

Technical Advisory – Imager 3001 and Disk Reliability

April, 2005

Applies to: All Imager 3001 systems

In the past few months there have been several cases of Imager 3001 systems with disk reliability problems. Several disk drives have been replaced as a result. All of the problem systems were manufactured in the period from 6/04 to 1/05, but as I'll explain below, there is a chance that systems manufactured before 6/04 may also have similar problems that have not yet become apparent.

Background: All Imager 3001 systems have been shipped with a boot drive and a pair of RAID (Redundant Array of Inexpensive Drives) disks for high speed data storage. Typically the three drives are placed into a 3-drive cage with a fan to blow air across the drives. There is about a 2mm gap between the drives.

After an exhaustive analysis of one failing system, I've concluded that the mounting cage for the hard drives is at fault. It has inadequate ventilation, leading to hard drive overheating and reliability problems. The same mounting cage has been used for the last four years with no problem until recently. The only explanation is that the latest hard drives must either produce more heat than older drives, which is probably due to their higher speed and capacity, or they may now be more sensitive to high temperature. In any event, even though older systems do not seem to be having this problem, you should be vigilant and consider taking preventive measures.

To see if you are experiencing problems, run the System Event Viewer and look for disk drive warnings or errors. To display the System Event Viewer under Windows XP, display the Control panel, choose the Performance and Maintenance section, choose Administrative Tools, and then Event Viewer. When Event Viewer is running, select the System Event log. On a system with properly working hard drives, disk warnings or errors should be very rare. On most systems, there will be no complaints or at most a few complaints per day. If you have more problems than this, you should immediately backup your data and reconfigure your hard drives.

Another way to see if you are experiencing problems is to run the Western Digital Data Lifeguard utility, which can test a hard drive. Most of its features will work on any brand of drive. Download it from support.wdc.com. Note that when you run DLG you should look both at DLG's status window and the System Event log for errors. It's possible to have errors show up in the System Event Log but not in the DLG status window. Also note that you have to periodically refresh the System Event Log using one of the toolbar buttons to see the latest Events.

SOLUTION – Remount your hard drives for more ventilation

If you have decided to remount your hard drives, you may want to have the work done by someone familiar with PC configuration. The work is not difficult and will not

take a long time, but experience in similar tasks is very helpful. If you have any questions, please contact kaare@opt-imaging.com for advice.

Step 1: move the PC to a clean workspace. Make sure there is no danger of static electricity. Make sure the power and all other cables are disconnected.

Step 2: Remove the PC cover by removing the two screws on either side.

Step 3: Remove the disk drive assembly, which is a metal frame with room for three 5.25" drives. The disk drive assembly could hold three CD-ROM drives, but instead it usually holds a 3-hard-drive cage, which takes two of its three mounting positions. (Hard drives come in a 3.5" format, which is much smaller than the 5.25" format used by CD-ROMS, DVDs, etc.) You need to loosen 4 screws attached to rubber shock absorbing posts, and one screw holding a safety interlock "Z" bracket. Remove the cables from the rear of the drives (noting where the data cables attach). Also note that a fan power cable must be removed. Slide the disk drive assembly about a half cm towards the power supply and then lift it up and out.

Step 4: Remove the 3-hard-drive cage from the disk drive assembly, by removing two screws on each side.

Step 5: Remove the middle disk drive from the 3 drive cage, by removing two screws on each side.

Step 6: Find an alternate place for the middle drive.

- a. If you have a floppy drive, you may be able to sacrifice it and put the middle disk drives in its place..
- b. If you have a CD, CD-Writer, or DVD in the disk drive assembly, you can remove that drive, get a 3.5 to 5.25 drive bay adapter, and mount the drive there.
- c. If you do not have a CD, CD-Writer, or DVD in the disk drive assembly, you probably have an empty slot where the drive can be mounted, using a 3.5 to 5.25 drive bay adapter

Mount the middle hard drive in the alternate location.

Step 7: Place the 3-drive cage (now containing only two drives) into the disk drive assembly.

Step 8: Reinstall the disk drive assembly in the pc. Reconnect all the cables to the drives. Remember to reconnect the fan cable.

Step 9: Reconnect the power and other rear PC cables, power up, and make sure it works. Run Western Digital's Data Lifeguard's comprehensive surface test (about 30-45 minutes/drive) several times on each drive, to verify that they work well. Check the Event Log to make sure that no errors are being reported.