

## Using XLR8 MACH Speed Control – OS9 & OSX

Important Information About XLR8 MACH Speed Control

5/15/03

This file contains information about the XLR8 MACH Speed Control software for Mac OS 9 and Mac OS X. You will find instructions on how to set up XLR8 MACH Speed Control and solutions to common problems in the manual that came with your software or upgrade card. Additional information about this product can be found at <http://.xlr8.com> and <http://daystartechnology.com>

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### About the XLR8 MACH Speed Control Software

XLR8 MACH Speed Control will configure all of XLR8's CPU upgrade cards for maximum performance under Mac OS 7.5.2 through Mac OS 10.1.1. It will also configure and enable third-party upgrades.

XLR8 MACH Speed Control provides automatic cache profiling and initialization at startup as well as important system tuning that overcomes deficiencies in older environments and improves overall stability. In addition, thermal monitoring will alert the user if potentially dangerous overheating of the CPU or CPUs occurs.

The control panel provides information about the upgrade, including its speed, CPU temperature and version, and backside cache if any. System information about the motherboard cache and motherboard memory is also provided when appropriate. The graphical display is an active test and provides accurate architectural information about the system at a glance.

The control panel allows the backside cache of the upgrade card to be configured manually if desired which can aid in trouble-shooting or in maximizing the performance of the upgrade card, or in fact any system containing a 750, 7400 or 7410 processor.

As of version 2.6.0, the software that enables Mac OS X has been moved to a separate installer. Multiprocessing support is no longer available.

### Installation

Because of variations in installation and system configuration, this release contains two installers: one for Mac OS9, and one for Mac OS X. The system must be booted from the appropriate environment in order for the installation to proceed.

To install and use MACH Speed Control on Mac OS 9 or lower, boot from Mac OS 9 and run the installer named "MSC-OS9". The OS9 installer will also move out of date and third-party components to an "XLR8 Removed Items" folder on the desktop.

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To install and use MACH Speed Control on Mac OS X or higher, boot from Mac OS X and run the installer named "MSC-OSX". *Note that third-party components will not be removed automatically.* If you are using alternative upgrade software, consult the accompanying documentation for instructions on its removal.

Installing the software prior to installing the processor upgrade card is recommended but not necessary. Please review the end-user license agreement before installing.

Note that the software will not be enabled until MACH Speed Control is opened and the correct serial number is entered. The number is a 16 digit number (including dashes), and begins with XLR- (2.6.1), DS9- (2.6.3) or DSX- (3.0.0).

Note that your machine will double-boot one time after installing the software and restarting. It will not do this again unless a new system less than Mac OS X is installed.

XLR8 MACH Velocity owners using Mac OS X should make sure that the appropriate version of XLR8 MACH Speed Control MP is installed. Mac OS 9 users do not need to perform any additional installations.

### Serialization

XLR8 MACH Speed Control versions after 1.4.3 (OS 8.x) requires a serial number. Until a serial number is entered, the software will not function (although the machine will be stabilized at startup). **The number is a 16 digit number (including dashes), and begins with XLR- (2.6.1), DS9- (2.6.3) or DSX- (3.0.0).**

### Purchasing and Upgrading

Users that purchased an XLR8 brand card previous to the release of 2.6.3 & 3.0.0 (OSX), can use the serial number (XLR-) found on the CD label or on the card itself.

Users that purchased an XLR8 card manufactured after the release of 2.6.3 can use the serial number (DS9-) found on their CD label, or sent with the download of the software.

Users owning version 2.6.1 and wanting to upgrade to 2.6.3 for improved OS 9.2 compatibility can purchase the new version of software at <http://daystartechnology.com> or <http://daystar-store.com>.

Note that version 3.0 (for OSX) is not bundled with any hardware. This software is available via download or separate purchase only from <http://daystartechnology.com>, or <http://daystar-store.com>.

### Compatibility

- MACH Speed Control 1.4.3 is compatible with System 7.5.2 through 8.6x
- MACH Speed Control 2.6.1 is compatible with System 9 through 9.1x
- MACH Speed Control 2.6.3 is compatible with System 9 through 9.2x
- MACH Speed Control 3.0.x is compatible with OS X 10.1 through 10.2x

### Components

The MACH Speed – OS9 installer installs the following components:

1. System:Control Panels:XLR8 MACH Speed Control
2. System:Extensions:XLR8 MACH Speed Extension
3. System:Extensions:Multiprocessing:XLR8 MACH Speed CPU Plugins
4. XLR8 Folder

The Mac OS X installer installs the following components:

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- /System/Library/Extensions/XLR8MACHSpeedKernel.kext
- /System/Library/Extensions/XLR8MACHSpeedPlatform.kext
- /System/Library/StartupItems/XLR8MACHSpeedStartup
- /Applications/Utilities/XLR8 MACH Speed Control

The latter is the utility itself. You may wish to create an alias or move it to the dock for easier access.

