

Open-E[®] Data Storage Server (DSS[™])

Volume Replication

INSTALLATION GUIDE

Enterprise-class Volume Replication helps ensure non-stop access to critical business data.

Open-E DSS Volume Replication

Open-E Data Server Storage (DSS) offers enterprise-class Volume Replication capability to help you protect business data against system failure, cyber-attack, fire or natural disaster, all at no extra cost! Because Open-E DSS provides integrated management for all your data - iSCSI, NAS, and Fiber Channel - all your enterprise data can be protected with one low-cost, easy-to-use solution.

How does it work?

Open-E DSS Volume Replication can be set up in just a few minutes to mirror target data volumes, providing an extra layer of fault tolerance in case of system downtime or loss of the primary data source.

By allocating one target as the primary data storage device and the second as a destination, you can ensure data will be written synchronously to both targets using a dedicated network connection. Volumes can be replicated at either the file level or the block level. Because the primary target is replicated in real time, the data will be immediately available if the primary storage system is down or damaged. The system accommodates up to 256 Logical Unit Numbers (LUNs) per target, and up to 4TB per volume. Adjustable bandwidth throttling helps to ensure continuous top performance.¹

¹ We recommend a dedicated 1GbE NIC for replication. Replication volume should not exceed 60MB for 1GbE. With 10GbE NICs, the volume can be higher.

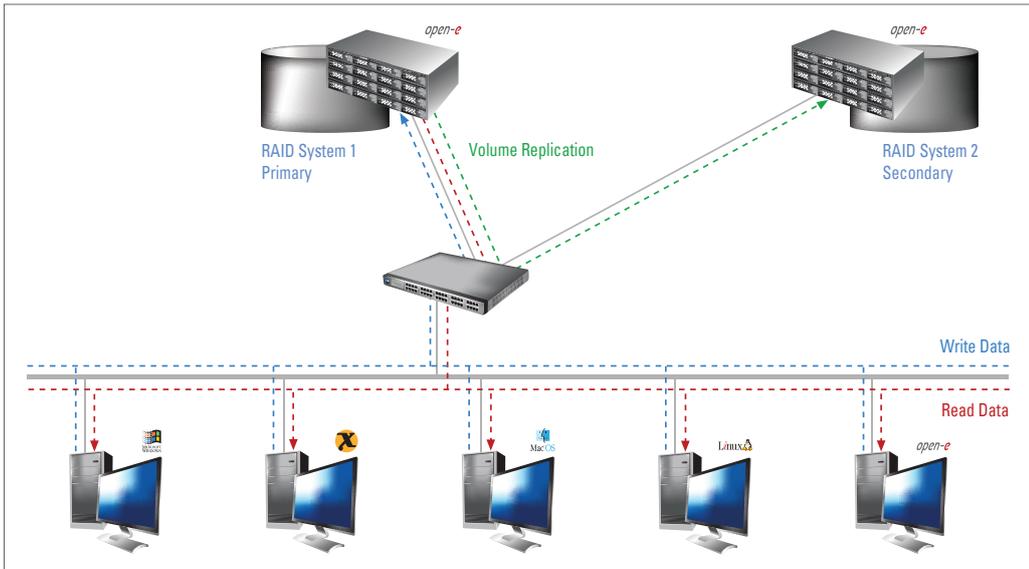


Figure 1
Data is written and read to a primary Open-E DSS Server (system1) and synchronously copied to a secondary Open-E DSS Server (system 2) via Open-E DSS Volume Replication.

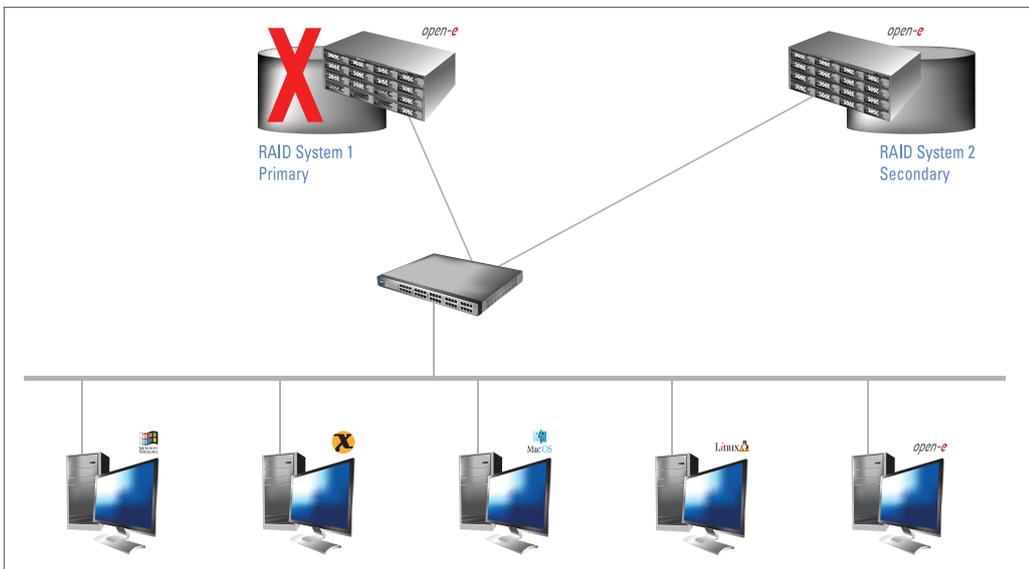


Figure 2
In the event of raid array error or disk drive error on the primary Open-E DSS Server (system 1), the server will send an e-mail notification to the administrator and users will be notified. The administrator then switches users to the secondary Open-E DSS Server (system 2).

