

# N-TEC rapidServe 316-G4 storage system



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## N-TEC rapidServe 316-G4 hardware components

Below is listed technical information about certified system.

Model	N-TEC rapidServe 316-G4
Operating system	Open-E DSS V6 build 5626
Enclosure/chassis	N-TEC rapidServe 316-G4 3U
CPU	Intel Xeon E5502 1.87GHz
Motherboard	Supermicro X8DTL-iF
Memory	3x 2GB DDR3 ECC Kingston KVR1333D3E9SK3/6G
Network	2x Intel 1GbE (i82574L)
HW RAID	Areca ARC-1680IX-16
Hard disk drives	16x 1TB Hitachi Ultrastar A7K2000 HUA722010CLA330

*TABLE 1: Hardware components list of Certified System with Open-E DSS V6*

All components was detected and properly recognized.



## N-TEC rapidServe 316-G4 photos



FIGURE 1: Front photo



FIGURE 2: Rear photo



FIGURE 3: Top photo

## Auxiliary systems hardware components

Auxiliary systems with MS Windows or Open-E DSS V6 installed on it, used in Open-E hardware certification process.

Model	Custom
Operating system	MS Windows Server 2008 R2
Enclosure/chassis	lpc-4u-600
Motherboard	Asus R7F-X
CPU	Intel Core i7-870 2.93GHz
Memory	8GB
Network controller	Intel PRO/1000 PT Quad LP Server Adapter
HW RAID controller	None
Hard disk drives	4x 1TB Seagate Barracuda

TABLE 2: Hardware components of first Workstation with MS Windows

Model	Custom
Operating system	MS Windows Server 2008 R2
Enclosure/chassis	lpc-4u-600
Motherboard	Asus R7F-X
CPU	Intel Core i7-870 2.93GHz
Memory	8GB
Network controller	Intel PRO/1000 PT Quad LP Server Adapter
HW RAID controller	None
Hard disk drives	4x 1TB Seagate Barracuda

TABLE 3: Hardware components of second Workstation with MS Windows

Model	Custom
Operating system	Open-E DSS V6 5625
Enclosure/chassis	lpc-4u-600
Motherboard	Asus R7F-X
CPU	Intel Core i7-870 2.93GHz
Memory	8GB
Network controller	Intel PRO/1000 PT Quad LP Server Adapter
HW RAID controller	None
Hard disk drives	4x 1TB Seagate Barracuda

TABLE 4: Hardware components of Workstation with Open-E DSS V6

Model	Planet GSW-2404SF
Description	24-ports 1GbE switch

TABLE 5: Network switch details

## Administration functionality

The following functionality has been tested.

Drive identifier	OK
Power button	OK
Front and rear LEDs	OK

*TABLE 6: Administration functionality test results*

In order to monitor the server please use external IPMI client.





## Network functionality

Tests performed in this section check the functionality, performance, and stability of the network solutions available in the Open-E DSS V6 product on a certified system.

Tests rely on configuring the iSCSI targets and copying the data from many *Workstations with MS Windows* through various network connections with big block size using appropriate testing tools.

### Network test topology

Network topology for Network testing is shown below.

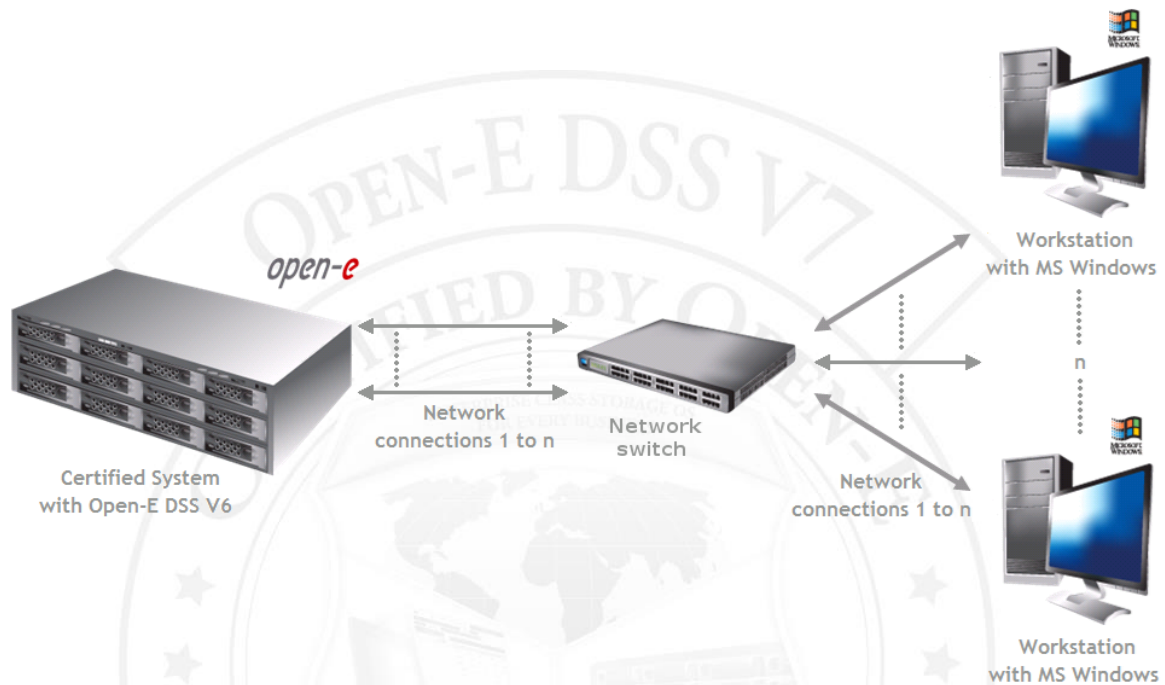


FIGURE 4: Network topology for Network testing

## 802.3ad bonding mode test

### 1. Test description

Test relies on configuring the iSCSI targets and copying the data from many *Workstations with MS Windows* through 802.3ad bonding mode network connection with 4MB block size using iometer testing tool.