### Deinstallation

To deinstall from Mac OS 9, use the MACH Speed – OS9 installer, custom, deinstall option.

To deinstall from Mac OS X, log in as root, or boot from Mac OS 9 and manually remove the following Mac OS X components listed in the previous section.

- /System/Library/Extensions/XLR8MACHSpeedKernel.kext
- /System/Library/Extensions/XLR8MACHSpeedPlatform.kext
- /System/Library/StartupItems/XLR8MACHSpeedStartup
- /Applications/Utilities/XLR8 MACH Speed Control

### Features

Virtual Firmware -- On clone-era machines, MACH Speed Control uses an exclusive technique known as Virtual Firmware. This technique allows compatibility software to be loaded into the system before "at-risk" hardware is initialized. Unlike other third party compatibility software "zapping" PRAM or booting without extensions cannot flush Virtual Firmware.

MVP<sup>a</sup> -- The software fully supports XLR8's exclusive MVP (Multiple Variable Processing) technology. This technology allows the user to modify RAM, CPU, and Cache bus speed for optimized system performance. It also provides exclusive support for XLR8's ability to run *on any system without motherboard jumper modifications*.

Temperature Scan -- The software monitors the temperature of the processors in the system and will report if any of them are overheating. This exclusive XLR8 technology takes away the worry that a processor can be damaged due to the misplacement or failure of cooling equipment.

Advanced AltiVec Support -- Only XLR8 MACH Speed Control has the exclusive ability to run AltiVec with 100% unconditional compatibility. Its advanced AltiVec initialization allows the CPU to run AltiVec (Velocity Engine) instructions exactly as it is done on native G4 systems. This is NOT available with any other third party Cache / CPU management system.

### Notes

#### Note for users of Adaptec UW cards with boot drives attached:

If you are using Adaptec firmware previous to version 4.0, you must install the XLR8 MACH Speed Control software prior to installing the processor upgrade. If you don't do this, you may not be able to boot from drives attached to your Adaptec card. If you forget to do this you will have to reinstall your old processor card in order to install the software.

After installing the XLR8 MACH Speed Control software, you will be prompted to restart your Mac. If you have not installed the processor upgrade yet, then you do not need to restart -just quit the installer, shutdown the machine, and install your processor upgrade. If the card is already installed, let the installer restart the machine.

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Note that your Mac may restart during the boot process. This will only occur once.

### Using the XLR8 MACH Speed Control Software

The first time the machine starts up with the processor upgrade installed, the XLR8 MACH Speed Control software will establish the necessary settings automatically. However, if the software has not already been serialized, the caches on your upgrade will not be enabled.

The software must be run and serialized at least once for full-functionality. It is a good idea to open the control panel and inspect the settings to make sure everything is set the way it should be. In particular check the backside cache settings to make sure that the caches are running at the advertised speed of your upgrade.

### Panels

Settings panel -- Displays the current settings for the processor upgrade. The mute button will silence the animation.

Processor Panel -- Displays the processor version number and other processor related information. Note that if an XLR8 MACH Velocity is installed, its version information can be obtained here.

- *Changing the status of Thermal Monitoring* -- Thermal monitoring is only available when one or more CPUs in the system provide temperature measuring facilities. While enabled by default, it is ok to disable monitoring after you are comfortable that the systems cooling measures are functioning consistently well. Even when disabled, thermal monitoring will still take place for two minutes after startup. Thermal monitoring is not yet available under Mac OS X.
- *Changing the status of Speculative Processing* -- The option to change the status of speculative processing is only available on systems where speculative processing may cause problems. If you have a choice, please note that enabling speculative processing is NOT recommended. Please refer to the XLR8 white paper.

Cache panel -- This panel allows the user to change the backside cache speed and to adjust the status of speculative processing and the motherboard cache on certain machines (for more information on speculative processing, please refer to the XLR8 white paper).

Changing the Backside Cache Speed -- Selecting the "Automatic" setting will cause the cache to run at the safest working speed. Sometimes this is not the fastest speed that may be available -see the earlier note about usable speeds. Selecting the "Manual" setting allows the user to select any available speed, possibly including speeds faster than that selected by "Automatic". Speeds selected manually will remain in effect until changed by the user.

