A Step-by-Step Guide to Asynchronous Volume Replication (Block Based) over a LAN with Open-E® DSS™

DSS ver. 5.00 up60 February 12, 2009

April 2009

Asynchronous **Volume Replication** over a LAN

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	Replication Mode		Source/Destination			Data Transfer		Volume Type			
									iSCSI		
	Synchronous	Asynchronous	w/ System	LAN	WAN	File based	Block based	NAS	File-IO	Block-IO	FC
Asynchronous Volume Replication over a LAN		✓		✓			✓	✓	✓	✓	✓

- **Volume Replication** is a process of coping a source logical volume to a destination system.
  - Volume replication provides maximal availability in case one of the systems or units fails.

Asynchronous **Volume Replication** over a LAN

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REPLICATION BETWEEN TWO SYSTEMS WITHIN ONE LAN

- **Recommended Resources**
  - Key Hardware (two systems)
    - ✓ x86 compatible,
    - ✓ RAID Controller,
    - ✓ HDD's,
    - ✓ Network Interface Cards.
  - Software
    - ✓ Open-E DSS (recommended) or Open-E iSCSI-R3, 2 units.
- **Benefits**
  - Data Redundancy over a LAN,
  - Enables continuous data access.
- **Disadvantages**
  - High cost of solution,
  - Natural disasters can destroy local systems.

Asynchronous **Volume Replication** over a LAN

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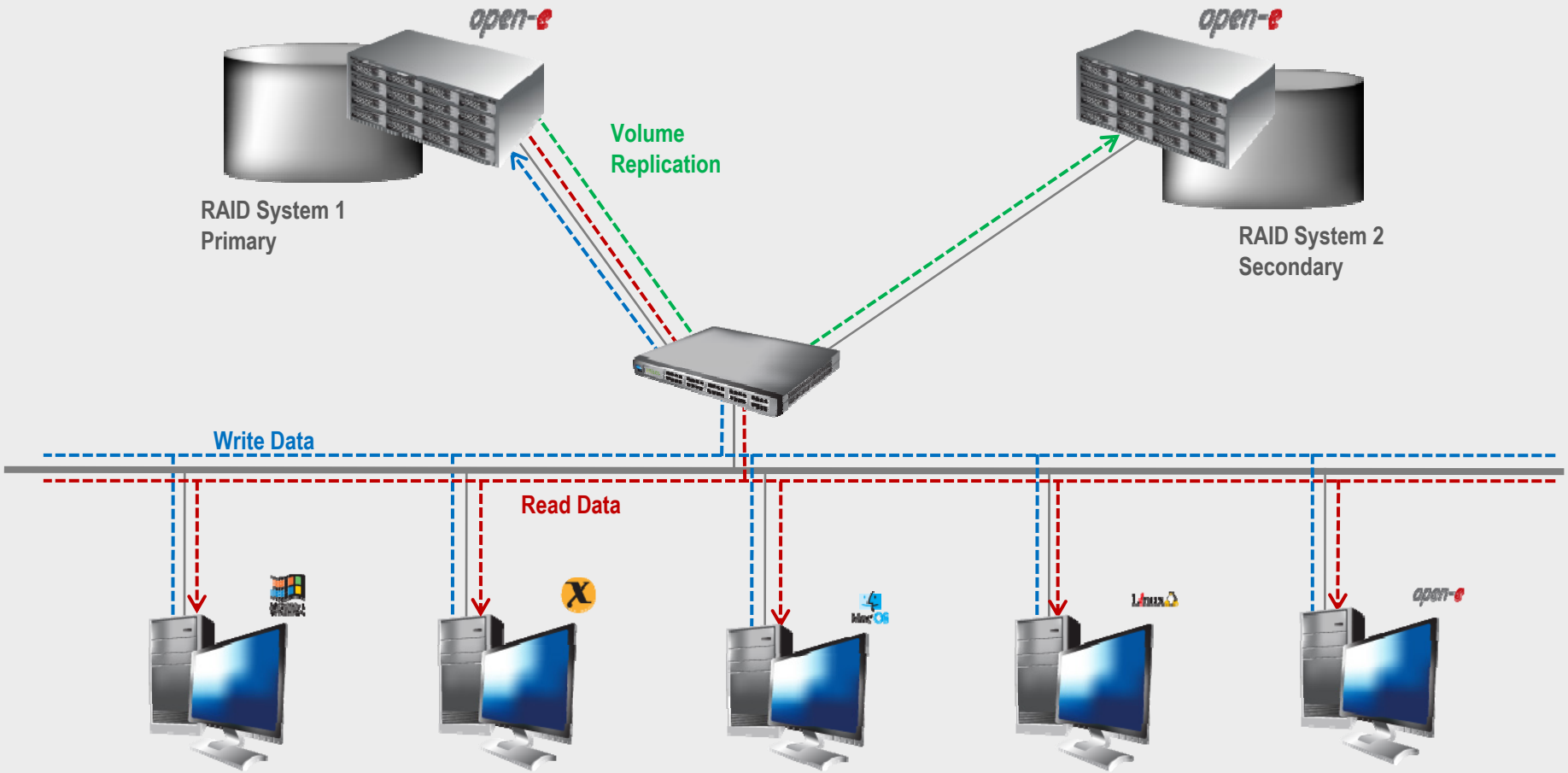
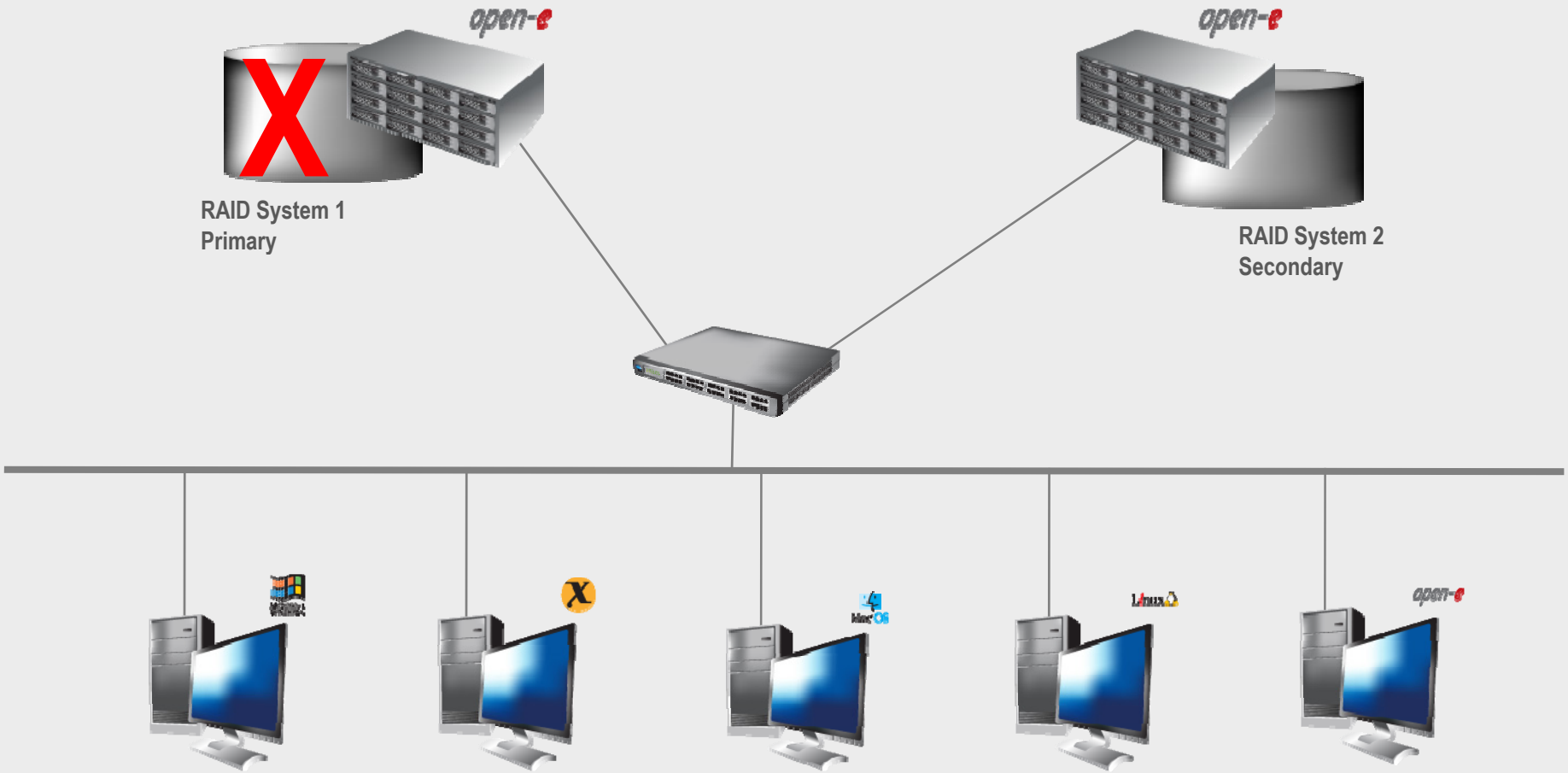
- Data is written and read to System 1
- Data is continiously replicated to System 2



Asynchronous **Volume Replication** over a LAN

- In case of raid array error or disk drive error on the System 1, the server will send an e-mail notification to the administrator,
- In the case of a failure of system 1, users will be notified,
- Administrator then switches users to the System 2.



Asynchronous **Volume Replication** over a LAN

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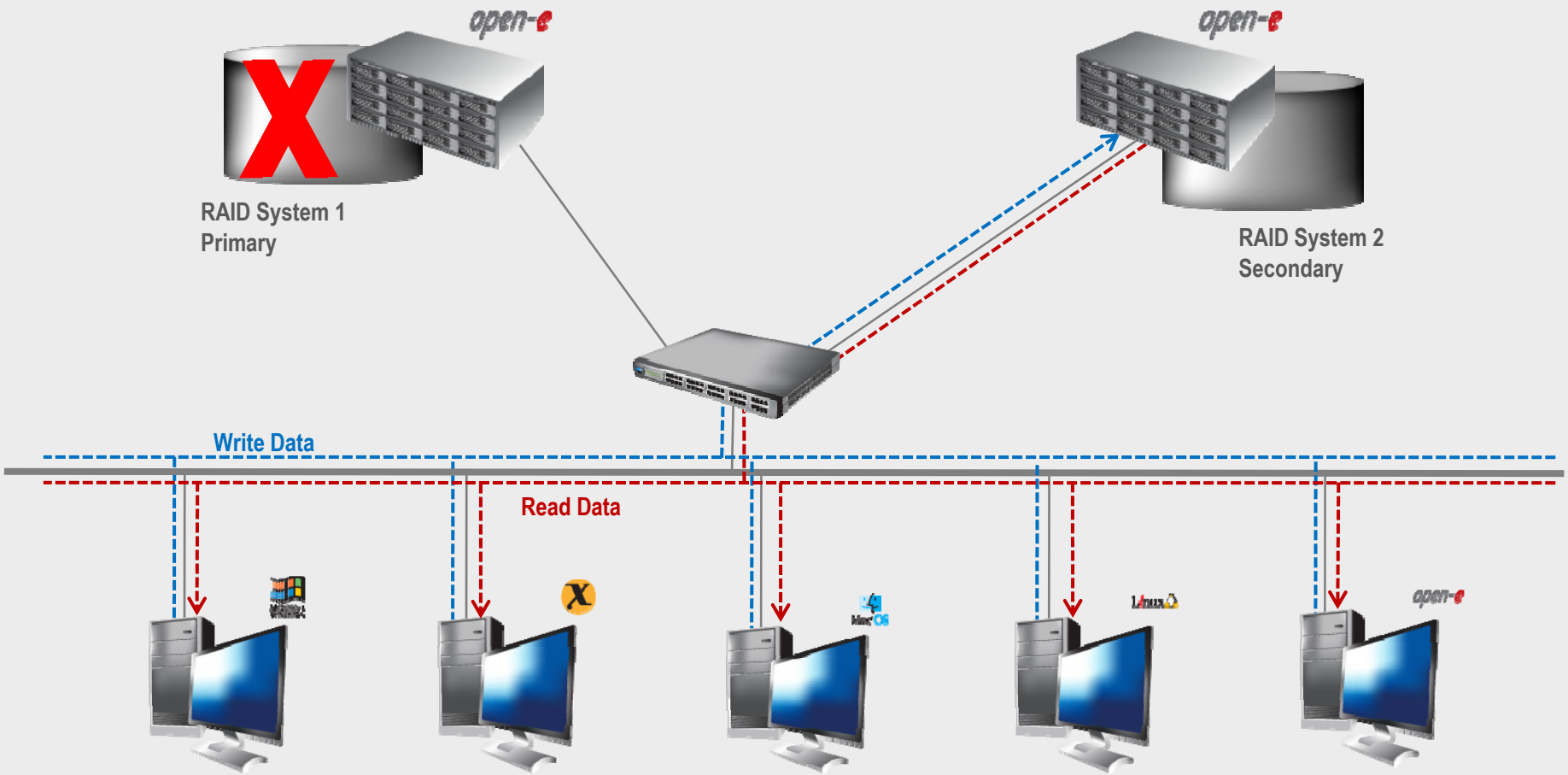
- After switching, replicated volume is available on System 2



