Open-E High Availability Certification report for bluechip STORAGEline R52203s

Executive summary

After successfully passing all the required tests, the bluechip STORAGEline R52203s is now officially declared as Open-E High Availability Certified Storage Server.

The tests, conducted by Open-E's Quality Assurance team, prove that Open-E High Availability solution works effectively and efficiently on the certified system. The certification also signifies to customers that the bluechip STORAGEline R52203s has met specific Open-E integration and interoperability standards.

The Open-E High Availability solution, based on the bluechip STORAGEline R52203s, is considered to be stable and secure with superb performance.

Certification notes

The HA Certification Document bluechip STORAGEline R52203s has been certified according to Open-E High Availability Certified Hardware Guide v. 1.0.

High Availability solution hardware components

Technical specification of iSCSI Failover nodes is listed below:

Model	bluechip STORAGEline R52203s
Operating system	Open-E DSS V7 build 19059
Enclosure/chassis	Supermicro SuperChassis CSE-216BE1C-R920LPB
CPU	2x Intel® Xeon® Processor E5-2620 v3 2.40GHz
Motherboard	Supermicro MBD-X10DRI-B
Memory	4x 8GB Kingston KVR21R15S4/8HA DDR4 ECC REG
Network	2x Emulex OCe14102-NT Ethernet Network Adapter
Network	2x Intel® Ethernet Server Adapter I350-T2V2
HW RAID	Avago MegaRAID SAS 9361-4i
Hard disk drives	24x 480GB Samsung SSD MZ-7KM480E

TABLE 1: Hardware components list of iSCSI Failover nodes

Both iSCSI Failover nodes have the same hardware configuration as listed above.

Auxiliary systems hardware components

Auxiliary systems with MS Windows installed, used in Open-E High Available solution Hardware Certification Process.

Model	Custom
Operating system	MS Windows Server 2012 R2
Enclosure/chassis	Custom
Motherboard	Supermicro MBD-X10DRW-IT
CPU	2x Intel® Xeon® Processor E5-2660 v3 2.60GHz
Memory	8x 8GB Kingston KVR21R15S4/8HA DDR4 ECC REG
Network	2x Emulex OCe14102-NT Ethernet Network Adapter
Network	Intel® Ethernet Controller X540-AT2
Hard disk controller	Avago MegaRAID SAS 9361-4i
Hard disk drives	480GB Samsung SSD MZ-7KM480E

TABLE 2: Hardware components of first Workstations with MS Windows

Model	Custom
Operating system	MS Windows Server 2012 R2
Enclosure/chassis	Custom
Motherboard	Supermicro MBD-X10DRW-IT
CPU	2x Intel® Xeon® Processor E5-2660 v3 2.60GHz
Memory	8x 8GB Kingston KVR21R15S4/8HA DDR4 ECC REG
Network	2x Emulex OCe14102-NT Ethernet Network Adapter
Network	Intel® Ethernet Controller X540-AT2
Hard disk controller	Avago MegaRAID SAS 9361-4i
Hard disk drives	480GB Samsung SSD MZ-7KM480E

TABLE 3: Hardware components of second Workstations with MS Windows

Model	Netgear XS712
Description	12x 10GbE Copper Ethernet Ports

TABLE 4: Network switches details

Both Network switches used for performing certification tests are of the same type as listed above.

High Availability solution performance

Tests performed in this section compare the performance of Active-Passive iSCSI Failover with Active-Active iSCSI Failover available in the Open-E DSS V7 software running on the certified systems.

High Availability solution performance test topology

Network topology for High Availability solution performance testing is shown below.

