



ENTERPRISE LEVEL STORAGE OS
for EVERY BUSINESS

Step-by-Step Guide to Asynchronous Data (File) Replication (File Based) within a System Supported by Open-E® DSS V6

DSS V6

DATA STORAGE SOFTWARE

16 TB



Easy to use, GUI based management provides performance and security.



Reliable disk based backup and recovery, along with Snapshot capability enable fast and reliable backup and restore.



Easy to implement remote Replication, at block or volume level, enables cost-effective disaster recovery.



IP based storage management combines NAS and iSCSI functionality for centralized storage and storage consolidation.

Software Version: DSS ver. 6.00 up85

Presentation updated: September 2011

www.open-e.com

Asynchronous Data (File) Replication within a System

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

- **ASYNCHRONOUS DATA (FILE) REPLICATION within a System** enables **asynchronous** file and folder copy from one LUN or Volume Group to another on the same system.
 - With asynchronous replication a point-in-time snapshot copy of data on the source is made and copied to the target storage device.

REPLICATION BETWEEN TWO RAID ARRAYS WITHIN ONE SYSTEM

■ Recommended Resources

- Key Hardware
 - ✓ x86 compatible
 - ✓ RAID Controller 1
 - ✓ RAID Controller 2 (optional, single RAID controller can manage 2 RAID arrays as well)
 - ✓ HDD's
 - ✓ Network Interface Cards
- Software
 - ✓ Open-E DSS V6

■ Benefits

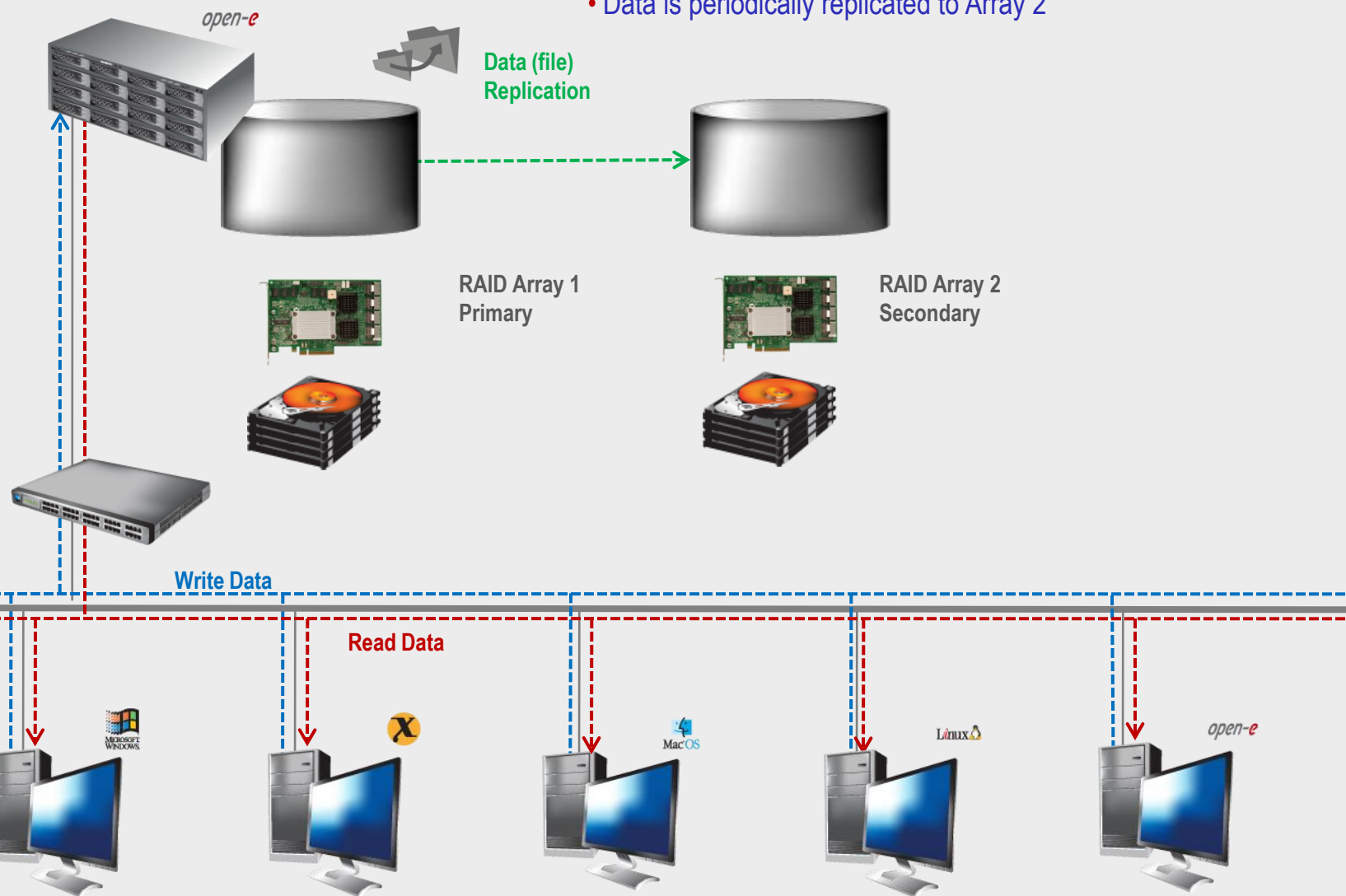
- Data redundancy over RAID Array
- Local data availability
- Low cost solution

