Step-by-Step Guide to Asynchronous Data Replication (File Based) within System Supported by Open-E® DSS™

Updated, October 2008

Asynchronous **Data Replication** within a System

open-e

	Replication Mode		Source/Destination			I/O type		Volume Type		
	Synchronous	Asynchronous	w/ System	LAN	WAN	File based	Block based	NAS	iSCSI	FC
Data Replication within a System		✓	✓			✓		✓		

- **ASYNCHRONOUS DATA REPLICATION within a System** enables **asynchronous** file and folder copy from one storage system to another.
  - With asynchronous replication a point-in-time – snapshot copy of data on the source is made and copied from the source to the target storage system.
  - Once the target system has the point-in-time copy of the data, the source storage system creates a delta set of all of the changes since the point-in-time copy was created. This delta set doesn't include every write or change, just the last set of changes prior to the snapshot.
  - For maximum flexibility, you can run a data replication task in two directions: one system can be both the source and the destination at the same time, allowing cross data backups on several systems. Replication can be used in disaster recovery or for disk-to-disk backup.

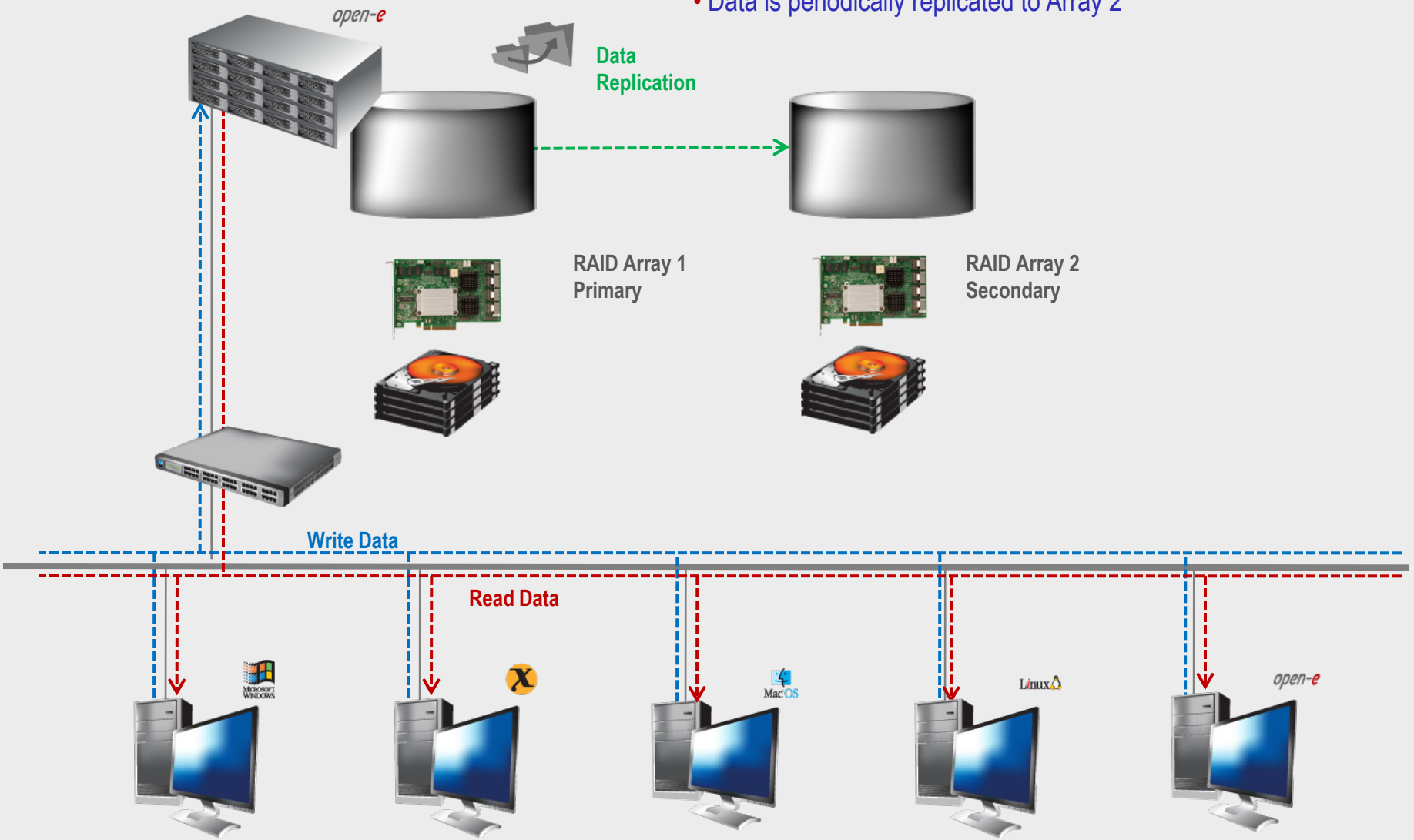
Asynchronous **Data Replication** within a System

REPLICATION BETWEEN TWO RAID ARRAYS WITHIN ONE SYSTEM

- **Recommended Resources**
  - Key Hardware
    - ✓ x86 compatible
    - ✓ RAID Controller 1
    - ✓ RAID Controller 2
    - ✓ HDD's
    - ✓ Network Interface Cards
  - Software
    - ✓ Open-E DSS (recommended) or Open-E NAS-R3
- **Benefits**
  - Data redundancy over RAID Array
  - Local data availability
  - Low cost solution
- **Disadvantages**
  - In case of complete system failure, data will be lost or inaccessible

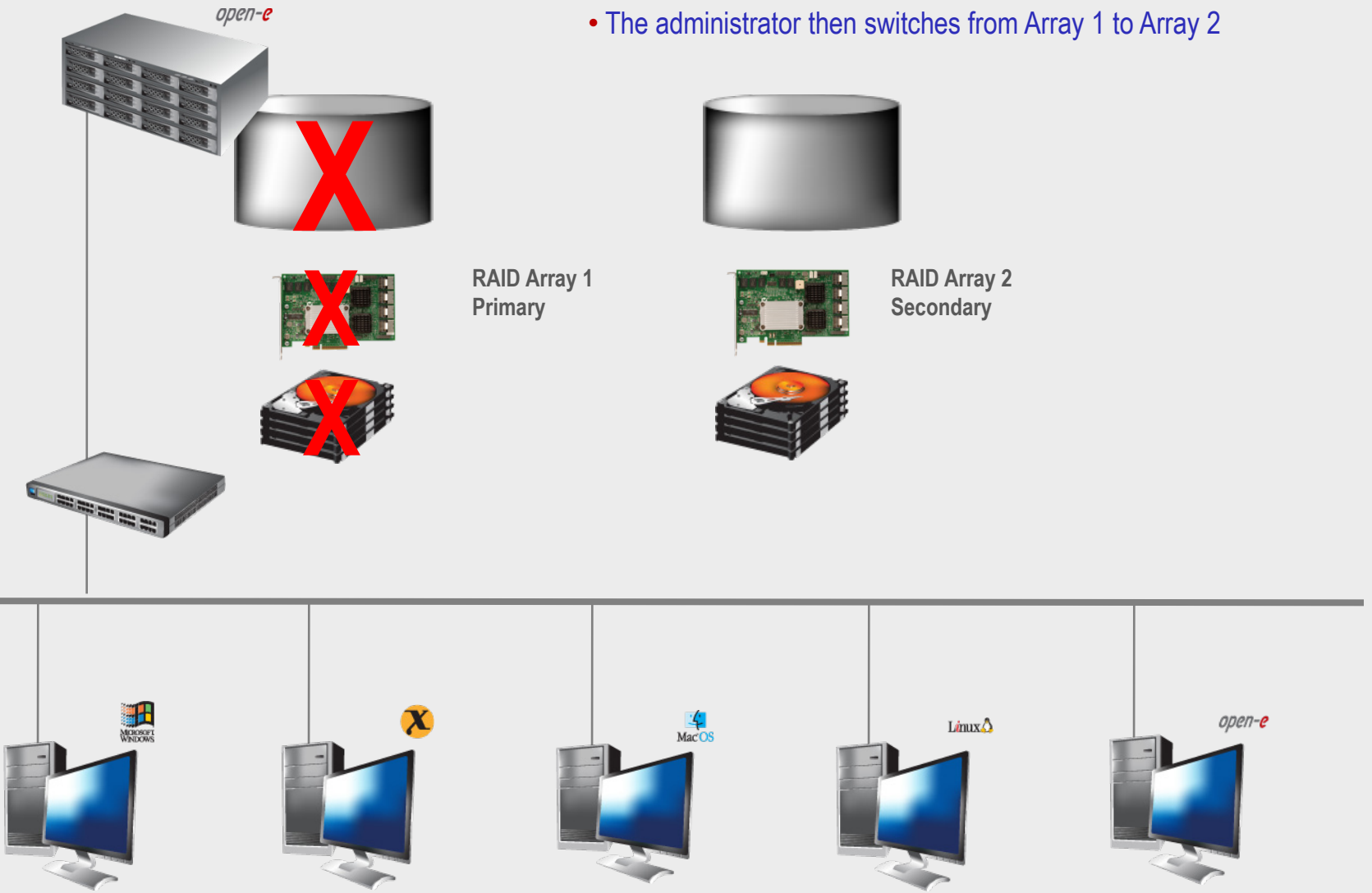
Asynchronous **Data Replication** within a System

- Data is written and read from Array 1
- Data is periodically replicated to Array 2



