installer's **Splash screen**.
- 3) See pic 11.2 – The next screen is the **Welcome** window, just click the Continue button.
- 4) See pic 11.3 on page 47 – Now you'll see the **Important Information** window. I suggest you give it a good read, there may be some issues that may affect you and you're programs.
- 5) See pic 11.4 on page 47 – Followed by the **License Agreement** window. Read it, if your not familiar it.
- 6) See pic 11.5 on page 47 – This window, the **Select Destination** screen, will allow you to switch between local disks connected to your Mac. You will also note that the 'Clean Install' option can be selected on this window as well. Note that, if you are going back to an earlier System version, but have a later MacOS version already installed, then the installer will warn you that you cannot install over this System. You have to do a clean install, to get round this problem. Once you've made your choices, click on the Select button to continue.



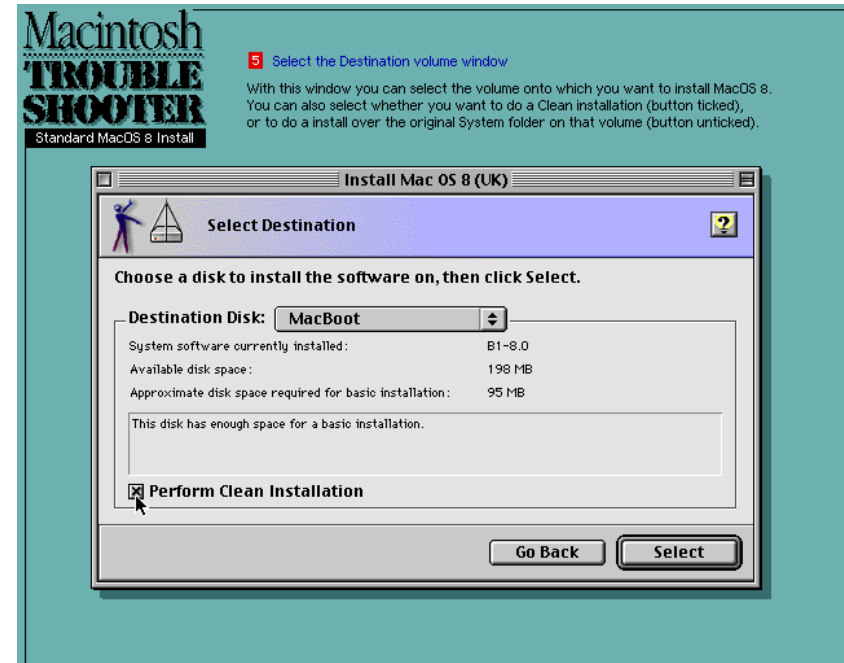
Picture 11.1 - The first window you'll see is the Splash screen.



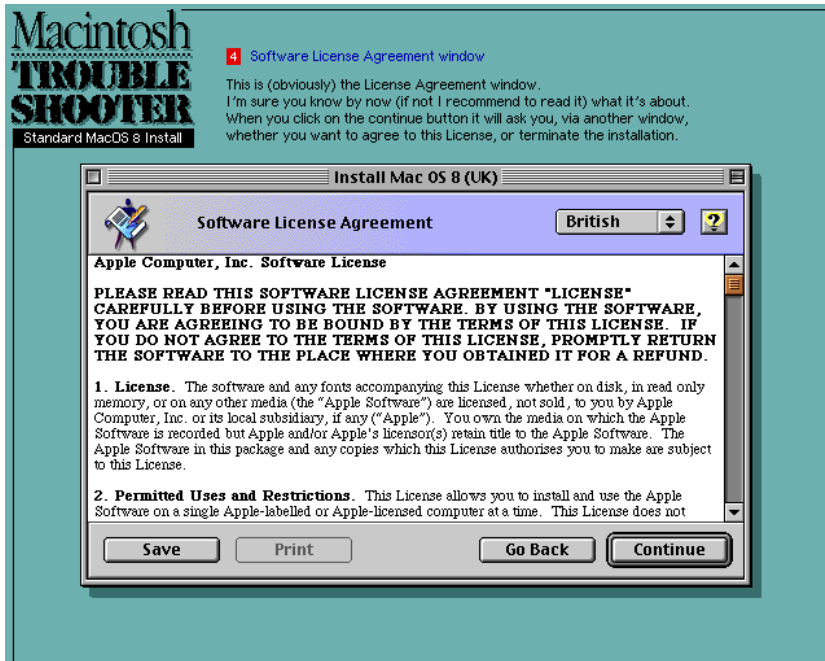
Picture 11.2 - The Welcome window – also gives you an overview of what's to come.



Picture 11.3 - Read the important information, if you're not already familiar with it.



Picture 11.5 - The Select Destination window.



Picture 11.4 - The Software License Agreement window.



Picture 11.6 - The Installation window.

7) See pic 11.6 on page 47 – The next one is the **Install Software**, or Easy Install window. This list of extra features are optional – most of which you don't really need, I'll explain:

- **MacOS Runtime for Java** – enables Java within MacOS.
- **Personal Web Sharing** – allows you to share your web site (on your hard disk) via a network.
- **OpenDoc** – is a document authoring application.
- **MacLink Plus** – is a PC to Mac word processor/document file conversion utility.
- **Apple Location Manager** – Lets you set up different 'location' preferences for on your Mac, or between Macs (eg. a portable).
- **Cyberdog** – is a collection of internet programs that get you on-line immediately.
- **QuickDraw GX** – is a kind of on-screen GX text/vector object to printer rendering engine.
- **Text-to-Speech** – this feature allows text that is displayed on screen to be spoken by the Mac.
- **Apple Remote Access** – allows others to access your Mac, and you to access other people's Macs over the internet.

8) See pic 11.7 – This pic shows the **Options** window, which can be accessed by the normal install window, or by the Customise installer window. The Hard Disk Update option allows the installer to update the hard disks current MacOS disk driver on the rigid disk block. This is recommended for all upgrades of the MacOS.

9) See pic 11.8 – The **Custom Installation & Removal** window, allows you limited customisation of the System you're about to install. If you require a much more customised file by file installation, then you need to use the alternative installer, which is located 3 to 4 folders deep, elsewhere on the CD. The extra features in this window, also includes the ones listed by instruction no.6:

- **MacOS 8** – the full install of MacOS 8 for this Mac.
- **MacOS Info Centre** – is a general Mac information utility. It'll give you info on your hardware setup, and what System software you're currently using. Pretty useful.
- **Internet Access** – installs the Control Panels & Extensions for accessing the internet. It also installs Internet Explorer v4.0 and Outlook Express v4.0 for browsing the world wide web.



Picture 11.7 - The installation Options window.



Picture 11.8 - The Custom Installation and Removal window.

- **Open Transport PPP** – is MacOS's main protocol manager for TCP, PPP and ethernet.
- **MacOS Runtime for Java** – enables Java within MacOS.
- **Personal Web Sharing** – allows you to share your web site (on your hard disk) via a network.
- **Quickdraw 3D** – is Apple's own 3D rendering engine, for applications that use it, eg. some games, and a few 3D drawing programs.
- **OpenDoc** – is a document authoring application.
- **MacLink Plus** – is a PC to Mac word processor/document file conversion utility.
- **Apple Location Manager** – Lets you set up different 'location' preferences for on your Mac, or between Macs (eg. a portable).
- **Cyberdog** – is a collection of programs that get you onto the internet straight away.
- **QuickDraw GX** – is a kind of on-screen GX text/vector object to printer rendering engine.
- **Text-to-Speech** – this feature allows text that is displayed on screen to be spoken by the Mac.
- **Apple Remote Access** – allows others to access your Mac, and you to access other people's Macs over the internet.

The Alternative MacOS 8.x Installer

This alternative installer can be located through these folders on the MacOS 8 CD: **MacOS8:Software Installers/ System Software/ Mac OS 8/ Installer.**

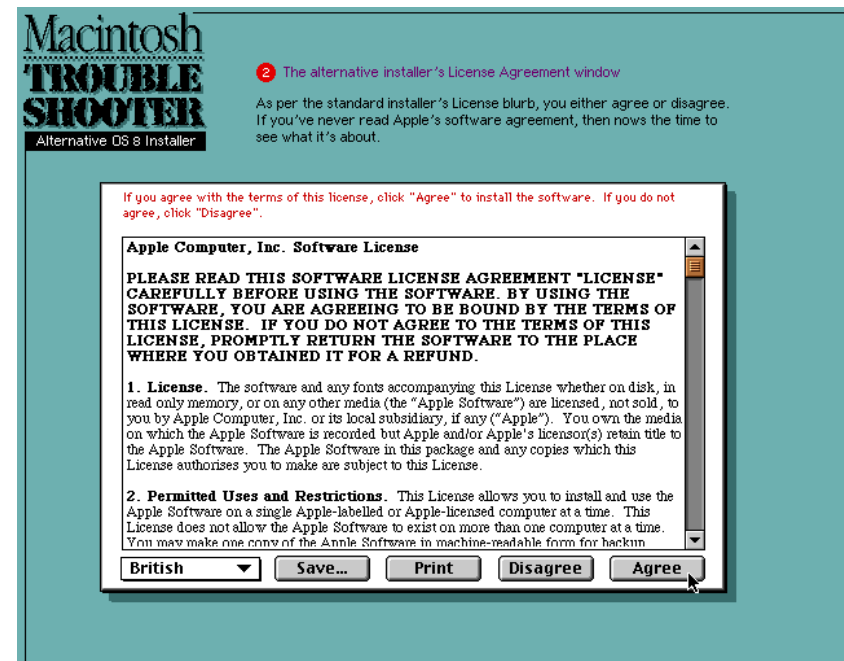
Use this installer to install individual components of MacOS 8.x, such as, Control Panels, Extensions, Apple Menu Items, etc. However you cannot install the System file or the Finder application individually, you have to install the **Core System**, or **System Software for this Macintosh**, with this installer, onto another disk/volume then copy those two components to your original System Folder, replacing the old/damaged ones.

Here are my guide for using this alternative installer:

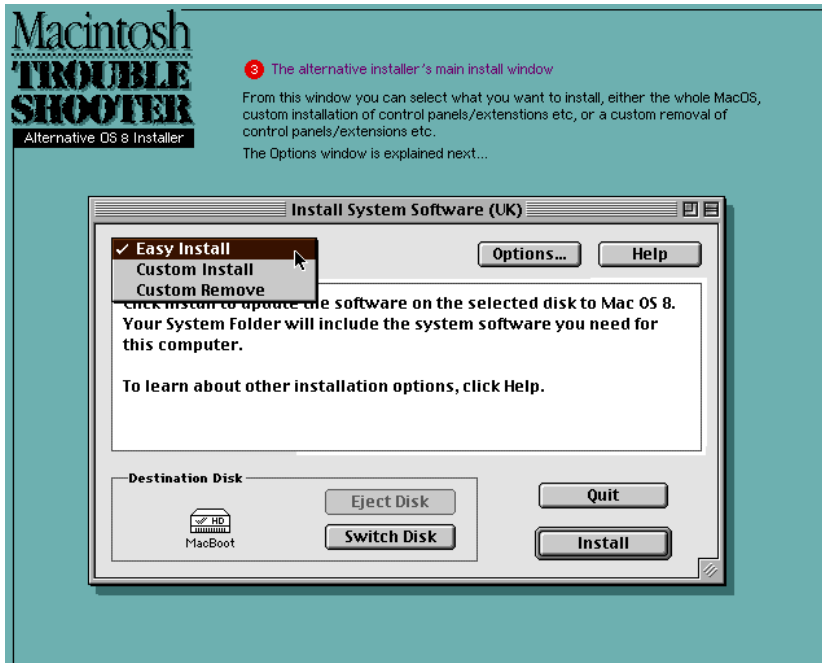
- 1) See pic 11.9 – This is the alternative installer's **Splash** screen.
- 2) See pic 11.10 – Next you'll see the **License Agreement** window. I suggest you give it a good read, there may be some issues that may affect you and you're programs.
- 3) See pic 11.11 on page 50 – Followed by the **Install System Software**



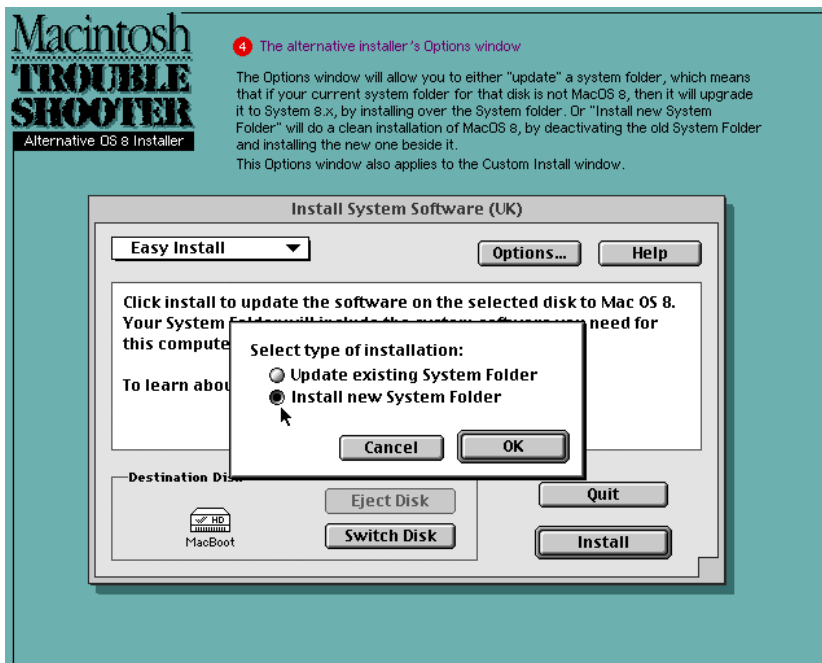
Picture 11.9 - The alternative installer's Splash screen.



Picture 11.10 - License blurb.

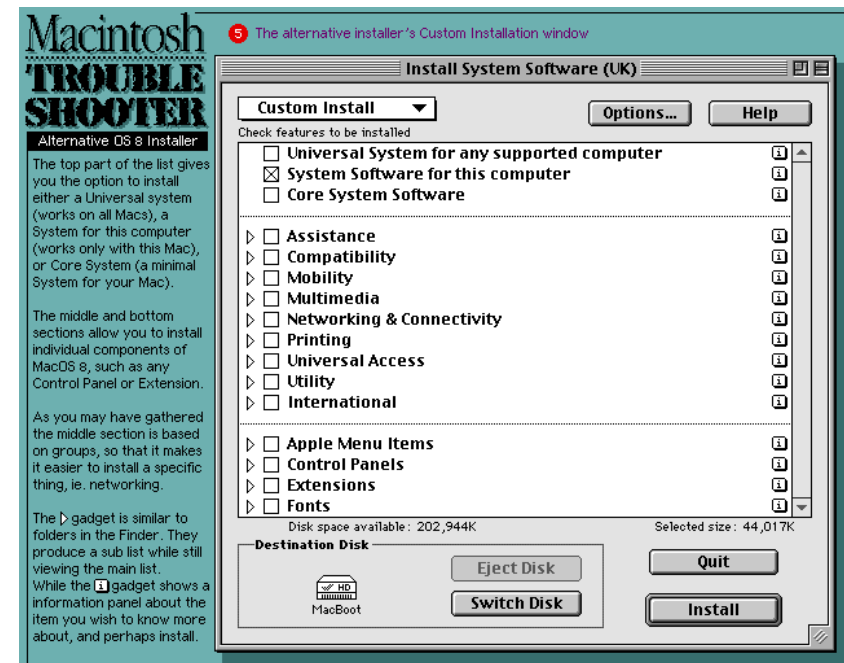


Picture 11.11 - The Install System Software window.

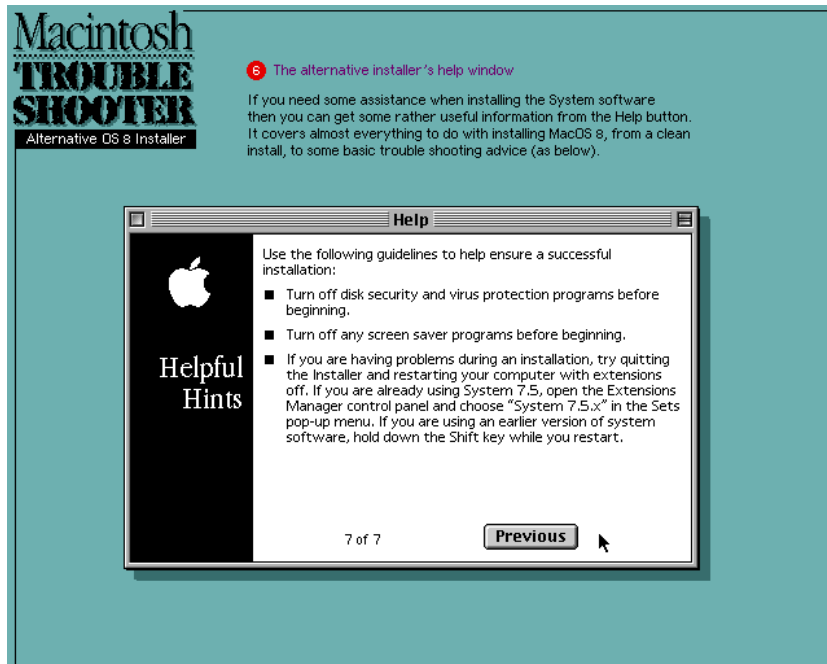


Picture 11.12 - The Installation Options screen.

- 3) The alternative installer's main install window
- From this window you can select what you want to install, either the whole MacOS, custom installation of control panels/extensions etc, or a custom removal of control panels/extensions etc.
- The Options window is explained next...
- 4) See pic 11.12 – The **Options** window, it can be accessed by the main Install screen and the Custom Install window. The Options window displays two ways of installing the System: “Update existing System Folder” which replaces your current System Folder with the new one, and leaves all your preferences and 3rd party Extensions etc. in place (this is often called a **Dirty Install**); or by “Install new System Folder” which will install a new System Folder, but it’ll leave the original System Folder untouched (often called a **Clean Install**).
- 5) See pic 11.13 – Next, is the **Custom Install** window, which enables you to select individual files you wish to place into your current System Folder, or onto the hard disk if it is just a utility.



Picture 11.13 - Custom Installation window.



Picture 11.14 - The installer's Help window.

- 6) See pic 11.14 on page 51 – The Help window provides useful information about installing and some troubleshooting tips.

When should I reinstall MacOS?

There are only a few times when you need to reinstall the System:

- 1) When the System file and/or the Finder ceases to function normally. You can tell when this is the case, when the OS randomly crashes, or it freezes right at the beginning of bootup – this normally means that the System file is damaged.
- 2) When you want to update the OS, but it buggers it up instead – again, it doesn't bootup.
- 3) The installation crashed halfway through the install process. You're going to have to bin all of the files it just installed, and start all over again.
- 4) A partial installation of some of the System's Extensions, eg. Open Transport, or a Control Panel, but only if you're original Extensions/Control Panels were damaged, and need replacing.
- 5) And lastly, when you repartition, or reinitialise (reformat) your hard disk.

I've just upgraded my original System software to a newer version (not an update), and I thought it best to do a clean installation. What Extensions etc. can I take from the old System Folder, and put into the new one?

This kind of thing should only be done by an intermediate to experienced Mac users. If you don't know precisely what you're doing, it could lead to your Mac not booting up again.

There are certain items from the previous System Folder (the one that was deactivated by the clean install option) that you can move into the new System. These are:

- 1) **Preferences:** all application & utility preferences can be moved. Most pref files that are connected to the System, eg. most of Apple's Control Panels (except TCP/IP prefs), and the Finder prefs file must **not** be moved into the new System Folder, let MacOS create new ones for those.
- 2) **Control Panels:** all of Apple's installed Control Panels, must **not** be moved. However, any third party Control Panels that were installed, **can** be moved to the new System Folder – provided it is compatible with the new MacOS, eg. MacOS 8 made a few 3rd party Extensions and Control Panels incompatible. If you're not sure, then you can try them out with the new System at a later date. If it doesn't boot, then you'll know one of them (or even more) doesn't react too well with the newer System.
- 3) **Extensions:** again, it is inadvisable to move Apple's installed Extensions from the old System Folder into the new one, they will be completely incompatible. But you can move third party Extensions over, into your new System's Extensions folder. Once again they may be incompatible with the new MacOS, so I suggest you take a little bit more caution than with Control Panels, as they are more likely to conflict with the new System software. Add a two or three Extensions at a time (between reboots), so that if anything should go wrong, you can easily identify which ones were messing things up.
- 4) Third party folders/files in the root of the System Folder: Most of these files and folders, can can be safely moved into the newer System Folder's root directory. These 3rd party folders do not load anything during bootup, only the program that uses the folder's data files will access it (99% of the time, anyway).

What can I take out of the newly installed System Folder, to reduce it's RAM usage, and to generally make it more efficient, and faster when booting up?

I'd recommend using the Extension Manager Control Panel only, if you're a beginner, as it does not disable system Extensions that are critical to the MacOS, eg. Text Encoding Extension for recognising HFS+ formatted disks in System 8.1. More experienced users, will probably want to go directly to the Extensions folder, and sort it out manually.

Now, in order to conserve memory, the System's Extensions folder is what you need to sort out. Control Panels are generally not loaded during bootup (except for virus checkers & ATM), so you don't really need to sort anything out in that folder.

Refer to either my Control Panel and Extensions description section, on page 83, for further details on the System's default installed Extensions. Or look at this very good shareware document called **Extensions Overload**, which explains 99% of all known Macintosh system Extensions, Control Panels, and Libraries. It also has useful information on a whole load of other MacOS related files.

Tips: only remove Extensions and Control Panels that you do not require – disable them to start off with (keep on hard disk), just in case you may need it later on. Then when you're satisfied with your setup, bin those useless Extensions.

To make the MacOS faster, simply reduce the number of Extensions in the Extensions folder – the less there are the faster it'll load up.

All other folders in the System Folder are for data files of one sort or another, and are loaded by the System or Finder, or by an active program, on request. So leave any installed folders where they are, they won't do any harm.

Maintenance & Protection Guide

How can I optimise or defragment my Mac hard disk?

The Norton Utilities' **Speed Disk** is a good one to use, and is reasonably safe. You can defragment individual files, as well as fully optimise any Macintosh disk. However Norton 3.5 will **not** optimise HFS+ hard disks, see below for other possibilities.

Or you could do the simple trick of, copying everything off the HD, onto another HD or removable disk, rebuild it's desktop file (Amiga+Alt during startup or via Norton Disk Doctor). Then copy the files back over to the HD again, all files will be optimised and defragmented.

TIP: ALWAYS backup the hard disk, and check the disk's integrity, before optimising. Here are some other commercial programs that available;

- **Spacemaker**: HFS to HFS+ while optimising the disk, from Total Recall Software.
- **PlusMaximiser**: Advanced HFS+ formatting software, from Alsoft.
- **PlusMaker**: HFS to HFS+ conversion, from Alsoft.
- **PlusOptimiser**: HFS/HFS+ optimiser, from Alsoft.
- **Disk Express Pro**: HFS+ optimiser with lots of features, from Alsoft (www.alsoft.com).
- **TechTool Pro 2**: It has HFS/HFS+ optimising only, however it cannot defrag individual files. It is also extremely safe to defrag/optimize (files will survive a crash during optimisation).

What else can I do to protect my disk and files?

To prevent future disasters, I recommend that you take these actions:

Backups

Regular backups – I do mine every 2 weeks, of course it all depends on how often you use your Macintosh, you could do one; every day, twice a week, or even once a month. Don't forget to check the integrity of the backup, by doing a random restore of some files. This'll verify that the backup is not faulty.

I use **Retrospect Express** (Dantz), a slightly different version of it's big brother **Retrospect**. Be careful with Retrospect Express, it is very picky about SCSI termination, if it is not set correctly, the program may eject a disk from the drive and will completely freeze-up the Amiga. You'll have to switch off the computer for 10 seconds and turn it back on again, to clear the error.

It may have damaged the System file and/or Finder at the same time, so have a bootable disk to hand.

I wouldn't recommend doing backups from the Amiga side, you'll corrupt all the Mac files – this due to the different filing systems in use. Instead buy one of these Mac backup programs:

- **Retrospect** (Dantz), THE Mac backup program, supports **all** types of drives, £130.
- **Retrospect Express** (Dantz), only supports removable hard disks, ie. Zip drives, £30. See pic 12.1.
- **DiskFit Pro/DiskFit Direct** (Dantz), little brother to the Retrospect family, freeware.
- **Backup Mastery** (ClarisMac), is a competitor to Retrospect, £100+.
- **Norton Backup v2 & Fastback v3.21** (Symantec), these 2 backup utilities came with Norton Utilities v2 (Backup) and v3.1/v3.2 (Fastback) – they are not supported any more. I'm not sure if they are available to download though. See pics 12.2 and 12.3 on this page and page 54.

There are some shareware/freeware utilities on the Mac internet sites, but these are mainly mirroring/synchronising type backups – don't use them, they do not archive files in any way, and are susceptible to directory and file damage – not a very safe way to back up files.

Shareware Backup programs: **Drag'n Back, Simple Backup, Switch Back and Synchronize.**

It is also a good idea to make an archive (use Stuffit for instance) or a backup of the entire System Folder, so that you can replace the System file, Finder or any Extensions etc, at your convenience, should any of them get damaged and need replacing – this would save you from reinstalling the full System software again.

Clean-up Your Disks

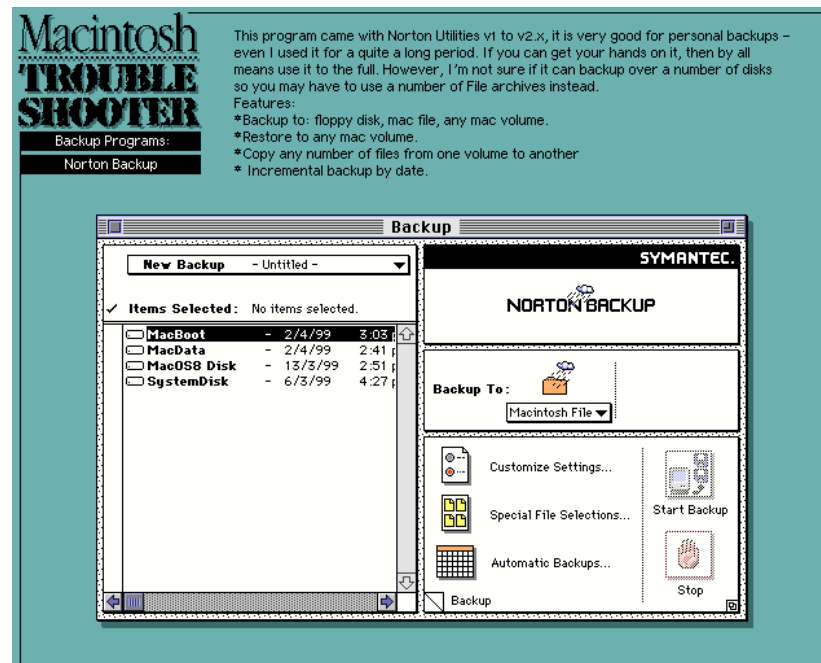
Do regular clear outs of your hard disk(s), every 3-6 months. Just sort out and bin, all that junk that accumulates on your disk(s).

Regular Check-ups & Defragmenting

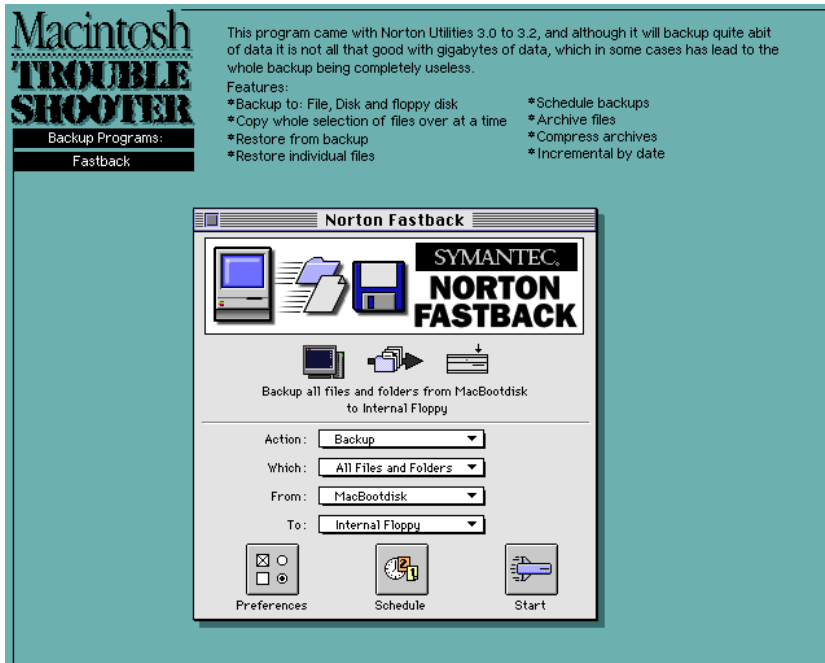
Regular disk checks, use a utility such as Norton Utilities' Speed Disk, and Disk Doctor. Macintosh hard disks require a lot more attention than Amiga ones. Therefore, I recommend that you make a copy of the **Disk Tools** floppy



Picture 12.1 - Retrospect Express's main control window.



Picture 12.2 - Norton Backup's main control window.



Picture 12.3 - Norton Fastback's main control window.



Picture 12.4 - Norton Utilities 3.5 features.

disk that came with the System CD or disk set. Even if you don't need a bootable floppy disk (assuming you have a high density drive) create one anyway, you may need it sooner or later, trust me on this!

You need to: Rebuild the desktop every month or so; You need to use Disk Doctor every 2-3 weeks; defragment files every couple of weeks; and a full optimisation (de-segment) of the hard disk every 3-6 months, depending on how often you create and bin files.

Here are a few good utility programs that I can recommend:

- **Norton Utilities 3.5** (Symantec) probably one of the best on the market today. Note that **Norton 3.5's** programs does not support HFS+, and will **damage** the directory structure. See pic 12.4.
- **Norton Utilities 4.0 & 5.0** (Symantec) will only work on **PowerPC Macintoshs**.
- **TechTool Pro 2.53** (Micromat Computer Systems) a good disk repair & diagnostics utility. This version can repair HFS+ disks, and is still 68k compatible – certainly an equal to Norton v4 & 5! See pic 12.5 on page 55.
- **DiskWarrior 1.01** (Alsoft) is extremely good at resurrecting corrupted HD directories.
- **Disk First Aid** (Apple) is the official disk repair utility, it won't fix all errors. Version 8.2 (comes with MacOS 8), can repair HFS+ formatted disks, and it is 68040/060 compatible. See pic 12.6 on page 55.

WARNING: Currently, Norton Utilities 4.0 does not work on any 68k computers, it is for PowerMacs. There will not be a 68k version of Norton Utilities v4, ever! So don't bother buying it.

Virus Checks

Get a good and updated virus checker program, these are commercial;

- **Norton Anti Virus** from Symantec.
 - **Antivirus** from Dr Soloman.
 - **Virex** from Datawatch.
 - **VirusScan** from McAfee (shareware).
 - **Disinfectant 3.71** is freeware, but it was discontinued in July 1998.
- Scan all files you download from the internet **FIRST**, before you launch it.

Recovering Deleted Files

Make sure Filesaver (or similar feature) is running at all times, because not only does it track deleted files, it also makes a copy of the hard disk's

directory. Volume Recover uses this info if the disk's directory is totally trashed. Its either that or reformat your hard disk! The only alternative to Filesaver is to do regular (daily/weekly) backups, which you should have done anyway.

About Formatting Hard Disks

You're better off with two Mac partitions rather than a large one (preferably with a System Folder on each one), because if one goes belly up, you have another unaffected hard disk.

You only need to low-level format your Mac hard disk **once**, ignore what other people say, ie. "formatting your HD every year is a good thing" – because it is completely wrong. Except for repartitioning the HD.

Use the MacOS, to format hard disks, via the **Erase Disk** option in the Finder's Special menu. Also, if you connect another SCSI hard disk, it should automatically be detected, and will ask you whether you want to format it.

For removable hard disks, use the Macintosh driver supplied with the drive, or download it from the manufacturer's web site.

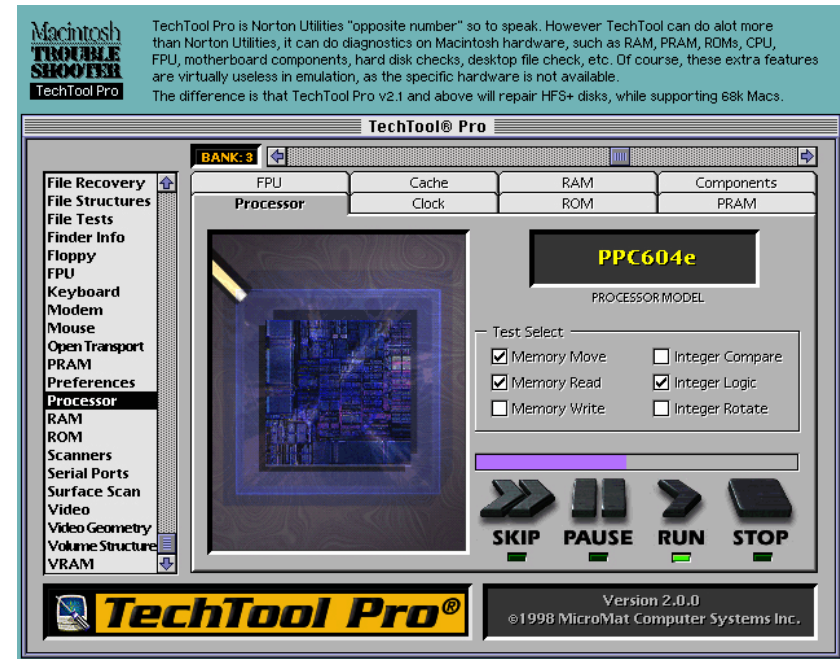
On a further note about 3rd party formatting software, you can download a free formatting utility called **Silverlining Lite** from any good Mac web site (eg. www.tucows.com).

What other disk management/repair programs are there other than Norton Utilities?

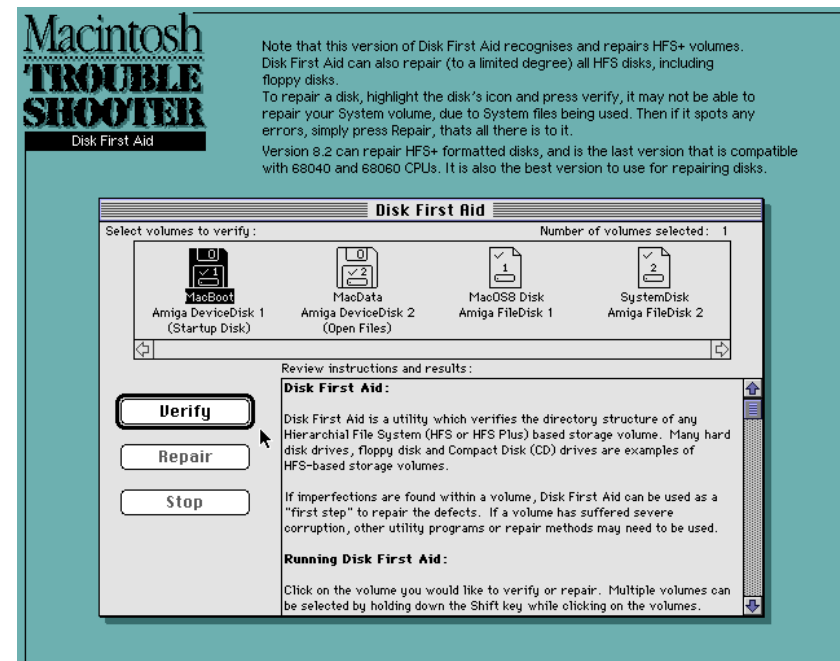
Some commercial programs:

- **TechTool Pro 2** (Micromat Computer Systems), is a full Mac diagnostic suite. See pic 12.5.
- **Disk Warrior** (Alsoft), a complete directory repair utility, very good too!
- **Hard Disk Toolkit** (FWB), supports all hard disk models and has loads of operation features.
- **RAID Toolkit** (FWB), a good, software based, hard disk RAID solution – supports HFS+.

There are other software publishers out there, who make hard disk utilities for the Macintosh, try these company's web pages for more info; **MacPeak**, **Corel** and **Clarismac**. Their web addresses are in the Useful Mac Software section on page 116.



Picture 12.5 - TechTool Pro's main control window.



Picture 12.6 - Disk First Aids' main control window.

What should I do to protect my Mac's System?

Well, you should make an archive of the entire System Folder, with a common Macintosh compression program, such as Stuffit, Compact Pro, Disk Doubler or Ziplt (pkZip compatible). So if anything disastrous should happen to your System, you can at least de-archive the System and/or Finder files, straight away without worrying about virus infection or a total System installation. Second thing to do, is buy a decent anti-virus program, see above.

Mac Viruses'99/00

2 or 3 Tunes

This is a HyperCard virus, it plays three German folk tunes when launched. The virus can cause system crashes.

AIDS

Aids infects application and system files, with no intentional damage. Aids is a nVIR B strain.

Aladin

Close relative of Frankie (see below).

ANTI

This virus changes program code, therefore causes applications to crash a lot. Can't spread under System 7.x, or System 6 under MultiFinder. Strains: **Anti-A, Anti-Ange, Anti-B, Anti-Variant.**

Antibody

Is a HyperCard virus and causes no damage. It checks for the MerryXmas virus, and then deletes it from all stacks.

AppleScript Trojans

AppleScript trojan viruses can be **extremely destructive**, they are to be treated like a program, if you run such a program which is alien to you, you may invoke a hard disk initialisation or it may go through all of your files and scramble it's Type and Creator codes. This type of virus is very easy to create and even easier to be undetected.

AppleScripts should be downloaded only from known trusted sources. It is nigh impossible for an average person to know what any given compiled script will do.

AutoStart 9805

The AutoStart virus is a 'worm', and it spreads via any HFS disk. Worms are self contained programs that replicate themselves at will. Some are destructive, over writing certain files with random data.

Symptoms: Perhaps the most noticeable symptom of the worms is that an

infected system will lock up and have unexplained delays and disk activity every 6, 10, or 30 minutes. Certain file types will have been damaged or deleted:

- **Autostart 9805** will overwrite files ending with **.data**, **.cod** or **.csa** that are over 100 bytes.
- **Autostart 9805-E** will write over some image files with random data, these are; JPEG, TIFF and EPSF picture files, only if they are bigger than 10,424 bytes.
- **Autostart 9805-F** will delete files ending with **.data**, **.cod**, **.csd** that are over 100 bytes, and **.dat** files that are over 2,063,232 bytes (total of the data & resource forks). It only infects PPC Macs, it is **incompatible** with 68K Macs. Strains: **Autostart 9805-B**, **Autostart 9805-C & D** (are really Autostart worm killers), **Autostart 9805-E**, **Autostart 9805-F**.
Autostart (invisible) Extensions/apps to look out for: **DB** or **BD**, and **Desktop Print Spooler** or **Desktop Printr Spooler**.

