

Tech Info Library

TITLE

Mac OS: Troubleshooting Startup Issues

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TOPIC

This article describes typical startup issues and provides a list of suggested actions based on the issue for Macintosh computers that came with a floppy disk drive.

DISCUSSION

Use the following table to determine what is wrong when you have trouble starting up your Macintosh computer. Follow the steps listed in the PROCEDURE column. If the RESULT column indicates a possible issue, the ACTION column indicates which topic under Troubleshooting Actions (following the table) describes how to correct (or isolate) the issue.

Here are possible issues this table can help isolate:

- o system hangs at startup or during use
- o flashing question mark on a floppy disk displays at startup
- o "sad Macintosh" displays at startup
- o system crashes (bomb or no indicator) at random times or with different applications

Troubleshooting Table

STEP	PROCEDURE	RESULT	ACTION
1	Disable extensions: Restart the computer while pressing the Shift key.	If the computer starts up without loading extensions, then you have a probable extension conflict. If not, go to Step 2.	See: Troubleshooting Extensions
2	Startup from Disk Tools: Restart the computer by booting from the Disk Tools floppy disk or startup CD.	If the computer restarts from floppy disk or CD, you may have corrupt system software or a hard drive issue. If not, go to Step 3.	See: Troubleshooting Tools
3	Disconnect external devices: Disconnect all external devices (such as SCSI devices, printers, network cables, extra monitors, and so on).	If the computer starts up with no external devices attached, you have a possible out-of-date driver or a SCSI ID or software conflict. If not, go to Step 4.	See: Troubleshooting Peripherals
4	Reset PRAM: Press Command-Option-P-R during startup to zero out the information the machine maintains on ports, devices, Finder, and network settings.	If the computer starts up after resetting PRAM, then there was most likely corrupt information in the Parameter RAM on your machine. If not, go to Step 5.	See: What's in PRAM?
5	Update the hard disk driver software.	If the computer starts up after reinstalling the hard disk driver, then either the hard disk driver software was out of date, or corrupted. If the computer still does not start up properly, go to Step 6.	Use either Apple HDSC Setup or Drive Setup to reinstall the hard disk driver software.

6	Perform a clean installation: Follow the steps in the TIL to perform a clean installation of system software.	If the computer starts up after a clean installation, then one of the files you added to the System Folder, or one of the old system files was corrupt. If not, go to Step 7.	Carefully go through the Storage folder you created during the clean installation; look for fonts, extensions, control panels that you might need and put them back where they belong.
7	Last steps to try: - Try other disk utilities. - Reformat the drive and restore from recent backup. - Contact vendors of third-party hardware or software you use.	If the computer starts up after trying these efforts, then you have successfully corrected the issue and are ready to work. If your machine still does not start up, there is most likely a hardware issue.	Make regular backups in case you have trouble again. (But do not destroy the backup you restored in this step.) Contact your local Apple-authorized service provider to isolate and correct your issue.

Troubleshooting Actions

These actions, and the preceding procedures, may help you resolve a number of common issues, from damaged or missing files, to extension incompatibilities, to SCSI termination issues. If you have any third-party (non-Apple) devices or software, please adhere to the recommendations of the manufacturer if they differ from the more general instructions presented here.

As a precaution, you should back up important files regularly to minimize the risk of data loss.

Troubleshooting Extensions

Extensions load into memory at system startup time, and actually change the way the operating system works. When they are incompatible with the version of the system software you run, corrupt, or conflicting with one another, they can cause unexpected results.

Extensions are sometimes also called INITs; they are usually in the Extensions Folder or the Control Panels folder within the System Folder. Sometimes they are at the root level of the System Folder itself. As they load into memory at system start-up time, their icons usually appear on the bottom of the screen.

