

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

Data Replication

INSTALLATION GUIDE

Integrated Data Replication reduces business downtime.

Open-E DSS Data Replication

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

How does it works?

Open-E DSS can be set up in just a few minutes to enable asynchronous file and folder replication from one storage system to another. The Open-E DSS Data Replication feature periodically takes a point-in-time snapshot of the data and then copies it to a target storage system. For efficiency, subsequent replications copy only files or folders that have changed since the previous snapshot.

Open-E DSS Data Replication can be run either locally disk-to-disk, as part of your backup strategy, or remotely via LAN or WAN, as part of your disaster recovery plan. You can set up tasks to replicate to many other systems, giving multiple redundant data points for backup or disaster recovery. You can also increase the volume sizes as needed to accommodate data growth. For maximum flexibility, data replication tasks can be run in two directions. Each system can function as both source and destination, allowing cross-data backups on several systems.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.

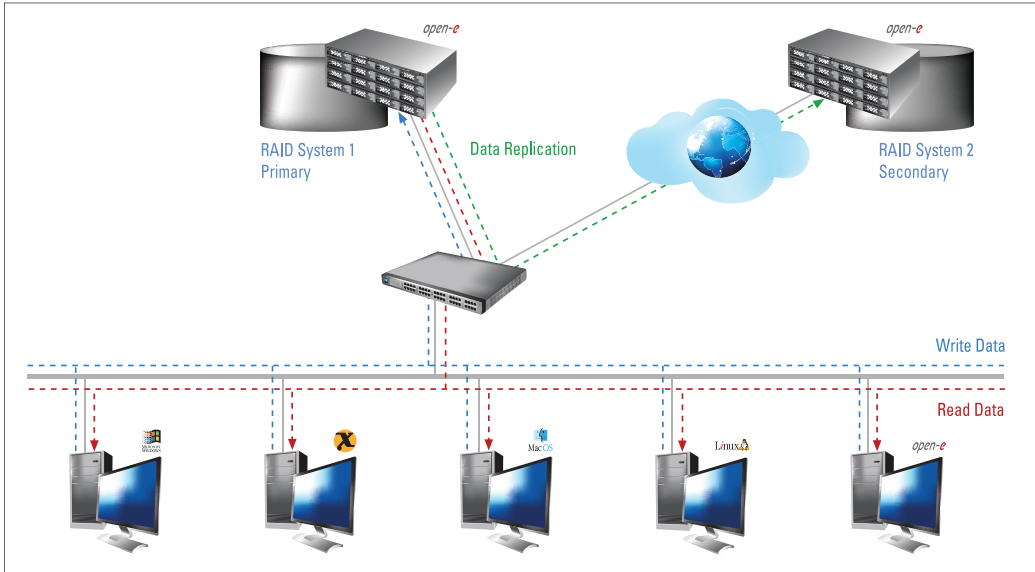


Figure 1
Data is written to a primary Open-E DSS Server and asynchronously copied to a secondary Open-E DSS Server via Open-E DSS Data Replication.

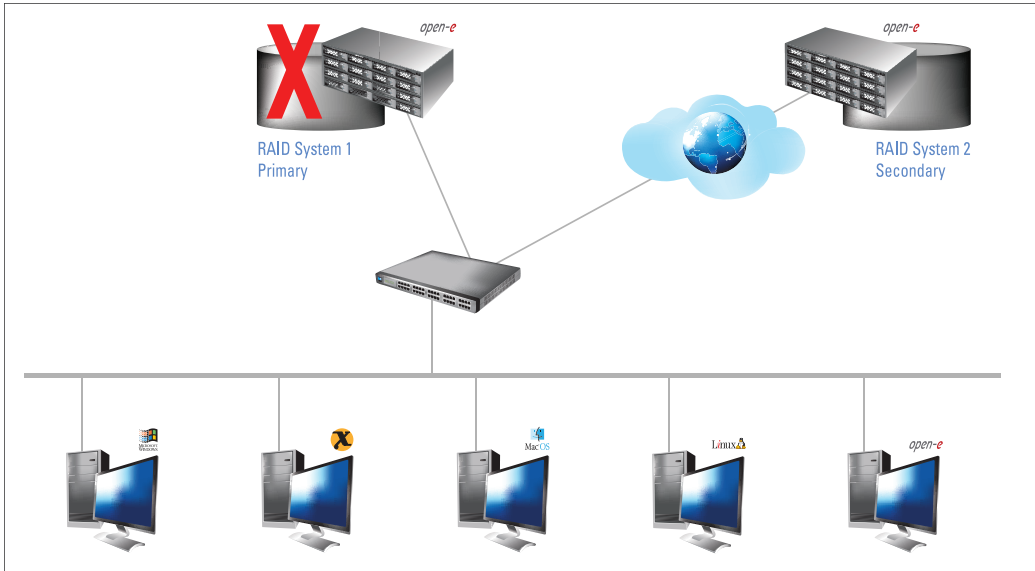


Figure 2
In the event of raid array error or disk drive error on the primary Open-E DSS Server, an e-mail notification is sent to the administrator. Administrator then switches to the secondary server over the LAN or WAN.