■ Disadvantages

- In case of complete system failure, data will be lost or inaccessible

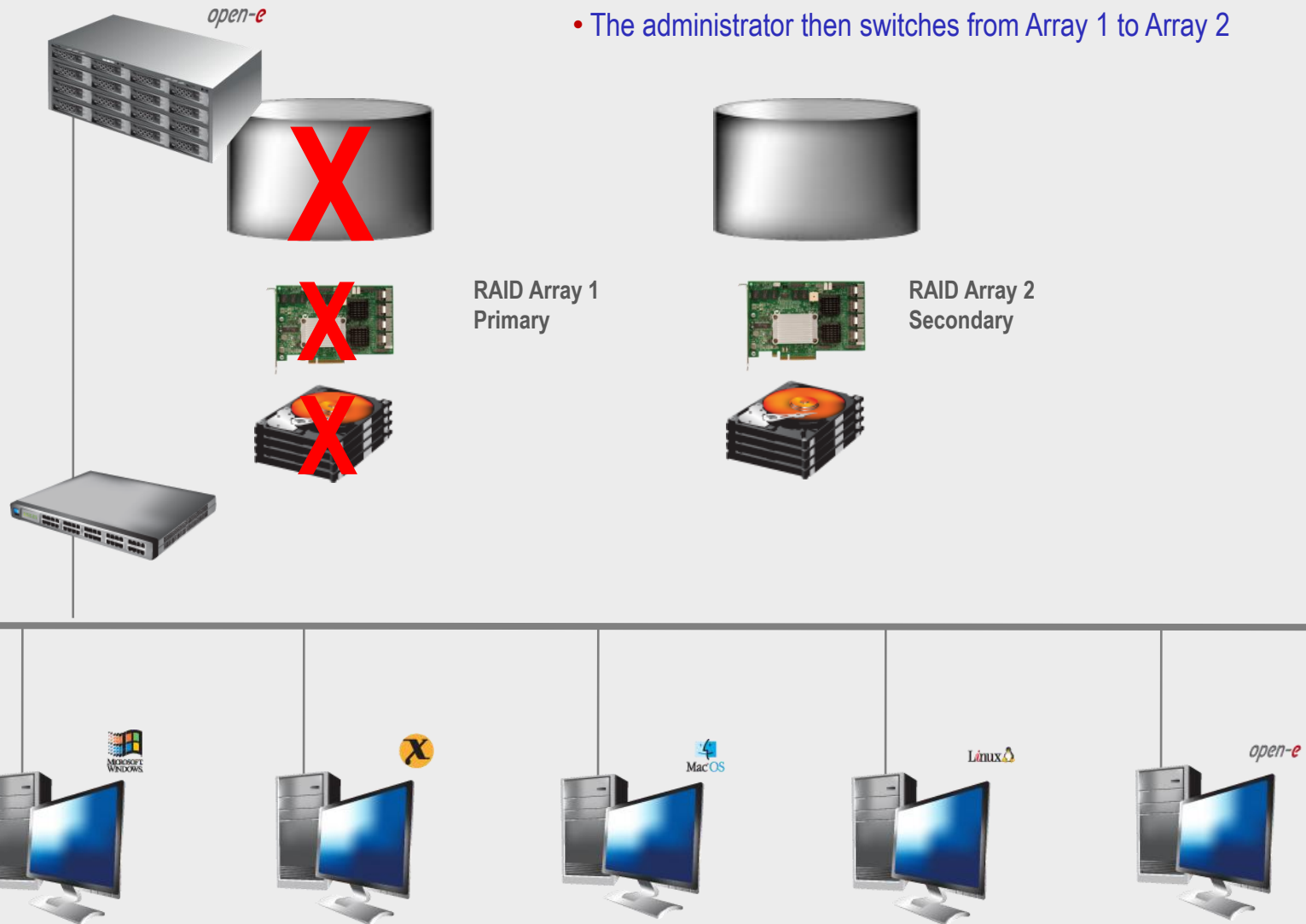
Asynchronous Data (File) Replication within a System