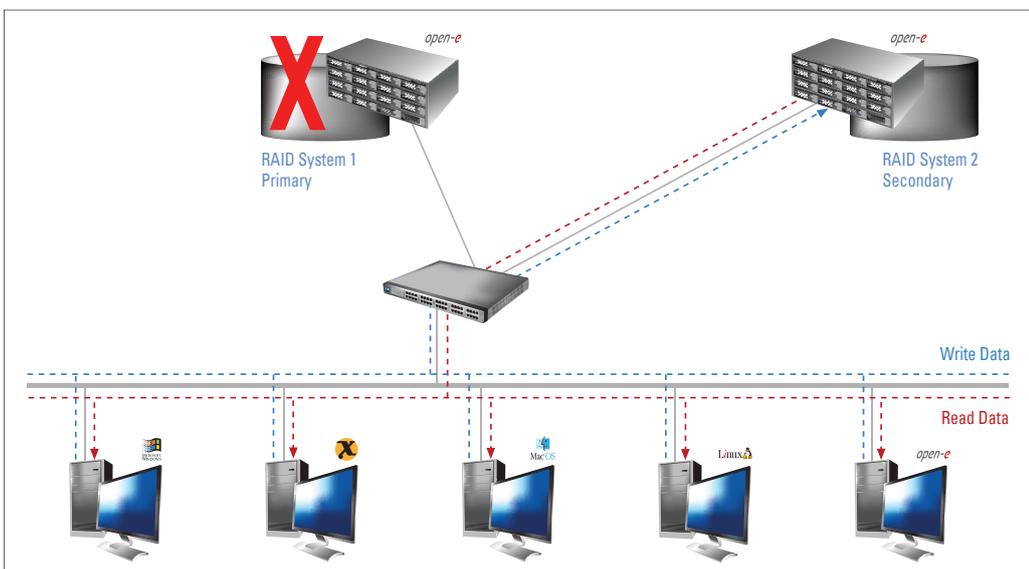


Figure 3
The replicated volumes are now available to users on the secondary Open-E DSS Server (system 2).

Open-E DSS supports IP security (IPsec), a standard for securing IP communications by encrypting and authenticating all packets. This provides extra security for the network layer to protect enterprise data as it is replicated and accessed from local or remote primary and secondary storage servers.

Volume Replication Usage Models

Volume Replication for Disaster Recovery

Open-E DSS Volume Replication provides synchronous replication to copy critical company data from NAS, iSCSI and/or Fibre Channel networks to a secondary site. If the primary server fails for any reason, the secondary server can be up and running as the primary server with just a few mouse clicks. You can also use Open-E DSS Automatic Failover to automatically switch over to secondary storage in case of failure.

Integrated Data and Volume Replication at No Extra Cost

Open-E DSS offers both asynchronous Data Replication and Synchronous Volume replication to provide zero-data-loss protection for your critical company data, at no extra cost! For example, when a system administrator is notified that failover has occurred with the Open-E DSS Automatic Failover feature, they can immediately apply incremental changes from Open-E DSS Data Replication to bring the secondary data source right up to pre-failure state. The combination of these features lets you maintain multiple complete copies of data on remote servers over local area networks (LANs) or wide area networks (WANs) using the integrated block-based replication technologies.

Configuring Open-E DSS Volume Replication

Hardware Requirements

The Volume Replication feature of Open-E DSS requires two storage servers. The destination volume should be exactly the same size as the source volume.