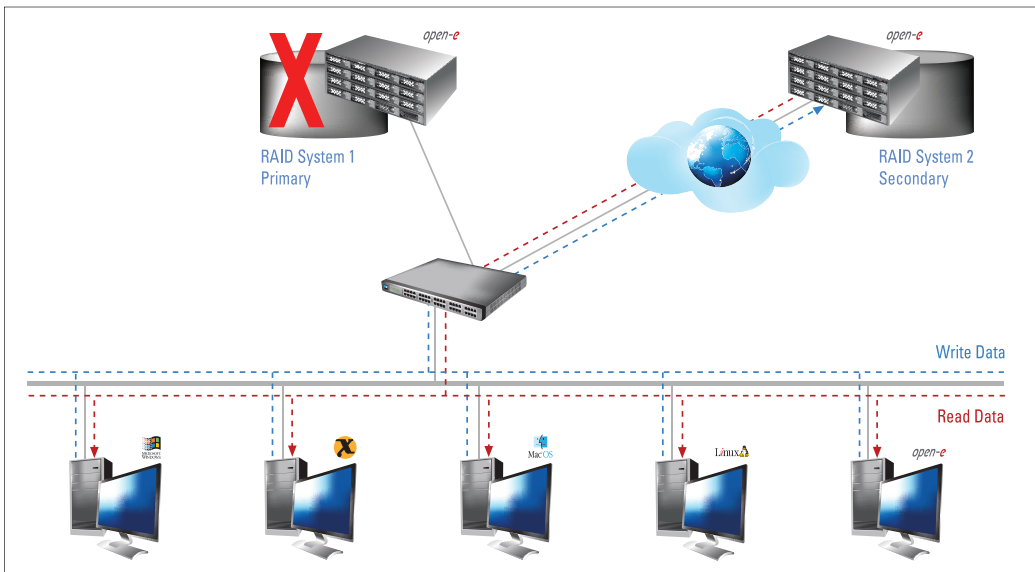


Figure 3
After Switching, data is available on the secondary Open-E DSS Server.

Open-E DSS also 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.

Data Replication Usage Models

Affordable, Efficient Backup and Fast Restore

Open-E Data Replication can be used in conjunction with backups, using cross-data replication to fully protect data while eliminating the costs of a dedicated backup server. Disk-based backup also offers faster and easier data restoration than tape-based backup systems.

Integrated Data and Volume Replication

Open-E DSS offers both asynchronous Data Replication, synchronous Volume Replication and Automatic Failover, at no extra cost, to provide zero-data-loss protection for your critical company data. For example, when a system administrator is notified that automatic failover has occurred, they can immediately apply incremental changes from 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 Data Replication

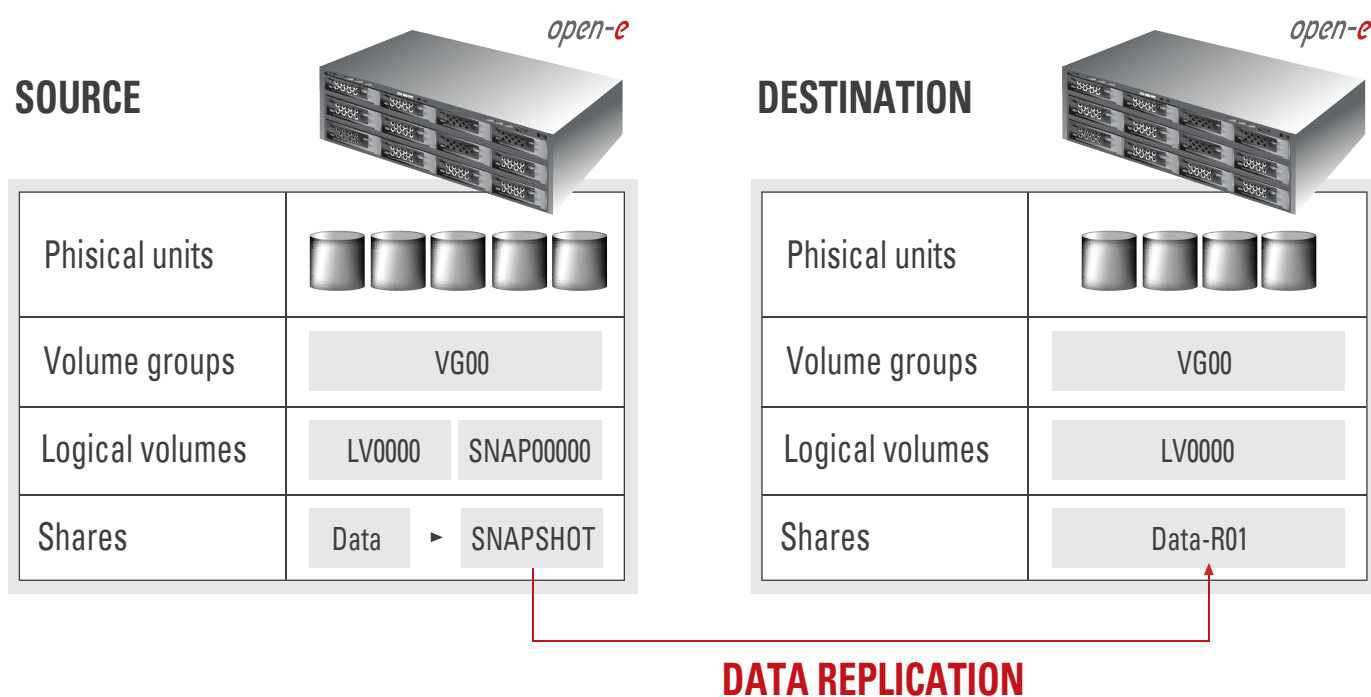
Hardware Requirements

To run the Data Replication feature of Open-E DSS, a minimum of two systems are required. Logical volumes working in slave mode must have snapshots created and enabled. An example configuration is shown below.



NOTE

Data can be replicated only at the file level (not block level).



Picture Configuration example for data replication between two systems.

