



Subsystem Performance Testing Report for

EonStor® DS S16F-G2842-6

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Table of Contents

1. Performance Configuration.....	3
1.1 Testing Configuration	3
2. Performance Test Results.....	5
2.1 End-to-End RAID 5 Performance.....	5
2.11 Sequential I/O	5
2.12 Random I/O.....	6
2.2 End-to-End RAID 6 Performance.....	7
2.21 Sequential I/O	7
2.22 Random I/O.....	8
2.3 All Cache Hit RAID 5 Performance	9
2.31 Sequential I/O	9
2.4 All Cache Hit RAID 6 Performance	10
2.41 Sequential I/O	10

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 S16F-G2842-6
	FW	3.86A.05(FA386A05_303_IPT_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)
	Channels	Fiber Host Channel - Channel 0, 1, 2, 3 ; Iscsi Host Channel - Channel 4,5
		Drive Channel - Channel 6
	Virtual Volumes (RAID5 / 6) (Dual Channel)	LV0 – Host channel 0; ID 112; LUN 0; 16 drives/channel; 1 partition
		LV1 – Host channel 1 ; ID 112; LUN 0; 16 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		
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)
	OS Register	MaximumSGList: FF (Hexadecimal) NumberOfRequests: FF (Hexadecimal)
HBA	Qlogic	QLE2562 , BIOS VER: 2.02 ; Driver VER: 9.17.18
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.

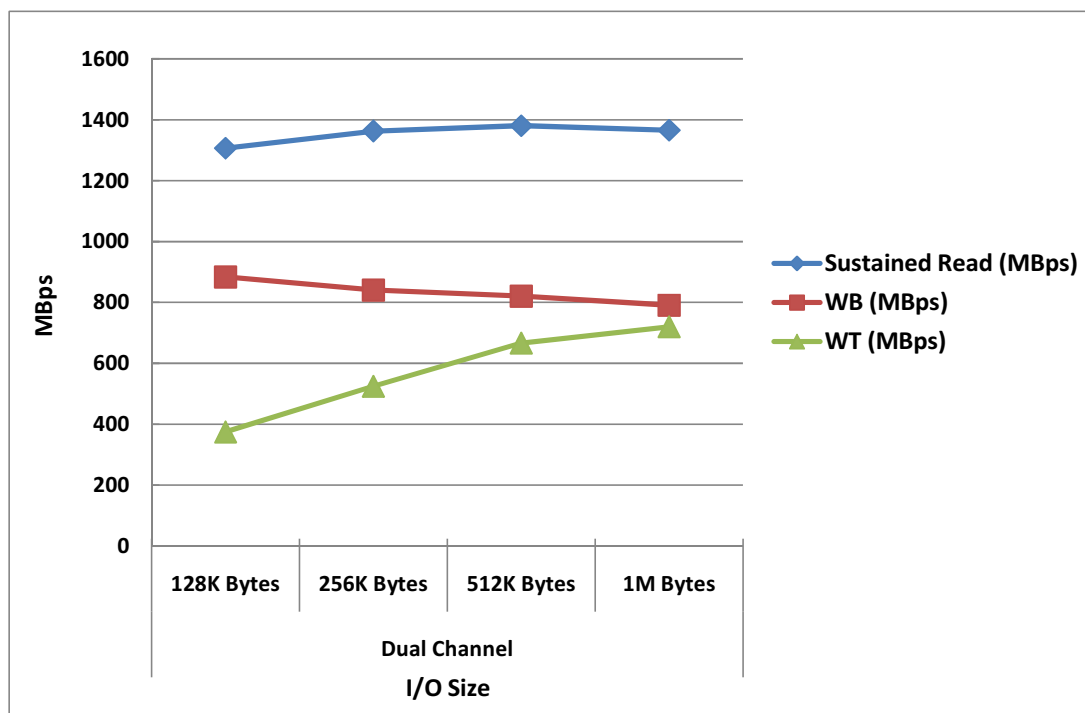
2.1 End-to-End RAID 5 Performance

2.11 Sequential I/O

>> Dual Channel

Data Transfer Rate (MBps)