### 2. Test results for 802.3ad bonding mode test

802.3ad bonding mode performance test results			
NIC model	1GbE		
Workstations with MS Windows	Write speed [MB/s]	Read speed [MB/s]	Performance [pass/failed]
1 <sup>st</sup> Workstation	97,10	93,50	pass
2 <sup>nd</sup> Workstation	97,90	87,00	pass

TABLE 7: 802.3ad bonding mode performance test results table

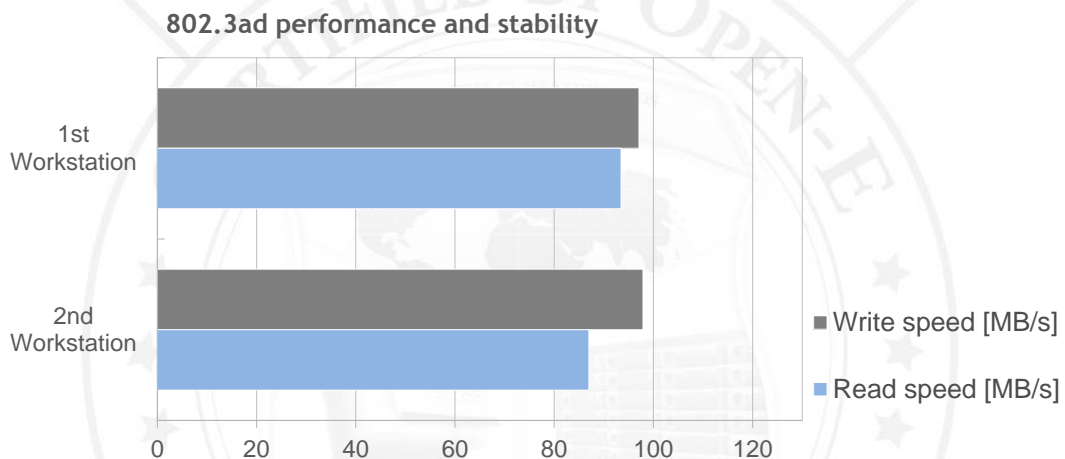


FIGURE 5: 802.3ad bonding mode performance test results chart



## Balance-alb bonding mode test

### 1. Test description

Test relies on configuring the iSCSI targets and copying the data from many *Workstations with MS Windows* through Balance-alb bonding mode network connection with 4MB block size using iometer testing tool.

### 2. Test results for Balance-alb bonding mode test

Balance-alb bonding mode performance and stability test results			
NIC model	1GbE		
Workstations with MS Windows	Write speed [MB/s]	Read speed [MB/s]	Performance [pass/failed]
1 <sup>st</sup> Workstation	111,27	111,81	pass
2 <sup>nd</sup> Workstation	111,42	111,90	pass

TABLE 8: Balance-alb bonding mode performance and stability test results table

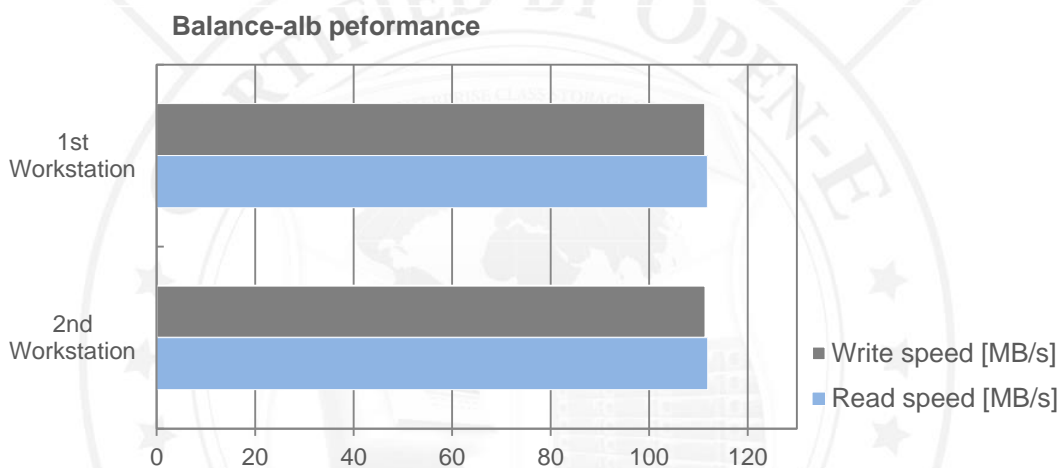


FIGURE 6: Balance-alb bonding mode performance and stability test results chart

## Balance-rr bonding mode test

### 1. Test description

Test relies on configuring the iSCSI targets and copying the data from many *Workstations with MS Windows* through Balance-rr bonding mode network connection with 4MB block size using Iometer testing tool.

### 2. Test results for Balance-rr bonding mode test

Balance-rr bonding mode performance results			
NIC model	1GbE		
Workstations with MS Windows	Write speed [MB/s]	Read speed [MB/s]	Performance [pass/failed]
1 <sup>st</sup> Workstation	59,56	107,07	pass
2 <sup>nd</sup> Workstation	49,41	106,44	pass

