



## Step-by-Step Guide

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### Open-E JovianDSS Off-site Data Protection and High availability

The aim of this document is to demonstrate how set up a backup of data residing on both JovianDSS High-Availability Cluster nodes to local-backup and to a remote backup-server over the LAN with Off-Site Data Protection Service.

Off-Site Data Protection Service creates rotational auto-snapshots of a dataset or zvol according to a retention-interval plan, and optionally asynchronously replicates snapshots delta to the local or remote destinations.

Asynchronous replication of rotational-auto-snapshots delta to local or remote destinations, where destination is:

1. Another dataset or zvol within the same ZFS pool.
2. Dataset or zvol on different ZFS pool.
3. Dataset or zvol on a remote node.

Retention plans:

The ODPS retention-interval plan consists of a series of retention periods to interval associations: "retention\_every\_interval,retention\_every\_interval,retention\_every\_interval,...".

Example: 1hour\_every\_10min,3day\_every\_1hour,1month\_every\_1day

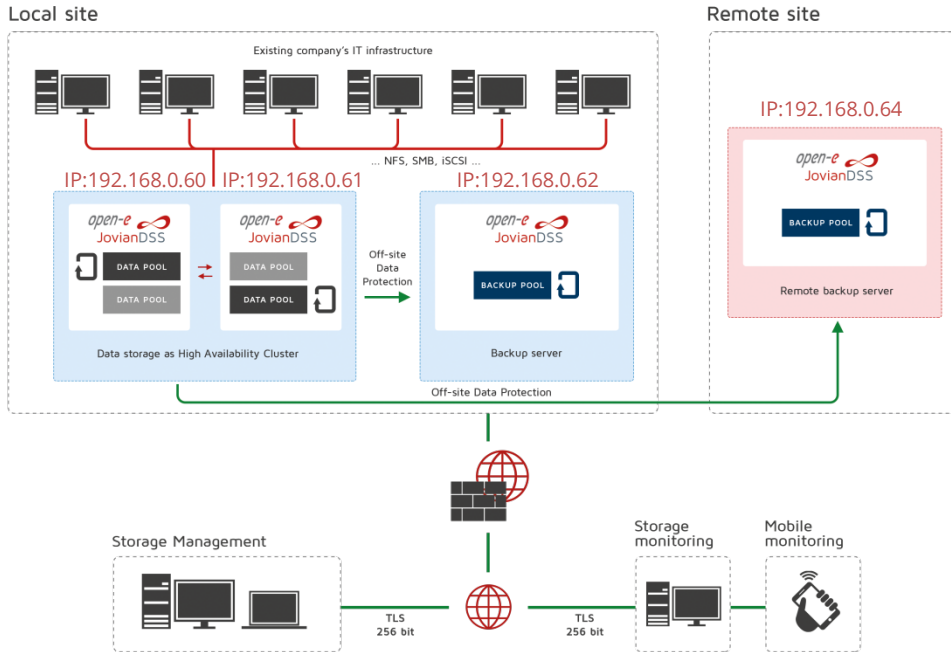
Both intervals and retention periods use standard units of time or multiples of them, with full names or a shortcut according to the following list: second | sec | s, minute | min, hour | h, day | d, week | w, month | mon | m, year | y

Rotational auto-snapshots on both source and destination are created according to retention plans. It is possible to have different retention plans for source and destination pool.

To set up a JovianDSS Off-site Data Protection and HA, perform the following steps:

1. Hardware configuration
2. Create new Pools:
  - 2.1. Create new Pool on node-a.
  - 2.2. Create new Pool on node-b.
  - 2.3. Create new Pool on backup-local server
  - 2.4. Create new Pool on backup-remote server
3. Create new shares
4. Create new target
5. Create new NAS volume (dataset)
6. Create new iSCSI volume (zvol)
7. Configure CLI access
8. Issuing odps commands
9. Odps commands examples
10. Testing of auto-snapshot functions
11. Testing data restore
12. Disable the running tasks using odps commands