SOFTWARE CONFIGURATION

To set up data replication, perform the following steps:

1. Configure the destination node
2. Configure the source node
3. Define a snapshot to be replicated
4. Schedule replication

Step 1 Configure the Destination Node

1. Under the **CONFIGURATION** tab, select **Volume Manager**.
Add the selected physical units to create a new **Volume Group** (in this case, vg00).

DESTINATION

Physical units	
Volume groups	VG00
Logical volumes	
Shares	

Picture Creating a new volume group (destination node).

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




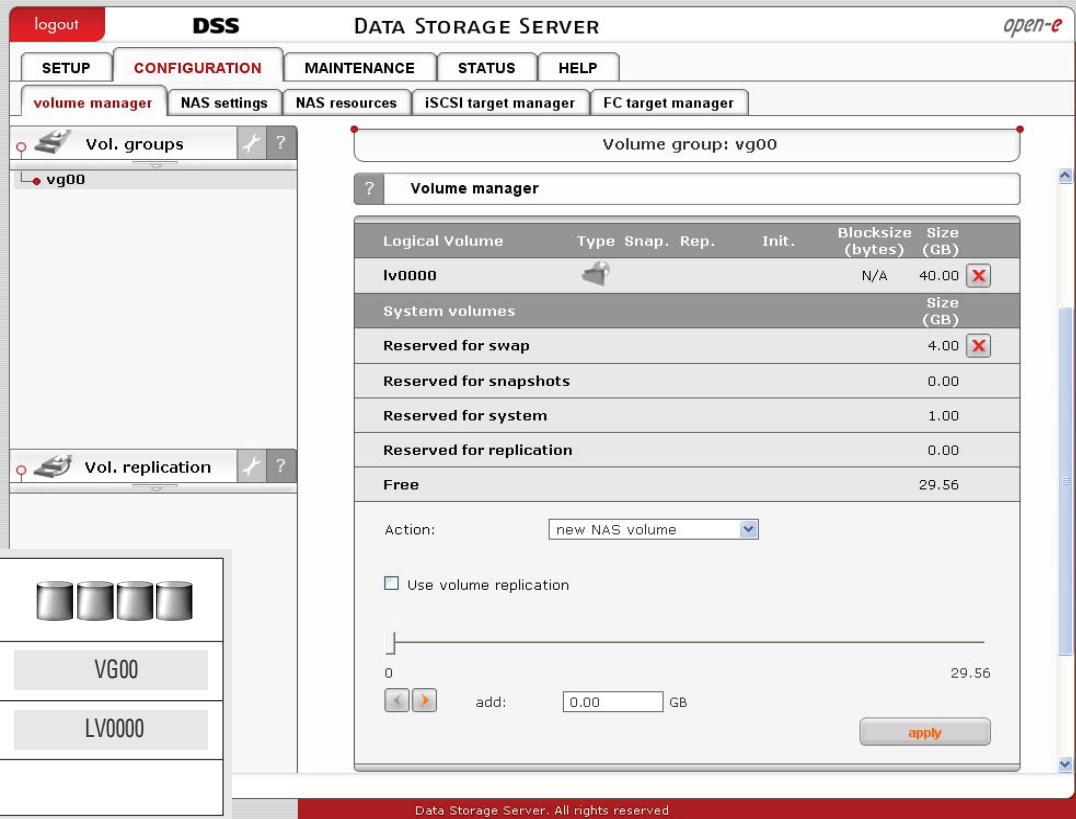
NOTE

The sizes of the source and the destination volumes do not necessarily need to be the same.

- After assigning an appropriate amount of space for the NAS volume, click the “Apply” button.

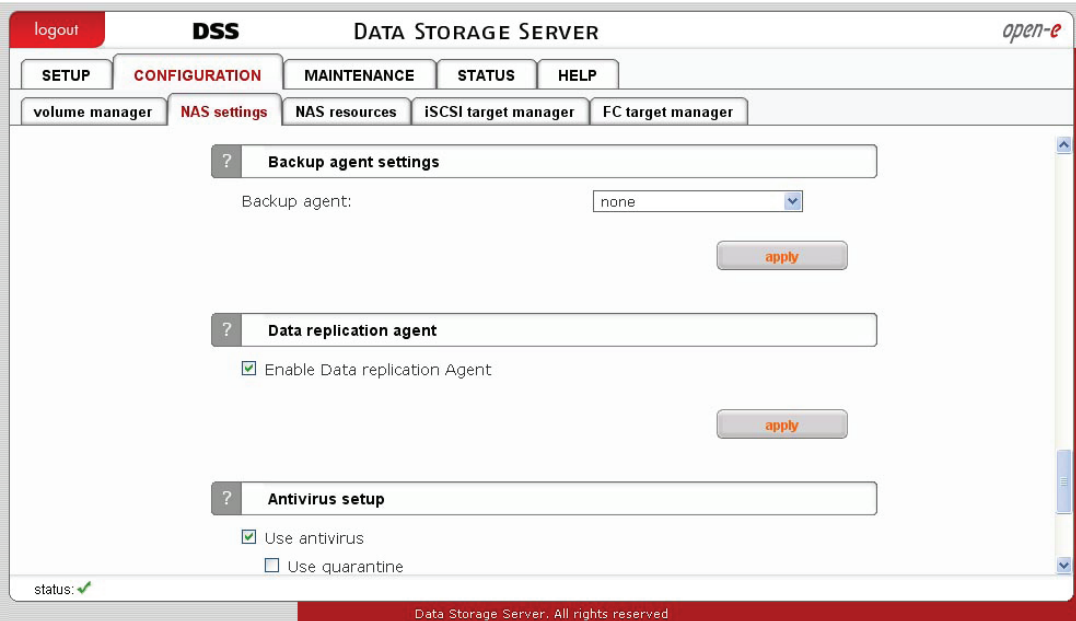
DESTINATION

Physical units	
Volume groups	VG00
Logical volumes	LV0000
Shares	



Picture Assigning disk space.