Setting up Synchronous **Volume Replication** over a LAN

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TO SET UP VOLUME REPLICATION, PERFORM THE FOLLOWING STEPS:

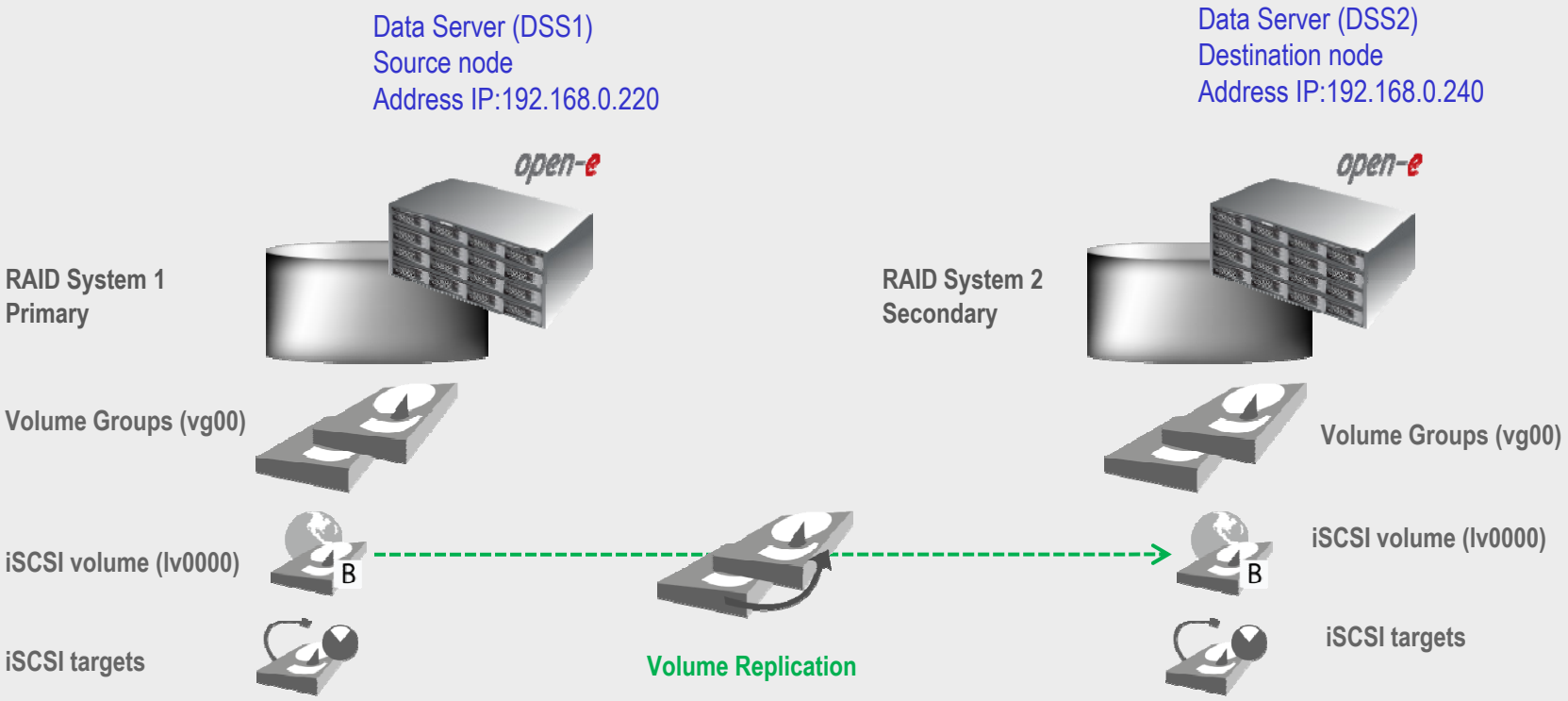
1. Hardware configuration
2. Configure the destination node
3. Configure the source node
4. Create the replication task
5. Checking status volume replication

Setting up Synchronous **Volume Replication** over a LAN

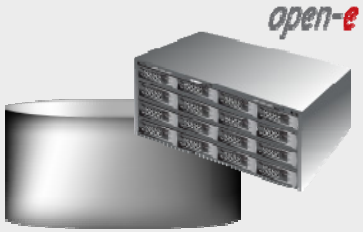
Hardware Requirements

To run the Volume replication of Open-E DSS (or iSCSI-R3), a minimum of two systems are required. Both servers are working in the Local Area Network. An example configuration is shown below:

1. Hardware Configuration



Setting up Synchronous **Volume Replication** over a LAN



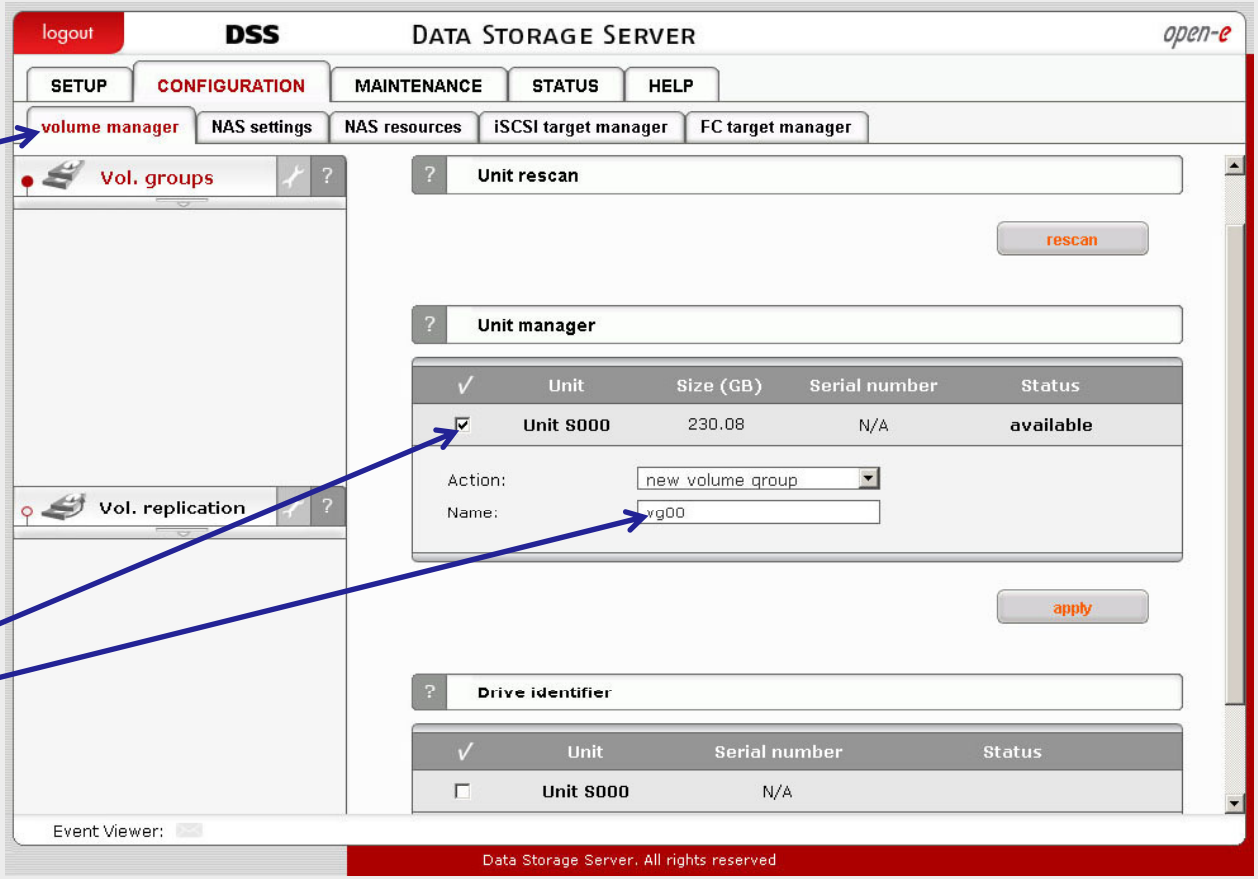
Data Server (DSS2)
Destination node
Address IP:192.168.0.240

2. Configure the Destination Node

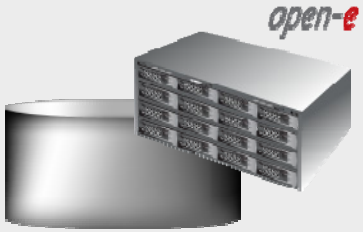
Under the „**CONFIGURATION**" tab, select „**volume manager**".

Volume Groups (vg00)

Add the selected physical units (**Unit MD0**) to create a **new volume group** (in this case, **vg00**) and click **apply** button.



Setting up Synchronous **Volume Replication** over a LAN



Data Server (DSS2)
Destination node
Address IP:192.168.0.240

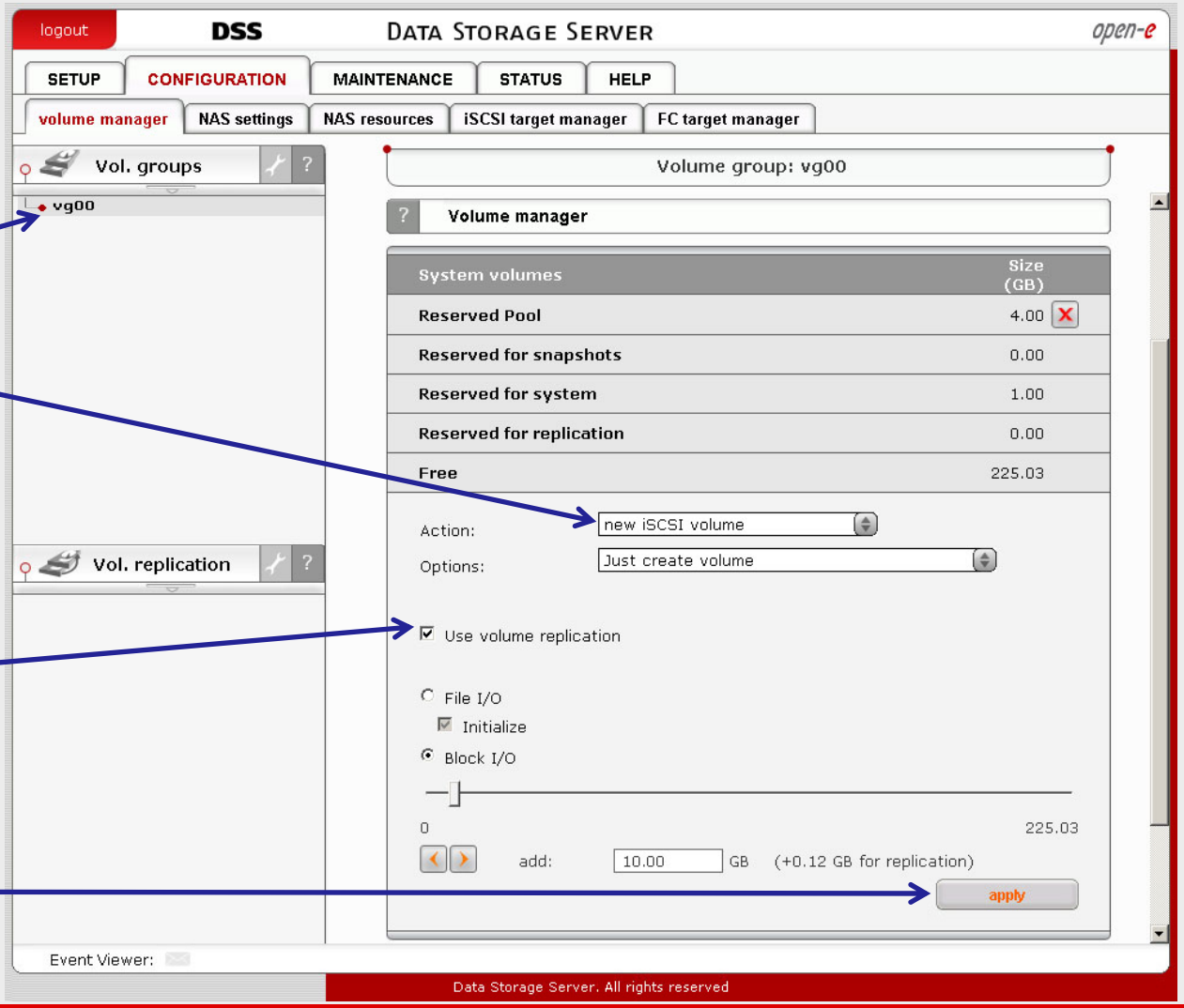
2. Configure the Destination Node

Select the appropriate volume group (**vg00**) from the list on the left and create a **new iSCSI volume** of the required size. This logical volume will be the destination of the replication process.