## 1. Hardware configuration



High-Availability Open-E JovianDSS production server

Backup on local pool

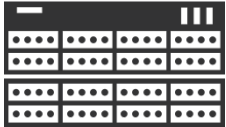
Backup on system in same location

Backup on remote site

Risks	Counter measure	Restore time
Virus attack	Snapshots	Instant
Data corruption	Self-healing	Instant
Disk failure	RAID	Instant
Rebuild failure	Second RAID	Instant
System failure	Backup server	Instant
Natural disaster	Remote server	Hours
Theft	Remote server	Hours
Human error	Remote server	Hours
Downtime	High Availability	Instant

## 2.1. Create new Pool on node-a

open-e



(JovianDSS – node-a)  
IP Address: 192.168.0.60

Go to menu Storage on node-a and create **Pool-0**.

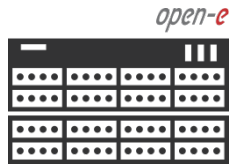
### NOTE:

The focus of this document is ODPS. This is why it will not show Pool creation step-by-step. Please refer to the JovianDSS [Quick Start Guide](#) for details.

This document also does not show the HA-Cluster setup step-by-step. Please refer to the [Open-E JovianDSS High Availability Cluster \(SAS, FC\) Step-by-Step Guide](#)

The screenshot shows the Open-E JovianDSS web interface. The browser tabs include 'node-a', 'node-b', 'backup-local', and 'backup-remote'. The address bar shows 'https://192.168.0.60'. The page title is 'open-e JovianDSS'. The navigation menu on the left includes 'Storage', 'User Management', 'Failover Settings', 'Storage Settings', 'System Settings', and 'Diagnostics'. The main content area is titled 'Storage' and shows 'Pool-0' with a state of 'ONLINE'. The pool details include: Zpool ID: 14295336180778377705, Total storage: 39.75 GiB, and Disks: 11. A status box indicates 'Status: Zpool is functioning correctly.' and 'Action: None required.' Below this, there is a section for 'Zpools available for import' with a 'Rescan required' message. At the bottom, there is a section for 'Unassigned disks' with a search bar and a table with columns: Name, Serial number, Size, Model, and Blink. The table currently shows 'No unassigned disks found.'

## 2.2. Create new Pool on node-b

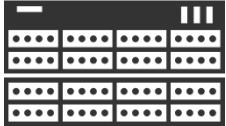


(JovianDSS - node-b)  
IP Address: 192.168.0.61

Please create **Pool-1** on node-b

## 2.3. Create new Pool on backup-local server

open-e



(JovianDSS - backup-local)  
IP Address: 192.168.0.62

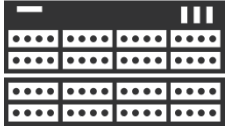
Please create **Pool-0** on the backup-local server.

The screenshot shows the Open-E JovianDSS web interface. The browser tabs are labeled 'node-a', 'node-b', 'backup-local', and 'backup-remote'. The address bar shows 'https://192.168.0.62'. The page title is 'open-e JovianDSS'. The left sidebar contains navigation options: Storage, User Management, Failover Settings, Storage Settings, System Settings, and Diagnostics. The main content area is titled 'Storage' and shows 'Pool-0' with a state of 'ONLINE'. The Zpool ID is '10175652553137950093' and the total storage is '109.00 GiB'. There are '11' disks. A 'Rescan' button is highlighted with a red arrow. Below the pool information, there is a section for 'Zpools available for import' with a 'Rescan required' message. At the bottom, there is a table of 'Unassigned disks' with two entries: 'sdp' and 'sdq'.

Name	Serial number	Size	Model	Blink
1 sdp	6000c29163db4ef1de51af816bb338db	10.00 GiB	Virtual disk	●
2 sdq	6000c29afaa96d9e901525be61a41317	10.00 GiB	Virtual disk	●

## 2.4. Create new Pool on backup-remote server

open-e



(JovianDSS - backup-remote)  
IP Address: 192.168.0.64

Please create **Pool-0** on the backup-remote server.

Storage

Pool-0

State: ONLINE

Zpool ID: 12723450185086645702

Total storage: 109.00 GiB

Disks: 11

Rescan + Add zpool

Options

Status: Zpool is functioning correctly.

Action: None required.