- Check the **Enable Data Replication Agent** box, located under the **CONFIGURATION** tab, under the NAS settings menu.



Picture Click to enable Data Replication.

- Under the **CONFIGURATION** tab, select the NAS resources menu. A tree listing of NAS shared volumes (Shares) will appear on the left side of the DSS console. In the example below, a shared volume named Data-R01 has been created.

DESTINATION

Physical units	
Volume groups	VG00
Logical volumes	LV0000
Shares	Data-R01

Picture Click to create a shared volume.

- After creating the new share, configure the share:
 - Click on the volume name.
 - Check the box Use Data Replication within Data Replication Agent Settings function.
 - Click on the “Apply” button.



NOTE

It is strongly recommended to protect the replication protocol by using a user name and password, along with a list of allowed IP addresses. This will prevent local network users from having access to this shared volume.

Picture Completing the configuration.


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

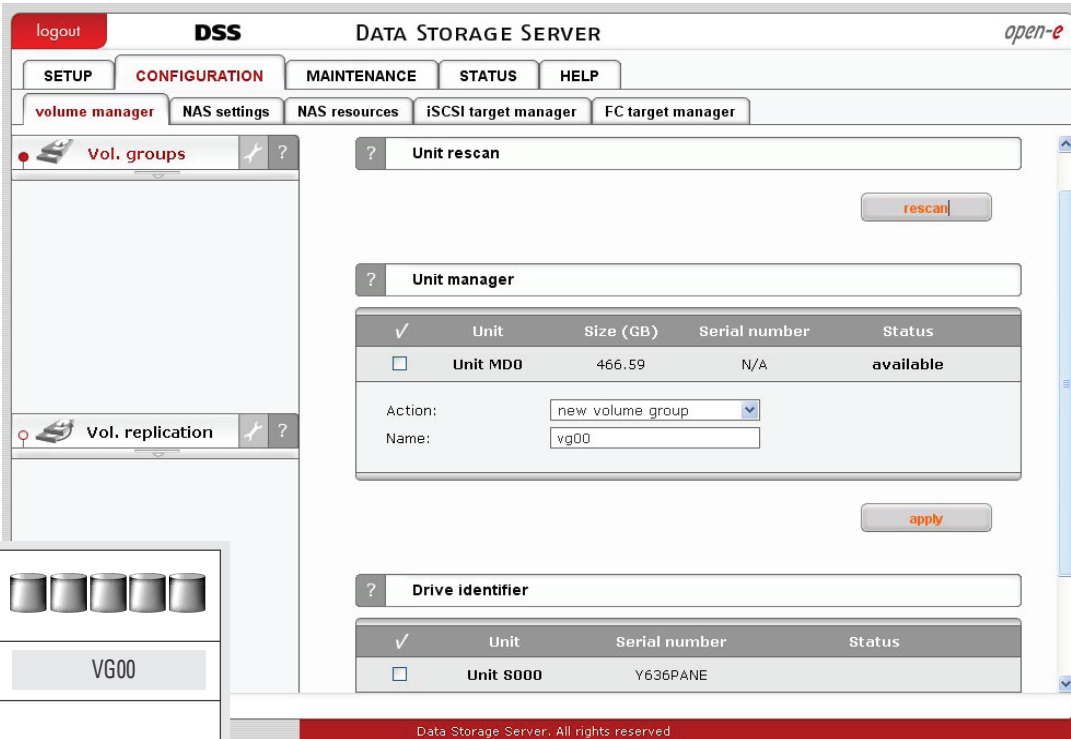
Step 2 Configure the Source Node

The configuration of the source node (storage server) is very similar to the configuration of the destination node.

1. Under the **CONFIGURATION** tab, click on Volume Manager.
Add the selected physical units in order to create a new volume group (in this case, vg00).

SOURCE

Physical units	
Volume groups	VG00
Logical volumes	
Shares	



The screenshot shows the DSS (Data Storage Server) web interface. The main navigation bar includes 'logout', 'DSS', 'DATA STORAGE SERVER', and the 'open-e' logo. Below this is a secondary navigation bar with 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' sub-tab is selected. On the left side, there is a 'Vol. groups' section with a search icon and a question mark. Below it, there is a 'Vol. replication' section. The main content area is divided into three sections: 'Unit rescan', 'Unit manager', and 'Drive identifier'. The 'Unit manager' section contains a table with the following data:

Unit	Size (GB)	Serial number	Status
<input type="checkbox"/> Unit M00	466.59	N/A	available

Below the table, there are fields for 'Action' (set to 'new volume group') and 'Name' (set to 'vg00'). There are also buttons for 'rescan' and 'apply'. The 'Drive identifier' section contains a table with the following data:

Unit	Serial number	Status
<input type="checkbox"/> Unit S000	Y636PANE	

At the bottom of the interface, there is a footer that reads 'Data Storage Server. All rights reserved'.

Picture Creating a new volume group (source node).

2. Choose the appropriate volume group (vg00) from the list on the left and create a new NAS volume of the required size. This logical volume will be the source of the replication process.



NOTE

The sizes of the source and the destination volumes do not necessarily need to be the same.

3. After assigning an appropriate amount of space for the NAS volume, click the “Apply” button.

SOURCE

Physical units	
Volume groups	VG00
Logical volumes	LV0000
Shares	

Picture Defining a snapshot.

Step 3

Define a snapshot of the volume

To run the replication process, you must first define a snapshot to be taken of the volume to be replicated.