Blink

Is a non-destructive Hypercard virus, which spreads to other Hypercard stacks, starts on January'99.

CDEF

This virus infects the desktop file and any mounted floppy disks. It causes system crashes and strange behaviour. System 7 can eradicate the virus simply by rebuilding the Desktop file, it is NOT necessarily immune to this virus.

ChinaTalk Trojan

ChinaTalk Trojan disguises itself as a female MacinTalk sound driver. This is a very destructive virus, it deletes the directories of all mounted hard drives and floppy disks.

CLAP

A 'nVIR' variant that fools Disinfectant to avoid detection (Disinfectant 3.6-3.7 recognises it).

CODE 1

Infects applications and system files. If the hard disk's name changes to "Trent Saburo" then you are infected and causes system crashes and some damage.

CODE 252

Infects the system file and then all applications. If you are infected, it displays a message, "You are infected with a virus. Ha Ha Ha. Now Erasing all disks. Ha Ha Ha (Click to continue)". **The virus does NOT erase disks**. It can crash System 7 and damage files, but doesn't spread beyond the System file. Alias: D-Day Virus.

CODE 32767

Once a month, it tries to delete documents. These are the times it will activate itself, for an hour each time; Jan 6th 9am, Feb 9th 10am, Mar 12th 11am, Apr 5th 12pm, May 16th 1pm, June 18th 2pm, July 5th 3pm, Aug 4th 4pm, Sept 1st 5pm, Oct 20th 6pm, Nov 15th 7pm, Dec 18th 8pm. This is a **destructive virus**.

Code 9811

Hides applications, replacing them with garbage files named ie. 'FIDVCXWGJKJWLOI'. It also produces a desktop covered with electronic worms, and also displays the message "You have been hacked by the Pretorians."

CPro Trojan

CPro disguises itself as an update to Compact Pro (a compression program). This is a **very destructive virus**, it formats all hard disks and floppy disks.

Dukakis

This is a HyperCard virus. It quickly spreads to other Hypercard docs, then displays the message "Dukakis for President" and deletes itself.

Excel Macro Viruses

Strains: **Laroux** (quite harmless), **Xtras.A**.

Flag

Unrelated to WDEF A and B, but was given the name WDEF-C in some anti-virus software. Not intentionally damaging but when spreading it overwrites any existing WDEF resource of ID:0, an action which might damage some files.

FontFinder

Supposed to list fonts used in a document, but actually deletes folders.

Frankie

This virus infects Macintosh emulators. When activated, it draws a bomb and then displays: "Frankie says: No more piracy!", then causes a crash.

Alias: Aldus.

Fuck

Infects application and System files. No intentional damage (nVIR B strain).

HC 9507

This infects HyperCard docs only. Once infected, the virus spreads to other randomly chosen Hypercard docs. It causes the screen to fade in and out, and the word pickle is typed automatically, or a system freeze/shutdown.

HC 9603

Infects HyperCard docs. The virus does not cause any damage.

Independance Day

It attempts to be destructive, but fortunately it is not well enough written to be more than a nuisance.

INIT 17

Displays message "From the depths of Cyberspace" the first time it triggers. INIT17 infects the System file immediately and then all applications. It can cause file damage and system crashes due to accidental damage, especially on 68K Macs.

INIT 1984

Infects system Extensions (INITs). It is activated on Friday 13th. It is a **very destructive virus**. It damages files by changing filenames and it's file Type & Creator to random characters, on any System 6/7 Mac.

INIT 29

INIT 29 infects System files. It infects data files as well as programs, infected data files do not spread the virus. This devious virus also tells you to unlock

locked disks by saying it needs minor repairs, then promptly infects it. The virus does not do intentional damage, though it can cause printing problems, system crashes.

Strains: **INIT 29A, INIT 29B.**

INIT 9403

Infects the Finder and other applications/files, and then attempts to ERASE the system disk and other mounted hard disks. It is a **very destructive virus**.

Alias: **SysX.**

INIT 9403 Trojan

This trojan horse, disguises itself as an application called RamDoubler. It also appears in some other applications.

INIT M

The INIT-M virus, is a **very destructive virus** that spreads applications, system Extensions, documents and preference files. It rename files and folders with random text, changes the creation/modification dates, and scrambles the file creator/type information, it is triggered on Friday the 13th. A dead give away is a preference called FSV Prefs. This virus infects System 7 or above.

Alias: **MindCrime** virus.

Laroux

This is an Excel macro virus. It creates a hidden, blank worksheet in infected documents, but it is not destructive.

MacMag

Is a HyperCard stack, it disguises itself as a program called New Apple Products and infects the System file, on Hard Disks and floppies. Set to trigger and self-destruct on March 2nd, 1988, so it is rarely found.

Strains: **Aldus, Brandow, Drew, Peace.**

Macro Viruses

Many of these only infect the application's files – however, some can do other damage. Be extra vigilant with Microsoft products, ie. MS Word and MS Excel – although they can infect any application that uses macros. Also note

that it is unlikely that a macro can be activated on a different word processor, as the macro language will mostly be different, therefore rendering the macro virus useless. However I'm not sure whether docs created on one platform and transferred to the Mac (PC to Mac for instance), using the same creator program, will infect your Mac?!

Macro viruses: **ABC, Alex, Alien, Alliance, Ammy, Anak, Andry, Angel, Angus, Ant, AntiConcept, Appder, Archer, Armadillo, Atom, Attack, Auge, Baby, BadBoy, Balrog, Balu, Bandung, Bertik, Birthday, Bismark, Black, Blachyrkh, Blee, Boom, Box, Breeder, Buero, Calender, Cap, Cebu, CeeFour, Chaka, Chaos, Cartman, Cheat, Clock, CMD, Colors, Concept, Counter, CountTen, Crema, Cult, CVCK1, Czech, Dance, Daniel, Dark, Date, Dave, Defender, Delta, Demon, Dietzel, Disco, Dishonor, Divina, DMV, Doggie, Dracula, Drugs, DWMVCK1, DZT, Easy, Envader, Epidemic, Eraser, Fake, Fire, Five, FormatC, FormatS, Four, Frenzy, Friday, Friendly, Fury, FutureNot, Fuzzy, Gable, Gambler, Gangsterz, Gas, Gest, Gnomo, Goggles, GoldFish, GoldSecret, Goodnight, Gsis, Habir, Haggis, Hark, Hassle, Header, Hellgate, Helper, Hiac, Hider, Hitman, Hot, Hunter, Hybrid, Hyper, Illiterate, Imposter, Incarnate, India, Inexist, Influenza, InsideOut, Irish, Italian, Ivana, jaja, Jerm, Johnny, JunkFace, Kerrang, KillDLL, KillDos, KillLuf, Killok, KillProt, Komcon, Kompu, Lazy, Lemon, Look, Lord, Louvado, Lox, Lucy, Lunar, Lunch, Macaroni, MadDog, Magnum, Malaria, Malice, Mark, MDMA, Mental, Mercy, Mess, Messenger, MG, Mind, Minimal, Mota, MTF, Muck, Munch, MVDK1, MVDK2, NF, NiceDay, Nightshade, Niki, Nikita, Niknat, NJ-WMDLK1, NJ-WMDLK1A, NJ-WMDLK1B, NJ-WMDLK1C, NJ-WMDLK1D, NJ-WMDLK1E, NJ-WMVCK1, NJ-WMVCK2, No-F, Nomvir, NOP, NoPrint, Nottice, No_va, NPad, Nuclear, Nuker, Oblom, Ochy, OldPad, Olympic, OPIM, Ordo, Orhey, Outlaw, Oval, Panjang, Paper, PayCheck, Percent, Pesan, Phantom, Phardera, Pig, Plushad, Polite, PWD, Quick, Random, Rapi, Rats, RatsAss, Razer, Red, Reflex, Rehenes, Rellik, Safwan, Sam, Satanic, Saver, Schoo, Sshumann, Screw, Setmd, Shadow, ShareFun, ShowOff, Shuffle, Silly, Simple, Since, Slow, Smiley, Snickers, Socks, Sparkle, Spiral, Splash, Spooky, Spy, Strezz, Stryx, Sunbeam, Surabaya, Switcher, Switches, Swlabs, Swlabs1, Swlabs2, Sword, Talon, Tamago, Target, Tear, Tedious, Tele, Temple, Terror, TestDoc, Theatre, Toten, Trap, Trash, Twister, Twno, TwoLines, Uka, Underground, Unhas, Vampire, Varmint, VHDL, Vicinity,**

Viva, Vivat, Wallpaper, Want, Wazza, Weather, Why, WiederOeffnen, WMVH1, Wazzu, Wompat, Wompie, Xenixos, Yaka, Zero, ZMB, Zoolog.

MBDF

This one infects the system, finder and any applications. It does not damage, but it may cause regular system and program crashes. It spreads under System 6 and 7. These 3 games; **Tetracycle, 10 Tile Puzzle** and **Obnoxious Tetris** contain this Trojan virus.

Strains: **MBDF A, MBDF B.**

MDEF

These viruses are not malicious in intent, but can cause system crashes and other unexplained behaviour. An infected program may have garbled pull-down menus.

Strains: **MDEF A, MDEF B, MDEF C, MDEF D.**

Aliases: **Garfield (MDEF A), Top Cat (MDEF B).**

MDEF-E & MDEF-F

Are simple and benign viruses. They infect applications and system files, and do not cause intentional file damage.

Merry XMas

The Merry Xmas virus infects HyperCard docs and has several strains. This virus can cause irreparable damage to Hypercard docs by adding or deleting scripts. Delete infected docs instead of repairing them, where ever possible.

Mosaic Trojan

Is a program that is supposed to display graphics, but actually mangles directory structures. **This is a very destructive virus.**

nVIR Family

This virus infects the System file and applications. If MacinTalk is installed in your System Folder, your computer will occasionally say "Don't Panic" or it may beep unexpectedly. It can also cause programs and the System to crash. **Some strains are destructive.**

Strains: **AIDS, Fuck, Hpat, J-nVIR, Jude, MEV#, MODM, nCAM, nFlu, nVIR A/B/C, prod, zero.**

NVP & NVP Trojan

When launched, the NVP virus stops these letters 'a e i o u' from being typed. NVP does not attempt to spread to other files.

Peace

The Peace Virus, is introduced by a HyperCard doc called New Apple Products. This virus infects and spreads to system files only. It displays a peace message on March 2, 1988. The virus then self-destructs, no damage is done.

Scores

This virus spreads rapidly to all applications every time the Mac is restarted. There is one tell tale sign that Scores is on your Mac, it changes the Note Pad and Scrapbook files, to dog-eared icons. Scores causes system crashes and other abnormal problems, especially when printing.

Strains: **Eric, San Jose Flu, NASA, VULT.**

SevenDust

A family of four viruses which spread both through MDEF resources and a system Extension created by those resources. Three of these viruses cause no other damage. On the sixth day of the month, one may erase all non-application files on the current volume.

Strains: **SevenDust A, SevenDust B, SevenDust C, SevenDust D, SevenDust E, SevenDust F.**

Aliases: **666, MDEF 9806 A, MDEF 9806 B, MDEF 9806 C, MDEF 9806 D.**

Steroid Trojan

Control Panel – claims to improve QuickDraw speed, but actually destroys the directory structure of your hard disk. **This is a very destructive virus.**

T4

Was in a game called GoMoku (v2/2.1), on the internet. It is a **destructive virus**, it causes significant damage to the system file, Extensions and applications. Resulting in an unbootable Mac, and unusable programs.

Strains: **T4 A, T4 B, T4 C.**

T4-D

It deletes files other than the System file from the System Folder, and documents. **This is a very destructive virus.**

Tetracycle Trojan

This virus hides in a game called Tetracycle. When it is launched, it infects the System, Finder and any applications. It causes System file and program damage.

Virus Info

This trojan virus disguises itself as a program which claims to provide virus info, but when launched, will destroys the directory of your hard drive. This is a **very destructive virus.**

WDEF

The WDEF virus spreads in System 6 via the Desktop file. It does not damage data files, but it can cause frequent System crashes. System 7 Desktop files are relatively immune to WDEF, only if you rebuild the desktop regularly.

Strains: **WDEF A, WDEF B.**

ZUC

ZUC and it's strains, infects applications and displays the annoying symptom of controlling the movement of the cursor on your screen. Once the infection reaches the Finder file, the computer becomes virtually unusable.

Strains: **ZUC A, ZUC B, ZUC C.**

System Error Codes

See this special section called 'Positive Error Codes 1-31 in Detail' on page 72, for further details on these common occurring error messages.

There are a few small applications that you can download from any Mac web, ones that I find very useful are: **System Errors**, **Easy Errors** and **Apple Error Codes '98**. You may also find, to a limited degree, that **Extension Overload** and **InformINIT**, also cover some Mac error codes.

Try out this excellent 'encyclopedia' of MacOS error codes, it's called **Black & Bleu**, it's shareware, but it has every single error code listed, and even has extensive details on quiet a few of them. It can be downloaded off any decent Mac shareware web site.

Positive error codes are often, confusingly, referred to as a Type xx Error (xx = usually a positive error number).

NOTE: "—" in the listing below, means that an error does not exist for this number.

POSITIVE ERRORS CODES

Error Code & Error Name	Error Description
0	noErrThe operation succeeded.
1	dsBusErrorBus error.
2	dsAddressErrAddress error.
3	dsIllInstErrIllegal instruction error.
4	dsZeroDivErrZero divide error.
5	dsChkErrCheck trap error.
6	dsOvflowErrOverflow trap error.
7	dsPrivErrPrivilege violation error.
8	dsTraceErrTrace mode error.
9	dsLineAErrLine 1010 trap error.
10	dsLineFErrLine 1111 trap error.
11	dsMiscErrMiscellaneous hardware exception error (code that doesn't exist).
12	dsCoreErrUnimplemented core routine error.
13	dsIrqErrUninstalled interrupt error.
14	dsIOCoreErrIO Core Error.
15	dsLoadErrSegment Loader Error.
16	dsFPERRFloating point error.
17	dsNoPackErrPackage 0 not present [List Manager].
18	dsNoPk1Package 1 not present [Reserved by Apple].
19	dsNoPk2Package 2 not present [Disk Initialization].
20	dsNoPk3Package 3 not present [Standard File].
21	dsNoPk4Package 4 not present [Floating-Point Arithmetic].
22	dsNoPk5Package 5 not present [Transcendental Functions].
23	dsNoPk6Package 6 not present [International Utilities].
24	dsNoPk7Package 7 not present [Binary/Decimal Conversion].

25	dsMemFullErrOut of memory!
26	dsBadLaunchCan't launch file.
27	dsFSERRFile system map has been trashed.
28	dsStknHeapStack has moved into application heap.
30	dsReinsertRequest user to re-insert off-line volume.
31	dsNotThe1Not the disk I wanted (obsolete).
32	EPIPEBroken pipe.
33	negZcbFreeErrZcbFree has gone negative.
34	ERANGEMath result not representable.
35	EDEADLKCall would block so was aborted.
36	transform_move_too_largeN/A.
37	btbadHdrBad BTree header record detected.
38	ENOTSOCKSocket operation on non-socket.
39	EDESTADDRREQDestination address required.
40	dsGreetingWelcome to Macintosh greeting.
41	dsFinderErrCan't load the Finder error.
42	dsBadStartupDiskUnable to mount boot volume (obsolete).
43	dsSystemFileErrCan't find System file to open (obsolete).
44	ESOCKTNOSUPPORTSocket type not supported.
45	EOPNOTSUPPOperation not supported on socket.
46	viewPort_clip_no_intersectionN/A.
47	viewPort_scale_too_smallN/A.
48	EADDRINUSEAddress already in use.
49	EADDRNOTAVAILCan't assign requested address.
50	ENETDOWNNetwork is down.
50	cmnotemptyDirectory CNode not empty (valence = 0).
51	dsBadSlotIntUnserviceable slot interrupt.
52	ENETRESETNetwork dropped connection on reset
53	EXONNABORTEDSoftware caused connection abort.
54	ECONNRESETConnection reset by peer.
55	ENOBUFSNo buffer space available.
56	EISCONNSocket is already connected.
57	ENOTCONNSocket is not connected.
58	ESHUTDOWNCan't send after socket shutdown.
59	ETOOMANTREFSToo many references: can't splice.
60	ETIMEDOUTConnection timed out.
61	ECONNREFUSEDConnection refused.
62	ViewDevice_skew_too_largeN/A
63	—
64	EHOSTDOWNHost is down.
65	EHOSTUNREACHNo route to host.
66	—
67	—
68	—
69	—
70	EPROTON/A
71	ETIMEN/A
72	ENOSRN/A
73	EBADMSGN/A
74	ECANCELN/A
75	ENOSTRN/A
76	ENODATAN/A

77	EINPROGRESS.....	N/A
78	ESRCH.....	N/A
79	ENOMSG.....	N/A
80	—	
81	dsBadSANEopcode.....	Bad opcode given to SANE Pack4.
82	—	
83	dsBadPatchHeader.....	SetTrapAddress saw the “come-from” header.
84	menuPrgErr.....	Happens when a menu is purged.
85	dsMBarNFnd.....	SysErr – cannot find MBDF.
86	dsHMenuFindErr.....	SysErr – recursively defined HMenus.
87	dsWDEFnFnd.....	Could not load WDEF.
88	dsCDEFnFnd.....	Could not load CDEF.
89	dsMDEFnFnd.....	Could not load MDEF.
90	dsNoFPU.....	FPU instruction executed, but machine has no FPU.
91	—	
92	—	
93	—	
94	—	
95	—	
96	—	
97	—	
98	dsNoPatch.....	Can’t patch for particular Model Mac.
99	dsBadPatch.....	Can’t load patch resource.
100	—	
101	dsParityErr.....	Memory parity error.
102	dsOldSystem.....	System is too old for this ROM.
103	ds32BitMode.....	Booting in 32-bit on a 24-bit system.
104	dsNeedToWriteBootBlocks.....	Need to write new boot blocks.
105	dsNotEnoughRAMToBoot.....	Need at least 1.5MB of RAM to boot 7.0.
106	dsBufPtrTooLow.....	bufPtr moved too far during boot.
107	—	
108	—	
109	—	
110	—	
111	—	
112	dsVMDeferredFuncTableFull.....	VM’s (virtual memory) DeferUserFn table is full.
113	dsVMBadBackingStore.....	An error occurred while reading or writing the VM backing store file.
114	dsCantHoldSystemHeap.....	The Mac was unable to hold the system heap during boot.
115	—	
116	dsSystemREquiresPowerPC.....	The startup disk requires a PowerPC.
117	dsGibblyMovedToDisabledFolder.....	The active gibbly was disabled during boot.
118	dsUnBootableSystem.....	The active system file will not boot on this system because it was designed only to boot from a CD.
119	dsMustUseFCBAccessors.....	Attempted to access the OpenFileList directly.
120	—	
121	—	
122	—	
123	—	
124	—	
125	—	

126	—	
127	errUserSElectPPD.....	This error is not shown to the user, it is used when the user has selected the ‘SelectPPD’ in the Setup Option dialogue.
128	dsWriteToSupervisor StackGuardPage.....	The supervisor stack overflowed into it’s guard page.
1001	klInvalidRequestForGuestErr.....	When guests try to make database requests.
1002	klInvalidSessionErr.....	When client sends a non-existing session ID.
1003	kRequestIDNotFoundErr.....	When client tries to cancel an invalid request.
1004	kSessionIDNotFoundErr.....	When client tries to log off with invalid session.
1005	kTranactionFailedErr.....	Requested pls transaction failed.
1006	klInvalidSourceIDErr.....	When client sends a non-existing info source ID.
1007	klInvalidDoolIDErr.....	When client sends a non-existing document ID.
1008	kNoAccessPriviligesErr.....	When client tries to access a file for which he doesn’t have access.
1009	kDerverGoingDownErr.....	When the server is in the process of shutting down.
1010	klInvalidObjectIDErr.....	Object ID for ObjectRequest is bad.
1011	kNoSharingOnServerErr.....	Server doesn’t have File Sharing or Appleshare running.
1012	kWrongProtocolErr.....	Client is using the wrong protocol version.
1013	kFileNotFoundErr.....	GetFile wasn’t able to locate the file.
1014	kDuplicateNameErr.....	Tried to add reporter with name that exists.
1015	kTooManyUsersErr.....	Maximum number of users already logged in.
1016	klInfoSourceHiddenErr.....	Info source on which you tried to execute this request is Hidden.
1017	kNoQueryStringErr.....	When client sends a zero-length query string.
1018	kQueryStringTooLongErr.....	When a client sends a very long query string.
1019	klInvalidMinRankErr.....	Min rank requested not in the range (1..5).
1020	klInvalidMacHitsErr.....	Max hits requested <= 0 on search request.
1021	klInvalidMacTermsErr.....	Mac terms requested <= 0 on related terms request.
1022	klInvalidTextBoundsErr.....	The startByte/endByte combo doesn’t make sense.
1023	klInvalidOperationErr.....	Invalid operation in DBObject/DBDReporter request.
1024	klInvalidObjectTypeErr.....	Invalid objectType in DBObject/DBEnumerate request.
1025	klInvalidObjectNameErr.....	Bogus objectName.
1026	klInvalidObjectDateErr.....	objectDateSize is bogus.
1027	klInvalidFlagsErr.....	Flags field is invalid (DBReporter/GetFile).
1028	klInvalidSubSessionIDErr.....	Invalid subsessionId.
1029	kDuplicateTickleErr.....	Duplicate Tickle request.
1030	kParamErr.....	Received a mal-formed request (too short, or too long).
1031	klInternalErr.....	Bad things happened on the Server. May be time to restart.
1032	kQuerySyntaxErr.....	Syntax error in query.
1033	kFileModSinceIndexErr.....	The file has been modified since indexing, so you can’t do GetText on it.

Open Transport/PPP Error Codes (also, see errors -3150)

7102	N/A.....	OT/PPP did not load properly at system start up.
7103	N/A.....	OT/PPP could not set up a port.
7104	N/A.....	OT/PPP is out of memory.
7105	N/A.....	The requested action is not supported.
7106	N/A.....	One or more resources are missing from OT/PPP’s installed files.

7107 N/AThe Remote Access Connections file is not compatible with the installed version of OT/PPP.

7108 N/AAn action requiring a connection was requested when there was no connection.

7109 N/AThe connection attempt or established connection was terminated by the user.

7110 N/AThe user name is unknown.

7111 N/AThe password is invalid.

7112 N/AAn unexpected error with no useful information has occurred.

7113 N/AOne or more of the installed OT/PPP files is damaged.

7114 N/AThe requested action could not be performed because OT/PPP was busy.

7115 N/AThe OT/PPP logical port is in an unknown state.

7116 N/AThe OT/PPP logical port is in an invalid state.

7117 N/AThe OT/PPP logical port has detected an invalid serial protocol.

7118 N/ALogin is disabled for the given user.

7120 N/AThe server administrator requires the user to enter a password.

7122 N/AOT/PPP could not initialize Open Transport.

7123 N/AThe requested action could not be performed because OT/PPP is not fully initialized yet.

7124 N/ATCP/IP is inactive and cannot be loaded.

7125 N/ATCP/IP is not yet configured.

7126 N/APPP is not selected as the TCP/IP interface in the current TCP/IP configuration.

7128 N/AThe requested PPP protocol was rejected by the PPP peer.

7129 N/APPP authentication failed.

7130 N/APPP negotiation failed.

7131 N/APPP was disconnected locally.

7132 N/AThe PPP peer disconnected unexpectedly.

7133 N/AThe PPP peer is not responding.

7134 N/AThe OT/PPP log file is not open.

7135 N/AThe OT/PPP log file is already open.

7136 N/AThe OT/PPP log entry could not be retrieved.

7138 N/AOT/PPP can not locate the active System Folder.

7139 N/AOT/PPP can not locate its Preferences folder.

7140 N/AThere is a pre-existing file using an OT/PPP type or creator.

7141 N/AThere is a pre-existing folder using an OT/PPP folder name & location.

7142 N/AThe Remote Access Connections file is not open.

7144 N/AAn unknown PPP control protocol type was received.

7145 N/APPP received a packet with an invalid length.

7146 N/APPP received a negotiable option with an invalid value.

7147 N/APPP received a negotiable option with invalid flags.

7148 N/APPP ran out of memory while negotiating with the peer.

7152 N/APPP encountered an error with no useful information.

7153 N/APPP is in an invalid state.

7163 N/AThe user cancelled the password entry dialog.

7164 N/AThe user did not respond to the password entry dialog in time.

7165 N/AAn unknown Open Transport serial port was referenced.

7166 N/AThe OT/PPP logical port is not configured.

7167 N/ANo AppleTalk services endpoints are available.

7168 N/AThe user cancelled the modem script ASK or the Manual Dialing dialog.

20000 dsShutDownOrRestartUser choice between ShutDown and Restart.

20001 dsSwitchOffOrRestartUser choice between Switch off or Restart.

20002 dsForcedQuitAllow the user to ExitToShell, return if Cancel.

32767 dsSysErrGeneral system error (catch-all used in DSAT).

NEGATIVE ERROR CODES

General System Errors

0 noErr0 for success.

-1 qErrQueue element not found during deletion.

-2 vTypErr.....Invalid queue element.

-3 corErrCore routine number out of range.

-4 unimpErrUnimplemented core routine.

-5 SlpTypeErrInvalid queue element.

-6 —

-7 —

-8 seNoDB.....No debugger installed to handle debugger command.

Colour Manager Errors

-9 iTabPurgErrFrom Color2Index/ITabMatch.

-10 noColMatchN/A

-11 qAllocErrFrom MakeTable.

-12 tblAllocErr.....N/A

-13 overRunN/A

-14 noRoomErr.....N/A

-15 seOutOfRangeFrom SetEntry.

-16 seProtErr.....N/A

-17 i2CRangeErrN/A

-18 gdBadDevN/A

-19 reRangeErrN/A

-20 selnvRequestN/A

-21 seNoMemErr.....N/A

I/O System Errors

-17 controlErrDriver can't respond to Control call.

-18 statusErr.....Driver can't respond to Status call.

-19 readErr.....Driver can't respond to Read call.

-20 writErr.....Driver can't respond to Write call.

-21 badUnitErr.....Driver reference number doesn't match unit table.

-22 unitEmptyErrDriver reference number specifies NIL handle in unit table.

-23 openErrRequested read/write permission doesn't match driver's open permission or attempt to open RAM serial driver failed.

-24 closErr.....Close failed, or permission to close .MPP driver was denied.

-25 dRemovErrTried to remove an open driver.

-26 dInstErrDrvrlInstall couldn't find driver in resources, or abort error.

-27 abortErrIO call aborted by KillIO.

-28 notOpenErrCouldn't rd/wr/ctl/sts cause driver not opened.

-29 unitTblFullErr.....Unit table has no more entries.

-30 dceExtErrDCE extension error.

-31 —

-32 —

File System Errors

-33	dirFulErr	Directory full.
-34	dskFulErr	Disk full.
-35	nsvErr	No such volume, or volume not found.
-36	ioErr	I/O error.
-37	bdNamErr	Bad file name; there may be no bad names in the final system!
-38	fnOpnErr	File not open.
-39	eofErr	End of file, or no additional data in the format.
-40	posErr	Tried to position to before start of file (r/w).
-41	mFulErr	Memory full (open) or file won't fit (load).
-42	tmfoErr	Too many files open.
-43	fnfErr	File/Folder/Edition container/Target not found.
-44	wPrErr	Disk is write-protected; Volume is locked through hardware.
-45	fLckdErr	File is locked, or publisher writing to an edition.
-46	vLckdErr	Volume is locked through software.
-47	fBsyErr	File is busy (delete); Section doing I/O.
-48	dupFNERR	Duplicate filename (rename); File found instead of folder.
-49	opWrErr	File already open with write permission.
-50	paramErr	Error in user parameter list.
-51	rfNumErr	Reference number invalid.
-52	gfpErr	Get file position error.
-53	volOffLinErr	Volume is off line.
-54	permErr	Permission error on file open, or software lock on file.
-55	volOnLinErr	Drive volume already on-line at MountVol.
-56	nsDrvErr	No such drive (tried to mount a bad drive number).
-57	noMacDskErr	Not a Macintosh disk (signature bytes are wrong).
-58	extFSErr	External file system, file system identifier is non-zero.
-59	fsRnErr	File system internal error: during rename the old entry was deleted but could not be restored.
-60	badMDBErr	Bad master directory block.
-61	wrPermErr	Write permission error.
-62	—	—
-63	—	—

Font Manager Errors

-64	fontDecError	Error during font declaration.
-65	fontNotDeclared	Font not declared.
-66	fontSubErr	Font substitution occurred.

Disk Errors

-64	lastDskErr	Last disk error.
-64	noDriveErr	Drive not installed.
-65	offLinErr	Read/write requested for an off-line drive.
-66	noNybErr	Couldn't find 5 nibbles in 200 tries.
-67	noAdrMkErr	Couldn't find valid address mark.
-68	dataVerErr	Read verify compare failed.
-69	badCksmErr	Address mark checksum didn't check.
-70	badBtSlpErr	Bad address mark bit slip nibbles.
-71	noDtaMkErr	Couldn't find a data mark header.
-72	badDCksum	Bad data mark checksum.
-73	badDBtSlp	Bad data mark bit slip nibbles.

-74	wrUnderrun	Write under-run occurred.
-75	cantStepErr	Step handshake failed.
-76	tk0BadErr	Track 0 detect doesn't change.
-77	initIWMErr	Unable to initialise IWM.
-78	twoSideErr	Tried to read second side on a one sided drive.
-79	spdAdjErr	Unable to correctly adjust disk speed.
-80	seekErr	Track number wrong on address mark.
-81	sectNFErr	Sector number never found on a track.
-82	fmt1Err	Can't find sector 0 after track format.
-83	fmt2Err	Can't get enough sync.
-84	verErr	Track failed to verify.
-84	firstDskErr	First disk error.

Serial Ports, PRAM/Clock

-85	clkRdErr	Unable to read same clock value twice.
-86	clkWrErr	Time written did not verify.
-87	prWrErr	Parameter RAM written didn't read-verify.
-88	prlNitErr	InitUtil found the parameter RAM uninitialized.
-89	rcvrErr	SCC receiver error (framing, parity, OR).
-90	breakRecd	Break received (SCC).

AppleTalk Errors

-91	ddpSktErr	Error opening socket, or invalid address or table is full.
-92	ddpLenErr	Data length too big.
-93	noBridgeErr	No network bridge for non-local send.
-94	lapProtErr	Error in attaching/detaching protocol.
-95	excessCollsns	Hardware error [excessive collisions on write].
-96	portNotPwr	The serial port is not currently powered.
-97	portInUse	Driver Open error code (port is in use).
-98	portNotCf	Driver Open error code (parameter RAM not configured for this connection).

Memory Manager Errors

-99	memROZErr	Hard error in ROZ.
-99	memROZError	Hard error in ROZ.
-99	memROZWarn	Soft error in ROZ.

Scrap Manager Errors

-100	noScrapErr	No scrap exists error.
-101	KNSLPluginNotKilled	N/A.
-102	noTypeErr	Format not available, or no object of that type in scrap.
-103	—	—
-104	—	—
-105	—	—
-106	—	—
-107	—	—

Memory Allocation Errors

-108	memFullErr	Ran out of memory, or not enough room in heap zone.
-109	nilHandleErr	GetHandleSize fails on baseText or substitutionText, NIL master pointer, handle was NIL in HandleZone or other.
-110	memAdrErr	Address was odd, or out of range.

- 111 memWZErr.....Attempted to operate on a free block; GetHandleSize fails on baseText or substitutionText, or WhichZone failed (applied to free block).
- 112 memPurErr.....Trying to purge a locked or non-purgeable block.
- 113 memAZErr.....Address in zone check failed.
- 114 memPCErr.....Pointer Check failed.
- 115 memBCErr.....Block Check failed.
- 116 memSCErr.....Size Check failed.
- 117 memLockedErr.....Trying to move a locked block (MoveHHi).
- 118 —
- 119 —

HFS Errors

- 120 dirNFErr.....Directory not found.
- 121 tmwdoErr.....No free WDCB available.
- 122 badMovErr.....Move into offspring error.
- 123 wrgVolTypErr.....Not an HFS volume or operation not supported for MFS (obsolete).
- 124 volGoneErr.....Server volume has been disconnected.
- 125 updPixMemErr.....Insufficient memory to update a pixmap.
- 127 fsDSIntErr.....Internal file system error.

Menu Manager Errors

- 126 dsMBarNFnd.....System error code for MBDF not found.
- 127 dsHMenuFindErr.....Couldn't find HMenu's parent in MenuKey.
- 128 userCanceledErr.....User cancelled an operation.
- 129 —

HFS File ID Errors

- 130 fidNotFound.....No file thread exists.
- 131 fidNotAFile.....Directory specified; it is not a file.
- 132 fidExists.....File ID already exists.
- 133 —
- 134 —
- 135 —
- 136 —
- 137 —
- 138 —
- 139 —
- 140 —
- 141 —
- 142 —
- 143 —
- 144 —

Colour QuickDraw and Colour Manager Errors

- 145 noMemForPictPlaybackErr..No memory available to playback a picture/movie.
- 146 —
- 147 rgnTooBigError.....Region too big or complex.
- 148 pixMapTooBigErr.....Pixel map record pixmap is too large.
- 149 nsStackErr.....Not enough stack space for the necessary buffers 'OR'.
- 150 cMatchErr.....Color2Index failed to find an index.

- 151 cTempMemErr.....Failed to allocate memory for temporary structures.
- 152 cNoMemErr.....Failed to allocate memory for structure.
- 153 cRangeErr.....Range error on colorTable request.
- 154 cProtectErr.....ColorTable entry protection violation.
- 155 cDevErr.....Invalid type of graphics device.
- 156 cResErr.....Invalid resolution for MakeTable.
- 157 cDepthErr.....Invalid pixel depth.
- 158 cParmErr.....Invalid parameter.
- 159 —
- 160 —
- 161 —
- 162 —
- 163 —
- 164 —
- 165 —
- 166 —
- 167 —
- 168 —
- 169 —

ColourSync Errors

- 170 cmProfileError.....N/A.
- 171 cmMethodError.....Error occurred during the CMM process that decides the CMM to use (part of ColorSync).
- 172 —
- 173 —
- 174 —
- 175 cmMethodNotFound.....CMM is not present.
- 176 cmProfileNotFound.....N/A.
- 177 cmProfilesIdentical.....The profiles are the same.
- 178 cmCantConcatenateError....The profile can't be concatenated.
- 179 cmCantXYZ.....CMM can't handle XYZ space.
- 180 cmCantDeleteProfile.....N/A.
- 181 cmUnsupportedSataType....N/A.
- 182 cmNoCurrentProfile.....N/A.
- 183 —
- 184 —

Resource Manager Errors (other than I/O)

- 185 badExtResource.....Extended resource has a bad format.
- 186 CantDecompress.....Resource bent ('the bends') can't decompress a compressed resource.
- 187 —
- 188 resourceInMemory.....Resource already in memory.
- 189 writingPastEnd.....Writing past end of file.
- 190 inputOutOfBounds.....Offset or count out of bounds.
- 191 —
- 192 resNotFound.....Resource not found.
- 193 resFNotFound.....Resource file not found.
- 194 addResFailed.....Add Resource failed.
- 195 addRefFailed.....Add Reference failed.
- 196 rmvResFailed.....Remove Resource failed.

- 197 rmvRefFailedRemove Reference failed.
- 198 resAttrErrAttribute inconsistent with operation.
- 199 mapReadErrMap inconsistent with operation.

Sound Manager Errors

- 200 noHardwareNo hardware support for the specified synthesizer.
- 201 notEnoughHardwareNo more channels for the specified synthesizer.
- 202 —
- 203 queueFullNo room in the queue.
- 204 resProblemProblem loading the resource.
- 205 badChannelChannel is corrupt or unusable [invalid channel queue length].
- 206 badFormatResource is corrupt (handle to 'snd' resource was invalid).
- 207 notEnoughBufferSpaceInsufficient memory available.
- 208 badFileFormatFile is corrupt or unusable, or not AIFF or AIFF-C.
- 209 channelBusyChannel is being used for a PFD already.
- 210 buffersTooSmallCannot operate in the memory allowed.
- 211 channelNotBusyChannel not currently used.
- 212 noMoreRealTimeNot enough CPU time available.
- 213 badParamA parameter is incorrect.
- 214 —
- 215 —
- 216 —
- 217 —
- 218 —
- 219 —
- 220 siNoSoundInHardwareNo sound input hardware available.
- 221 siBadSoundInDeviceInvalid index for SoundInGetIndexedDevice.
- 222 siNoBufferSpecifiedNo buffer specified.
- 223 siInvalidCompressionInvalid compression type.
- 224 siHardDriveTooSlowHard drive too slow to record.
- 225 siInvalidSampleRateInvalid sample rate.
- 226 siInvalidSampleSizeInvalid sample size.
- 227 siDeviceBusyErrSound input device is busy.
- 228 siBadDeviceNameInvalid device name.
- 229 siBadRefNumInvalid reference number.
- 230 siInputDeviceErrInput device hardware failure.
- 231 siUnknownInfoTypeDriver returned invalid info type selector.
- 232 siUnknownQualityInvalid quality selector returned by driver.
- 233 —
- 234 —
- 235 —
- 236 —
- 237 —
- 238 —
- 239 —
- 240 noSynthFoundNo SPEECH device could be located.
- 241 SynthOpenFailedThe SPEECH device could not be accessed.
- 242 SunthNotReadyThe SPEECH device is offline.
- 243 bufTooSmallA SPEECH buffer was too small.
- 244 voiceNotFoundThe requested voice wasn't found.
- 245 incompatibleVoiceThe requested voice could not be faked.
- 246 badDictFormatThe SPEECH dictionary format is bad.

- 247 badInputTextSomething is wrong with the SPEECH text.
- 248 —
- 249 —

MIDI Manager Errors

- 250 midiNoClientErrNo client with that ID found.
- 251 midiNoPortErrNo port with that ID found.
- 252 midiTooManyPortsErrToo many ports already installed in the system.
- 253 midiTooManyConsErrToo many connections made.
- 254 midiVConnectErrPending virtual connection created.
- 255 midiVConnectMadePending virtual connection resolved.
- 256 midiVConnectRmvdPending virtual connection removed.
- 257 midiNoConErrNo connection exists between specified ports.
- 258 midiWriteErrCouldn't write to all connected ports.
- 259 midiNameLenErrName supplied is longer than 31 characters.
- 260 midiDuplDErrDuplicate client ID.
- 261 midiInvalidCmdErrCommand not supported for port type.
- 262 to -289 —
- 290 smSDMInitErrThe SDM could not be initialised.
- 291 smSRTInitErrThe Slot Resource Table could not be initialised.
- 292 smPRAMInitErrThe Slot PRAM entry could not be initialised.
- 293 smPrilInitErrThe Cards could not be initialised.

Notification Manager Error

- 299 nmTypErrInvalid queue Type – must be ORD(nmType).