To troubleshoot extensions, follow these steps:

1. Restart with the Shift key pressed, until you see the box with the message Welcome to Macintosh -- Extensions Off. If the issue goes away, then continue these steps to determine which of the extensions are causing the issue.
2. Restarting with extensions off also disables file sharing and virtual memory. Use the Memory control panel to turn virtual memory, 32-bit, and Memory Manager **off** and to turn the Disk Cache down to 96K or below. Use the Sharing Set Up control panels to turn File Sharing **off**. Restart. If issues do not go away, continue with these steps.
3. If you are running System 7.0 through 7.1.2:
 - A. Check your Extensions folder, your Control Panels folder, and the root level of your System Folder for non-Apple chooser and system extensions and control panels (such as virus protection, screen savers, compression utilities, and so on.).
 - B. Drag these outside of your System Folder (make a new folder for them named Disabled Extensions).
 - C. Restart. If the issue goes away, then you have succeeded in removing the issue extensions. Continue with Step D. Otherwise, check through your System Folder again for extensions you may have overlooked.
 - D. To determine which of the extensions you removed was causing the issue, drag the extensions one at a time onto the icon of your closed System Folder. The system puts them where they belong. Restart after each addition. When the issue returns, you will know that it is the last extension you dragged to the System Folder. Remove it and restart. Check its version number for compatibility. Try reinstalling it from original floppy disks, or contact the software vendor.

* If you are running System 7.5.x or later:

- A. Restart the computer and press the Space bar until the Extensions Manager control panel opens.
- B. Use the pull-down menu in the Extensions Manager to choose "All Off". Close the Extensions Manager window by clicking on the close box in the upper left corner.
- C. Try to recreate the failure. If the failure does not reappear, then you have an extension conflict. Go to Step D. If the failure still occurs, go to the Clean Installation Procedure

D. Restart the Macintosh computer and press the Space bar until the Extensions Manager control panel opens. Turn on groups of extensions and control panels by clicking to the left of each item to put a check mark by the item. Close the Extensions Manager control panel using the close box in the upper left corner. Try to recreate the failure.

E. Repeat Step D until you have recreated the failure and isolated the conflict to a single extension or group of extensions. Check the version number of the conflicting item or items for compatibility. Try reinstalling from original floppy disks, or contact the software vendor.

4. If you are still unable to find the culprit, perform a clean installation by following the steps outlined in the appropriate article found in the Tech Info Library Article, search "clean install."

Using Disk Tools

The Disk Tools Disk that comes with the system software includes a System Folder, Disk First Aid, and, depending on your version of system software, one of these utilities:

- Apple HD SC Setup
- Apple Internal HD Format
- Drive Setup

When you are having trouble starting up the Macintosh computer from the hard drive, first start up from the Disk Tools Disk. This way you can repair any issues on the hard drive (which you cannot do when it is the startup drive). Insert the floppy disk or CD-ROM disc into the floppy or CD-ROM drive and turn on your Macintosh. The Disk Tools Disk icon displays in the upper right corner, and the hard disk icon should display below it.

Disk First Aid

Use Disk First Aid to check the internal hard disk for directory issues. Simply launch Disk First Aid, highlight the drive icon for the applicable hard drive, and click Verify. (On older versions of Disk First Aid click Drive until the selected drive is your internal hard disk, then click Open and Start.) If Disk First Aid finds issues it cannot repair, you may want to try other third-party disk utilities to correct the issue. However, if you cannot repair the disk, you need to reformat it. Make sure you have a backup of your data before reformatting. If you don't have a backup, you may want to take your drive to a Service Provider that specializes in hard disk recovery.

Apple HD SC Setup

Apple HD SC Setup is a disk formatting utility for Apple hard disks. If you have a third-party hard disk in your Macintosh, you get the message that Drive Selection Failed when you launch Apple HD SC Setup. In this case, use the third-party disk formatting utility that came with your drive, or contact the vendor of the drive. To use Apple HD SC Setup on an Apple hard disk, launch the utility and click the Update button to reinstall the hard disk drivers. You can also use the Test button to test the hard disk, and Initialize to reformat.