iSCSI volume (lv0000)

Next check the box to **Use volume replication**

After assigning an appropriate amount of space for the iSCSI volume, click the **apply** button



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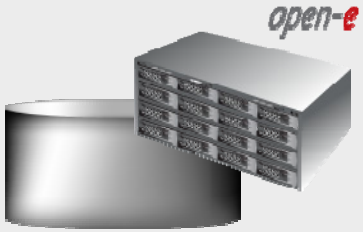
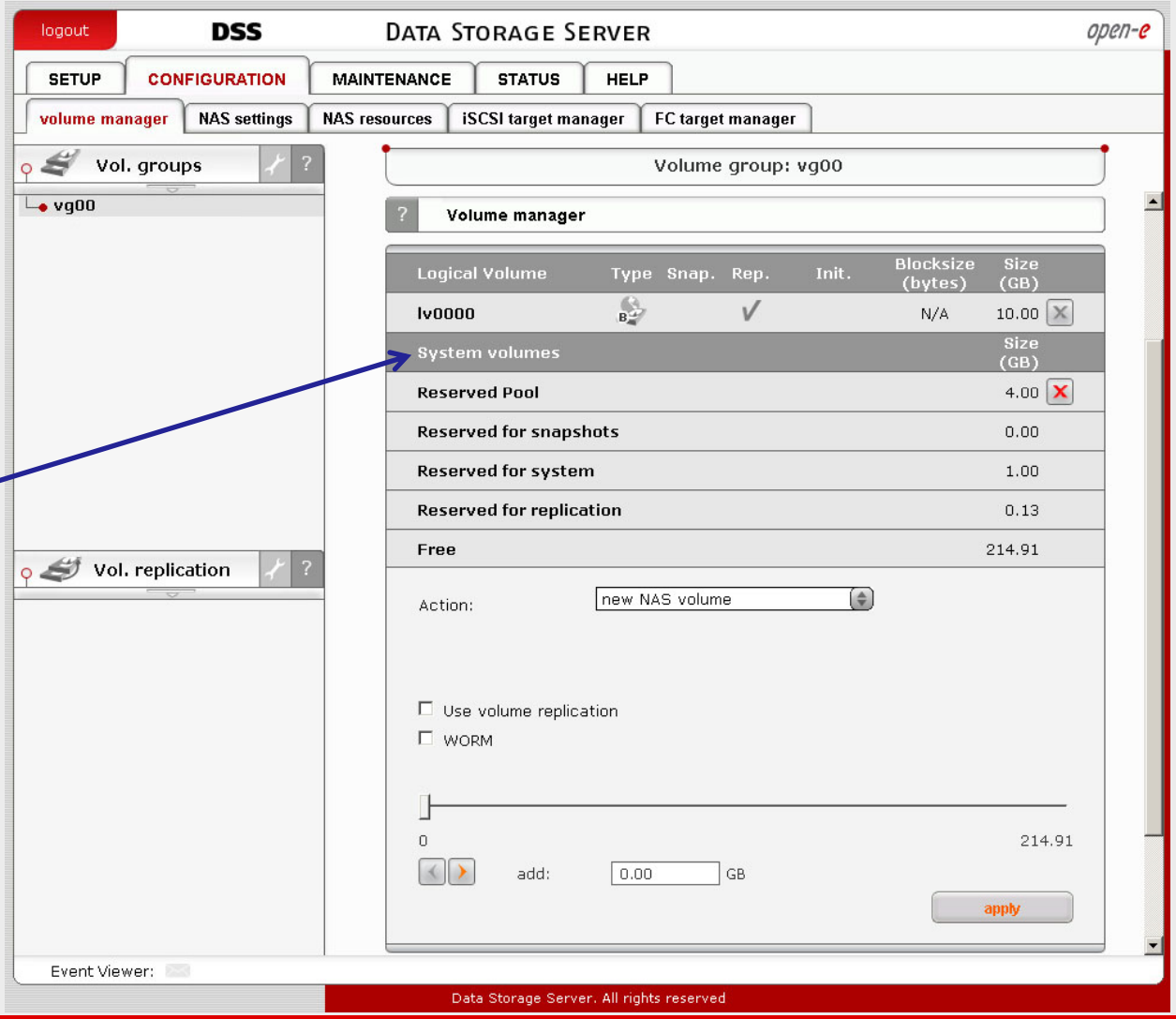


Data Server (DSS2)
Destination node
Address IP:192.168.0.240

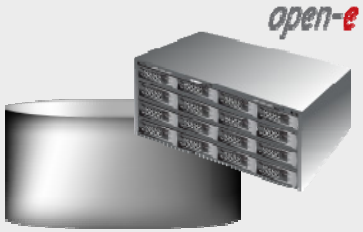
iSCSI volume (lv0000)

The destination iSCSI Volume Block I/O is now configured.

2. Configure the Destination Node



Setting up Synchronous **Volume Replication** over a LAN



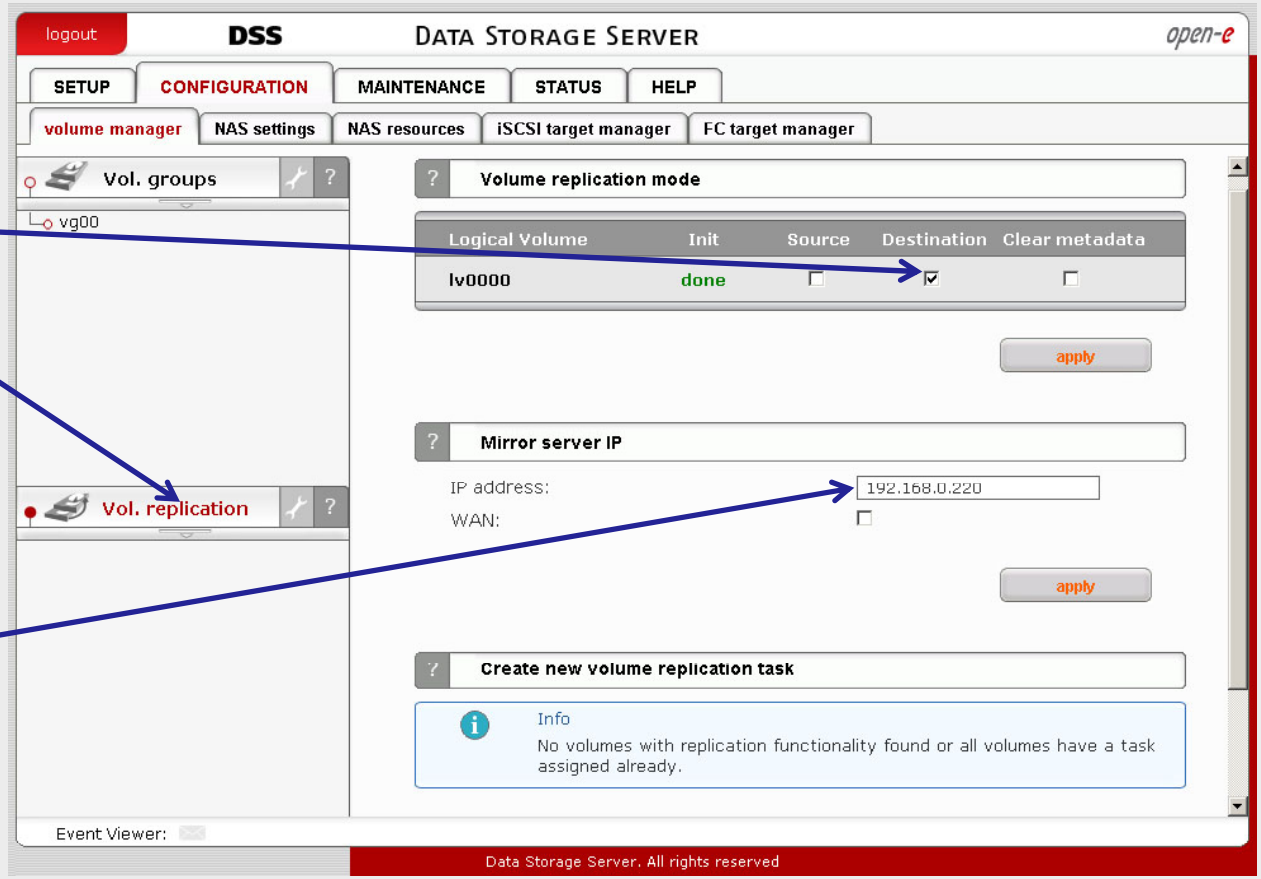
Data Server (DSS2)
Destination node
Address IP:192.168.0.240

2. Configure the Destination Node

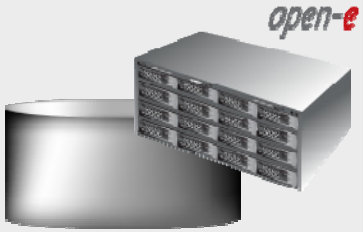
Now, select the **Vol. replication** and check box under **Destination** and click the **apply** button

Volume Replication

Next, under **Mirror Server IP** function, enter the IP address of the source node. In our example, this would be 192.168.0.220 click the **apply** button