Start Manager Errors

- 290 smSDMInitErrSDM could not be initialized.
- 291 smSRTInitErrSlot Resource Table could not be initialized.
- 292 smPRAMInitErrSlot Resource Table could not be initialized.
- 293 smPrilInitErrCards could not be initialized.
- 300 smEmptySlotNo card in slot.
- 301 smCRCFailCRC check failed for declaration data.
- 302 smFormatErrFHeader Format is not Apple's.
- 303 smRevisionErrWrong revision level.
- 304 smNoDirDirectory offset is Nil.
- 305 smDisabledSlotThis Slot is disabled.
- 306 smNosInfoArrayNo slInfoArray. Memory Mgr error.
- 307 smResrvErrFatal reserved error. Reserved field <> 0.
- 308 smUnExBusErrUnexpected BusError.
- 309 smBLFieldBadByteLanes field was bad.
- 310 smFHBlockRdErrError occurred during _sGetFHeader.
- 311 smFHBikDispErrError occurred during _sDisposePtr (dispose of FHeader block).
- 312 smDisposePErrDispose Pointer error.
- 313 smNoBoardsRsrcNo Board sResource.
- 314 smGetPERRError occurred during _sGetPRAMRec (See SIMStatus).
- 315 smNoBoardIdNo Board Id.
- 316 smlntStatVErrThe InitStatusV field was negative after primary or secondary init.
- 317 smlntTbIVErrAn error occurred while trying to initialize the Slot Resource Table.

- 318 smNoJmpTbl.....SDM jump table could not be created.
- 319 smBadBoardId.....BoardId was wrong, re-init the PRAM record.
- 320 smBusErrTO.....BusError time out.
- 330 smBadRefld.....Reference Id not found in List.
- 331 smBadsList.....Bad sList: Id1<Id2<Id3, format is not followed.
- 332 smReservedErr.....Reserved field not zero.
- 333 smCodeRevErr.....Code revision is wrong.
- 334 smCPUErr.....Code revision is wrong.
- 335 smsPointerNil.....LPointer is nil (from sOffsetData, if this error occurs, check sInfo record for more information).
- 336 smNiIsBlockErr.....Nil sBlock error (Don't allocate and try to use a nil sBlock).
- 337 smSlotOOBErr.....Slot out of bounds error.
- 338 smSelOOBErr.....Selector out of bounds error.
- 339 smNewPErr.....NewPtr error.
- 340 smBlkMoveErr.....BlockMove error.
- 341 smCkStatusErr.....Status of slot = fail.
- 342 smGetDrvrNamErr.....Error occurred during _sGetDrvrName.
- 343 smDisDrvrNamErr.....Error occurred during _sDisDrvrName.
- 344 smNoMoresRsrcs.....No more sResources.
- 345 smsGetDrvrErr.....Error occurred during _sGetDriver.
- 346 smBadsPtrErr.....Bad pointer was passed to sCalcsPointer.
- 347 smByteLanesErr.....NumByteLanes was determined to be zero.
- 348 smOffsetErr.....Offset was too big (temporary, should be fixed).
- 349 smNoGoodOpens.....No opens were successful in the loop.
- 350 smSRTOvrFlErr.....SRT over flow.
- 351 smRecNotFnd.....Record not found in the SRT.

Device Manager Slot Support Errors

- 360 slotNumErr.....Invalid slot # error.
- 400 gcrOnMFMErr.....GCR format on high density media error.

Edition Manager Errors

- 450 editionMgrlInitErr.....Edition manager not initied by this application.
- 451 badSectionErr.....Not a valid section record.
- 452 notRegisteredSectionErr.....Not a registered section record.
- 453 badEditionFileErr.....Edition file is corrupt.
- 454 badSubPartErr.....Cannot use sub parts in this release.
- 460 multiplePublisherWrn.....Pub already registered for container.
- 461 containerNotFoundWrn.....Couldn't find editionContainer now.
- 462 containerAlreadyOpenWrn...Container is open by this section.
- 463 notThePublisherWrn.....Different pub last wrote that container.

SCSI Manager Errors

- 470 scsiBadPBErr.....Invalid field(s) in the parameter block.
- 471 scsiOverrunErr.....Attempted to transfer too many bytes.
- 472 scsiTransferErr.....Write flag conflicts with data transfer phase.
- 473 scsiBusTOErr.....Bus error during transfer.
- 474 scsiSelectTOErr.....scsiSelTO exceeded (selection failed).
- 475 scsiTimeOutErr.....scsiReqTO exceeded.
- 476 scsiBusResetErr.....The bus was reset, so your request was aborted.
- 477 scsiBadStatus.....Non-zero (not 'Good') status returned.
- 478 scsiNoStatusErr.....Device did not go through a status phase.

- 479 scsiLinkFailErr.....Linked command never executed.
- 489 scsiUnimpVctErr.....Unimplemented routine was called SysErrs used instead.

SysErrs used instead of inline \$A9FF & \$ABFF

- 490 userBreak.....User debugger break.
- 491 strUserBreak.....User debugger break – display string on stack.
- 492 exUserBreak.....User debugger break – execute commands on stack.

QuickDraw Error

- 500 rgnTooBigErr.....Bitmap would convert into a region greater than 64 KB.

Text Edit Error

- 501 teScrapSizeErr.....Scrap item too big for text edit record.

Operating System Error

- 502 hwParamrErr.....Bad selector for _HWPriv.

Processes Errors

- 600 procNotFound.....No eligible process with specified process serial number.
- 601 memFragErr.....Not enough room to launch application with special requirements.
- 602 appModeErr.....Memory mode is 32-bit, but application is not 32-bit clean.
- 603 protocolErr.....Application made module calls in improper order.
- 604 hardwareConfigErr.....Hardware configuration not correct for call.
- 605 appMemFullErr.....Application size is not big enough for launch.
- 606 appsDaemon.....Application is BG-only, and launch flags disallow this.
- 607 bufferIsSmall.....Buffer is too small.
- 608 noOutstandingHLE.....No outstanding high-level event.
- 609 connectionInvalid.....Connection is invalid.
- 610 noUserInteractionAllowed....Attempted Post High Level Event from background and no session yet established Memory Dispatch Errors.

Memory Dispatch Errors

- 620 notEnoughMemoryErr.....Insufficient physical memory.
- 621 notHeldErr.....Specified range of memory is not held.
- 622 cannotMakeContiguousErr..Cannot make specified range contiguous.
- 623 notLockedErr.....Specified range of memory is not locked.
- 624 interruptsMaskedErr.....Called with interrupts masked.
- 625 cannotDeferErr.....Unable to defer additional user functions.

Database Access (Pack 13) Errors

- 800 rcDBNull.....The data item was NULL.
- 801 rcDBValue.....Data available or successfully retrieved.
- 802 rcDBError.....Error executing function.
- 803 rcDBBadType.....Next data item not of requested data type.
- 804 rcDBBadCol.....Function timed out.
- 805 rcDBBreak.....Query currently executing.
- 806 rcDBExec.....Session ID is invalid.
- 807 rcDBBadSessID.....Invalid session number.
- 808 rcDBBadSessNum.....Couldn't find the specified database extension, or error occurred in opening database extension.
- 809 rcDBBadDDEV.....The database extension does not support asynchronous calls.

- 810 rcDBCcancel.....Invalid parameter block specified.
- 811 rcDBAsynchNotSuppThere is no handler for this data type installed for the current application.
- 812 rcDBBadAsynchPB.....N/A
- 813 rcDBNoHandler.....The InitDBPack function has not yet been called.
- 814 rcDBWrongVersionThe wrong version was called.
- 815 rcDBPackNotInitedPack not inited.
- 816 rcDBStatusCancelStatus was cancelled.

Help Manager Errors

- 850 hmHelpDisabledHelp balloons are not enabled.
- 851 hmResNotFound.....Help Manager resource not found.
- 852 hmMemFullErrHelp Manager, memory full error.
- 853 hmBalloonAbortedBecause of constant cursor movement, help balloon wasn't displayed.
- 854 hmBadHelpDataBalloon Menu and item are same as previous menu and item.
- 855 hmHelpManagerNotInited....Help menu not set up.
- 856 hmBadSelectorHelp Manager has a bad selector.
- 857 hmSkippedBalloon.....No balloon content to fill in.
- 858 hmWrongVersionWrong version of Help Manager resource.
- 859 hmUnknownHelpType.....Help message record contained a bad type.
- 860 hmCouldNotLoadPackage...Help Manager could not load package.
- 861 hmOperationUnsupported...Bad method parameter.
- 862 hmNoBalloonUp.....No balloon showing.
- 863 hmCloseViewActiveUser using CloseView won't let you remove balloon.

AppleTalk: PPC Toolbox Errors

- 900 notInitedErrPPC Toolbox has not been initialized yet.
- 902 nameTypeErrInvalid or inappropriate locationKindSelector in location name.
- 903 noPortErrInvalid port name; Unable to open port or bad port reference number.
- 904 noGlobalsErrSystem unable to allocate memory, critical error.
- 905 localOnlyErrNetwork activity is currently disabled.
- 906 destPortErr.....Port does not exist at destination.
- 907 sessTableErrPPC Toolbox is unable to create a session.
- 908 noSessionErrInvalid session reference number.
- 909 badReqErrBad parameter or invalid state for this operation.
- 910 portNameExistsErr.....Another port is already open with this name.
- 911 noUserNameErrUser name unknown on destination machine.
- 912 userRejectErr.....Destination rejected the session request.
- 913 noMachineNameErrUser hasn't named his Macintosh.
- 914 noToolboxNameErrA system resource is missing, not too likely.
- 915 noResponseErrUnable to contact application.
- 916 portClosedErr.....The port was closed.
- 917 sessClosedErrThe session has closed.
- 919 badPortNameErr.....PPC port record is invalid.
- 922 noDefaultUserErrUser has not specified owner name in Sharing Setup Control Panel.
- 923 notLoggedInErrDefault user reference number does not yet exist.
- 924 noUserRefErr.....Unable to create a new user reference number.
- 925 networkErrAn error has occurred in the network.

- 926 noInformErrPPCStart failed because target program did not have an inform pending.
- 927 authFailErrUser's password is wrong.
- 928 noUserRecErrInvalid user reference number.
- 930 badServiceMethodErrService method is other than ppcServiceRealTime.
- 931 badLocNameErr.....Location name is invalid.
- 932 guestNotAllowedErrDestination port requires authentication.

AppleTalk: NBP Errors

- 1024 nbpBuffOvrBuffer overflow in LookupName.
- 1025 nbpNoConfirm.....Name not confirmed on ConfirmName.
- 1026 nbpConfDiffName confirmed at different socket.
- 1027 nbpDuplicate.....Duplicate name exists already.
- 1028 nbpNotFound.....Name not found on remove.
- 1029 nbpNISErrError trying to open the NIS.

ASP Errors (XPP driver)

- 1066 aspBadVersNumServer cannot support this ASP version.
- 1067 aspBufTooSmall.....Buffer too small.
- 1068 aspNoMoreSessNo more sessions on server.
- 1069 aspNoServersNo servers at that address.
- 1070 aspParamErr.....Parameter error.
- 1071 aspServerBusyServer cannot open another session.
- 1072 aspSessClosed.....Session closed.
- 1073 aspSizeErrCommand block too big.
- 1074 aspTooManyToo many clients (server error).
- 1075 aspNoAckNo Ack on attention request (server error).

AppleTalk: ATP Errors

- 1096 reqFailed.....Request to contact router failed: retry count exceeded.
- 1097 tooManyReqs.....Too many concurrent requests.
- 1098 tooManySksToo many concurrent responding-sockets.
- 1099 badATPSktBad ATP-responding socket.
- 1100 badBuffNumBad response buffer number specified.
- 1101 noRelErr.....No release received.
- 1102 cbNotFoundControl Block not found; no pending asynchronous calls.
- 1103 noSendRespAddResponse issued without SendResponse.
- 1104 noDataAre.....No data area for request to MPP.
- 1105 reqAbortedERdCancel function called for ERead [SendRequest aborted by RelTCB].

Data Stream Protocol: DSP driver Errors

- 1273 errOpenDeniedOpen request denied by recipient.
- 1274 errDSPQueueSizeSend or receive queue is too small.
- 1275 errFwdResetRead terminated by forward reset.
- 1276 errAttentionAttention message too long.
- 1277 errOpening.....Attempt to open connection failed.
- 1278 errStateBad connection state for this operation.
- 1279 errAborted.....Request aborted by dspRemove or dspClose function.
- 1280 errRefNumBad connection reference number.

HFS Errors

- 1300 fidNotFoundFile ID not found [No file thread exists].
- 1301 fidExistsFile id already exists.
- 1302 notAFileErrSpecified file is a directory.
- 1303 diffVolErrFiles on different volumes.
- 1304 catChangedErr.....Catalogue has changed and CatPosition may be invalid.
- 1305 desktopDamagedErr.....The desktop database has become corrupted – the Finder will fix this, but if your application is not running with the Finder, use DTRreset or DTDelete.
- 1306 sameFileErrCan't exchange a file with itself.
- 1307 badFidErrFile ID is dangling or doesn't match file number.
- 1308 notARemountErrIf _Mount allows only remounts & doesn't get 1.

AppleEvent Errors

- 1700 errAECOercionFailData could not be coerced to the requested description type.
- 1701 errAEDescNotFound.....Description record was not found.
- 1702 errAECorruptDataData in an Apple event could not be read.
- 1703 errAEWrongDataType.....Wrong description type.
- 1704 errAENotAEDescNot a valid description record.
- 1705 errAEBadListItem.....Operation involving a list item failed.
- 1706 errAENewerVersionNeed a newer version of the Apple Event Manager.
- 1707 errAENotAppleEvent.....Event is not an Apple event.
- 1708 errAEEventNotHandled Event wasn't handled by an Apple event handler.
- 1709 errAEReplyNotValid AERresetTimer was passed an invalid reply.
- 1710 errAEUnknownSendMode ... Invalid sending mode was passed.
- 1711 errAEWaitCanceled User cancelled out of wait loop for reply or receipt.
- 1712 errAETimeout..... AppleEvent timed out.
- 1713 errAENoUserInteraction..... No user interaction allowed.
- 1714 errAENotASpecialFunction .. Wrong keyword for a special function.
- 1715 errAEParmMissed..... Handler did not get all required parameters.
- 1716 errAEUnknownAddressTypeUnknown Apple event address type.
- 1717 errAEHandlerNotFound No handler found for an Apple event or a coercion.
- 1718 errAEReplyNotArrived Reply has not yet arrived.
- 1719 errAEIllegalIndex Not a valid list index.

AppleTalk: ATP Errors

- 3101 buf2SmallErrBuffer too small.
- 3102 noMPPerrNo MPP error.
- 3103 ckSumErrCheck sum error.
- 3104 extractErrExtraction error.
- 3105 readQErrRead queue error.
- 3106 atpLenErrATP length error.
- 3107 atpBadRspATP bad response error.
- 3108 recNotFndRecord not found.
- 3109 sktClosedErrSocket closed error.

Open Transport Errors

- 3150 kOTBadAddressErr.....The specified protocol address was in an incorrect format or contained illegal information.
- 3151 kOTBadOptionErrThe specified protocol options were in an incorrect format

- 3152 kOTAccessErrThe user does not have permission to negotiate the specified addressor options.
- 3153 kOTBadReferenceErrThe specified EndpointRef or TEndpoint * does not refer to a valid endpoint.
- 3154 kOTNoAddressErrThe endpoint could not allocate an address, or an address was required and not supplied by the client.
- 3155 kOTOutStateErrThe function was issued in the wrong sequence.
- 3156 kOTBadSequenceErr.....An invalid sequence number was specified, or a NULL call pointer was specified when rejecting a connection request.
- 3158 kOTLookErrAn asynchronous event has occurred on this endpoint.
- 3159 kOTBadDataErrThe amount of client data specified was not within the bounds allowed by the endpoint.
- 3160 kOTBufferOverflowErr.....The number of bytes allocated to hold a result is greater than zero, but not sufficient to store the result.
- 3161 kOTFlowErr.....The endpoint is in asynchronous mode, but the flow control mechanism prevents the endpoint from accepting any data at this time.
- 3162 kOTNoDataErrThis endpoint is in non-blocking mode, but no data is currently available. It is also returned by LookupName when no names are found.
- 3163 kOTNoDisconnectErr.....No disconnect indication is available.
- 3164 kOTNoUDerrErr.....No unit data error indication currently exists on this endpoint.
- 3165 kOTBadFlagErr.....An invalid flag was specified.
- 3166 kOTNoReleaseErrNo orderly release indication currently exists on this endpoint.
- 3167 kOTNotSupportedErrThis action is not supported by this endpoint.
- 3168 kOTStateChangeErrThe endpoint is undergoing a transient state change. This error is returned when a function call is made while an endpoint is in the process of changing states. The client should wait for an event indicating the endpoint has finished changing state and call the function again.

Note: The equivalent state-change error code, TSTATECHNG, is not described in the 1992 X/Open XTI specification. This error is also returned if you attempt to use an incompatible function while another operation is still ongoing (for example: calling SndUDData while an OptionManagement call is still outstanding).

- 3169 kOTStructureTypeErr.....An unsupported structure type was passed in the structType field. This error is also returned when the structType field is inconsistent with the endpoint type.
- 3170 kOTBadNameErrThe endpoint name is invalid.
- 3171 kOTBadQLenErrThe argument qlen when the endpoint was bound with Bind was zero.
- 3172 kOTAddressBusyErrThe requested address is in use, or this endpoint does not support multiple connections with the same local and remote addresses. This result code indicates that a connection already exists. As a return value for a Bind call, it may also indicate that no dynamic addresses are available for protocols or configuration methods that allow dynamic addressing.

- 3173 kOTIndOutErrThere are outstanding connection indications on the endpoint. All other connection indications must be handled either by rejecting them with SndDisconnect, or by accepting them with Accept.
- 3174 kOTProviderMismatchErrThe endpoint that is to accept the connection is not the same kind of endpoint as this one.
- 3175 kOTResQLenErrWhen this endpoint was bound (see Bind), the qlen parameter was greater than zero. But to accept a connection on an alternate end-point, such as this one, the endpoint must be bound with a qlen parameter equal to zero.
- 3176 kOTResAddressErr.....The address to which this endpoint is bound differs from that of the endpoint that received the connection request; thus, this endpoint cannot accept this connection request.
- 3177 kOTQFullErr.....The maximum number of outstanding indications has been reached for the endpoint.
- 3178 kOTProtocolErrAn unspecified protocol error occurred.
- 3179 kOTBadSyncErrA call to Sync was made at non-SystemTask time.
- 3180 kOTCanceledErrAn outstanding call was cancelled.
- 0000 kOTNoErrorThe function completed execution without error.

Print Manager/LaserWriter Errors

- 4096 N/ANo free Connect Control Blocks available.
- 4097 N/ABad connection reference number.
- 4098 N/ARequest already active.
- 4099 N/AWrite request too big.
- 4100 N/AConnection just closed.
- 4101 N/APrinter not found, or closed.

File Manager Extensions Errors

- 5000 accessDeniedIncorrect access for this file/folder.
- 5006 DenyConflict.....Permission/Deny mode conflicts with the current mode in which this fork is already open.
- 5015 NoMoreLocks.....Byte range locking failure from Server.
- 5020 RangeNotLockedAttempt to unlock an already unlocked range.
- 5021 RangeOverlap.....Attempt to lock some of an already locked range.

AFP Errors (XPP driver)

- 5000 afpAccessDeniedAFP access denied.
- 5001 afpAuthContinueAFP authorisation continue.
- 5002 afpBadUAM.....AFP bad UAM.
- 5003 afpBadVersNumAFP bad version number.
- 5004 afpBitmapErrAFP bit map error.
- 5005 afpCantMove.....AFP can't move error.
- 5006 afpDenyConflict.....AFP deny conflict.
- 5007 afpDirNotEmpty.....AFP directory not empty.
- 5008 afpDiskFullAFP disk full.
- 5009 afpEofError.....AFP End-of-File error.
- 5010 afpFileBusyAFP file busy.
- 5011 afpFlatVo.....AFP flat volume.
- 5012 afpItemNotFoundAFP item not found.
- 5013 afpLockErr.....AFP lock error.

- 5014 afpMiscErrAFP misc error.
- 5015 afpNoMoreLocks.....AFP no more locks.
- 5016 afpNoServer.....AFP no server.
- 5017 afpObjectExistsAFP object already exists.
- 5018 afpObjectNotFound.....AFP object not found.
- 5019 afpParmErr.....AFP parameter error.
- 5020 afpRangeNotLockedAFP range not locked.
- 5021 afpRangeOverlap.....AFP range overlap.
- 5022 afpSessClosed.....AFP session closed.
- 5023 afpUserNotAuthAFP user not authorised.
- 5024 afpCallNotSupported.....AFP call not supported.
- 5025 afpObjectTypeErrAFP object type error.
- 5026 afpTooManyFilesOpen ..AFP too many files open.
- 5027 afpServerGoingDown.....AFP server going down.
- 5028 afpCantRenameAFP can't rename.
- 5029 afpDirNotFound.....AFP directory not found.
- 5030 afpIconTypeErrorAFP icon type error.
- 5031 afpVolLockedVolume is Read-Only.
- 5032 afpObjectLockedAFP Object is M/R/D/W inhibited.
- 5033 afpContainsSharedErr ..Folder being shared has a shared folder
- 5034 afpIDNotFound.....ID not found.
- 5035 afpIDExistsID exists.
- 5036 afpDiffVolErrDifferent volume error.
- 5037 afpCatalogChangedCatalogue changed.
- 5038 afpSameObjectErrSame object error.
- 5039 afpBadIDErrBad ID error.
- 5040 afpPwdSameErr.....Same password on a mandatory password change.
- 5041 afpPwdTooShortErrPassword being set is too short.
- 5042 afpPwdExpiredErrPassword being used is too old.
- 5043 afpInsideSharedErrFolder being shared is in a shared folder.
- 5044 afpInsideTrashErr.....Folder being shared is in the trash folder.

SysEnviron Errors

- 5500 envNotPresentSysEnviron trap not present – returned by glue.
- 5501 envBadVers.....Version non-positive.
- 5502 envVersTooBigVersion bigger than call can handle.

Gestalt Errors

- 5550 gestaltUnknownErr.....Gestalt doesn't know the answer.
- 5551 gestaltUndefinedSelectorErr .Undefined code was passed to Gestalt.
- 5552 gestaltDupSelectorErr ...Tried to add entry that already existed.
- 5553 gestaltLocationErrGestalt function not in system heap.

LaserWriter Driver Errors

- 8132 N/AManual Feed time out.
- 8133 N/AGeneral PostScript Error.
- 8150 N/ANo LaserWriter chosen.
- 8151 N/AVersion mismatch between LaserPrep dictionaries.
- 8150 N/ANo LaserPrep dictionary installed.
- 8160 N/AZoom scale factor out of range.

Picture Utilities Errors

- 11000 pictInfoVersionErr.....Wrong version of the PictInfo structure.
- 11001 pictInfoIDErr.....Internal consistency check is wrong.
- 11002 pictInfoVerbErr.....The passed verb was invalid.
- 11003 cantLoadPickMethodErr.Unable to load the custom pick proc.
- 11004 colorsRequestedErr.....The number of colours requested was illegal.
- 11005 pictureDataErr.....The picture data was invalid.

Power Manager Errors

- 13000 pmBusyErr.....Power manager never ready to start handshake.
- 13001 pmReplyTOErr.....Timed out waiting for reply.
- 13002 pmSendStartErr.....During send, power manager did not start handshake.
- 13003 pmSendEndErr.....During send, power manager did not finish handshake.
- 13004 pmRecvStartErr.....During receive, power manager did not start handshake.
- 13005 pmRecvEndErr.....During receive, power manager did not finish handshake.

Mac TCP

- 23000 ipBadLapErr.....Bad network configuration.
- 23001 ipBadCnfgErr.....Bad IP configuration error.
- 23002 ipNoCnfgErr.....Missing IP or LAP configuration error.
- 23003 ipLoadErr.....Error in MacTCP load.
- 23004 ipBadAddr.....Error in getting address.
- 23005 connectionClosing.....Connection in closing.
- 23006 invalidLength.....Invalid length.
- 23007 connectionExists.....Request conflicts with existing connection.
- 23008 connectionDoesntExist.....Connection does not exist.
- 23009 insufficientResources.....Insufficient resources to perform request.
- 23010 invalidStreamPtr.....Invalid stream Ptr.
- 23011 streamAlreadyOpen.....Stream already open
- 23012 connectionTerminated.....Connection terminated.
- 23013 invalidBufPtr.....Invalid buffer Ptr.
- 23014 invalidRDS.....Invalid RDS.
- 23014 invalidWDS.....Invalid WDS
- 23015 openFailed.....Open failure.
- 23016 commandTimeout.....A command timed out.
- 23017 duplicateSocket.....Duplicate socket error.
- 23030 ipOpenProtErr.....Can't open new protocol, table full.
- 23031 ipCloseProtErr.....Can't find protocol to close.
- 23032 ipDontFragErr.....Packet too large to send without fragmenting.
- 23033 ipDestDeadErr.....Destination not responding.
- 23034 ipBadWDSERr.....Error in WDS format.
- 23035 icmpEchoTimeoutErr.....ICMP echo timed-out.
- 23036 ipNoFragMemErr.....No memory to send fragmented packet.
- 23037 ipRouteErr.....Can't route packet off-net.
- 23041 nameSyntaxErr.....Name has a syntax error.
- 23042 cacheFault.....Cache not working properly.
- 23043 noResultProc.....No result Proc.
- 23044 noNameServer.....No name has been specified for the Server.
- 23045 authNameErr.....Author name is wrong.
- 23046 noAnsErr.....No answer error.
- 23047 dnrErr.....Dnr error.

- 23048 outOfMemory.....Out of memory.

Font Manager Errors

- 32615 fontNotOutlineErr.....Bitmap passed, routine does outlines only.

Primary or Secondary Init Code Errors

- 32768 svTempDisable.....Temporarily disable card but run primary init.
- 32640 svDisabled.....Reserve -32640 to -32768 for Apple temp disables.

THESE ARE FAIRLY OBSCURE ERRORS

Internal File System Errors

- 1 chNoBuf.....No free cache buffers (all in use).
- 2 chInUse.....Requested block in use.
- 3 chnotfound.....Requested block not found.
- 4 chNotInUse.....Block being released was not in use.
- 16 fxRangeErr.....File position beyond mapped range.
- 17 fxOvFIErr.....Extents file overflow.
- 32 btnotfound.....Record not found.
- 33 N/A.....Record already exists.
- 34 N/A.....No available space.
- 35 btnoFit.....Record doesn't fit in node.
- 36 btbadNode.....Bad node detected.
- 37 btbadHdr.....Bad BTree header record detected.
- 48 cmnotfound.....CNode not found.
- 49 cmexists.....CNode already exists
- 50 cmnotempty.....Directory CNode not empty (valence = 0).
- 51 cmRootCN.....Invalid reference to root CNode.
- 52 cmbadnews.....Detected bad catalogue structure.
- 53 cmFTHdDirErr.....Thread belongs to a directory not a file.
- 54 cmFTHdGone.....File thread doesn't exist.
- 64 dsBadRotate.....Bad BTree rotate.

Slot Declaration ROM Manager Errors

- 1 silnitSDTbIErr.....Slot int dispatch table couldn't be initialized.
- 2 silnitVBLQsErr.....VBLQueues for all slots couldn't be initialized.
- 3 silnitSPTbIErr.....Slot priority table could not be initialized.
- 10 sdmJTInitErr.....SDM Jump Table could not be initialized.
- 11 sdmInitErr.....SDM could not be initialized.
- 12 sdmSRTInitErr.....Slot Resource Table could not be initialized.
- 13 sdmPRAMInitErr.....Slot PRAM could not be initialized.
- 14 sdmPrilInitErr.....Cards could not be initialized.

HD20 Driver Errors

- 16 wrtHsLw.....HSHK low before starting.
- 17 wrtHSLwTO.....Time out waiting for HSHK to go low.
- 19 wrtHSHighTO.....Time out waiting for HSHK to go high.
- 32 rdHsHi.....HSHK high before starting.
- 33 rdSyncTO.....Time out waiting for sync (\$AA) bye.
- 34 rdGroup to.....Time out waiting for group.
- 36 rdHoffSyncTO.....Time out waiting for sync after hold off.
- 37 rdHsHiTO.....Time out waiting for HSHK high.

38	rdChksumErr.....	Checksum error on response packet.
48	invalidResp.....	First byte in response packet was wrong.
49	sqncNumErr.....	Sequence number in response packet was wrong.
50	dNumberErr.....	Drive number in response packet was wrong.
64	noResp.....	No response packet ever received.

SCSI Manager Errors

2	scCommErr.....	Communications error (operations time out).
3	scArbNBErr.....	Arbitration failed during SCSIGet Bus busy.
4	scBadparmsErr.....	Bad parameter or TIB opcode.
5	scPhaseErr.....	SCSI bus not in correct phase for operation.
6	scCompareErr.....	SCSI Manager busy with another operation when SCSIGet was called.
7	scMgrBusyErr.....	SCSI Manager busy with another operation when SCSIGet was called.
8	scSequenceErr.....	Attempted operation is out of sequence, eg. calling SCSISelect before doing SCSIGet.
9	scBusTOErr.....	Bus timed out before data ready on SC SIRBlind and SC SIWBlind.
10	scCompIPhaseErr.....	SCSIComplete failed – bus not in Status phase.

Connection Manager Errors

-1	cmGenericError.....	N/A
0	cmNoErr.....	N/A
1	cmRejected.....	N/A
2	cmFailed.....	N/A
3	cmTimeOut.....	N/A
4	cmNotOpen.....	N/A
5	cmNotClosed.....	N/A
6	cmNoRequestPending.....	N/A
7	cmNotSupported.....	N/A
8	cmNoTools.....	N/A
9	cmUserCancel.....	N/A
11	cmUnknownError.....	N/A

File Transfer Manager Errors

-1	ftGenericError.....	N/A
0	ftNoErr.....	N/A
1	ftRejected.....	N/A
2	ftFailed.....	N/A
3	ftTimeOut.....	N/A
4	ftTooManyRetry.....	N/A
5	ftNotEnoughDSpace.....	N/A
6	ftRemoteCancel.....	N/A
7	ftWrongFormat.....	N/A
8	ftNoTools.....	N/A
9	ftUserCancel.....	N/A
10	ftNotSupported.....	N/A
11	ftUnknownError.....	N/A

Terminal Manager Errors

-1	tmGenericError.....	N/A
0	tmNoErr.....	N/A

1	tmNotSent.....	N/A
2	tmEnvironsChanged.....	N/A
7	tmNotSupported.....	N/A
8	tmNoTools.....	N/A
11	tmUnknownError.....	N/A

Positive Error Codes 1–31 in Detail

1 :Bus Error

The computer tried to access memory that doesn't exist. You can get this error on almost any Macintosh. If one of these computers tried to access one or more bytes beyond the total number of bytes in RAM, you see a bus error.

2 :Address Error

The Motorola 68000 microprocessor can access memory in increments of one byte (8 bits), one word (16 bits), or one long word (32 bits). The microprocessor can access a byte of information at an odd or even memory address. But it must access a word or long word at an even memory address. So, when the microprocessor attempts to read or write a word or long word at an odd address, you see this error. Since that's a 50/50 proposition when running random code, this one shows up quite often.

3 :Illegal Instruction

If the computer tries to execute an instruction that isn't in its vocabulary, you see this error code. It's less likely than error 02, but still very common.

4 :Zero Divide Error

This error occurs if the CPU divides two numbers, and the divisor is zero.

5 :Range Check Error

An instruction is used to check if a number is within a certain range, if not, this error is displayed.

6 :Overflow Error

An overflow condition results if a generated number is too big for its allotted space.

7 :Privilege Violation

The 68000 runs in Supervisor or User mode. The Macintosh should always

be in Supervisor mode as some instructions can only be used in this mode, but sometimes it is placed in User mode. This error results if an Supervisor instruction was run in User mode.

8 :Trace Mode Error

A programmer can use a runtime debugger while in Trace mode. This allows tracing through a program one instruction at a time. You see this error if a debugger isn't installed and the 68000 is accidentally placed in Trace mode.

9 & 10 :Line 1010 & 1111 Trap

There are many routines in the Macintosh ROM that can be called by placing instructions in a program that aren't in the 68000's vocabulary. When the CPU encounters such an instruction, it looks it up in the instruction table. If it finds that there's no entry for the instruction, you see one of these errors.

11 :Miscellaneous Hardware Exception Error

A Type 11 error is listed as a hardware exception error. However, Type 11 errors are more general in nature, and usually have nothing to do with hardware problems – it more likely a software instruction trying to do something that the hardware cannot do. You may see more Type 11 errors on a Power Macintosh computer because of problems with the software-based 68k emulation.

12 :Unimplemented Core Routine

A programmer might set break points in parts of a program to inspect for errors. If a debugger isn't installed when a break point occurs, you see this error code.

13 :Uninstalled Interrupt

The Macintosh uses an interrupt to identify when devices like keyboards and disk drives need service. Routines must be available in memory to tell the computer how to service the device. If those routines aren't available, you see this error.

15 :Segment Loader Error

The segment loader is responsible for loading a needed program allocated segment into RAM. If the segment loader can't do this, you'll see this error.

17-24 :Missing Packages 0-7

If you get these errors, you probably have a damaged System file. Error codes 15, 16, 26, 27, 30, and 31 also come up when the System file is damaged.

25 :Memory Full Error

You've run out of RAM!

26 :Bad Program Launch

The application could not be executed.

28 :Stack Ran into Heap

This is a memory related error, basically it was trying to use memory that is already in use.

27,30-31

See error codes 17-24 :Missing Packets.

Useful Macintosh Information

I've supplied this section for your benefit, so that you can better understand how MacOS works and what to expect, so that future problems can be avoided, or handled with some confidence.

Macintosh Filing Systems: HFS/HFS+

DETAILED INFORMATION ON HFS

The Hierarchical File System Specifications

Before discussing hard drive block allocation, and the intricacies of determining allocation block sizes and such, let's first review the Hierarchical File System, better known as HFS.

Below are some specifications and associated terminology used to describe the Macintosh HFS structure. The following numbers apply to both System 6 and System 7, and are current as of this writing.

A Macintosh Volume

A volume is either a full disk, or a section of a disk, partitioned into separate parts. If you partition a single drive then each partition is considered a volume.

What's a Logical block?

A logical block is a unit of drive space composed of up to 512 bytes. A logical block is numbered from 0 to n, n being the last block on the volume – not necessarily the hard disk. Take the volume size, divide it by 512 bytes, and you have the number of logical blocks.

What's an Allocation Block?

An allocation block is a unit of storage on a volume, composed of one or more logical blocks. The larger the volume, the more logical blocks comprise one allocation block. The maximum number of allocation blocks per volume is 65,536; most volumes have slightly less.

In both the Macintosh and DOS environment, the maximum number of blocks on a driver is 65,536 because both Operating Systems address the allocation blocks with a 16-bit address. Drives larger than 512mb cannot use a block size of 8K or less because there just aren't enough addresses. Thus, if a 2gig drive is one Macintosh partition, the smallest file size allowed is 32K.

(If you save a TeachText file with one character in it, it would take up 32K of disk space.) This means that the size of your hard drive determines the minimum size of each file.

A non-empty file fork always occupies at least one allocation block, no matter how many bytes of data the file fork contains. If the data fork and resource fork of a file contain data, the file uses two allocation blocks. If all the files are only one allocation block long, then there can be as many files on the volume as there are allocation blocks for the volume. However, when a file is longer than one allocation block, the total number of possible files decreases. For example, on a volume with 65,535 allocations block, you can have:

- 65,536 files, each 1 allocation block long.
- 32,768 files, each 2 allocation blocks long.
- 2048 files, each 32 allocation blocks long.
- 1024 files, each 64 allocation blocks long.

All of the numbers above refer to the System's record structures. Other elements place tighter restrictions on the actual number of usable files in the root directory. The Standard File dialog uses the List Manager. The List Manager has a limit of 32K of data, which is somewhere between 800 and 900 files. Though more files can be handled in a directory, the List Manager will not display the first 32K.

A second element concerns the performance of the Finder when approaching 800 to 900 files per directory. Even simple operations, such as moving the icon of a file, tend to slow down considerably when this number of files exists in a directory. This limitation changes depending on the speed of the individual Macintosh model.

Determining the Allocation Block Size

Follow these steps to calculate the allocation block size:

- 1) Take the size of the drive in megabytes and multiply it by 2000 (there are 2000 disk blocks in 1mb of disk space).
- 2) Divide that number by 65,536, since the Macintosh cannot have more than 65,536 allocation blocks.
- 3) Round this number up and multiply it by 512.

The result is the number of bytes in the allocation block. Here is an example using a 230mb drive:

$$230 \times 2000 / 65536 = 7.019$$

7.019 rounded up = 8

8 x 512 = 4096 bytes

So what does this mean to you? The larger the hard drive, the larger the allocation block size, and the more space that is wasted on small files. If you have a large drive with a lot of small files, the hard drive space is being used less efficiently than if most of your files average 32K in size.

Note: Since drives come from different manufacturers, it is possible to get different values. This is because a 500 MB drive is not exactly 500 MB but is usually somewhat larger. This could result in different logical block sizes than those listed in the chart (see Allocation Block Size Table below), but the difference should not be more than +/- 512 bytes. This difference is most noticeable on the larger drives. For example, the 500 MB drive actually calculates to 8192 bytes but the 500 MB drive in some Macintosh computers is actually 540 MB, which has a logical block size of 8704, as listed in the chart.

Allocation Block Size Table

Here is a complete list of allocation block sizes for the various volume sizes, based on the formula described above:

Volume Organisation of HFS

The first two logical blocks (labelled 0 and 1) of a volume are the boot blocks. This is where the information for mounting the volume is stored.

The third logical block (labelled 2) is the Master Directory Block, or MDB for short. This block contains part of the data structure of a flat directory volume. It contains the volume information and the volume allocation block map. This block is where the information for the hard disk, such as number of files in the directory and the last time the drive was initialized, is stored.

Logical blocks 3 to x (see the following table) contain the volume bitmap. This block is a data structure containing a sequence of bits, one bit for each allocation block. The volume bitmap stores a reference to every piece of data that is in the allocation blocks and indicates whether the block is allocated or free for use. Volume bitmaps exist both on hierarchical directory volumes and in memory.

Volumes may have as few as 32,768 allocation blocks and as many as 65,536 allocation blocks. This table defines what logical block the volume bitmap ends on based on the number of allocation blocks:

Allocation Blocks	Last Volume Bitmap Logical Block
> 61,440	18
> 57,344	17
> 53,248	16
> 49,152	15
> 45,056	14
> 40,960	13
> 36,864	12
> 32,768	11

Allocation blocks begin after the volume bitmap. Contained in the allocation blocks are the catalogue, extents and data files.

The catalogue file is a list of all files and folders stored in a volume. The catalogue file maintains the relationships between the files and directories on a hierarchical directory volume. It corresponds to the file directory on a flat directory volume. The catalogue file is organised and accessed using a B-tree structure. The files are arranged in alphabetical order evenly balanced on the tree so that finding a 'Z' doesn't take any longer than finding an 'A'. This structure is the glue that keeps the catalogue file together.