TABLE 9: Balance-rr bonding mode performance test results table

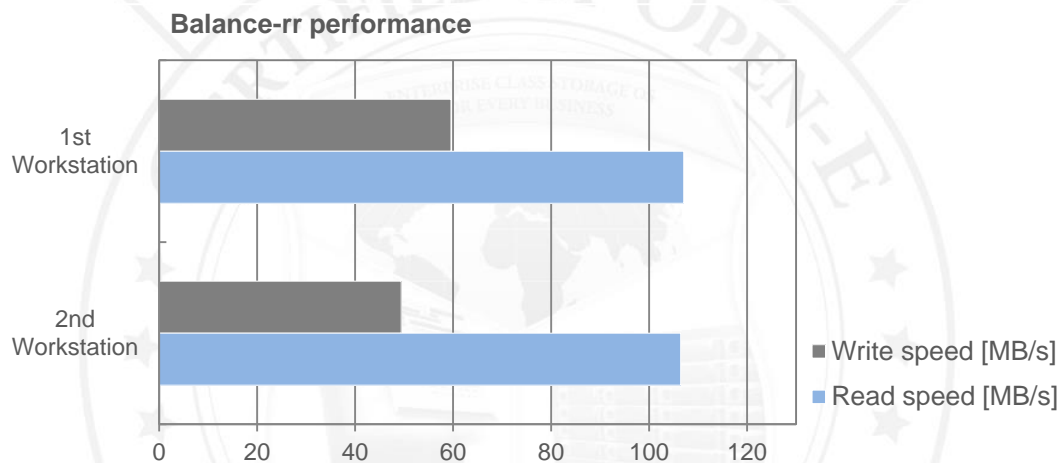


FIGURE 7: Balance-rr bonding mode performance and test results chart

## RAID functionality

Tests performed in this section check the functionality, performance, and stability of Open-E DSS V6 storage devices on a certified system.

Tests in this section rely on creation of the RAID units on all available levels, configuring the iSCSI target and copying the data from *Workstation with MS Windows* via 1GbE network connection with various block sizes using the lometer testing tools.

### RAID test topology

Network test topology for RAID testing is shown below

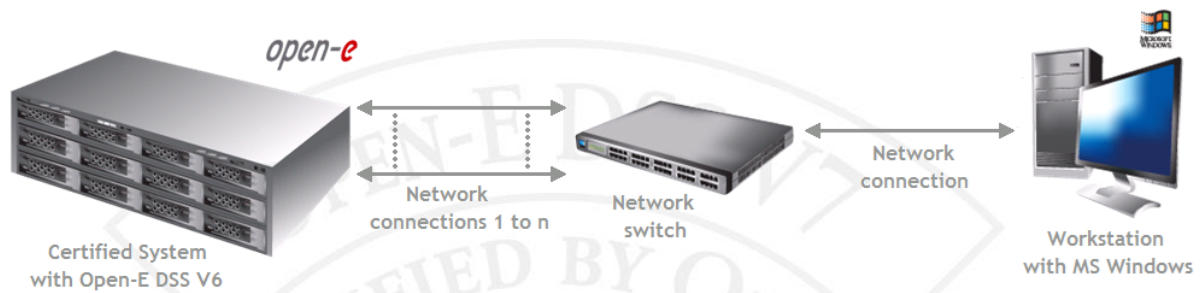


FIGURE 8: Network test topology for RAID testing

## Hardware RAID0 test

### 1. Test description

Test relies on creation of the RAID0 unit on all hard disk drives, configuring the iSCSI target and copying the data from *Workstation with MS Windows* via 1GbE network connection with various block sizes using the lometer testing tool.

### 2. Test results for RAID0 and 1GbE network connection

RAID0 performance test results			
Block size [KB]	Write speed [MB/s]	Read speed [MB/s]	Performance [pass/failed]
4	69,93	88,14	pass
32	79,14	81,41	pass
64	96,33	97,74	pass
128	102,28	103,33	pass
256	111,92	111,76	pass
512	111,98	111,79	pass
1024	112,32	111,78	pass
4096	111,62	111,66	pass

TABLE 10: RAID0 via 1GbE performance test results table

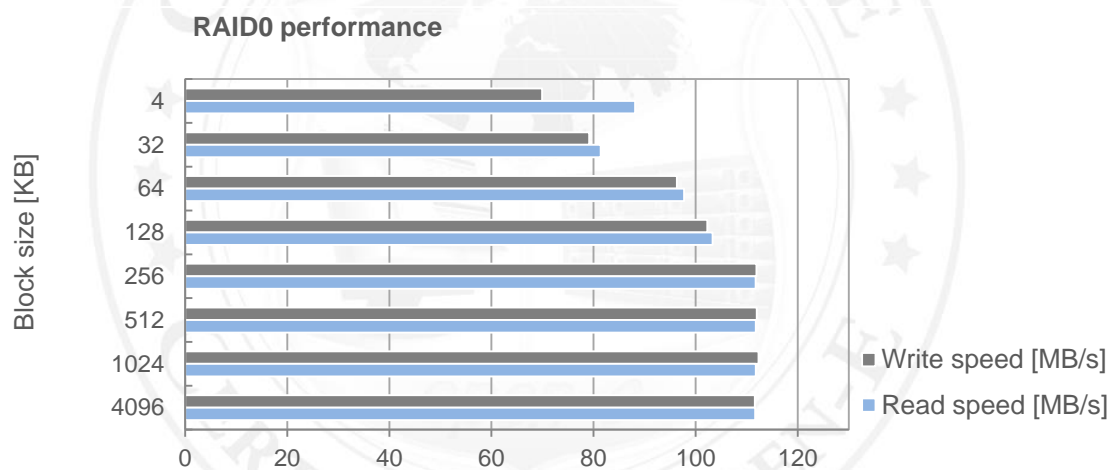


FIGURE 9: RAID0 via 1GbE performance test results chart

## Hardware RAID5 test

### 1. Test description

Test relies on creation of the RAID5 unit on all hard disk drives, configuring the iSCSI target and copying the data from *Workstation with MS Windows* via 1GbE network connection with various block sizes using the lometer testing tool.