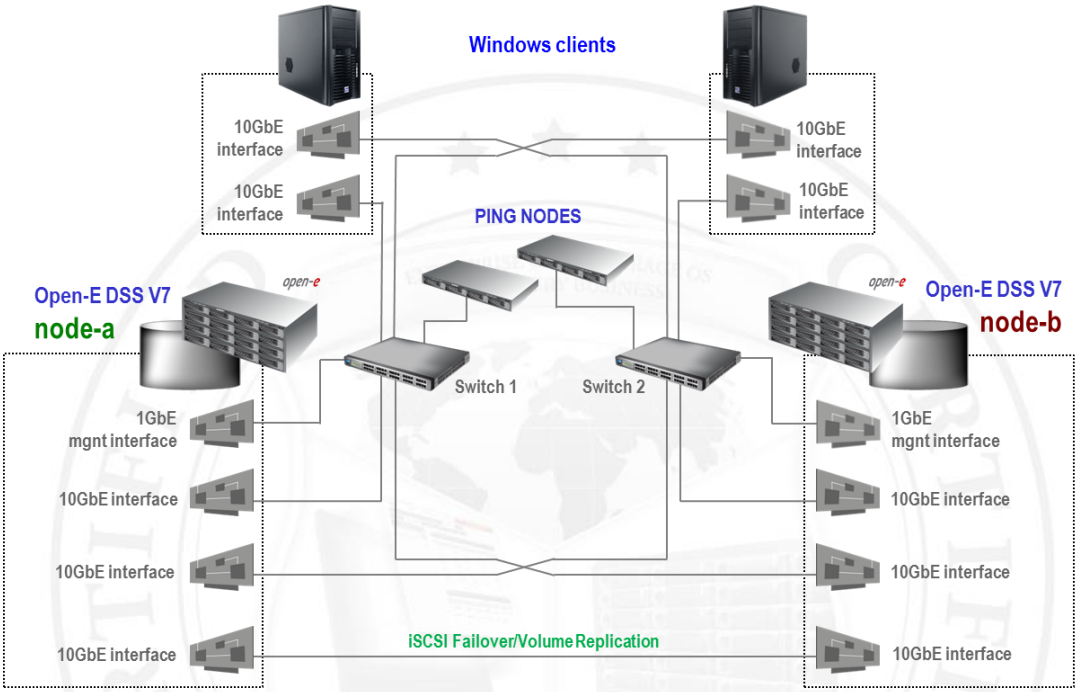

FIGURE 1: Network topology for High Availability performance testing

Active-Passive iSCSI Failover data throughput performance test

1. Test description

The test relies on using the iSCSI targets exported by Active-Passive iSCSI Failover running on certified systems. The data are copied from four *Workstations with MS Windows* equipped with two 1GbE interfaces each to iSCSI targets located on one active node using the Iometer tool. One 10GbE interface is used on each node for Volume replication.

2. Test results for Active-Passive iSCSI Failover data throughput performance using Emulex OCe14102-NT Ethernet Network Adapter on one active node

Active-Passive iSCSI Failover data throughput performance test results			
Block size [KB]	Total write throughput [MB/s]	Total read throughput [MB/s]	Performance test results
4	210.96	284.79	passed
32	839.18	1477.31	passed
64	1224.67	1965.15	passed
128	1495.99	1943.56	passed
256	1292.65	1372.53	passed
512	2073.06	2182.49	passed
1024	2023.84	2168.73	passed
4096	2012.89	1132.91	passed

TABLE 5: Active-Passive iSCSI Failover data throughput performance test results table for Emulex OCe14102-NT Ethernet Network Adapter on one active node

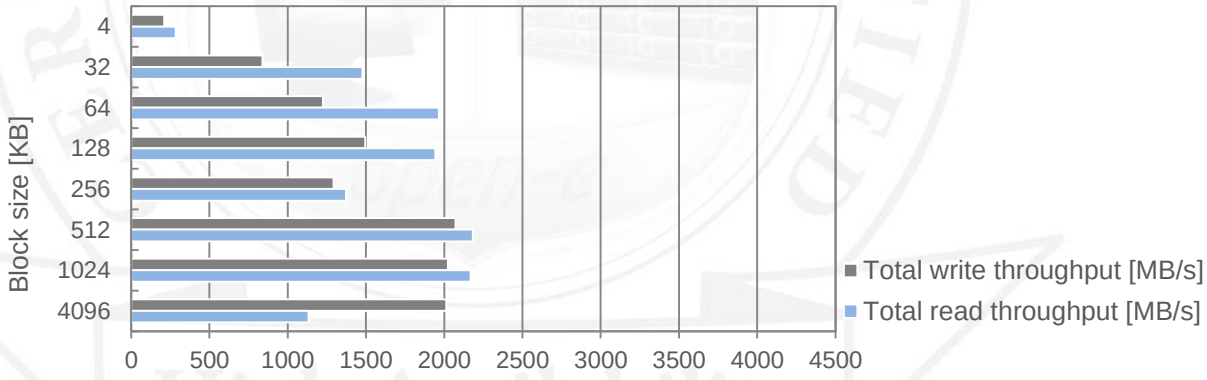

FIGURE 2: Active-Passive iSCSI Failover data throughput performance test results chart for Emulex OCe14102-NT Ethernet Network Adapter on one active node

Active-Active iSCSI Failover data throughput performance test

1. Test description

The test relies on using the iSCSI targets exported by Active-Active iSCSI Failover running on certified systems. The data are copied from four *Workstations with MS Windows* equipped with two 1GbE interfaces each to iSCSI targets located on two active nodes using the Iometer tool. One 10GbE interface is used on each node for Volume replication.