The extents tree file contains the locations of all the files on a volume (An extent is a series of contiguous allocation blocks). The extents tree file is where the information (such as where to find file, and how many extents a file is divided into) about the data files you have created is stored. Any given file you create may be broken up into multiple extents. When extents are linked together, behind the scenes, with information from the extents tree file, the appearance is of one data file.

The next, and largest, section of the volume contains all the actual data files and applications which are referenced using the above files.

The next to last block on the hard disk contains the alternate master directory. This alternate is a backup to the MDB kept on logical block 2. It is used when the file manager determines that the MDB is corrupt and needs to be rewritten with the correct information.

The very last block is empty. It is used to check for bad sections of the hard disk.

What You Can Do

So, can you do anything to decrease the file size on a large hard drive? One

solution is to partition larger drives into smaller partitions, or logical drives, each with a maximum of 65,536 blocks.

Apple's Drive Setup can be used to partition qualified Apple hard drives and some removable devices as listed in the Drive Setup Guide file. Unsupported hard drives will show up in the device list by name, however, if you select an unsupported hard drive you will get the message, "Cannot modify a disk in an unsupported drive".

Drive Setup is supported on all of the Power Macintosh computers. This includes the original Power Macintosh computers and the new PCI-based Power Macintosh computers. Drive Setup is also supported on 68LC040 processor-based systems that have IDE drives installed. Drive Setup is not supported with the Power Macintosh Upgrade Card. The latest version of Drive Setup is available from Apple's web site.

What's the difference between HFS and HFS+ filing systems? Can I use HFS+?

Hierarchical Filing System (HFS) is a 12 year old filing system, it allows only a limited number of blocks (65,536) you can have on a partition. I suggest you create multiple partitions from any hard disk above 1 gigabyte, because you will only be wasting valuable disk space, due to large block sizes. See the table below.

Estimated Block Sizes in Relation to the Size of HFS Standard Partitions

(In increments of 0.5k for every 31mb, and +16k for every gigabyte.)

Partition Size = Block Size	Partition Size = Block Size
0mb - 31mb = 0.5k	1.0gig - 1.5gig = 16-24k
32mb - 64mb = 1k	1.5gig - 2.0gig = 24-32k
65mb - 95mb = 1.5k	2.0gig - 3.0gig = 32-48k
96mb - 255mb = 2-4k	3.0gig - 4.0gig = 48-64k
256mb - 511mb = 4.5-8k	4.0gig - 9.0gig = 64-144k
512mb -1023mb = 8.5-16k	9.0gig - 18.0gig = 144-288k

HFS+ or HFS Extended was made to extend the number of blocks, particularly for very large hard disks (1gig+). It now allows for hundreds of millions of blocks to be used. The default System block allocation is as follows:

- A 10-250 megabyte partition will have a 0.5k block size.

- A 250-999 megabyte partition will have either a 1k or 2k block size.
- 1 gigabyte up to 2 terrabyte (2000gig) partitions will have a 4k block size.

The Limitations of HFS

- The maximum volume size under System 6 and System 7 is 2 gigabytes. System 7.5 increased that limit to 4 GB and System 7.5.2 (and later) increases that limit to 2 terrabytes on some computers, including; any system that shipped with System 7.5.2 or newer, and any Macintosh system with PCI slots.
 - The maximum number of volumes is theoretically limited to 173 due to the maximum number of open files in Mac OS. Since there are other files which are opened when the computer boots up, the actual maximum will vary depending upon how many other files are open by the operating system.
 - The maximum file size is 2 gigabytes.
 - The maximum number of files on a volume is 65,536.
 - The maximum number of files in a folder is 32,767.
 - The maximum size of the data fork in a file is 2 gigabytes.
 - The maximum size of the resource fork in a file is 16 megabytes.
- Note that AppleShare, including Personal File Sharing, has its own volume size limitations.

The Limitations of HFS+

- Maximum number of volumes: 21.
- At system boot, the event queue for the Finder can accept 20 volumes plus the startup volume. Once the computer has completed the boot process, you may use a disk utility to mount as many additional volumes as there are available file control blocks. This number is variable depending upon how many applications are running, files open, or other operating system processes which require file control blocks.
- Maximum volume size: 2 terrabytes
 - Maximum file size: 2 gigabytes
 - Maximum data fork size: 2 gigabytes
 - Maximum resource fork size: 16 megabytes
 - Maximum number of files: more than 2 billion.
 - Maximum number of files/folders in a folder: 32,767.

The advantage of using HFS+ is obvious, quite a lot of disk space will be

reclaimed. This depends on the size of the hard disk, 1 gigabyte drive and above will see the most gains in saved space. Apple have added other advanced features to the new filing system, that are not accessible via System 8.1 at the moment, but should be in later revisions of the operating system.

The Advantages of HFS+

- 68040/060 Macs can read/write to HFS+ disks.
- A server with a large capacity HFS+ formatted disk can be accessed by **any** Mac, with **any** System version.
- The user can define the allocation block size, but only with some commercial formatting software, eg. 0.5-2k (under 500mb only), 4k, 8k or even 16k if you want.
- The maximum partition size is **at least** 2 terrabytes, or 2000 gigabytes.
- It uses disk space much more efficiently, especially with small files.
- Additional, built-in features of HFS+ will come available with later versions of PPC System software, eg. MacOS 8.5.

The Disadvantages of HFS+

- Only **PowerPC** and **68040/060** Amigas and Macs can use HFS+.
- You will have to reformat/optimize/format your hard disk.
- 68k Macs cannot startup from a HFS+ volume, it will fail to boot.
- HFS+ will not format any partition below 32mb.
- It requires the **Text Encoding Convertor** system Extension, and the Text Encoding data folder.
- There are only a few repair packages which can repair and optimize HFS+ formatted disks.
- Only System 8.1 is capable of recognizing HFS+ disks.

HFS+ Compatible Programs

- TechTool Pro2 (commercial).
- Disk First Aid v8.2 (on System 8.1 CD, or via the 8.1 updater).
- Norton Utilities v4.0 (commercial) – for **PowerPC Macs** only.
- Look at commercial software for HFS+ formatting & optimization programs.

Don't use...

- Any version of Norton Utilities from v1-3.52, they **will** damage a HFS+ disk. Norton Fix – repairs any damage caused by Norton Disk Doctor 3.5. Free from any Mac internet site.

How Files Work on the Mac

FINDER FILE FLAGS

Like the Amiga, the Macintosh uses flags or settings for individual files, however these flags are totally different to the Amiga's standard set, and less accessible. So I will go through all of them, and explain what each one does. An asterisk (*) next to the title means that this particular flag can be switched on or off at will, without doing any damage to the file in question. Most of these should not be tinkered with, as they may cause untold damage. Experiment with a copy of the file if you must change something. The description tells you what happens when you activate it...

On Desk; System 6 users only. Means that the file is on the desktop.

Invisible; Means it will not be displayed in the Finder or in Open/Save dialogue boxes. Usually programs or the System creates these invisibles because they are important, and it doesn't want the user to bin or alter it.

Bundle; The icon for this item, is stored in its resource fork. This applies mainly to all programs and most of its data/library files.

Stationery; Makes this document into a stationery file, which can be opened and its contents loaded into an untitled window, rather like a template.

Always Switch Launch; System 6 users only. It switches to the System file to the disk where the application is located.

Shared; The program can now be shared over a network.

Inited; The Finder recognises it as a special kind of file (eg. a Control Panel) and assigns it to a location on the disk or desktop, ie. if dragged over the top of the System Folder, it'll know which folder it goes in.

Alias; Marks this as a standard Alias file (do not tick if it is a data file, it might destroy all data in it).

No Inits; This will prevent a system Extension from loading at boot-up.

Name Locked; The file & its filename cannot be changed.

Custom Icon; Indicates that this file has its own custom icon.

Type & Creator Codes

A **Type** code tells you what file type it is, for example; a GIFf Type is an image file, a WRD6 Type is a MS Word6 document, and an APPL Type is always used for executable programs.

This is the most critical half of these two codes, because if it displays **????**, then there is no way to tell what type of file it is. Unless you have a

shareware program called **Type/Creator Database**, this lists all known file Types.

The **Creator** code tells the MacOS which program this file or document belongs to. This makes it possible for you to automatically load-up the application when you double click on an icon. That is, **if** you have the program on your hard disk. Look in the **Jargon** section for more info on the Desktop file.

A typical file with it's Finder flags shown, see pic 13.1.

Data & Resource Forks, the Building Blocks of Mac Files

What the heck are these, you may say? These are the two building blocks that make a Mac file or program – they are similar to the Amiga's [filename].info and [filename] files. The [filename] equals the Data fork, and [filename].info equals the Resource fork, in principle.

Basically the Data fork holds all data, ie. pictures, text and other data, while the Resource fork holds vital Finder and application information, ie. icon image, Finder flags, all program code, and accompanying program graphics.

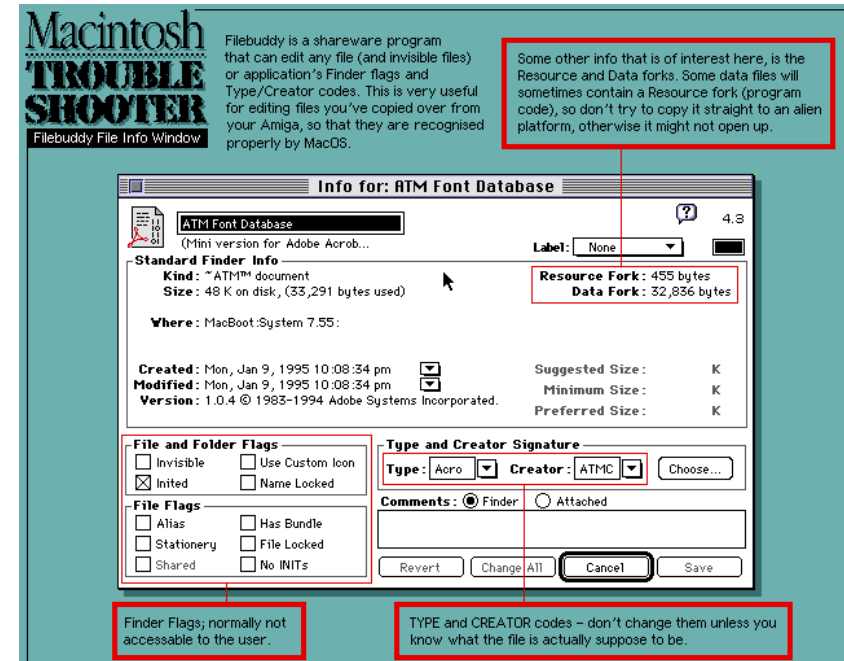
The Finder

The Finder is like Workbench, it manages the Mac environment. The Mac 'environment' is actually known as **The Desktop**, this is where all disk, file and folder management takes place.

The **Desktop File** is managed by the Finder, and is a type of database, it stores; all icon positions, and remembers what each file's icon should look like, from the applications stored on your hard disks. Pic 13.2 shows you all the elements that make up the Finder's Desktop screen.

Finder Limitations & Useful Facts

- MacOS 7.x to 8.1 are **Single Tasking** operating systems. Although in MacOS 8 you can empty the trash and copy files at the same time.
- Maximum number of open files: 346.
- Maximum number of Apple Menu Items: 52. More items can added, but only 52 appear when clicking on the Apple Menu icon.
- Maximum number of files supported by the Desktop: Unlimited. This is limited to the available disk space – see HFS/HFS+ limits.
- Maximum number of applications in memory: The Finder does not limit the



Picture 13.1 - FileBuddy's file info screen shows you a file's flags and other info.



Picture 13.2 - The Finder's Desktop (work area).

number of applications, but the amount of available RAM does.

- Maximum number of volumes available on the Desktop: 32.
- Maximum number of items in a folder by list view: Up to 32,000 depending on the computer and RAM. Note: With System 7.x, attempting to view a large number of files in one window, something in the range of 500-1500 files, creates very slow opening times and drop-out viewing problems. The specific number depends on RAM and CPU. With Mac OS 8.x, it is possible to view as many as 32,766 files, though it is dependent upon the amount of RAM available, and performance is significantly degraded.
- Maximum number of resources in the System File: 32,767 or 16 Megabytes.
- Maximum number of system Extensions or Control Panels that can be loaded into memory: The Finder does not limit these, but hard disk space and RAM can limit them.
- Maximum RAM allocated to an application with the Finder: 99,999K.
- The Finder supports 24-bit color, BUT icons are only 8-bit.
- QuickDraw supports 48-bit color, but the current operating system maximum is 32-bit color.
- Recommended Disk cache size: 32 KB per megabyte of installed RAM.
- The Finder & HFS limits filenames to 31 characters.
- The Finder & HFS do not allow these characters in filenames: “.” & “;”.
- The maximum number of fonts you can have open at any one time: 128.
- The maximum number of files that can be opened at once: 346.
- The maximum number of items you can have in the Apple Menu: 50.

INVISIBLE FOLDERS & FILES

On all Mac volumes, you'll find (with the necessary utility) a number of invisible files and folders, whatever you do, **do not delete or edit** them in any way, as this may invalidate your hard disk and cause an untold amount of hassle for yourself. These are the files/folders in question;

Invisible Folders

- **Trash** – Contains the files you place in the Wastebasket. If you see this on a networked volume, it'll have a belt round it (locked), it makes sure any files (from that hard disk) you've placed into your Wastebasket, is actually put into it's own Trash folder.
- **Desktop Folder** – Contains all icons that have been placed on the

Desktop's background.

- **Move&Rename** – A special temporary folder for files that were in the middle of being edited (filename) or moved to a different location, but crashed before it could be completed.
- **Temporary Items** – Contains any temporary files created by programs. These temporary files are often deposited in the Wastebasket after a crash and reboot. They are mostly useless and unopenable, and so are safe to bin.

Invisible Files

- **Desktop DB & Desktop DF** – Contains the icon association database file. This makes sure that all files on your hard disk have the correct icons.
- **OpenFolderListDF** – Makes a note of the opened folders that were displayed when you shutdown or restarted, so that it can display those folders again when the Finder is reloaded.
- **Icon** – Is the custom icon used on a folder or disk's icon (usually found in that folder's or disk's root directory).
- **Shutdown Check** – Is a file that tells the MacOS, that the Mac didn't shutdown correctly.
- **DesktopPrintersDB** – Is a data file that keeps a track of what Desktop Printer icons you have.

FINDER MENUS

The following menus are taken from System 7.5x. MacOS 8.x's extra menu follows afterwards..

The APPLE (icon) Menu

About This Macintosh... – Displays the current programs in memory, what System version you're currently using, the amount of free RAM, and whether virtual memory is in use.

Automated Tasks – Is a folder that contains executable Apple Scripts, for Finder operations.

Calculator – A useful little GUI based calculator.

Chooser – The network and printer selector interface.

Control Panels – Is an alias of the Control Panels folder in the System Folder, for easy access.

Find File – A Find utility. This can also be accessed via the Finder's File menu.

Jigsaw Puzzle – A simple puzzle game.

Key Caps – Displays all characters of a highlighted font (selected from the menu). Just press any key combination, ie. Apple+Control, and further hidden characters will shown.

Note Pad – This is very simple text input program, mainly for reminders etc.

Scrapbook – A useful utility for storing text, sounds and pictures, just cut and paste into it.

Stickies – Is a utility that places little notes on the screen to help you remember things.

***Shutdown** – Another way to shutdown the Mac.

The FILE Menu

New Folder – Creates a new folder with the default name “untitled folder”.

Open – This is pretty much a universal command, to open: folders, launch files or programs.

Print – The Print command allows you to print out the contents of the selected folder.

Close Window – Simply enables you to put away an open folder – a useful key command: #W.

Get Info.. – Select any icon, folder or disk, and this will display information about it, such as (for a file) it's last modified date, file size, program creator, disk space used.

Sharing – Allows you to ‘Share’ over a network, eg. everything in a folder(s) or even whole disks.

Duplicate – Makes a copy of the icon/folder/disk you've just highlighted.

Make Alias – Creates a pointer file to absolutely anything you like, from documents to disks.

Put Away – Allows you to either: eject a disk, or put an icon (from the desktop) back into it's original folder, or root directory, eg. from your wastebasket back into a network volume.

Find – This useful feature allows you to do fast searches of any local or networked volumes.

Find Again – If you couldn't find a file the first time, select this to go back to your original find settings.

Page Setup.. – Displays the print settings of the currently selected printer driver. To be used in conjunction with the Print menu.

Print Desktop.. – Output a graphic dump of the Desktop in it's current state.

The Edit Menu

Undo – Resets what you just did (x1 undo only).

Cut – Copy the item, then clear that selected item.

Copy – Makes copy of the selected item (text, sound or picture) into memory.

Cut and **Copy** can be used just about at any time, and in Save/Open dialogue boxes.

Paste – Takes the current item that was last copied or cut, and places it at the cursor's current position.

Clear – Erases the highlighted item or text, and does not copy it.

Select All – Highlights all text/pictures, or icons/folders in a folder or disk.

Show Clipboard – Displays the contents of what was last Copied or Cut, currently in memory.

The VIEW Menu

by Small Icon – Displays all files in a folder as small icons.

by Icon – Displays all files as in a folder as normal sized icons.

by Name – Lists all files in that folder by filename, alphabetically (includes a small icon).

by Kind – Lists all files in that folder by file type, & then in alphabetical order.

by Date – Lists all files in that folder by it's modified date.

by Size – Lists all files in that folder by file size, from largest to smallest.

The LABEL Menu

Labels can be applied to all icons and folders. The purpose of Labels is to enable you to keep tabs on certain files, or to differentiate between them.

[orange] Essential

[red] Hot

[magenta] In Progress

[cyan] Cool

[blue] Personal

[green] Project1

[brown] Project2

The SPECIAL Menu

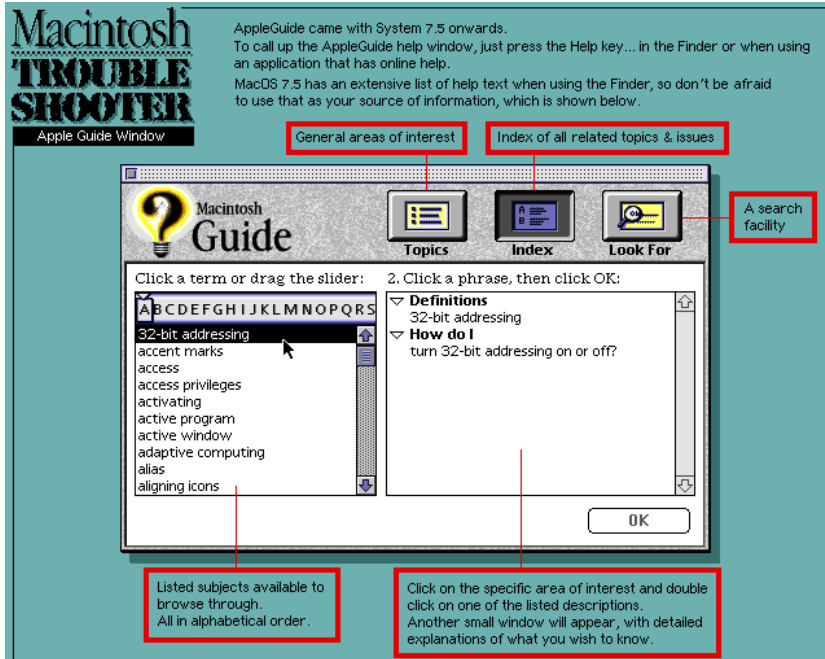
Clean Up Desktop – Relocates all icons into a default icon grid.

Empty Wastebasket – Deletes all files and folders held in the Trashcan.

Eject Disk – Ejects the highlighted disk – you cannot eject disks manually,



Picture 13.3 - A typical example of AppleGuide used by an application.



Picture 13.4 - The AppleGuide for the Finder & MacOS.

MacOS has to get shot of it first (from the desktop), otherwise you'll freeze the Mac. Note that in Shapeshifter, a little "1" character flashes on and off on the right hand side of the menu bar, when you've dragged the disk's icon to the wastebasket, indicating that it is safe to manually eject the floppy disk.

Erase Disk.. – Formats any alien disk format to MacOS's HFS or HFS+, or if you have PCExchange loaded, it'll let you format floppies disks as PC DOS or Mac formatted disks. Note: if the disk is already Mac formatted, it will only create a new directory structure, in other words a 'quick format'.

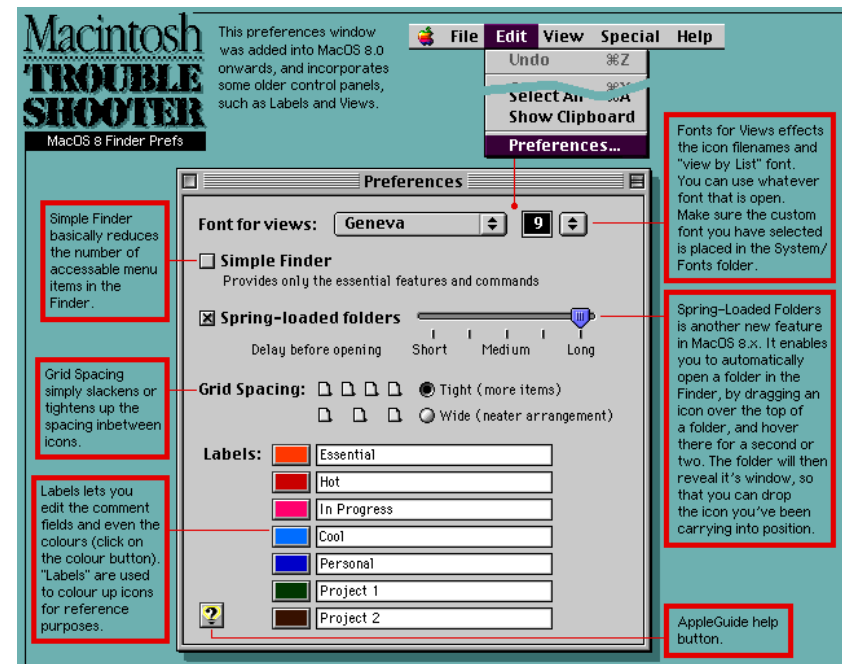
Restart – Reboots the Mac, the System will then reload.

Shutdown – This command quits all applications, and ends MacOS emulation.

The ? (help) Menu

About AppleGuide – Is the Mac's help system, press the Help key to display the AppleGuide for the currently used program (see pic 13.3), or the Finder and MacOS (see pic 13.4).

Show Balloons – When selected, this will display little speech bubbles with



Picture 13.5 - The Finder's preference window in System 8.0 & 8.1.

descriptive text when the pointer is placed over any icon or menu in the Finder environment.

Macintosh Guide – Is a help file for the whole of the Finder. This AppleGuide file must be in the Extensions folder in order to gain access to it from this menu.

Shortcuts – Is another AppleGuide file (must be in Extensions folder to enable it) that lists useful keyboard shortcuts when using the MacOS.

The APPLICATIONS (program's icon) Menu

Hide Finder – This will hide all open windows and transfer you to the last used program in RAM.

Hide Other – This will hide all other programs from view, except the last one you just used.

Show All – Displays every programs' elements, eg. floating palettes.

Finder – Is always listed in this second half of the menu. It is an application after all!

Icon + Application Name – All programs loaded into RAM are listed in here, for easy access.

MACOS 8.X'S EXTRA MENUS

The FILE Menu

Move to Wastebasket – Immediately moves the selected icon to the bin.

Label – This is where the Labels menu from System 7.x, is now located.

Show Original – Displays the Alias's original item's location.

The EDIT Menu

Preferences... – This is the Finder preferences window. It contains Font size, Spring Loaded Folder switch, Label names, icon spacing and Simple Finder settings. See pic 13.5 on page 81.

The VIEW Menu

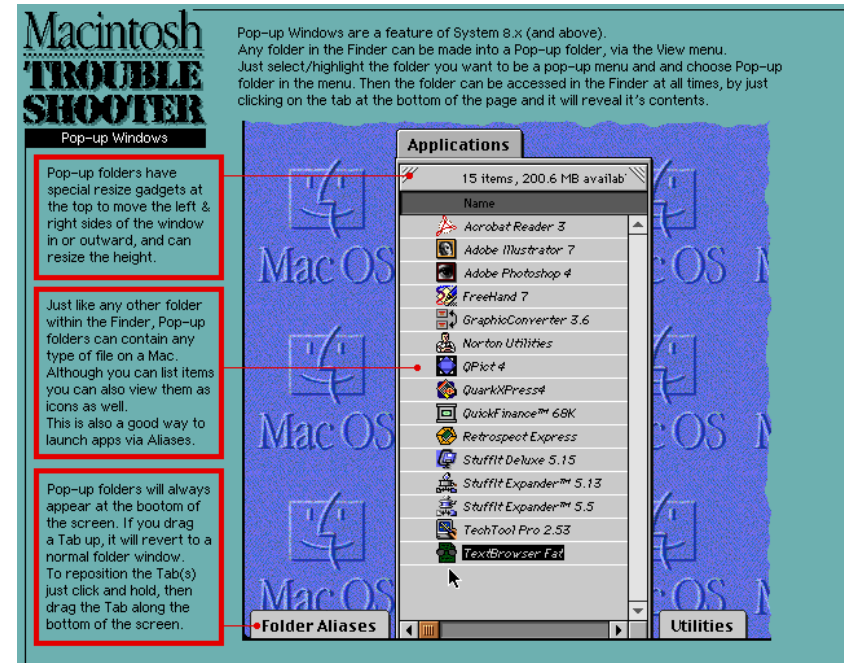
as Icon – Displays all files as in a folder as icons.

as Buttons – Lists all files in that folder by filename, alphabetically (includes a small icon).

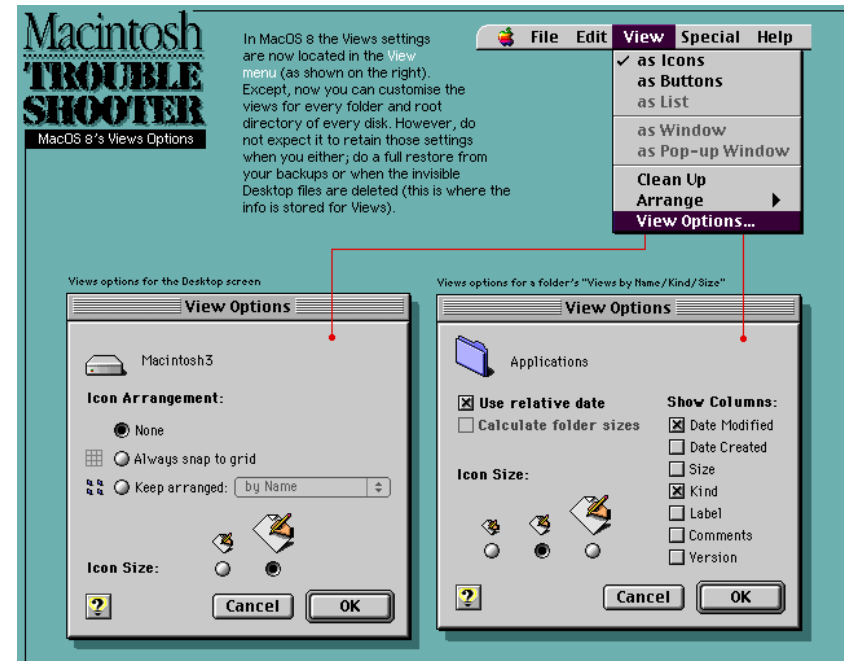
as List – Lists all files in that folder by file type, and then in alphabetical order.

as Window – Reverts a Popup Window back to a normal folder.

as Popup Window – Makes that folder into a special pop-up folder, that is



Picture 13.6 - MacOS 8's pop-up folder feature.



Picture 13.7 - The View Options has two types of options depending on whether it is a folder or the Desktop itself.

always on the Desktop. See pic 13.6.

Cleanup – Relocates all icons into a default icon grid.

Arrange – Displays a sub-menu, which lists the number of different ways a list can be sorted:

by Date Modified; by Date Created; by Size; by Kind; by Label.

View Options... – Allows you to customise the icon and list views in any window. See pic 13.7.

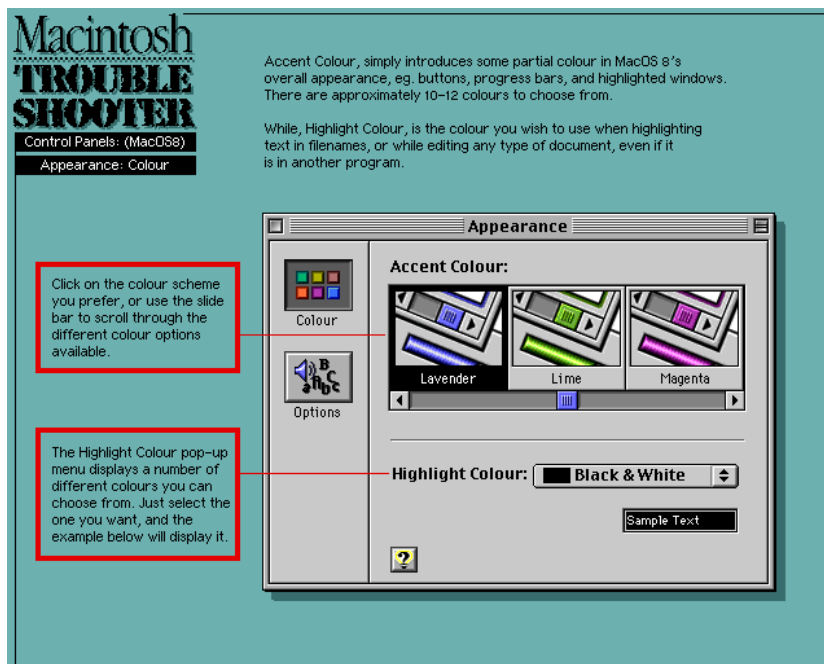
The SPECIAL Menu

Erase Disk – In MacOS 8.1, you can now format a disk with the new HFS+ format.

The HELP Menu

About Help – Displays an AppleGuide explaining how Apple's Help System works.

Help – Displays the AppleGuide Help file for the current program (inc. the Finder).



Picture 14.1 - Appearance Control Panel- displaying the Options screen.

Inside The System Folder

I've listed most of the standard System components that'll be installed (from MacOS 7.53 to 7.6) and what they do exactly, these are; **Control Panels, Extensions, Libraries, System Enablers** and loose items in the **System Folder**. Some of these Extensions and Control Panels may not be available on an Amiga but they are usually installed anyway – I've highlighted these with a bold message.

There are two excellent self viewing documents which explains every single System component in detail, and they're called **Extension Overload** and **InformINIT**. Both cover Systems 7.x to 8.x, and include all of Apple's standard System files and most known third party Extensions and Control Panels – both have very useful additional info concerning: Libraries, Enablers and other types of files.

Control Panels

What is a Control Panel? A Control Panel is a small piece of software that allows you to customise certain settings that meet your needs. For example, you can change the pattern or colour of your computer's desktop using the Desktop Patterns Control Panel.

Depending on the type of computer you have and the System version you're using, the contents of your Control Panels folder may vary. You might also have Control Panels that were added by third-party applications. You can see a complete detailed list of all Apple Control Panels in the Macintosh Guide via the '?' menu, or press the Help key (only in System 7.5 or later).

On page 95, I've listed some miscellaneous Control Panels that the installer placed in your system, but you may not need.



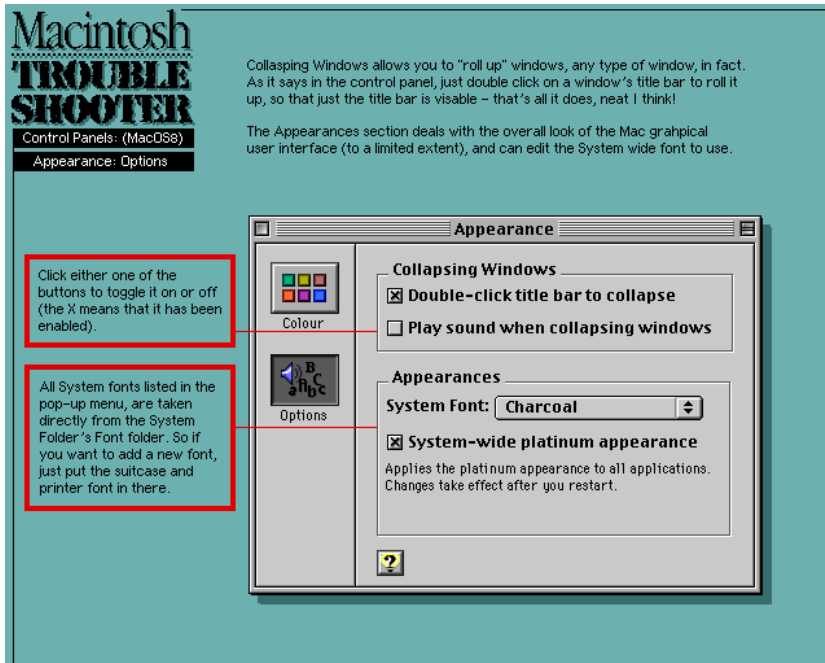
Appearance (MacOS 8 only)

Controls how the MacOS 'looks', this is also where you can add Themes to the GUI. See pics 14.1 (this page) and 14.2 (on page 84).



Apple Menu Options

Provides hierarchical sub-menus in the Apple Menu. See pic 14.3 on page 84.



Picture 14.2 - Appearance Control Panel- displaying the Colour screen.



AppleTalk

You can specify AppleTalk settings (such as connection port and zone) for use with Apple's Open Transport networking. See pic 14.4 on page 85.

At Ease Setup

Allows you to start up your Mac in a simple, configurable launcher, which replaces the standard Finder.



ATM

Makes your Type 1 fonts look sharp and clear at any point size, both on your screen and on paper. Improves the output of QuickDraw printers, such as the ImageWriter and StyleWriter series. See pic 14.5 on page 85.



ATM GX

For displaying smooth QuickDrawGX fonts. Apple no longer supports QuickDrawGX features.



AutoRemounter

Allows remounting of volumes after waking from sleep, on Powerbooks. It also works on desktop Macs, to remount shared disks instead of using the AppleShare 'mount on startup' option. See pic 14.3 on page 85.



Cache Switch

For 68040/680LC40 Macs only. Allows you to turn off the 68040 processor caching for compatibility with older applications. See pic 14.6 on page 85.



Colour

You can set the colour of highlighted text and window borders. See pic 14.7 on page 86.



CloseView

You can magnify your computer display for easier viewing.



ColourSync System Profile

Part of the ColourSync system that provides consistent colour across various types of equipment (printers, scanners, monitors, and so on). In the Control Panel, you can view and select ColourSync profiles for the types of equipment you use. See pic 14.7 on page 86.



Control Strip

You can display or hide the Control Strip, and specify a font for Control Strip menus. With the Control Strip, you can control a variety of settings directly from your desktop, such as sound volume, monitor resolution, file sharing, and so on. See pic 14.8 on page 86.



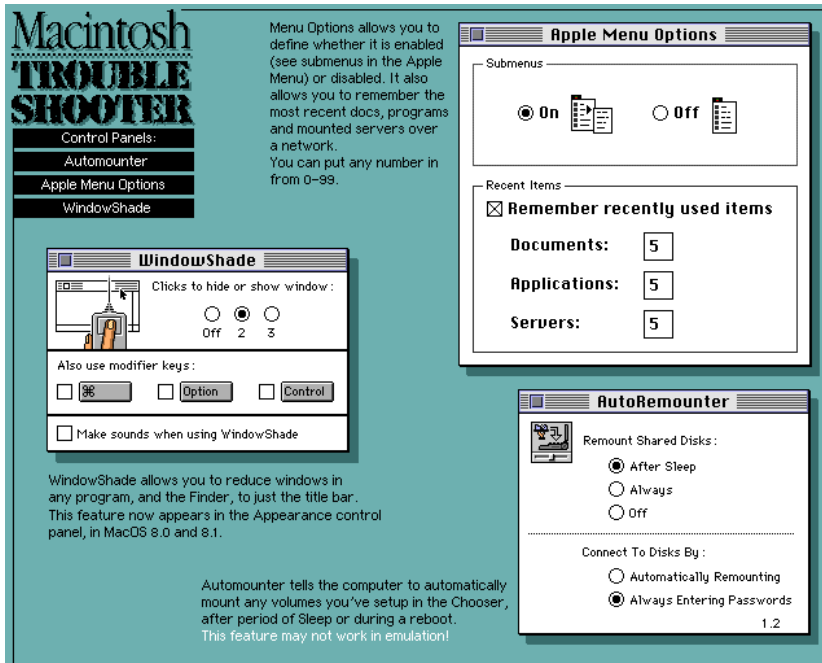
Date & Time

You can set the date, time, and time zone on your computer. You can also set how dates and times are displayed. See pic 14.9 on page 86.

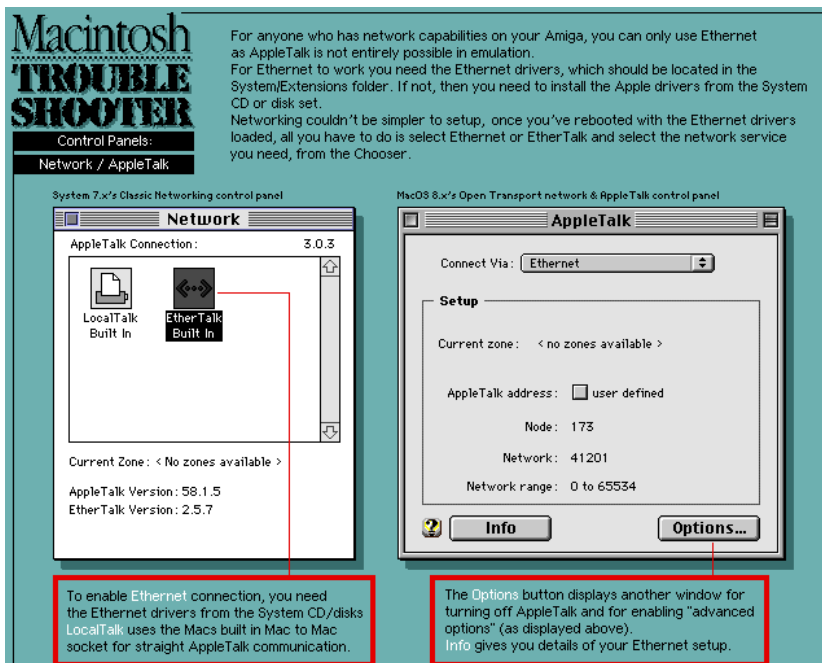


Desktop Patterns

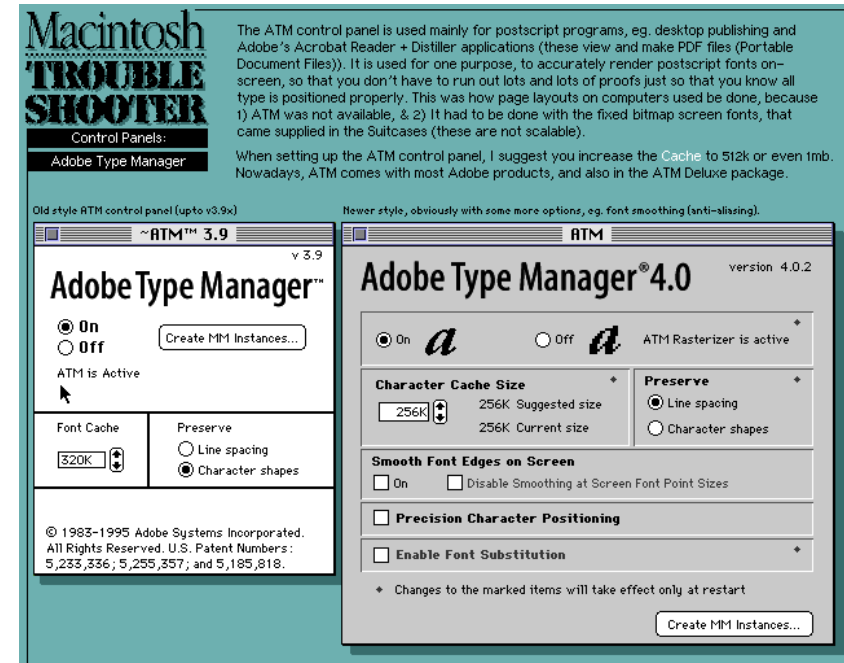
You can change the pattern or colour of your computer's desktop. See pic 14.10 on page 86.