Setting up Synchronous **Volume Replication** over a LAN



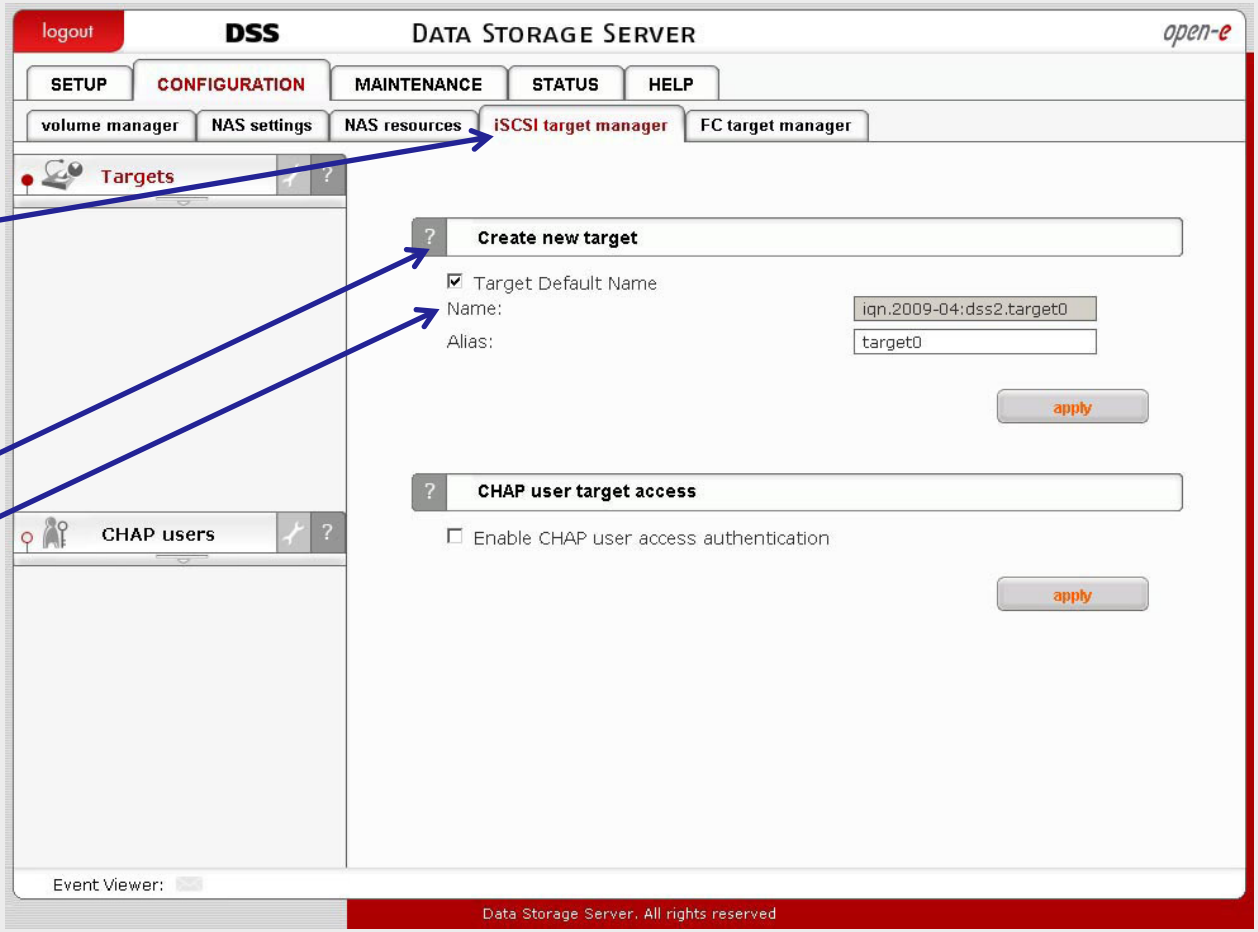
Data Server (DSS2)
Destination node
Address IP:192.168.0.240

2. Configure the Destination Node

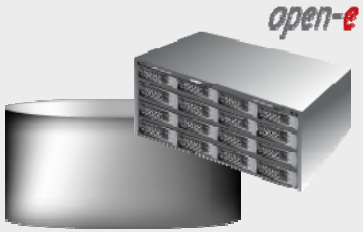
Under the „**CONFIGURATION**" tab, select „**iSCSI target manager**".

iSCSI targets

In the **Create new target** function enter a name for the new target (as desired) in the Name field and click **apply** to confirm.



Setting up Synchronous **Volume Replication** over a LAN



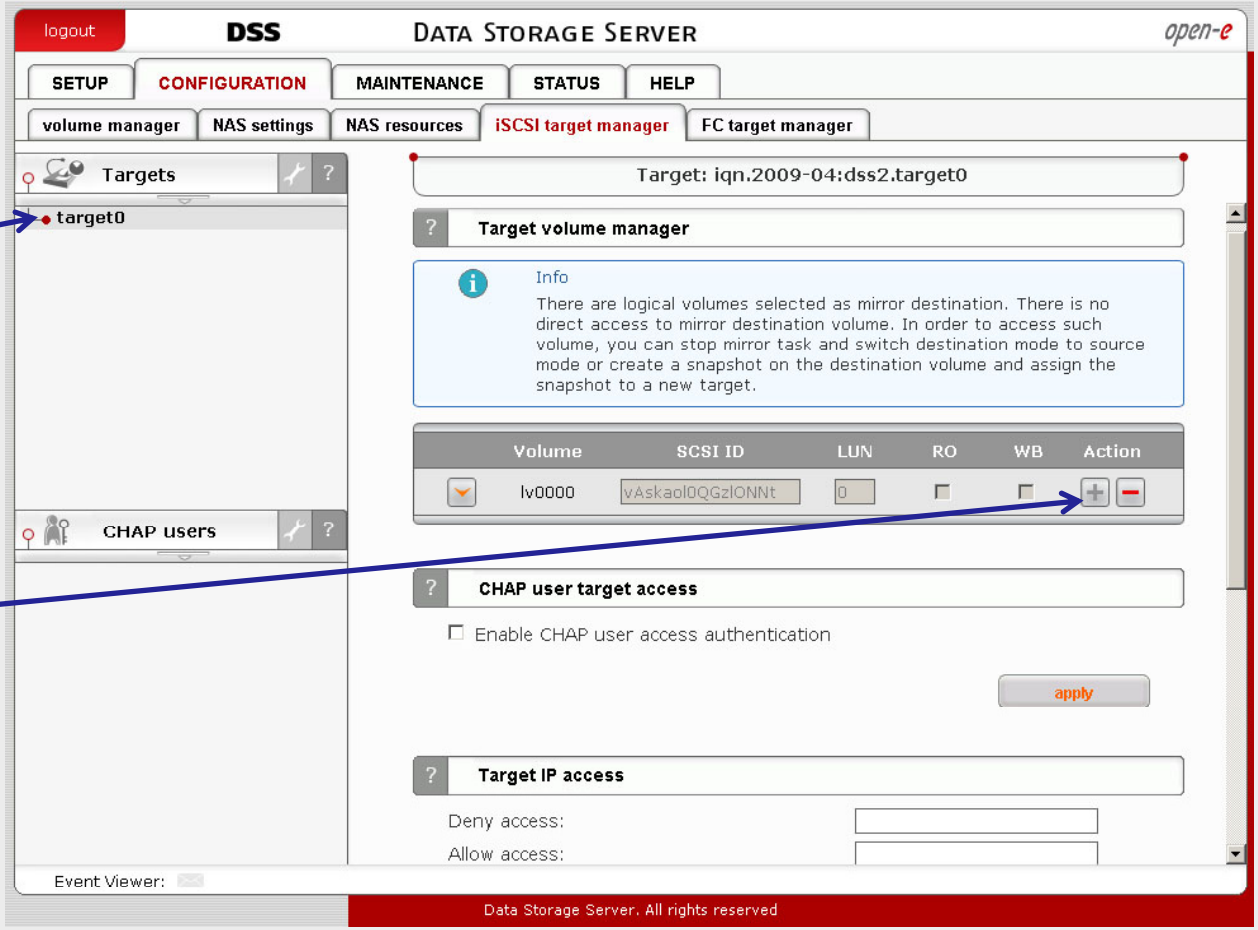
Data Server (DSS2)
Destination node
Address IP:192.168.0.240

2. Configure the Destination Node

Select **target0** within the **Targets** field.

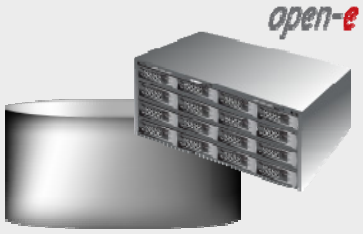
iSCSI targets

To assign a volume to the target, click the button + located under **Action**



The configuration of the Destination Node (storage server) is now complete.

Setting up Synchronous **Volume Replication** over a LAN



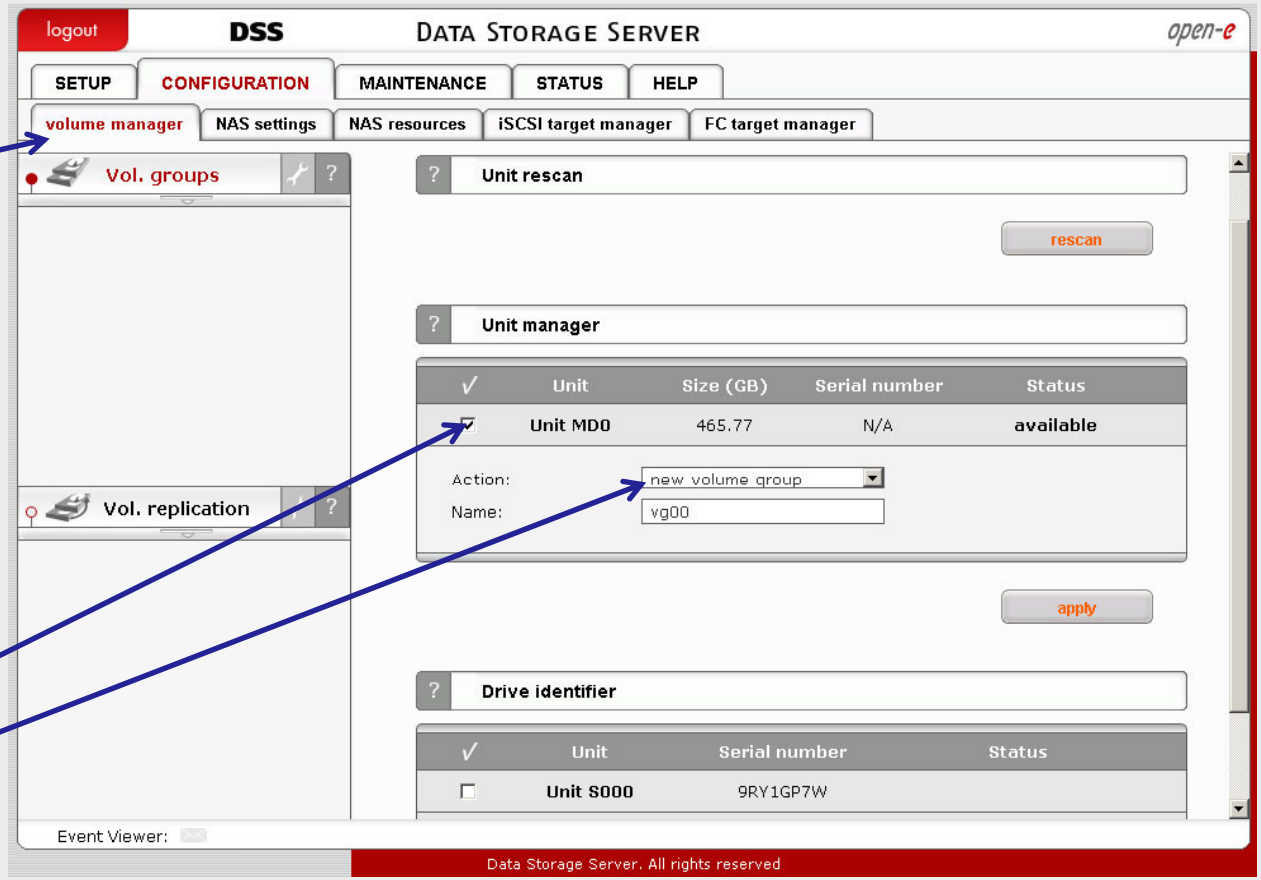
Data Server (DSS1)
Source node
Address IP:192.168.0.220

3. Configure the Source Node

Under the **CONFIGURATION** tab, select **volume manager**..

Volume Groups (vg00)

Add the selected physical units (**Unit MD0**) to create a **new volume group** (in this case, **vg00**) and click **apply** button.