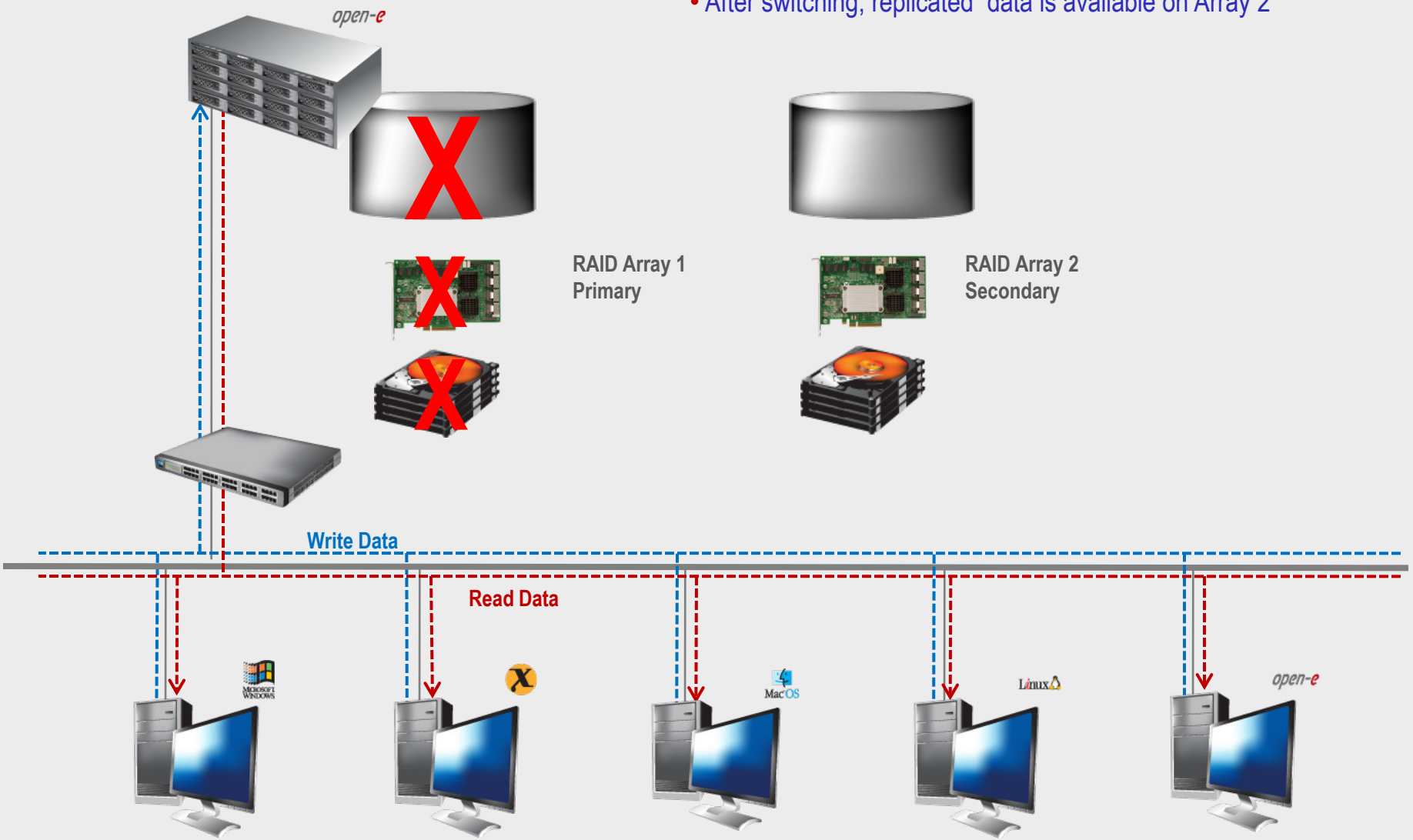
Asynchronous **Data Replication** within a System

- In case of raid array error or disk drive error on the Raid Array 1, the server will send an e-mail notification to the administrator and/or users
- The administrator then switches from Array 1 to Array 2



Asynchronous **Data Replication** within a System

- After switching, replicated data is available on Array 2



Setting up Asynchronous **Data Replication** within a System

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TO SET UP DATA REPLICATION, PERFORM THE FOLLOWING STEPS:

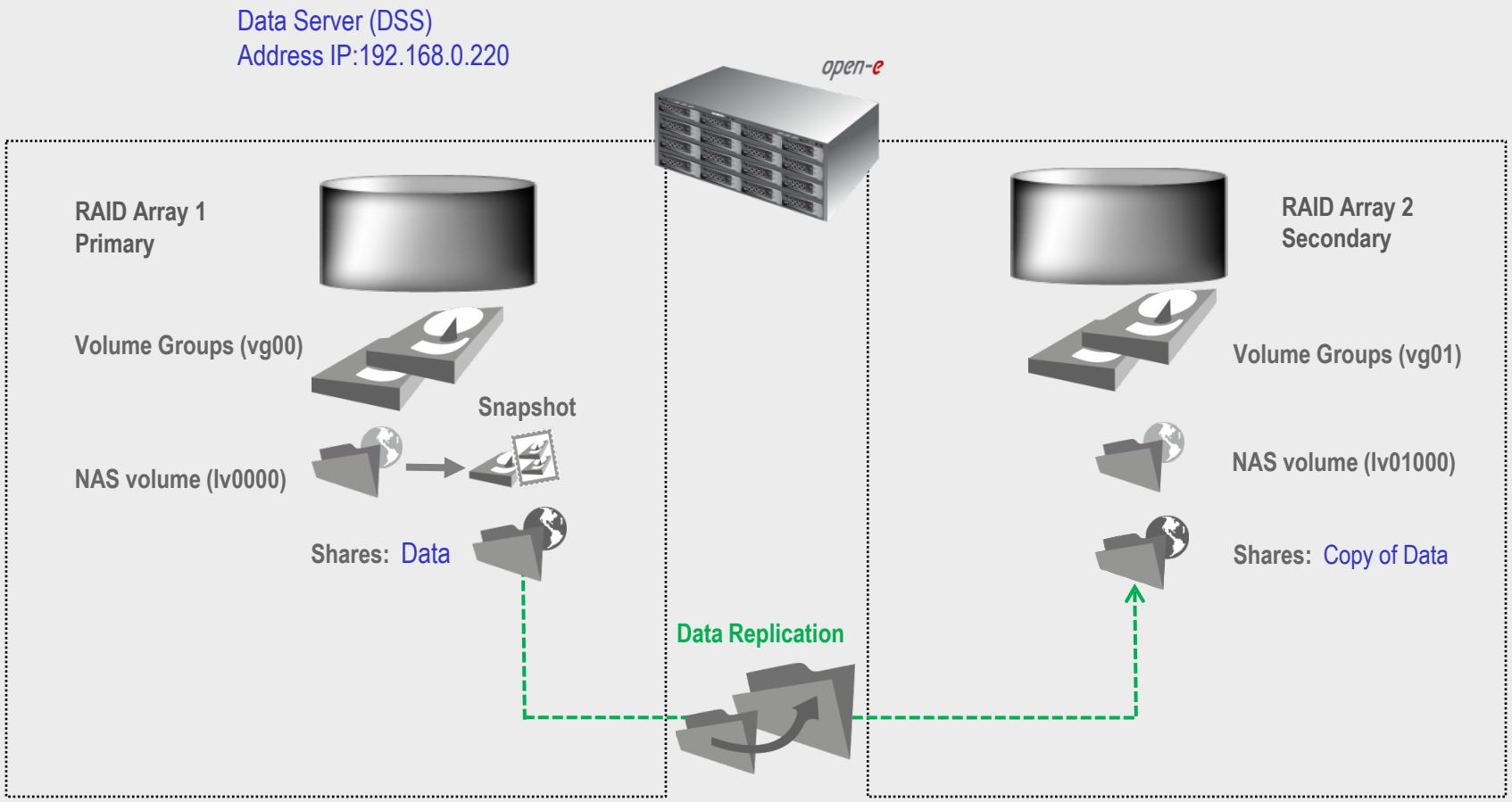
1. Hardware configuration
2. Configure the destination node
3. Configure the source node
4. Create Schedule replication
5. Checking status data replication

Setting up Asynchronous **Data Replication** within a System

1. Hardware Configuration

Hardware Requirements

To run the data replication of Open-E DSS (or NAS R-3), a minimum of two RAID Systems are required on one system. Logical volumes working in slave mode must have snapshots created and enabled. An example configuration is shown below:

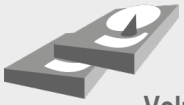


Setting up Asynchronous **Data Replication** within a System

Data Server
Raid Array System 2
Address IP:192.168.0.220

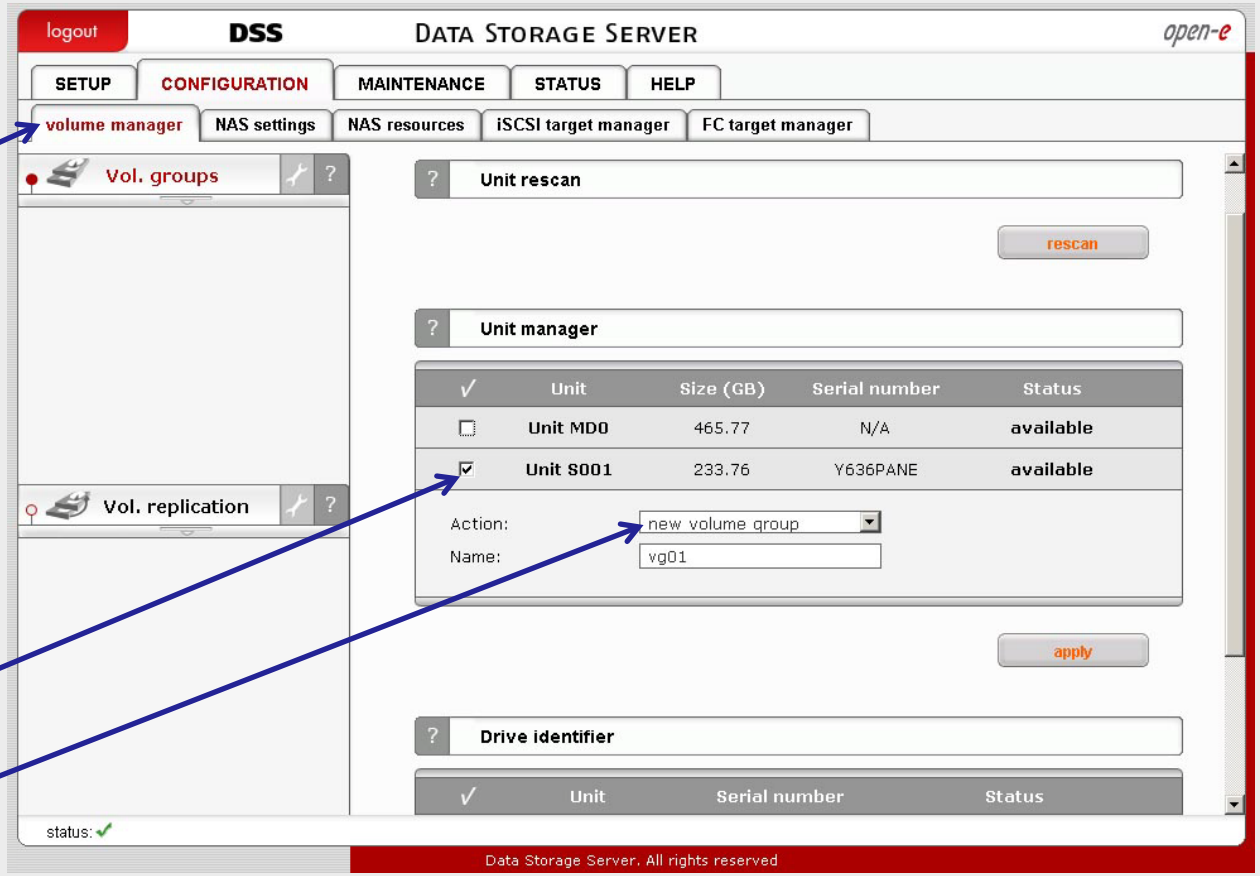
2. Configure the destination node

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



Volume Groups (vg01)