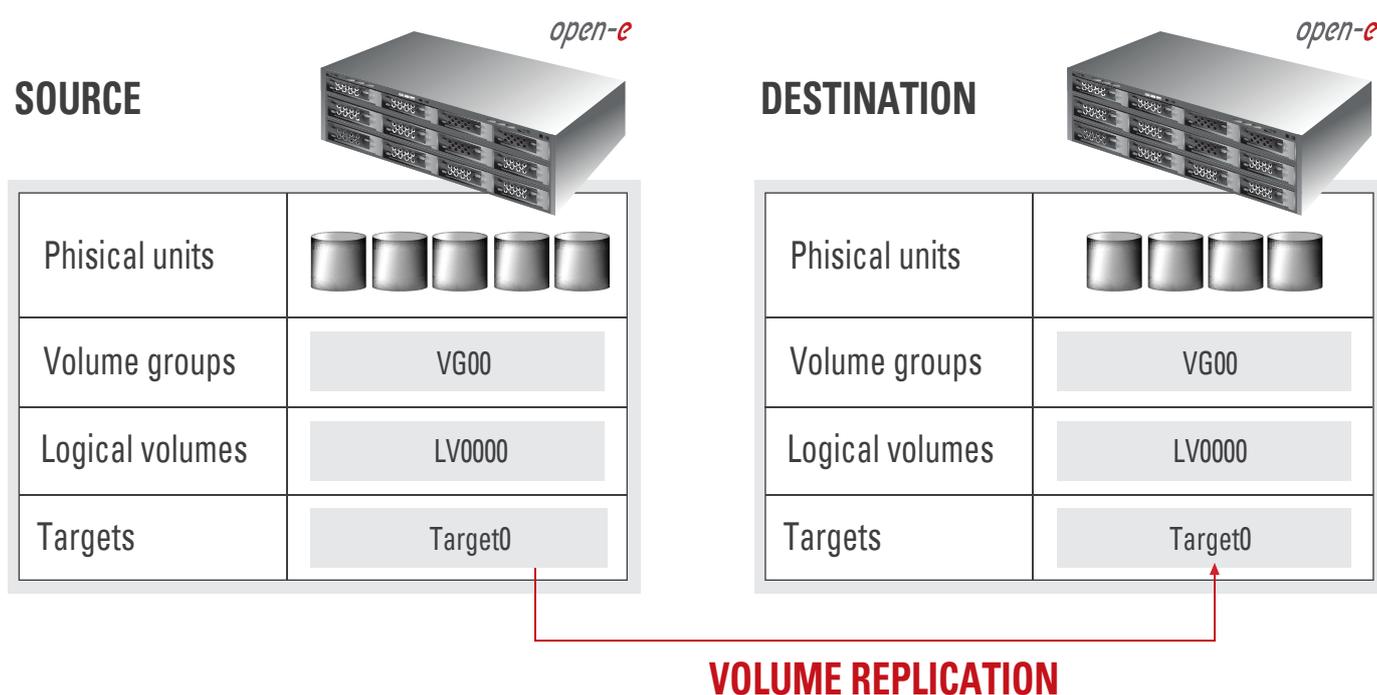
Hardware Requirements

To configure Volume Replication in Open-E DSS, you must first configure the destination and source systems.



NOTE

The volumes to be replicated must be exactly the same size.



Picture How volume replication works

SOFTWARE CONFIGURATION

To set up volume replication, perform the following steps:

1. Configure the destination node
2. Configure the source node

Step 1 Configure the Destination Node

1. In the **CONFIGURATION** tab under **Volume Manager**, create a new volume group (vg00).

The screenshot displays the DSS (Data Storage Server) web interface. The main navigation bar includes 'logout', 'DSS', 'DATA STORAGE SERVER', and the 'open-e' logo. Below this, there are tabs for 'SETUP', 'CONFIGURATION', 'MAINTENANCE', 'STATUS', and 'HELP'. Under the 'CONFIGURATION' tab, there are sub-tabs for 'volume manager', 'NAS settings', 'NAS resources', 'iSCSI target manager', and 'FC target manager'. The 'volume manager' sub-tab is selected, and the 'Vol. groups' section is active. This section contains a table with columns for 'Unit', 'Size (GB)', 'Serial number', and 'Status'. The table shows one entry: 'Unit MD0' with a size of 74.62 GB and a status of 'available'. Below the table, there is an 'Action:' dropdown menu set to 'new volume_group' and a 'Name:' text input field containing 'vg00'. An 'apply' button is located below the form. To the left of the main interface, there is a 'DESTINATION' sidebar with a tree view showing 'Physical units' (represented by four disk icons), 'Volume groups' (containing 'VG00'), 'Logical volumes', and 'Targets'. At the bottom of the interface, there is a footer that reads 'Data Storage Server. All rights reserved'.

Picture Creating a new volume group.

- Under **CONFIGURATION** on the **Volume Manager** tab, select the appropriate volume group within the volume group function. Create the logical volume that will be the destination for the replication process. Remember to enable **Volume Replication**, as shown below:

The screenshot shows the open-e DSS (Data Storage Server) interface. The main window is titled "DSS DATA STORAGE SERVER" and has tabs for "SETUP", "CONFIGURATION", "MAINTENANCE", "STATUS", and "HELP". Under "CONFIGURATION", there are sub-tabs for "volume manager", "NAS settings", "NAS resources", "iSCSI target manager", and "FC target manager". The "volume manager" tab is active, showing a tree view of "Vol. groups" with "vg00" selected. The main area displays the configuration for "Volume group: vg00".

Logical Volume	Type	Snap.	Rep.	Init.	Blocksize (bytes)	Size (GB)
lv0000			✓		N/A	10.00
System volumes						Size (GB)
Reserved for swap						4.00
Reserved for snapshots						0.00
Reserved for system						1.00
Reserved for replication						0.13
Free						59.44

Below the table, there is an "Action:" dropdown menu set to "new NAS volume". There is a checkbox for "Use volume replication" which is currently unchecked. A progress bar shows the current size (0) and total size (59.44). An "add:" field is set to "0.00" GB. An "apply" button is visible at the bottom right.