Zpools available for import

Rescan required  
Press Rescan storage button above to scan disks for new zpools.

Unassigned disks

Name	Serial number	Size	Model	Blink
1 sdp	6000c29613fe3c18fa6f078e5e50b0ca	10.00 GiB	Virtual disk	●



### 3. Create new share

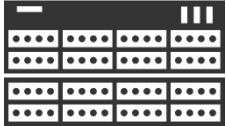


(JovianDSS – node-a)  
IP Address: 192.168.0.60

In the pool menu select **Shares** and click on the **Add dataset** button.

The screenshot shows the Open-E JovianDSS web interface. The browser address bar shows the URL <https://192.168.0.60>. The page title is "open-e JovianDSS". The navigation menu on the left includes "Storage", "User Management", "Failover Settings", "Storage Settings", "System Settings", and "Diagnostics". The main content area shows the "Storage" section for "Pool-0". The "Pool-0" status is "ONLINE". The "Zpool ID" is "14295336180778377705", "Total storage" is "39.75 GiB", and "Disks" are "11". A message box indicates "Status: Zpool is functioning correctly." and "Action: None required." Below this, there are tabs for "Status", "Disk groups", "iSCSI targets", "Snapshots", "Shares", and "Virtual IPs". The "Shares" tab is selected, showing "No datasets found." and an "Add dataset" button. A red box highlights the "Add dataset" button and the "Shares" tab. A red arrow points from the "Add dataset" button to the "Shares" tab. Below the "Shares" section, there is a "Zpools available for import" section with a "Rescan required" message: "Press Rescan storage button above to scan disks for new zpools." At the bottom, there is an "Unassigned disks" section with a search bar.

### 3. Create new share



(JovianDSS - node-a)  
IP Address: 192.168.0.60

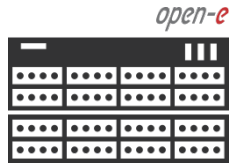
In **Add new dataset**, enter the name **vol00** and click on the **Apply** button.

The screenshot shows the Open-E JovianDSS web interface. The browser address bar shows `https://192.168.0.60`. The page title is "open-e JovianDSS". The main navigation menu includes "Storage", "User Management", "Failover Settings", "Storage Settings", "System Settings", and "Diagnostics". The "Storage" section is active, showing "Pool-0" with a status of "OK". Below the pool information, there is a "Shares" section with the message "No datasets found". A modal dialog box titled "Add new dataset" is open, showing the following fields and options:

- Name:
- Deduplication:
- Copies:
- Compression:
- Sync:
- Log bias:
- Primary cache:
- Secondary cache:
- Access time:
- Enable quota
- Enable reservation

At the bottom of the dialog box, there are two buttons: "Cancel" and "Apply". A red arrow points from the text box on the left to the "Apply" button.

## 3. Create new share



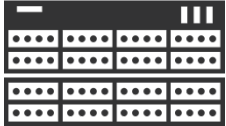
(JovianDSS – node-a)  
IP Address: 192.168.0.60

The screenshot shows the Open-E JovianDSS web interface. The browser address bar shows `https://192.168.0.60`. The page title is "open-e JovianDSS". The sidebar on the left contains the following menu items: Storage, User Management, Failover Settings, Storage Settings, System Settings, and Diagnostics. The main content area is titled "Storage" and shows "Pool-0" with a status of "ONLINE". Below the pool information, there are tabs for "Status", "Disk groups", "iSCSI targets", "Snapshots", "Shares", and "Virtual IPs". The "Shares" tab is selected, showing "Shares: 0" and "All active". At the bottom of the Shares section, there are buttons for "Edit dataset", "Delete dataset", and "Add share". A red box highlights the "Add share" button. A red arrow points from the "Shares" tab in the sidebar to the "Add share" button. Another red arrow points from the "Add share" button to the "Add dataset" button. At the bottom of the page, there is a "Rescan required" message: "Rescan required. Press Rescan storage button above to scan disks for new zpools."

In the pool menu select **Shares** and click on the **Add share** button.