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



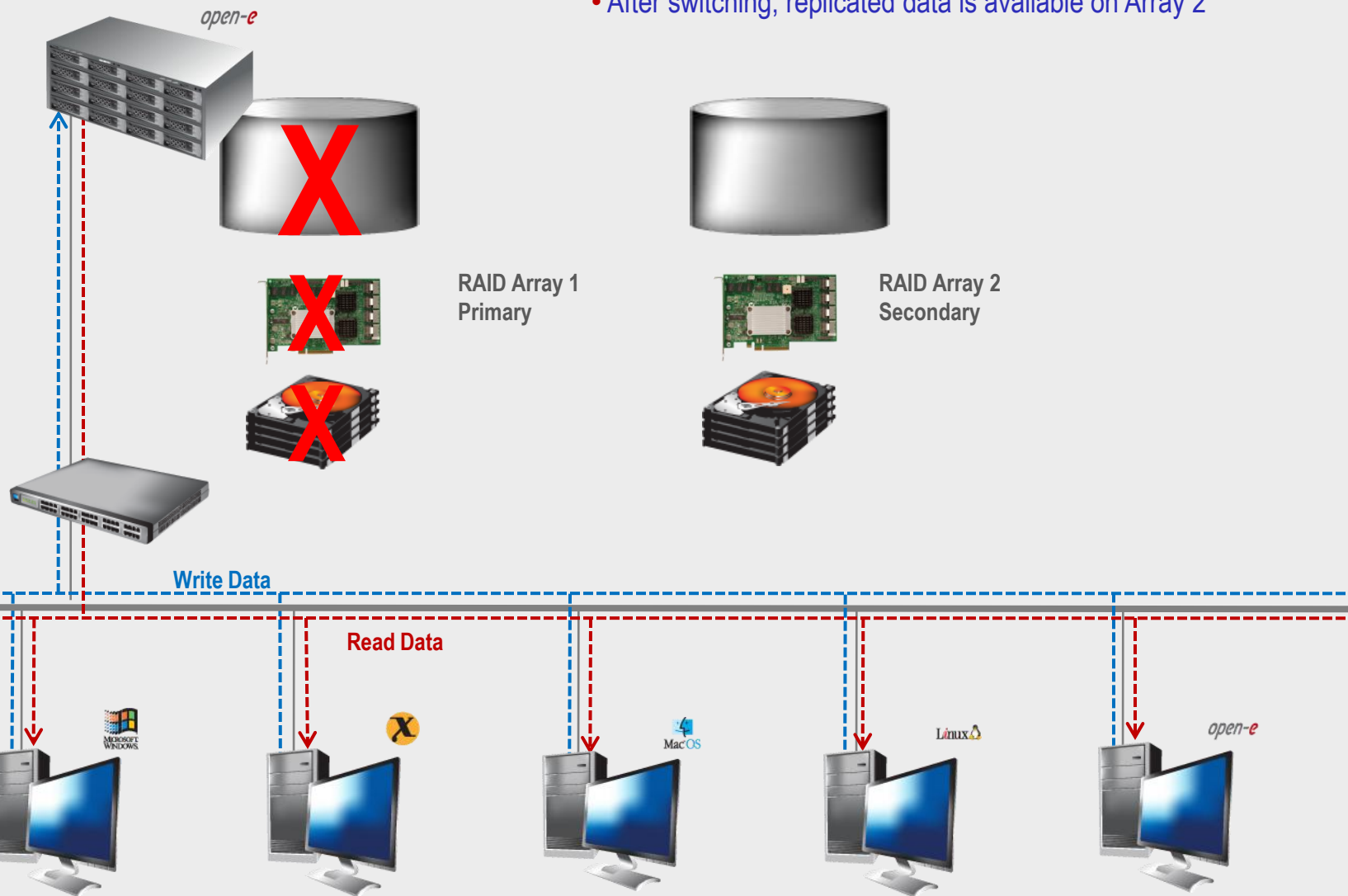
Asynchronous Data (File) Replication within a System

- 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 (File) Replication within a System

- After switching, replicated data is available on Array 2



TO SET UP DATA (FILE) REPLICATION, PERFORM THE FOLLOWING STEPS:

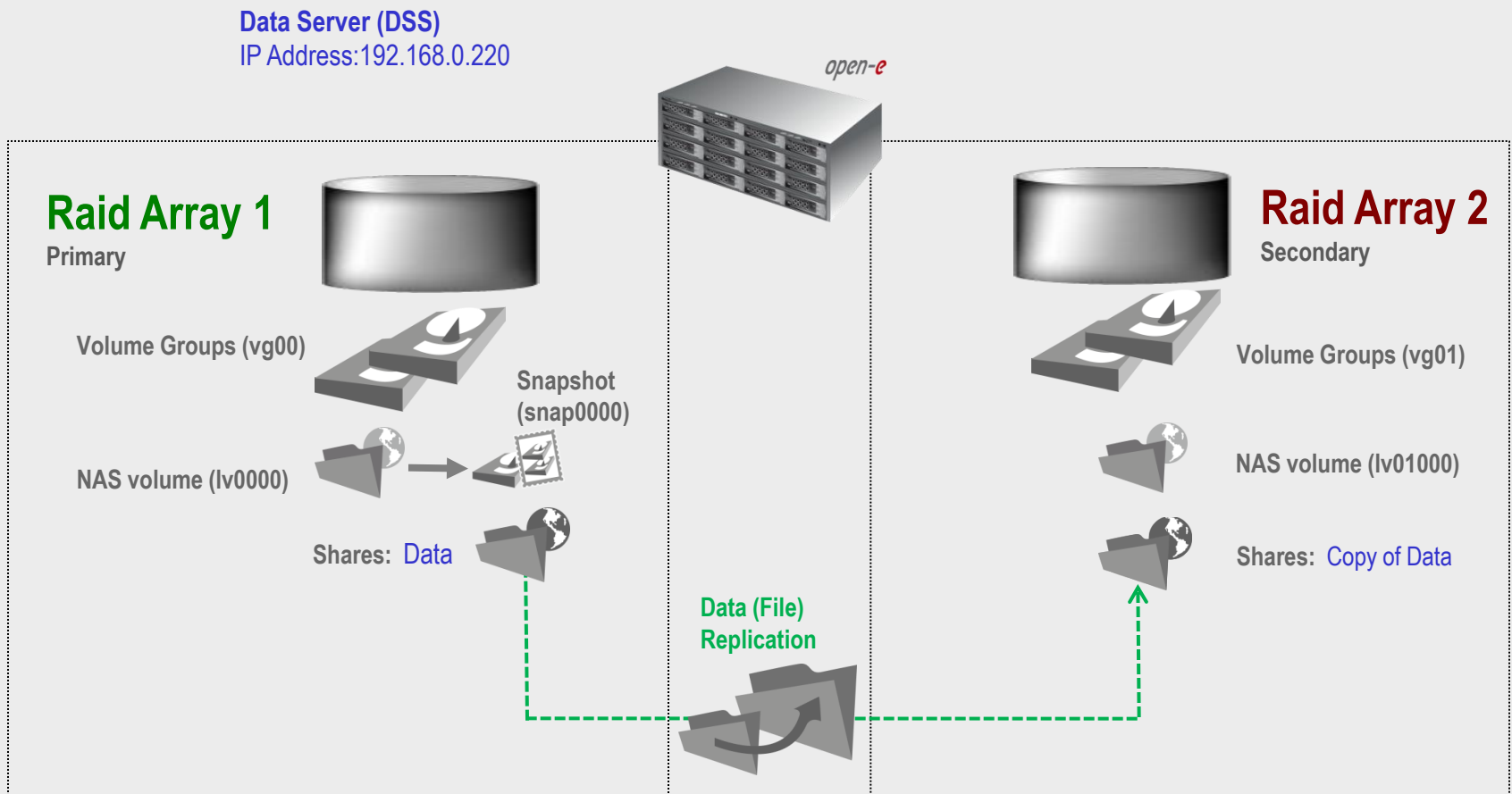
1. Configure Hardware
2. Configure the destination volume
3. Configure the source volume
4. Configure Schedule replication
5. Check the status of Data (File) Replication

Setting up Asynchronous **Data (File) Replication** within a System *open-e*

1. Configure Hardware

Hardware Requirements

To run the Data (File) Replication on Open-E DSS V6, a minimum of two RAID arrays are required on one system. Logical volumes working on RAID Array 1 must have snapshots created and enabled. An example configuration is shown below:



Setting up Asynchronous **Data (File) Replication** within a System *open-e*



Data Server (DSS)
Raid Array 2
IP Address:192.168.0.220

2. Configure the destination volume

Under the "CONFIGURATION" menu, select "volume manager" and "Vol. Groups"

Volume Groups (vg01)



Add the selected physical units (Unit S003) to create a new volume group (in this case, vg01) and click **apply** button.

The screenshot shows the open-e web interface for configuring storage. The breadcrumb path is "CONFIGURATION > volume manager > Vol. groups". The "Unit manager" table lists the following units:

Unit	Size (GB)	Serial number	Status
Unit MD0	465.77	N/A	available
<input checked="" type="checkbox"/> Unit S003	230.08	N/A	available

The "Action" dropdown is set to "new volume group" and the "Name" field contains "vg01". The "apply" button is visible at the bottom right of the configuration area.

Setting up Asynchronous Data (File) Replication within a System *open-e*



Data Server (DSS)
Raid Array 2
IP Address: 192.168.0.220

2. Configure the destination volume

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

The screenshot shows the open-e web interface for configuring a new NAS volume. The breadcrumb trail is: CONFIGURATION > volume manager > Vol. groups > vg01. The 'Vol. groups' panel on the left shows 'vg01' selected. The 'Volume manager' panel on the right displays system volumes and their sizes:

System volumes	Size (GB)
SWAP	4.00
Reserved for snapshots	0.00
Reserved for system	4.00
Reserved for replication	0.00
Free	222.03

The 'Action:' dropdown is set to 'new NAS volume'. Below it, there are checkboxes for 'Use volume replication' and 'WORM', both of which are unchecked. A slider shows the available free space (0 to 222.03 GB) with a handle positioned at 200 GB. The 'add:' field is set to '200' GB. An 'apply' button is visible at the bottom right of the configuration area. A footer note says: 'Please apply changes or press "reload" button to discard'. At the bottom of the interface, there is an 'Event Viewer' icon and the text 'Data Storage Software V6 - All rights reserved'.

