MemTest 4.0 (c) 2009

A product of HCI Design (http://hcidesign.com/memtest)

Introduction

MemTest verifies the reliability of RAM. A correctly functioning computer should be able to store data in memory with 100% accuracy day in and day out. A computer that fails these tests, perhaps because of old hardware, damaged hardware, or poorly configured hardware, will be less stable and crash more often. Even worse, it will become even less stable over time as corrupted data is written to hard disk.

By using MemTest you can ensure that your computer's RAM is functioning correctly. This is a good thing to check whenever you buy a new computer, install new RAM, or change the configuration of your machine (for instance, to overclock it). If you are the sort of user who likes to push the performance of your machine to the edge, relying upon whether your machine will boot after your new BIOS tweaks is a poor way to determine the safety of your new settings. Use MemTest as a true test of stability.

How to use it

Please read this section before contacting technical support.

How much RAM to test: To keep the test running smoothly and quickly, you should only test the amount of RAM that is unused, rather than the total amount of RAM in your system - otherwise your computer will spend 90% of the test reading and writing to your hard drive, rather than testing RAM. By default MemTest will check all RAM that is not in use by other applications. If you want more control, you can use the Windows Task Manager to determine how much RAM is free for checking. As a rule of thumb, Win9X uses about 32MB of RAM when nothing is open, and Windows2000/XP uses about 64MB. Vista uses quite a bit more, depending on what features you have enabled. Even though you cannot directly check used RAM, Windows dynamically moves the location of most of its subsystems, so most of your RAM will be checked eventually.

No Windows program can directly check the RAM used by the OS; this is a fundamental limitation of using a modern OS. **If you need to check every byte, consider purchasing MemTest Deluxe**, which boots off of CD for unfettered access to RAM.

How long to test: Unlike other memory checking software, MemTest is designed to find all types of memory errors, including intermittent problems. To catch intermittent errors, however, you need to run it for several hours. You can also run MemTest Pro while you use your computer for other tasks, which will help identify memory errors which only show up while the computer is under load.

100% coverage represents one full pass of testing your memory. In general it is better to run multiple passes. Here are three typical lengths of testing you might use:

1. Test until 100% coverage (a quick test to make sure your RAM is functioning reasonably)
2. Test for 1 hour (this will catch everything except intermittent of errors)
3. Test overnight (recommended; your computer is not doing anything else at night anyway, why not be absolutely sure your RAM is good?)

MemTest will report any errors that it finds as soon as it finds them, so if you do not see any error messages then all testing so far has been successful. Once you start testing, MemTest will continue to test your RAM until you tell it to stop, or quit. The tests can run as long as you wish, and become more rigorous the longer you let them go.

How many instances of MemTest: If you have a multi-core or multiprocessor machine you can make the memory test more effective by running multiple copies of MemTest at the same time. Start at least as many copies of MemTest as you have cores and then divide the amount of RAM to test between them equally.

How MemTest works: MemTest tests the ability of your RAM to store many different unique bit patterns, and to correctly hold those values over various periods of time. More traditional memory checking programs can only catch problems which show up immediately. MemTest catches both immediate errors and long term errors. The longer you run the program, the better the test against long term errors. If you can run MemTest overnight without errors then you can be sure that your RAM functions correctly.

NOTE: If you run MemTest and it only checks a few % of RAM over the period of an hour, this means you told it to allocate more RAM than is available. When this happens, almost all of the testing time is taken reading from the hard disk swap, which is a reasonable hard disk check, but not very useful for checking RAM. Select less RAM to check and try again.

If you find an error

In all cases if MemTest finds an error it will stop and report it to you. If you do get an error, you should consider replacing your RAM or at the very least verifying that your machine is correctly configured. **Note that even ONE error is a sign of a serious problem - a correctly functioning computer can run MemTest for weeks with no errors.**

If you do get an error, the next question is to determine how to fix it. The most common cause of memory errors is a faulty memory card. Unfortunately, due to variations in motherboards and chipsets, it is impossible to reliably locate the physical chip that is failing purely via software. It is still possible, however, to determine which DIMM is failing if you have more than one, by elimination: Run the machine with one memory board installed at a time; when errors are found the installed board is at fault. This is also a good diagnostic for another reason: sometimes the problem is really with the motherboard, and it will disappear if you have less RAM installed, or if the DIMMs are installed in different slots. If you have access to multiple computers, you can also try testing the "faulty" RAM in both to isolate whether the problem is the memory or some other component.

If you have more than one DIMM and you find errors with both, even when you test them one at a time, this suggests that your RAM is probably OK. Either your motherboard is failing, you are using memory timing settings that are too aggressive, or your RAM is not compatible with your motherboard. You can experiment with memory timing settings in your BIOS, which may allow you to use your RAM without errors at a small performance cost. Another thing to check is that you are using the proper voltage setting for your RAM (not all BIOSes let you set this). Please refer to your motherboard manual for information on this topic - HCI Design cannot provide specific recommendations for BIOS settings.

Another potential cause of memory problems is overheating - make sure your machine is well ventilated and try running the test again.

If you have any questions, please take a look at our FAQ page before contacting tech support.

The Pro and Deluxe Versions

The normal version of MemTest is a Windows program, and is free for private, non-commercial, or home use. There are two other versions available:

The Pro version ($5) is a Windows program that extends the free version. It is tuned to the needs of users who diagnose the quality of RAM often, or on multiple machines. Features include:

- More detailed reporting of errors.
- A "nice" mode which allows you to test RAM in the background, during normal use of the machine.
- Option to automatically spawn multiple copies of MemTest when this is needed to test all available RAM.
- Errors are logged to disk so that you can send an official error report to whomever you bought the RAM from. Also, if the machine crashes or is shut down you can read the log to see what happened.
- It does not pause every time an error is found, so it can be used to determine if failures are correlated with some secondary factor, such room temperature or 3D gaming, rather than just as a tool that determines if there are any errors at all.
- It can be run without the "first time user" messages.
- Command line support:

/s123 tests until 123% coverage
/t256 tests 256 MB of ram
/tall tests all ram available ram
/tr tests all available ram, starting multiple copies of MemTest if need be.
/lc:\log.txt saves the output log to c:\log.txt
/chatty runs in chatty mode

The Deluxe CD package ($14) includes the Windows native Pro version. It adds a 32-bit and 64-bit version of MemTest that runs directly from a bootable CD. This version can be run on any PC and does not require any sort of installation. Use it to check the RAM quality of any PC, whether it has Linux, Windows, or no OS at all. Plus, since it does not load an OS, it can directly access and test all of your RAM. This is a great disk for computer technicians to carry around. It also uses the rate that memory is checked as a basic speed benchmark. This can be useful if you are trying different BIOS settings. Not only will MemTest tell you if your RAM is still stable, but it will also indicate if the tweaks you have made improve RAM performance.

Also available: The Deluxe Floppy package ($14) includes the same software as the CD package, but comes on a bootable 3.5" floppy. Note: the Floppy version only supports 32-bit CPUs.

See the **online order form** for more details.

Support

Questions about this product? Visit us online at http://hcidesign.com/memtest, or send your question to technical support (memtest_questions@hcidesign.com). Please take a look at our FAQ page before contacting tech support.