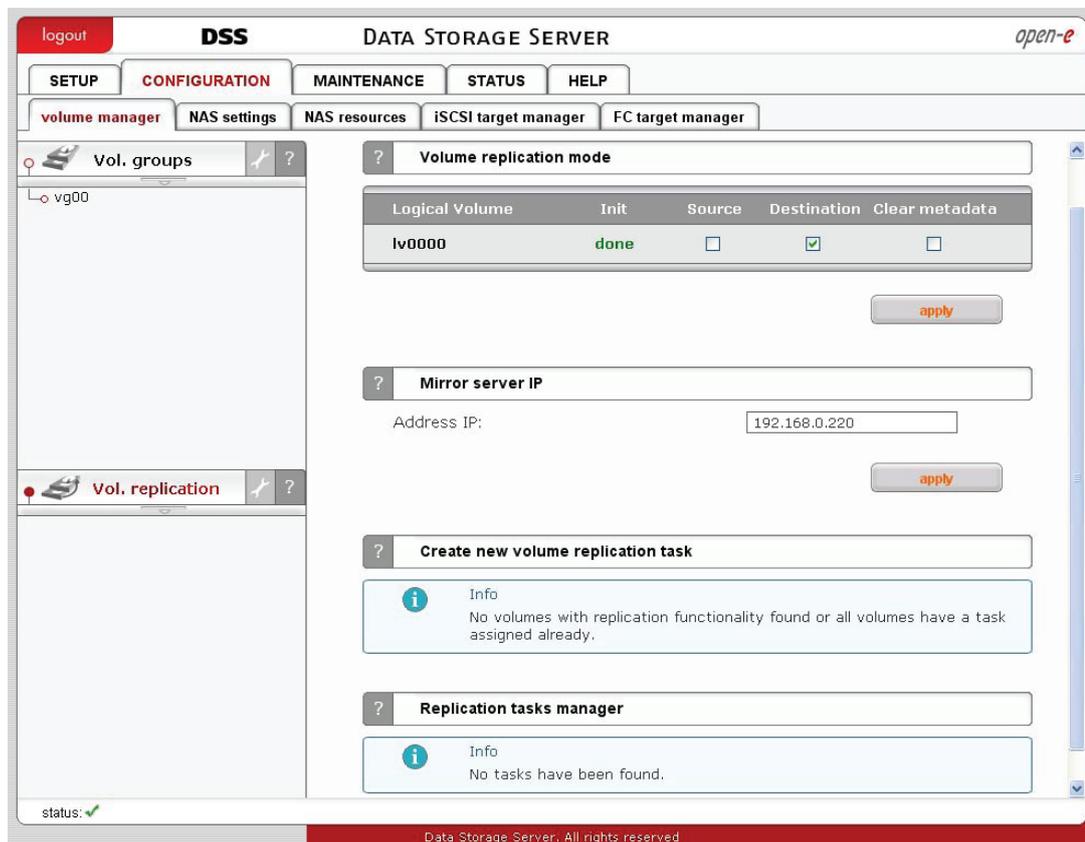
On the left side, there is a "DESTINATION" table:

Physical units	
Volume groups	VG00
Logical volumes	LV0000
Targets	

Picture Creating the logical volume that will be the destination.

- Under **Volume Manager**, check the destination box within the **Volume Replication Mode** function, then click the apply button.

4. Under **Mirror Server IP** function, enter the IP address of the source node. In our example, this would be 192.168.0.220.



Picture Providing the IP address of the source node.

The destination node is now configured.

