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Memory Validation

Memory validation is performed by running a piece of software on the server that basically writes data to a memory location, reads it back and then checks it is correct.

Once this has been done for the particular memory location under test, the program will then move on to the next location until all locations have been tested.

The program can perform a variety of different tests usually specified by the user. It may also start the whole process all over again from the start after completing all the tests specified until the program completes or is stopped by the user.

Fester uses “MemTest86+” for memory testing from a USB stick, but there are many other free memory testers available.

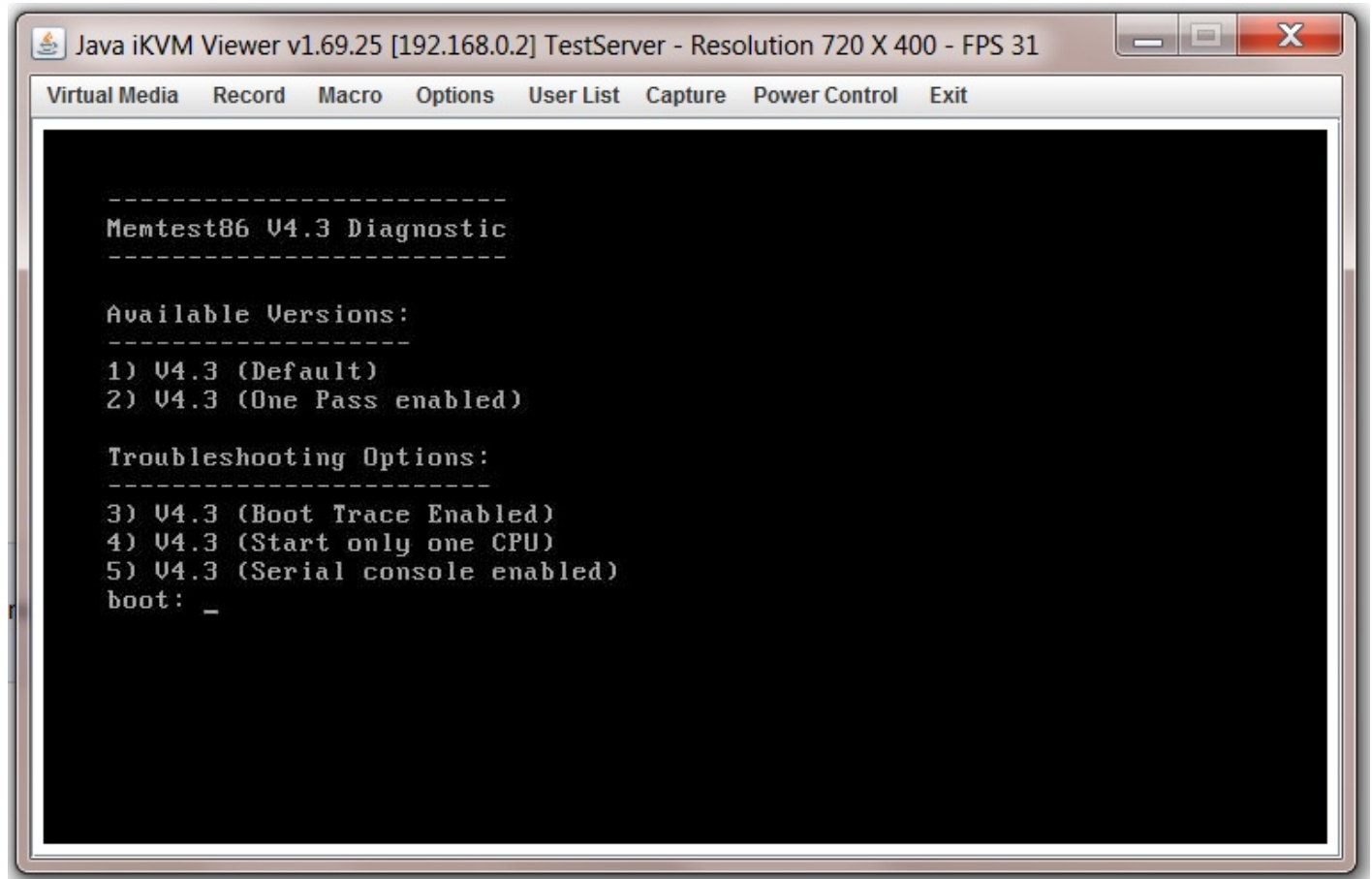
Creating a Bootable MemTest86+ USB Stick

Download the “[MemTest86+ USB Drive](#)” ISO image for Windows. Unzip the file and [write it to a USB stick](#) or [mount via IPMI](#).

Using MemTest86+

Shut down the server if it isn't already and then insert the USB stick.

Power up and the server should boot into the MemTest86+ start up screen as shown.



If you are happy running the default tests, then when the start up screen appears do nothing, don't hit any keys just wait and after a short period of time MemTest86+ will just launch into the default tests with no user intervention.

Fester uses the default tests (I don't know if this is a good or bad idea, perhaps someone has some advice on this so I can improve the guide).

When MemTest86+ is conducting the tests you should see a screen that looks something like this.

```
Java iKVM Viewer v1.69.25 [192.168.0.2] TestServer - Resolution 720 X 400 - FPS 21
Virtual Media Record Macro Options User List Capture Power Control Exit
Memtest86 v4.3.7 Intel Xeon(R) E5-2620 v3 @ 2.40GHz
CPU Clk : 2400 MHz | Pass 17% #####
L1 Cache: 64K 133948 MB/s | Test 86% #####
L2 Cache: 256K 36977 MB/s | Test #7 [Moving inversions, 32 bit pattern]
L3 Cache: 15360 25840 MB/s | Testing: 14G - 16G 2048M of 16G
Memory : 16G 11945 MB/s | Pattern: 08000000
-----
CPU: 012345 | CPUs_Found: 12 CPU_Mask: ffffffff
State: W\WWW | CPUs_Started: 6 CPUs_Active: 1
-----
Time 0:26:10 Iterations: 1 AdrsMode:64Bit Pass: 0 Errors: 0
(ESC)exit (c)configuration (Space)scroll_lock (Enter)scroll_unlock
```

I ran the test for 24 hours. But some people run this test for days or even weeks!

The test should return zero errors (circled in red in the previous screen shot). If you get even one error then this might be a faulty module/s and should be returned for testing. It cannot be used for the FreeNAS server as it will likely cause corruption in the ZFS file system.

When you are finished press the “Esc” button (this will reboot the server) or switch it off with the power button. Don’t forget to remove the USB stick.

That’s the memory tested.

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