2. Test results for Active-Active iSCSI Failover data throughput performance using Emulex OCe14102-NT Ethernet Network Adapter on both active nodes

Active-Active iSCSI Failover data throughput performance test results			
Block size [KB]	Total write throughput [MB/s]	Total read throughput [MB/s]	Performance test results
4	207.77	287.11	passed
32	882.57	1535.30	passed
64	1293.11	2352.77	passed
128	1627.14	3170.99	passed
256	1974.24	3789.46	passed
512	2793.83	4363.17	passed
1024	3424.26	4324.44	passed
4096	2887.30	2077.45	passed

TABLE 6: Active-Active iSCSI Failover data throughput performance test results table for Emulex OCe14102-NT Ethernet Network Adapter on both active nodes

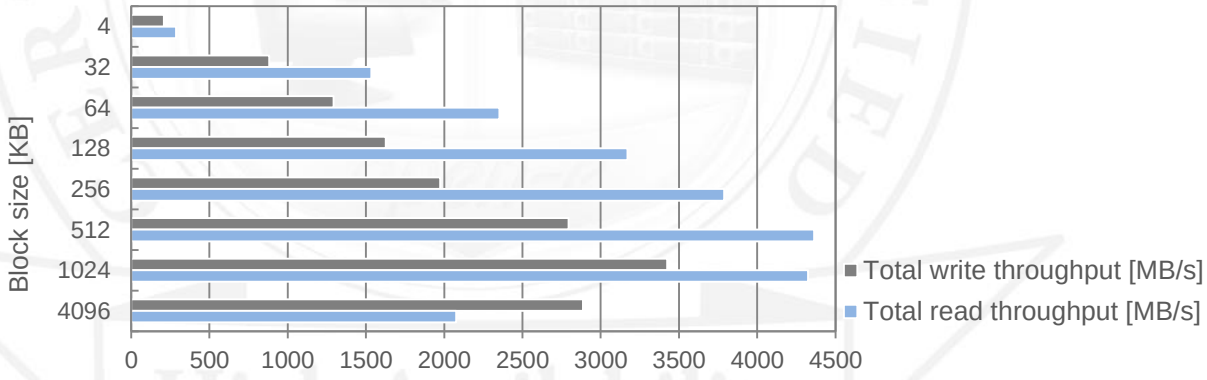

FIGURE 3: Active-Active iSCSI Failover data throughput performance test results chart for Emulex OCe14102-NT Ethernet Network Adapter on both active nodes

Active-Passive iSCSI Failover resource group switching time test

1. Test description

The test relies on copying data of 4MB block size using the Iometer tool from four *Workstations with MS Windows* equipped with two 1GbE interfaces each to iSCSI targets located on one active node. The Resource group switching time is measured under high load for 2, 10 and 20 iSCSI targets located on one active node. One 10GbE interface is used on each node for Volume replication.

2. Test results for Active-Passive iSCSI Failover resource group switching time using Emulex OCe14102-NT Ethernet Network Adapter on both active nodes

Active-Passive iSCSI Failover resource switching time test results		
Total number of targets	Switching time [seconds]	Performance test results
2	15	passed
10	17	passed
20	23	passed

TABLE 7: Active-Passive iSCSI Failover resource group switching time test results table for Emulex OCe14102-NT Ethernet Network Adapter on one active node

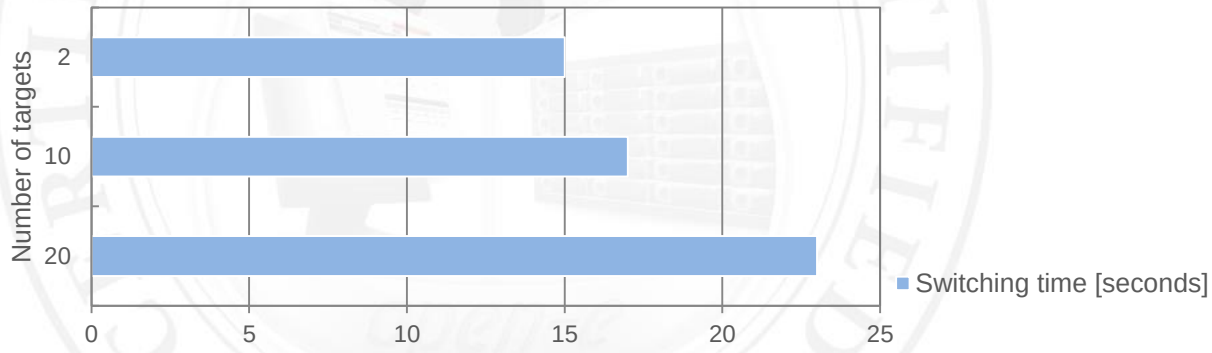

FIGURE 4: Active-Passive iSCSI Failover resource group switching time test chart for Emulex OCe14102-NT Ethernet Network Adapter on one active node

Active-Active iSCSI Failover resource group switching time test

1. Test description

The test relies on copying data of 4MB block size using the Iometer tool from four *Workstations with MS Windows* equipped with two 1GbE interfaces each to iSCSI targets located on two active nodes. The Resource group switching time is measured under high load for 2, 10 and 20 iSCSI targets located on two active nodes. One 10GbE interface is used on each node for Volume replication.