Setting up Asynchronous **Data (File) Replication** within a System *open-e*



Data Server (DSS)
Raid Array 2
IP Address:192.168.0.220

2. Configure the destination volume

Under the **“CONFIGURATION”** menu, select **“NAS settings”**

Data (File) Replication



In the **Data (file) replication agent** function, check the **Enable data (file) replication agent** box, and click the **apply** button

The screenshot shows the open-e web interface. At the top, there's a navigation menu with 'CONFIGURATION' selected. Below the menu, the breadcrumb path is 'You are here: CONFIGURATION > NAS settings'. The main content area has several sections: 'Enable NDMP data server' (unchecked), 'Data (file) replication agent' (checked), 'Antivirus setup' (Info: No shares found), and 'Local backup settings' (unchecked). Each section has an 'apply' button. The footer shows 'Event Viewer:' and 'Data Storage Software V6 - All rights reserved'.

Setting up Asynchronous **Data (File) Replication** within a System *open-e*



Data Server (DSS)
Raid Array 2
IP Address:192.168.0.220

2. Configure the destination volume

Under the “**CONFIGURATION**” menu, select “**NAS resources**” and “**Shares**”.

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** on **lv0100** has been created.

The screenshot displays the open-e web interface for configuring a new share. The breadcrumb trail indicates the current location: CONFIGURATION > NAS resources > Shares. The main content area is titled "Create new share" and contains the following fields:

- Name:** Copy of Data
- Comment:** (empty text area)
- Default path:** /lv0100/Copy of Data
- Specified path:** /

An "apply" button is located at the bottom right of the form. Below the form is the "ACL (Access control list)" section, which includes a "Browser" tab and a list of volumes, with "lv0100" selected.

At the bottom of the interface, there is an "Event Viewer" icon and the text "Data Storage Software V6 - All rights reserved".

Setting up Asynchronous **Data (File) Replication** within a System *open-e*



Data Server (DSS)
Raid Array 2
IP Address: 192.168.0.220

2. Configure the destination volume

After creating the new shared volume, click on the share name, check the box **Use data (file) replication within Data (file) replication agent settings** function and click on the **apply** button.

Data (File) Replication



The screenshot shows the open-e web interface. The top navigation bar includes 'open-e', 'ENTERPRISE CLASS STORAGE OS for EVERY BUSINESS', and 'DATA STORAGE SOFTWARE V6'. Below this are tabs for 'SETUP', 'CONFIGURATION', 'MAINTENANCE', 'STATUS', and 'HELP'. The breadcrumb trail reads 'You are here: CONFIGURATION > NAS resources > Shares > Copy of Data'. The main content area is divided into three sections: 'Shares', 'Users', and 'Groups'. The 'Shares' section is active, showing a list with '1. Copy of Data'. The 'Data (file) replication agent settings' panel is expanded, showing a checked checkbox for 'Use data (file) replication'. Below this are input fields for 'Login name:', 'Password:', 'Confirm password:', and 'Allow access IP:'. An 'apply' button is at the bottom right of this panel. Below it is an 'Info' message: 'NDMP data server access' and 'Info: NDMP data server is off!'. At the bottom is a 'Remove share' panel with a 'remove' button. The footer contains 'Event Viewer: [icon]' and 'Data Storage Software V6 - All rights reserved'.

NOTE:

It is strongly recommended protecting the replication protocol with a user name and password, along with a list of allowed IP address. This will prevent other Data (File) Replication tasks from accessing this share.

The configuration of the destination volume is now complete.

Setting up Asynchronous **Data (File) Replication** within a System *open-e*



Data Server (DSS)
Raid Array 1
IP Address:192.168.0.220

3. Configure the source volume

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.

The screenshot shows the open-e web interface with the following components:

- Navigation:** SETUP, CONFIGURATION, MAINTENANCE, STATUS, HELP. Breadcrumbs: You are here: CONFIGURATION > volume manager > Vol. groups.
- Vol. groups:** A list showing 'vg01'.
- Unit manager:** A table of physical units with checkboxes for selection.
- Action:** A dropdown menu set to 'new volume group' and a text input field containing 'vg00'.
- Buttons:** 'rescan', 'apply', and 'reload'.
- Drive identifier:** A table listing available physical units.