Add the selected physical units (**Unit S001**) to create a **new volume group** (in this case, **vg01**) and click **apply** button.



Setting up Asynchronous **Data Replication** within a System

Data Server
Raid Array System 2
Address IP:192.168.0.220

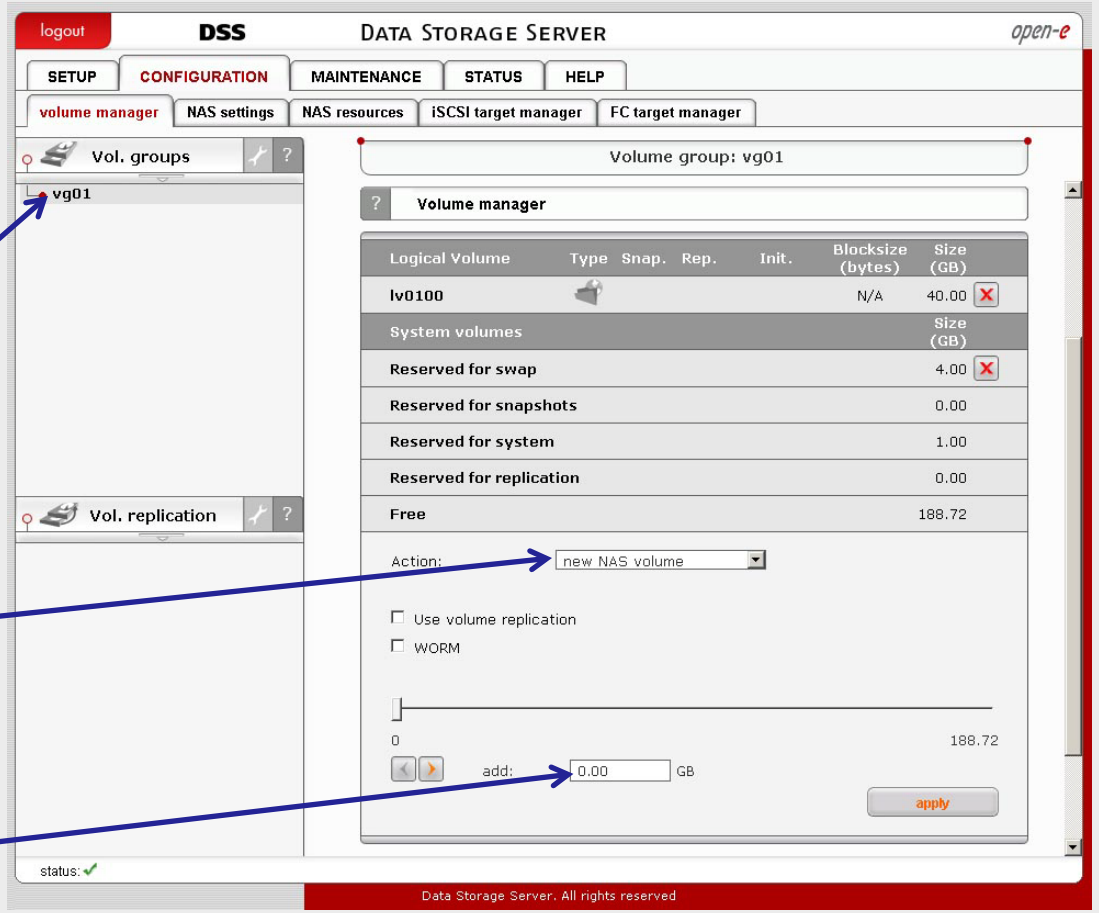
Volume Groups (vg01)

NAS volume (lv0100)

Select the appropriate **volume group (vg01)** from the list on the left and create a **new NAS volume** of the required size. This logical volume **lv0100** will be the destination of the replication process.

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

2. Configure the destination node



Setting up Asynchronous **Data Replication** within a System

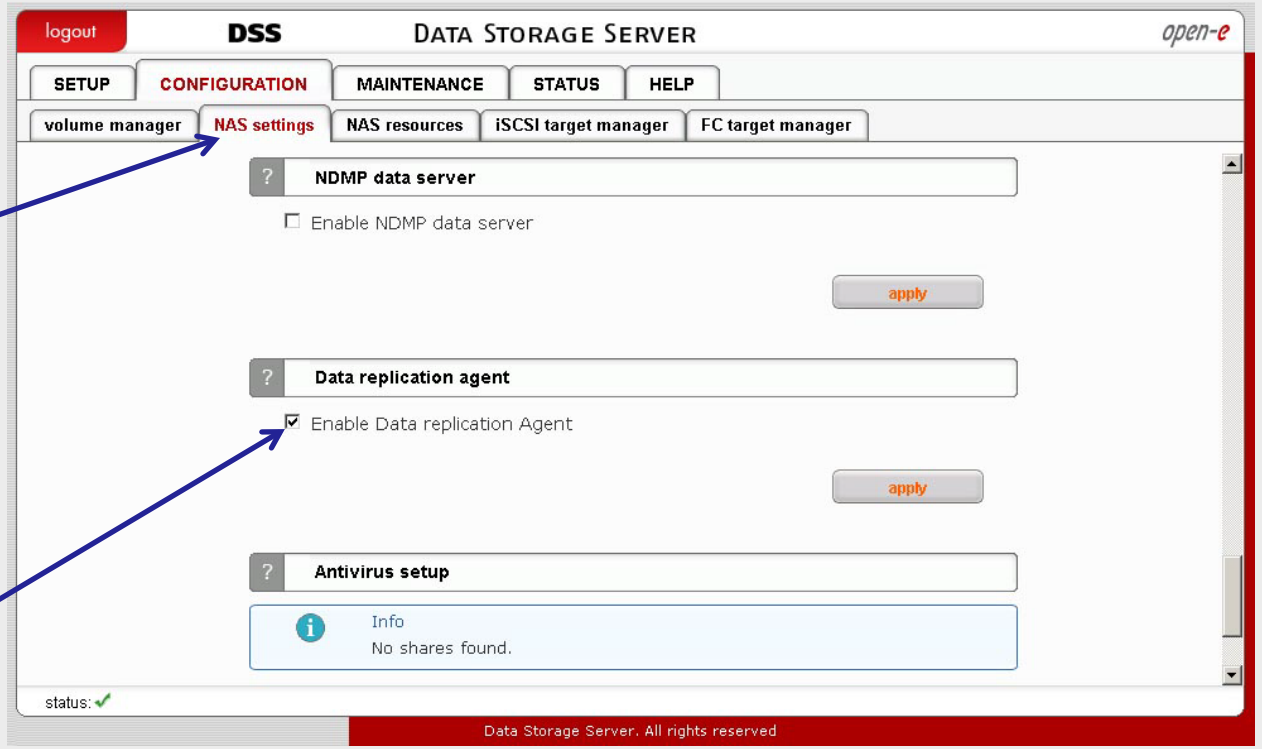
Data Server
Raid Array System 2
Address IP:192.168.0.220

2. Configure the destination node

Under the „**CONFIGURATION**" tab, select „**NAS settings**" menu.