### 2. Test results for RAID5 and 1GbE network connection

RAID5 performance test results			
Block size [KB]	Write speed [MB/s]	Read speed [MB/s]	Performance [pass/failed]
4	67,02	88,08	pass
32	76,50	76,11	pass
64	87,47	89,00	pass
128	96,30	99,05	pass
256	111,04	111,80	pass
512	111,06	111,81	pass
1024	111,22	111,78	pass
4096	111,32	111,66	pass

TABLE 11: RAID5 via 1GbE performance test results table

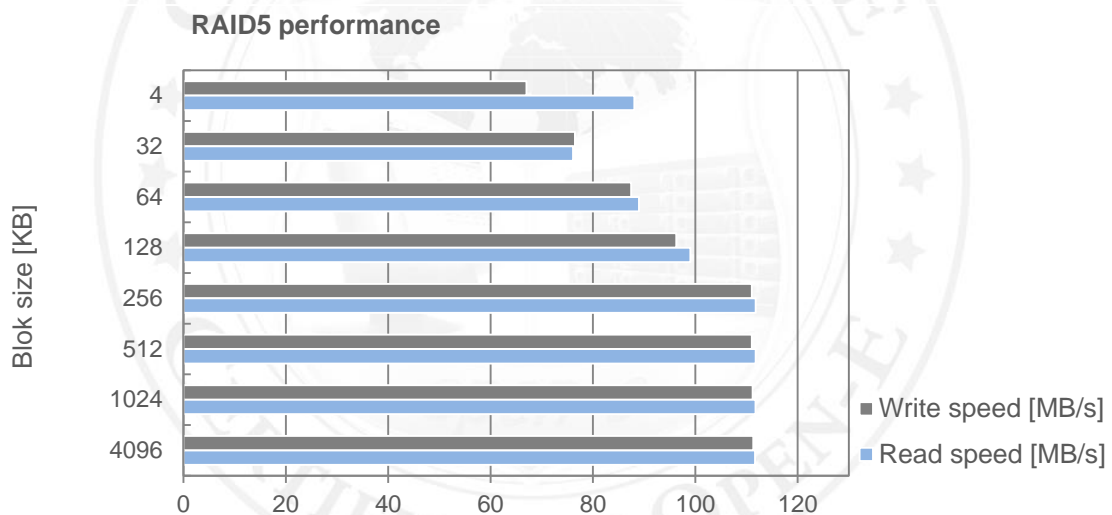


FIGURE 10: RAID5 via 1GbE performance test results chart

## Hardware RAID6 test

### 1. Test description

Test relies on creation of the RAID6 unit on all hard disk drives, configuring the iSCSI target and copying the data from *Workstation with MS Windows* via 1GbE network connection with various block sizes using the lometer testing tool.

### 2. Test results for RAID6 and 1GbE network connection

RAID6 performance test results			
Block size [KB]	Write speed [MB/s]	Read speed [MB/s]	Performance [pass/failed]
4	65,07	87,09	pass
32	75,59	75,70	pass
64	85,20	89,56	pass
128	95,22	96,01	pass
256	111,01	111,20	pass
512	111,29	111,33	pass
1024	111,78	111,90	pass
4096	111,42	111,10	pass

TABLE 12: RAID6 via 1GbE performance test results table

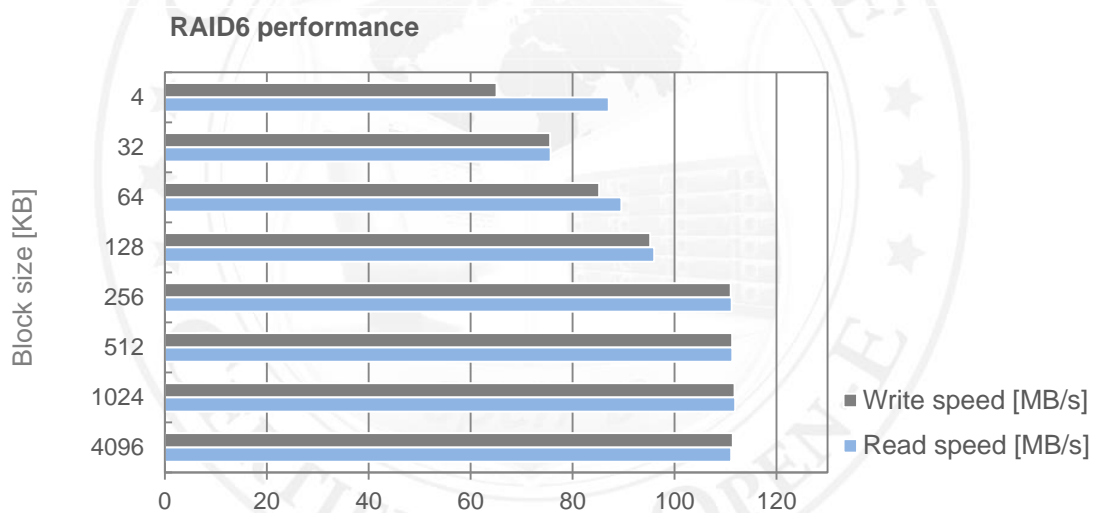


FIGURE 11: RAID6 via 1GbE performance test results chart



## Hardware RAID10 test

### 1. Test description

Test relies on creation of the RAID10 unit on all hard disk drives, configuring the iSCSI target and copying the data from *Workstation with MS Windows* via 1GbE network connection with various block sizes using the lometer testing tool.

### 2. Test results for RAID10 and 1GbE network connection

RAID10 performance test results			
Block size [KB]	Write speed [MB/s]	Read speed [MB/s]	Performance [pass/failed]
4	63,75	83,90	pass
32	74,60	75,76	pass
64	85,56	89,40	pass
128	97,12	95,21	pass
256	111,21	111,50	pass
512	111,25	111,43	pass
1024	111,87	111,75	pass
4096	111,24	111,80	pass