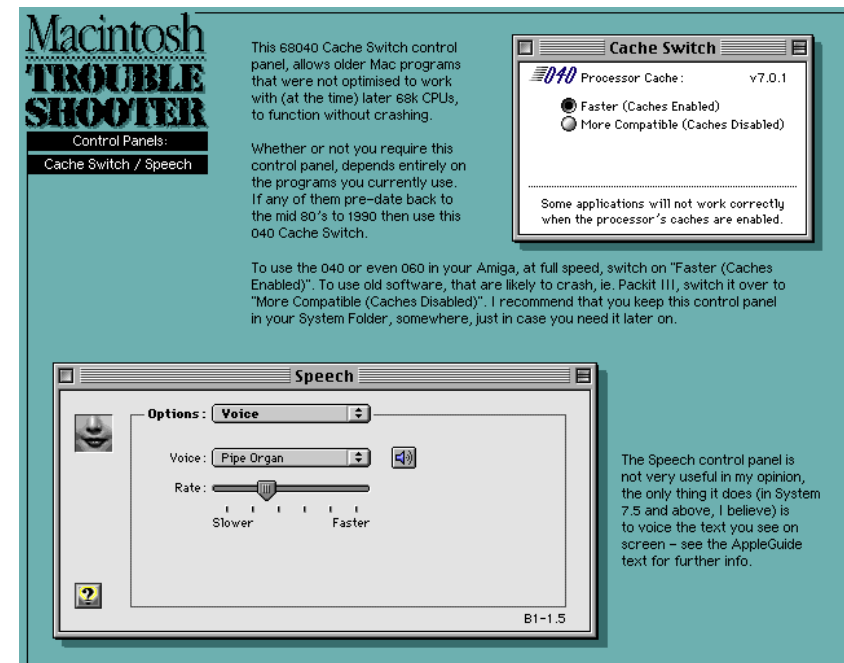
Picture 14.3 - The Apple Menu Options, AutoRemounter & Window Shade Control Panels.



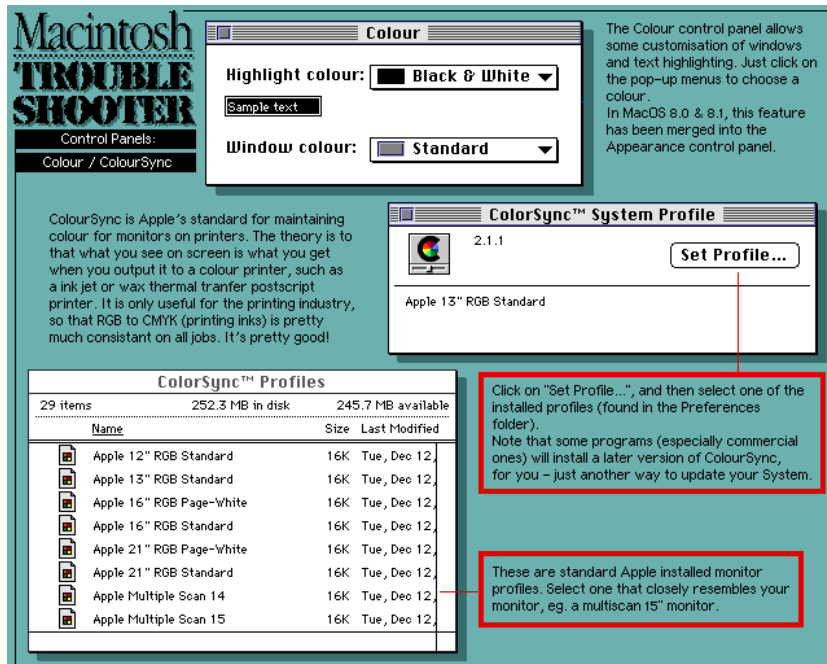
Picture 14.4 - AppleTalk & Network Control Panels.



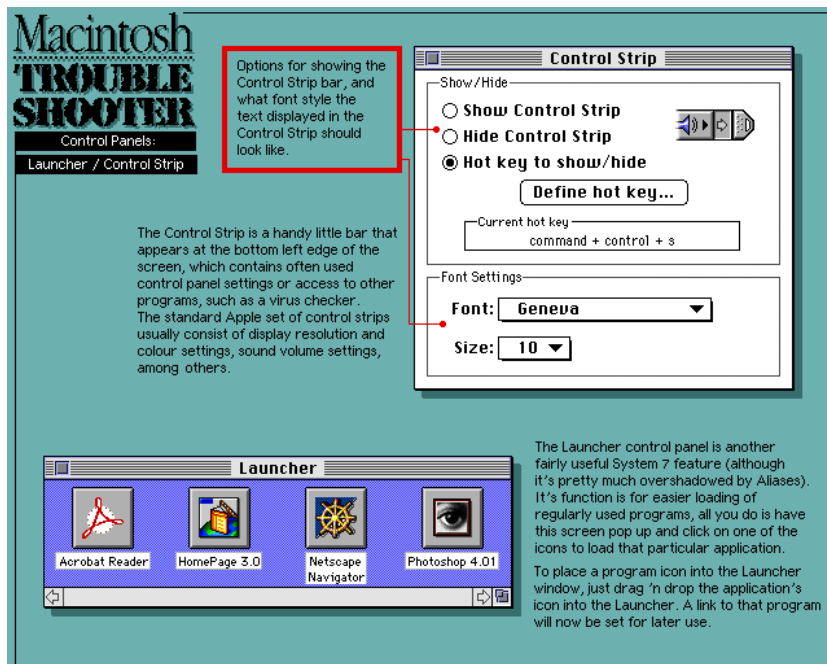
Picture 14.5 - Adobe Type Manager Control Panel – shows versions 3.9 and 4.0.



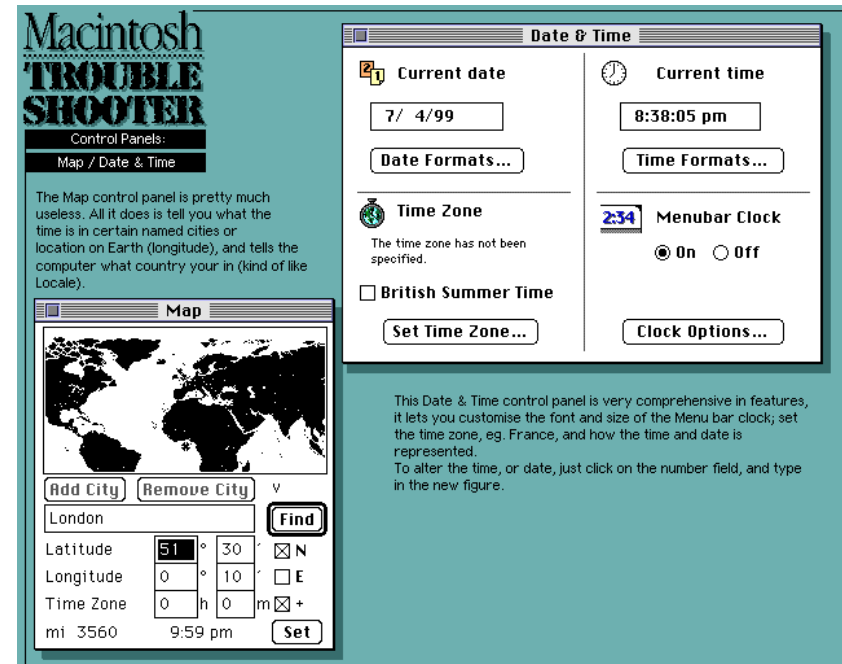
Picture 14.6 - The 040 Cache Switcher & Speech Control Panels.



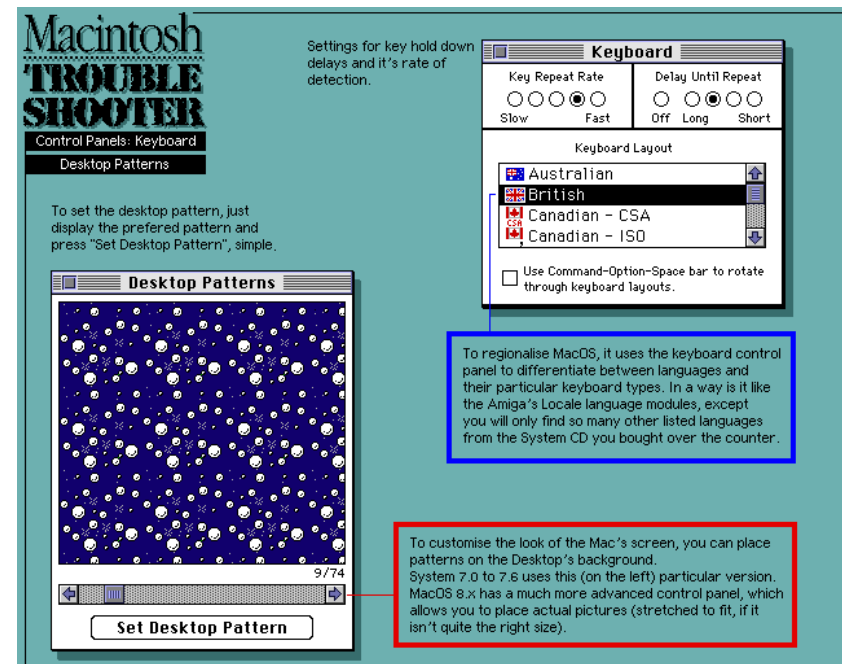
Picture 14.7 - The Colour & ColourSync Control Panels.



Picture 14.8 - Control Strip & Launcher Control Panels.



Picture 14.9 - Date+Time & Map Control Panels.



Picture 14.10 - Desktop Patterns & Keyboard Control Panels.

Desktop Pictures

This Control Panel replaces Desktop Pictures in MacOS 8.x. This time not only can you select a pattern for the Desktop, but you can also place an image onto Desktop. See pics 14.11 and 14.12 on page 88.



Easy Access

Provides keyboard enhancements, and easier mouse input, and audio/visual feedback on keyboard entries for people with disabilities.



Editor Setup

You can specify which OpenDoc parts to use for different kinds of file formats. System 7.6-8.1 only.



Extensions Manager

You can turn your computer's system Extensions on or off. Extensions include items in the Extensions folder, Control Panels, and other startup programs in the System Folder. See pic 14.13 on page 88.



File Sharing Monitor

When file sharing is turned on, this Control Panel displays a list of users who are connected to your computer. Only available on networked Amigas. See pic 14.14 on page 88.



General Controls

You can set various options, including desktop hiding, Launcher visibility at startup, folder protection to prevent folders and files from being deleted, insertion point blinking rate, menu selection blinking, and the default folder that appears in the Save dialogue box. See pic 14.15 on page 89.



Keyboard

You can set the repeat rate and delay before repeat for your keyboard. Also lets you switch keyboard layouts. See pic 14.10 on page 86.



Labels

You can customise the colour and text of icon labels. See pic 14.16 on page 86.



Launcher

You can open the Launcher window, where you can easily find and open programs. You can add items to the Launcher by placing an alias to your favourite applications, files, or folders in the Launcher Items folder in the System Folder. See pic 14.8 on page 86.



Mac OS Easy Open/Macintosh Easy Open

Allows you to select the way a Mac or DOS/Windows file is translated/opened when you don't have the application that created it. See pic 14.13 on page 88.



MacIPX

Used with the MacIPX network Extensions to provide support for the MacIPX network protocol.



MacPPP

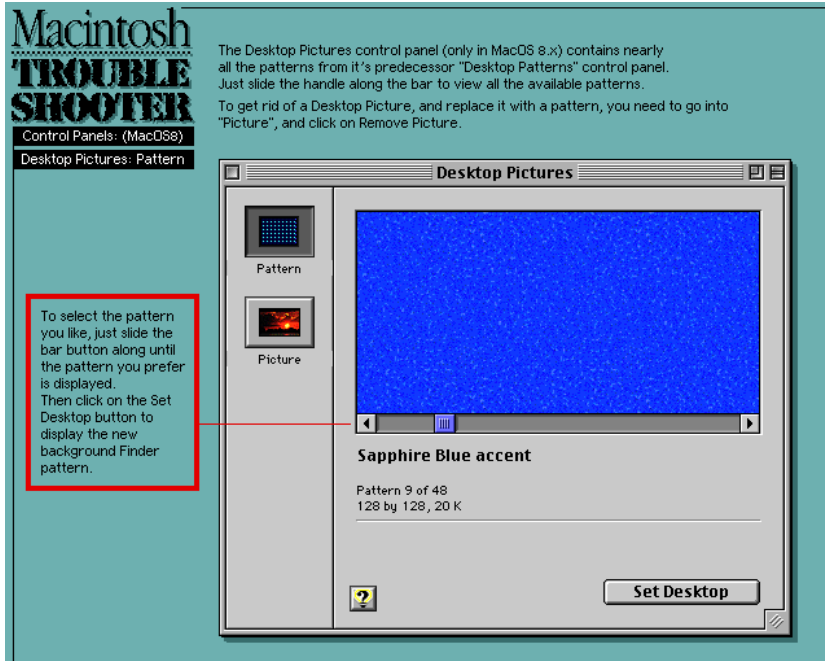
Is System 7.5x's PPP Control Panel for connecting the modem to the internet. This Control Panel can be found on the System 7.53 or 7.6 CD, it is actually called Config PPP, and is relatively easy to set-up despite the number of options screens available for you to fine tune. It also comes with a PPP system Extension, which you manually drop into the Extensions folder.

MacPPP's main setup (see pic 4.17 on page 89); the IPCP Options and Authentication windows (see pic 4.18 on page 89); the Command Script window (see pic 4.19 on page 91); the LCP Options (see pic 4.20 on page 91).



MacTCP

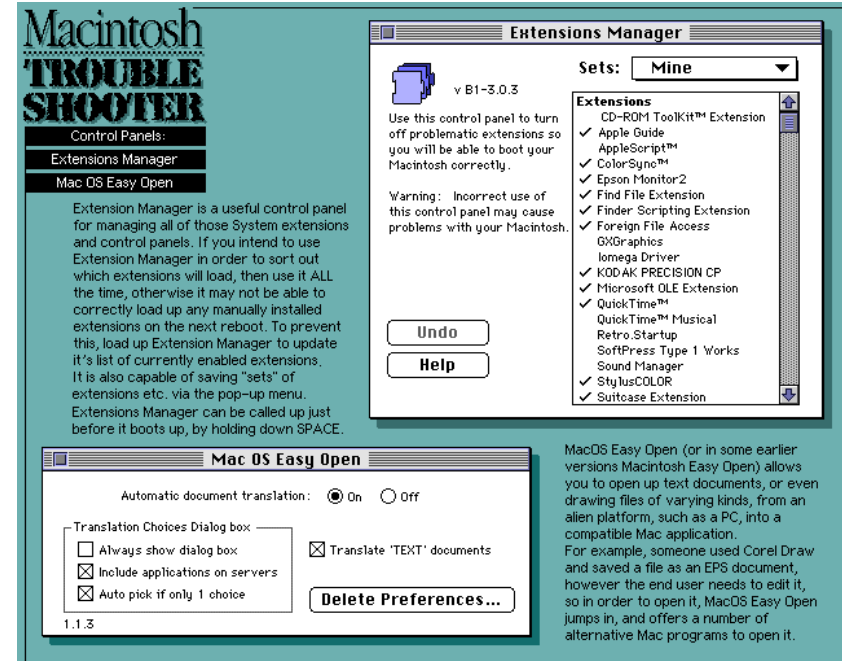
Used to configure and connect to TCP/IP-based networks, either locally or dial-up. Replaced by the TCP/IP Control Panel under Open Transport. See pic 14.21 on page 91.



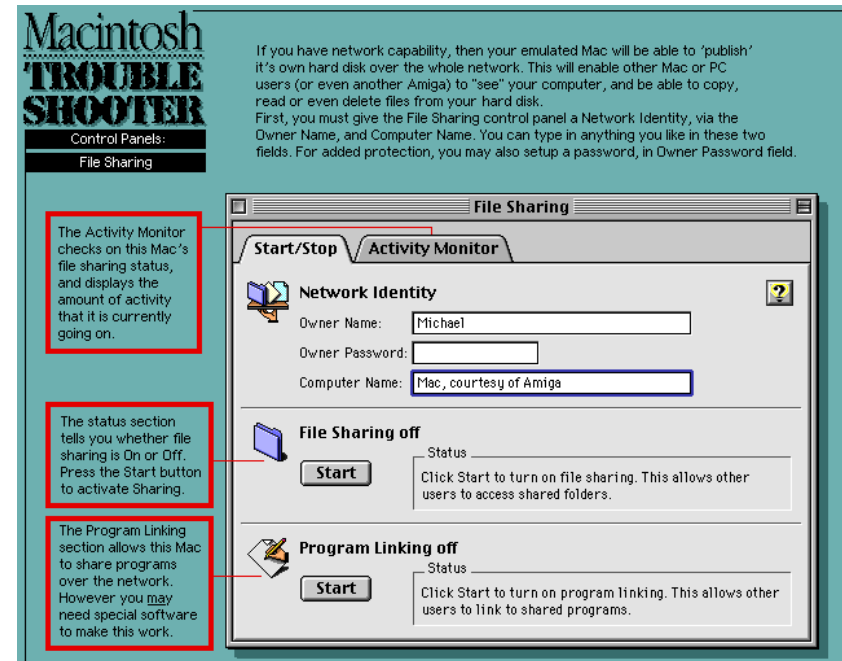
Picture 14.11 - Desktop Pictures Control Panel- displaying the Patterns screen.



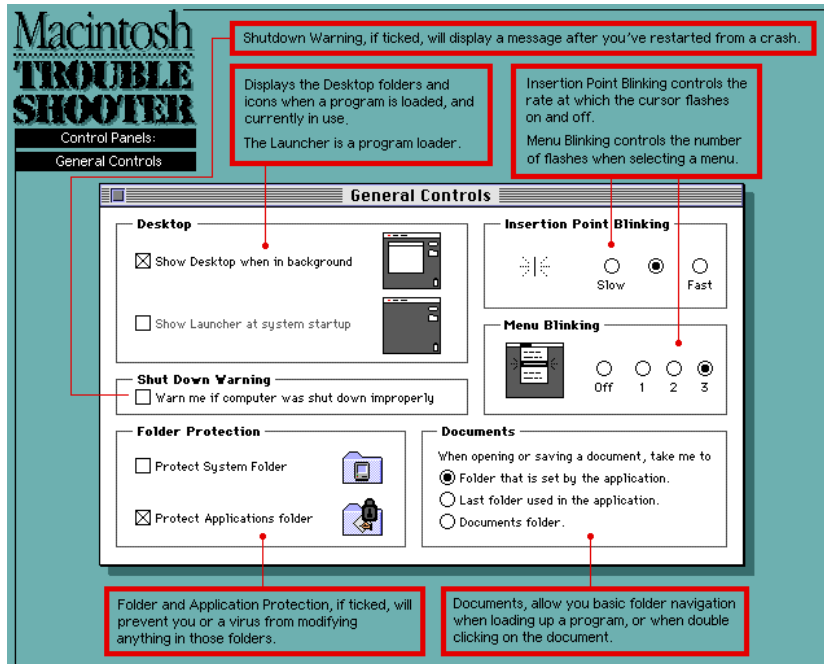
Picture 14.12 - Desktop Pictures Control Panel- displaying the Picture screen.



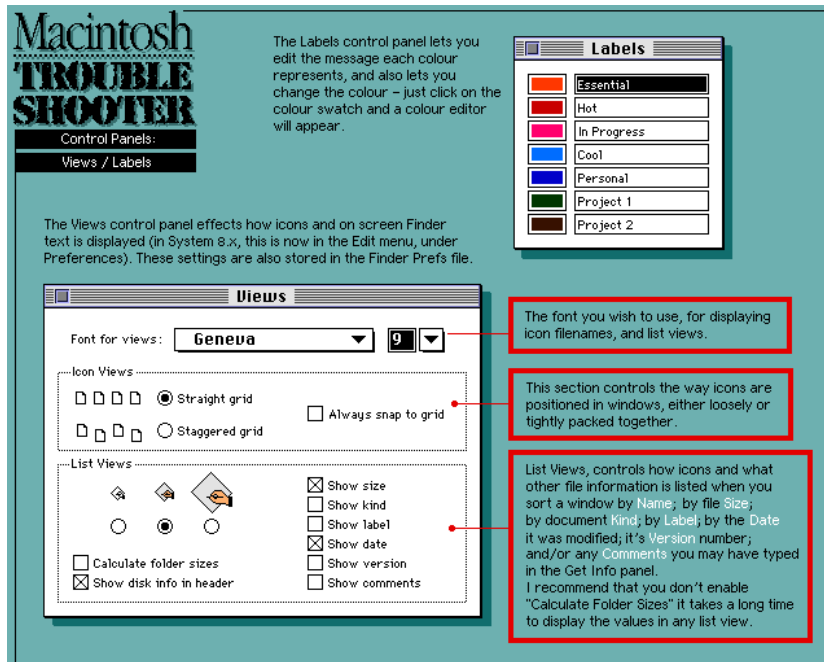
Picture 14.13 - Extension Manager Options Control Panel.



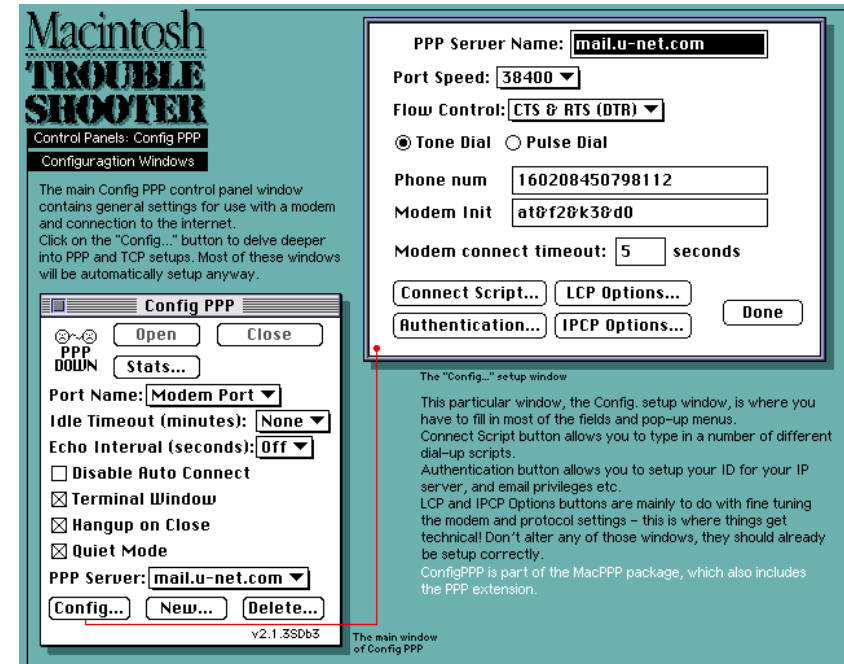
Picture 14.14 - File Sharing Control Panel.



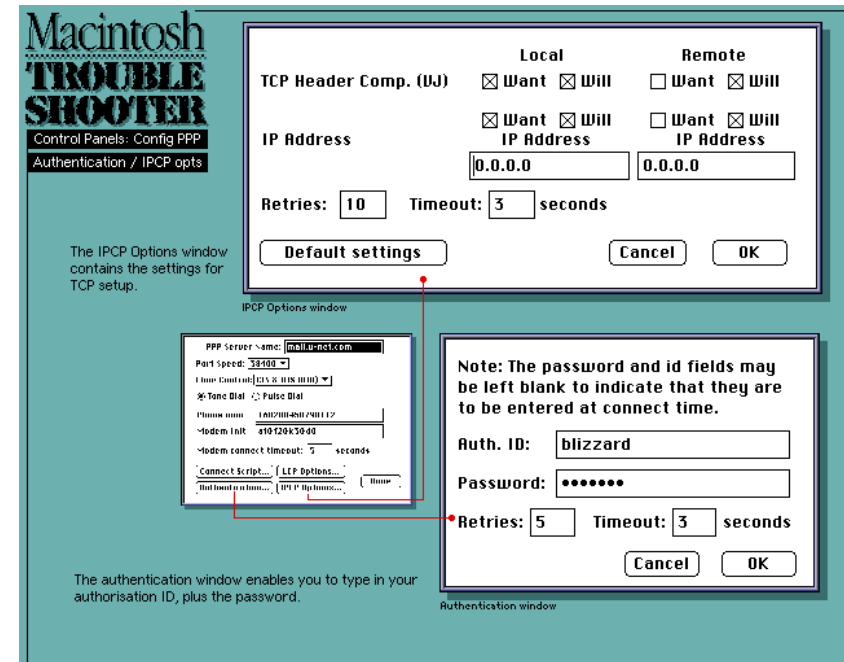
Picture 14.15 - General Controls Options Control Panel.



Picture 14.16 -Labels and Views Control Panels.



Picture 14.17 - MacPPP's Config Control Panel - main control window.



Picture 14.18 - MacPPP - the IPCP Options and Authentication windows.



MacTCP DNR

This file, which is loose in your system folder. DNR (Domain Name Resolver) contains part of the information needed by TCP/IP applications.

Map



You can locate popular cities around the world, and display longitude and latitude coordinates and local time. Lets you set the location of your computer. See pic 14.9 on page 86.

Memory



Lets you control settings such as virtual memory, disk cache size, the Modern Memory Manager, RAM disks and 24/32-bit addressing switch. See pic 14.22 on page 91.

Modem (MacOS 8 only)



The Modem Control Panel allows you to use Modem Scripts, or modem drivers. This allows MacOS to optimise performance of the modem and allow for a much smoother operation when in use. The System installer, installs drivers for most of the up-to-date modems for you, however if your particular model is not listed, then download a Mac Modem Script from the manufacturer's web site, or look in the MacOS CD (quite a few are not installed). See pic 14.23 on page 92.

Monitors



Allows you to configure your monitors; no. of colours/greys, resolution, main monitor on multiple monitor systems for non-PCI Macs and the 7200 series PCI Macs. See pic 14.24 on page 92.

Monitors & Sound (MacOS 8 only)



A combined Control Panel that replaces the separate Sound and Monitors Control Panels. Monitor setup (see pic 14.25 on page 92); sound setup (see pic 14.26 on page 92); alerts setup (see pic 14.27 on page 94).

Mouse



You can set the tracking speed and double-click speed for your mouse. See pic 14.24 on page 92.



Network

Used to choose the type of network in Systems 7.0-7.1x. Replaced by the AppleTalk Control Panel under Open Transport. See pic 14.4 on page 85.



Numbers

You can control how numbers and currencies are displayed on your computer (for example, where decimal points appear). See pic 14.28 on page 94.



PC Exchange

Allows your computer to read files from ProDOS and MS-DOS disks. You can specify the Mac OS application program used to open a DOS document. You can also use SyQuest and Bernoulli disks on your desktop. See pic 14.29 on page 94.



PPP

Is part of the Open Transport PPP package (download from Apple). This allows you to use PPP through Open Transport. Pic 14.30 on page 94, shows PPP disconnected. Pic 14.31 on page 95, shows PPP connected.



QuickTime Settings

This changes the preferences for QuickTime 2.5 (onwards). You can set options for MIDI instruments, and set a CD to play automatically when inserted.



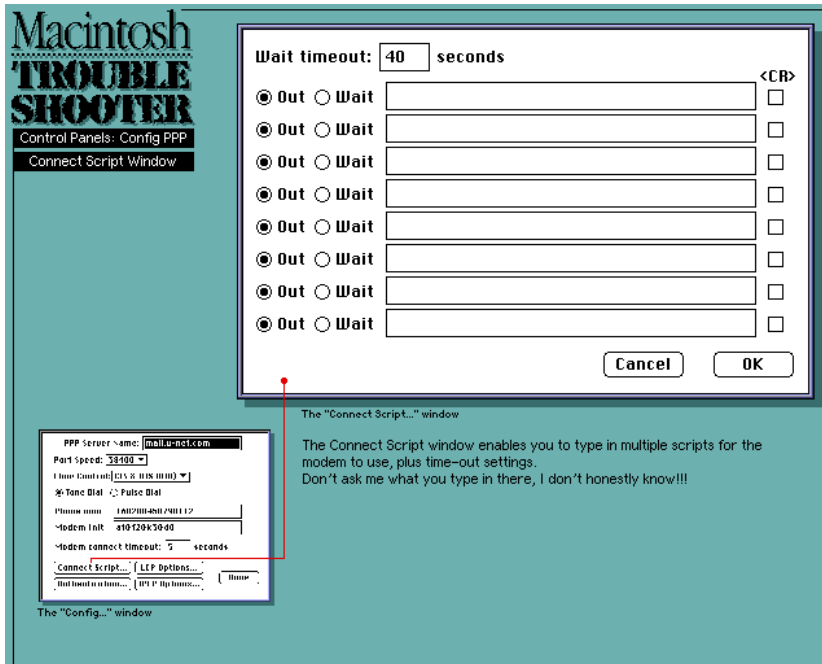
Sharing Setup

You can set file sharing options and specify a network name for your computer. **Only available on networked Amigas.** See pic 14.32 on page 95.

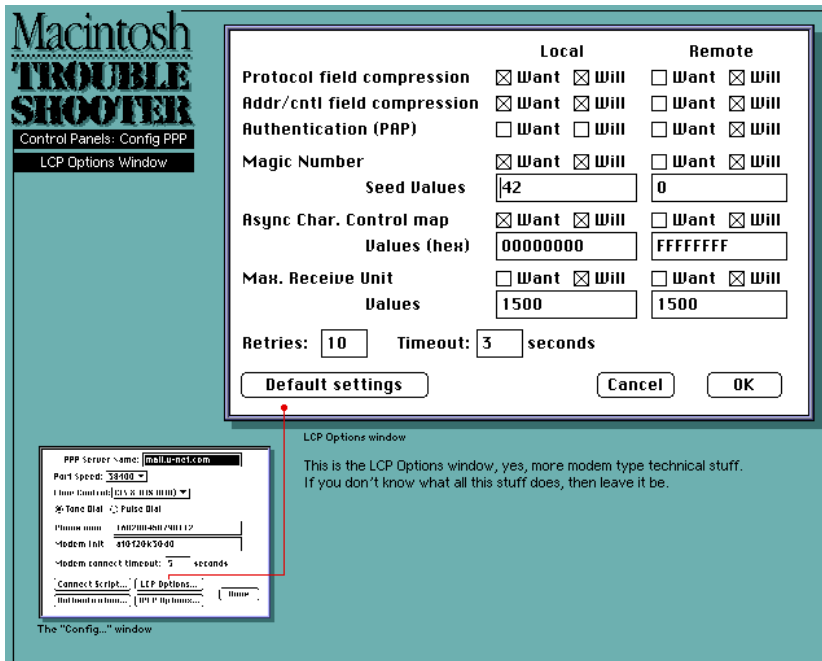


Sound

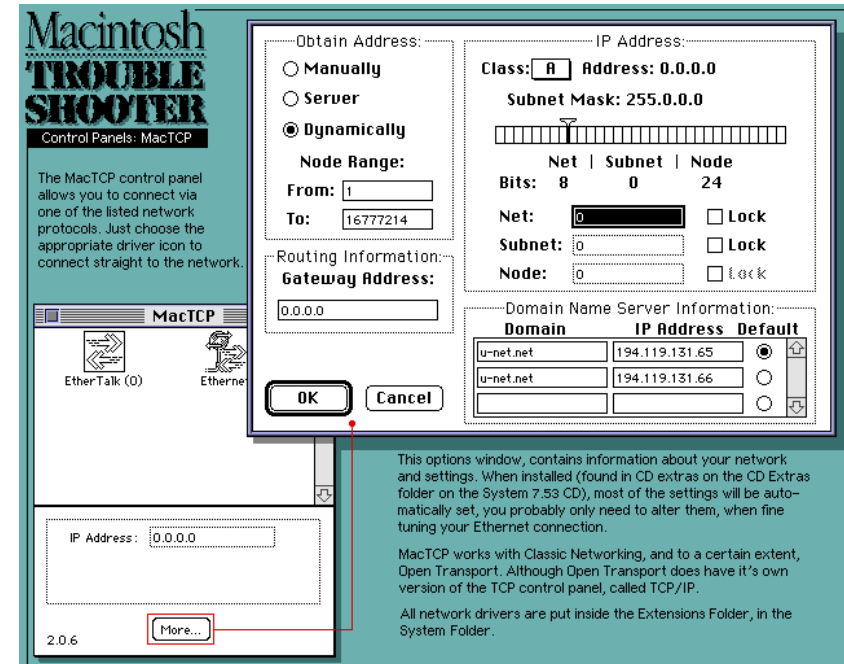
You can set the alert sound and volume and specify a sound input and sound output source for your computer. On PowerPC-based computers with PCI slots, this Control Panel is replaced by the Monitors and Sound Control Panel.



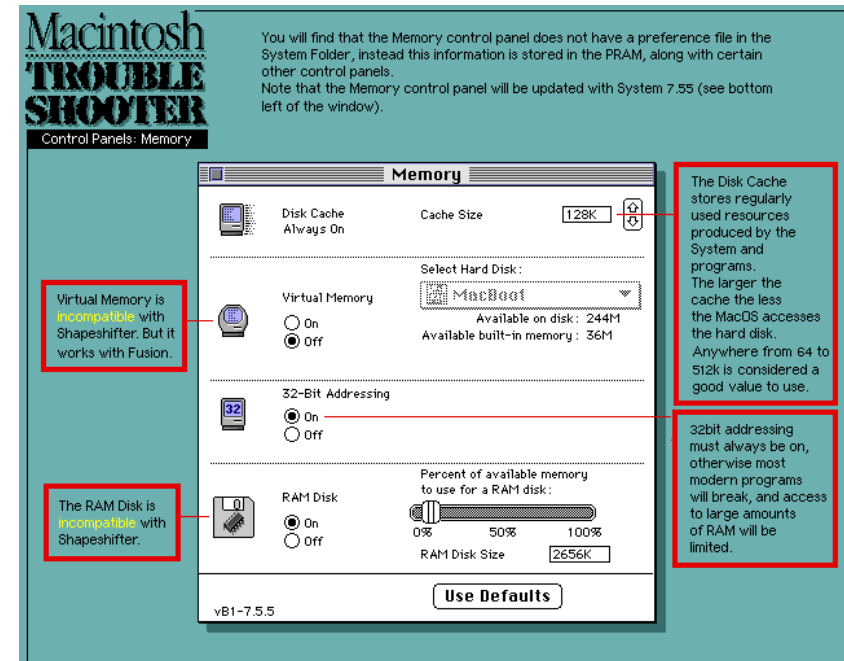
Picture 14.19 - MacPPP – the Command Script window.



Picture 14.20 - MacPPP – LCP options window.



Picture 14.21 - MacTCP Control Panel.



Picture 14.22 - Memory Control Panel.

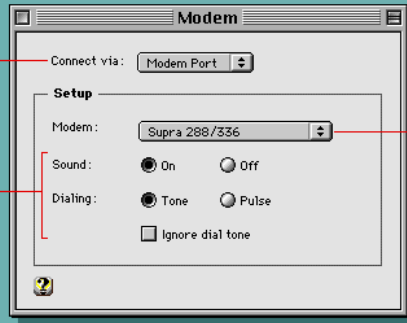
Macintosh TROUBLE SHOOTER

Control Panels:
Modem (MacOS8)

This control panel comes with MacOS 8 only, and is part of the internet installation, in conjunction with Open Transport. With you specify the modem you are using, so that it can better communicate with that particular modem.

The "Connect via:" pop-up menu gives you the option of which port you wish to use - normally the Modem or Printer ports. Either will do.

These buttons allow some customisation of the sounds that come from your modem.



Select your modem make and model via this pop-up menu. If your modem does not appear in the list, then you will have to go along to Apple's web site and download the appropriate modem driver data. It is important that the correct modem model is selected in this menu.

Picture 14.23 - Modem Control Panel.

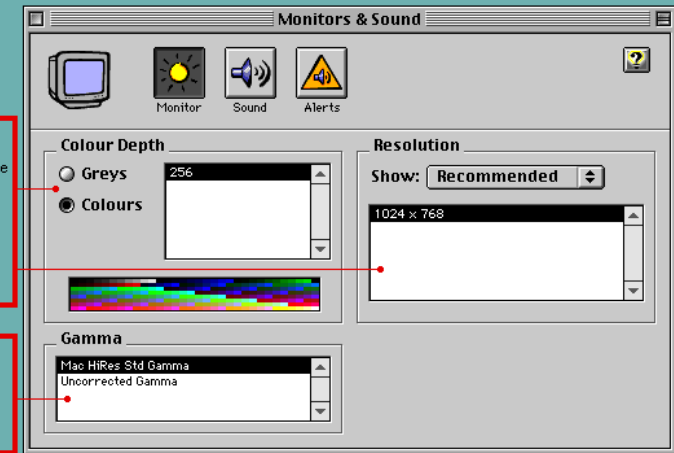
Macintosh TROUBLE SHOOTER

Control Panels:
Monitors & Sound: Monitor

Basically the same as System 7.5's Monitor control panel, except bigger! However, it does not show the multi monitor window, which is no major loss anyway. Normally you would get a choice of colour depths (256, thousands or millions of colours), and supported resolutions, if you are using Fusion - this was taken from Shapeshifter, which limits both these to just one setting each. Gamma, allows you to set the optimum hue setting for comfortable viewing.

Colours and resolution is handled by these two windows. This is what it'll look like when using Shapeshifter. Fusion gives you more options.

Gamma is to do with how colour is displayed. Whether it is dark, light or rich colours.



Picture 14.25 - Monitors & Sound Control Panel - monitor setup.