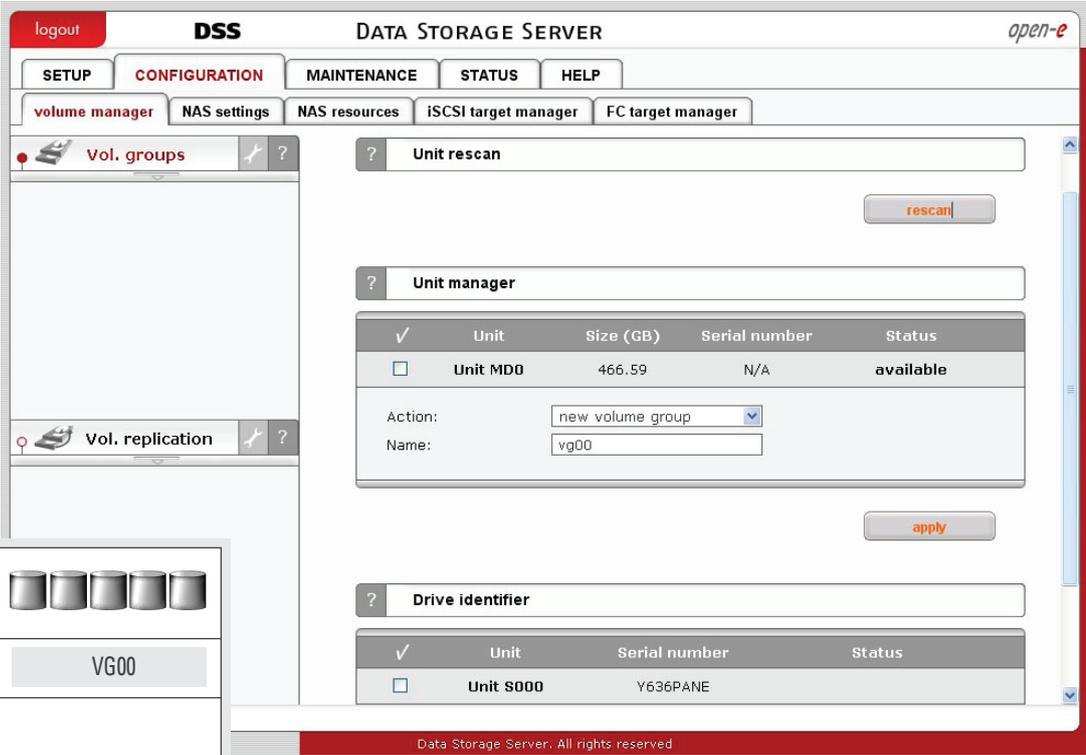
Step 2

Configure the Source Node

- 1. Under the **CONFIGURATION** tab, create a new volume group (vg00).

SOURCE

Physical units	
Volume groups	VG00
Logical volumes	
Targets	



Picture Creating the new volume group.

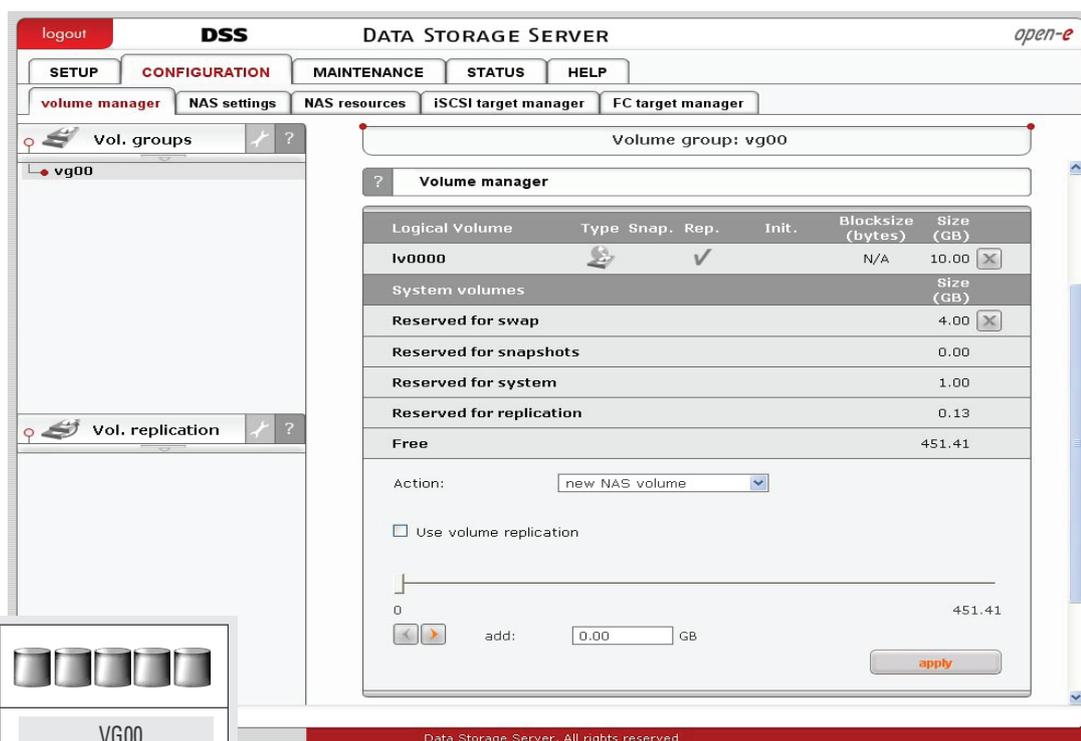
- 2. Identify the source volume to be replicated.

- Under the **CONFIGURATION** tab, click on **Volume Manager** and select the applicable volume group (vg00) within the Volume group function.