## 3. Create new share

open-e

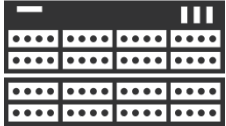


(JovianDSS - node-a)  
IP Address: 192.168.0.60

Next, in **Share wizard** enter the name of share, and click **Next** button.

The screenshot shows the Open-E JovianDSS web interface. The browser tabs include 'node-a', 'node-b', 'backup-local', and 'backup-remote'. The address bar shows 'https://192.168.0.60'. The main navigation menu includes 'Storage', 'User Manager', 'Failover Settings', 'Storage Settings', 'System Settings', and 'Diagnostics'. The 'Storage' section is active, and the 'Share wizard' dialog is open. The wizard has four steps: 1. Share properties, 2. Access protocols, 3. User/group access, and 4. Summary. The 'Share properties' step is selected, and the 'Name' field contains 'data'. The 'Path' field contains 'vol00/'. A red arrow points from the 'Name' field to the 'Next' button. A red box highlights the 'Next' button. A red arrow points from the text box on the left to the 'Next' button. A 'Rescan required' message is visible at the bottom of the interface.

### 3. Create new share

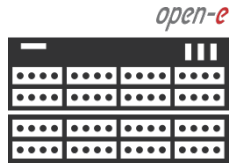


(JovianDSS - node-a)  
IP Address: 192.168.0.60

In Access protocols, please set **Enable SMB service**, and click **Next** button.

The screenshot shows the Open-E JovianDSS web interface. The browser tabs include 'node-a', 'node-b', 'backup-local', and 'backup-remote'. The address bar shows 'https://192.168.0.60'. The interface displays the 'Storage' section with a sidebar menu containing 'Storage', 'User Manager', 'Failover Settings', 'Storage Settings', 'System Settings', and 'Diagnostics'. A 'Share wizard' dialog box is open, showing the following steps: 1. Share properties, 2. Access protocols, 3. User/group access, and 4. Summary. In the 'Access protocols' step, the 'Enable SMB service' checkbox is checked, while 'Enable NFS service' is unchecked. Under 'User access permissions', 'Guest (anyone without password)' is selected. Under 'Advanced', 'Inherit permissions' is checked. The 'Next' button is highlighted with a red arrow. A red box highlights the 'Next' button and the 'Enable SMB service' checkbox. A red arrow points from the text box on the left to the 'Next' button. A red arrow also points from the 'Next' button to the 'Next' button in the wizard. A 'Rescan required' message is visible at the bottom of the interface.

## 3. Create new share



(JovianDSS - node-a)  
IP Address: 192.168.0.60

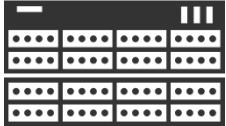
New share **data** with the **SMB** service is active.

The screenshot shows the Open-E JovianDSS web interface. The left sidebar contains navigation options: Storage, User Management, Failover Settings, Storage Settings, System Settings, and Diagnostics. The main content area displays the 'Storage' configuration for 'Pool-0', which is in an 'ONLINE' state. Below this, the 'Shares' section shows a table with one active share named 'data' at the root path, using the SMB protocol. A red arrow points from the text box on the left to the 'data' share in the table. At the bottom, a 'Rescan required' message is visible.

Share name	Path	Access protocols	Comments	Status	Options
1 data	/	SMB		Active	Options

## 4. Create new target

open-e



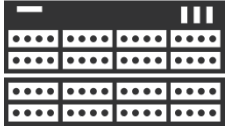
(JovianDSS – node-b)  
IP Address: 192.168.0.61

In the pool menu select **iSCSI targets** and click on the **Add new target** button.

The screenshot shows the Open-E JovianDSS web interface. The browser address bar shows 'https://192.168.0.61'. The page title is 'open-e JovianDSS'. The navigation menu on the left includes Storage, User Management, Failover Settings, Storage Settings, System Settings, and Diagnostics. The main content area is titled 'Storage' and shows details for 'Pool-1'. The 'iSCSI targets' tab is selected, and the 'Add new target' button is highlighted with a red arrow. The interface also shows a 'Rescan' button and a 'Zvols not attached to targets' message.

## 4. Create new target

open-e



(JovianDSS - node-b)  
IP Address: 192.168.0.61

Enter the **Target name** and click the **Next** button.