TABLE 13: RAID10 via 1GbE performance test results table

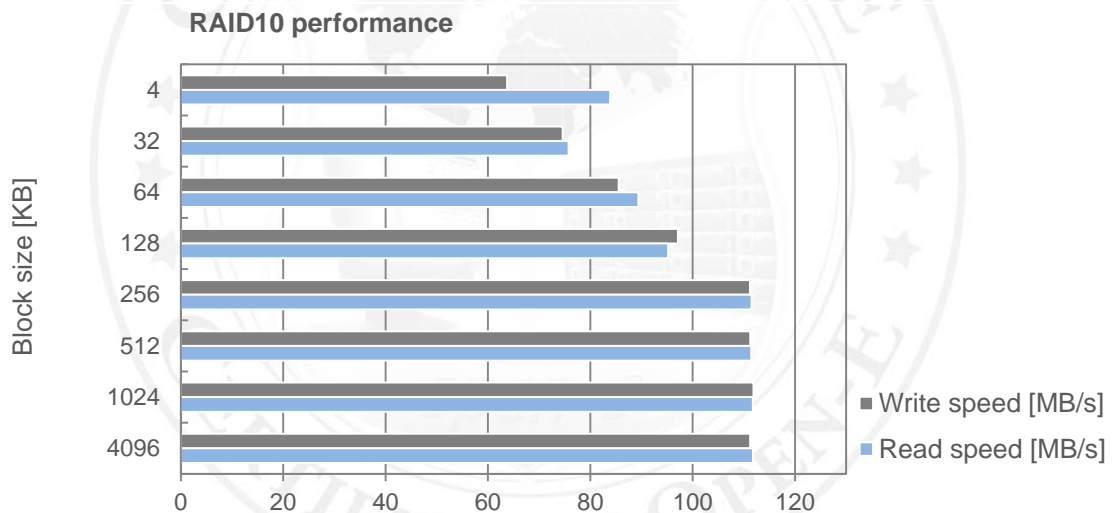


FIGURE 12: RAID10 via 1GbE performance test results chart

## Hardware RAID50 test

### 1. Test description

Test relies on creation of the RAID50 unit on all hard disk drives, configuring the iSCSI target and copying the data from *Workstation with MS Windows* via 1GbE network connection with various block sizes using the lometer testing tool.

### 2. Test results for RAID50 and 1GbE network connection

RAID50 performance test results			
Block size [KB]	Write speed [MB/s]	Read speed [MB/s]	Performance [pass/failed]
4	64,55	83,90	pass
32	73,44	75,76	pass
64	85,70	89,40	pass
128	98,34	95,21	pass
256	111,01	111,41	pass
512	111,90	111,43	pass
1024	111,67	111,91	pass
4096	111,43	111,75	pass

TABLE 14: RAID50 via 1GbE performance test results table

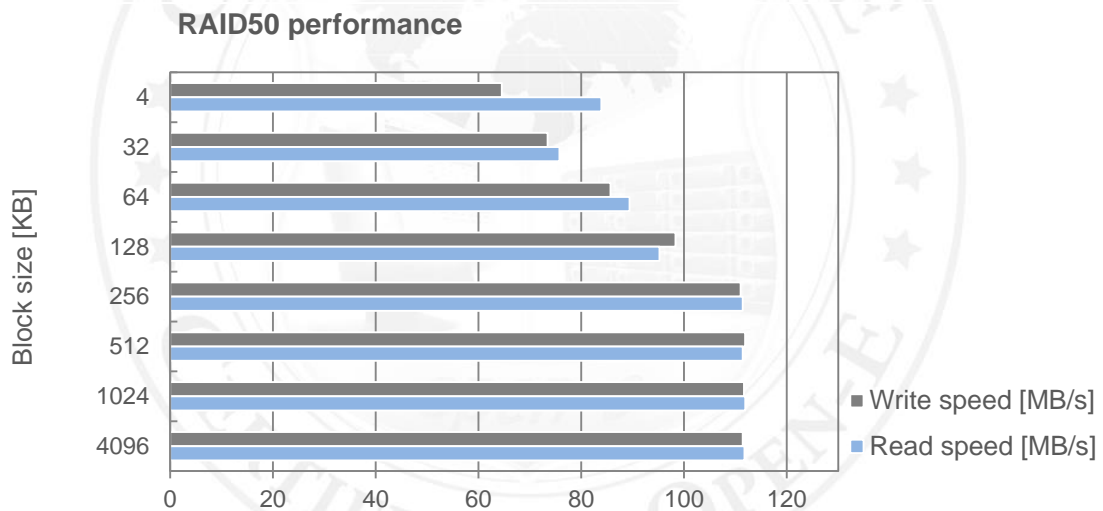


FIGURE 13: RAID50 via 1GbE performance test results chart

## Hardware RAID60 test

### 1. Test description

Test relies on creation of the RAID60 unit on all hard disk drives, configuring the iSCSI target and copying the data from *Workstation with MS Windows* via 1GbE network connection with various block sizes using the lometer testing tool.

### 2. Test results for RAID60 and 1GbE network connection

RAID60 performance test results			
Block size [KB]	Write speed [MB/s]	Read speed [MB/s]	Performance [pass/failed]
4	65,23	81,95	pass
32	74,41	76,90	pass
64	86,90	92,46	pass
128	97,10	98,33	pass
256	111,29	111,12	pass
512	111,16	111,39	pass
1024	111,50	111,92	pass
4096	111,12	111,10	pass