1. Choose the **Volume Manager** under the **CONFIGURATION** tab.

The screenshot shows the DSS web interface with the 'CONFIGURATION' tab selected. The 'Volume manager' section is active, displaying the configuration for volume group 'vg00'. A table lists logical volumes and their sizes:

Logical Volume	Type	Snap.	Rep.	Init.	Blocksize (bytes)	Size (GB)
lv0000					N/A	40.00
System volumes						Size (GB)
Reserved for swap						4.00
Reserved for snapshots						0.00
Reserved for system						1.00
Reserved for replication						0.00
Free						29.56

Below the table, the 'Action' dropdown is set to 'new NAS volume'. There is an unchecked checkbox for 'Use volume replication' and a slider for volume size with 'add: 0.00 GB' and an 'apply' button.

SOURCE

Physical units	
Volume groups	VG00
Logical volumes	LV0000 SNAP00000
Shares	

Picture Assigning a snapshot to a logical volume.

- Assign the **Snapshot** to the **Logical Volume** to be replicated (in this example, lv0000).

The screenshot shows the DSS web interface with the 'CONFIGURATION' tab selected. The 'Volume replication' section is active, displaying the configuration for volume group 'vg00'. A 'Snapshot definition' table is shown:

Name	LV	Status
snap00000	lv0000	unused

There is an 'apply' button below the table. The status at the bottom left is 'status: ✓'.

Picture Enabling data replication.

3. Check the **Enable Data Replication Agent** box under NAS Settings on the **CONFIGURATION** tab.
4. Use the **CONFIGURATION** tab, under NAS Resources, to see a tree listing all the NAS shared volumes (Shares). This listing appears on the left side of the Open-E DSS console. In the example below, a new share named Pictures has been created.

SOURCE

Physical units	
Volume groups	VG00
Logical volumes	LV0000 SNAP00000
Shares	Data ▶ SNAPSHOT

Picture Creating a new share - pictures.

5. After creating the new share, configure the share:
 - Click on its name.
 - Check the box **Use Data Replication**, within the Data Replication Agent Settings table.
 - Click on the “**Apply**” button.

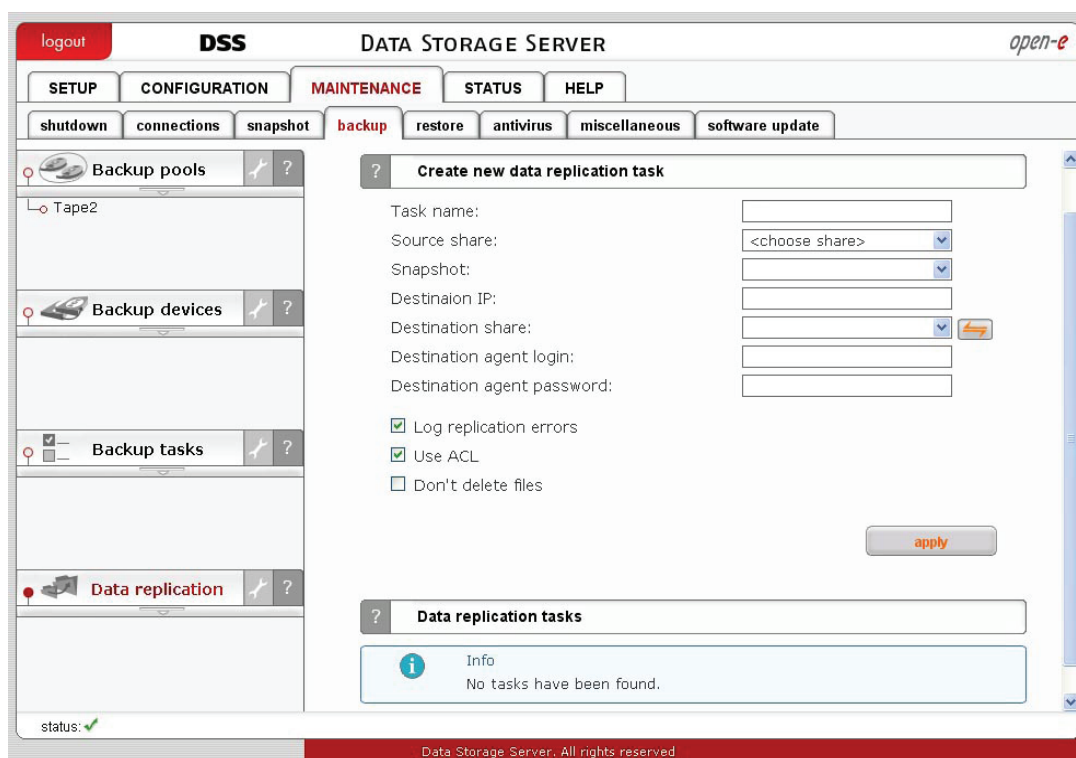
Picture Click on share name to configure.

**NOTE**


It is strongly recommended to protect the replication protocol with a user name and password, along with a list of allowed IP address. This will prevent local network users from accessing this share.