## 4. Create new target

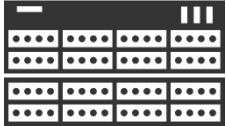


(JovianDSS - node-b)  
IP Address: 192.168.0.61

In order to create a new volume assigned to the target click on the **Add new zvol** button.

The screenshot shows the Open-E JovianDSS web interface. The browser tabs include 'node-a', 'node-b', 'backup-local', and 'backup-remote'. The address bar shows 'https://192.168.0.61'. The interface has a sidebar with menu items: Storage, User Management, Failover Settings, Storage Settings, System Settings, and Diagnostics. The main content area is titled 'Storage' and contains a 'Target Wizard' dialog box. The wizard has four steps: 1. Target name, 2. Zvols, 3. Access, and 4. Summary. Step 2 is active, showing a search box and a table of 'Zvols available for target'. A red arrow points from the 'Add new zvol' button to the 'Zvols available for target' table. The table has columns: Name, Type, Logical size, SCSI ID, LUN, and Access mode. At the bottom of the wizard are 'Cancel', 'Back', and 'Next' buttons.

## 4. Create new target



(JovianDSS – node-b)  
IP Address: 192.168.0.61

Enter the zvol name **zvol00** and size and click on the **Add** button.

The screenshot shows the Open-E JovianDSS web interface. The browser tabs include 'node-a', 'node-b', 'backup-local', and 'backup-remote'. The address bar shows 'https://192.168.0.61'. The main navigation menu includes 'Storage', 'User Manager', 'Failover Settings', 'Storage Settings', 'System Settings', and 'Diagnostics'. The 'Storage' section is active, and the 'Target Wizard' is displayed. The 'Add new zvol' dialog box is open, showing the following configuration:

- Name: zvol00
- Size: 1000 GiB (14.53 GiB physical available)
- Provisioning:  Thin provisioned (default)
- Deduplication: Disabled (default)
- Copies: 1 (default)
- Compression: lz4 (default)
- Volume block size: 128 KiB (default)
- Sync: Always (default)
- Log bias: Latency (default)
- Primary cache: All (default)
- Secondary cache: All (default)

The 'Add' button is highlighted with a red arrow, and the 'Cancel' button is also visible.

## 4. Create new target



(JovianDSS - node-b)  
IP Address: 192.168.0.61

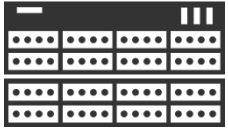
Now, click on the **Next** button.

The screenshot shows the Open-E JovianDSS web interface. The browser tabs are labeled 'node-a', 'node-b', 'backup-local', and 'backup-remote'. The URL is 'https://192.168.0.61'. The interface displays the 'Storage' section with a sidebar menu containing 'Storage', 'User Management', 'Failover Settings', 'Storage Settings', 'System Settings', and 'Diagnostics'. The main content area shows the 'Target Wizard' dialog box, which is currently at step 2, 'Zvols'. The dialog has a progress indicator on the left with steps: 1. Target name, 2. Zvols, 3. Access, and 4. Summary. The 'Zvols available for target' section includes a search box and an 'Add new zvol' button. Below this is a table of available zvols:

Name	Type	Logical size	SCSI ID	LUN	Access mode
<input checked="" type="checkbox"/> zvol00	zvol	1000.00 GiB	h4rdnmJ6i85pkRbD	0	Read-write (default)

At the bottom of the dialog, there are three buttons: 'Cancel', 'Back', and 'Next'. A red arrow points from the text 'Now, click on the Next button.' to the 'Next' button.

## 4. Create new target



(JovianDSS - node-b)  
IP Address: 192.168.0.61

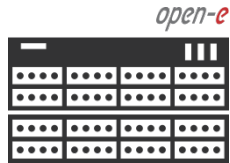
In Access tab, click on the **Next** button.