Setting up Synchronous **Volume Replication** over a LAN

Data Server (DSS1)
Source node
Address IP:192.168.0.220

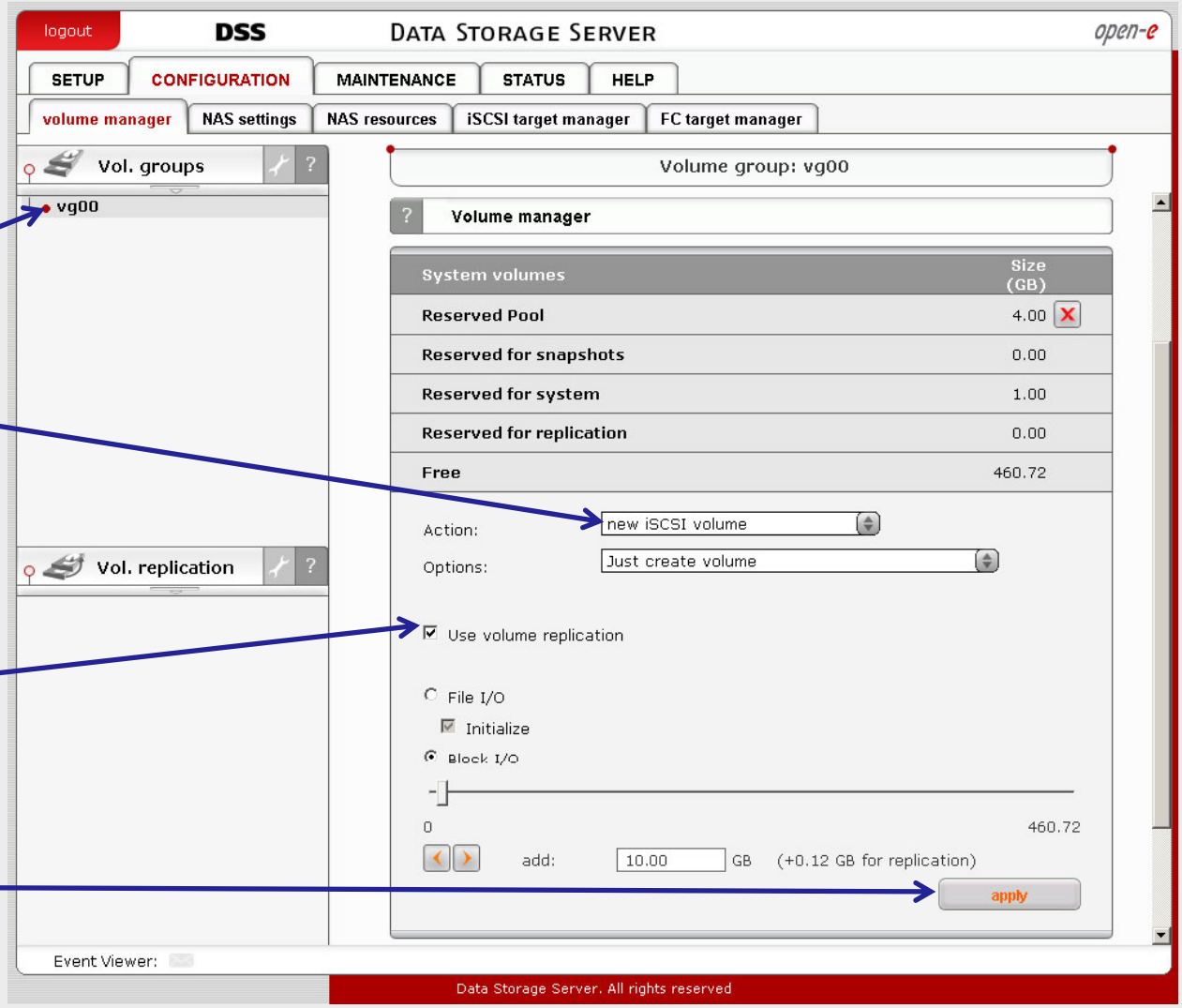
3. Configure the Source Node

Select the appropriate volume group (**vg00**) from the list on the left and create a **new iSCSI volume** of the required size. This logical volume will be the destination of the replication process.

iSCSI volume (lv0000)

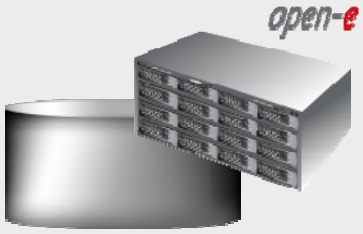
Next check the box to **Use volume replication**

After assigning an appropriate amount of space for the iSCSI volume, click the **apply** button



NOTE:
The source and destination volumes must be of identical size. Remember to enable Volume Replication

Setting up Synchronous **Volume Replication** over a LAN

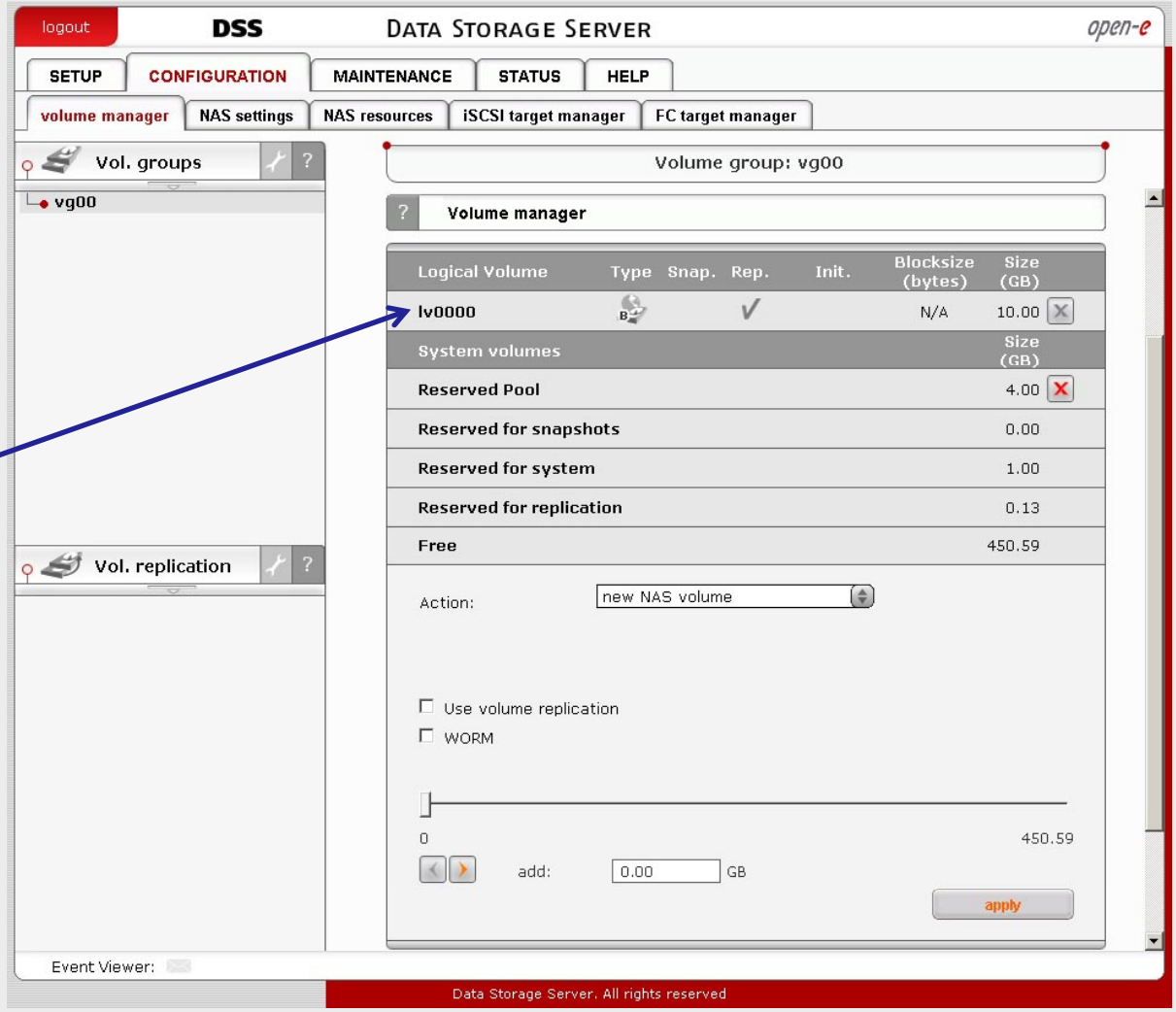


Data Server (DSS1)
Source node
Address IP:192.168.0.220

iSCSI volume (lv0000)

The destination iSCSI Volume Block I/O is now configured.

3. Configure the Source Node



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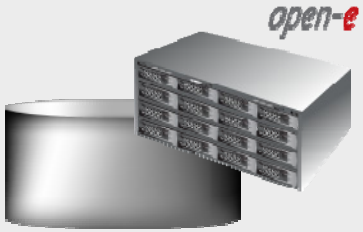


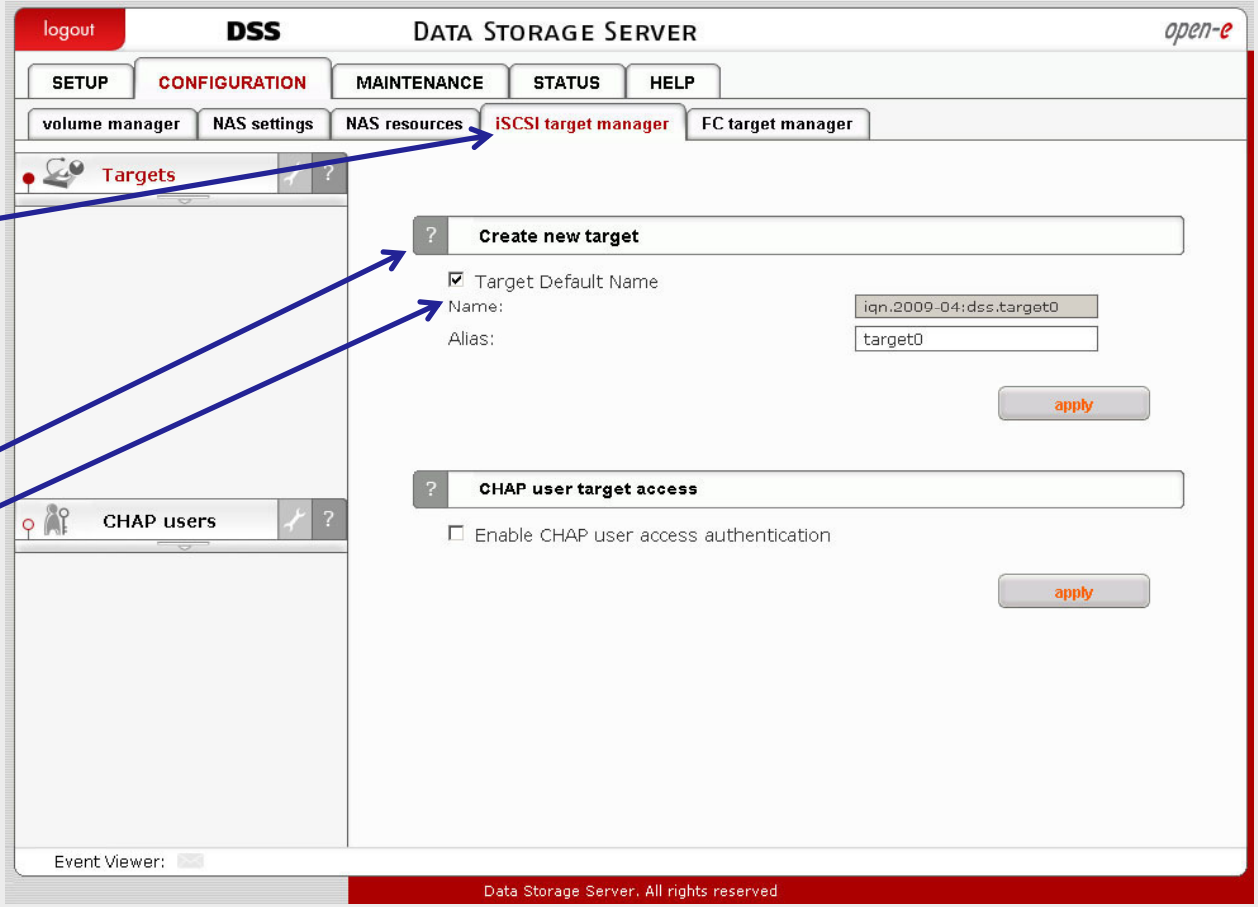
Data Server (DSS1)
Source node
Address IP:192.168.0.220

3. Configure the Source Node

Under the „**CONFIGURATION**" tab, select „**iSCSI target manager**".

iSCSI targets

In the **Create new target** function enter a name for the new target (as desired) in the Name field and click **apply** to confirm.