NOTE

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



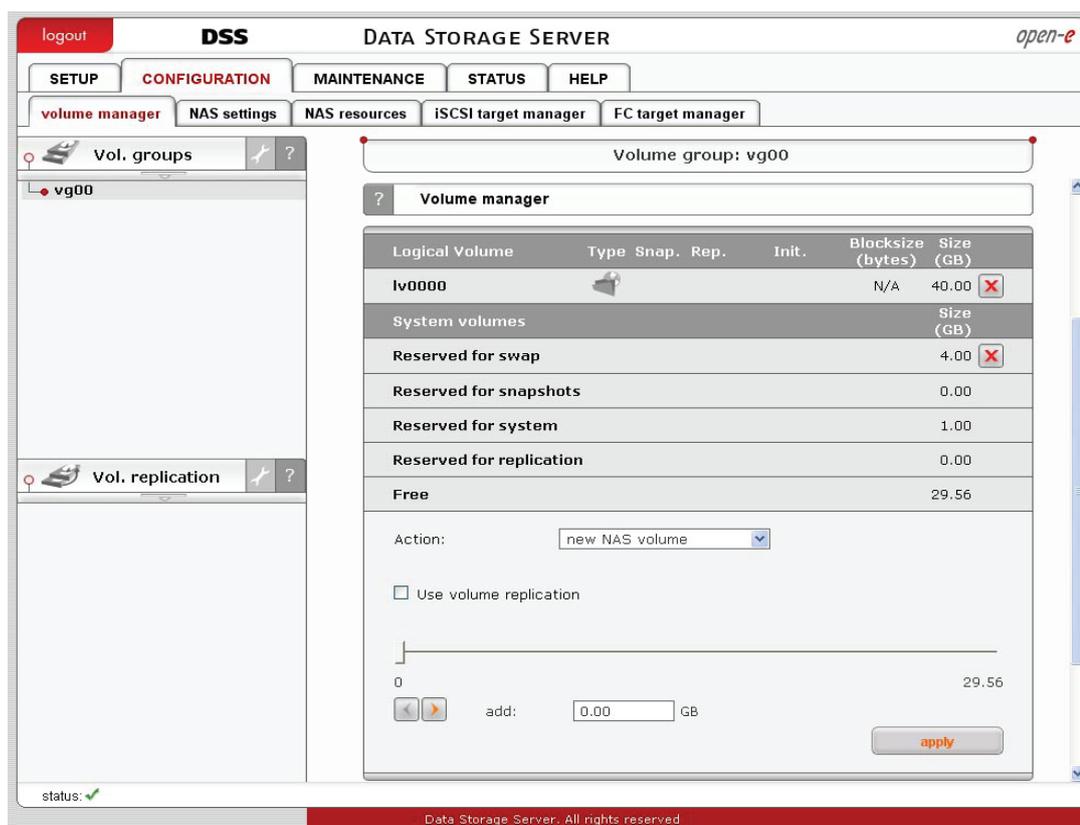
SOURCE

Physical units	
Volume groups	VG00
Logical volumes	LV0000
Targets	

Picture Selecting the volume group.

- Under **Volume Manager** in the **Volume Replication Mode** function, check the **Source** box for the source volume to be replicated.
- In the **Mirror Server IP** function, enter the IP address of the destination node. In our example, this would be 192.168.0.240.

6. Next, access the **Create New Volume Replication Task** function and enter the name in the **Task Name** field (here, **Replication_01**), and choose the appropriate destination volume using the  button.



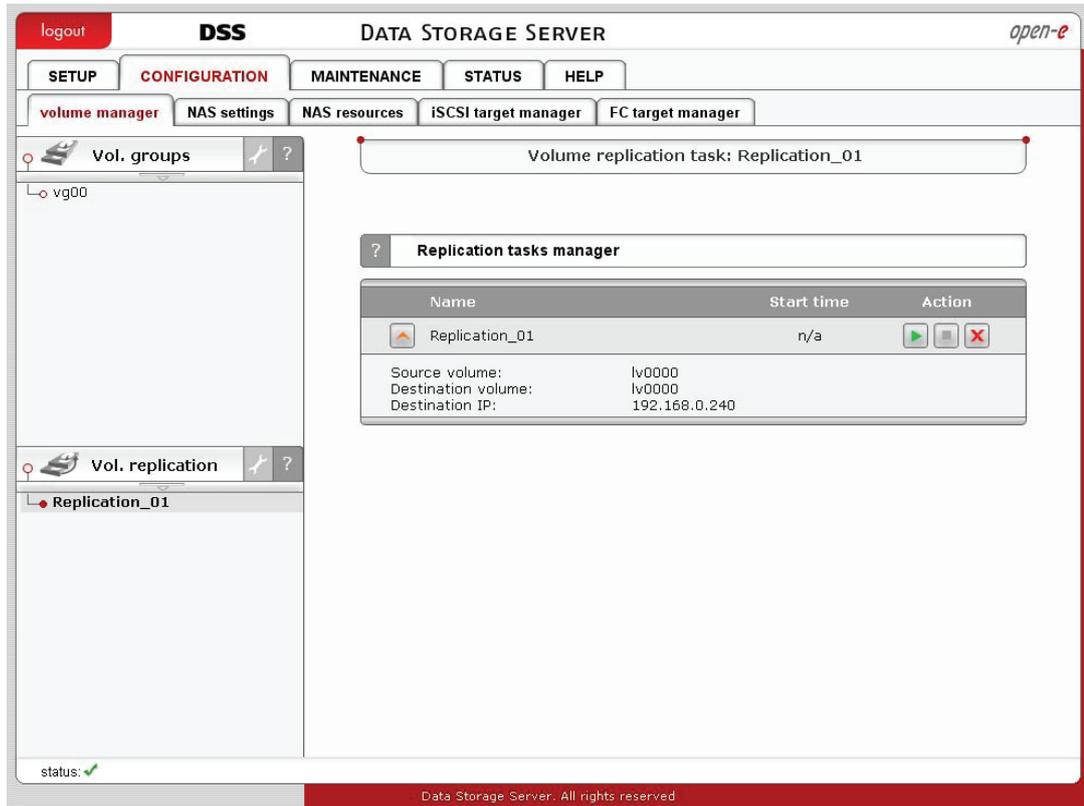
Picture Choosing the destination volume.