*Changing the status of Power Conservation* -- Checking "Power Conservation" will allow the OS to put the backside cache into low-power mode when the system is inactive. Battery life on portables will be extended and electricity bills will be reduced. Enabling Power Conservation will not affect system performance.

*Changing the status of Write-through* -- Generally write-through is not necessary except on some older machines or at very high CPU speeds. If you are having stability issues on 6 PCI-slot hardware, or are running at 500 MHz or faster, you may wish to consider turning write-through on. Note that there is a modest performance penalty associated with this action. If write-through comes on by default in the control panel, it is a good idea to leave it on.

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*Changing the status of the Motherboard Cache* -- This selection is only available on systems that have a motherboard cache. If you have a choice, please note that enabling the motherboard cache is NOT recommended -your system will run more reliably with the motherboard cache disabled. If your motherboard cache is removable, it is highly recommended that it be physically removed from the system.

Memory Panel -- The memory panel provides highly detailed information about the DIMMs installed in pre-"blue and white" machines. This information is particularly useful on clone-era equipment. Enough information is provided that will allow a memory configuration to be calculated that will take maximum advantage of the interleaving capabilities of those machines. Note that information provided by alternative tools will not correctly cover the more unusual possibilities that exist. DIMM information for later machines is not provided.

Support panel -- Contact info and addresses for XLR8. Includes World Wide Web links to XLR8.

### MVP Jumper Settings

XLR8 processor upgrade cards feature the ability to select system bus speed and processor multipliers to allow the selection of speeds faster than normal. See the Speed Chart included on the CD (with the software), or on the web at <http://daystartechnology.com>.

### Troubleshooting

The XLR8 MACH Speed Control software is fully automatic. In most cases problems are usually an indication that a piece of hardware is malfunctioning.

**For OS X specific problems, review the troubleshooting information in the "ReadMe" included with MACH Speed Control OSX.**

Problem: Intermittent Crashing.

Solution: If you have used MVP to boost the processor upgrade beyond its default settings, i.e. running at a faster bus speed, or a faster processor speed, you may have boosted it beyond its capabilities. Back the speeds down towards the default settings and try again.

- Try running the backside cache at a slower speed. The automatic setting used by the XLR8 MACH Speed Control software should generally be safe, but it is not foolproof. In particular, if MVP is being used to squeeze extra performance out of the processor upgrade, the software may select a speed that is unsustainable. Use "Manual" to select the next lowest speed from the popup menu and restart the machine.
- If it behaves after that, then the backside cache was running too fast. If you are using MVP, it would pay to move the processor upgrade back towards its default speed in order to regain cache performance. An extra 50 MHz of backside cache performance is far more beneficial than an extra 10 MHz of processor performance.
- If a motherboard cache is present (clone-era machines only) physically remove the cache, or, if the cache is soldered to the board, press and hold down the command, option 'x' and 'd' while booting, then use control panel to disable the motherboard cache.

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Problem: The Extension Crashes.

Solution: Press and hold down the **command, option 'x' and 'd' keys** before the extension comes up. This will disable the extension entirely. Use the control panel to select a slower cache speed than was previously being used.

- Note that if the extension is crashing after selecting a speed faster than that recommended by the control panels "Automatic" setting, you can quickly restore the automatic setting by pressing and holding down the **command, option 'x' and 'r' keys** before the extension comes up.
- You can remember the keys as follows: 'x' stands for "XLR8", 'd' stands for "disable the extension", and "r" stands for "reset the cache speed".

Problem: Machine gets stuck at "Happy Mac" or grey screen appears after "Happy Mac".

Solution: Reboot the machine and immediately press and hold down the option key. Let the option key go at the "Welcome to Macintosh" screen. Report the problem immediately to XLR8 tech support.

Problem: 5 tones at startup -screen stays black.

Solution: You need to update your firmware. Remove the G4 ZIF upgrade from your Blue&White machine and replace the original G3 processor. Follow instructions for the Blue&White ROM updater from the XLR8 CD.

Problem: Screen artifacts.

Solution: Use the Extensions Manager to disable any and all extensions containing the words "Graphics Accelerator".

### Contacting Daystar Technology

If you have questions about your MACH Speed upgrade card or any other XLR8 products you may contact us as follows:

#### **Daystar Technology**

1532 Turtlebrook Lane,  
Lawrenceville, GA 30043 USA

<http://daystartechnology.com>

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