Data Replication

Check the **Enable Data replication Agent** box, and click the **apply** button



Setting up Asynchronous **Data Replication** within a System

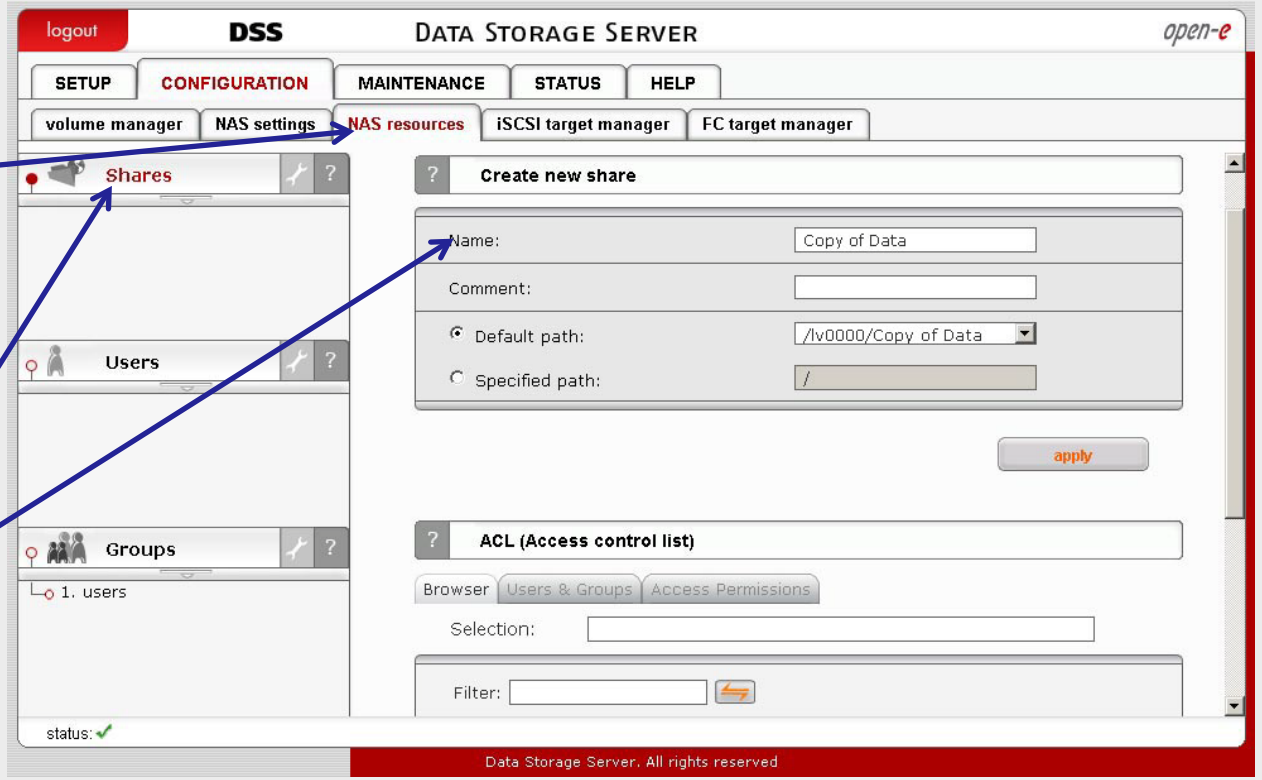
Data Server
Raid Array System 2
Address IP:192.168.0.220

2. Configure the destination node

Under the „**CONFIGURATION**" tab, select „**NAS resources**" menu.

Shares: Copy of Data

A tree listing of NAS shared volumes (**Shares**) will appear on the left side of the DSS console. In the example, a shared volume named **Copy of Data** has been created.



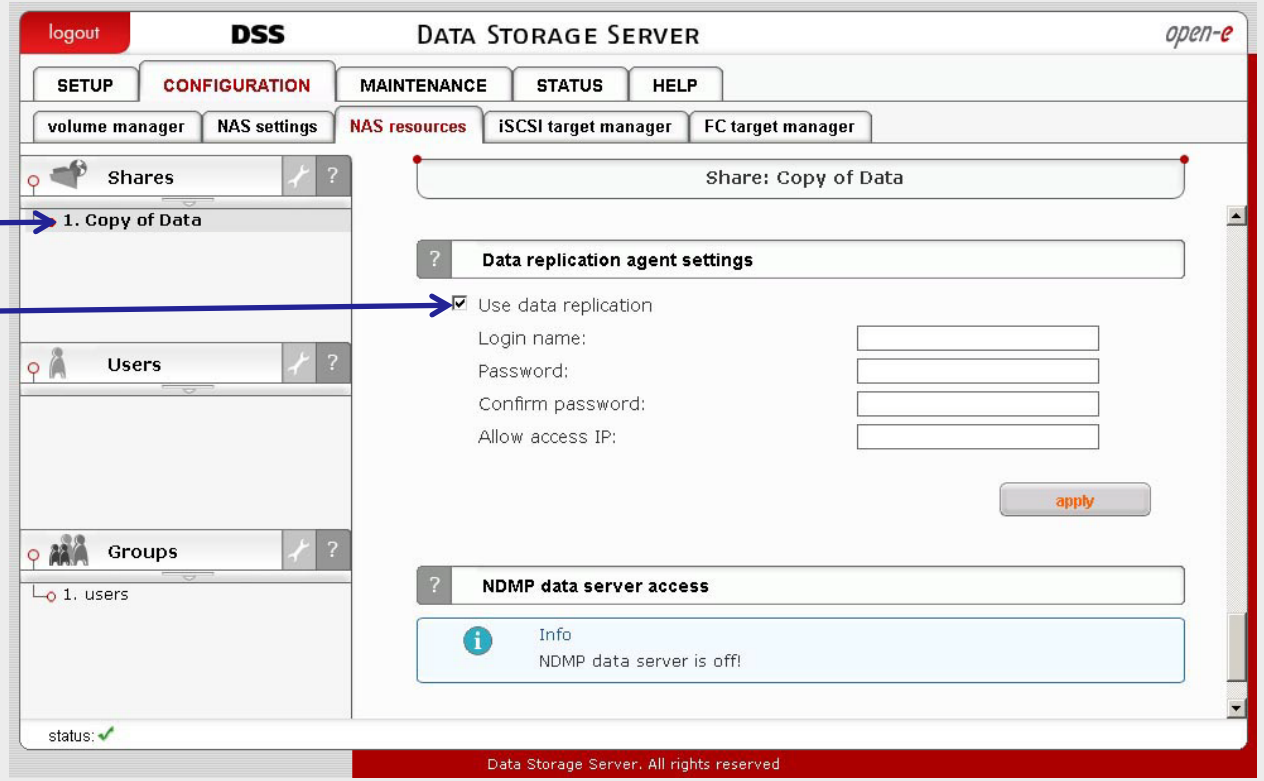
Setting up Asynchronous **Data Replication** within a System

Data Server
Raid Array System 2
Address IP:192.168.0.220

2. Configure the destination node

After creating the new shared volume, configure it.

- Click on the share name,
- Check the box **Use data replication** within **Data replication agent settings** function.
- Click on the **apply** button.



Data Replication

The configuration of the destination node is now complete.

Setting up Asynchronous **Data Replication** within a System

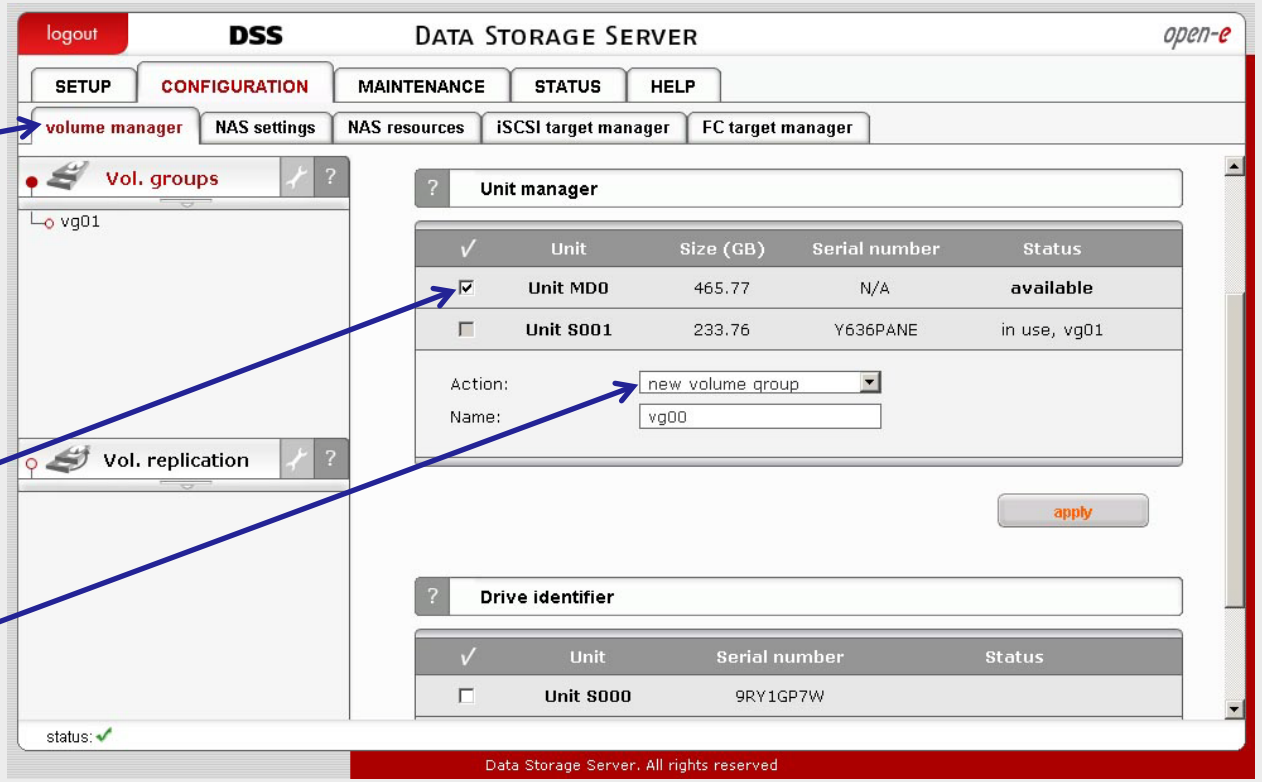
Data Server
Raid Array System 1
Address IP:192.168.0.220

2. 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 Asynchronous **Data Replication** within a System

