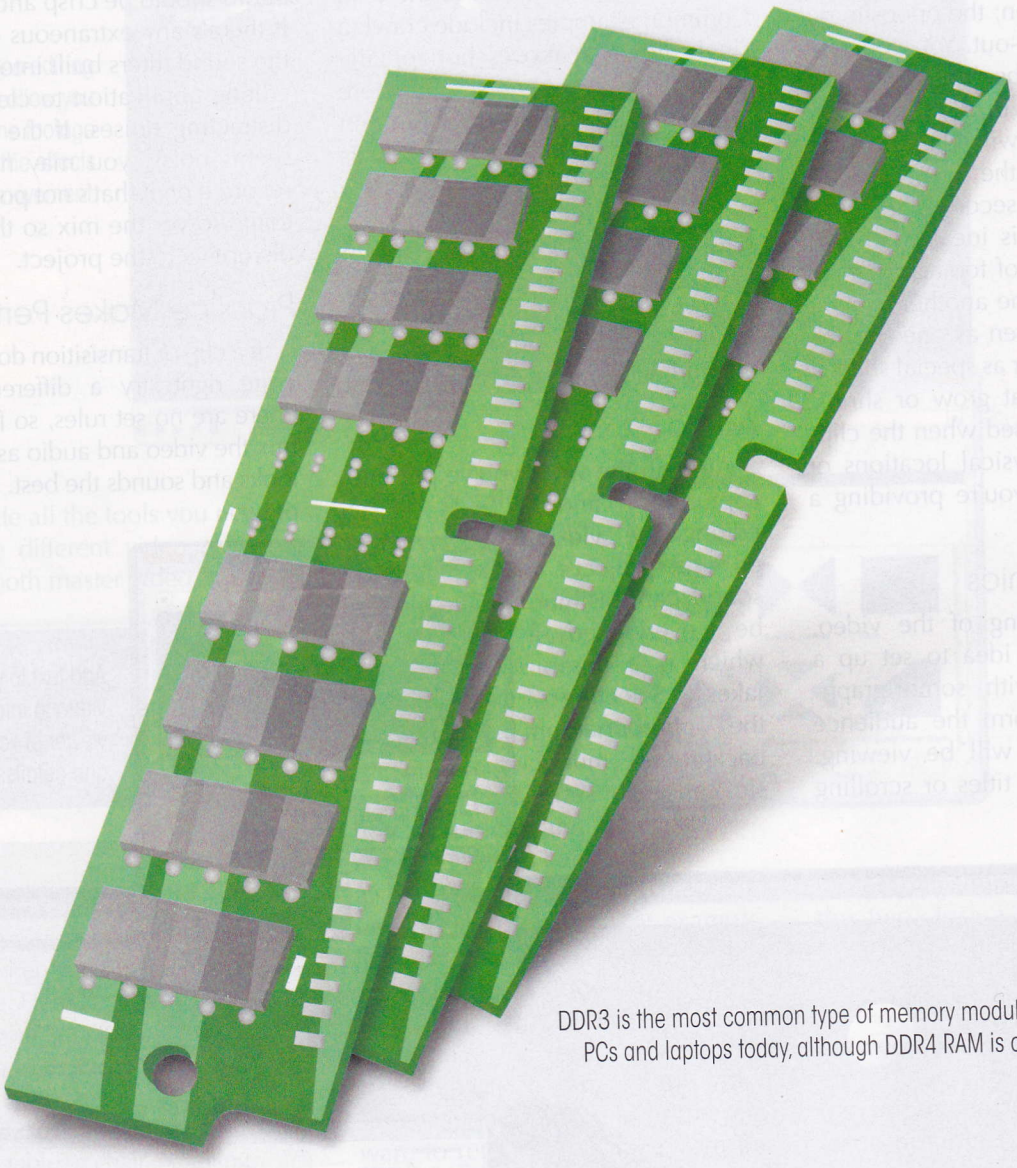
How To Buy

Memory



DDR3 is the most common type of memory module found in PCs and laptops today, although DDR4 RAM is on the way.

Memory prices have dropped precipitously over the past year. In fact, as we go to press, the average price for 4GB of modern DDR3 is about $15.75, which is fairly cheap, considering that 4GB is all most PCs need to handle everyday tasks, such as multitasking between a Web browser, word processing document, and email client. With prices near an all-time low, now is the time to invest in a memory upgrade that will allow your PC to multitask like a champ and render images and video more quickly than ever. Here, we'll explain what you should look for wh buying memory for your PC.

It's A DDR3 World At The Moment

Almost all PCs made within t last few years use DDR3 (dou data rate type 3) memory. De

top systems use a type of memory called DDR3 SDRAM (synchronous dynamic RAM), while laptops generally use DDR3 SO-DIMM (small outline dual in-line memory module). Compared to the previous generation DDR2 memory, DDR3 uses less power and transfers data at much faster rates. DDR3 is not backward compatible with DDR2, so you wouldn't be able to use DDR3 modules on an older PC that utilizes DDR2 memory.