TABLE 15: RAID60 via 1GbE performance test results table

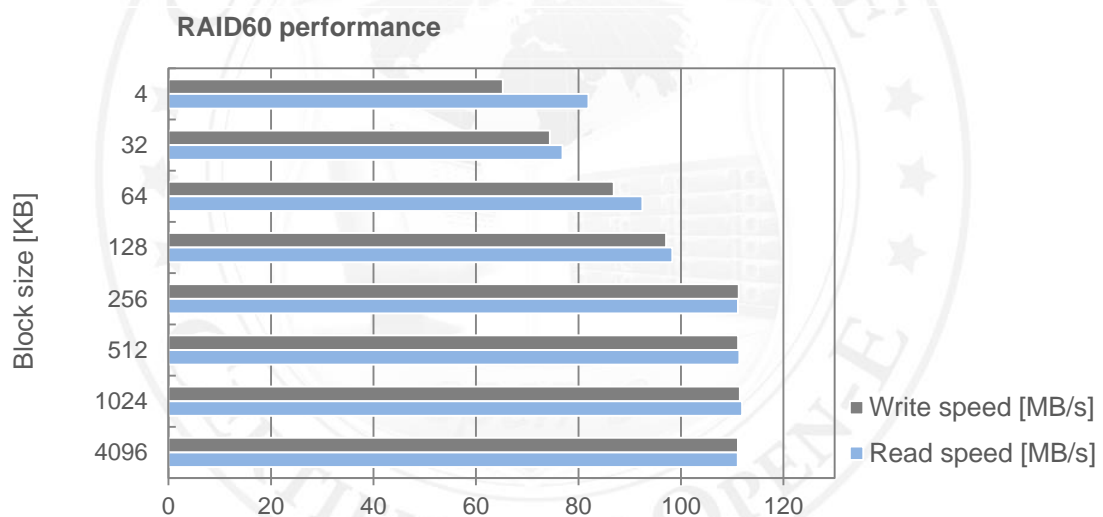


FIGURE 14: RAID60 via 1GbE performance test results chart

## NAS functionality

Tests performed in this section check the functionality, performance and stability of the NAS protocols in the Open-E DSS V6 product on the certified system.

Tests rely on a NAS shares creating and copying the data from *Workstation with MS Windows* via 1GbE network connection with the various block sizes using the Iometer testing tool.

### NAS test topology

Network topology for NAS testing is shown below.

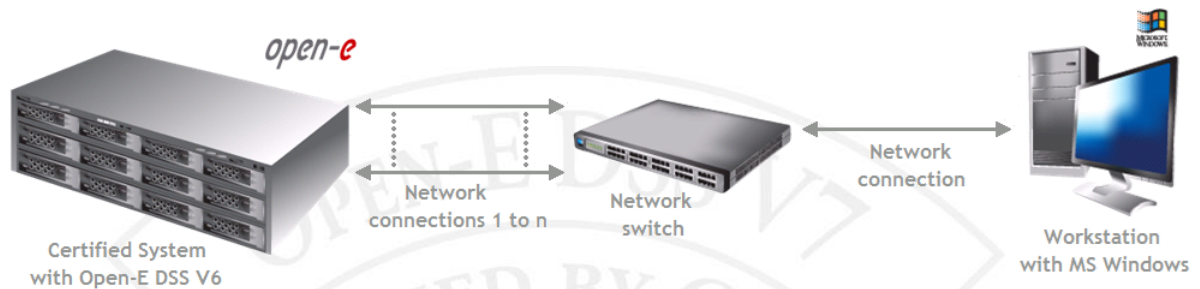
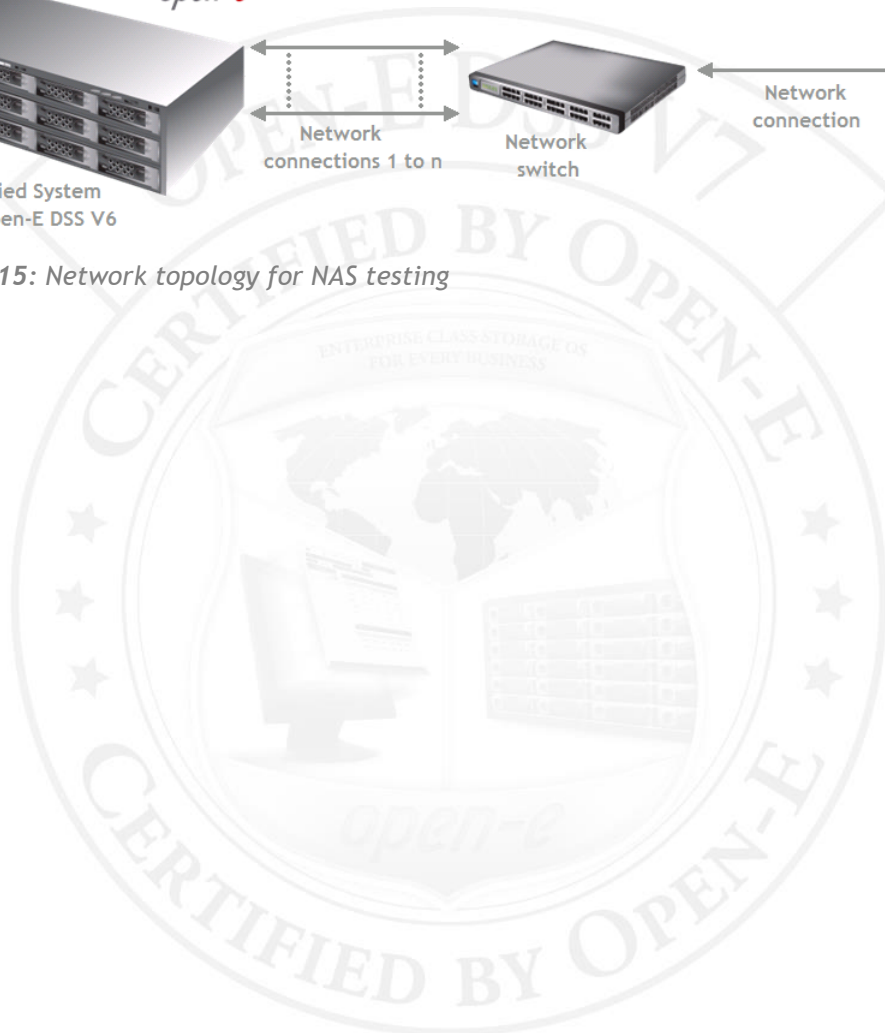


FIGURE 15: Network topology for NAS testing



## SMB test

### 1. Test description

Tests rely on a NAS shares creating and copying the data from *Workstation with MS Windows* via 1GbE network connection with the various block sizes using the Iometer testing tool.