Data Server
Raid Array System 1
Address IP:192.168.0.220

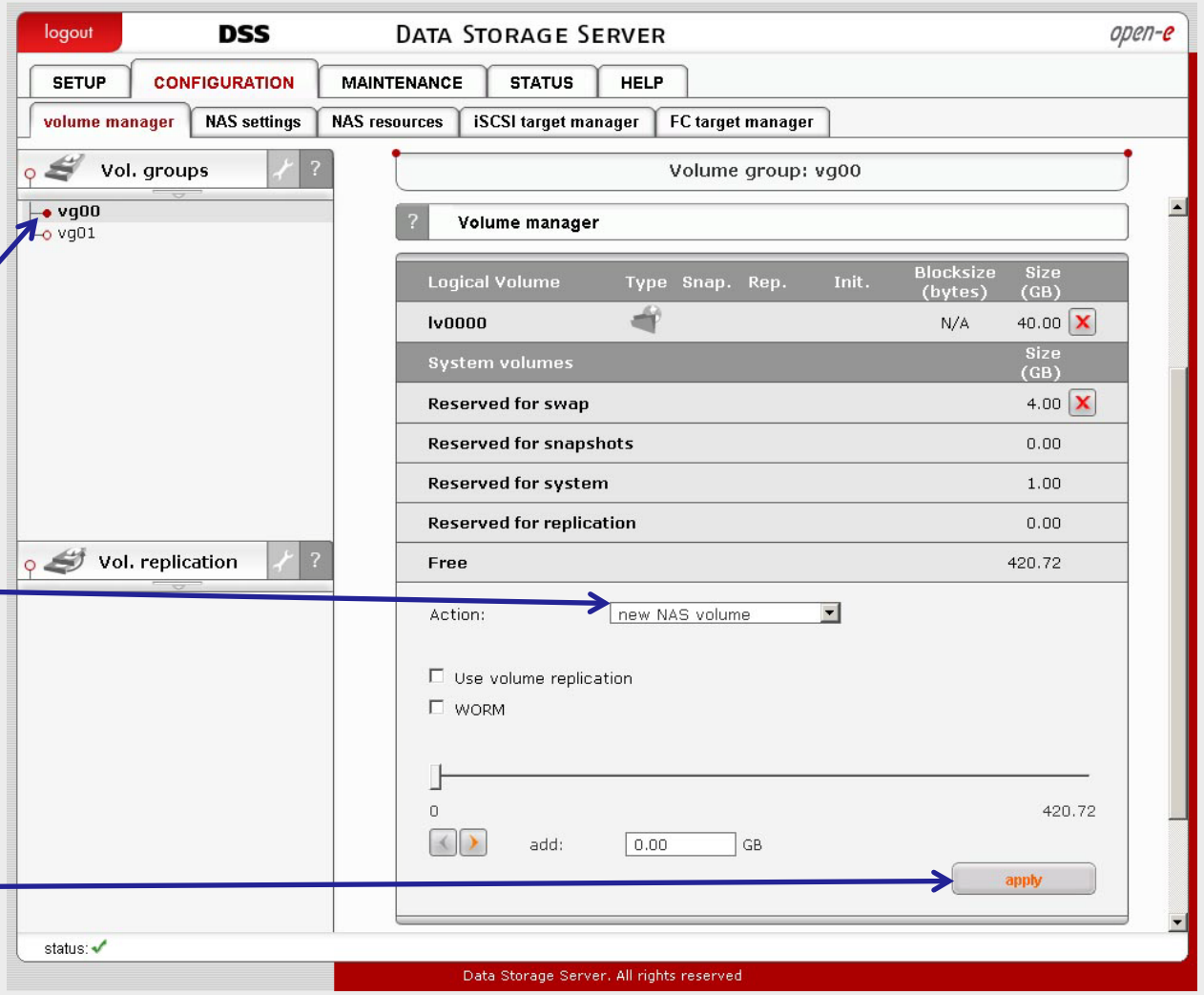
Volume Groups (vg00)

NAS volume (lv0000)

2. Configure the source node

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 source of the replication process.

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



Setting up Asynchronous **Data Replication** within a System

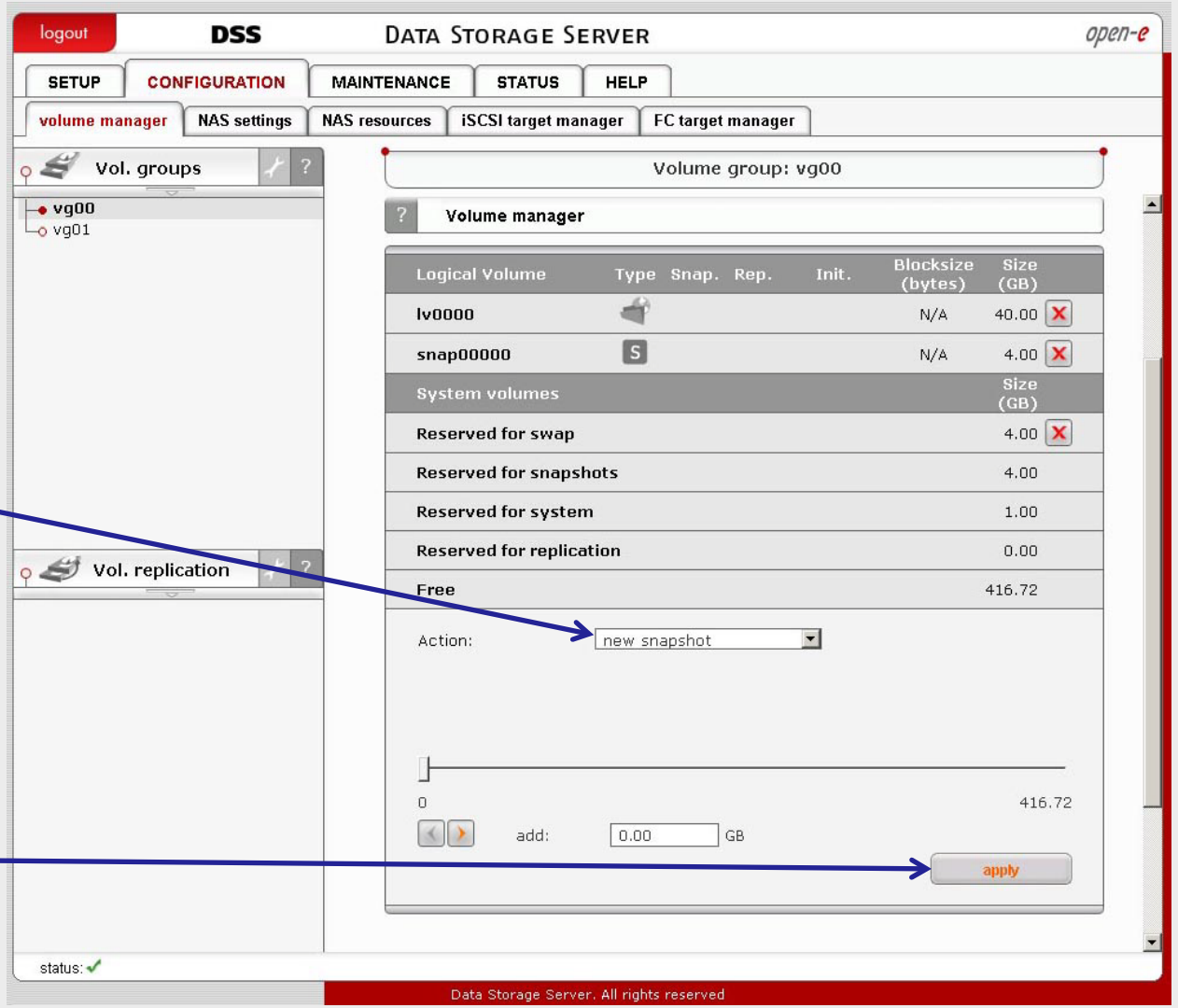
Data Server
Raid Array System 1
Address IP:192.168.0.220

2. Configure the source node

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

Snapshot 

After assigning an appropriate amount of space for the **new snapshot**, click the **apply** button.



Setting up Asynchronous **Data Replication** within a System

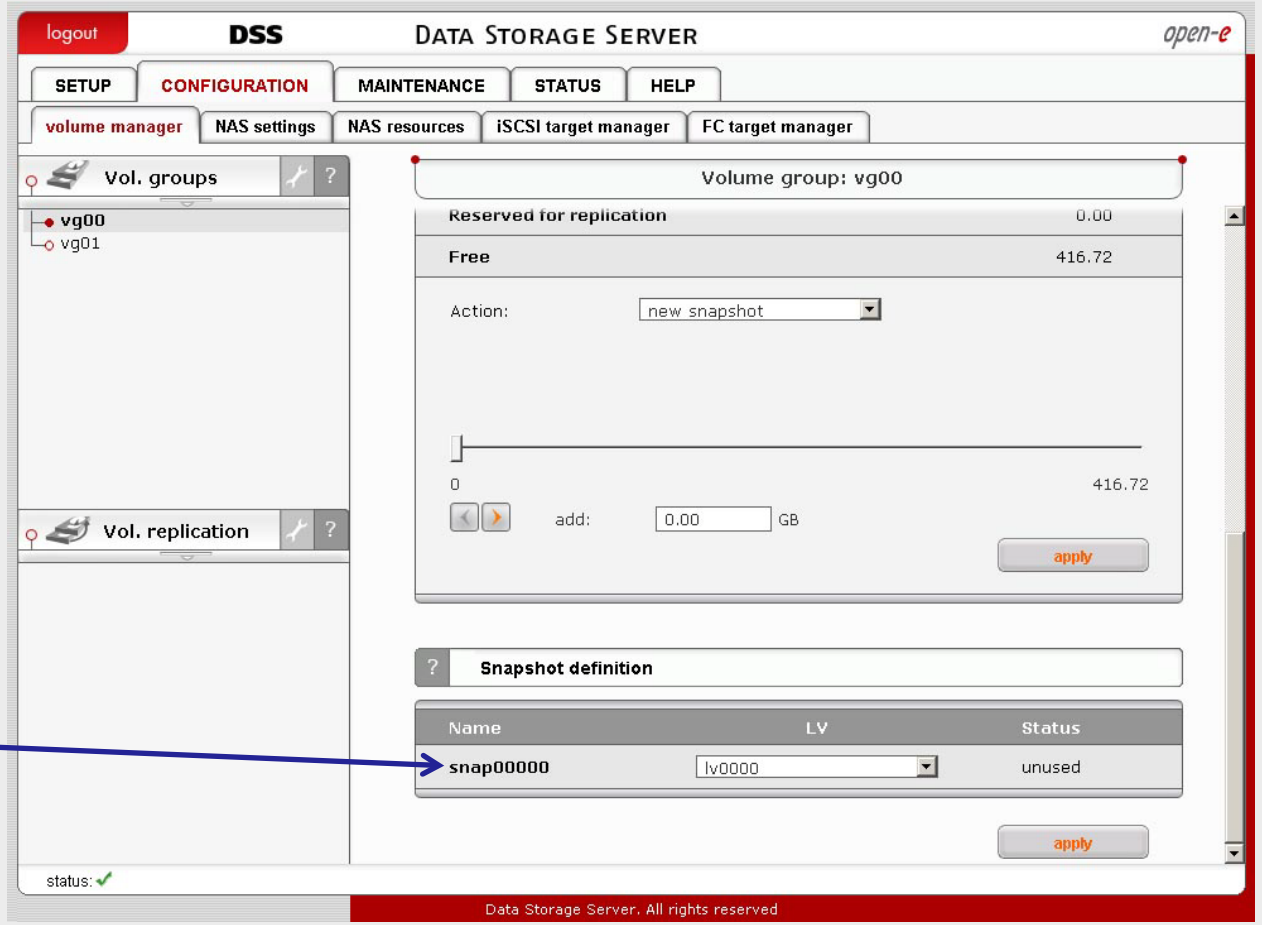
Data Server
Raid Array System 1
Address IP:192.168.0.220

2. Configure the source node

NAS volume
(lv0000)

Snapshot

Assign the **snapshot00000** to the logical volume to be replicated (in this example, **lv0000**), click the **apply** button.