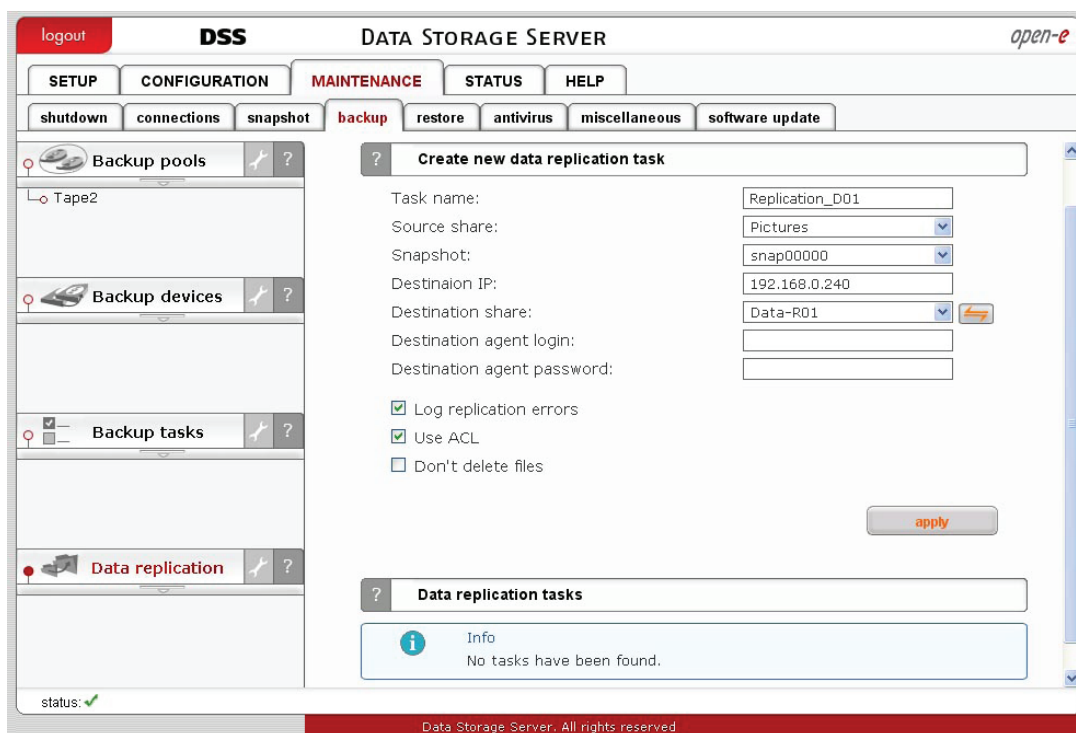
The user name and password must be the same as on the destination node.

- After the share to be replicated has been configured, go to the **MAINTENANCE** tab and select **Backup** to choose the **Data Replication** function.



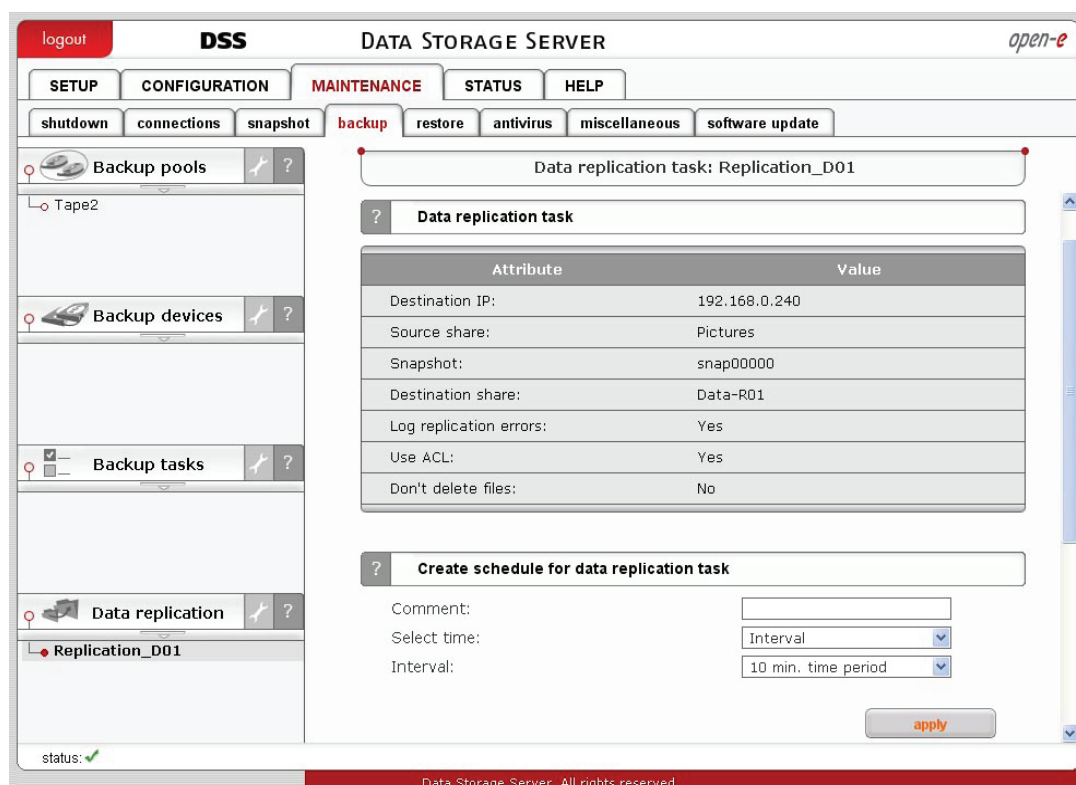
Picture Choosing the data replication function

- Select the source share to be replicated:
 - Under **Create New Data Replication Task**, enter a name for the task and select the source share to be replicated. At this point, a snapshot of the source share will automatically be assigned.
 - In the **Destination IP** field, enter the IP address of the destination server (in this example, 192.168.0.240) and the user name/password (if applicable) for the destination.
 - Next, configure the **Destination Share** field by clicking on the  button. In this example, the **Data-R01** share appears.
 - Click on the **Apply** button.



Picture Selecting the source share to be replicated.

- After the Open-E DSS console, has been reloaded, the new task should appear.



Picture Configuring the destination share.