I/O Parameters		Read	WB	WT
Host Channels	I/O Size	(MB/sec)	(MB/sec)	(MB/sec)
Dual Channel	128K Bytes	1306.90	884.23	375.20
	256K Bytes	1363.41	841.11	525.18
	512K Bytes	1380.82	821.49	667.26
	1M Bytes	1366.04	790.92	720.77



Data Access Rate (IOPS)

I/O Parameters		Read (IOPS)	WB (IOPS)
Host Channels	I/O Size		
Dual Channel	512 Bytes	76808.64	56978.49
	4K Bytes	64019.79	45967.87

2.12 Random I/O

>> Dual Channel

Data Transfer Rate (IOPS)

I/O Parameters		Read (IOPS)	WB (IOPS)
Host Channels	I/O Size		
Dual Channel	512 Bytes	9188.33	4164.42
	4K Bytes	9201.89	4205.99

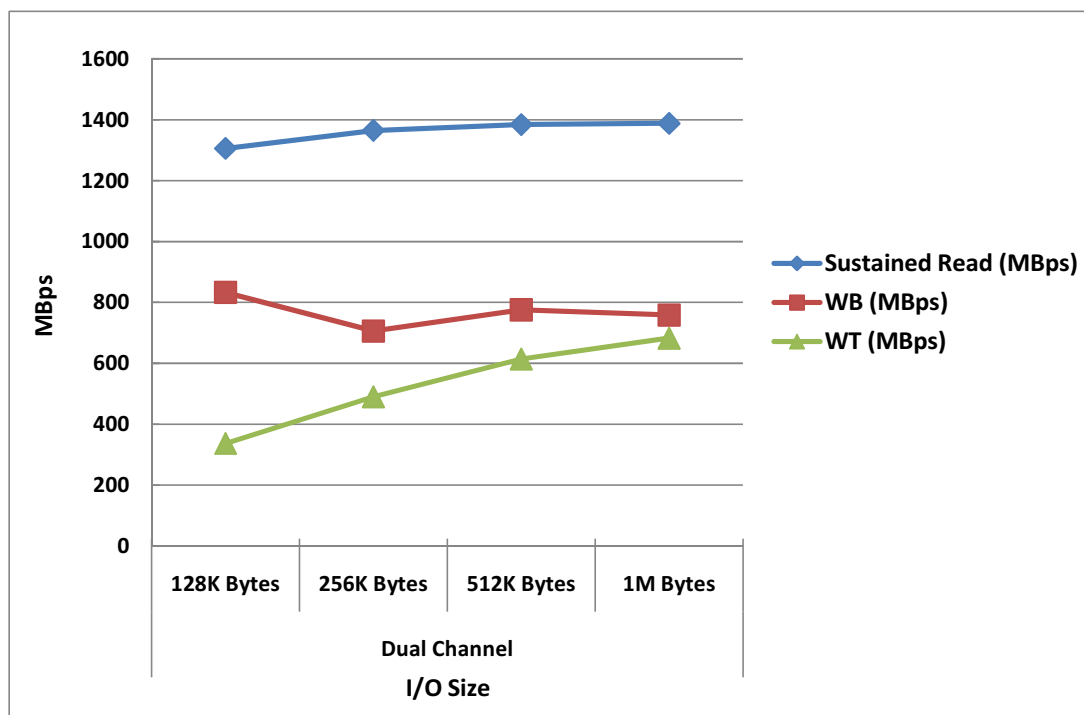
2.2 End-to-End RAID 6 Performance

2.2.1 Sequential I/O

>> Dual Channel

Data Transfer Rate (MBps)

I/O Parameters		Read	WB	WT
Host Channels	I/O Size	(MB/sec)	(MB/sec)	(MB/sec)
Dual Channel	128K Bytes	1306.31	832.75	337.34
	256K Bytes	1365.41	706.53	490.18
	512K Bytes	1384.57	776.09	614.32
	1M Bytes	1388.30	758.98	682.81