2. Test results for Active-Active iSCSI Failover resource groups switching time using Emulex OCe14102-NT Ethernet Network Adapter on both active nodes

Active-Active iSCSI Failover resource switching time test results		
Total number of targets	Switching time [seconds]	Performance test results
2	5	passed
10	6	passed
20	11	passed

TABLE 8: Active-Active iSCSI Failover resource groups switching time test results table for Emulex OCe14102-NT Ethernet Network Adapter on both active nodes

FIGURE 5: Active-Active iSCSI Failover resource groups switching time test chart for Emulex OCe14102-NT Ethernet Network Adapter on both active nodes

High Availability solution functionality

Tests performed in this section analyze the functionality of High Availability solution configured as Active-Active iSCSI Failover, available in the Open-E DSS V7 product on the certified systems.

High Availability solution functionality test topology

Network topology for High Availability solution functionality testing is presented below.

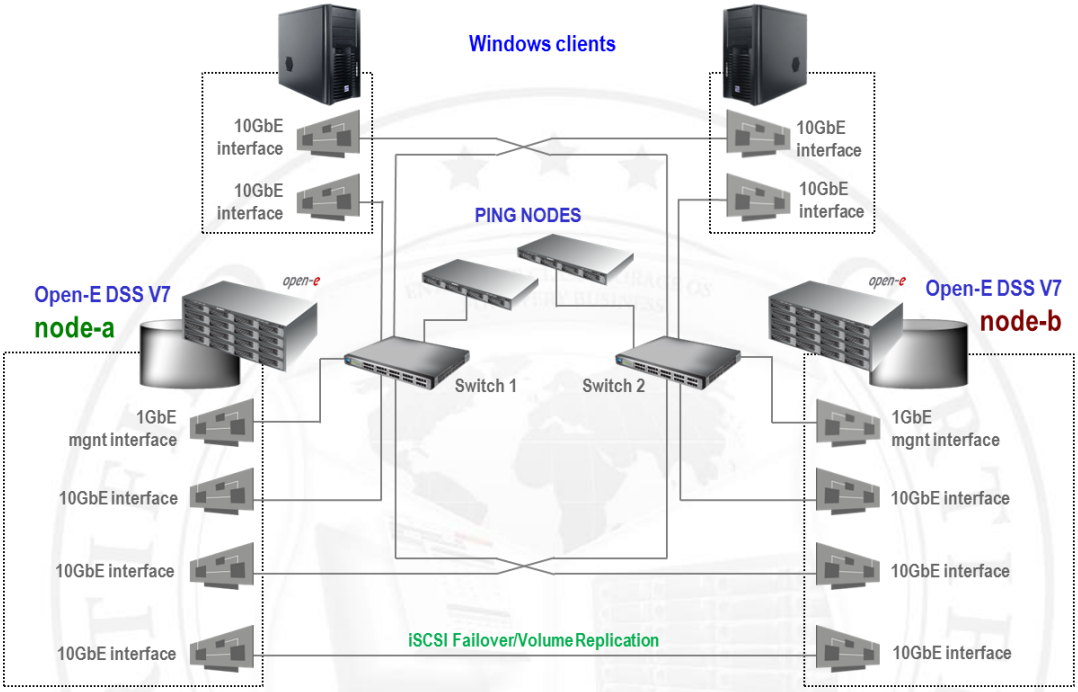

FIGURE 6: Network topology for High Availability solution functionality testing

High Availability solution functionality test

1. Test description

The test relies on performing various actions which should cause Resource group switching during copying data from four *Workstations with MS Windows* equipped with two 1GbE interfaces each to iSCSI targets exported by Active-Active iSCSI Failover. It tests whether failover occurs and if all resources are still reachable for 20 iSCSI targets located on two active nodes. One 10GbE interface is used on each node for Volume replication.

2. Test results for High Availability solution functionality

High Availability solution functionality test		
Total number of targets	**Test case**	**Test results**
20	Manual resources transfer test	passed
20	Network malfunction test	passed
20	Reboot test	passed
20	Shutdown test	passed
20	I/O error test	passed

TABLE 9: *High Availability solution functionality test results table*