Macintosh TROUBLE SHOOTER

Control Panels:
Monitors / Mouse

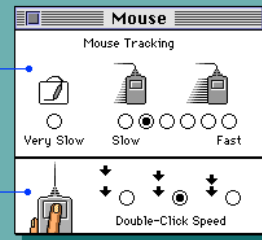
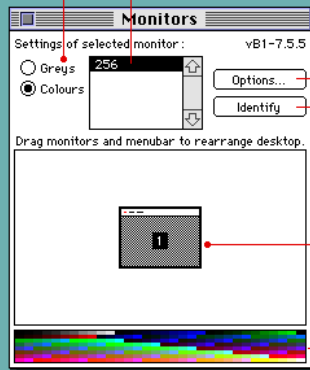
Options for your mouse:
-How fast your mouse moves
-Tablet option
-Double click configuration

Colour settings are displayed here. The number of colours available is determined by the emulator you're using.

Options: allows you to switch resolutions.

Identify: is to do with using multiple monitors (not compatible with emulation)

Current palette being used



Picture 14.24 - Monitors and Mouse Control Panels.

Macintosh TROUBLE SHOOTER

Control Panels:
Monitors & Sound: Sound

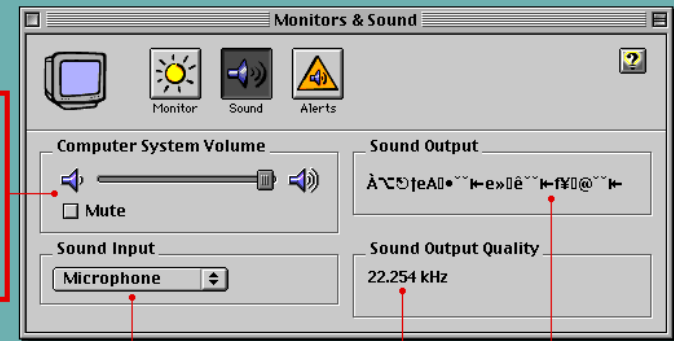
This one is a bit more feature laden than System 7.5's individual control panel, which doesn't have Sound Output Quality and Sound Input sections. Note the line of gibberish in Sound Output, this feature cannot be emulated.

The volume setting is linked to a real Macintosh's internal speaker, however it will work in emulation, a sort of second volume adjustment. I'd recommend leaving the slider set all the way to the right of the bar, this will set the volume to maximum, the same setting as the Monitor's setting.

To alter the volume control just slide the volume control button on the slide bar to the left for the quietest setting, or to the right for the loudest setting.

Use Sound Input to record sounds. This may not work in emulation!

These two display the current setup for emulation (taken from Shapeshifter). Basically the Sound Output is via the monitor and the Sound Output Quality is xxxx kHz.



Picture 14.26 - Monitors & Sound Control Panel - sound setup.



Speech

You can set options for hearing text read aloud by the computer. If you have Speakable Items software and a PlainTalk-compatible microphone, you can set options for giving spoken commands to the computer. Works on all Macintosh 660AV and 840AV computers. Also works on all computers with PowerPC microprocessors. See pic 14.6 on page 85.



Startup Disk

Select the disk you want to start up your computer (it must have a compatible System Folder on it). See pic 14.28 on page 94.



TCP/IP

You can specify TCP/IP settings for use with Apple's Open Transport and Ethernet. TCP/IP can also be used to setup your modem's PPP/ISP details. There is one drawback to the Mac's TCP/IP Control Panel, it cannot connect to an Ethernet network, and connect to the internet via PPP at the same time, unless you're connected via Ethernet to internet router system. See pic 14.33 and 14.34 on page 95.



Text

You can select from the text features for the script systems installed on your computer. See pic 14.28 on page 94.



Users & Groups

Specifies who can access your computer's hard disk when sharing is on. **Available on networked Amigas only.** See pic 14.35 on page 96.



Views

You can customise how information is displayed in Finder windows. Note: Can be found in the Edit menu under "Preferences" in System 8 to 8.1. See pic 14.16 on page 89.



WindowShade

Specifies whether to hide a window by clicking on its title bar. Note: Can be found in the Edit menu under "Preferences" in System 8 to 8.1. See pic 14.3 on page 85.

Other Control Panels

Some of these Control Panels (CPs) may have been installed with the standard set of Control Panels. 99% of these will not apply to you, or simply won't work (it'll give an error message if you try to double click on an incompatible CP), so you can safely bin most of them.

AppleCD Speed Switch

From System 7.1. Allows you to switch between "standard" or "faster" speed. It is integrated into CD Software 5.0.

AppleShareSetup

Allows you to change many of the AppleShare parameters.

AppleTalk Options

Part of the Open Transport package, but not installed automatically. It allows a user to suppress unwanted router-related alerts.

AppleVision Setup

For PCI Macs; after upgrading to System 7.5.3, this Control Panel should be eliminated. All of its functionality will be incorporated into the Monitors & Sound Control Panel.



Auto Power On/Off

Allows your Mac to automatically shut down after a specified idle time, reboot after a power failure, and/or start up or shut down at a certain times.



Button Disabler

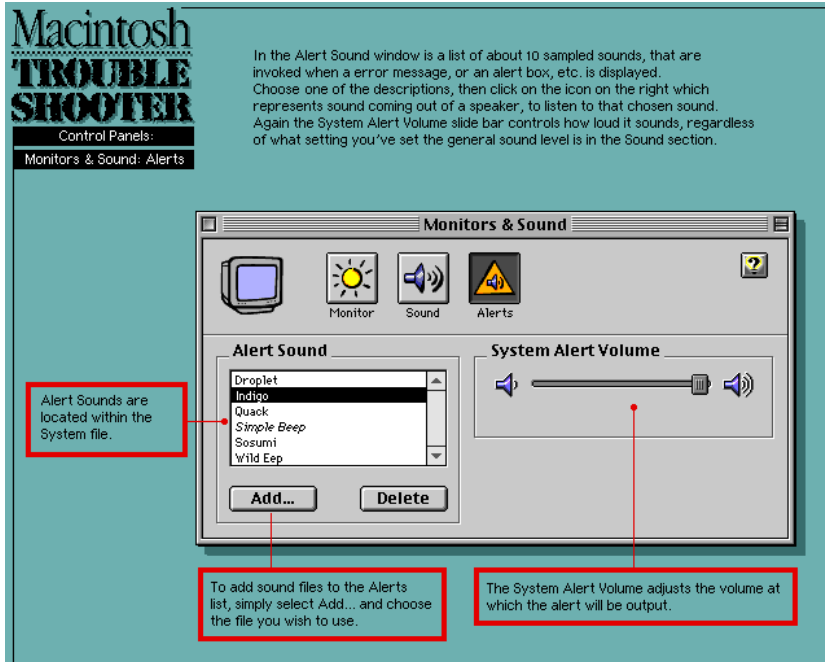
Allows you to disable the volume, brightness etc. buttons on the front of certain computer models, ie. the LC/Performa 500 series Macs.

CPU Energy Saver

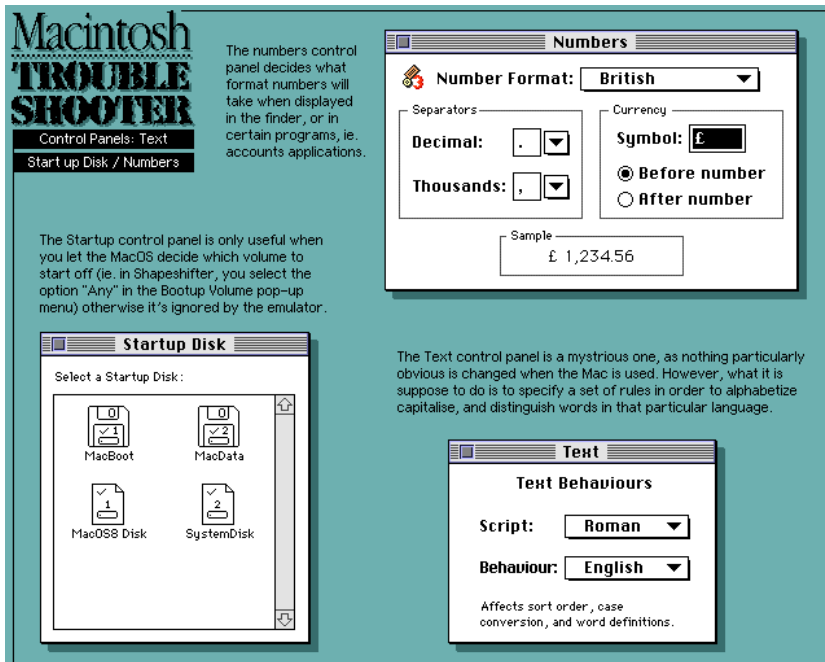
Allows you to turn your Mac off at a specific time or after a specified amount of idle time.

DOS Compatibility Software Update / PC Setup

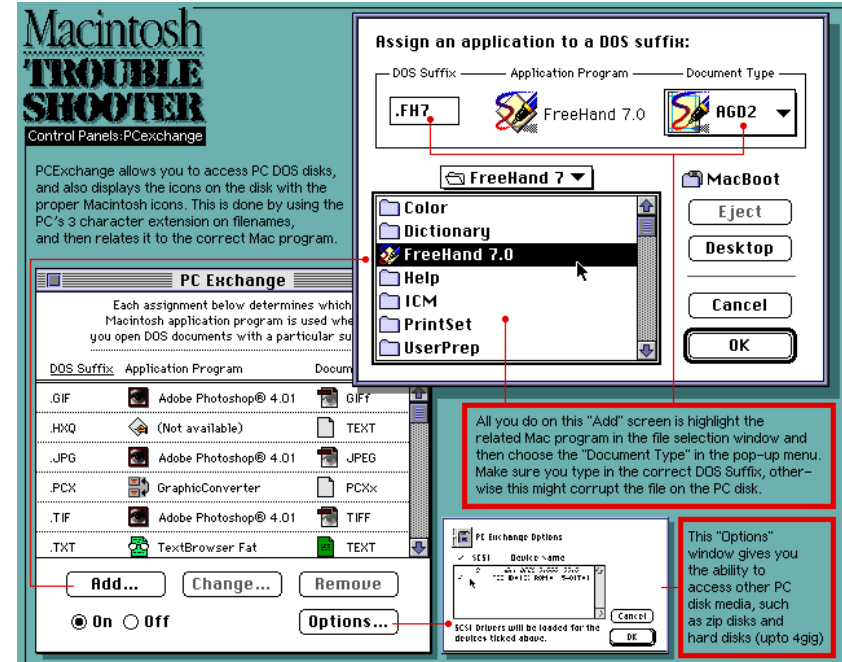
Used by Macs with the DOS Compatibility Card.



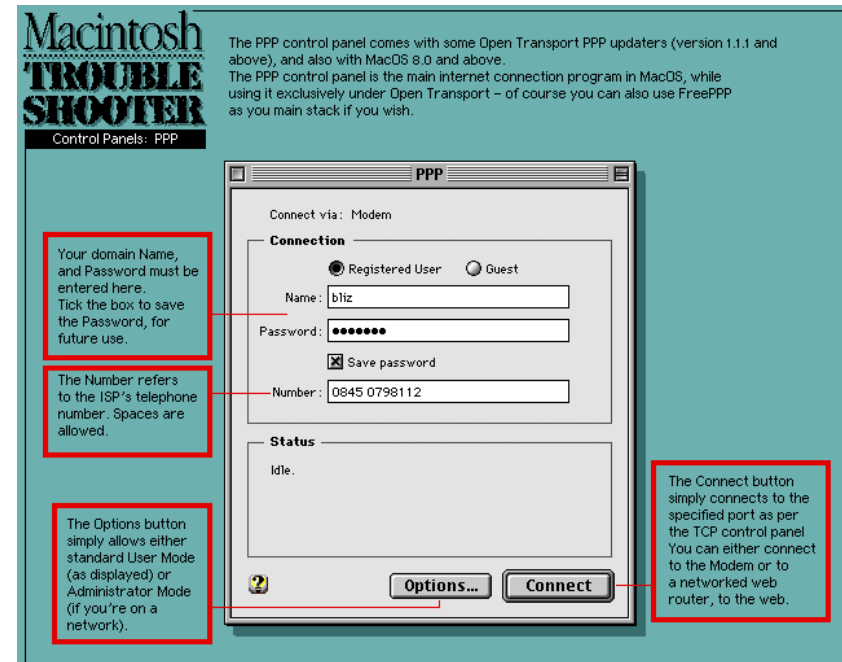
Picture 14.27 - Monitors & Sound Control Panel – alerts setup.



Picture 14.28 - Numbers, Text and Startup Disk Control Panels.



Picture 14.29 - PCExchange Control Panel.

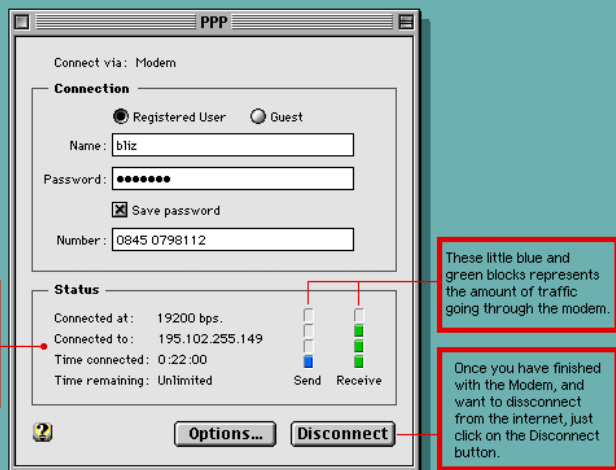


Picture 14.30 - PPP Control Panel, disconnected.

Macintosh TROUBLE SHOOTER

This is what's displayed once you've successfully connected to the internet. But before that, the Status section of this window will give some feedback on what it's doing, via text, so that you know what could be wrong if it doesn't connect first time, eg. the Server is not responding.

Control Panels: PPP



The Status section gives you useful information on what is sending and being received, and what connection speeds you have at the moment.

These little blue and green blocks represents the amount of traffic going through the modem.

Once you have finished with the Modem, and want to disconnect from the internet, just click on the Disconnect button.

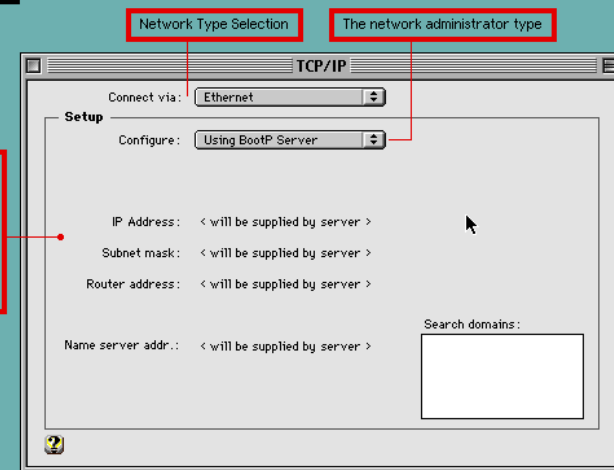
Picture 14.31 - PPP Control Panel, connected.

Macintosh TROUBLE SHOOTER

The TCP/IP control panel is extremely easy to setup, just select the "Connect via" pop-up menu to select Ethernet or other protocol (if you have a real Mac) and the control panel will get the rest of the settings automatically (usually).

To view the rest of this control panel, go to the menu and select Advanced User.

Control Panels: TCP/IP (Ethernet)



To display this part of the window, go to the menu and select "advanced user". This will enlarge the window to display all of the settings.

Network Type Selection

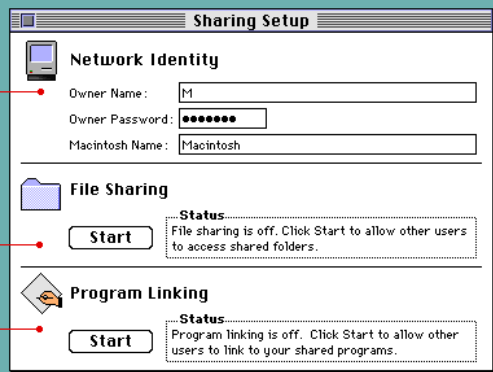
The network administrator type

Picture 14.33 - TCP/IP Control Panel – Ethernet settings.

Macintosh TROUBLE SHOOTER

If you have network capability, then your emulated Mac will be able to 'publish' it's own hard disk over the whole network. This will enable other Mac or PC users (or even another Amiga) to "see" your computer, and be able to copy, read or even delete files from your HD. First, you must give the Sharing Setup control panel a Network Identity, via the Owner Name, and Macintosh Name. You can type in anything you like in these two fields. For added protection, you may also setup a password, in Owner Password field.

Control Panels: Sharing Setup



The Network Identity section enables you to specify your Mac's ID on a network. And also to add some security via the password feature.

The File Sharing section allows you to switch on/off sharing of your hard disk. Press the Start button to activate Sharing.

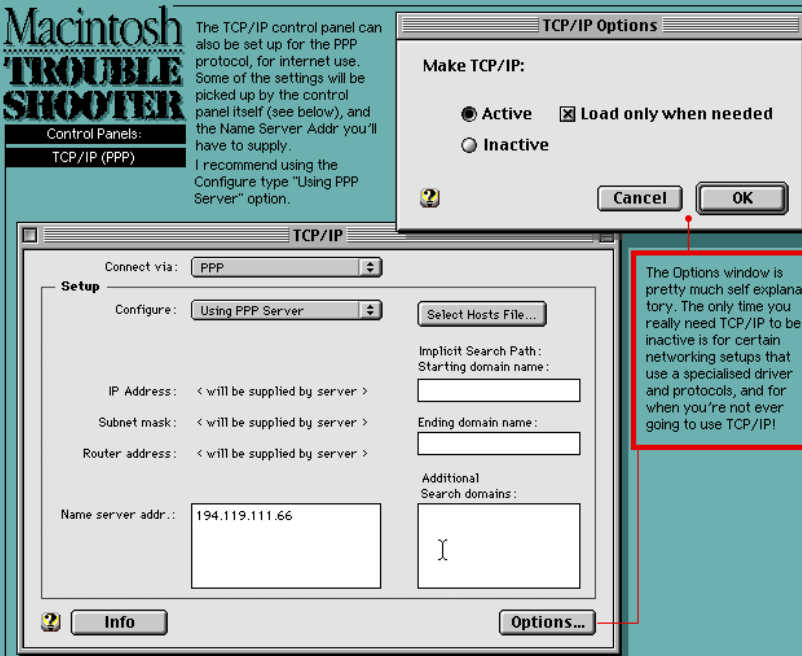
The Program Linking section allows this Mac to share programs over the network. However you may need special software to make this work.

Picture 14.32 - Sharing Setup Control Panel.

Macintosh TROUBLE SHOOTER

The TCP/IP control panel can also be set up for the PPP protocol, for internet use. Some of the settings will be picked up by the control panel itself (see below), and the Name Server Addr you'll have to supply. I recommend using the Configure type "Using PPP Server" option.

Control Panels: TCP/IP (PPP)



The Options window is pretty much self explanatory. The only time you really need TCP/IP to be inactive is for certain networking setups that use a specialised driver and protocols, and for when you're not ever going to use TCP/IP!

Picture 14.34 - TCP/IP Control Panel – PPP settings.



Picture 14.35 - The Users & Groups Control Panel.



Energy Saver

Allows you to put your external monitor into sleep mode after a specified idle time. It only works with Macs that have the built-in video, it also requires an Energy Star compliant monitor. **Compatible with PCI based PowerMacs only.**

LaserWriter Bridge

Open Transport-compatible version of LaserWriter Bridge and LocalTalk Bridge. Allows you to use LocalTalk printers and access LocalTalk networked Macs over an Ethernet or TokenRing network.

LocalTalk Bridge

Allows you to bridge Ethernet and LocalTalk networks.

MODE32

Under System 7, gives the Mac II, IIx, IIcx, or SE/30 (68000 & some 68020 CPUs) the ability to run in 32-bit addressing mode. With 32-bit

addressing on, your Mac can take advantage of more than 8MB of RAM. Under System 7.5, a new version of MODE32 was released. You MUST use MODE32 v7.5 if you are running System 7.5. **This CP is not necessary for Mac emulation on Amigas – 32 bit addressing is guaranteed, except with 68000 CPUs.**

Network Time

If you are on a network with a Time Server, this Control Panel checks the server and synchronizes your Mac's clock.



Password Security

Used on portable Macs only, and will not work in emulation anyway. Allows you to lock-out the Mac's hard disk, so that thieves cannot use the computer.

PC Setup

Used by Macs with the 610 PC and DOS Compatibility Cards, and is replaced by the DOS Compatibility Software Update 1.5.

Performa

Included with Performa models running System 7.1P. Provides functionality similar to the General Controls Control Panel.



Power Macintosh Card & 601 Processor Upgrade

Allows the use of a PowerPC accelerator on a real Mac. Cannot work in emulation.

ScriptSwitcher

Provides a quick way to automatically switch the primary script system resources in your System software.



Serial Switch

Provides compatibility for some applications that use the printer or modem port. You can set the serial port option to Faster or More Compatible. **Works on Macintosh IIx and Macintosh Quadra 950 computers only.**



Token Ring

Under Open Transport, works with the AppleTalk Control Panel to allow access to a Token Ring network.



Trackpad

Used on portable Macs only. It controls the trackball, for speed control and button use.

Extensions

What is an Extension? An Extension is a small file that changes how your computer operates. Unlike a Control Panel, you typically do not have any direct interaction with an Extension. An Extension makes the appropriate changes when you start your computer and remains active until you shutdown your computer.

Depending on the type of computer you have, the contents of your Extensions folder may vary. You might also have Extensions that were added by third-party applications.

To disable an Extension, simply take it out of the Extension Folder and put it in a folder called **Extensions (disabled)**, this can be placed in the System Folder, don't worry, no Extension will be loaded from this particular folder. You can also use the Extension Manager Control Panel to do the same thing.

Other types of Extensions are actually Libraries, these are often used by many applications or system components. It is usually a good idea not to turn off libraries, otherwise it may cause some programs not to load up. Some of the more common ones are listed in the Libraries link below.

On page 102, I've listed some miscellaneous Extensions that the installer placed in your system that you may not need.

EM Extension

Works with the Extensions Manager Control Panel, which lets you specify which Extensions are turned on when you start your computer.

About Apple Guide

Provides information about how to use Apple's on-screen help system.

ADSP

AppleTalk Data Stream Protocol, provides networking protocol under pre-7.0 systems. More specifically, it provided data flow and full duplex data delivery over a network. However, in order for the benefits to be realised, both Macs had to be running this Extension.

AppleCD Audio Player Guide

Provides step-by-step instructions for using the AppleCD Audio Player.

Apple CD-ROM

Enables your computer to use an Apple CD-ROM drive.

Apple Color SW Pro CMM

Contains colour-matching information used by ColorSync 2.0 to maintain consistent colour between documents.

AppleGuide

Enables your computer to use Apple's on-screen help system. You can access Macintosh Guide from the ? menu (the help menu is on the right hand side of the menu-bar), whilst in the Finder. This feature can only be found in Systems 7.5 to 8.1. Appleguide file 'additions':

AppleVision Guide Additions, AV Guide Additions, Energy Saver Guide Additions, Monitors & Sound Guide Additions, Network Guide Additions, Open Transport Guide Additions, Speech Guide Additions, Video Guide Additions

These add step-by-step instructions for using features specific to a program, MacOS, or Control Panel.

Apple Multimedia Tuner

Enhances QuickTime 2.0 and Sound Manager 3.0. Once you upgrade to QuickTime 2.1 and Sound Manager 3.1, or System 7.5.3/Update 2.0, this is no longer necessary.

Apple Photo Access

Part of the CD-ROM software, and is needed for viewing Kodak PhotoCDs.

AppleScript

Enables automation of repetitive tasks in applications that support it. Some applications, such as Apple on-screen help, require AppleScript to work.

AppleShare

Gives you access to shared disks on the network. Systems 7.6 through to 8.1 uses a later version of AppleShare that is incompatible with ShapeShifter up to v3.10.

Audio CD Access

Lets you play audio CDs on your internal or external CD-ROM drive. Requires the AppleCD Audio Player or equivalent application to control the audio CD.

Clipping Extension

Lets you use the drag-and-drop feature to create clipping files on your desktop.

Color Picker

Creates a standard colour selection interface for all applications.

Color SW 2000 Series CMM

Colour-matching information used by ColorSync to maintain consistent colour between documents printed on a Color StyleWriter 2000 series printer and other colour devices.

ColorSync

Matches colours on your display with the closest matching colours on your printers, scanners, and other devices.

Desktop Printer Extension / Desktop Printer Spooler / Desktop PrintMonitor

All three of these files are necessary for the desktop printing feature to work. (With desktop printing, you can print documents by dragging their icons to printer icons.)

Dragging Enabler / Drag Enabler

Provides Drag Manager support under System 7.0 and 7.1. When used with the Macintosh Drag and Drop Extension, provides inter-application drag and drop support under System 7.1. Integrated into the Finder under System 7 Pro and later.

Energy Saver Extension

Used in conjunction with the Energy Saver Control Panel. Sends the Mac to sleep.

Ethertalk Phase 2

Lets you connect your computer to an Ethernet network.

File Sharing Extension

Enables your computer to share files and folders with other computers on your network.

Find File Extension

Lets you search for files and view the results in a single window. If you turn off this Extension and choose Find from the File menu, you'll get the System 7.1 Find dialogue box instead of Find File.

Finder Help

Provides Balloon Help support for the Finder.

Finder Scripting Extension

Allows you to use AppleScript to automate tasks in the Finder.

Foreign File Access

Enables your computer to work with CD-ROM discs whose contents don't use the standard Mac OS file system (for example, ISO 9660 or High Sierra formats).

Global Guide Files folder

Contains files used by the on-screen help system. Some of these files may be used to provide help more than one application.

High Sierra File Access

Part of the CD-ROM software that lets you view CDs with High Sierra file systems.

Installer Cleanup

This is put in the System Folder after a OS is installed. All it does is to make sure that the installation process was successful and that everything was installed in the proper place. You must allow it to load on the next restart so that it can take care of any files that were left behind after the installation. It should then disappear.

ISO 9660 File Access

Part of the CD-ROM software that lets you view CDs with ISO 9660 file systems.

LaserWriter 8

(Version 8.x) A PostScript level II print driver that enables your computer to print documents on a PostScript printer connected to an AppleTalk network.

Mac OS Guide

Contains step-by-step instructions for working in the Finder. You access Mac OS Guide from the Guide (question mark) menu when the Finder is active.

MacinTalk 3

Lets your computer read text documents in human-like voices.

MacinTalk Pro

Lets your computer read text documents in human-like voices. Older computers (with 68030 or 020 processors) should use MacinTalk 3 instead.

Macintosh Drag / Drag&Drop Extension

Provides Drag and Drop support under Systems 7.0.x and 7.1.x. These two files are still installed by numerous software packages, such as Now Utilities and ccMail, for universal compatibility, but are not needed under System 7.5 and later.

MacIPX AppleTalk / MacIPX TCP/IP / MacIPX Token Rink

These are network drivers which support the MacIPX protocol over the respective network type (ie. AppleTalk, TCP/IP or Token Ring).

MacTCP Token Ring Extension

Allows you to use the TCP/IP protocol over a Token Ring network.

Mailbox Extension

Supports your PowerTalk mailbox. Enables the Mailbox icon to appear on your desktop.

My Speech Macros

Supports the Speech Macro Editor.

Network Extension

Lets you set Personal File Sharing from the Finder.

Printer Descriptions

This folder contains printer description files (PDFs) for any make of printer.

Printer Driver Extensions

These are Extensions which allow access/connection to various types of networks, services, printers, etc. using the Chooser. They do not take up any RAM when the System has booted-up. Most of these (99.9%) can be deleted out of the Extensions folder, it is very unlikely you won't have these printers.

AppleTalk ImageWriter

Color SW 1500 (SW=StyleWriter)

Color SW 2200

Color SW 2400

Color SW 2400

Color SW 2500

Color SW Pro

Color SW Pro GX (GX=QuickDraw GX compatible)

ImageWriter

ImageWriter GX

ImageWriter LQ GX

Laserwriter 8.x (General purpose postscript II compatible printer driver)

LaserWriter 300 & LaserWriter 300/LS

LaserWriter 300 GX

LaserWriter GX

LaserWriter IISC GX

LW 300/LS GX

LW Select 310

Personal LaserWriter SC

Portable StyleWriter

StyleWriter 1200

StyleWriter GX

Printer Share / Printer Share GX

Provides the ability to share non-network printers (for example, the StyleWriter II) across a network.

PrintMonitor

This application allows you spool your print jobs to any printer.

PowerTalk Extension

Supports PowerTalk services. Includes information used by the PowerTalk key chain.

PowerTalk Manager

Manages your PowerTalk mailbox and services.

QuickDraw GX

QuickDraw GX is a specialist (no longer supported) printing system. Note that if this Extension is installed, you must have GX-compatible printer drivers. If you have this Extension installed, non-GX drivers will not even show up in the Chooser.

Printer Description

This folder contains Postscript2 printer description files or PPDs, and includes PPDs for most of Apple's own printers.

QuickTime

Provides built-in multimedia support for applications.

QuickTime PowerPlug

Provides native support of QuickTime for PowerPC-based computers when used in combination with QuickTime 2.x onwards.

QuickTime Musical Instruments

Supports 30 Roland Standard MIDI sound samples that can be accessed by QuickTime applications with no additional MIDI equipment.

Scripting Additions

Extends the AppleScript language with special features, such as finding the date or time of day. With scripting additions installed, AppleScript acts as if these features are part of the language. Scripting additions are required only when a script uses them.

Serial (Built-In)

Used by Open Transport to allow access to the built-in serial port on your computer.

Shared Library Manager

Provides native support for Open Transport.

Shortcuts

Explains common keyboard equivalents and other shortcuts to use in the Finder. You can access Shortcuts in the Guide (question mark) menu when the Finder is active.

SimpleText Guide

Provides step-by-step instructions for using SimpleText. You can access the SimpleText Guide from the Guide (question mark) menu, after you open SimpleText.

SOMobjects for Mac OS

Used by OpenDoc.

Speech Manager

Provides text-to-speech capabilities.

SR Monitor

Used to monitor and interpret speech.

Startup Tuner

Ensures correctly starting up from the disk selected in the Startup Disk Control Panel.

System 7 Tuner

For System 7.0, and comes on the System Tune-Up disk. It provided better memory management for the initial release of System 7.

SystemAU

Used for audio-video input. Required by the Monitors & Sound Control Panel.

System Speech Rules

Supports voices and speech dialects.

Thread Manager

Thread Manager is an addition to the Macintosh Toolbox that enables concurrent programming for real multi-tasking within an application. Supports cooperative and pre-emptive threads of execution at the application level, but not at the system level. It has been incorporated into System 7.5 onwards.

TokenTalk Phase 2

Used by the Apple Token Ring card.

TokenTalk Prep

Provides driver support for TokenTalk Phase II.

Tutorial Items

Provides instructions for learning basic skills on your computer. You can access the tutorial from the Guide (question mark) menu when the Finder is active.

Video Out Default (PAL)

Used by the Apple Video Player. On the standard U.S. System, the default video-out for the Apple Video Player is NTSC. Outside of the US, the standard video format is PAL – this Extension changes the Apple Video Player default to PAL.

Video Startup

Used by the Apple Video Player.

Voices folder

Contains voices for use by Speech/ PlainTalk/ Text-to-Speech.

WorldScript Power Adapter

Supports language kit software on PowerPC-based computers. However, computers that use the Roman alphabet (English and French, for example), can still take advantage of performance and stability enhancements provided by the WorldScript Power Adapter.

Other Extensions

These will probably not be installed on later System OSs, eg. 7.5 to 8.1, although it depends entirely on the MacOS you are running, the processor, and any added hardware, such as; a CD-ROM drive, Ethernet, SCSI etc. 99% of these will not apply to you, so you can safely bin them.

A/ROSE

Allows communication between your computer's main logic board and NuBus cards that run the Apple Real-Time Operating System. Examples of such NuBus cards include the Apple Token Ring 4.16 NB card and the Apple Serial NB card.

ADBReInit

ADB is a port on the Mac, which you use to plug in the keyboard and mouse. The ADBReInit Extension prevents memory from being moved at interrupt time, which could cause the some PowerBook and Quadra models to hang or crash.

Appleguide Additions

PB 500 Upgrade Guide Additions, PB 190 Upgrade Guide Additions, PB 2300 Upgrade Guide Additions, PB 5300 Upgrade Guide Additions, PowerBook Guide Additions

Adds step-by-step instructions for using features specific to Powerbook Macs.

Apple Built-In Ethernet / Apple Ethernet NB

A driver for the built-in Ethernet port on Nubus-based Macs.

Apple Event Manager

Allows applications (including the Finder) to send commands to other applications (again, including the Finder). For example, in InformINIT, when you click on the little "IE" and "NN" buttons, InformINIT sends an Apple Event to Netscape telling it to go to the URL listed. This file is incorporated into the AppleScript Extension with System 7.5 and above.

AppleTalk ImageWriter

Enables your computer to print documents on a networked ImageWriter II.

AppleVision

Only used for support of AppleVision monitors only.

AudioVision

Part of the AudioVision 14 inch monitor software package. Only needed on pre-7.5 systems.

Assistant Toolbox

This is the base Extension for AutoRemounter. AutoRemounter works on Macintosh PowerBook computers and allows file synchronisation, battery management, and easy mobile computing. It also provides support for a persistent RAM disk and deferred printing. This Extension may conflict with the LaserWriter Select 310 printer software to block printing. A solution is to turn off background printing in the Chooser.

At Ease 7.5 Layer Patch

Fixes a crash when using At Ease, and the Show Desktop box is unchecked in the General Controls Control Panel.

At Ease Startup

Forces your Mac to start up with the At Ease instead of the standard Mac Finder.

AU Setup

Used to control AppleVision displays.

Caps Lock

Provides a visual indication of the state of the Caps Lock key on a Macintosh PowerBook. When Caps Lock is turned on, an Up arrow appears in the menu bar next to the Guide "?" menu. (Not needed on Macintosh PowerBook 500 series computers.)

CFM Update

Installed by older versions of QuickDraw 3D. CFM stands for Code Fragment Manager.

DAL

Enables network activity using Data Access Language, formerly called CL/1. Data Access Language is Apple's client/server protocol for remote data access and is based on ANSI standard SQL (Structured Query Language). DAL is optimised to provide decision-support applications with uniform access to data, regardless of the different brands of databases, the different host platforms, or the different types of networks.

Desktop Printer Menu

Creates a menu bar which allows you to change to a different printer without having to use the Chooser.

Display Enable

Provides multiscan/multisync support, especially for AppleVision monitors. Adds functionality to Energy Saver, and to the Monitors control strip module by allowing you to switch resolutions on-the-fly.

DoubleTrouble

For use under pre-System 7.5 systems. When using a debugging utility, the DoubleTrouble Extension will break into the debugger to alert you whenever the code in a project attempts to free a "handle" that has already been freed. An unsupported Apple Extension. NOTE: do not use this Extension with System 7.5 or later. It is intended only for pre-7.5 use.

Ethernet (Built-In)

Used by Open Transport to allow access to the built-in Ethernet port on on PCI Macs. Not to be confused with the Apple Built-In Ethernet Extension.

EthertalkPrep

On older systems, worked with Ethertalk Phase 2 to establish and maintain Ethernet connections. No longer needed under 7.5.3.

FontSize Patch

Fixes problems with font corruption when using the Asian language kits under System 7.5.3 and later.

Frontmost Extension

Frontmost comes with the full AppleScript commercial product, it allows you to create sophisticated user interfaces for AppleScript applications. It also acts as a run-time assistant for projects saved as miniature applications.

GetInfo

For use only under System 7.0. Provides extra information about files which depend on other files by modifying the Get Info... box. Only works with applications that use QuickTime.

Graphics Accelerator

Provides video acceleration for PCI Macs using an ATI video card.

Hardware System Update 1.0/2.0/3.0

System 7.1 Updates. Provided numerous system-level improvements. This file was not designed for use on Performa models.

Version 2.0 adds further improvements and overall stability, while version 3.0 increases reliability and performance, even further. AV Systems already have these improvements in their ROMs.

Ilci/Ilsi Monitors

Describes the capabilities of the built-in video card for the Macintosh Ilci and Ilsi. If you remove this file, your computer can still use the video card and you can still select the number of colours displayed on your monitor, but monitor options (such as gamma settings) may not be available.

InLine Filter

Helps AppleScript and PlainTalk Speech Recognition work together. Allows Worldscript users to type scripts 'in-line' instead of to a separate text file.

Insomnia

Created for Apple PowerBooks to keep them from falling asleep.

LC Monitors Extension

Adds functionality to the Monitors Control Panel for LC series Macs.

Letterhead

Is part of the QuickDraw GX package, this Extension enables the Letterhead paper type option in the Page Setup window of all GX compatible applications.

LocalTalk DMA

Is part of the obscure System 7.5.3 Revision 2.1, this file fixes a bug with transferring files over LocalTalk on Performa 6400/180 and 6400/200 computers. This fix is included in the System 7.5.5 Update.

MIDI Manager

Enables Apple's MIDI Management system.

Modem Scripts

A folder which contains the modem descriptions/scripts used by OT/PPP and Apple Remote Access to communicate with your modem.

Mount IDE Drive

Allows Macs with IDE hard drives to mount these drives when the Mac is booted from another disk or device.

n-Up Printing

Part of the QuickDraw GX package, this Extension allows you to print more than one page on a single sheet of paper by dividing the page into smaller sections and reducing the printing size. Up to 16 pages can be printed on a single 8.5x11 sheet.

Network Launch Fix

On 68040 Macs, fixed a bug when launching applications over a network. Incorporated into system 7.5 and later.

PC Net Exchange

Works with the PC Exchange Control Panel to help Mac users share DOS/Windows files over an AppleTalk network with users of the AppleShare Client for Windows software.

Printer Selector

Under LaserWriter 8.4 and above, this adds a menu of configured printers to your menu bar for quick printer switching.

ProDOS File System

Allowed pre-7.5 Macs to recognise ProDOS/Apple IIe disks. Incorporated into PC Exchange 2.0.2 and later, and is incompatible with System 7.5.x.

PowerBook Monitors Extension

Describes the PowerBook built-in display. If you remove this file, your computer can still use the PowerBook video card and you can still select the number of colours your screen can display, but certain options (such as gamma settings) may not be available.

PowerPC Monitors Extension

Supports Apple's AudioVision 14 monitor.

Quadra AV Monitors Extension

Describes the capabilities of the built-in video card for the Macintosh Quadra and Centris AV computers. If you remove this file, your computer can still use the video card and you can still select the number of colours displayed on your monitor, but monitor options, ie. Gamma settings, may not be available.

Quadra Monitors Extension

Describes the capabilities of the built-in video card for the Macintosh Quadra and Macintosh Centris computers. If you remove this file, your computer can still use the video card and you can still select the number of colours displayed on your monitor, but monitor options (such as gamma settings) may not be available.

Scanner

Is a driver for all Apple scanners (including 3rd party compatible scanners).

SCSI Manager

Version 4.3 is incorporated into the System under System 7.5.3 and later. On earlier systems, this is a SCSI driver upgrade Extension for all (real) Macintoshes, with in-built SCSI.

SCSI Update

Included with the AppleShare IP 5.0 beta. Updates the SCSI Manager to allow asynchronous access on machines that don't already support it, such as 680x0 machines and early PowerMacs. The new SCSI Manager is required for products such as the Advanced Driver Toolkit from Dantz for accessing Digital Linear Tapes from within Retrospect.