Internal HD Format

This utility enables you to reformat an IDE hard drive found in Macintosh 630 series and Power Macintosh 5200/5300 series computers.

Drive Setup

This utility enables you to test; partition; install hard disk drivers; and reformat SCSI hard drives, IDE hard drives and some third-party removable hard drives. Drive Setup only works on Power Macintosh computers or computers with a 68LC040 processor and an IDE hard drive.

Note: Initializing erases all data on your hard disk. Ensure you have a backup before doing this.

Troubleshooting Peripherals

If you were experiencing issues that went away when you disconnected the peripherals, follow these guidelines:

SCSI Devices

If you have SCSI devices connected to your Macintosh, make sure that you have followed the vendor's instructions for installation. Specifically, check:

- Termination - SCSI chains should be terminated at the beginning and end of the SCSI chain. The internal hard disk (if any) is considered the beginning of the chain, and has terminating resistors. Whatever device is last in your chain should also be terminated. Check the manuals that came with the devices to discover if they are internally terminated. If not, the last device needs an external terminator. Devices in the middle of the chain should not be terminated. Again, check the manuals or contact the vendor.
- Unique SCSI ID - Each device on the SCSI chain requires a unique ID number between 0 and 7. ID 0 is generally used on internal hard disks; ID 7 is reserved for the Macintosh itself. If your computer has a built-in CD-ROM drive, it is usually set at SCSI ID 3. This leaves numbers 1,2,4,5, and 6, available to assign to your external devices. Consult the manuals that came with your devices to

determine how to set their ID numbers.

- High-quality SCSI cables - Use high-quality cables, the shorter the better (three feet or less). When chaining more than one external SCSI device, try to use the same brand of cable.
- Starting up - External SCSI devices should be powered on, one at a time, before starting up the computer. When shutting down, shut down the Macintosh first. Once the Macintosh has powered down (the screen goes dark or you get a dialog box telling you that it is OK to turn the computer off) then turn off each device, if desired. Never connect or disconnect SCSI cables when any device is turned on. Do not start up the computer with a SCSI device turned off, unless the manufacturer specifically says in the manual that this is acceptable.

Network Connections

If you have issues starting up the Macintosh computer with a network connector attached (such as a LocalTalk connector box), there may be issues on the network, or with the connector itself. This usually occurs at the Welcome to Macintosh screen when the computer freezes. First, swap out the connector with a known-good one; if issues persist, consult with your network administrator.

Apple Desktop Bus (ADB) Devices

If you are experiencing issues starting up when an ADB device, such as a mouse or tablet, is connected, first make sure the connections are snug. Try another ADB port, if the computer has more than one. If you are still having issues, contact the device vendor.

What is in PRAM?

Parameter random-access memory (PRAM) is a small amount of memory continually powered by a lithium battery to retain its contents even when the computer is shut down. PRAM maintains information such as background color, default video selection, network information, serial port information, and default highlight color.

The Macintosh 128K, Macintosh 512K, and Macintosh 512KE contain 20 bytes of parameter RAM (PRAM). These 20 bytes of PRAM are documented on pages II-369 to II-371 of "Inside Macintosh Volume II". The rest of the computers in the Macintosh family have 256 bytes of PRAM (except for the Macintosh Portable which has 128 bytes). Most of the information stored in PRAM is not documented in any technical manual.

Even though you may not know what in PRAM is causing issues on your machine, resetting this information can often be an important troubleshooting step. Particularly when serial devices are connected to the machine, or when networking software is in use.

After resetting PRAM, your environment may be a bit different; you should reconfigure it to your liking. Resetting the PRAM resets your Macintosh computer to the factory defaults, so anything you have customized (like background or highlight color) is reset, the alert sound may be different, and AppleTalk will most likely be turned off. Use the control panels to set the computer back to the way it was before the PRAM was reset.

EXTENDED Information - [Apple Internal Use - Service Providers and Support Professional](#)

Document Information

Product Area: Mac OS System Software
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