Setting up Asynchronous **Data Replication** within a System

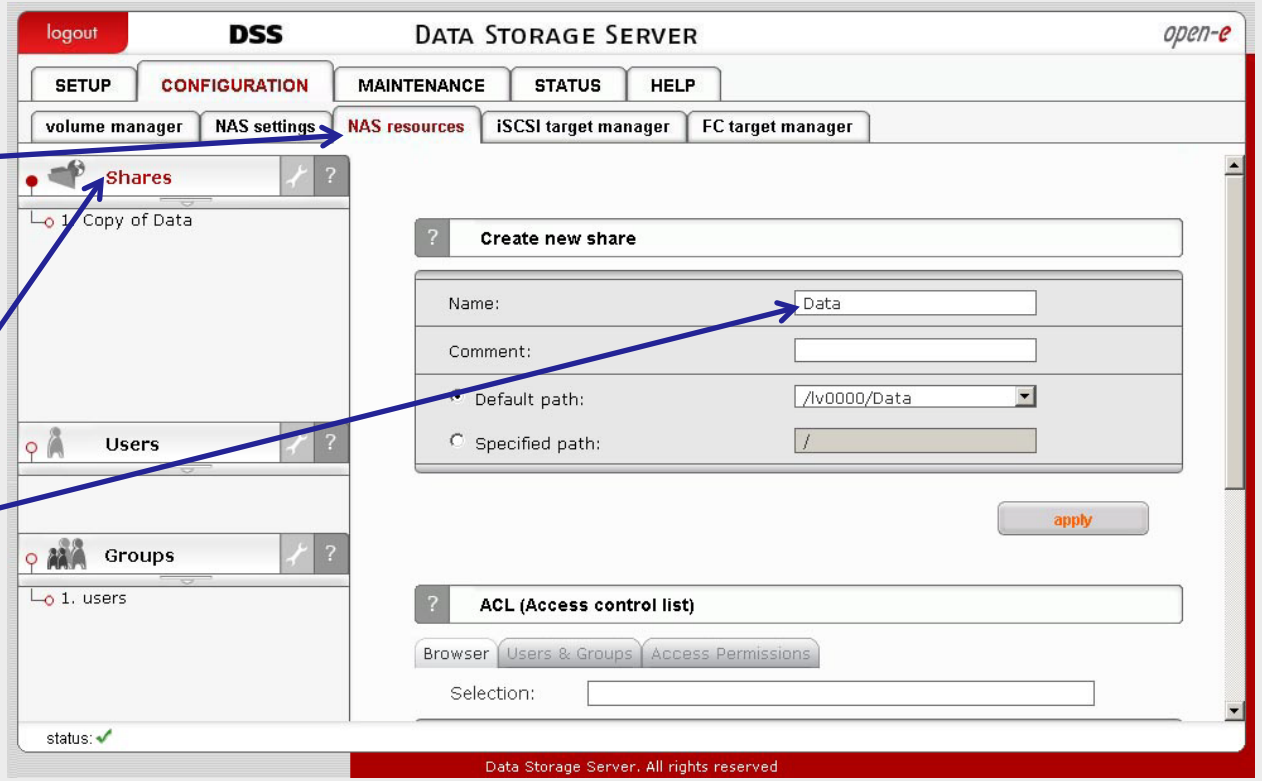
Data Server
Raid Array System 1
Address IP:192.168.0.220

2. Configure the source node

Under the „**CONFIGURATION**" tab, select „**NAS resources**" menu.

Shares: Data

A tree listing of NAS shared volumes (**Shares**) will appear on the left side of the DSS console. In the example, a shared volume named **Data** has been created.



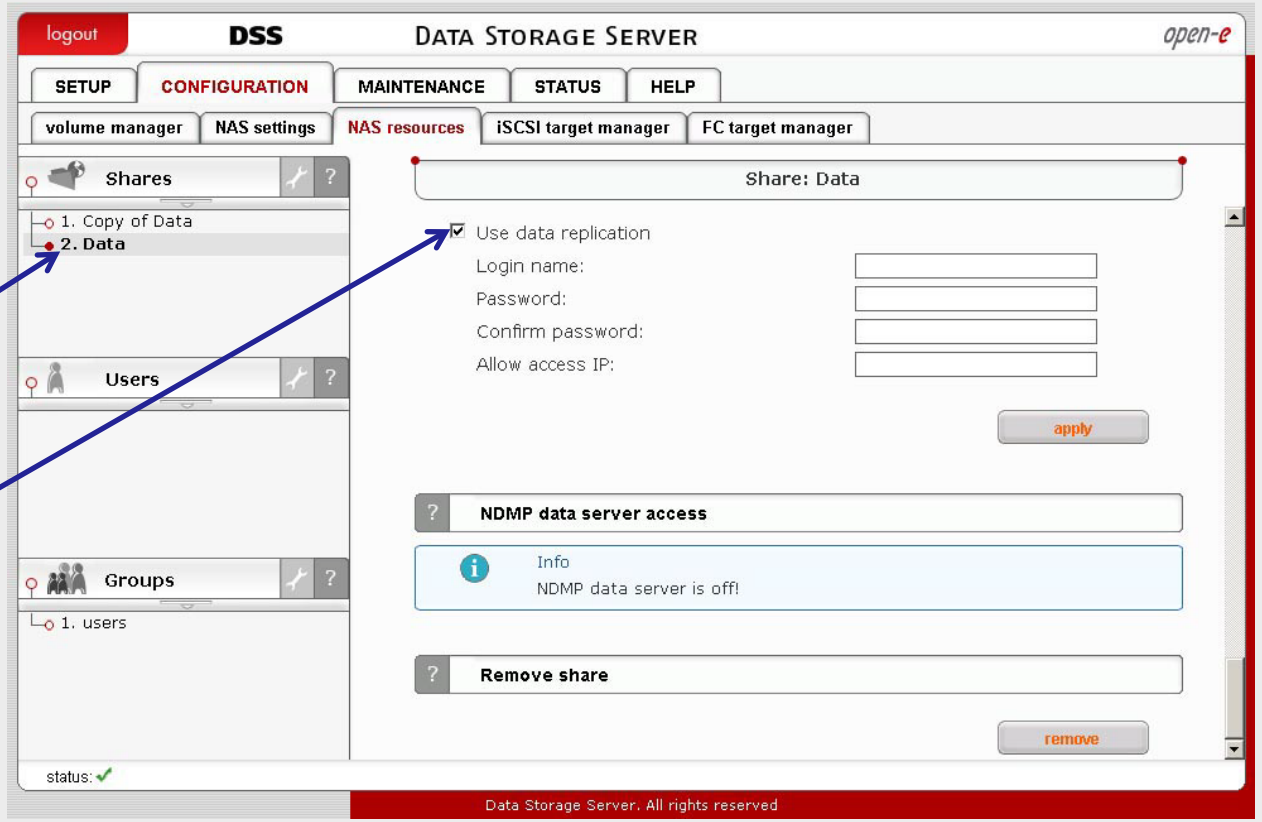
Setting up Asynchronous **Data Replication** within a System

Data Server
Raid Array System 1
Address IP:192.168.0.220

3. Configure the source node

After creating the new shared volume, configure it:

- Click on its name **Data**,
- Check the box **Use data replication**, within the *Data Replication Agent Settings* table.
- Click on the **apply** button



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.**

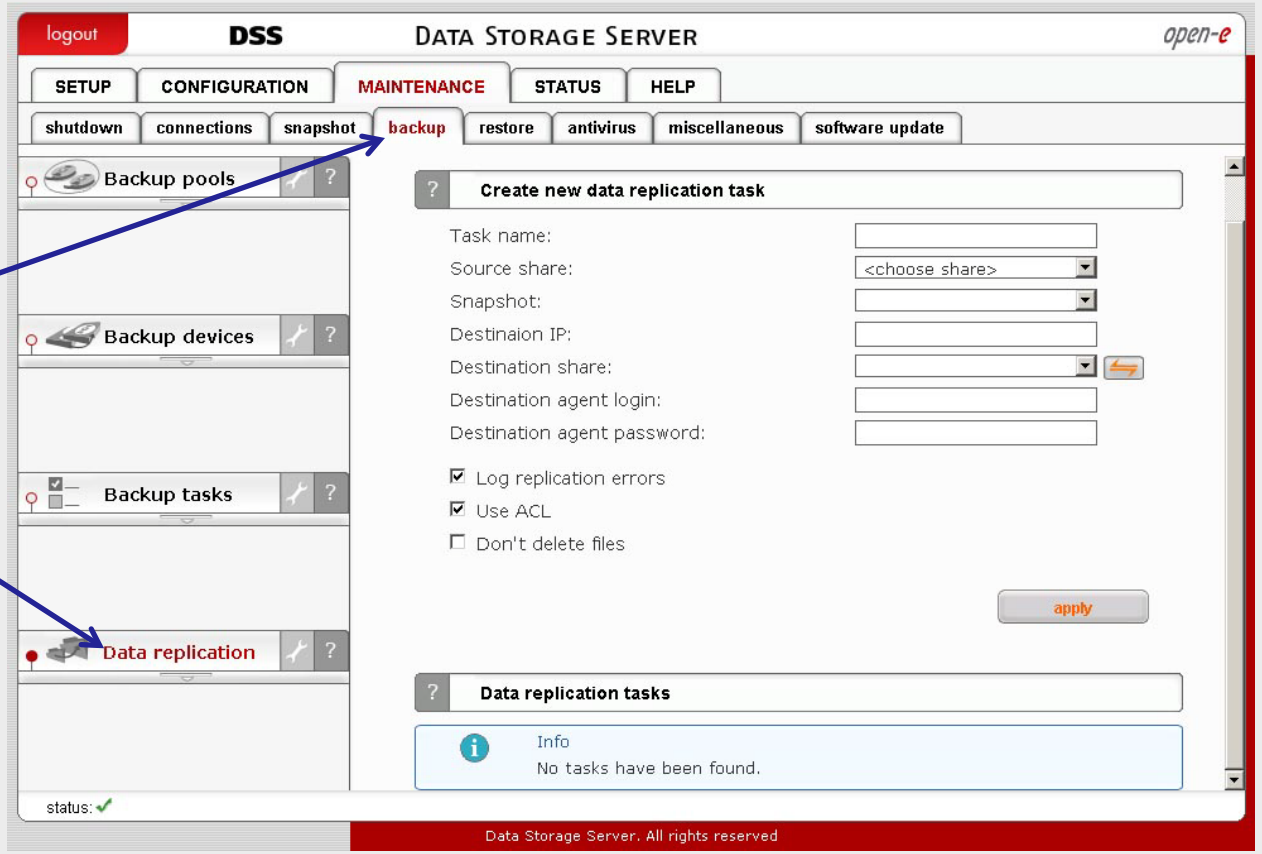
Setting up Asynchronous **Data Replication** within a System

