Intel SR2612UR
storage system

Table of contents

Test description and environment

Copy data between Intel SR2612UR with Open-E DSS V6 and Workstation with MS Windows 2003.

Test topology

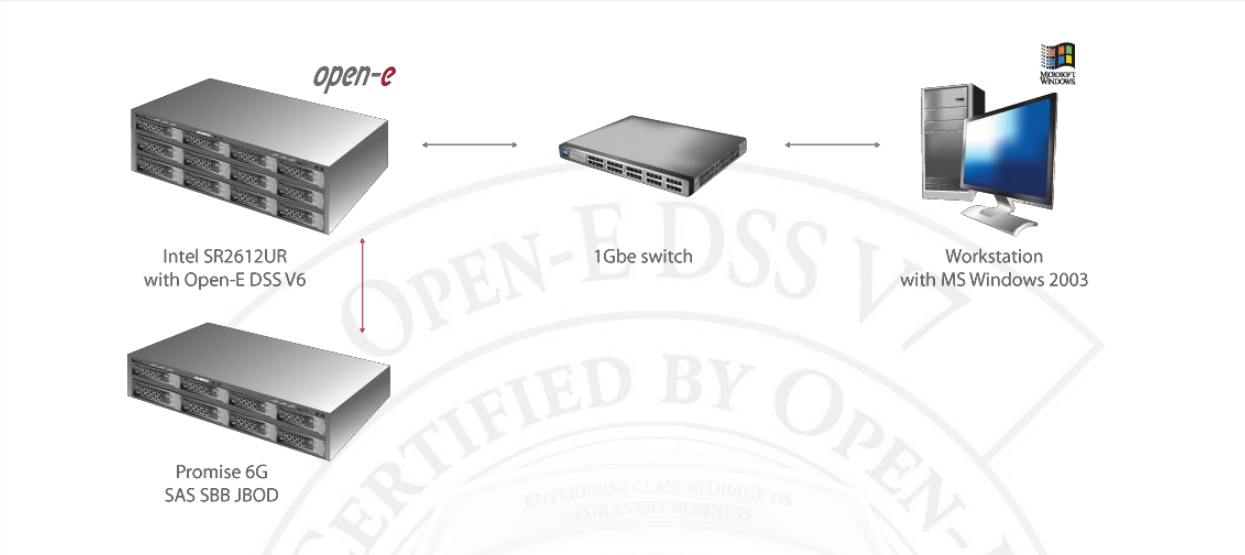

FIGURE 1: Connection between Intel SR2612UR and Workstation with MS Windows 2003

1. Intel SR2612UR with Open-E DSS V6

Model	Intel SR2612UR "Timber Creek"
Operating system	Open-E DSS V6 build 4452
Motherboard	Intel S5520UR[1]
CPU	2x Intel Xeon Quad-core E5540 2.53GHz[2]
Memory	8GB DDR3 ECC-REG
Network controller	Intel PRO/1000 dual (i82575EB) [vid:8086, did:10a7][3]
Network controller	Intel PRO/1000 ET Quad (i82576EB) [vid:8086, did:10c9]
HW RAID controller	LSI 9280-8E[4] [vid:1000, did:0079]
HW RAID controller	Intel SRCSASLS4I[5] [vid:1000, did:0079]
Hard disks set	4 x 500GB Western Digital WD5002ABYS SATAII Drives[6]

TABLE 1: Intel SR2612UR details

1 Chipset Intel i5520+ICH10, IPMI 2.0
http://www.intel.com/Products/Server/Motherboards/S5520UR/S5520UR-specifications.htm
2 8M Cache, 2.53 GHz, 5.86 GT/s Intel® QPI , 4 Cores HT, FCLGA1366, http://ark.intel.com/Product.aspx?id=37104
3 vid, did - vendor id, device id
4 External SAS +SATA, PCI-E
http://www.lsi.com/storage_home/products_home/internal_RAID/megaRAID_sas/6gb_s_feature_line/sas9280-8e/index.html
5 Internal SAS +SATA, PCI-E
http://www.intel.com/Products/Server/RAID-controllers/SRCSASLS4I/SRCSASLS4I-overview.htm
6 Drives mounted inside Promise VTrak Jx30 6Gb/s Series [SAS Storage Bay Bridge (SSB) 2.0 JBOD] storage subsystem attached to LSI 9280-8E
http://www.promise.com/storage/RAID_series.aspx?region=en-US&m=151&rsn1=1&rsn3=25