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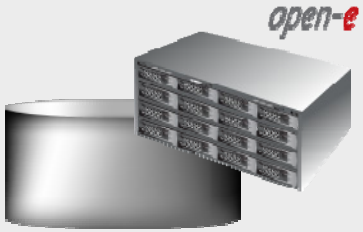

Data Server (DSS1)
Source node
Address IP:192.168.0.220

3. Configure the Source Node

Select **target0** within the **Targets** field.

iSCSI targets

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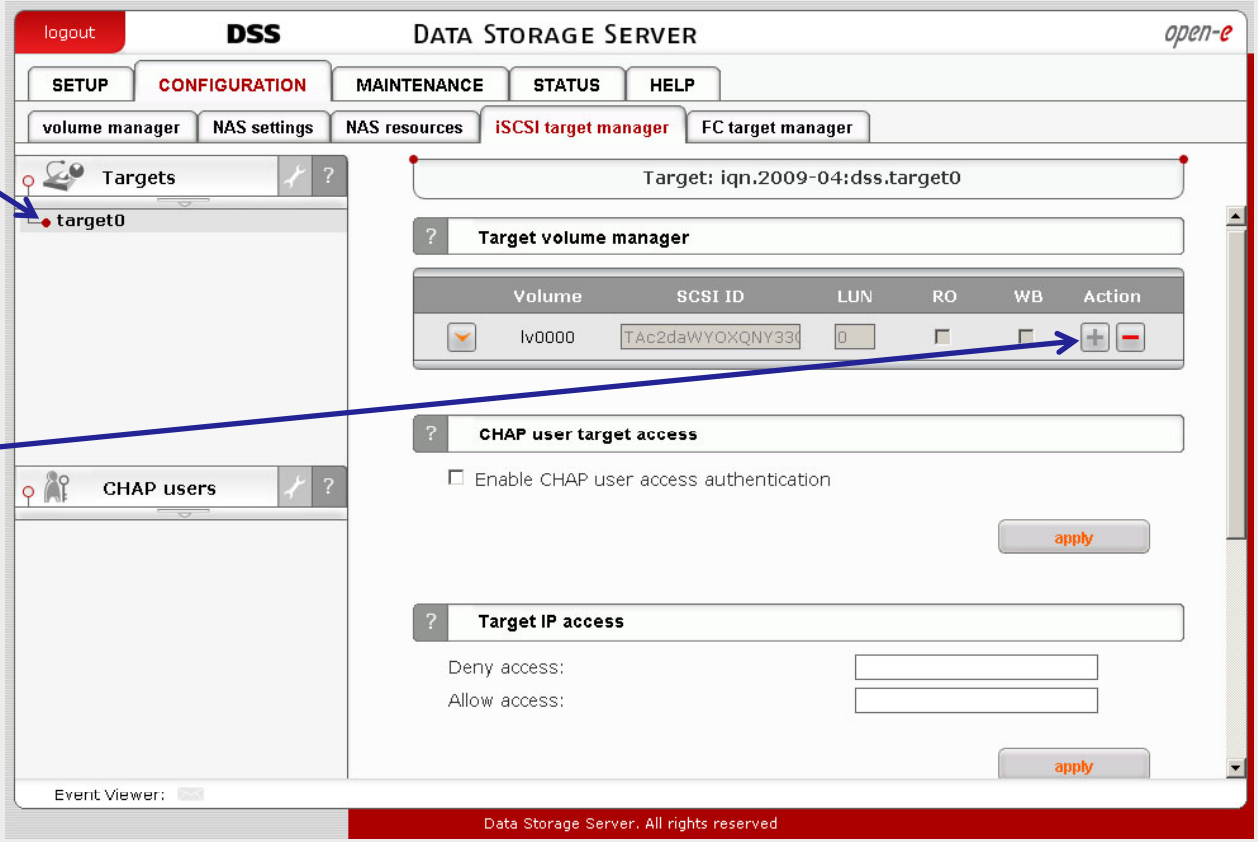

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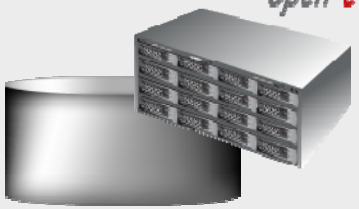


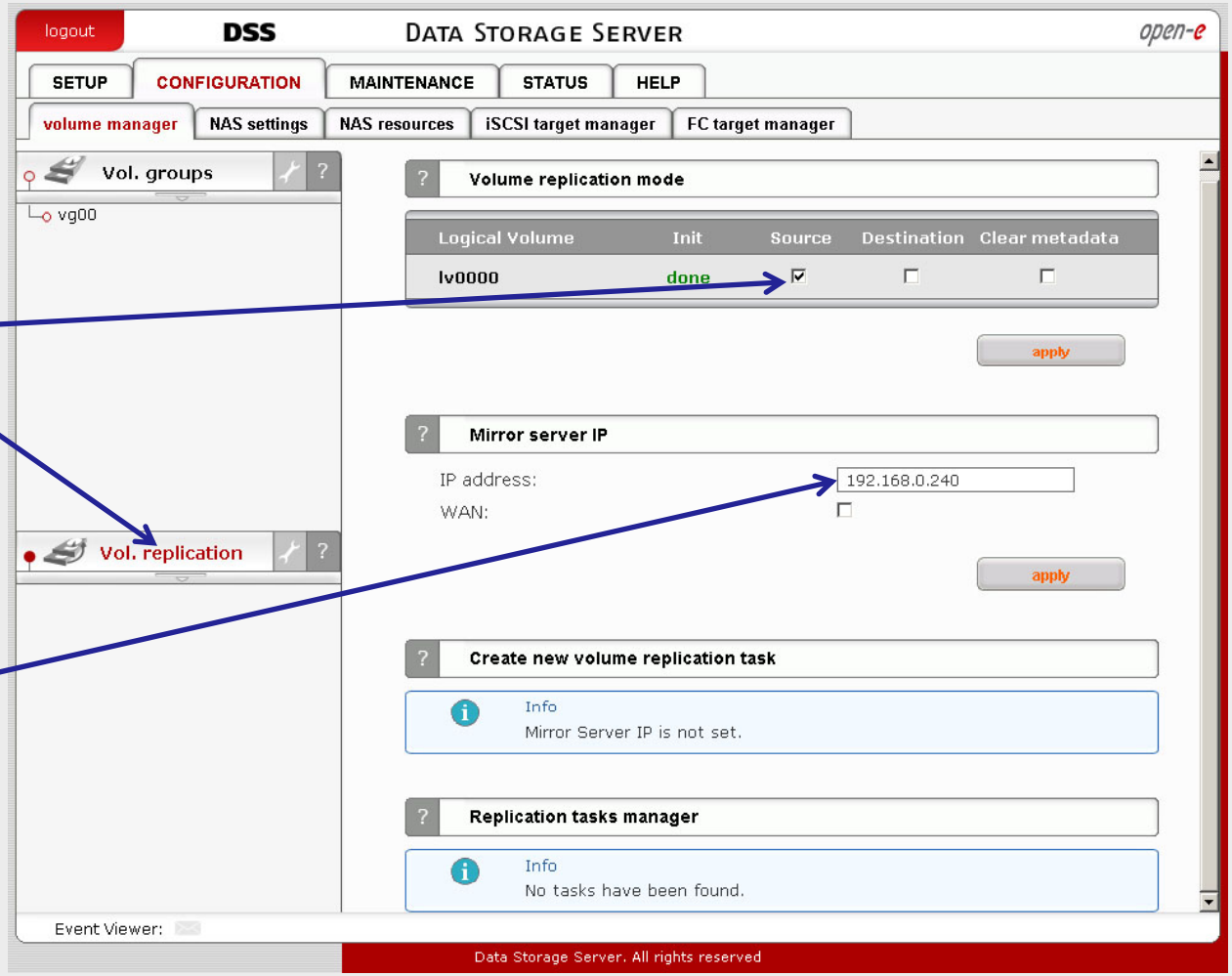
Data Server (DSS1)
Source node
Address IP:192.168.0.220

3. Configure the Source Node

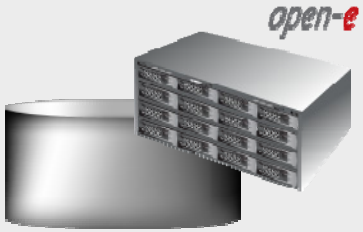
Now, select the **Vol. replication** and check box under **Source** and click the „**apply**" button

Volume Replication

Next, under **Mirror Server IP** function, enter the IP address of the destination node. In our example, this would be 192.168.0.240 click the **apply** button



Setting up Synchronous **Volume Replication** over a LAN

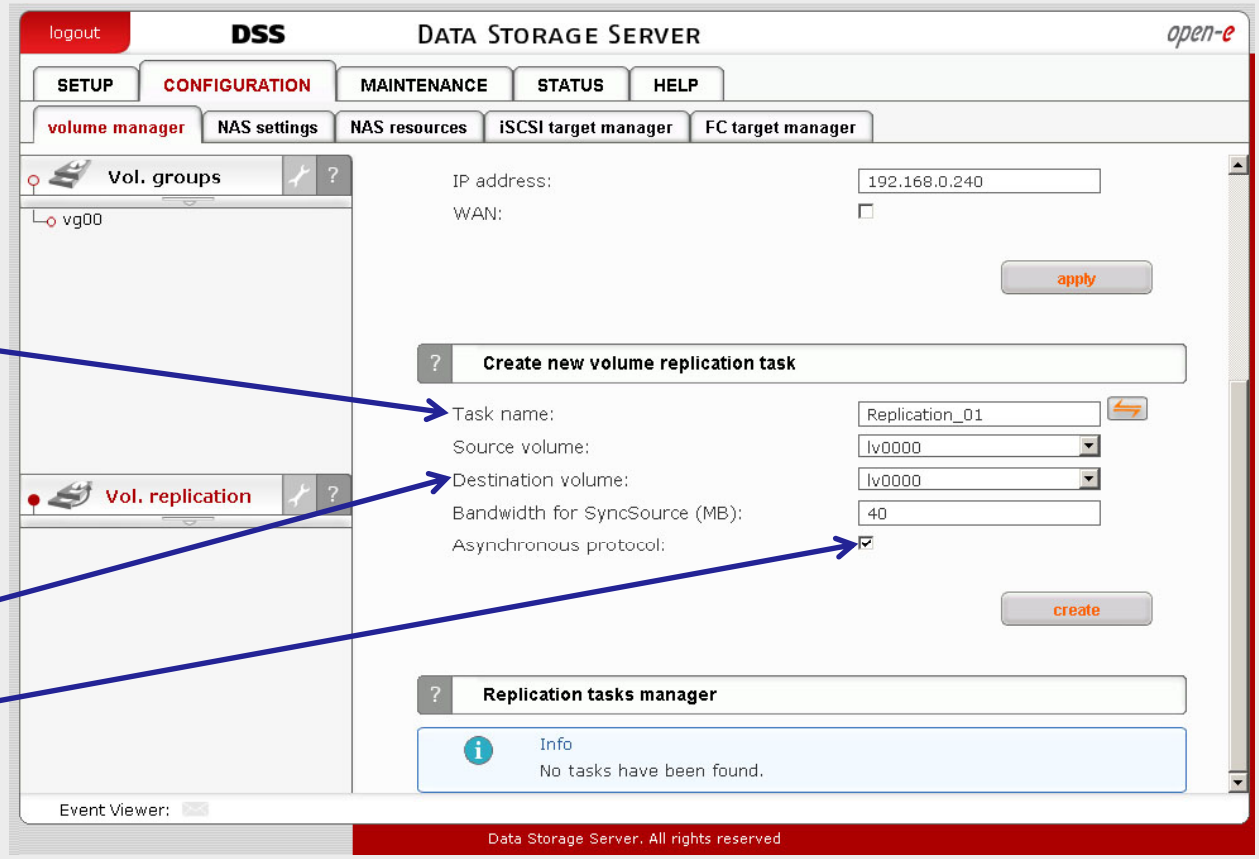


Data Server (DSS1)
Source node
Address IP:192.168.0.220

4. Creating replication task

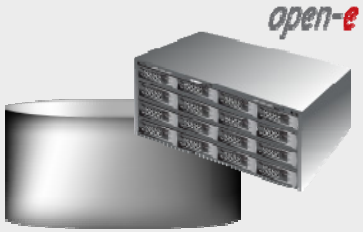
Enter the task name in field **Task name** next, click on the button

In the **Destination volume** field select the appropriate volume (in this example, **lv0000**). Next check the **Asynchronous protocol** box and click **create** to confirm



The configuration of the Source Node (storage server) is now complete.