SerialDMA v2.02

Is a driver update for DMA chips for PPC and 68040 Macs. Serial DMA is now incorporated into the System file from System 7.5.3 onwards.

Sound Manager

Sound Manager 3.2 was incorporated into the System in System 7.5.3, and included asynchronous sound playback. Version 3.2.1 is part of the QuickTime 2.5 package and provides even better low-memory performance and better multi-channel sound via a new sound clock component. Sound Manager 3.2.1 is built into the System file under 7.6.

Startup Tuner

Part of the System 7.5.3 revision, fixes a problem with the Startup Disk Control Panel where the Mac (on selected models) may not startup from the selected disk. Not necessary for System 7.5.5 and later.

Stationary

Part of the QuickDraw GX package, this Extension enables the Stationary paper type option in the Page Setup.. window of compatible applications.

TokenTalk Phase 2

Driver used by the Apple Token Ring card and the Network/AppleTalk Control Panels.

Video Startup

Provides support for the Apple Video Player; needed to use the AVP.

WindowPicker

Older, unsupported utility which provides the ability to bring any open window to the front via a pop-up menu and/or arrow keys.

Shutdown Items enabler

Provides support for the Shutdown Items folder under System 7 Pro.

Libraries

Shared libraries are modules of data/code that is used by many applications. They are loaded only when needed, and not during boot-up. They must be placed either, in the Extensions folder (if copied there by the installer) or in the same folder as the program. Libraries often appear in Systems 7.5 to 8.1.

AppleScriptLib

Provides native support for AppleScript on PowerPC-based computers.

ColorSyncLib 68k

Code Fragment Manager file for the ColourSync software.

DisplayLib

Provides backwards compatibility for Display Manager 2.0 functionality on pre-7.5 systems. The Display Manager allows users and applications to dynamically change the arrangement and display modes of monitors attached to the computer.

DragLib

It is a drag and drop support library which is incorporated into the Macintosh Drag and Drop Extension. Included in the System software under System 7.5+.

Game Sprockets:

DrawSprocketLib, GoggleSprocketLib, InputSprocketLib, NetSprocketLib, SoundSprocketLib

The game sprocket system was developed as a way for game developers to directly access certain features of the System software, such as networking, video and audio, and also to provide added game-oriented functionality to these areas. The individual sprocket modules provide shared library support for their respective features.

ColorSyncLib68K, NuDragLib.slb, NuQuickTimeLib.slb, NuThreadsLib.slb, NuTranslationLib.slbm QuickDraw GX Enabler

These files are 68K shared libraries which work with the CFM-68K Runtime

Enabler Extension. They are loaded by the CFM-68K Runtime Enabler Extension if a CFM68K based application needs them.

ObjectSupportLib

Provides services to allow applications to send, receive and exchange Apple Events that conform to the object model as well as implementing the Open Scripting Architecture object model.

OpenDoc Libraries folder

Contains code libraries and other files that enable OpenDoc technology.

Open Tpt AppleTalk Library

Used by Open Transport for the AppleTalk communication protocol.

Open Tpt Internet Library

Used by Open Transport for the TCP/IP communication protocol.

Open Transport Library

Used by Open Transport.

OpenTptAppleTalkLib

Used by Open Transport for AppleTalk communication protocol.

OpenTptInternetLib

Used by Open Transport for the TCP/IP communication protocol.

OpenTransportLib

Used by Open Transport.

PrintingLib

Provides shared library support for the LaserWriter 8.4.x software. Needed for 68k Macs and PowerMacs.

The System Folder

The contents of your System Folder may vary to what I have shown here. MacOS 7.5 & 8.1 Systems, see pic 15.1. & 15.2.

Finder

Displays the desktop area, where you work with files and disks, and keeps track of your files.

Apple Menu Items folder

When you place an item (folder, application, or document) in this folder, it appears in the Apple menu. To create sub-menus, place folders inside the Apple Menu Items folder.

Clipboard

Temporarily stores the last item you cut or copied from a document.

Control Panels folder

Contains individual Control Panels. You use Control Panels to adjust your computer's settings. See the "About the Control Panels" document in the Apple Extras folder for more information.

Control Strip Modules folder

Contains modules used by the Control Strip Control Panel.

Editors

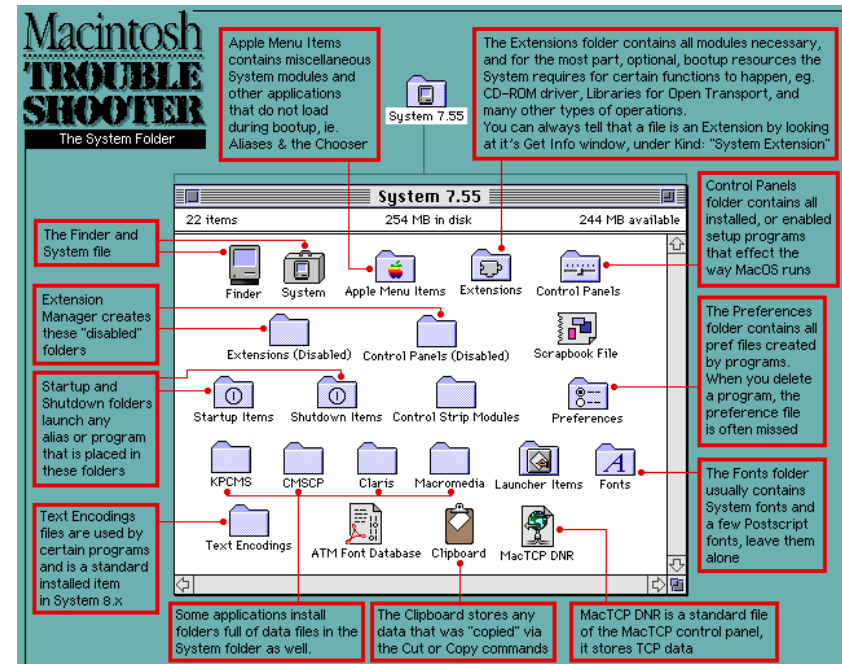
Contains OpenDoc part editors. Editors provide functionality to OpenDoc parts, but you don't work with editors directly. To use an editor to create a document, double-click the editor's stationery icon. Your stationery icons are probably located in the Stationery folder on your hard disk.

Extensions folder

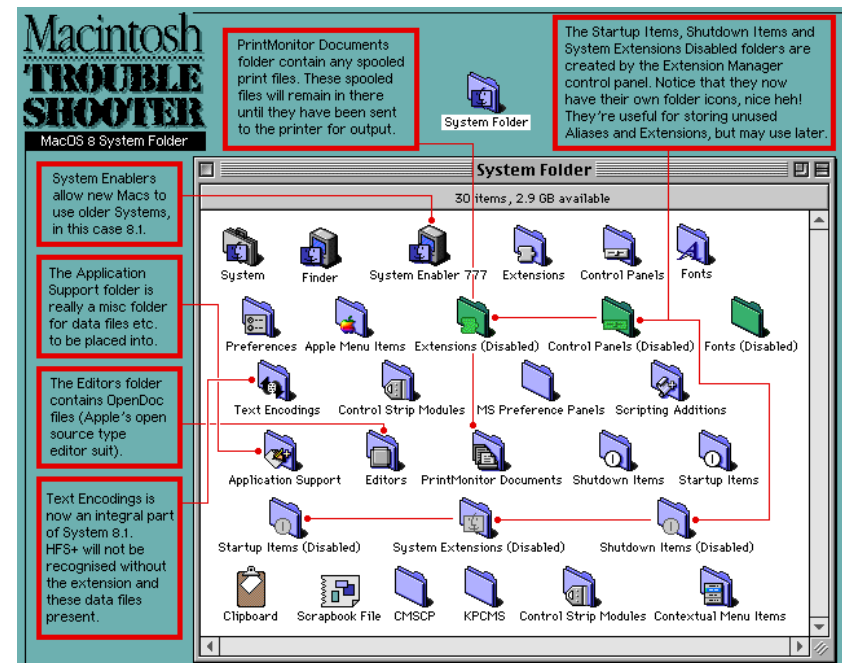
Contains individual Extensions that modify the operation of your computer. Unlike a Control Panel, an Extension works automatically, without your intervention.

Fonts folder

Contains font suitcases or individual font files. You can place up to 128



Picture 15.1 - MacOS 7.x system folder.



Picture 15.2 - MacOS 8.x system folder.

suitcase or font files in this folder. PostScript fonts are not included in the 128 file limit. Font suitcases can hold any number of font files, up to a limit of 16 MB. See pics 15.3 and 15.4 for the different types of Macintosh fonts.

Launcher Items folder

Contains files, folders, and applications that appear in the Launcher window.

Macsbug

A debugger used by programmers to help diagnose problems with programs, Extensions, and so on. Unless you're programming, you don't need Macsbug.

Preferences folder

Contains preferences files created by individual applications. A preference file determines application settings.

PrintMonitor Documents folder

Stores all spooled print documents waiting to be printed.

Scrapbook

Stores items placed in the Scrapbook (Scrapbook is in the Apple menu).

Shutdown Items folder

Contains applications or scripts that run automatically when you shut down your computer. You can add or remove items from this folder.

Startup Items folder

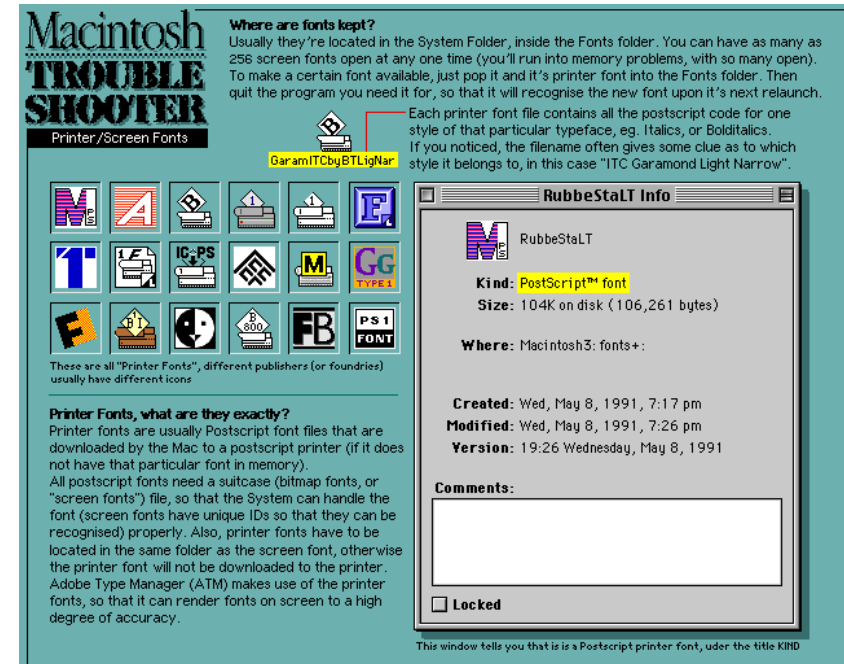
Contains applications or scripts that run automatically when you start your computer. You can add or remove items from this folder.

System Enabler

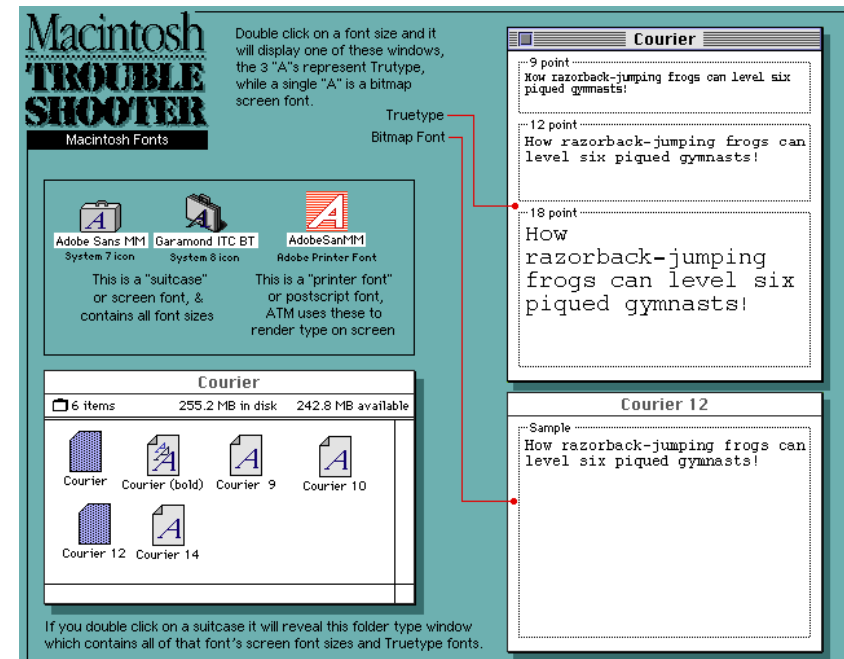
Is an System updater file, that makes a **specific** Macintosh work with older System software, ie. System 7.1x with a Power Mac 7500. See the Enablers section, on page 108, for details.

System file

Contains some system-wide resources, such as sounds and keyboard layouts.



Picture 15.4 - The different types of printer fonts.



Picture 15.3 - Screen fonts and suitcases.

System Enablers For 68K Macs

What are Enablers?

In the past, when Apple released new computers, the system software was revised. To get around this problem, system enablers were written which contain information necessary for newer computers to start up. All Apple computers released since system software 7.1 (September 1992) require a system enabler to start up. If you have System 7.5 upwards, then you will not require an Enabler (it is built into the System file).

Will I need it for Mac emulation?

Very unlikely, except maybe for Systems 7.0 to 7.11 (Pro) – this is because ShapeShifter and Fusion makes your Amiga think it is a Quadra or MacIIci in emulation mode (depending on the version of SS/Fusion you are using). You're better off reading the docs that came with the emulator, to confirm any queries you might have.

Notes (see Table):

- A** System Enabler 131 replaces System Enabler 111 and System Enabler 121.
- C** Requires System Software 7.1.1 or later. System Software 7.1.1 and PowerBook Duo Enabler 2.0ship with the PowerBook Duo 280 and 280c.
- D** No system enabler is required for this Macintosh under System 7.5 or later.
- E** Requires System Software 7.5.2 or later.
- F** The Performa 600 requires System Enabler 304 to run Performa System Software (7.1Px) and Macintosh System Enabler 001 to run Macintosh System Software (7.1).

Macintosh Model	Enabler	Version	Note
Centris 610	System Enabler 040	1.1	D
Centris 650	System Enabler 040	1.1	D
Centris 660AV	System Enabler 088	1.2	D
Colour Classic	System Enabler 401	1.0.5	D
Macintosh IIvi	System Enabler 001	1.0.1	D
Macintosh IIvx	System Enabler 001	1.0.1	D
Macintosh LC III	System Enabler 003	1.1	D
Macintosh LC 475	System Enabler 065	1.2	D
Macintosh LC 520	System Enabler 403	1.0.2	D
Macintosh LC 550	System Enabler 403	1.0.2	D
Macintosh LC 575	System Enabler 065	1.2	D
Macintosh LC 630	System Enabler 405	1.0	D
PowerBook 150	PowerBook150 Enabler	1.1	D
PowerBook 160	System Enabler131	1.0.3	A
PowerBook 165	System Enabler131	1.0.3	A
PowerBook 165c	System Enabler131	1.0.3	A
PowerBook 180	System Enabler131	1.0.3	A
PowerBook 180c	System Enabler131	1.0.3	A
PowerBook 190	PowerBook 5300/2300/190 Enabler	1.2.4	E
PowerBook 520	PowerBook 500 Series Enabler	1.0.2	D
PowerBook 520c	PowerBook 500 Series Enabler	1.0.2	D
PowerBook 540	PowerBook 500 Series Enabler	1.0.2	D
PowerBook 540c	PowerBook 500 Series Enabler	1.0.2	D
PowerBook 5300	PowerBook 5300/2300/190 Enabler	1.2.4	E
PowerBook Duo 210	PowerBook Duo Enabler	1.0	B
PowerBook Duo 230	PowerBook Duo Enabler	1.0	B
PowerBook Duo 250	PowerBook Duo Enabler	1.0	B
PowerBook Duo 270c	PowerBook Duo Enabler	1.0	D
PowerBook Duo 280	PowerBook Duo Enabler	2.0	C
PowerBook Duo 280c	PowerBook Duo Enabler	2.0	C
PowerBook Duo 2300	PowerBook 5300/2300/190 Enabler1	2.4	E
Quadra 605	System Enabler 065	1.2	D
Quadra 610	System Enabler 040	1.1	D
Quadra 630	System Enabler 405	1.0	D
Quadra 650	System Enabler 040	1.1	D
Quadra 660AV	System Enabler 088	1.2	D
Quadra 800	System Enabler 040	1.1	D
Quadra 840AV	System Enabler 088	1.2	D
Macintosh TV	System Enabler 404	1.0	D
Performa 600	System Enabler 304	1.01	D,F
Performa 450,460,466/7	System Enabler 308	1.0	D
Performa 475,476,575,577/8	System Enabler 364	1.1	D
Performa 550,560	System Enabler 332	1.1	D
Performa 630,635CD	System Enabler 405	1.0	D

MacOS Documentation

There are quite a few sources, on MacOS documentation. These are some of the docs and books I've found, a lot of it can be found at Apple's web site, as PDF files (see below)...

Online Help - AppleGuide

AppleGuide can be accessed via the "?" menu or the Help key. It has many topics available to you, with regard to a lot of MacOS's features – however it does not go into detail about how they work, but gives you an overview of that feature, and steps on how to do something. AppleGuide is available on Systems 7.5x to 8.1.

Help, is System 7.0 to 7.1's simplistic help system, again it gives you a basic guide to the Macintosh's System features.

Books

The Macintosh Bible – 6th edition (Peachit Press)

Guide to Macintosh System 7.5 (Hayden)

MacWorld OS7.6 Bible (IDG Books), or

The Mac OS8 Bible (IDG Books)

Buy these on-line at **Computer Manuals**, at:

www.compman.co.uk/as.cgi/768

Document Files

- **FREE Guide.Macintosh** (freeware, from any web site) – contains a lot of useful info about MacOS.
- **Extension Overload** (shareware), has some info on MacOS, but not much.
- **InformINIT** (shareware), has quite a bit of info on MacOS.

Apple's Manual/Technical Info Library Web Sites

For the **Manuals** web site, go to:

<http://www.info.apple.com/manuals/manuals.taf>

For the **Technical Information** web site, go to: <http://til.info.apple.com/>

Both of these will take you to a search engine web page, where you can browse or search for a particular document, by part code, title or content. Try these PDFs, they're worth a read!

Internet Pages

www.mactimes.com/lowend/ – info on 68k Macs.

www.webaccess.net/~mrpedri/index.html – info on 68k Macs.

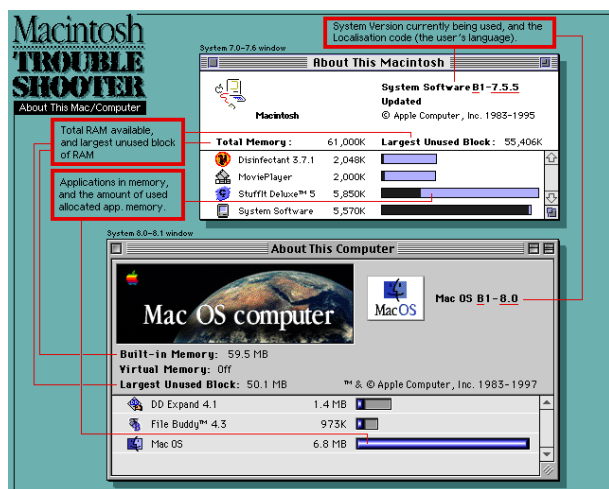
Apple's PDF Manuals

PDF Title	Filename	Part No.	File size	Comment
System 7.x Documentation				
Macintosh Reference [MacOS 7]	MacintoshReference.pdf	N/A	1.1mb	Essential!
How to Install System 7	HowToInstallSystem7.pdf	N/A	16K	Limited info
System 7 Information	System7Information.pdf	N/A	40K	Limited info
System 7 [Upgrade Guide]	0302650Sys7UpgradeGuide.pdf	030-2650	72K	Useful
System 7 [Macintosh Reference]	MacReferenceSystem7.pdf	N/A	193K	Essential!
System 7 [Tune Up]	0302605System7TuneUp.pdf	030-2605	16K	Useful
System 7 Pro [Multipack Hndbk]	System7ProMultipack.pdf	N/A	47K	Limited info
System 7.1 [Upgrade Guide]	0302799Sys71UpdateGuide.pdf	0302799	16K	Useful
System 7.1 [New Features]	NewFeature7.1.pdf	N/A	30K	Useful
Macintosh System 7.5 [Manual]	96608001AMOS7.5UPGUM.PDF	96608-001	1.0mb	Essential!
Macintosh System 7.5 Upgrade Manual	0307163ASYS75UPG.PDF	030-7163	1.1mb	Essential!
Macintosh System 7.5 [Group Upgrade Manual]	0305759AMOS75UGHBK.PDF	030-5759	628K	Useful
System 7.5.5 Update	U96501036AMMOS7.5.5UD.PDF	U96501-036	19K	Limited info
Mac OS 7.6.1 Software Update	0340231AOS761SWUD.PDF	034-0231	619K	Very good
*Mac OS 7.6 [New Features]	U96609036AMOS7.6IM.PDF	U96609-036	530K	Essential!
*Mac OS 7.6 [Install+Features]	MacOS7.6Install.pdf	N/A	530K	Essential!
Installing Mac OS 7.6.1	0330496AMOS761PM.PDF	033-0496	23K	Limited info
About Your Computer's System	0330544A7.6.1SWAD.PDF	033-0544	35K	Limited info
Macintosh Basics 5.03 (2nd ed)	?unknown?	N/A	1.2mb	Essential!
Apple Software Updates	96511016AMOS7.55WUD.PDF	96511-016	18K	Useful
System 8.x Documentation				
Mac OS 8 User Manual	U97609001AMOS8II.PDF	U97609-001	744K	Useful
Mac OS 8 Additions	30609MacOS8CPUAdd.pdf	033-0609	909K	Useful
Mac OS 8 Install & Configure	MacOS8Install.pdf	N/A	499K	Useful
Mac OS 8.1 [about HFS+]	0330901AMACOS81UD.PDF	033-090	10K	Not much use
Emergency Handbook	PMac_Emergency_Handbook.pdf	N/A	531K	Useful

[The Emergency Handbook is mainly for PowerMac users, but it has a lot of relevant information (bootup problems and general MacOS problems) which you may find useful.] *These two PDFs are virtually the same. [xxx] describes it's contents.

Localised System Codes

All of Apple's system software can be identified by the system version and the Language/Localisation Code. The Language code is a one or two character prefix applied to each localised System version. For example "F-7.5 Update 1.0" is a localised French MacOS. The pic below shows you where to find the code.



About this Macintosh windows.

Language	Country	Localised Code
Arabic	Arabia	AB
Bulgarian	Bulgaria	BG
Bengali	Bangladesh	BD
Byelorussian	Byelorussia	BY
Catalan	Catalunya, Spain	CA
Croatian	Croatia	CR
Cyprian	Cyprus	CY
Czech	Czechoslovakia	CZ
Danish	Denmark	DK
Dutch	Netherlands	N
English, American	United States	<none>
English, Australian	Australia	X
English, British	United Kingdom	B
Estonian	Estonia	ES
Faeroese	Faeroe Islands	FA
FarEast	(Generic)	FE
Finnish	Finland	K

Language	Country	Localised Code
Flemish	Belgium/Lux	FN
French	France	F
French, Belgian	Belgium	BF
French, Canadian	Canada	C
French, Swiss	Switzerland	SF
French (universal)	All French Speaking	FU
German	Germany	D
German, Austrian	Austria	AU
German, Swiss	Switzerland	SD
Hanzi (simplified)	PRC	CH
Hanzi (traditional)	ROC	TA
Greek	Greece	GR
Hangul	Korea	KH
Hebrew	Israel	HB
Hindi (Devanagari)	India	HN
Hungarian	Hungary	MG
Icelandic	Iceland	IS
International English	(All English speaking)	Z
International	Multi-Country	ZM (any country)
Irish	Ireland	ER
Italian	Italy	T
Italian, Swiss	Switzerland	ST
Kanji	Japan	J
Latvian	Latvia	LT
Lithuanian	Lithuania	LH
Luxembourg	Luxembourg	LX
Maltese	Malta	MA
Macedonian	Yugoslavia	MD
Norwegian	Norway	H
Persian	Iran	PS
Polish	Poland	PL
Portuguese	Portugal	PO
Portuguese, Brazilian	Brazil	BR
Romanian	Rumania	RO
Russian (cyrillic)	Russia	RS
Serbian	Yugoslavia	SR
Slovak	Czechoslovakia	SL
Slovenian	Yugoslavia	SV
Spanish	Spain/Laain America	E
Swedish	Sweden	S
Thai	Turkey	TU
Ukranian	Ukraine	UA
Urdu	Pakistan	UR
Yugoslavia	Yugoslavia	YU

Macintosh 680x0 ROMs & Supported MacOS's

Listed below is the entire range of 68K Macintoshes. I've also included; the MacOSs that will work with each Mac, from System 7.0 upwards (see the KEY for details); which processor was used; and what ROM was used on that particular Mac (incomplete).

Note the stars (*) next to the Mac's name, this means that this ROM will **not** be compatible with ShapeShifter or Fusion. Fusion accepts 256k, 512k and 1mb ROMs, while ShapeShifter will only accept 512k and 1mb ROMs.

Also note, that I've listed the memory addressing 'Bit' capability of the Mac. If you got a ROM from a 24bit Mac, it **will not** cause a problem with memory addressing in emulation, this is handled by ShapeShifter or Fusion.

Compatibility guidelines;

- 1) Use 512k or 1mb ROMs for System 7.5 and above
- 2) Use 1mb ROMs for 68040 or 68060 Amigas, and when you want to use System 8.x.

This list contains system version compatibility info for 'real' Macintoshes, this does not mean that it effects emulation in the same way. Most ROMs and systems listed, will work in emulation, however there is no guarantee that they will work with all amiga setups!

Key

Individual System Versions

- 1 = System 7.0
- 2 = System 7.01
- 3 = System 7.01P
- 4 = System 7.1
- 4a = System 7.1P
- 5 = System 7.11 (Pro)
- 5a = System 7.11
- 6a = System 7.1P1
- 6b = System 7.1P2
- 6c = System 7.1P3

- 6d = System 7.1P5
- 6e = System 7.1P6
- 6f = System 7.12P
- 7 = System 7.5
- 8 = System 7.51
- 9 = System 7.52
- 10 = System 7.53
- 11 = System 7.55
- 12 = System 7.6
- 13 = System 7.61
- 14 = System 8.0
- 15 = System 8.1

Grouped System Versions

- A = System 7.0,7.0, 7.1, 7.11(Pro)
- B = System 7.5,7.51,7.53,7.55
- C = System 7.6 & 7.61
- D = System 8.0 & 8.1

Other

- DOS = DOS Compatible card.
- N/A = ROM ID not available.
- * = This ROM is not compatible with ShapeShifter or Fusion.

Macintosh Model	ROM ID/Size	CPU/Mhz	Bit	MacOS
Desktop Macs				
Macintosh 128K*	\$0000 64k	68000/8	24	7.01P only
Macintosh 512K*	\$0000 64k	68000/8	24	Systems 1.0-6.08
Macintosh 512Ke*	\$0075 128k	68000/8	24	Systems 1.0-6.08
Macintosh XL*	N/A 16k	68000/5	24	MacWorks System
Macintosh Plus*	\$0075 128k	68000/8	24	1,2,4,B
Macintosh SE	\$0276 256k	68000/8	24	A,B
Macintosh SE FDHD	\$037A 256k	68000/8	24	A,5a,B
Macintosh SE/30	\$0178 256k	68030/16	24	A,B
Macintosh Classic	\$0276 512k	68000/8	24/32	A,B
Macintosh Classic II	\$067C 512k	68030/16	24/32	2,4,5,7,10,11,C
Macintosh Colour Classic	\$067C 1mb	68030/16	24/32	4,5,B,C
Macintosh Colour Classic II	\$067C 1mb	68030/33	24/32	4,B,C
Macintosh II	\$0178 256k	68020/16	24	A,B
Macintosh IIx	\$0178 256k	68030/16	24	A,B
Macintosh IIcx	\$0178 256k	68030/16	24	A,B
Macintosh IIci.	\$067C 512k	68030/25	24/32	A,B,C
Macintosh IIsi.	\$067C 512k	68030/20	24/32	A,B,C
Macintosh IIvi	\$067C 1mb	68030/16	24/32	4,5,A,B,C
Macintosh IIvx	\$067C 1mb	68030/32	24/32	4,5,A,B,C
Macintosh IIfx	\$067C 512k	68030/40	24/32	A,B
Macintosh LC	\$067C 512k	68020/16	24/32	A,B
Macintosh LC II	\$067C 512k	68030/16	24/32	2,4,5,B,C
Macintosh LC III	\$067C 1mb	68030/25	24/32	4,5,B,C
Macintosh LC III+	\$067C 1mb	68030/33	24/32	4,5,B,C
Macintosh LC 475	\$067C 512k/1mb	68LC040/50	24/32	4,5,B,C,D
Macintosh LC 520	\$067C 1mb	68030/25	24/32	4,5,B,C
Macintosh LC 550	\$067C 1mb	68030/33	24/32	4,5,B,C
Macintosh LC 575	\$067C 1mb	68LC040/66	24/32	4,5,B,C,D
Macintosh LC 580	\$067C 1mb	68LC040/66	32	B,C,D
Macintosh LC 630	\$067C 1mb	68LC040/66	32	6f,B,C,D
Macintosh LC 630 DOS	\$067C 1mb	68LC040/66	32	8,10,11,C,D
Macintosh TV	\$067C 1mb	68030/32	24/32	4,5,B,C
Macintosh Performa 200	\$067C 512k	68030/16	24/32	3,4,6a-6e,B,C
Macintosh Performa 250	\$067C 1mb	68030/16	24/32	4,5,B,C

Macintosh Model	ROM ID/Size	CPU/Mhz	Bit	MacOS
Macintosh Performa 275	\$067C 1mb	68030/33	24/32	4,B,C
Macintosh Performa 400	\$067C 512k	68030/16	24/32	3,4a,6a-6e,B,C
Macintosh Performa 405	\$067C 512k	68030/16	24/32	4,4a,6a-6e,B,C
Macintosh Performa 410	\$067C 512k	68030/16	24/32	6c-6e,B,C
Macintosh Performa 430	\$067C 512k	68030/16	24/32	6b-6e,B,C
Macintosh Performa 450	\$067C 1mb	68030/25	24/32	6b-6e,B,C
Macintosh Performa 460	\$067C 1mb	68030/33	24/32	6c-6e,B,C
Macintosh Performa 466	\$067C 1mb	68030/33	24/32	6c-6e,B,C
Macintosh Performa 467	\$067C 1mb	68030/33	24/32	6c-6e,B,C
Macintosh Performa 475	\$067C 1mb	68LC040/50	24/32	6c-6e,B,C,D
Macintosh Performa 476	\$067C 1mb	68LC040/50	24/32	6c-6e,B,C,D
Macintosh Performa 520	\$067C 1mb	68030/25	24/32	4,5,B,C
Macintosh Performa 550	\$067C 1mb	68030/33	24/32	6c-6e,B,C
Macintosh Performa 560	\$067C 1mb	68030/33	24/32	6d-6e,B,C
Macintosh Performa 575	\$067C 1mb	68LC040/66	24/32	6e,B,C,D
Macintosh Performa 577	\$067C 1mb	68LC040/66	24/32	6e,B,C,D
Macintosh Performa 578	\$067C 1mb	68LC040/66	24/32	6e,B,C,D
Macintosh Performa 580cd	\$067C 1mb	68LC040/66	32	B,C,D
Macintosh Performa 588cd	\$067C 1mb	68LC040/66	32	B,C,D
Macintosh Performa 600/600cd	\$067C 1mb	68030/32	24/32	4a,6a-6e,B,C
Macintosh Performa 630/630cd	\$067C 1mb	68LC040/66	32	6f,B,C,D
Macintosh Performa 630cd DOS	\$067C 1mb	68LC040/66	32	8,10,11,C,D
Macintosh Performa 631cd	\$067C 1mb	68LC040/66	32	8,10,11,C,D
Macintosh Performa 635cd	\$067C 1mb	68LC040/66	32	6f,B,C,D
Macintosh Performa 636/636cd	\$067C 1mb	68LC040/66	32	6f,B,C,D
Macintosh Performa 637cd	\$067C 1mb	68LC040/66	32	6f,B,C,D
Macintosh Performa 638cd	\$067C 1mb	68LC040/66	32	6f,B,C,D
Macintosh Performa 640cd DOS	\$067C 1mb	68LC040/66	32	8,10,11,C,D
Macintosh Centris 610	\$067C 1mb	68LC040/40	24/32	4,5,B,C,D
Macintosh Centris 650	.\$067C 1mb	68040/50	24/32	4,5,B,C,D
Macintosh Centris 660av*	\$077D 2mb	68040/50	32	4,5,B,C,D
Macintosh Quadra 605	\$067C 512k/1mb	68LC040/50	24/32	4,5,B,C,D
Macintosh Quadra 610/610 DOS	\$067C 1mb	68040/50	24/32	4,5,B,C,D
Macintosh Quadra 630	\$067C 1mb	68040/66	32	6f,B,C,D
Macintosh Quadra 650	\$067C 1mb	68040/66	24/32	4,5,B,C,D

Macintosh Model	ROM ID/Size	CPU/Mhz	Bit	MacOS
Macintosh Quadra 660av*	\$077D 2mb	68040/50	32	4,5,B,C,D
Macintosh Quadra 700	\$067C 1mb	68040/50	24/32	2,4,5,B,C,D
Macintosh Quadra 800	\$067C 1mb	68040/66	24/32	4,5,B,C,D
Macintosh Quadra 840av*	\$077D 2mb	68040/80	32	4,5,B,C,D
Macintosh Quadra 900	\$067C 1mb	68040/50	24/32	2,4,5,B,C,D
Macintosh Quadra 950	\$067C 1mb	68040/66	24/32	2,4,5,B,C,D
Portable Macs				
Macintosh Portable	\$0378 256k	68000/16	24	A,B
Macintosh PowerBook 100	\$067C 256k	68000/16	24	2,4,5,B
Macintosh PowerBook 140	\$067C 1mb	68030/16	24/32	2,4,5,B,C
Macintosh PowerBook 145	\$067C 1mb	68030/25	24/32	2,4,5,B,C
Macintosh PowerBook 145B	\$067C 1mb	68030/25	24/32	4,5,B,C
Macintosh PowerBook 150	\$067C 1mb	68030/33	32	5a,B,C
Macintosh PowerBook 160	\$067C 1mb	68030/25	24/32	4,5,B,C
Macintosh PowerBook 165/165c	\$067C 1mb	68030/33	24/32	4,5,B,C
Macintosh PowerBook 170	\$067C 1mb	68030/25	24/32	2,4,5,B,C
Macintosh PowerBook 180/180c	\$067C 1mb	68030/33	24/32	4,5,B,C
Macintosh PowerBook 190*	\$077D 2mb	68LC040/66	32	9,10,11,C,D
Macintosh PowerBook 190cs*	\$077D 2mb	68LC040/66	32	9,10,11,C,D
Macintosh PowerBook Duo 210	\$067C 1mb	68030/25	24/32bit	4,5,B,C
Macintosh PowerBook Duo 230	\$067C 1mb	68030/33	24/32	4,5,B,C
Macintosh PowerBook Duo 250	\$067C 1mb	68030/33	24/32	4,5,B,C
Macintosh PowerBook Duo 270c	\$067C 1mb	68030/33	24/32	4,5,B,C
Macintosh PowerBook Duo 280	\$067C 1mb	68LC040/66	24/32	5a,B,C,D
Macintosh PowerBook Duo 280c	\$067C 1mb	68LC040/66	24/32	5a,B,C,D
Macintosh PowerBook 520/520c*	N/A 2mb	68LC040/50	32	5a,B,C,D
Macintosh PowerBook 540/540c*	N/A 2mb	68LC040/66	32	5a,B,C,D
Macintosh PowerBook 550c*	\$067C 2mb	68040/66	32	B,C,D
Server Macs				
WorkGroup Server 60	\$067C 1mb	68040/40	24/32	4,8,10,11,C,D
WorkGroup Server 60/50mhz	\$067C 1mb	68040/50	24/32	4,8,10,11,C,D
WorkGroup Server 80	\$067C 1mb	68040/66	24/32	4,8,10,11,C,D
WorkGroup Server 95	\$067C 1mb	68040/66	24/32	.B,C,D (unsure)

Keyboard Shortcuts

Macintosh key name - the Amiga's equivalent:

Apple/Command - Amiga's 'A' keys.

Option - Alt keys

Power-key is only available on Macintosh keyboards, there's no Amiga equivalent – all other keys are literally named the same.

Action Keys, When Booting-up

Deletes the contents of the PRAM memory file.

Keys: Apple + Option + p + r

How to use them: Hold down at the very beginning of bootup.

Disables all non-essential system Extensions.

Key: Shift

How to use it: Hold down when the Happy Mac screen appears.

Calls up the Extensions Manager Control Panel.

Key: Spacebar

How to use it: Hold down this key on the Happy Mac screen until the Extensions enabler screen appears.

Bypass the internal hard disk, and startup from a different System Folder.

Keys: Apple + Option + Shift + Backspace Delete

How to use it: Hold down at the very beginning of bootup.

Force quits any application/program.

Keys: Apple + Option + Escape

How to use it: Press and hold all at once; anytime a program appears to freeze-up or crash.

Rebuild the Desktop File.

Keys: Apple + Option

How to use it: Hold both keys just before the last Extensions load up during startup. A dialogue box will appear, asking you whether you to rebuild for every locally mounted disk.

Disables virtual memory upon loading the Finder.

Key: Apple

How to use it: Hold down, right through the startup sequence.

Actions & Shortcuts, While in the Finder: File & Icon Management Shortcuts

Force quit any current program.

Keys: Apple + Option + Escape

How to use it: Hold all keys down until a dialogue is displayed, this shows options for you to either; quit the program, or restart the Mac.

Cleanup just the selected icons.

Key: Shift + Cleanup [menu]

How to use it: Highlight the icons, then press & hold the key and select the menu item.

Sort and clean up selected icons.

Keys: Option + Shift + Cleanup [menu]

How to use it: Highlight the icons, then press & hold the keys and select the menu item.

Edit the icon's filename.

Keys: Return or Enter

How to use it: Select one icon and press Return/Enter key.

Cancel a drag and drop operation.

How to use it: Drag icon(s) over the menu bar and release the mouse button.

Select the next icon.

Key: Tab

How to use it: Press the Tab key once or multiple times.

Select the previous icon.

Keys: Shift + Tab

How to use it: Press the Tab key once or multiple times.

Select an icon that's nearby.

Keys: All Arrow Keys

How to use it: Press any arrow key once or multiple times.

