

I would like to know how fast a processor my Power Macintosh 9500/120 can accommodate. It has a 40 MHz system bus, while the new Power Macintosh 9500/150 has a 50 MHz system bus. According to Apple, the 9500/150 can be upgraded to 200MHz, but I don't know how fast a processor my computer can handle. —Ward Curry, via the Internet

The maximum clock speed at which a 9500 can run is a function of two separate components: the system bus and the CPU.

The system bus on 9500-series computers cannot run faster than 50 MHz, so any CPU communicating with this bus must be able to work with a system bus operating at 50 MHz or less. This restriction also applies to machines such as the PowerWave- series from PowerComputing and the new S900L from UMAX, both of which are based on the Tsunami motherboard used in the 9500-series computers.

The 604 used by Apple, PowerComputing and UMAX in their various versions of this basic motherboard design does this communicating by operating at three times the speed of the motherboard. Tsunami-based machines which are advertised as running at 120 MHz have 120 MHz CPUs communicating with a system bus running at 40 MHz. 132 MHz CPUs deal with a system bus cruising along at 44 MHz and 150 MHz machines have a 50 MHz system bus.

If you stick with the 604 as your CPU, that's where it ends, since the 604's clock chip multiplier is limited to a 3:1 ratio (i.e. it can't run at more than three times the speed of the

system bus). The new 604e, however, is not so restricted. This new chip from IBM and Motorola is able to communicate with the outside world while working as much as four times as fast as the system bus it's on.

On a machine with a maximum bus speed of 50 MHz, therefore, it is theoretically possible to plug in a 200 MHz 604e and have the whole thing work quite happily. I need to stress that I said theoretically, since CPU daughtercards with such chips don't currently exist.

Apple's own datasheets on the 9500/120 and 132 state that the CPU in these machines is "upgradable to 150 MHz." The datasheet for the 9500/150, however, states that this machine is "user-upgradable to [a] faster processor when available (up to 200 MHz)."

This apparent disparity may be nothing more than appropriate conservatism on Apple's part since the 9500/150 uses the same logic board as its slower 120 MHz and 132 MHz cousins (the part-number for the logic board of all three machines is 661-0924).

Given this identical logic board it is probably reasonable to presume that a 200MHz 604e daughter card that works in a 9500/150 will also work in a 9500/120 or 9500/132. Nonetheless, and regardless of how reasonable this surmise is, there is no guarantee that such a card will work or that Apple will sell a 200 MHz card (assuming it manufactures one) to 9500/120 or 9500/132 users.

PowerComputing is requiring people who want to purchase their Processor Card Upgrades to supply a valid PowerCurve 120 serial number and is limiting supply to one card per computer. It may well be that Apple follows a similar path when it gets around to releasing Processor Card Upgrades with 604e CPUs on board. — BF.

have just installed System Update 2.0 on my Performa 5200 and have found a new extension that seems to have no use whatsoever. It's called InputBackSupport. Any idea what it's for or if I need it at all? —[Leslie Willis, via the Internet](#)

The InputBackSupport extension is used by KanjiTalk (the Japanese version of the Mac OS) and the Japanese Language Kit (JLK) to maintain compatibility with the special bitmap fonts used by both products as well as to maintain compatibility with input methods used under version 6.x of the Mac OS.

Unlike bitmap fonts used for one-byte languages like English and German, these bitmap fonts typically consisted of two files (L1 and L2) which corresponded with the Level 1 and Level 2 standards for the Japanese character set as laid down by the JIS (Japanese Industry Standard). Bitmap fonts included in the Japanese Language Kit which conform to this standard include Osaka, ChuGothic, HonMincho, MaruGothic and SaiMincho.

If you use either KanjiTalk or the JLK without the InputBackSupport extension installed, text typed using bitmap fonts such as those noted above will contain garbled characters and the empty black squares so common when a face is asked to display an ASCII number for which it has no corresponding character.

InputBackSupport is also included with the Chinese Language Kit for much the same reasons and is installed in any System Folder created using System Update 2.0's facility to create a universal System Folder from an existing Mac OS 7.5 System Folder.

Although System Update 2.0 can custom install InputBackSupport—the extension is listed with other WorldScript specific files in the WorldScript Software section of the Custom Install list—it shouldn't otherwise install these files unless it finds older versions of said files extant on your hard drive. That's not to say the System Update 2.0 Installer won't put such an extraneous file into your System Folder, just that it shouldn't.

If you are using the Japanese or Chinese Language Kits with Mac OS 7.5.x or KanjiTalk 7.0 or later you need the InputBackSupport extension installed. If not it can be safely dragged to the Trash, giving you back 107KB of precious hard drive space. — [BF](#).

want to add 8MB of RAM to the 8MB already installed in my Performa 5215. I keep seeing memory advertised which carries the admonition “must be ordered in pairs.” Does this mean that I would have to throw out my existing 8MB SIMM to add any RAM to my machine? —[Tim Dickey, via the Internet](#)

he “must be ordered in pairs” admonition applies only to Macs which use a 64-bit data path to RAM while still using 32-bit RAM chips (i.e. 72-pin SIMMs). The reason such machines need to have SIMMs installed in pairs is evident in the two numbers noted above: if data has to travel between RAM and the CPU along a 64-bit wide path, you need two 32-bit wide memory chips to accomodate the path.

Macs which fit into this category include all the so-called "first generation" PowerPC-based Mac OS computers, such as the 6100-, 7100- and 8100-series machines from Apple and the Power 80-, 100- and 120-series machines from Power Computing. This category does not, however, include your Performa 5215 or any other machines based on the same motherboard (ie the 52xx, 53xx 62xx and 63xx series desktop machines).

Machines which share your Mac's basic motherboard design can use exactly the same 72-pin, 32-bit SIMMs used in the "first generation" machines noted above but, because the data path between RAM and the CPU on these entry-level machines is only 32-bits wide, said SIMMs can be installed one at a time.

In your particular case, you do not have to throw out the 8MB SIMM already installed in the Performa 5215. 52xx-series machines all come with two 72-pin SIMM slots and Macs in this series which shipped from Apple with 8MB of RAM did so with a single 8MB SIMM installed in one of the slots, leaving you one spare slot to fill in any way you wish.

Finally, and mindful that it is always easy to spend someone else's money, you might want to consider filling that spare slot with a 16MB SIMM. Going from 8MB to 16MB of RAM is a nice jump but going straight to 24MB of RAM is even more pleasant. With the price of RAM so low at the moment it isn't much more expensive either. — BF.

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