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



NOTE

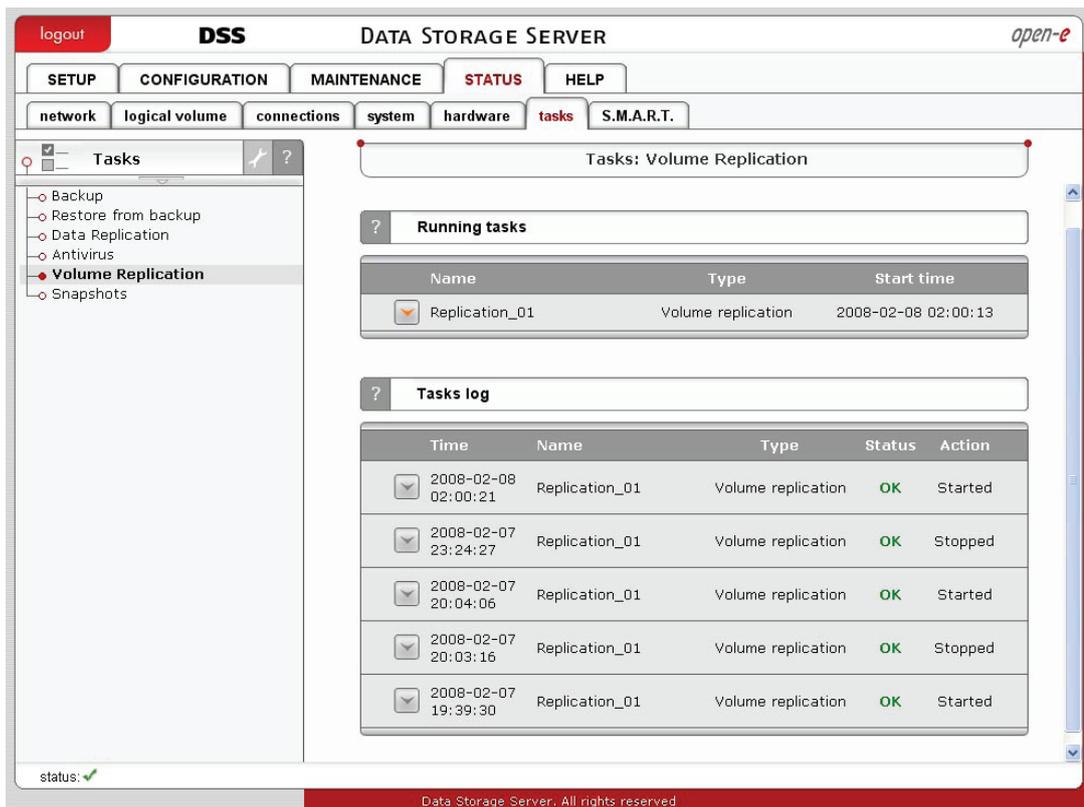
Once the replication process has started, the replication direction cannot be changed.



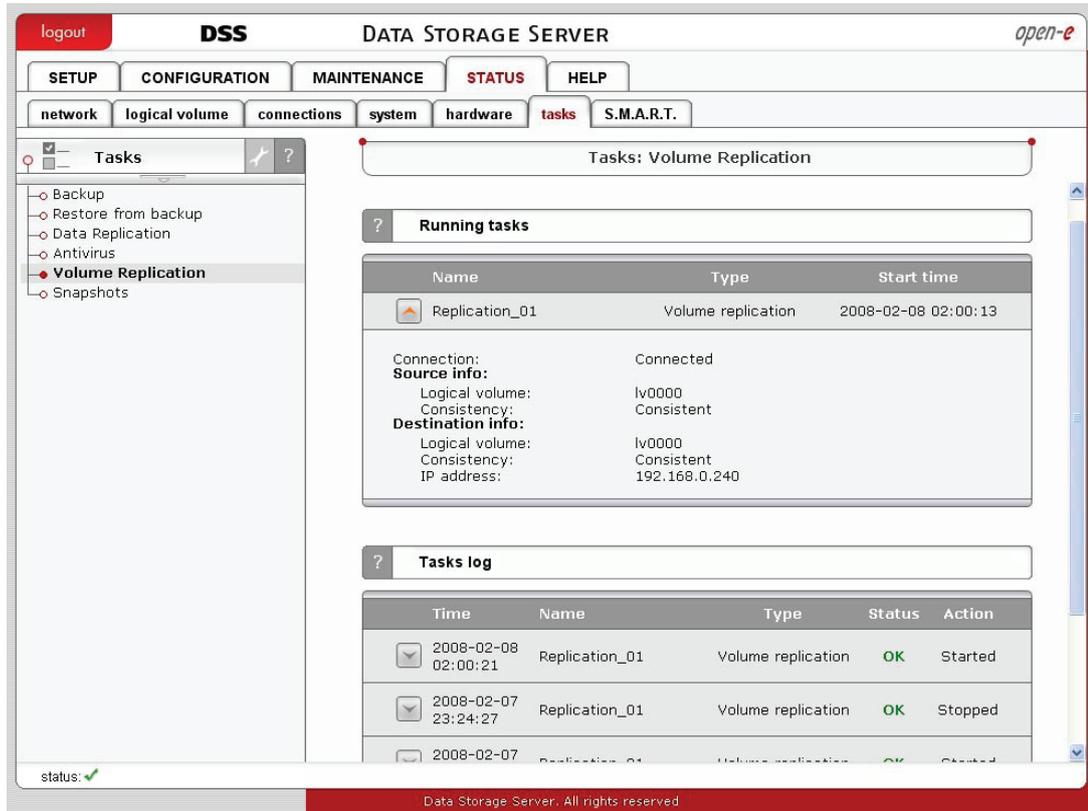
Picture Starting, stopping or deleting the replication task with the Task Manager.