Unit	Size (GB)	Serial number	Status
<input checked="" type="checkbox"/> Unit MD0	465.77	N/A	available
<input type="checkbox"/> Unit S003	230.08	N/A	in use, vg01

Unit	Serial number	Status
<input type="checkbox"/> Unit S003	N/A	
<input type="checkbox"/> Unit S000	9RY1GP7W	
<input type="checkbox"/> Unit S001	5RY13SBZ	

Setting up Asynchronous **Data (File) Replication** within a System *open-e*



Data Server (DSS)
Raid Array 1
IP Address:192.168.0.220

Volume Groups (vg00)



NAS volume (lv0000)



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

3. Configure the source volume

The screenshot shows the open-e web interface for configuring a source volume. The breadcrumb trail is: CONFIGURATION > volume manager > Vol. groups > vg00. The left sidebar shows a tree view with 'Vol. groups' selected, containing 'vg00' and 'vg01'. Below it is 'Vol. replication'. The main content area is titled 'Volume manager' and contains a table of system volumes:

System volumes	Size (GB)
SWAP	4.00
Reserved for snapshots	0.00
Reserved for system	4.00
Reserved for replication	0.00
Free	457.72

Below the table, the 'Action:' dropdown is set to 'new NAS volume'. There are checkboxes for 'Use volume replication' and 'WORM', both of which are unchecked. A slider bar shows the available free space of 457.72 GB. Below the slider, the 'add:' field is set to '200' GB. A red 'apply' button is visible at the bottom right of the configuration area. A message at the bottom of the configuration area reads: 'Please apply changes or press "reload" button to discard'. At the bottom of the interface, there is an 'Event Viewer' icon and a footer that says 'Data Storage Software V6 - All rights reserved'.

Setting up Asynchronous **Data (File) Replication** within a System *open-e*



Data Server (DSS)
Raid Array 1
IP Address: 192.168.0.220

3. Configure the source volume

To run the replication process, you must first define a **new snapshot** to be taken of the volume to be replicated. Snapshot size should be large enough to accommodate the changes you anticipate, 10% to 15% of the logical volume is sometimes recommend. Next, you select “**Assign to volume lv0000**”.

Snapshot



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

The screenshot shows the open-e web interface for configuring a new snapshot. The breadcrumb path is: CONFIGURATION > volume manager > Vol. groups > vg00. The 'Vol. groups' panel shows 'vg00' selected. The 'Volume manager' table lists logical volumes, including 'lv0000' with a size of 200.00 GB. The 'System volumes' section shows 'SWAP' at 4.00 GB and 'Free' space at 257.72 GB. The 'Action:' dropdown is set to 'new snapshot' and the 'Assign to volume:' dropdown is set to 'Assign to volume lv0000'. A slider below the dropdowns shows the snapshot size, currently set to 20 GB. The 'apply' button is highlighted with a red box.

Logical Volume	Type	Snap.	Rep.	Init.	Blocksize (bytes)	Size (GB)
lv0000					N/A	200.00

System volumes	Size (GB)
SWAP	4.00
Reserved for snapshots	0.00
Reserved for system	4.00
Reserved for replication	0.00
Free	257.72

Setting up Asynchronous **Data (File) Replication** within a System *open-e*



Data Server (DSS)
Raid Array 1
IP Address:192.168.0.220

3. Configure the source volume

NAS volume
(lv0000)



Snapshot (snap0000)

The Snapshot is now created, and has been assigned to the logical volume lv0000.

open-e | ENTERPRISE CLASS STORAGE OS for EVERY BUSINESS | DATA STORAGE SOFTWARE V6

SETUP | CONFIGURATION | MAINTENANCE | STATUS | HELP

You are here: CONFIGURATION > volume manager > Vol. groups > vg00

Vol. groups

- vg00
- vg01

Vol. replication

Reserved for replication: 0.00

Free: 237.72

Action: new NAS volume

Use volume replication

WORM

0 237.72

add: 0.00 GB

apply

Snapshot definition

Name	LV	Status
snap00000	lv0000	in use/inactive

apply

Event Viewer: [icon]

Data Storage Software V6 - All rights reserved

Setting up Asynchronous **Data (File) Replication** within a System *open-e*



Data Server (DSS)
Raid Array 1
IP Address:192.168.0.220

3. Configure the source volume

Under the “**CONFIGURATION**” menu, select “**NAS resources**” and **Shares**.

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.

The screenshot displays the open-e web interface for configuring a share. The top navigation bar includes 'SETUP', 'CONFIGURATION', 'MAINTENANCE', 'STATUS', and 'HELP'. The breadcrumb trail indicates the current location: 'You are here: CONFIGURATION > NAS resources > Shares'. The left sidebar shows a tree view of NAS resources, with 'Shares' expanded to show '1. Copy of Data'. The main content area is titled 'Create new share' and contains the following fields:

- Name: Data
- Comment: (empty text area)
- Default path: /lv0000/Data
- Specified path: /

An 'apply' button is located at the bottom right of the form. Below the form, there is a note: 'Please apply changes or press "reload" button to discard'. The 'ACL (Access control list)' section is visible below the form, with a 'Browser' tab selected. The 'Selection:' and 'Filter:' fields are empty. A list of volumes is shown below, including 'lv0000' and 'lv0100'.

Setting up Asynchronous **Data (File) Replication** within a System *open-e*



Data Server (DSS)
Raid Array 1
IP Address:192.168.0.220

3. Configure the source volume

After the share to be replicated has been configured, go to the **"MAINTENANCE"** menu and select **"backup"** to choose **Data (file) replication**.

