Subsystem Performance Testing Report for

EonStor® DS S24E-G2142-6

Table of Contents

1. Performance Configuration

Below is a description of the benchmarking testing environment and includes specifications for the server hardware, disk drive, subsystem, management tools of the subsystem and the software-testing tool. The industry standard test application IOMeter was used to measure the performance of the unit. This system comes with the standard Infortrend management software SANWatch®. Telnet and RS-232 connections can be used to manage the subsystem as well.

1.1 Testing Configuration

RAID	Controller	DS S24E-G2142-6
	FW	3.85D.21(FA385D21_224_IFT_ESDSG6S6G.BIN)
	RAM	1GB DDR SDRAM
	Drives	RAID: Hitachi SAS 300GB (Model: HUS156030VLS600; Capacity: 300GB; Speed: 6G; 15,000 RPM) JBOD: HItachi SAS 300GB (Model: HUS156030VLS600; Capacity: 300GB; Speed: 6G; 15,000 RPM) * 2
	Channels	Host Channel - Channel 0, 1, 2, 3,4,5
		Drive Channel - Channel 6
	Virtual Volumes (LD RAID5 / 6) (Six Channel)	LV0 - Host channel 0; ID 0; LUN 0; 9 drives/channel; 1 partition
		LV1 - Host channel 1; ID 0; LUN 0; 9 drives/channel; 1 partition
		LV2 - Host channel 2; ID 0 ; LUN 0; 9drives/channel; 1 partition
		LV3 - Host channel 3; ID 0 ; LUN 0; 9 drives/channel; 1 partition
		LV4 - Host channel 4; ID 0; LUN 0; 9 drives/channel; 1 partition

		LV5 - Host channel 5; ID 0; LUN 0; 9 drives/channel; 1 partition
	Virtual Volumes (LD RAID5 / 6) (Dual Group)	LV0 – Group0 (Host channel 0,1,2); ID 0; LUN 0;28drives/channel; 1 partition
		LV1 – Group1(Host channel 3,4,5); ID 0; LUN 0; 28 drives/channel; 1 partition
	Setting	Optimization for – Sequential, (Raid 5 / 6 Default stripe size 128K)
		Periodic Drive Check Time – Disable
		Periodic SAF-TE and SES Device Check Time – Disable
		Verification on Normal Drive Writes – Disable
		Verification on LD Rebuild Writes – Disable
		Max Drive Response Timeout – Disable
		Drive Delayed Write – Enable
		Jumbo Frame – Enable
		BBU – ON
Server*2 (Host)	M/B	SUPERMICRO X8 DTN Single
	CPU	Intel Xeon E5506 2.13GHz
	RAM	Kingston 2GB DDRIII 1333 DIMM * 12
	PCI	PCI-X 64-bit/133MHz *3,PCI-E 2.0 X8*2,PCI-E X4*1
	System Drive	SATA WD 1500HLFS 150G(WXL908026216)
	OS.	Microsoft Windows Server 2003 Enterprise Edition R2 (With Service Pack 2)
HBA	On Board Lan	Intel 82576 Gigabit Dual Port Network Adapter
	Intel Lan	Intel Pro/1000 MT Dual Port Network Adapter
Benchmark	IOmeter	2004.07.30
	I/O Tool Setting	Outstanding I/O - 16 for MB/s; (Random - 256 for IO/s , Sequential - 64 for IO/s)
		Ramp Up Time: 40 sec.
		Run Time: 30 sec.
		One LD Corresponds to One Worker.
		All Cache : Maximum Disk Size 10240
		Align I/Os on

2. Performance Test Results

The Performance test results are listed below.

NOTE:

1. In the following sections, “write-back” is abbreviated as **WB** and “write-through” is abbreviated as **WT**.
2. End-to-End four-channel IOPS Read having a lower performance than dual-channel configuration is a known issue, and will be resolved in the coming release of firmware.