8. Check the status:

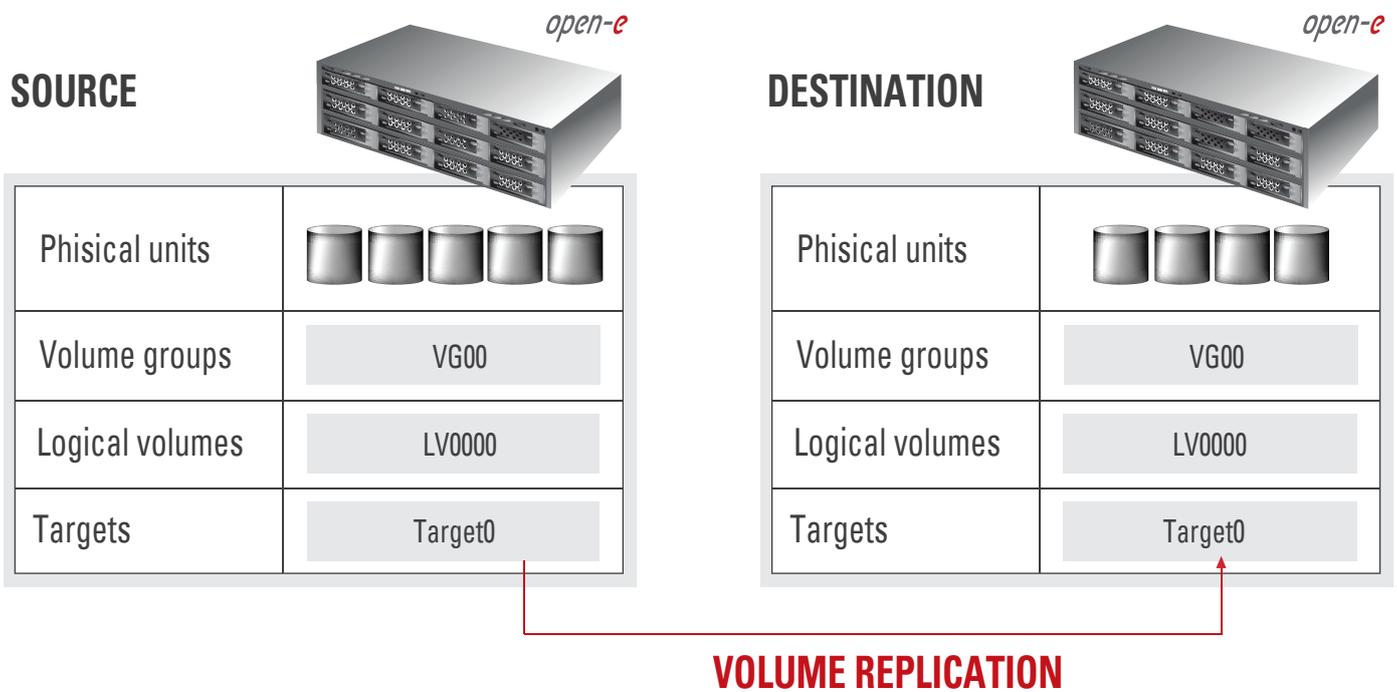
- To see current replication tasks, refer to the **STATUS** tab under **Tasks**, as shown in the figure below.
- Select **Volume Replication** under **Tasks** to display information on existing volume replication tasks.
- Click to display detailed information on the current replication task.



Picture Checking the status of current replication tasks.



Picture Showing the changing status of the replication task currently running.



Picture The completed setup.

Open-E DSS Volume Replication, between source and destination nodes, is now complete!



About Open-E

Open-E IP-based storage management products are known throughout the storage industry for their best-in-class performance, reliability, scalability and ROI. The Open-E **DSS**, **NAS-R3** and **iSCSI-R3** line of products offer outstanding flexibility and value with the ability to support a variety of storage protocols, such as iSCSI, Fibre Channel or Infiniband (IPoB), in either file or block data transmission.

Open-E works extensively with leading technology vendors, allowing system integrators to build affordable, scalable and secure storage systems on a variety of industry-standard hardware platforms.



LEARN MORE
To find out more about Open-E DSS, go to www.open-e.com or contact us at 1-781-481-9399