Select multiple icons.

Keys: Shift + Click left mouse button

How to use it: Press and hold the Shift key, then select each and every icon you need.

Unselect icons and folders.

Action: Click on the Desktop's Background

How to use it: Click the left mouse button once.

Closes all open windows and folders.

Key: Option + click on Close Gadget [on window]

How to use it: Press key first and then the mouse button.

Move window without making it active.

Key: Apple + drag window

How to use it: Press key first and then drag the window.

Automatically closes the window which contains the icon you double clicked.

Key: Option + double click on app/icon/folder

How to use it: Press the Option key then double click the app/icon/folder.

Skips the trash warning dialogue box.

Key: Option + Empty Wastebasket [menu]

How to use it: Hold the key down while you select the menu item.

Automatically erases a disk when inserted.

Keys: Apple + Option + Tab

How to use it: Hold both keys down when inserting the disk.

Displays a contextual menu anywhere on screen.

Key: Control + click [mouse button]

How to use it: Hold the Control key & select the option you require, from the menu (System 8.x only).

Closes all open folder windows.

Key: Option + click the window close gadget

How to use it: Hold the option key, then click the gadget.

Copies the icon(s) into a different folder or location, leaving the original still in place.

Key: Option + drag icon

How to use it: Hold the option key, then click & drag the icon over the folder you want it duplicated to, and release the mouse button.

Creates an alias of the icon/folder/disk.

Keys: Apple + Option + drag icon

How to use it: Hold all keys, then drag & release mouse button.

Displays the folder's full path on the disk.

Keys: Apple + window title bar

How to use it: Hold key & click on the folder name in the window's title bar, a pop-up menu will appear.

A snapshot of the current Mac screen will be saved onto the desktop of the startup disk.

Keys: Apple + Shift + 3

How to use it: Hold all keys until you hear a crunching sound, then the image will be saved.

This enables you to take a snapshot of any part of the Mac's screen.

Keys: Apple + Shift + 4

How to use it: Hold all keys down, then use the mouse to click and drag a rectangle round the area you wish to save, and release the mouse button.

A snapshot of any active window.

Keys: Apple + Shift + Capslock + 4

How to use it: Hold all the keys down, release them and use the mouse to click on the window you want]

Cancel current operation, this is equivalent to pressing the cancel button in a window. You may also use this key combo to cancel a disk request window.

Keys: Apple + “.” [full stop]

How to use it: Hold both down until the operation is cancelled.

Equivalent to clicking the OK button in a window. This also applies to all ‘default’ highlighted buttons (with extra thick border round it).

Keys: Return or Enter

How to use it: Just press the Return/Enter key once.

Save/Load Window Shortcuts

Cancels the save/load/overwrite dialogue box.

Keys: Apple + “.” [full stop] or Escape

How to use it: Press both keys together, until the window disappears.

Moves to the Desktop level, in the file requester window.

Keys: Apple + d

How to use it: Press both keys together.

Select the first file that begins with those letters.

How to use it: Type in the first 1-4 letters of the file.

Move down to the previous folder, in the file requester window.

Keys: Apple + UP arrow key

How to use it: Press both keys together.

Select the previous or next filename.

Keys: UP or DOWN arrow keys

How to use it: Press UP arrow for the previous file, and the DOWN arrow for the next file.

Open the selected file.

Keys: Return or Enter

How to use it: Press key once. Or select the bolder outlined button, which is usually; Replace, Open or Cancel.

Create a new folder. This only works in the Save dialogue box.

Keys: Apple + n

How to use it: Press both keys together, until a dialogue box shows, for you to rename the folder.

Selects the No button in the “Do you want to save this document” dialogue box.

Keys: Apple + n

How to use it: Press both keys together, until the No option is selected.

Toggle between the Filename field and the File List window (highlighted with a bolder border).

Key: Tab

How to use it: Press once to switch between fields.

For Those Who Use Real Macintoshes

Eject a floppy disk.

Action: Hold down the mouse button, right at the beginning of the bootup sequence, until it ejects the undesirable disk

Restart or Shutdown the Mac via a dialogue box.

Keys: Apple + Option + Shift + Power key, or Power-key twice

How to use it: Press and hold all keys for 1-2 seconds, or press Power key twice in quick succession.

Immediately reboot the Mac.

Keys: Apple + Control + Power key

How to use it: Press and hold all keys for 1-2 seconds.

Did You Know..

Interesting System 7.x information

- HFS is limited to 65,536 files for any partition or removable hard disk.
- To move the Control Strip in the Finder, press Alt and drag with the left hand edge of the Control Strip gadget.
- PC Exchange (up to version 2.1) will only recognise PC formatted disks up to 1gig.

Where do I find the full specs for the whole Macintosh range...

Go to this FPT page (below), you will need to download two files:
ftp://ftp.info.apple.com/Apple_Support_Area/Apple_Software_Updates/English-North_American/Macintosh/Utilities/Apple_Spec/Apple_Spec_8-98.smi.bin and [Apple_Spec_app.smi.bin](ftp://ftp.info.apple.com/Apple_Support_Area/Apple_Software_Updates/English-North_American/Macintosh/Utilities/Apple_Spec/Apple_Spec_app.smi.bin)

The file is a Filemaker Pro3 document, so you'll need the accompanying viewer program if you do not own Filemaker. Both files are in the same web page. Apple also has the above information in it's web pages. Use this web address to go direct to it:

<http://support.info.apple.com/applespec/applespec.taf>

and at

<http://www.info.apple.com/info.apple.com/applespec/applespec.taf>

Useful Macintosh Utilities & Programs

MAIL ORDER COMPANIES

Camelot[unknown].....Tel: 0171 383 2727
Dabs Direct.....www.dabs.com/.....Tel: 0800 68000 (sales freephone)
Computer Warehouse.....www.cwonline.co.uk/.....Tel: 0181 400 1234
MacWarehouse.....www.macwarehouse.co.uk/.....Tel: 0800 181 332 (sales freephone)

COMMERCIAL SOFTWARE

Software Title	Publisher/Author	Web Site	Description
ATM Deluxe	Adobe	www.adobe.com	On-screen font render.
Anti-virus	Dr Solomans	www.drsoloman.com	Anti-virus program.
Anubus Plus 3.0	Clarismac	www.clarismac.com	Disk manager HFS/HFS+.
BackupMastery	Clarismac	www.clarismac.co	Backup package.
CD Autocache	Charismac	www.charismac.com	CD-ROM driver.
CD-ROM Toolkit	FWB	www.fwb.com	CD-ROM management.
Charismac RAID	Charismac	www.charismac.com	RAID management software.
Conflict Catcher	Cassidy	www.cassidy.com	Extension conflict catcher.
DiskFit	Dantz	www.dantz.com	Very cheap backup utility.
Disk Doubler	Symantec	www.symantec.com	Compression/archive creation.
Disk Express Pro	Alsoft	www.alsoft.com	.Advanced HFS+ optimiser
DiskWarrior	Alsoft	www.alsoft.com	Disk repair utility.
Fastback	Symantec	www.symantec.com	Backup util, came with NU v3.
FileGuard	Highwire	[unknown]	Disk/data security utility.
Hard Disk ToolKit	FWB	www.fwb.com	Disk management utils.
MacLink+/Pro	Dataviz	www.dataviz.com	Text file converter.
MarkzTools2	Markzware	www.markzware.com	Xpress doc repairer.
Master Juggler	Alsoft	..www.alsoft.com	Font manager program.
Norton Backup	.Symantec	www.symantec.com	Backup util, came with NU v2.
Norton DiskLock	Symantec	www.symantec.com	Disk/data security utility.
Norton Utilities 3.5 CD	Symantec	www.symantec.com	Disk repair utility.
PKzip (PC & Mac)	PKware Inc	www.pkware.com	Compression/archive creation.
Plus Maximiser	Alsoft	www.alsoft.com	Enhances System HFS+ formatting.
PlusMaker	Alsoft	www.alsoft.com	HFS to HFS+ converter.

Software Title	Publisher/Author	Web Site	Description
PlusOptimiser	.Alsoft	www.alsoft.com	HFS/HFS+ disk optimiser.
PowerPrint v4	Infowave	www.infowave.com	Parallel printer driver.
Private File	Aladdin Systems	www.aladdinsys.com	Disk/data security utility.
RAID Toolkit	FWB	www.fwb.com	RAID0/1 hard disk manager.
Ram Doubler	Connectix	www.connectix.com	RAM expander.
Rapid-CD	Insignia Solutions	www.insignia.com	CD-ROM driver.
RapidCD	MacPeak	www.macpeak.com	CD-ROM driver.
Remus	Adaptec	www.adaptec.com	RAID management software.
Retrospect/R.Express	Dantz	www.dantz.com	THE Mac backup program.
SAM Anti-Virus	Symantec	www.symantec.com	Anti-virus program.
SCSI CD Driver	Corel	www.corel.com	CD-ROM driver.
Spacemaker	Total Recall	www.spacemaker. recallusa.com	HFS and HFS+ converter.
Stuffit Deluxe	Aladdin Systems	www.aladdinsys.com	Compression/archive creation.
StyleScript	Infowave	www.infowave.com	Postscript for inkjets.
Suitcase	Symantec	www.symantec.com	Font manager program.
TechTool Pro2	.Micromat Systems	www.micromat.com	Disk repair utility.
Toast CD-ROM Pro/v3.5	Adaptec	www.adaptec.com	CD burning utility.
Virex	Datawatch	www.datawatch.com	Anti-virus program.

SHAREWARE SOFTWARE

Software Title	Publisher/Author	Web Site	Description
AppSizer	Michael Peirce.s	[any shareware site]	Memory allocation utility.
@{i}Black&Bleu	N/A	[any shareware site]	Explains error codes.
CanOpener	Abbott Systems	www.abbottsystems.com	Retrieve data from any corrupt file (v.good for text files).
Chucks Printer Driver	Charles Rentmeesters	[any shareware site]	Epson/HP b&w printer driver.
Compact Pro	Bill Goodman	[any shareware site]	Compression/archive creation.
Data Rescue	[unknown]	www.wildbits.com/ rescue	Recovers lost data from high level formatted HDs.
Default Folder	St.Clair Software	[any shareware site]	Open/save folder navigator.
Dos2mac	T.Sourbier	[any shareware site]	Removes unwanted characters from PC text.
Extension Overload	Peter Lewis	[any shareware site]	.Extension info database.
FileBuddy	Lawrence Harris	[any shareware site]	.File flag/type editor.

Software Title	Publisher/Author	Web Site	Description
FileTyper	[unknown]	[any shareware site]	.File flag/type editor.
Font Manager	Ed Hopkins	[any shareware site]	Font manager program.
GraphicConverter	Lemke Software	[any shareware site]	Multi image format converter.
InformINIT	Don Frakes	[any shareware site]	.Extension info database.
Scripter	Main Event Soft.	www.latenightsw.com	An AppleScript editor.
Script Debugger	Late Night Soft.	www.mainevent.com	An AppleScript editor.
Snitch	Mitch Jones	[any shareware site]	File flag/type editor.
Shrinkwrap	Aladdin Systems	[any shareware site]	Disk image mounter/creator.
Stuffit Lite	Aladdin Systems	[any shareware site]	Compression/archive creation.
TTconverter	Chris Reed	[any shareware site]	PC truetype font converter.
Type/Creator Database	Ilan Szekeley	[any shareware site]	Type codes database.
ZipIt	Softlock	[any shareware site]	Compression/archive creation.

FREWARE SOFTWARE

Software Title	Publisher/Author	Web Site	Description
Apple Error Codes'98	Apple Computers	www.apple.com	Explains System error codes.
Binhex 4 & 5	Yves Lempereur	[any shareware site]	HQX encoder/decoder.
DD Expand	Symantec	[any shareware site]	DiskDoubler archive expander.
Disk Copy	Apple Computers	www.apple.com/support	Disk image mounter/creator.
DiskFit Direct	Dantz	www.dantz.com	Comes on Mac Zip Tools disk.
Disinfectant 3.7	John Norstad	[any shareware site]	.Anti-virus program.
Easy Errors 1.2	Dave Rubinic	[any shareware site]	.Explains error codes.
FreePPP	S.Dagley & R.Reynolds	[any shareware site]	PPP internet driver.
LHA Expander	Masanori Sekino	[any shareware site]	LHA archive expander.
MacGZip	SPD Soft	[any shareware site]	Expands:gz.,z.,taz.,tgz.
Memory Mapper	Street Logic Soft	www2.connectnet.com/ ~stlogic/	Shows exactly what is currently using memory.
Packit	[unknown]	[any shareware site]	Archive creator.
Resedit	Apple Computers	asu.info.apple.com/	File Resource editor.
SoftwareFPU	J.Neil & Asso.	[any shareware site]	FPU emulator.
Stuffit Expander 5.5	Aladdin Systems	[any shareware site]	Expands SIT,CPT,ZIP,HQX,BIN.
System Errors	Bill Steinberg	[any shareware site]	Explains error codes.
System 7.01 & 7.53	Apple Computers	asu.info.apple.com/	Free System software!
Text Browser	..John Lamb	[any shareware site]	Text doc viewer.
Zip Tools	Iomega	.www.iomega.com	Zip & Jazz drivers/tools.

See the section on Useful Mac Sites for Share/Freeware web addresses.

Useful FTP & Web Sites

All these sites have been tested, and they work!

Macintosh Shareware & Information Sites

<http://www.tucows.com/>Has a large collection of shareware.
<http://macsupport.about.com/>Troubleshooter site for Mac users.
<http://www.macappraiser.com/servlet/MacAppraiser/>Lists up-to-date prices on all used Macs.
<http://www.applelinks.com/>Applelinks.
<http://www.appleinsider.com/>Apple Insider.
<http://www.cucug.org/mac/index.html>.....Cucug's Macintosh Web Directory.
<http://www.everythingmac.com/>Everything Macintosh.
<http://www.tcp.ca:80/gsb/Mac/index.html>.....GB's Mac Watch Page.
<http://www.insanely-great.com/>Insanely Great Mac.
<http://www.honeycomb.net/os/oses/mac.htm>.....Macs and other platform FAQs.
<http://www.macaddict.com/>MacAddict - lots of useful info.
<http://www.macaddictnetwork.com/>MacDaily Network - Mac news site.
<http://www.macassistant.com/>MacAssistant.
<http://www.maccentral.com/>MacCentral Online.
<http://www.ameritel.net/lusers/abrody/mac.html>Macintosh Related Sites.
<http://macsupport.miningco.com/>Mac support.
<http://www.macresource.com/>Mac Resource.
<http://mac.map.com/>Macintosh Watering Hole - forum site.
<http://www.cucug.org/mac/>Macintosh Web Directory.
<http://www.mactimes.com/puremac/>Pure Mac stuff.
<http://www.macalliance.com/>Mac community site.
<http://sharewarestation.com/>Large shareware site.
<http://www.zdnet.com/mac/>Good selection of shareware here.
<http://www.filez.com/>Millions of Mac files to be had.
<http://www.versiontracker.com/>Hosts every software update for Macs.
<http://cdrom.amug.org/http/bbs/files.html>Mac version of the Aminet.
<http://www.macfaq.com/>FAQs, vendors, links and much more.
<http://www.macville.mac-mania.com/>Guide to Mac sites.
<http://www.MacintoshOS.com/>Great for Mac info, shareware and more.
<http://www.macfixit.com/>A Mac troubleshooter web site (not mine).

<http://www.Macreviewzone.com/>Reviews on Mac software.
<http://www.macupdate.com/>The largest shareware site in the world.
<http://www.shareware.com/>General Mac shareware site.
<http://www.download.com/Mac/FrontDoor/>Links to other shareware sites.
<http://www.maccentral.com/>General Mac shareware site.
<http://www.hyperactive.lcs.mit.edu/>Very large shareware & freeware site.
<http://www.host.ots.utexas.edu/>Very large shareware & freeware site.
<http://www.happypuppy.com/>Loads of games.
<http://www.jumbo.com/pages/mac>Large shareware site.
<http://www.MacintoshOS.com/>Everything for Macintosh at this site.
<http://www.ap.net/download/>The Macintosh Shareware Source.
<http://www.macorchard.com/>Up-to-date Mac internet software.
<http://www.gamesdomain.com/>Huge site, endless supply of info.
<http://www.pixi.com/~schizo/>The latest in 68k Mac games.
<http://www.macsites.com/>Guide to Macintosh sites.
<http://www.Macreviewzone.com/>Mac related reviews.
<http://micro.s.hensa.ac.uk/platforms/mac.html> .Large shareware site.

<http://www.macresource.com/>News, views, updated regularly.
<http://www.macintouch.com/>Get in touch with Mac news!
<http://www.macnn.com/>More news for Mac users.
<http://www.versiontracker.com>Lists all the latest software updates.

<http://www.macformat.com/>Macintosh magazine, lots of info & reviews.
<http://www.macuser.com/>Mac magazine, the last 18 months of reviews.

FTP Sites with many Mac files (regularly updated)

<ftp://VOLftp.tin.it/pub/mac/>Mac stuff.
<ftp://ShadowMAC.org/pub/>Mac stuff.
<ftp://www.cdrom.com/>Lots of shareware etc.

Apple's Global Sites

<http://www.apple.com/support/>Apple support, US.
<http://www.asia.apple.com/>Asia Pacific, India and Singapore.
<http://www.apple.com.au/>Australia.
<http://www.apple.be/>Belgium.

<http://www.apple.com.br/>Brazil.
<http://www.apple.ca/>Canada.
<http://www.applechile.cl/>Chile.
<http://www.euro.apple.com/>Europe.
<http://www.apple.de/>Germany.
<http://www.appleclub.com.hk/>Hong Kong.
<http://www.apple.co.jp/index-e.html>Japan.
<http://www.apple.co.nz/>New Zealand.
<http://www.uk.euro.apple.com/>UK & Ireland.
<http://www.apple.com/quicktime/>Quicktime.
<http://speech.apple.com/>PlainTalk.
<http://www.apple.com/publishing/>Publishing and New Media.

Apple's Support & Development FTP Sites

<http://asu.info.apple.com/>Apple's free software to download library.
<http://til.info.apple.com/>Apple's technical information library.
<ftp://manuals.info.apple.com/>
Apple_Support_Area/Manuals/Apple's software documentation library.
<ftp://ftp.apple.com/dts/>Apple software.
<ftp://ftp.apple.com.au/pub/>Apple software for Macs & Newtons.
<ftp://ftp.info.apple.com/Apple.Support.Area/>Apple software.
<ftp://ftp2.info.apple.com/Apple.Support.Area/>Apple software - alternative2.
<ftp://ftp3.info.apple.com/Apple.Support.Area/>Apple software - alternative3.
<ftp://ftp.info.euro.apple.com/Apple.Support.Area/>Apple software (Europe).
<http://www.apple.com/support/>Apple software & updates centre.
<ftp://mirror.apple.com/mirrors/>Software updates +mirrors of other sites.

FTP Mirror/Shadow Archive Sites

<ftp://cnuce-arch.cnr.it:21/pub/micros/>
<motorola/mac/>Limited software selection.
<ftp://f.ms.uky.edu/pub/mac/>Quite a a bit of software.
<ftp://fiesta.tsc.udel.edu/pub/mac/>Apple System software & updaters.
<ftp://ftp.agt.net/pub/info-mac/>Large mirror site.
<ftp://ftp.auckland.ac.nz/pub/mac/>Large mirror site.
<ftp://ftp.ausom.net.au/pub/mirrors/info-mac/>Large mirror site.
<ftp://ftp.bitcon.no/pub/mac/info-mac/>Large mirror site.

<ftp://ftp.calvacom.fr/pub/mac/info-mac/>Large mirror site.
<ftp://ftp.cdrom.com:21/.3/mac/umich>See [www.cdrom.com] above.
<ftp://ftp.center.osaka-u.ac.jp/info-mac/>Large Japanese mirror site.
<ftp://ftp.chem.sci.osaka-u.ac.jp/pub/mac/>Another large Japanese mirror site.
<ftp://ftp.circa.ufl.edu/pub/software/mac/>Large mirror site.
<ftp://ftp.cs.tu-berlin.de/pub/mac/info-mac/>Large mirror site.
<ftp://ftp.epix.net:21/apple/Macintosh>Up-to-date software only.
<ftp://ftp.euro.net:21/d3/info-mac>Large mirror site.
<ftp://ftp.hawaii.edu/mirrors/info-mac/>Large mirror site.
<ftp://ftp.ij.ad.jp:21/pub/mac/umich>Small mirror site.
<ftp://ftp.ims.ac.jp/pub/mac/info-mac/>Large mirror site.
<ftp://ftp.informatik.rwth-aachen.de/pub/info-mac/>Large mirror site.
<ftp://ftp.inter.spin.ad.jp/pub/Mac/Merit.mirror/>Medium-sized mirror site.
<ftp://ftp.is.co.za/info-mac/>Large mirror site.
<ftp://ftp.uu.net/systems/mac/info-mac/>Large mirror site.
<ftp://sunsite.anu.edu.au:21/mnt/disk3/info-mac/>Large mirror site.
<ftp://sunsite.doc.ic.ac.uk/packages/info-mac/>Large mirror site (UK).
ftp://newton.sys.uea.ac.uk/Newton_Archive/Mirrors of 13 Newton & Apple sites.

Jargon

ADB (port)

The ADB (Apple Desktop Bus), is a cable/port standard on most Macs. It allows you to connect the keyboard and mouse, via through connectors.

Alias

Is a special file which points to the location of the original file/folder/disk. If you launch an alias, it will open the original file, folder or disk window instead. If you bin an alias, it will NOT delete the original.

Allocated Memory

The Macintosh Operating System is pretty dumb when it comes allocating memory for applications/programs, it doesn't have any Memory Management features at all. So the user has to manually set the preferred amount of memory. It may be necessary for you to bump up the size of most of your regularly used software, particularly if they are memory intensive, such as image processing packages.

To view its settings, find the application's icon in the Finder, then press Amiga+i, this will display the Get Info window. It should have a standard preset number already, however you can alter the number in the Preferred Size box, but don't touch the Minimum Size. The number is in kilobytes. The maximum limit is 99,999k (don't use commas ","). See pic 5.1 on page 17.

Apple Events

Is the message language of System 7.5's Inter-application Communications Technology (IAC), used by programs to communicate with other programs. It allows them to share data and commands. Applescript can use Apple Events to control the scriptable Finder and many applications.

Apple Menu

This menu is accessed via the multi-coloured Apple logo icon, on the top left of the menu bar. It's purpose is to allow easy access to utilities/programs and Control Panels. You can also place as many aliases of programs, in here as you like, for easy access.

AppleGuide

Is Apple's interactive help system, built into System 7.5 upwards. It can be accessed via the "?" icon on the top right of the menu bar, or by pressing the Help key. If you have enabled the AppleGuide Extension, then you can access all help guides, including Macintosh Guide, which is the Finder's help file – both located in the Extensions folder.

AppleScript

Apple's system level scripting software. It's like AREXX, and provides a way of automating complex or tedious tasks. You can even customise some user operations as well, see the "Automated Tasks" folder that is often installed into the Apple Menu Folder.

AppleTalk

Is Apple's standard Macintosh network and printer communication language. It was the main and only standard on all MacOS's up to System 7.55.

Classic Networking, as it is now called, only allowed the use of AppleTalk as main network protocol, no other protocol could be used. For instance, Ethernet is converted into Ethertalk, which is an AppleTalk variant, before it is sent over the network.

Application

This term is just another descriptive word for 'program' (executable = computer code).

ATM

Stands for Adobe Type Manager. This is a Control Panel that renders postscript type on-screen so that it's shape is always smooth. Before ATM was conceived, all type was rendered using the bitmap screen font sizes (from the Suitcase file), this generated very pixelised looking type, and was no good for typesetters and designers – they couldn't see what it would truly look like, not without printing it out.

Bombed!

Is a common saying with Mac users. People usually say "My Mac just bombed!", when a System Error message appears, simply because this window displays a little icon of a bomb with a lit fuse on it.

Classic Networking

Is a System 6.x to 7.5x network language protocol, which was superseded by Open Transport. Classic Networking used AppleTalk as its basic network language, even when using modems. TCP/IP was converted to a AppleTalk variant before it was sent down a network, therefore it was very difficult for Macs using this software to talk to any other platform, apart from other Macs.

Clean Install

This refers to the type of System installation. The clean install option (from 7.5 onwards) lets you install the System Folder next to the original System that already exists on the destination volume. This will leave that original System intact but deactivated.

Clipboard

The Mac uses the Clipboard file (in the System Folder) to store data that has been copied or cut into memory. However, the data is lost when you restart or shutdown Mac emulation.

Clipping File

This is the product of dragging the on-screen selection, be it a piece of text, sound or image, from an application onto the Finder, which immediately creates a Clipping file. This is only possible with drag'n drop capable applications.

Contextual Menus

Was introduced in System 8.0, and allows you to call up a little menu (whilst in the Finder) containing all the most common actions you are likely to use. It works only if you highlight an icon, window or disk, and then pressing the Control key and drag to the menu item – anywhere on screen.

Control Panels (CDEFs)

Are part of the System Folder, they are used to setup your Mac to how you want. This could be anything from the monitor resolution, colour, networks and various other Finder behaviour. All of them can be customised by the user.

Creator Codes

The creator code, actually refers to the program that saved the document/file. It is like a cattle brand, any file that has a program's unique Creator code, launches that program when you double click on it. It is also used to produce the file's icon, in conjunction with the file's Type code. All Creator codes (4 characters only) use upper and lower case characters, numbers, and even symbols.

Defaulted Icons

Means that the Desktop File (see below) for that Mac volume has become corrupted, and so, all icons on that disk have now assumed the System File's own standard set of default icons, namely a dog eared page icon (represents all data and document files), a rotated square with a hand pointing to it (represents any executable application), and default icons for System files, eg. Extensions, Control Panels, Control Strips and preference files.

You will also see a dog-eared icon of a document, if you do not have the program that created that file, such as a MS Word 98 formatted file.

Desk Accessories (DAs)

DAs are mini-programs that are usually located in the Apple Menu, such as the Calculator, the Chooser, the Scrapbook or Key Caps.

Dirty Install

This type of System installation will update the current System Folder on the destination hard disk, with the newer System version. It will also leave all preferences and 3rd party Extensions & Control Panels as they were, as per the original System Folder.

Disk Drivers

Like PCs, Macs use drivers for its hard disks, whether its formatted via the Finder or another utility, it places its info onto the disk for basic operational functions.

Desktop (The)

The desktop contains the menu bar, disk icons, background pattern, the trashcan and any icons you may have left lying around – it is basically the Finder's work space for organising icons and windows.

Desktop File

Is a disk based database for keeping information on icon and window positions, and what icons are used on which file or program. Without the Desktop file, all icons would revert to the System file's generic icon collection.

Disk Cache (Memory Control Panel)

This setting uses a portion of RAM to store frequently used data, and also helps your programs to run faster. Many Mac users, use the "32k for every megabyte of memory" calculation to figure out how much it should be, personally I use a standard 256k, 512k or 1024k value, of course this depends largely on how much memory you have available. The absolute minimum is approximately 32k.

Drag & Drop

This feature was introduced in System 7.1, it enables you to drag any document item, be it a; bit of text, a picture, a movie or sampled sound, and literally drag and drop it either onto another document or onto the Desktop. The item that was dropped onto the Desktop, is called a "clipping".

EtherTalk

Is a AppleTalk version of the Ethernet protocol (not true Ethernet TCP/IP protocol) for use on the high speed network standard.

Extensions

Are part of the System Folder, they add specific resources to the Operating System, such as libraries, CD filing system data, System enhancements etc.

File Sharing

Is the term used when you allow other users to have access to your hard disk on a network. Not only can you "share" an entire disk, but you can also "share" specific folders – which I believe you are able to do (share folders) from System 7.6 onwards. Sharing whole disks can be done in all versions of MacOS 7 and 8.

Finder

Manages the "desktop" environment, it is similar to the Amiga's Workbench. When the Finder is placed in a folder, it "blesses" the folder with the familiar

System Folder icon, to show you that this is the active System for this disk.

Firmware

This is the software or individual program modules, that are built into the Mac's ROM. Sometimes you can get Firmware updates (downloaded from Apple's web pages) to supplement the ROM. Apple's iMac and the blue & white G3 computers use Firmware updates.

Flashing "?" Disk Screen

This grey screen with a disk and a flashing question mark on it, immediately appears when the computer cannot find a valid System Folder to boot from. Macs can boot from; floppy disks, CD-ROMs or hard disks. Sometimes, even when you have inserted a bootable disk into the Mac, it may reject it, and still show the flashing question mark screen – this means that the disk you inserted is also invalid or non-bootable for your model of Macintosh. It may have a System Folder on the disk, but the computer doesn't recognise it, because the System Folder itself isn't been "blessed" with the normal System Folder icon – this is because there is no recognisable Finder and/or System file in it.

Flashing "X" Disk Screen

This grey screen with a disk and a flashing "X" on it, immediately appears when the computer tries to boot from an invalid System Folder. An invalid System, is one that was created for a different model of Macintosh – you see, each System file is built (during the installation process) specifically for that particular Macintosh, and cannot work on a different make of Mac. Or, that System is so corrupted that it is now invalid, as a bootable volume.

Forks

This term refers to the Resource and Data Forks, these make up all Mac files. Most files comprise of 2 forks, however each fork is stored on disk as individual files. You will not be able to see them ordinarily in MacOS, unless you use a file editor, such as **ResEdit**.

The Resource Fork contains program code and graphics, and icons, while the Data Fork contains any data, text or graphics for documents.

Happy Mac Screen

This screen always appears right at the beginning of the System startup. It is a grey screen with a little pic of a smiling Classic Macintosh in the center. This indicates that all is well with the Mac (computer diagnostics are Ok, and the System Folder is OK) – in emulation, all this means is that emulation is give a green light for booting up. Whether it does is a different matter!

Hard Disk Driver

Is the bit of information stored in the Rigid Disk Block, on a hard disk – all Mac hard disk formatting programs create this so called “driver” when it initialises the disk.

You can see which driver has been used for any disk, by highlighting the hard disk icon and pressing Amiga+i, for the Get Info window. Look in the “Where” field, and it will give some details of where the disk is on the SCSI or IDE chain and the version of the driver that was used. In emulation, the main boot disk is called an AmigaDevice or AmigaFileDisk.

HFS & HFS+ (Hierarchical Filing System)

HFS/HFS+ is the Macintosh’s only, filing system for hard disks. HFS Standard, as Apple likes to call it, was originally created for small (20 to 500mb) hard disks, and is limited by the number of blocks it can have on any partition. Meanwhile, HFS+/HFS Extended, is an improved version, allowing smaller block sizes for very large hard disks (1gig upwards), performance increase and better error handling.

Hypercard

Is rather like the AmigaGuide file, except Hypercard docs can contain pictures. However you need a Hypercard viewer or the Hypercard program to view them.

INITs

Is an Extension; which is a loaded file during bootup. It could either be an Extension or Control Panel, since these are the only types of files that are loaded whenever you boot a Macintosh.

Initialise

This term refers to high level formatting of a hard disk, usually via the Finder or utility.

LocalTalk

Is a network port on real Macintosh computers, it is used for linking Macs together.

LUN

Stands for Logical Unit Number – it is a number used to uniquely identify and address a subsystem of a SCSI device. Usually it is not necessary to set the LUN, since most SCSI devices are single units. A SCSI peripheral that has LUNs are optical disk/CD-ROM juke boxes, and multiple custom hard disk tower RAID systems, all these have many drives in a single case.

MacBinary

Is an archive file type, but with no compression. It is similar to HQX, except that it is not ASCII encoded, instead it combines the two forks (resource & data) into one file. This makes the Mac file safe from corruption when it is transferred over to alien filing systems, ie. PC or Amiga formats.

MacOS

Stands for “Macintosh Operating System”, ie. System 7.5 or System 8.1.

Open Transport

Supersedes the AppleTalk standard, it is much faster, and allows you to use different types of network protocols. It will allow you to change from one network to another, very quickly, and it allows you to use different types of network, simultaneously.

NU-Bus

Is an old expansion slot type, used in all 68k Macs and some early PowerPC Macs.

PC Exchange

Is a Control Panel that helps you to mount any PC formatted floppy disk (high density or 720mb double density disks only) and any PC SCSI removable hard disk, ie. CD & Zip disks, via the Options button.

It also creates Mac icons for PC files with a 3 character Extension. It can only do this if you setup PC Exchange to associate a Mac file type with the correct PC file naming convention, ie. GRAPHIC.TIF, means that this is a

TIFF file, therefore you can use any Mac image handling program. If it is a specific file type, ie. an Excel document, then you associate it with your Mac version, eg. Macintosh Excel.

PC Exchange already shows you an example in its window, .TXT = Simpletext = TEXT.

PICT

PICT is Apple's standard image file format. It is capable of holding 2-24bit colour pictures, as either bitmap or outline graphics (object orientated drawings).

Power Macintosh

Refers to the PowerPC (PPC) range of Macintoshes, that are currently being sold today. PowerPCs are RISC (Reduced Instruction Set Computer) based CPUs, these are capable of extremely high speeds.

PPD

Stands for Postscript Printer Description file, this can only be used with Postscript printer drivers, such as Laserwriter 8. They usually live in the Printer Descriptions folder, in the System: Extensions folder.

PRAM

Stands for Parameter RAM – this a tiny bit of memory that stores vital information, when you shutdown the Mac, ie. the Startup Disk Control Panel setup and some other bits of info the System needs. Sometimes, this memory gets corrupted, so what you do is, you 'zap the PRAM' – to delete it's contents by a keyboard combination, see **Keyboard Shortcuts** on page 113 for more info.

Printer Fonts

This actually refers to the Postscript Font files that are supplied with it's screen (bitmap) font, which are kept in a suitcase file. Printer fonts are exactly that, fonts that are downloaded to the printer so that the text in any document can be rendered to any size and rotation they were set to.

The difference between TrueType and Postscript printer fonts is that you can print out any character or words (from a Printer font) that have special effects applied to them, eg. skewed and rotated. This is not possible for

TrueType, as it can only be printed "as is". However some programs get round this by converting the TrueType font to postscript before it is rendered to paper.

RAID

RAID stands for Redundant Array of Independent Disks. It is a way of linking several drives together so that they behaved and appeared as one large capacity drive.

There are a few options for setting up a RAID array. The two most common (range from RAID0 to RAID5) options are RAID Level 0 (Striping) and RAID Level 1 (Mirroring).

Striping increases data throughput to and from the member drives, by using all the drives to split up the file over all member drives. Mirroring uses dedicated hard disk members to simultaneously write files to both disks, basically making a backup of the main server RAID disk.

To find out more on RAID technology, there is a FAQ on FWB's web site: www.fwb.com.

Rebless the System Folder

Reblessing the System Folder is a procedure which re-activates the old System Folder (eg. you cancelled during the middle of a clean installation of the System). To do this, you have to take the System and Finder files out of the old System Folder and then drop them back in, OR open up the old System Folder until all the icons are shown, then close the folder's window again. In both cases this should replace the standard folder icon with the proper System Folder icon.

Rebuilding the Desktop

This often used phrase in the Mac world, means you are recreating the Desktop Database files that hold the entire icon sets for all the documents on the disk you're about to rebuild. You do this by holding down the Amiga+Option keys (and keep them held down) during the very last part of the bootup procedure. Then the Finder will ask if you want to Rebuild the Desktop for each locally mounted disk that has mounted. You can also invoke the Rebuild requester when you insert any removable disk, of course you still need to hold those keys down before it is mounted on the Mac's screen.

Restart

Is the Mac's terminology for a warm or cold bootup, into MacOS.

Sad Mac Screen

When you have a very hard crash, or something on the SCSI chain is not cooperating with the Mac, this screen will appear right at the beginning of the start-up procedure. The screen will be black, with two lines of white hexadecimal code under a little pic of a classic Mac with it's eyes crossed and mouth turned down, in the center of the screen. This hex code is produced by a real Mac's internal diagnostic routines, should something in hardware prove fatal. However this will **never** happen in emulation, simply because Amigas have a totally different hardware design, and therefore cannot be diagnosed, and so this is skipped in emulation.

Screen Font

A screen font is a bitmap image of a font at a particular size (usually 9,10,12,14,18,24). These files normally live inside a Suitcase, along with other styles of that specific font family, ie. roman, italic, bold or bold-italic.

SCSI

Small Computer System Interfaces – is an industry standard interface for plugging in many peripherals onto a single computer, by daisy chaining them. There are currently three versions: SCSI1, SCSI2 & SCSI3 – and some very fast off-shoots: Wide SCSI, Ultra SCSI & Ultra Wide SCSI.

Shutdown

This menu item will remove all active temporary files, quit all open programs, and prepare the Mac for powering off.

SIMs (Self Mounting Images)

SIMs are really a special kind of disk image, it always has a application with a filename prefix of ".smi", this program will load all the "parts" and merge them together to create a fully accessible 'virtual disk' on your desktop.

Startup Volume

A Startup Volume is any partition or disk that has a valid (a System that works) System Folder, to boot from. This can be easily seen in the Startup

Control Panel, as it will display all local disks that have a active (has the custom System icon on it's folder) System Folder on them.

Stuffit

Stuffit is probably the most common compression type on Macs at the moment. It is commercially available as Stuffit Deluxe, also appears on the internet as a shareware program called Stuffit Lite. All Stuffit files appear with a 3 character dot extension ".sit".

Suitcase

Is a special type of folder, which only allows one type of system resource to be stored in them, such as screen fonts (including Truetype), keyboard layouts, sounds and desk accessory files.

System Bomb

Refers to a Mac system error message, because it shows a little bomb with a lit fuse next to the message. The Macintosh is also famous for giving very uninformative error messages, ie. "An Error of Type -11 has occurred!".

System File

This looks like a suitcase file, but in actual fact it contains the Operating System resources (libraries, drivers, generic icons, program code etc.) needed for your particular Mac to work.

The System Folder

Contains all the elements that the MacOS needs to operate correctly. You could take out all of the folders and extraneous files in the folder if you like, **except** the System, Finder and any System Enabler files, and it will still work.

Usually this folder contains: the System file, the Finder program, Extensions folder, Control Panels Preferences folder, Startup Items Folder, Shutdown folder by default.

Three Finger Salute

I know, this sounds like a "up-yours" type of gesture, but it isn't! Actually, what it refers to is the number of keys used (three in all) to reset the Mac, eg. when a freeze or whatever has occurred and you need to restart the Mac again. The keys in question are: Apple + Control + Power.

TrueType

Was introduced by Apple in 1990, just before System 7 was made available, it is a scalable font format that can be used at the System-wide level, and is mainly used for display and printing purposes. The only practical difference between TrueType and Postscript fonts, is that you cannot print Truetype fonts that have been rotated or have any special effects applied to them.

Type 1 Fonts

Are postscript outline font files, based on Adobe's Type1 format.

Type Codes

Type codes are unique codes for all the different kinds of data files that reside on your hard disk. All Mac files have Type codes. The Type code also helps the program that opens the file, by telling it what kind of file it is, eg. whether it is a JPEG file, word processor file, plain text file, or an application/program – which always has the Type code APPL on them.

All Type codes (4 characters only) use upper and lower case characters, numbers, and even symbols.