Data Access Rate (IOPS)

I/O Parameters		Read	WB
Host Channels	I/O Size	(IOPS)	(IOPS)
Dual Channel	512 Bytes	76034.91	56262.03
	4K Bytes	63373.35	44505.38

2.22 Random I/O

>> Dual Channel

Data Transfer Rate (MBps)

I/O Parameters		Read	WB
Host Channels	I/O Size	(IOPS)	(IOPS)
Dual Channel	512 Bytes	9060.06	2939.25
	4K Bytes	9066.77	2927.05

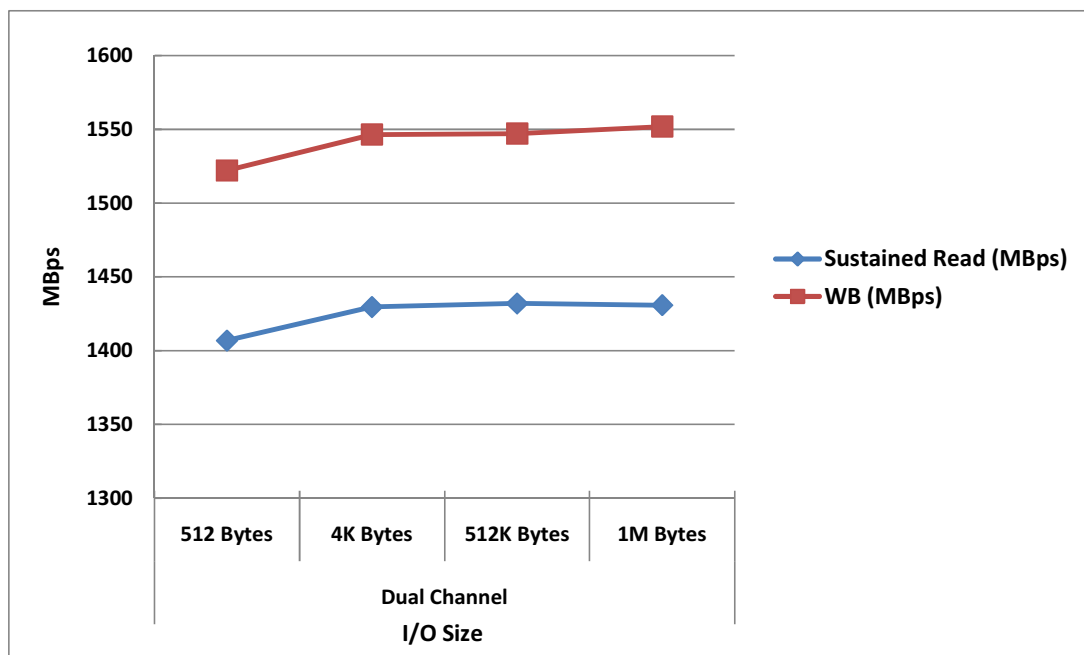
2.3 All Cache Hit RAID 5 Performance

2.3.1 Sequential I/O

>> Dual Channel

Data Transfer Rate (MBps)

I/O Parameters		Read (MB/sec)	WB (MB/sec)
Host Channels	I/O Size		
Dual Channel	128K Bytes	1406.78	1522.12
	256K Bytes	1429.63	1546.44
	512K Bytes	1432.02	1547.01
	1M Bytes	1430.79	1551.90



2.4 All Cache Hit RAID 6 Performance

2.4.1 Sequential I/O

>> Dual Channel

Data Transfer Rate (MBps)

I/O Parameters		Read (MB/sec)	WB (MB/sec)
Host Channels	I/O Size		
Dual Channel	128K Bytes	1409.56	1521.95
	256K Bytes	1429.54	1546.51
	512K Bytes	1432.22	1547.19
	1M Bytes	1431.81	1551.97