### 2. Test results for SMB and 1GbE network connection

SMB performance test results			
Block size [KB]	Write speed [MB/s]	Read speed [MB/s]	Performance [pass/failed]
4	73,97	67,95	pass
32	112,22	112,47	pass
64	111,58	111,74	pass
128	112,04	111,87	pass
256	112,64	112,02	pass
512	112,71	111,93	pass
1024	112,67	111,99	pass
4096	112,56	111,78	pass

TABLE 16: SMB via 1GbE performance test results table

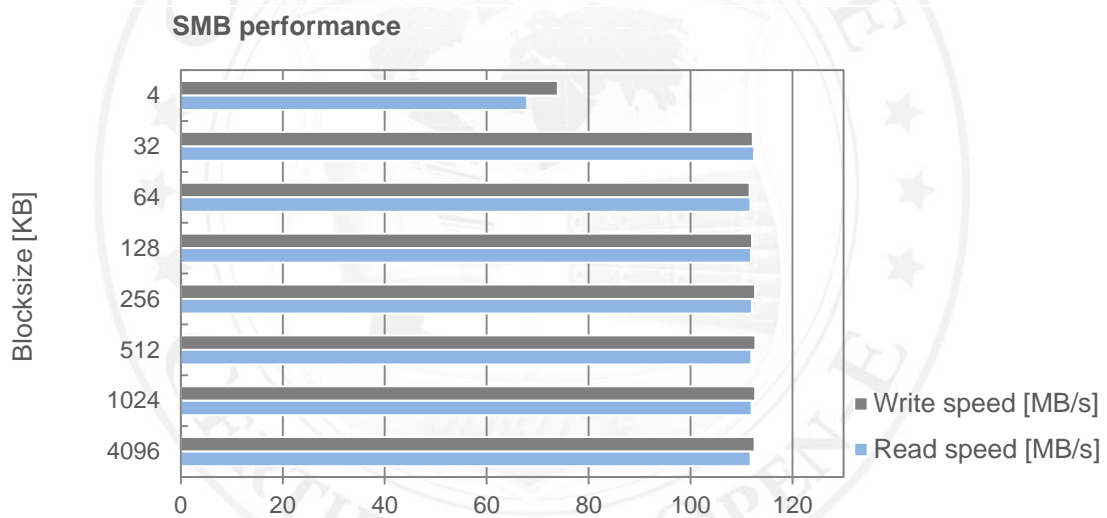


FIGURE 16: SMB via 1GbE performance test results chart

## iSCSI functionality

Tests performed in this section check the functionality, performance, and stability of the iSCSI protocol in the Open-E DSS V6 product on the certified system.

### iSCSI Initiator test topology

Network topology for iSCSI Initiator testing is shown below.

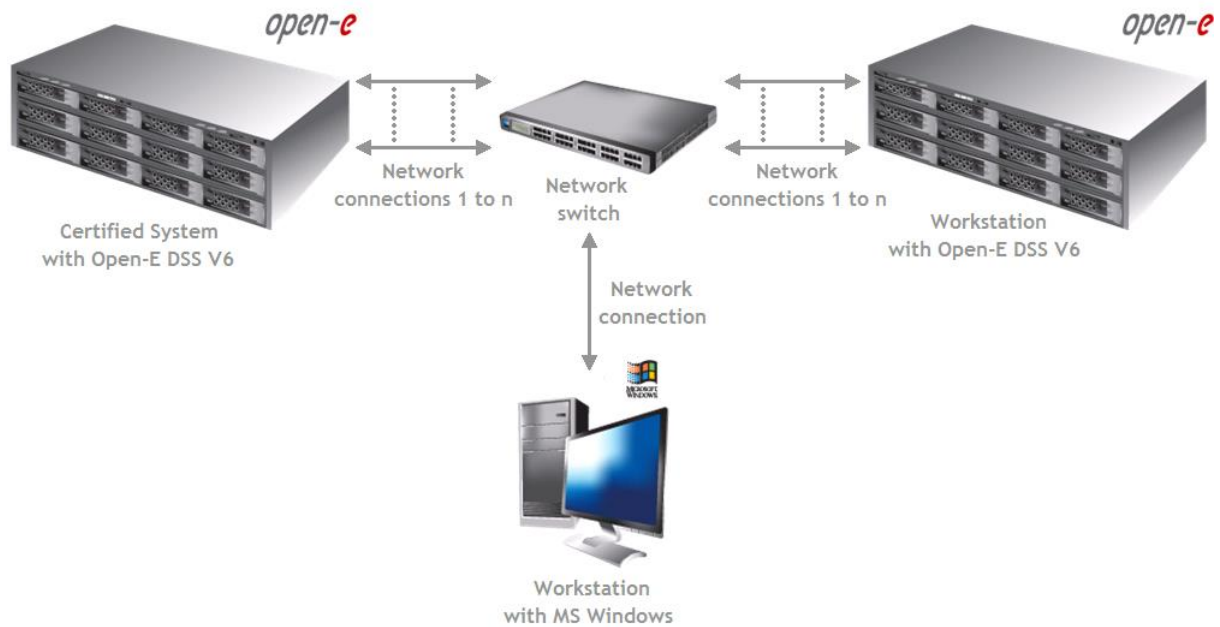


FIGURE 17: Network topology for iSCSI Initiator testing

### iSCSI Target test topology

Network topology for iSCSI Target testing is shown below.

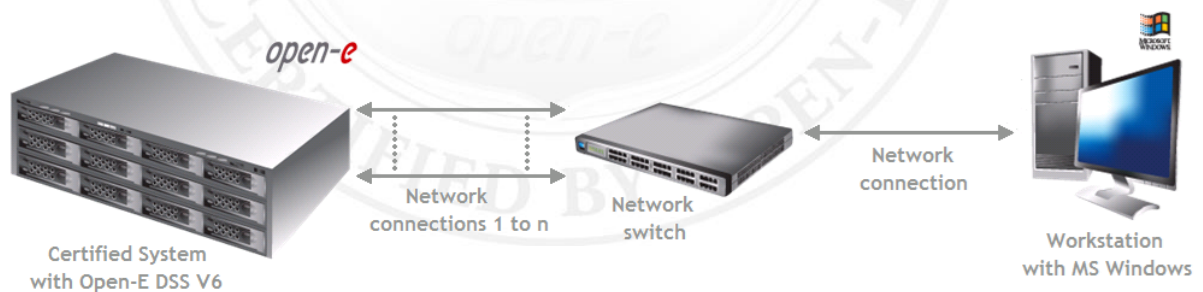


FIGURE 18: Network topology for iSCSI Target testing



## iSCSI Initiator test

### 1. Test description

Test relies on using the storage connected via the built-in iSCSI Initiator for NAS volumes. Creating the SMB shares on these NAS volumes and copying data from *Workstation with MS Windows* to them with the various block sizes using the lometer testing tool. All the tests were performed using 1GbE network connection.