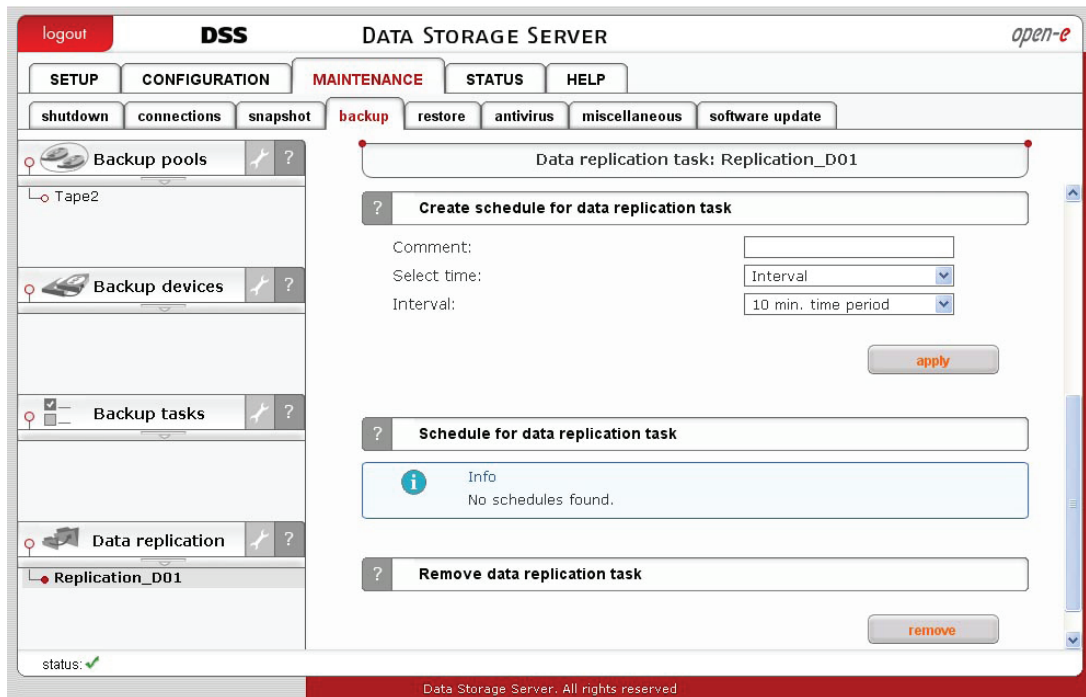
- Obtain additional information about a selected replication task by accessing the **Data Replication task** function.

Step 4

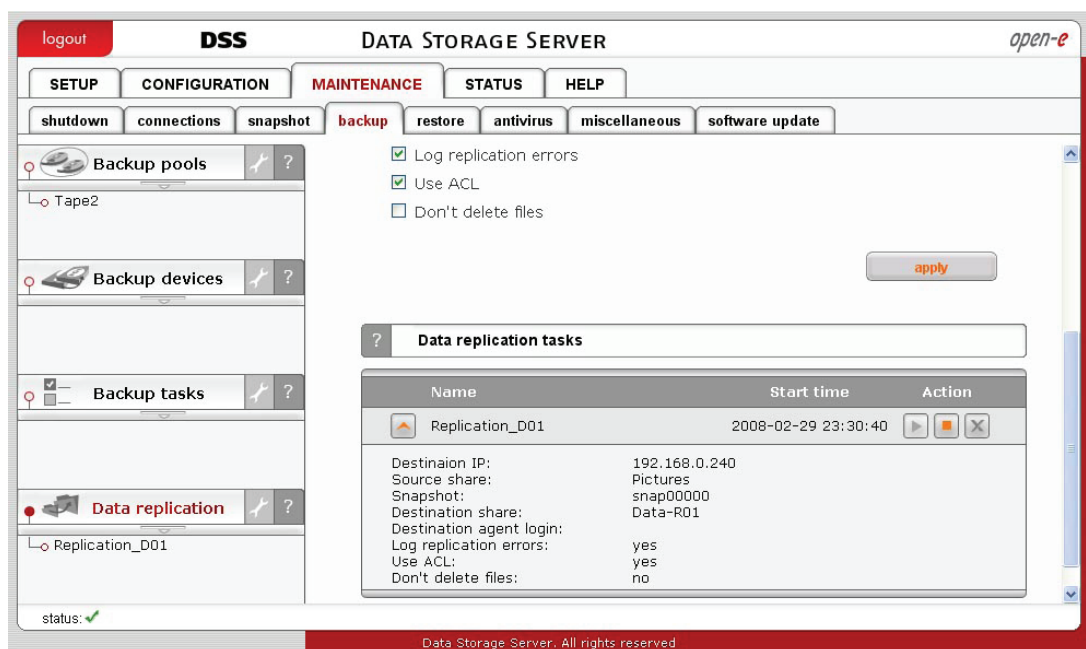
Schedule or run future replication events

- Using the Create Schedule for Data Replication Task function, set the desired replication schedules or explicitly start, stop and delete data replication tasks, as desired.

NOTE: Open-E DSS Data Replication is an asynchronous process; that is, the replication repeats after a specific time interval.