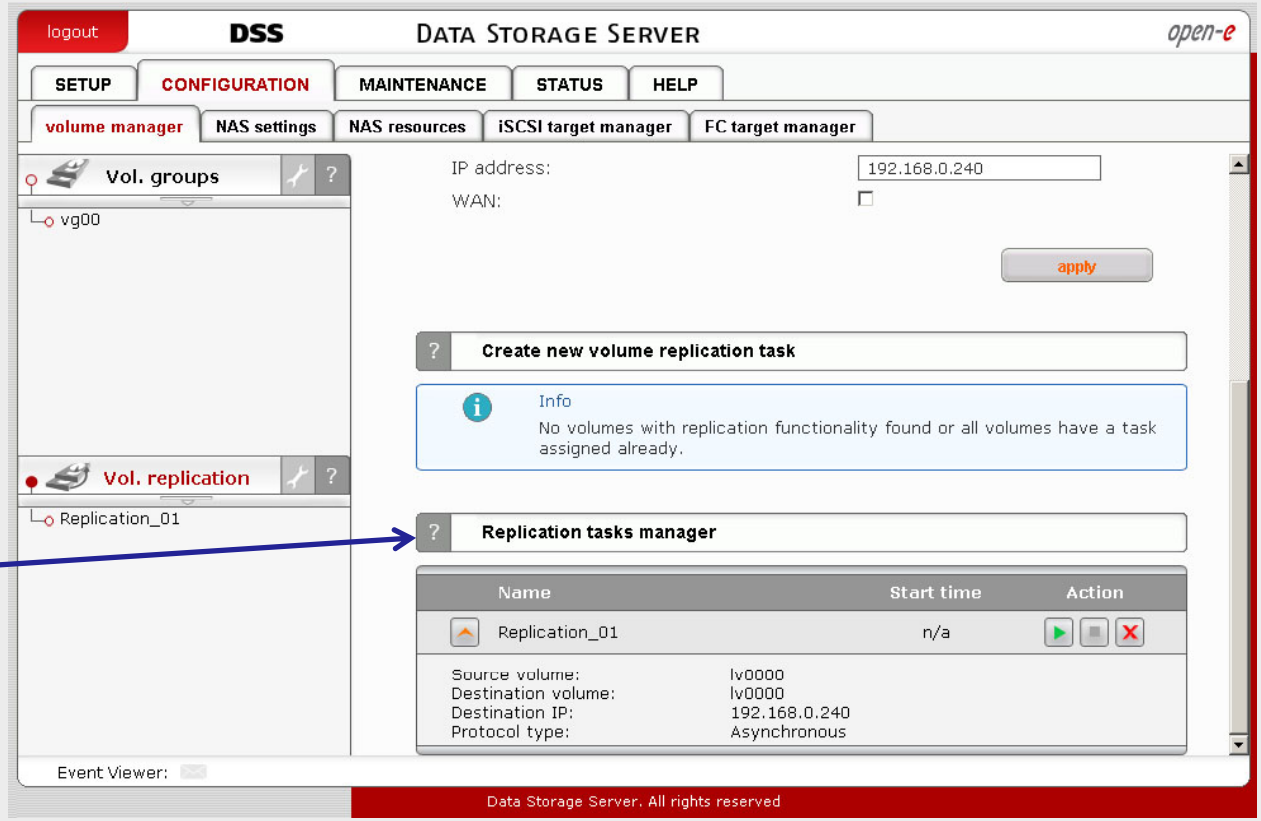
Setting up Synchronous **Volume Replication** over a LAN



Data Server (DSS1)
Source node
Address IP:192.168.0.220

4. Creating replication task

After the DSS console has reloaded, you can start, stop or delete the task within the **Replication task manager** function.



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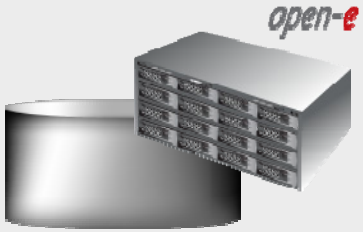
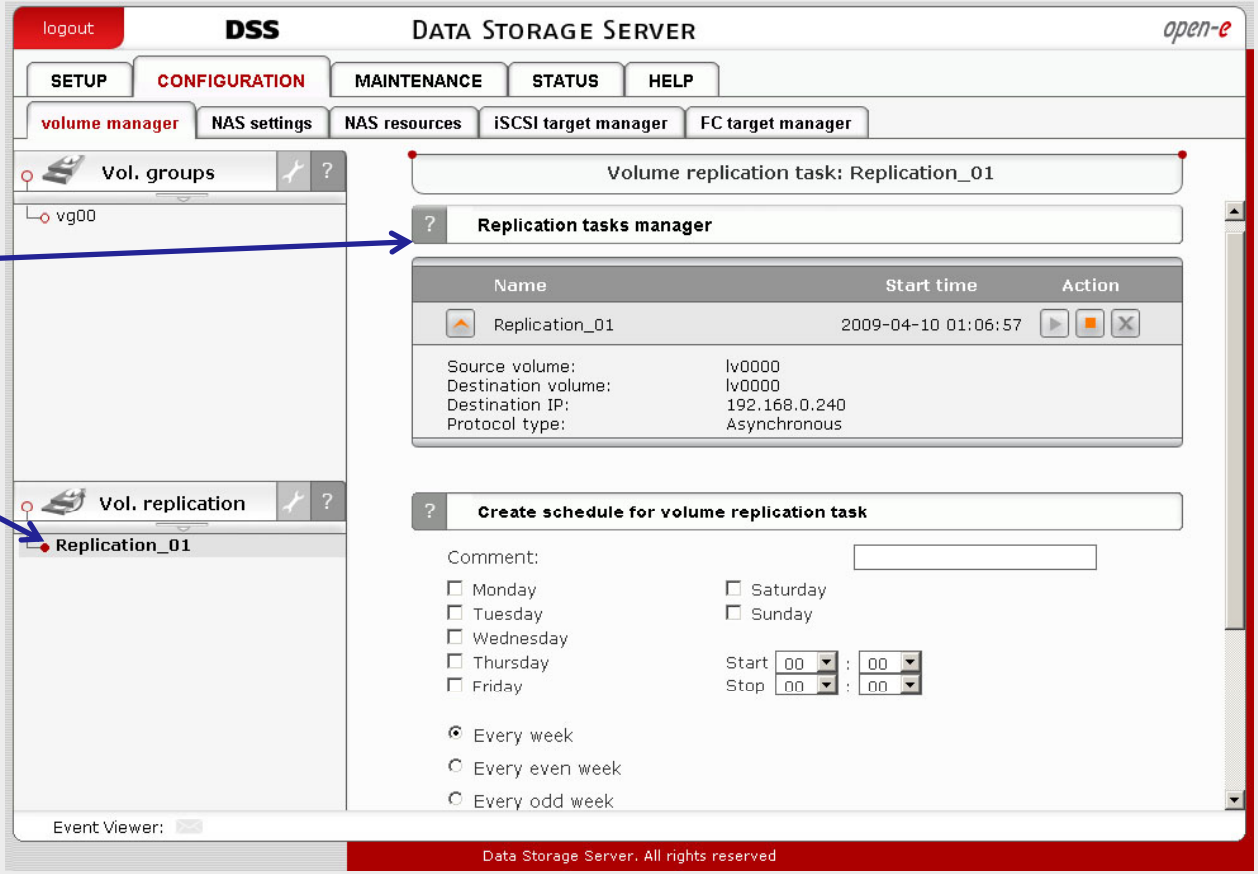


Data Server (DSS1)
Source node
Address IP:192.168.0.220

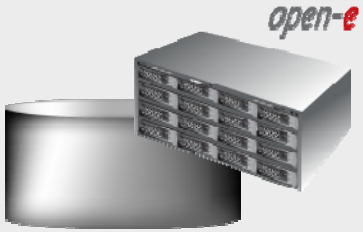
4. Creating replication task

Also, you can start, stop or delete the task within the **Replication Task Manager** function by clickling on the name replication (in this case, **Replication_01**)



NOTE:
Once the replication process has started, the replication direction cannot be changed.

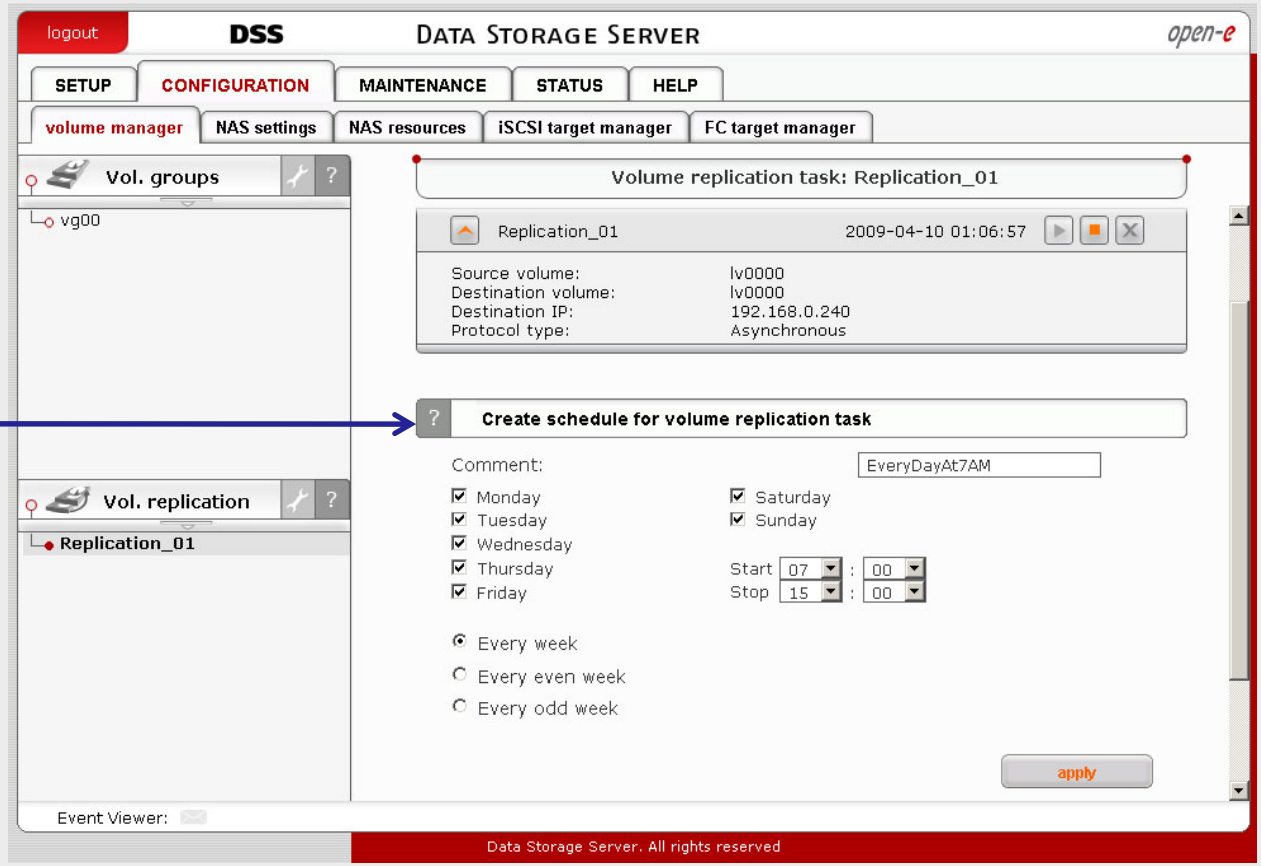
Setting up Synchronous **Volume Replication** over a LAN



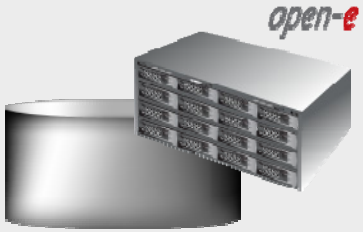
Data Server (DSS1)
Source node
Address IP:192.168.0.220

4. Creating replication task

In the "**Create schedule for volume replication task**" function, enter a comment for the new schedule and select for all days of the week. In this example choose **Every** week and select time for the start task (7 am) and stop (3 pm). Next, click the **apply** button.