1.1 Intel SR2612UR pictures

PICTURE 1: Intel SR2612UR server – front panel

PICTURE 2: Intel SR2612UR server – back panel

PICTURE 3: Intel SR2612UR server – inside

2. 1GbE switch

Model	Planet GSW-2401
Operating system	24 port Gigabit managed switch

TABLE 2: 1GbE switch details

3. Workstation with MS Windows 2003

Model	Custom
Operating System	MS Windows 2003 R2 SP1 Enterprise Edition
Motherboard	Supermicro X6DVA-4G2
CPU	Intel Xeon 3.20Ghz
Memory	1GB DDR2 ECC
Network controller	Intel PRO/1000 MT dual (i82541PI) [vid:8086, did:1076][7]
HW RAID controller	LSI 1020 Single Channel Ultra320 SCSI [vid:1000, did:0030]
Hard disks set	1x 160GB Seagate ST3160815AS SATAII Drive[8]

TABLE 3: Workstation details

7 Built on board
8 Hard disk drive attached to built on board SATA controller

Test execution

Functionality test results

1. Hardware monitoring and Intel I/O AT

Hardware monitoring (IPMI)	OK
Intel I/O AT	OK

TABLE 4: Hardware monitoring functionality details

2. Recognized controllers

Network controllers	Intel Corporation 82575EB Gigabit Network Connection (rev 02) Intel Corporation 82575EB Gigabit Network Connection (rev 02) bus master, fast devsel, latency 0, IRQ 32 bus master, fast devsel, latency 0, IRQ 42 bus master, fast devsel, latency 0, IRQ 33 bus master, fast devsel, latency 0, IRQ 31	OK
RAID/SCSI controllers	LSI Logic / Symbios Logic LSI MegaSAS 9260 (rev 03) LSI Logic / Symbios Logic MegaRAID SAS 1078 (rev 04)	OK

TABLE 5: Recognized controllers details

3. Used drivers

Network drivers	Ethernet Channel Bonding Driver, v3.3.0 Intel(R) Gigabit Ethernet Network Driver	OK
RAID/SCSI drivers	SCSI disk (type 0) and CDROM (type 5) dev handler for SCST using files on file systems or block devices SCSI target core SCSI tape (st) driver iSCSI/TCP data-path iSCSI library functions iSCSI Transport Interface SCSI generic (sg) driver LSI MegaRAID SAS Driver	OK

TABLE 6: Used drivers details

Performance test results

1. Write and read test on locally attached disk devices

Write to/read from 4 SAS disks mounted inside Promise 6G and attached to LSI MegaSAS 9260 RAID controller using dd with block size between 4KB and 4MB. All disk drives are configured into RAID0. This test shows how fast is connection between disks drives and the RAID controller.

Block size [KB]	Write data [MB/s]	Read data [MB/s]
4	519	513
32	519	513
64	519	513
1024	519	513
4096	519	513

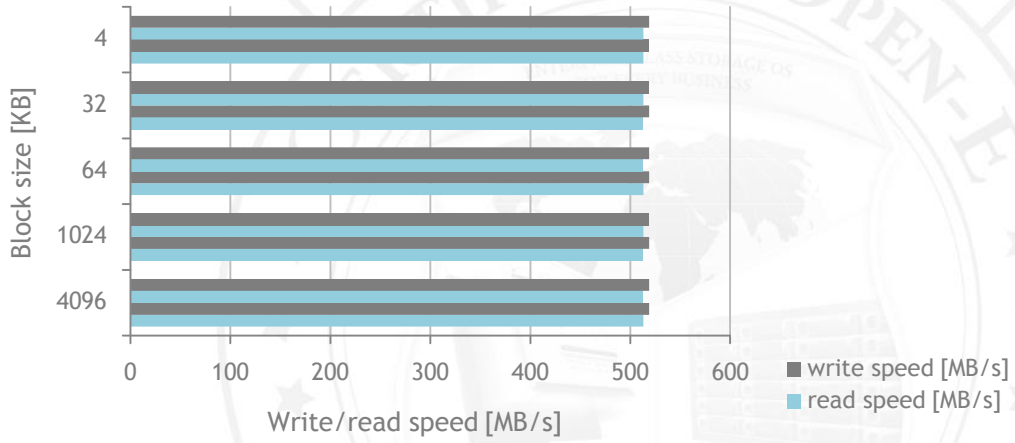

FIGURE 2: Table and chart with write and read speed results for locally attached disk devices (RAID0)

2. Write and read test on Block I/O Write-through iSCSI device connected to *Workstation* via1GbE controller.

Write to/read from disk device exported by *Intel SR2612UR with Open-E DSS V6* and connected via iSCSI to the *Workstation with MS Windows 2003 R2 SP1* using bst5 benchmark with blocksize between 4KB and 4MB. All disk drives on target side (certified *Intel SR2612UR with Open-E DSS V6* running on it) exported via iSCSI are configured into RAID0. Exported lun size is 50GB and type is Block I/O. The mtu parameter is set to 1500. The target side is connected by Intel PRO/1000 dual (i82575EB) 1GbE network controller and the initiator side is connected by Intel PRO/1000 MT dual (i82541PI) 1GbE network controller. Network connection topology is shown on **Test topology: FIGURE 1**.