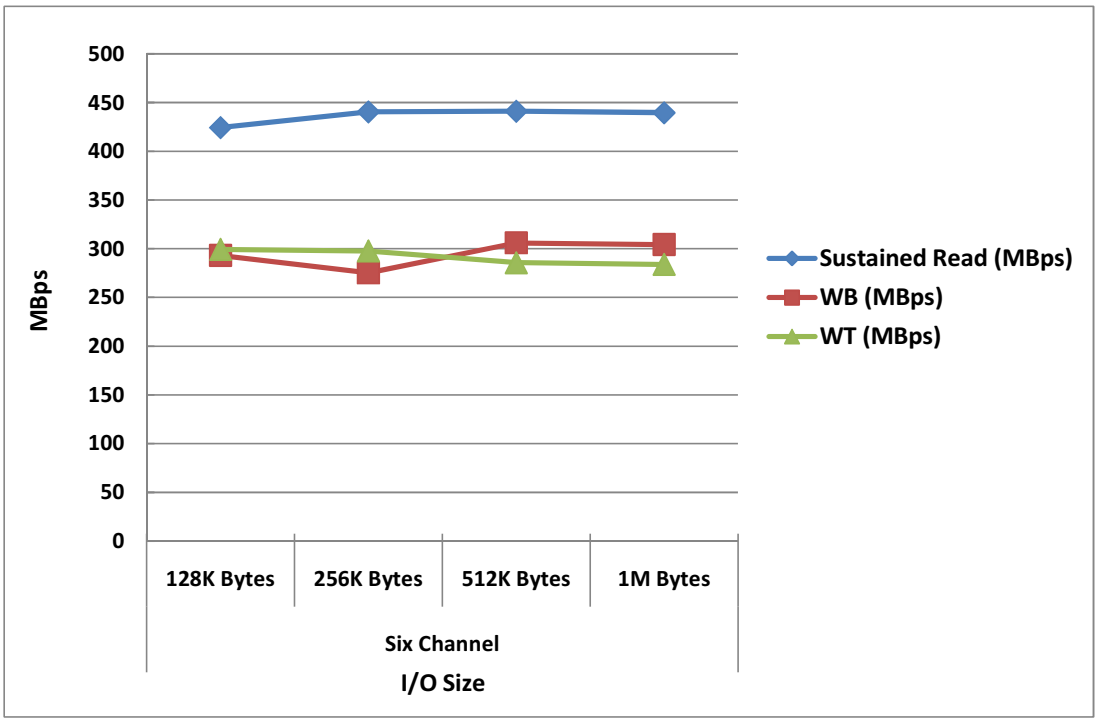
2.1 End-to-End RAID 5 Performance

2.11 Sequential I/O

>> Six Channel

Data Transfer Rate (MBps)

I/O Parameters		Read (MB/sec)	WB (MB/sec)	WT (MB/sec)
Host Channels	**I/O Size**			
Six Channel	128K Bytes	424.49	293.32	299.35
	256K Bytes	440.62	275.39	297.78
	512K Bytes	441.19	306.22	285.66
	1M Bytes	439.67	304.55	284.03



Data Access Rate (IOPS)

I/O Parameters		Read (IOPS)	WB (IOPS)
Host Channels	I/O Size		
Six Channel	512 Bytes	40760.58	25838.55
	4K Bytes	32779.49	19176.71

2.12 Random I/O

>> Six Channel

Data Transfer Rate (IOPS)

I/O Parameters		Read (IOPS)	WB (IOPS)
Host Channels	I/O Size		
Six Channel	512 Bytes	10314.60	5074.82
	4K Bytes	10532.56	4893.44

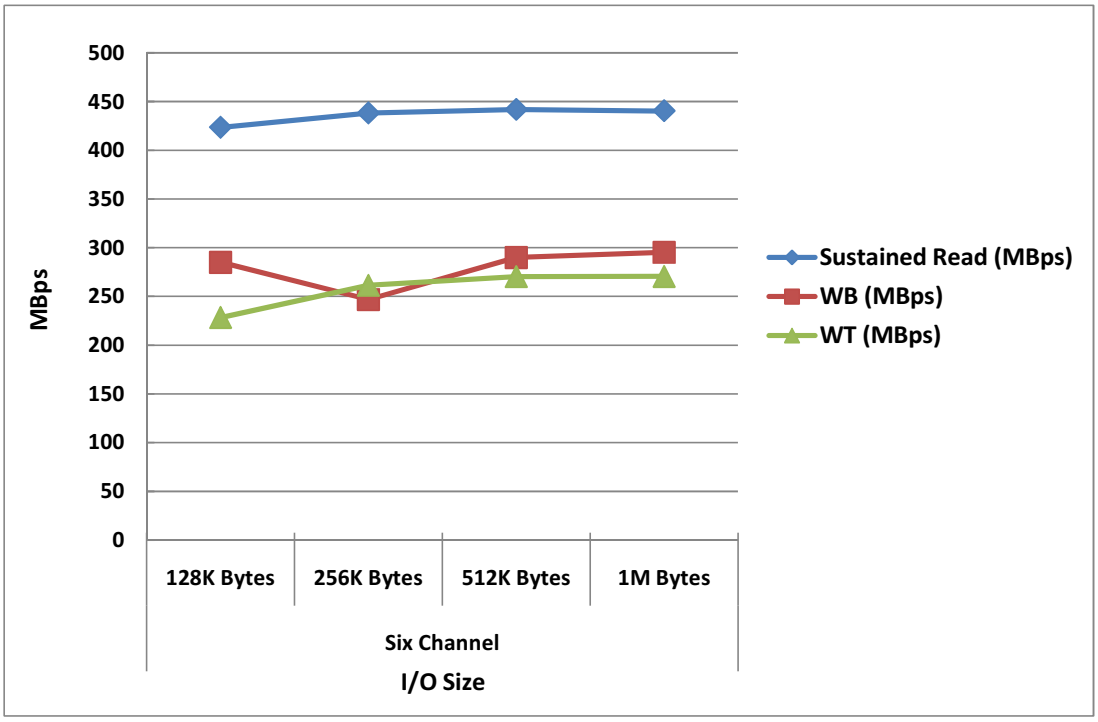
2.2 End-to-End RAID 6 Performance

2.21 Sequential I/O

>> Six Channel

Data Transfer Rate (MBps)