Data Server
Raid Array System 1
Address IP:192.168.0.220

3. Configure the source node

Data Replication

After the share to be replicated has been configured, go to the „**MAINTENANCE**" tab and select „**backup**" to choose the **Data replication**.



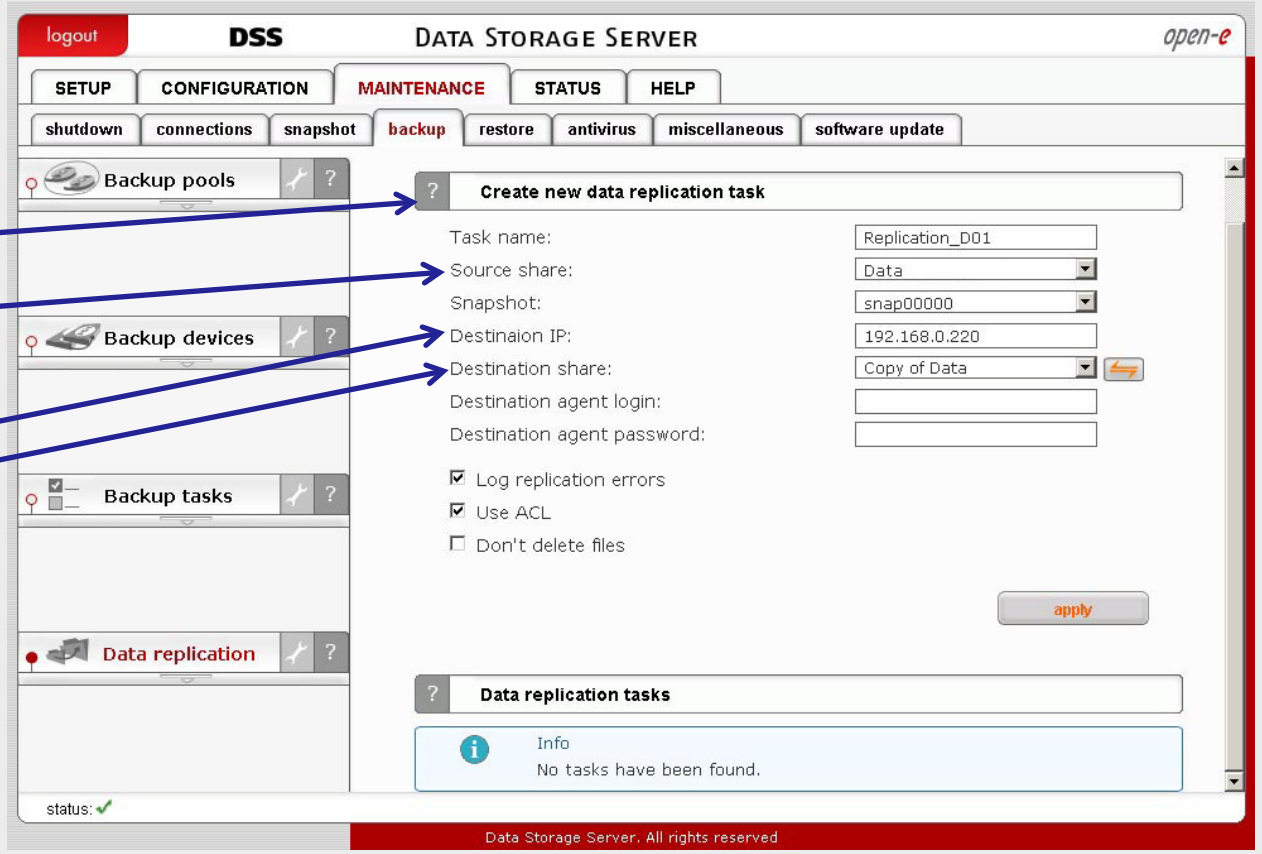
Setting up Asynchronous **Data Replication** within a System

Data Server
Raid Array System 1
Address IP:192.168.0.220

3. Configure the source node

Select the source share to be replicated. Under **Create new data replication task** function, 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, 192.168.0.220) 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 „**Copy of Data**" share appears. Click on the **apply** button.



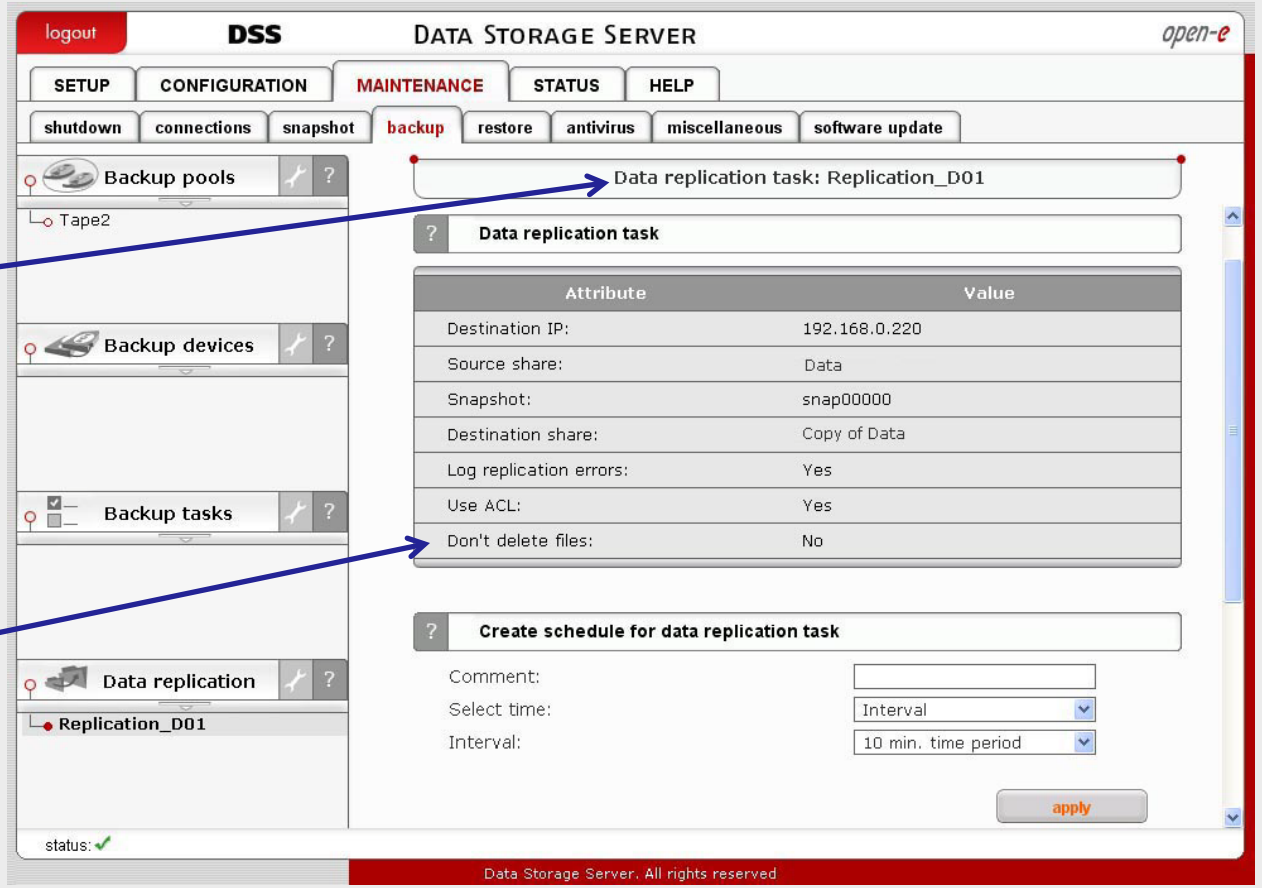
Setting up Asynchronous **Data Replication** within a System