Data (File) Replication



open-e | ENTERPRISE CLASS STORAGE OS for EVERY BUSINESS | DATA STORAGE SOFTWARE V6

SETUP | CONFIGURATION | MAINTENANCE | STATUS | HELP

You are here: MAINTENANCE > backup > Data (file) replication

Backup pools

Backup devices

Backup tasks

Data (file) rep.

Event Viewer: [icon]

Data Storage Software V6 - All rights reserved


Setting up Asynchronous **Data (File) Replication** within a System *open-e*



Data Server (DSS)
Raid Array 1
IP Address: 192.168.0.220

3. Configure the source volume

Select the source share to be replicated. Under the **Create new data (file) replication task** function, enter a name for the task and select the source share to be replicated. At this point, a snapshot (**snap00000**) 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.

Task name: ReplicationTask
Source share: Data
Snapshot: snap00000
Destination IP: 192.168.0.220
Destination share: Copy of Data
Destination agent login:
Destination agent password:
 Log replication errors
 Use ACL
 Don't delete files
apply
Please apply changes or press "reload" button to discard

Data (file) replication tasks
Info
No tasks have been found.

Setting up Asynchronous **Data (File) Replication** within a System *open-e*



Data Server (DSS)
Raid Array 1
IP Address:192.168.0.220

3. Configure the source volume

After the DSS V6 Web console has been reloaded, the new task should appear. Additional information about a selected replication task is visible in the **Data (file) replication task** function.

The configuration of the source volume is now complete.

The screenshot shows the open-e web console interface. The breadcrumb navigation indicates the user is in the 'ReplicationTask' configuration page. The main content area is divided into two sections: 'Data (file) replication task' and 'Create schedule for data (file) replication task'.

Data (file) replication task

Attribute	Value
Destination IP:	192.168.0.220
Source share:	Data
Snapshot:	snap00000
Destination share:	Copy of Data
Log replication errors:	Yes
Use ACL:	Yes
Don't delete files:	No

Create schedule for data (file) replication task

Comment:

Select time:

Interval:

Schedule for data (file) replication task

i Info
No schedules found.

Event Viewer:

Data Storage Software V6 - All rights reserved

Setting up Asynchronous **Data (File) Replication** within a System *open-e*



Data Server (DSS)
Raid Array 1
IP Address:192.168.0.220

4. Configure Schedule replication

Using the **Create schedule for data (file) replication task** function, set the desired replication schedules or explicitly start, stop and delete Data (File) Replication tasks, as desired.

open-e | ENTERPRISE CLASS STORAGE OS for EVERY BUSINESS | DATA STORAGE SOFTWARE V6

SETUP | CONFIGURATION | MAINTENANCE | STATUS | HELP

You are here: MAINTENANCE > backup > Data (file) replication > ReplicationTask

Backup pools

Backup devices

Backup tasks

Data (file) rep.

ReplicationTask

Use ACL:	Yes
Don't delete files:	No

Create schedule for data (file) replication task

Comment:

Select time:

Interval:

apply

Please apply changes or press "reload" button to discard

Schedule for data (file) replication task

i Info
No schedules found.

Remove data (file) replication task

remove

Event Viewer:


Data Storage Software V6 - All rights reserved

Setting up Asynchronous **Data (File) Replication** within a System *open-e*



Data Server (DSS)
Raid Array 1
IP Address: 192.168.0.220

4. Configure Schedule replication

In the **Data (file) replication tasks** function set the desired data (file) replication to start or stop, or you can delete tasks. Click on the  button next to the task name (in this case ReplicationTask) to display detailed information on the current replication task (the replication task running at 10 pm)

The screenshot shows the open-e web interface with the following elements:

- Header: open-e | ENTERPRISE CLASS STORAGE OS for EVERY BUSINESS | DATA STORAGE SOFTWARE V6
- Navigation: SETUP | CONFIGURATION | MAINTENANCE | STATUS | HELP
- Breadcrumbs: You are here: MAINTENANCE > backup > Data (file) replication
- Left sidebar: Backup pools, Backup devices, Backup tasks, Data (file) rep., ReplicationTask
- Main content area: Configuration form for Data (file) replication tasks with fields for Snapshot, Destination IP, Destination share, Destination agent login, Destination agent password, and checkboxes for Log replication errors, Use ACL, and Don't delete files. An 'apply' button is at the bottom right.
- Bottom section: Data (file) replication tasks table with columns Name, Start time, and Action.