I/O Parameters		Read (MB/sec)	WB (MB/sec)	WT (MB/sec)
Host Channels	I/O Size			
Six Channel	128K Bytes	423.78	285.13	228.61
	256K Bytes	438.38	246.97	261.57
	512K Bytes	441.97	290.05	270.47
	1M Bytes	440.64	295.45	270.74



Data Access Rate (IOPS)

I/O Parameters		Read (IOPS)	WB (IOPS)
Host Channels	I/O Size		
Six Channel	512 Bytes	40016.49	26233.66
	4K Bytes	31355.31	18524.08

2.22 Random I/O

>> Six Channel

Data Transfer Rate (IOPS)

I/O Parameters		Read (IOPS)	WB (IOPS)
Host Channels	**I/O Size**		
Six Channel	512 Bytes	10340.41	4101.51
	4K Bytes	10474.77	3987.96

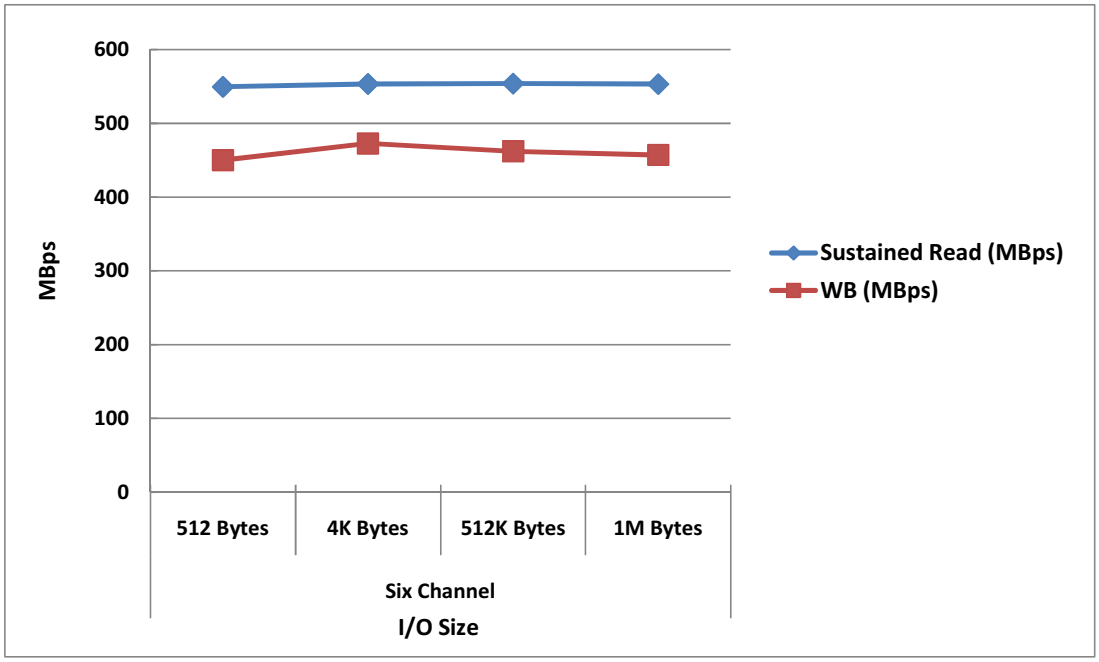
2.3 All Cache Hit RAID 5 Performance

2.31 Sequential I/O

>> Six Channel

Data Transfer Rate (MBps)

I/O Parameters		Read (MB/sec)	WB (MB/sec)
Host Channels	I/O Size		
Six Channel	128K Bytes	549.50	450.13
	256K Bytes	553.41	472.75
	512K Bytes	554.10	462.10
	1M Bytes	553.29	457.12



2.8 All Cache Hit RAID 6 Performance

2.81 Sequential I/O

>> Six Channel

Data Transfer Rate (MBps)

I/O Parameters		Read (MB/sec)	WB (MB/sec)
Host Channels	I/O Size		
Six Channel	128K Bytes	550.15	440.65
	256K Bytes	557.34	466.62
	512K Bytes	553.74	452.05
	1M Bytes	554.55	449.52