### 2. Test results for iSCSI Initiator and 1GbE network connection

iSCSI Initiator performance test results			
Block size [KB]	Write speed [MB/s]	Read speed [MB/s]	Performance [pass/failed]
4	72,91	65,31	pass
32	112,51	110,47	pass
64	110,20	111,56	pass
128	110,30	111,32	pass
256	111,38	112,67	pass
512	112,19	111,87	pass
1024	112,61	111,25	pass
4096	112,92	111,80	pass

TABLE 17: iSCSI Initiator via 1GbE performance test results table

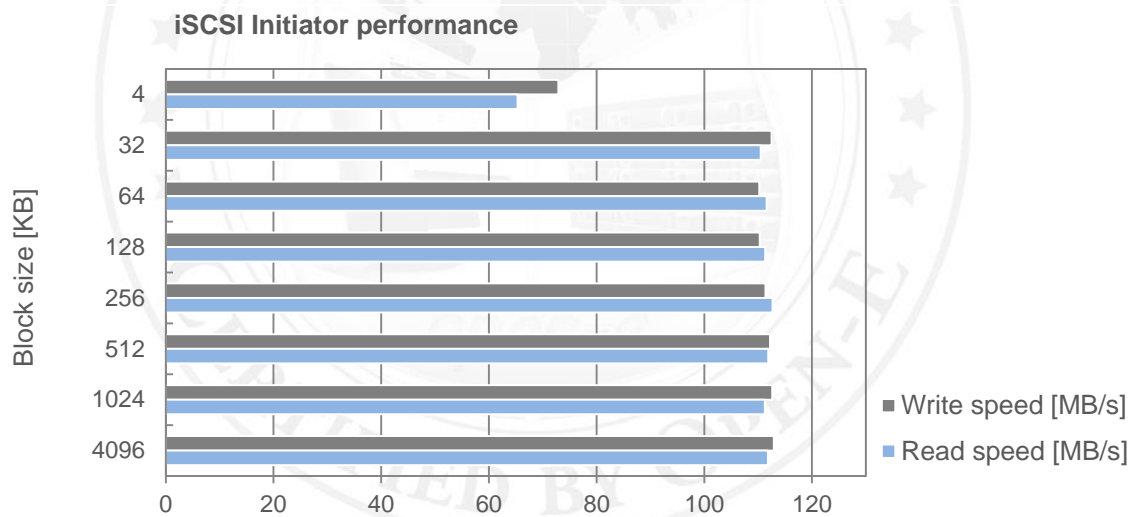


FIGURE 19: iSCSI Initiator via 1GbE performance test results chart

## iSCSI Target test

### 1. Test description

Test relies on creating the iSCSI targets on certified system and copying the data from *Workstation with MS Windows* to them with the various block sizes using the iometer tool. All the tests were performed using 1GbE network connection.

### 2. Test results for iSCSI Target and 1GbE network connection

iSCSI Target performance test results			
Block size [KB]	Write speed [MB/s]	Read speed [MB/s]	Performance [pass/failed]
4	64,78	85,46	pass
32	74,11	88,37	pass
64	98,9	91,97	pass
128	101,72	100,28	pass
256	111,63	111,36	pass
512	111,7	111,74	pass
1024	112,85	111,31	pass
4096	111,61	111,77	pass

TABLE 18: iSCSI Target via 1GbE performance test results table

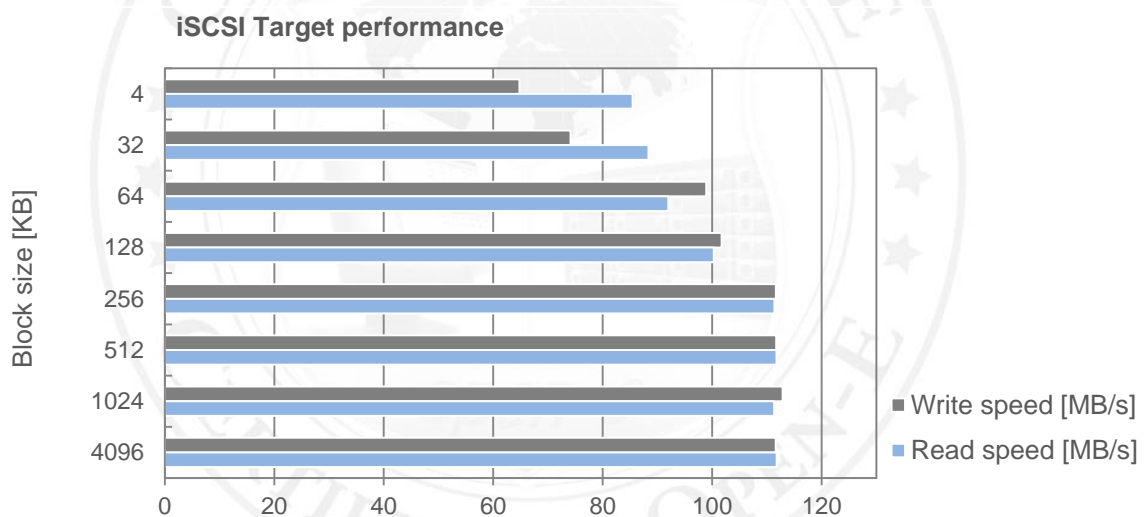


FIGURE 20: iSCSI Target via 1GbE performance test results chart