Name	Start time	Action
ReplicationTask	2011-09-04 22:00:05	

Destination IP:	192.168.0.220
Source share:	Data
Snapshot:	snap00000
Destination share:	Copy of Data
Destination agent login:	
Log replication errors:	yes
Use ACL:	yes
Don't delete files:	no

Setting up Asynchronous **Data (File) Replication** within a System *open-e*



Data Server (DSS)
Raid Array 1
IP Address:192.168.0.220

5. Check the status of Data (File) Replication

To obtain detailed information about the progress of Data (File) Replication tasks, under the "STATUS" menu, select "tasks". Next click Data (File) Replication tasks and select the Tasks

The screenshot shows the open-e web interface. The top navigation bar includes 'SETUP', 'CONFIGURATION', 'MAINTENANCE', 'STATUS', and 'HELP'. The breadcrumb trail indicates the current location: 'STATUS > tasks > Data (File) Replication'. The left sidebar shows a tree view of tasks, with 'Data (File) Replication' selected. The main content area is divided into two sections: 'Running tasks' and 'Tasks log'.

Name	Type	Start time
ReplicationTask	Data (file) replication	2011-09-04 22:00:05

Time	Name	Type	Status	Action
2011-09-04 22:00:34	ReplicationTask	Data (file) replication	OK	Started

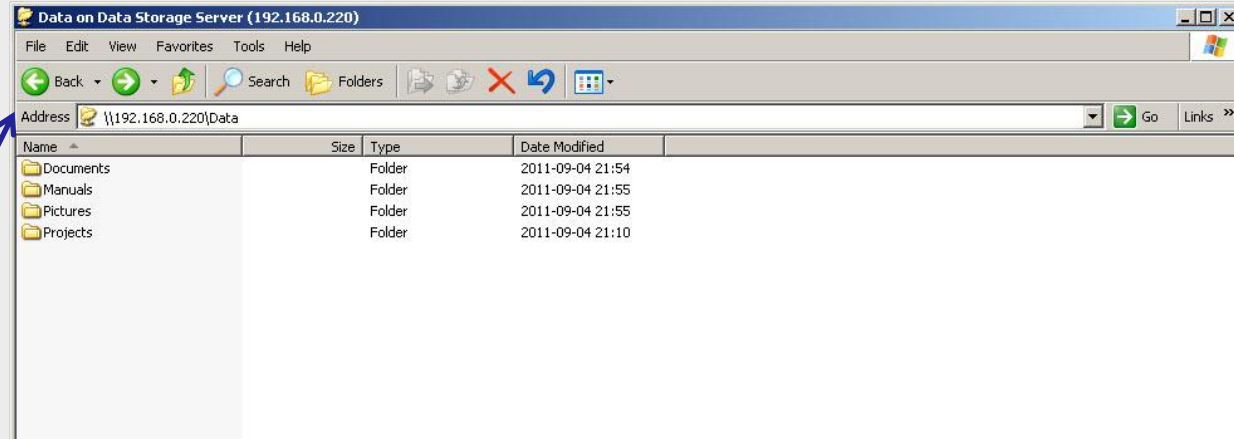
Setting up Asynchronous **Data (File) Replication** within a System *open-e*



Data Server (DSS)
Raid Array 1 and 2
IP Address:192.168.0.220

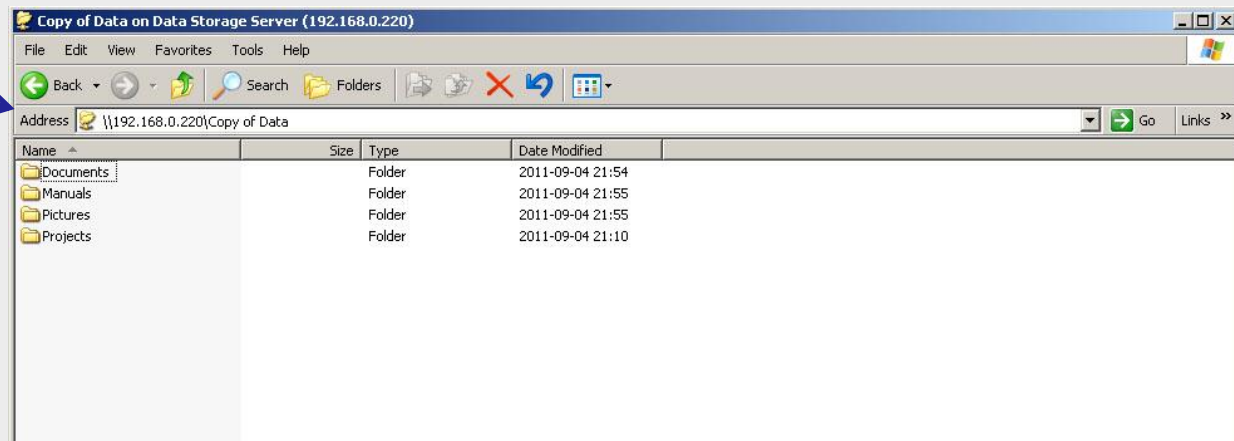
5. Check the status of Data (File) Replication

Share: Data



After the end of the Data (File) Replication task all data from the "Data" share are available on the "Copy of data" share.

Share: Copy of Data



The configuration of the source and destination volumes for asynchronous Data (File) Replication is now complete.

Thank you!