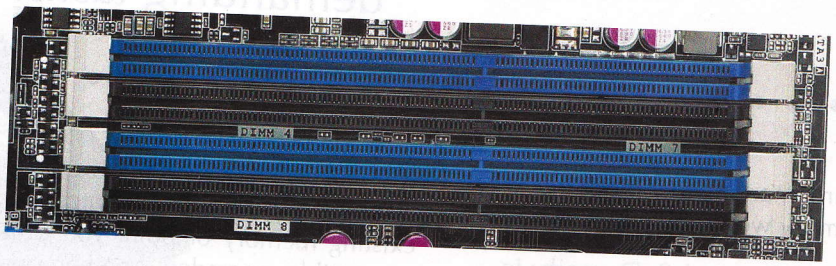
Looking to the future, the final specs for DDR4 memory were finalized in September of 2012, and the new memory type is expected to be released for use in servers sometime at the beginning of 2013. No company has yet announced availability dates for DDR4 for general-use PCs, and it may take a little longer for DDR4 to hit the PC market because motherboard and processor manufacturers must figure out a way to integrate the DDR4 technology into chipsets. Similar to DDR3's upgrade over DDR2, DDR4 is expected to use even less power and transfer data and rates even faster than what we currently see with DDR3.

Memory Speed: Match, Don't Mix

When you're shopping for memory, you'll see that the modules are rated for specific speeds, so you may see modules labeled as "DDR3-1333MHz." The speed rating refers to the module's transfer rate per second; the faster the rating, the more quickly your computer will operate when multitasking and performing other demanding tasks. However, you can't just go out and buy the fastest memory available, because memory only works as fast as the maximum speed supported by your PC's motherboard. Additionally, for optimal results, all of the memory modules installed on your computer must function at the same speed. If you pair a stick of memory operating at DDR3-1600MHz with a module that operates at DDR3-1333MHz, the new memory will lower its speed to 1333MHz; you will thus have gained no speed improvement.

Memory	1. 4 x 1.5V DDR3 DIMM sockets supporting up to 32 GB of system memory * Due to Windows 32-bit operating system limitation, when more than 4 GB of physical memory is installed, the actual memory size displayed will be less than 4 GB. 2. Dual channel memory architecture 3. Support for DDR3 2400(OC)/1600/1333/1066 MHz memory modules 4. Support for non-ECC memory modules 5. Support for Extreme Memory Profile (XMP) memory modules (Please refer "Memory Support List" for more information.)

There is a maximum amount of memory you can install in a PC, and that amount will vary by brand and model.



Many desktop computers are built with four memory slots, but some can handle as many as eight modules.

To help you select memory appropriate for your notebook, most memory manufacturers offer online utilities that allow you to select your desktop or laptop from a drop-down menu and see which memory modules will best suit your system. The detailed databases contain the ideal memory for use in almost any off-the-shelf system, so it's easy to find the right type and speed of memory. Your PC's user's manual should list the maximum speed, capacity, and number of memory modules you can install. (If your computer is custom built, check the mother-

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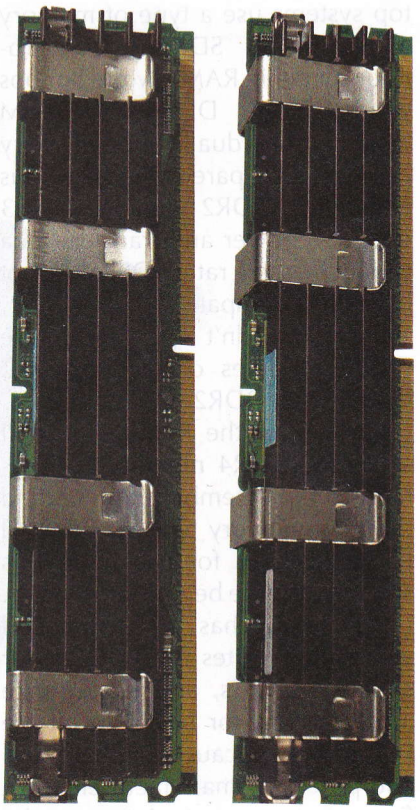
board manual to determine what memory would be compatible.)

What Speed & Density Is My Current Memory?

Looking to keep an existing set of memory when upgrading the system? You have a couple of options. One way is to open up a desktop PC's case and pull out the existing memory modules, so you can write down the model number and figure out the exact speed and type you'll need. (Or just take the memory into a reliable supplier's store, such as your local Staples. The sales associate should be able to match the existing memory or point you to a compatible upgrade.) Another option is to download a free utility, such as CPU-Z from CPUID (www.cpuid.com), that will scan your computer and indicate the type and size of memory currently installed in your system.

The Kit Option

To ensure compatibility, memory modules are often sold in kits: sets of two, three, or four matched sticks of RAM. Investing in a replacement kit is a particularly good option for those who don't want to go into the BIOS (basic input/output settings) of their computer to ensure that the memory sticks are using the same settings, because the matched pairs are already designed to work together. Going with a kit is also a good idea if you're significantly increasing the memory capacity of your system, because an older module may have a smaller capacity that would limit how much total memory you could install.



You may be able to buy memory in matched pairs, which can take much of the guesswork out of buying RAM.

Lifetime Warranty

Most memory manufacturers back modules with a limited lifetime warranty that will cover you if one of the sticks goes bad.

Memory Sizes

When you buy memory, you often have to deal with some jargon and with potentially confusing specs. For example, you may come across memory labeled as follows: 8GB (2x4GB), 204-pin SO-DIMM, DDR3-1333 (PC3-10600). Here's what that actually means.

8GB (2x4GB) - The first part relates to the total amount of memory, 8GB in this case, for the kit. The parenthesis indicate that the kit consists of two 4GB modules.

204-pin SO-DIMM - The pin count and SO-DIMM designation means that this particular kit is designed for use in a laptop. Desktop DDR3 memory will have 240 pins and be labeled as a DIMM.

DDR3-1333 (PC3-10600) - These two items indicate how fast the memory works. 1333 is the speed at which the memory can transfer data; PC3 refers to the fact that it's a DDR3 module, while the second set of numbers is the peak transfer rate.