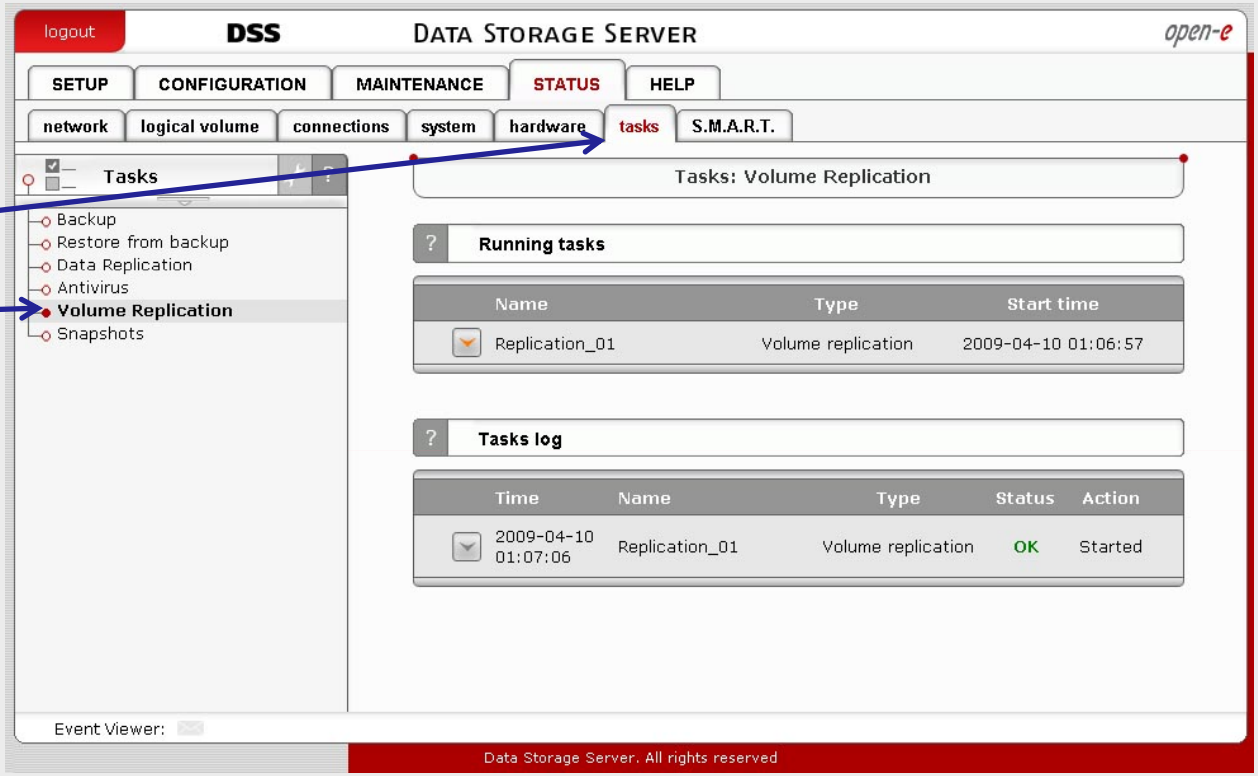
Setting up Synchronous **Volume Replication** over a LAN



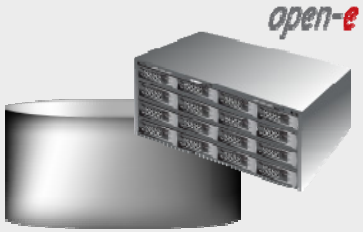
Data Server (DSS1)
Source node
Address IP:192.168.0.220

5. Checking volume replication status

Under the „**STATUS**" tab, select „**tasks**" and select **Volume Replication** to display information on existing volume replication tasks



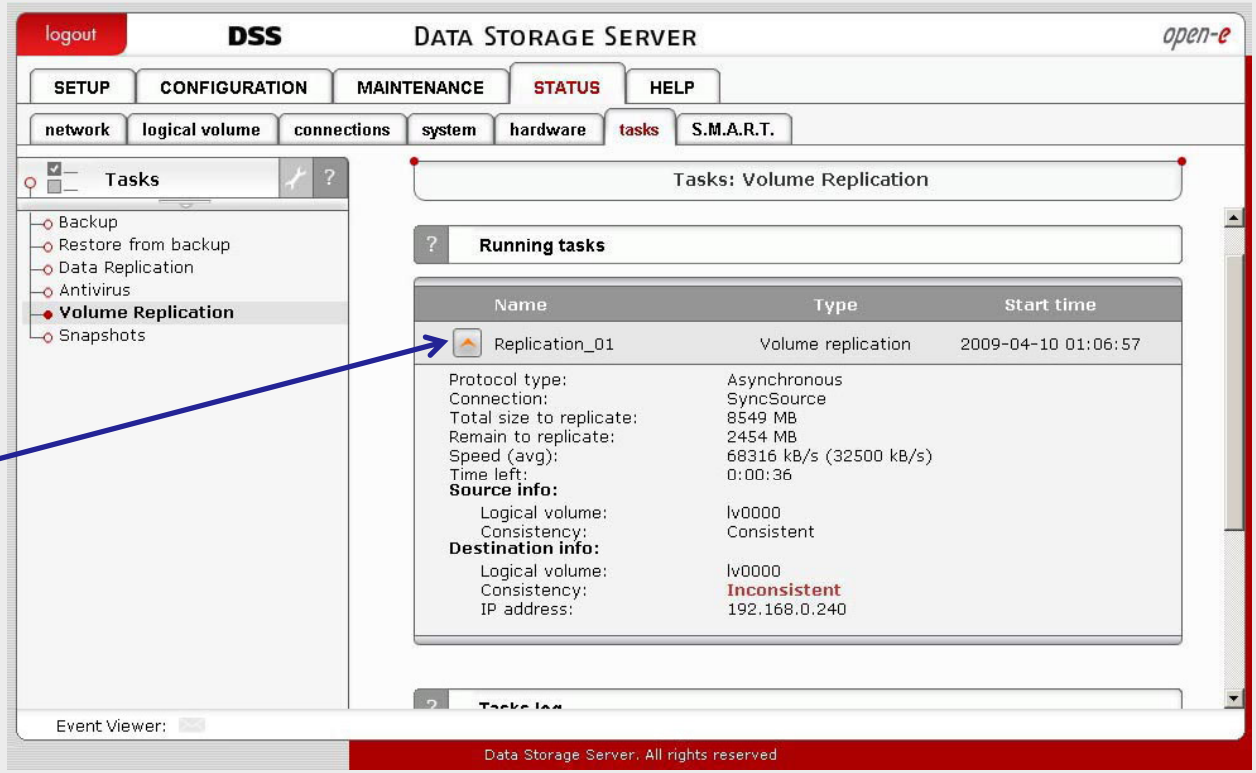
Setting up Synchronous **Volume Replication** over a LAN



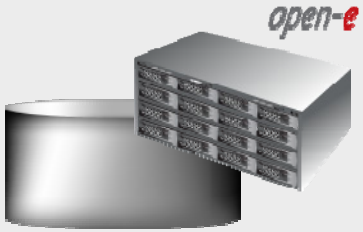
Data Server (DSS1)
Source node
Address IP:192.168.0.220

5. Checking volume replication status

Click on button with task name (in this case **Replication_01**) to display detailed information on the current replication task.



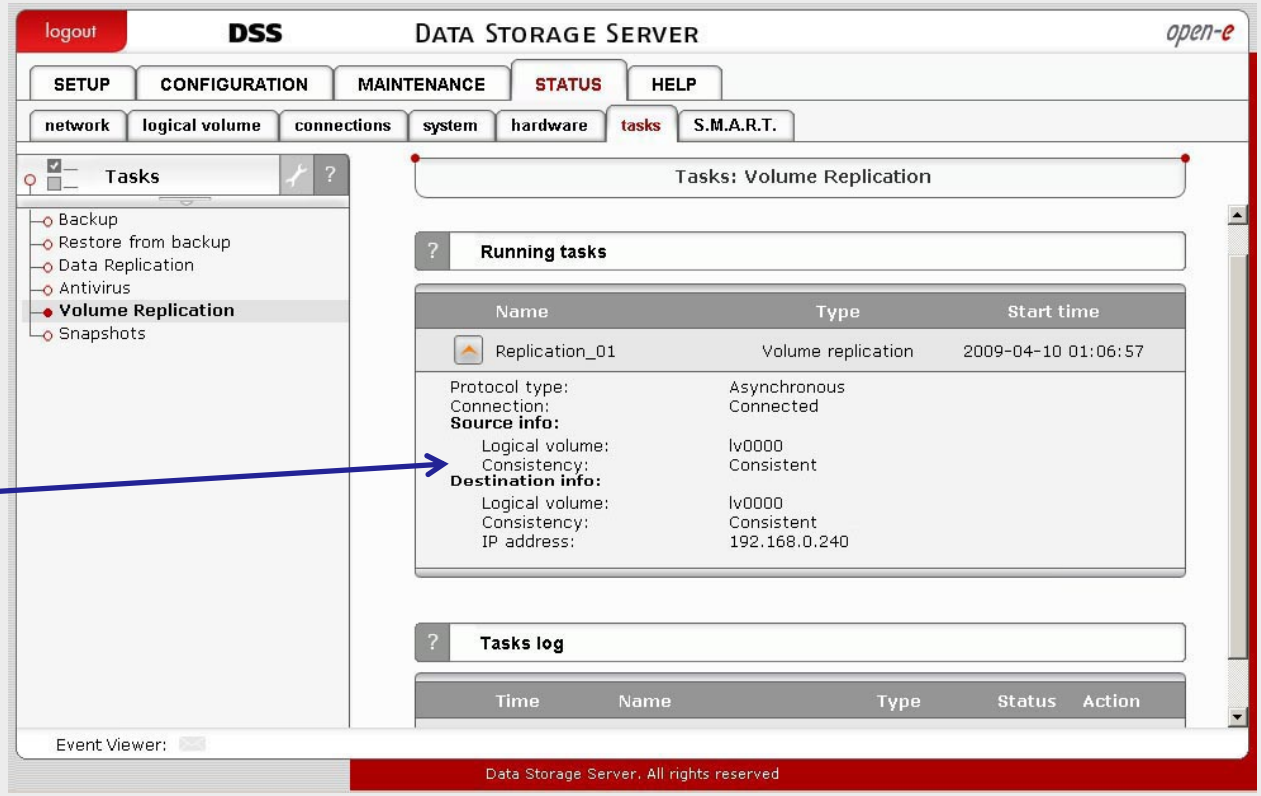
Setting up Synchronous **Volume Replication** over a LAN



Data Server (DSS1)
Source node
Address IP:192.168.0.220

5. Checking volume replication status

The replication tasks shows consistency status of the destination volume. This will state **Inconsistent** immediately upon starting a new replication.
This will switch to **Consistent** once reaching the state that both volumes are in sync. Destination volume has useful data only when replication task reaches **Consistent** state.
Asynchronous replication does not guarantee exact mirror of the data especially with slow uplink, but data remains consistent.
It could be that some of the most recent files are missing on destination volume. The amount of the not replicated data depends on the uplink speed and the amount of the new data on the source volume.



Volume Replication, between source and destination nodes, is now complete

Thank You!