Data Server
Raid Array System 1
Address IP:192.168.0.220

3. Configure the source node

After the DSS WEB console, has been reloaded, the new task should appear

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



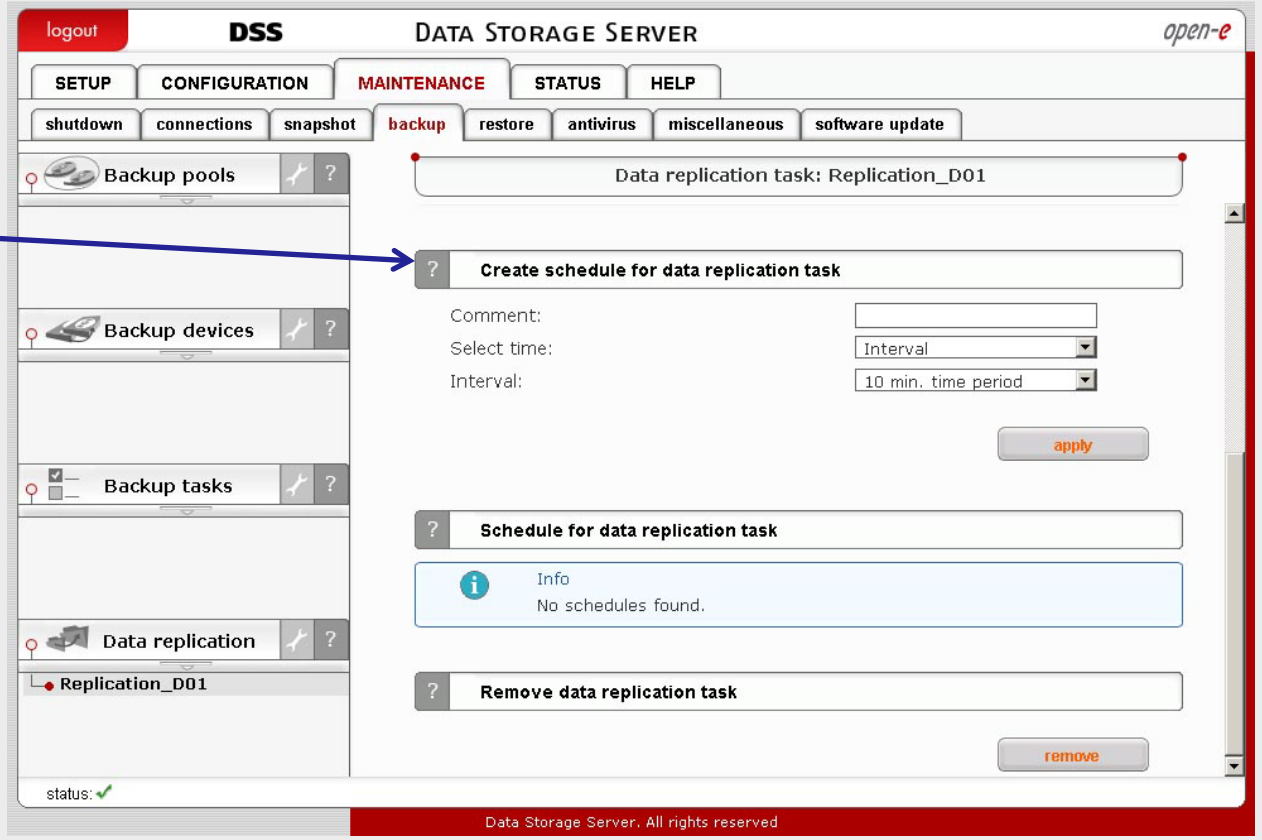
The configuration of the Source Node (storage server) is now complete.

Setting up Asynchronous **Data Replication** within a System

Data Server
Raid Array System 1
Address IP:192.168.0.220

4. Configure Schedule replication

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.

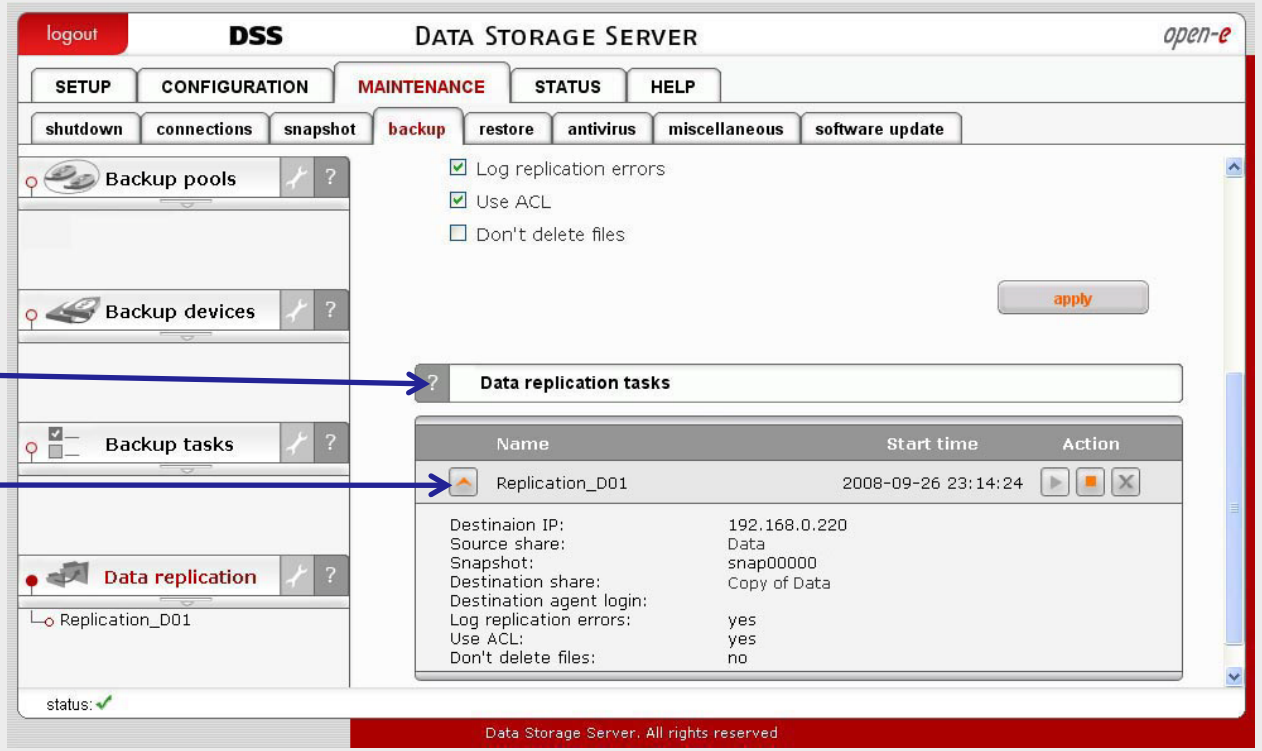


Setting up Asynchronous **Data Replication** within a System

Data Server
Raid Array System 1
Address IP:192.168.0.220

5. Checking status data replication

In **Data replication tasks** function set the desired data replication to start, stop and delete tasks

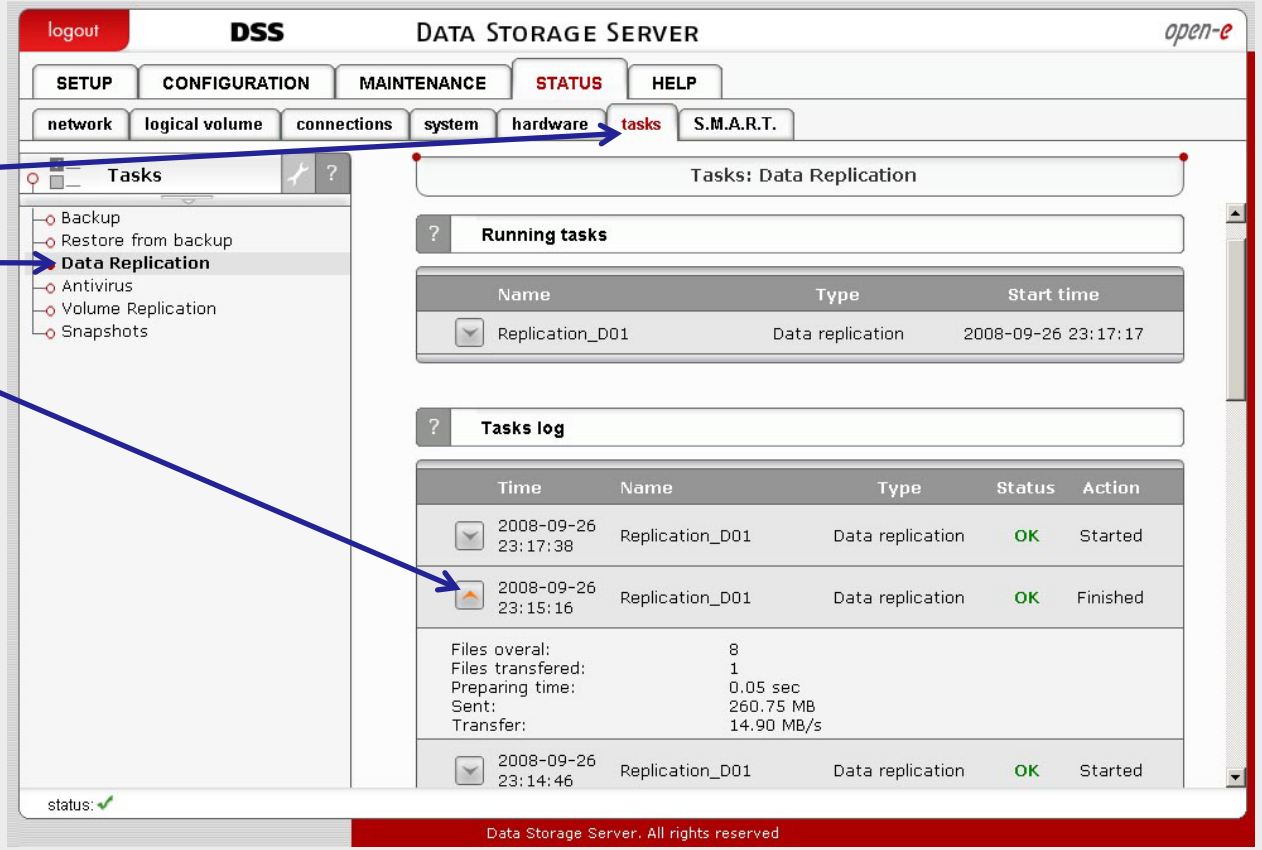


Setting up Asynchronous **Data Replication** within a System

Data Server
Raid Array System 1
Address IP:192.168.0.220

5. Checking status data replication

To obtain detailed information about the progress of data replication tasks, under the „**STATUS**" tab, select „**tasks**" menu.
Next click **Data Replication** tasks and select the Tasks



The configuration of the source and destination nodes for asynchronous data replication is now complete.

Thank You!