# Comparing Fibre Channel with SATA
Positioning Information (withdrawn product)

Main

The DS4100 controller using a SATA drive is suited primarily for sequential I/O operations. In this type of environment, the DS4100 performs very well. Figure 1 illustrates the throughput obtained when performing 100% sequential reads (such as from a video streaming application). Note that the DS4500 (FAStT900) is the best performer for streaming workloads and that the SATA-based DS4100 (FAStT100) is as good if not better than the DS4300 (FAStT600).

The RAID controllers contribute to the significant difference in maximum throughput capability. The DS4500 is a more powerful RAID controller than the DS4300. The similar performance in maximum throughput capability between the DS4100 and the DS4300 is because these RAID controllers are very similar, with the exception that the DS4100 is a storage server that uses a SATA drive while the DS4300 is a storage server that uses a Fibre Channel drive.
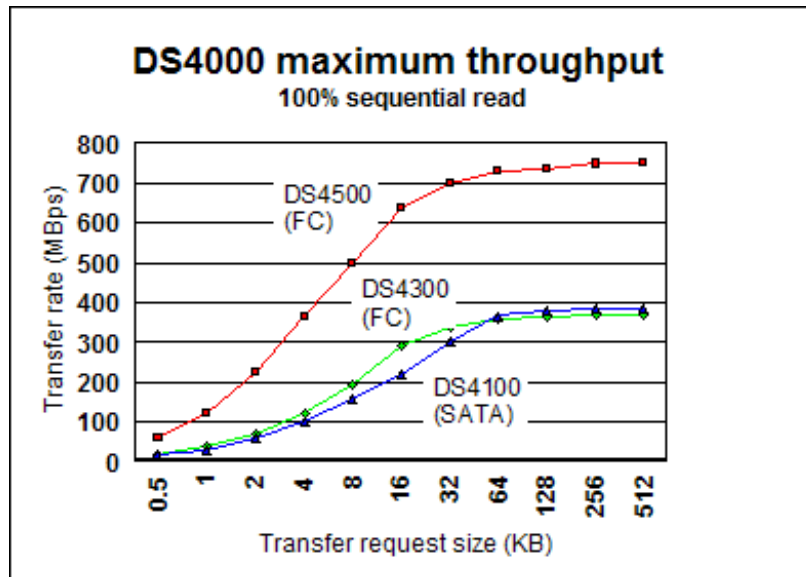
Figure 1: DS4000 throughput comparison using 100% sequential read operations
(Configuration: 64 KB segment, Read cache enabled, 16 KB cache block, 8% drive stroke, Dual RAID controllers, RAID-5, 14 drives, DS4300: 15K RPM, DS4100: 7200 RPM)

For random OLTP workloads, however, the DS4300 can handle significantly more I/O requests than the DS4100, as shown in Figure 2.
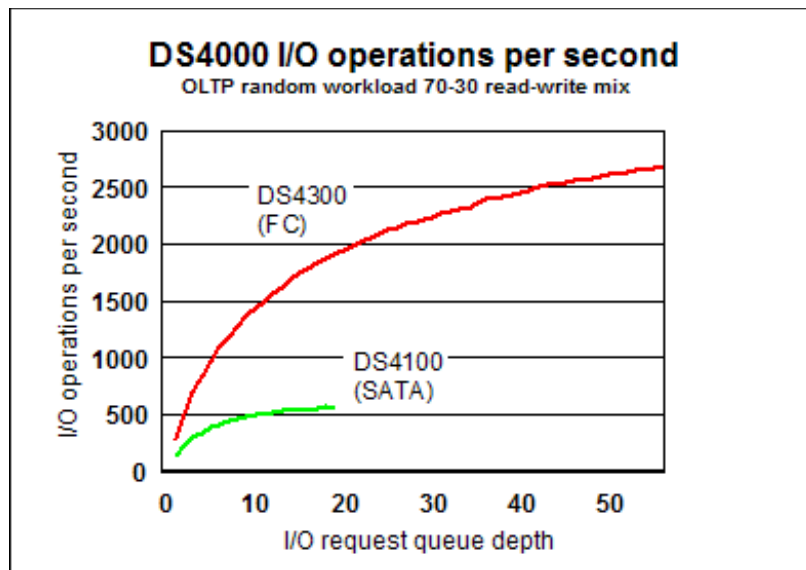
Figure 2: DS4000 throughput comparison using 70-30 read-write mix
(Configuration: 64 KB segment, Read cache enabled, 16 KB cache block, 8% drive stroke, Dual RAID controllers, RAID-5, 14 drives, DS4300: 15K RPM, DS4100: 7200 RPM)

The data illustrated in Figure 2 substantiates that the D4100 is designed for seldom-accessed, near-line storage. You should not implement this system as part of a storage subsystem that you use to access data frequently, such as file serving, Web serving, database applications, and mail applications. SATA drive technology is currently not robust enough to handle the duty cycles of enterprise class applications.

For more information about SATA, see:

- *Introducing IBM TotalStorage FAStT EXP100 with SATA Disks,* REDP-3794
- *Tuning IBM eServer xSeries Servers for Performance*, SG24-5287

This redpaper and redbook are available from: http://ibm.com/redbooks

For more detailed DS4000 performance information, read the following papers written by Charles Stephan of the xSeries Performance Lab:

- *Comparison of the Performance of the DS4300 (FAStT600) and FAStT200 Storage Servers*
- *Comparison of the Performance of the DS4500 (FAStT900) and DS4400 (FAStT700) Storage Servers*

These papers are both available in from:
http://www.pc.ibm.com/ww/eserver/xseries/benchmarks/related.html

Related product families

Product families related to this document are the following:

- Host Bus Adapters

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