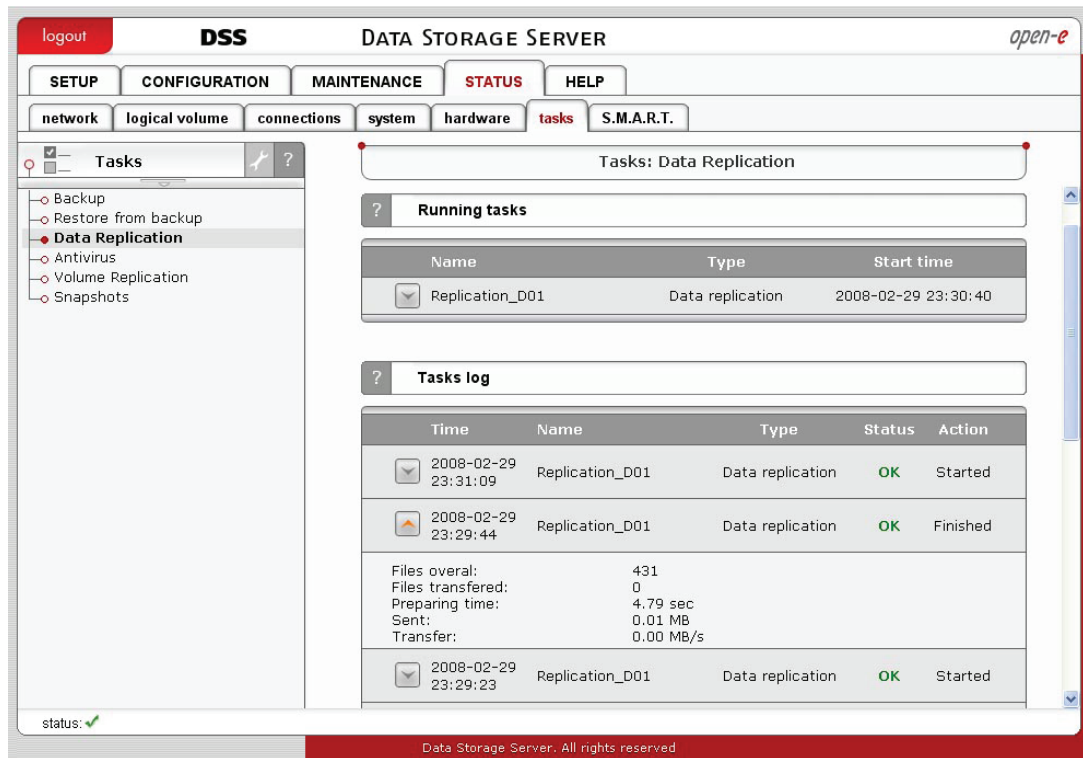


Picture Scheduling future replication events.

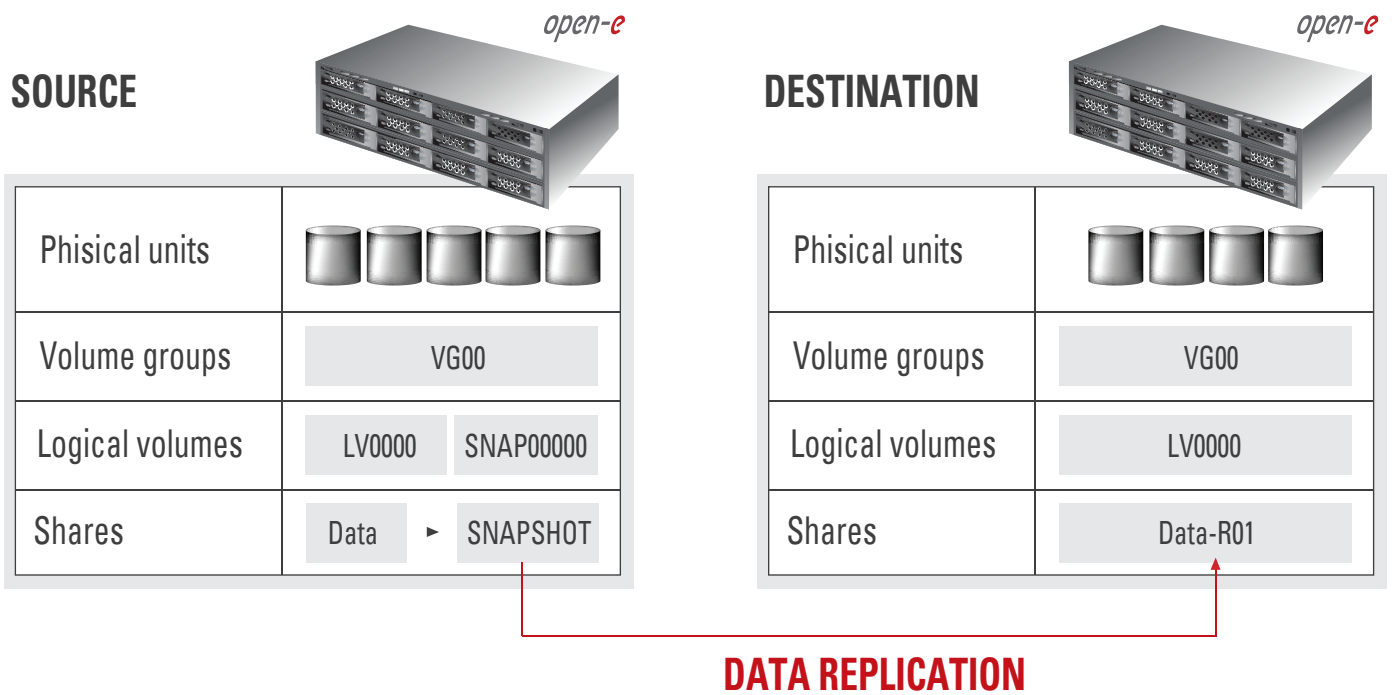


Picture Click to manage data replication tasks.

- To obtain detailed information about the progress of data replication tasks, under the **Running Tasks** function, click on the **STATUS** tab and select **Tasks**.



Picture Displaying the progress of tasks.



Picture Complete configuration of nodes.

The configuration of the asynchronous Data Replication 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