Block size [KB]	Write data [MB/s]	Read data [MB/s]
4	4.6	15.2
32	9.8	42.6
64	17.3	57.6
128	36.6	70.3
256	43.7	78.5
512	52.7	90.7
1024	58.5	90.3
4096	105.4	87.7

FIGURE 3: Table and chart with write and read speed results for Block I/O Write-through iSCSI device (RAID0)

3. Write and read test on SMB share connected to *Workstation* via 1GbE controller.

Write to/read from SMB share exported by *Intel SR2612UR* and mapped via SMB to the *Workstation with MS Windows 2003 R2 SP1* using bst5 benchmark with block size between 4KB and 4MB.
All disk drives on server side (certified *Intel SR2612UR with Open-E DSS V6* running on it) exported via SMB are configured into RAID0. Exported SMB share size is 50GB.
The mtu parameter is set to 1500. The server side is connected by Intel PRO/1000 dual (i82575EB) 1GbE network controller and the client side is connected by Intel PRO/1000 MT dual (i82541PI) 1GbE network controller Network connection topology is shown on **Test topology: FIGURE 1.**

Block size [KB]	Write data [MB/s]	Read data [MB/s]
4	15.1	15.3
32	45.8	44
64	61.2	47.3
128	81.2	56.3
256	94.9	64.1
512	97.7	63.9
1024	102.1	59.5
4096	105.2	65.3

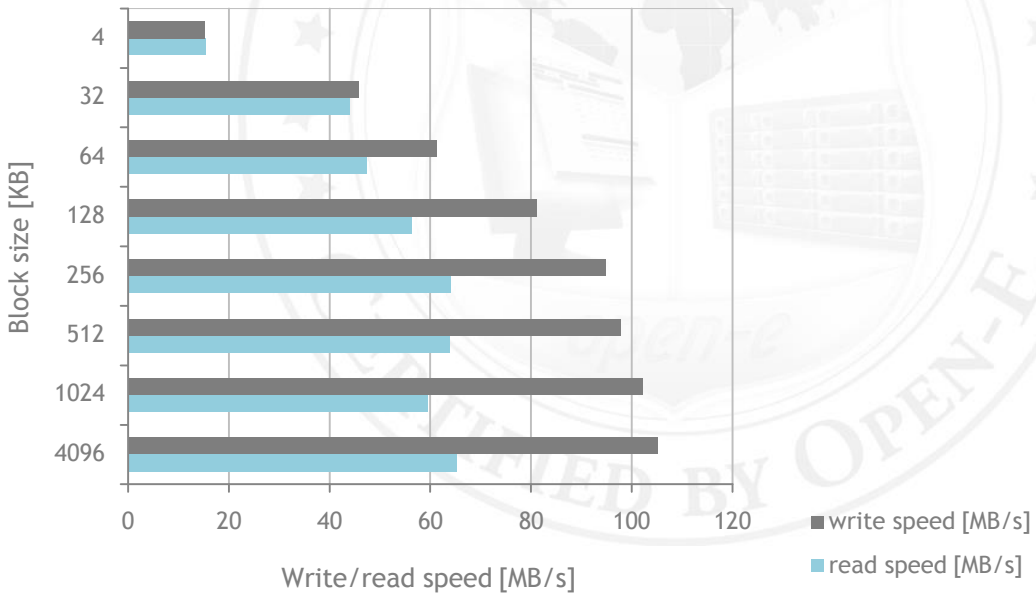

FIGURE 4: Table and chart with write and read speed results for SMB share (RAID0)

Stability test results

1. Writing and reading data on lun and share exported by Intel SR2612UR to Workstation

Writing and reading data on lun and share using bst5 with sequential read/write operations performed by 3 days. Operations was successful. Data transmission speed was constant all the time. There were no errors in the logs.

Day	Write speed [MB/s]	Read speed [MB/s]
1st	102.1	59.5
2nd	102	60
3rd	102.3	59.7

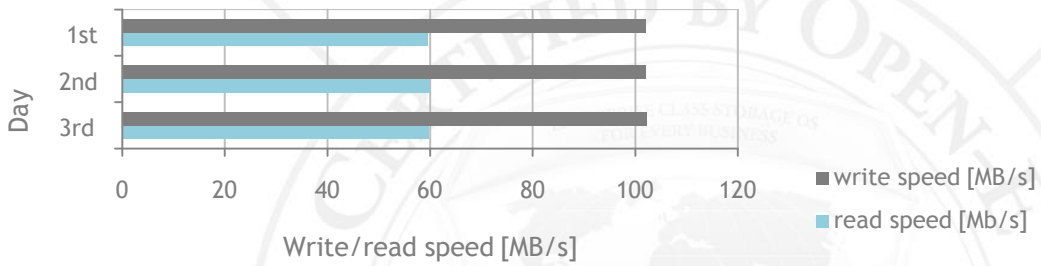

FIGURE 5: Table and chart with stability test result