The screenshot shows the Open-E JovianDSS web interface with the Target Wizard dialog box open. The wizard is in the 'Access' tab, showing the following configuration:

- 1. Target name: CHAP user access authentication
- 2. Zvols:  Enable CHAP users authentication
- 3. Access: Mutual CHAP user
- 4. Summary:  Enable mutual CHAP user,  Target IP access restrictions,  Enable target IP access restrictions

The 'Next' button is highlighted with a red arrow, indicating the next step in the wizard. The interface also shows a sidebar with navigation options like Storage, User Manager, Failover Settings, Storage Settings, System Settings, and Diagnostics. The top navigation bar includes 'About', 'Help', 'Trial version is valid for 248 days', and 'Logout'.

## 4. Create new target



(JovianDSS - node-b)  
IP Address: 192.168.0.61

In Summary, click on the **Add** button.

The screenshot shows the Open-E JovianDSS web interface with the 'Target Wizard' dialog box open. The wizard is at the '4. Summary' step. The configuration details are as follows:

- 1. Target name:** Target name
- 2. Zvols:** Name: iqn.2017-02:ha.target0
- 3. Access:** Zvols attached to target
- 4. Summary:**

Name	SCSI ID	LUN	Access mode
zvol00	h4rdnmj6i85pkRbD	0	Read-write (default)

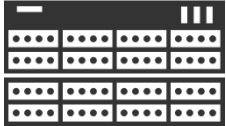
CHAP users

  - CHAP user access authentication is disabled.
  - Mutual CHAP user
  - Mutual CHAP user is disabled.
  - Target IP access restrictions

At the bottom of the wizard, there are three buttons: 'Cancel', 'Back', and 'Add'. A red arrow points from the 'Add' button to the text box on the left.

## 4. Create new target

open-e



(JovianDSS - node-b)  
IP Address: 192.168.0.61

New iSCSI target with the assigned **zvol00** is up and running.

The screenshot shows the Open-E JovianDSS web interface. The left sidebar contains navigation options: Storage, User Management, Failover Settings, Storage Settings, System Settings, and Diagnostics. The main content area is titled 'Storage' and shows 'Pool-1' with a status of 'ONLINE'. A message box indicates 'Status: Zpool is functioning correctly. Action: None required.' Below this, there are tabs for Status, Disk groups, iSCSI targets, Snapshots, Shares, and Virtual IPs. The 'iSCSI targets' tab is active, showing a search bar and a table of targets. A red arrow points from the text box on the left to the 'iqn.2017-02:ha.target0' target in the table.

Name	Type	SCSI ID	LUN	Logical size	Physical size	Compression	Provisioning
1 zvol00	zvol	h4rdnmJ6i85pkRbD	0	1000.00 GiB	93.00 KiB	1.00	thin

Zpools available for import

## 5. Create new NAS volume (dataset)

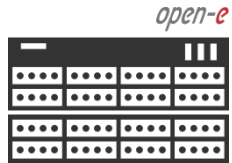


(JovianDSS – backup-local)  
IP Address: 192.168.0.62

In Dataset properties, enter the name **vol00** and click on the **Apply** button.

The screenshot shows the Open-E JovianDSS web interface. The browser tabs are labeled 'node-a', 'node-b', 'backup-local', and 'backup-remote'. The address bar shows 'https://192.168.0.62'. The interface includes a sidebar with navigation options: Storage, User Management, Failover Settings, Storage Settings, System Settings, and Diagnostics. The main content area displays 'Storage' with 'Pool-0' and 'Shares' sections. A modal dialog box titled 'Add new dataset' is open, showing 'Dataset properties' with the following fields: Name (vol00), Deduplication (Disabled (default)), Copies (1 (default)), Compression (lz4 (default)), Sync (Standard (default)), Log bias (Latency (default)), Primary cache (All (default)), Secondary cache (All (default)), and Access time (Disabled (default)). There are also checkboxes for 'Enable quota' and 'Enable reservation'. The 'Apply' button is highlighted with a red arrow.

## 5. Create new NAS volume (dataset)



(JovianDSS - backup-local)  
IP Address: 192.168.0.62

New **vol100** is active.

The screenshot shows the Open-E JovianDSS web interface. The browser address bar shows `https://192.168.0.62`. The page title is "open-e JovianDSS". The left sidebar contains navigation options: Storage, User Management, Failover Settings, Storage Settings, System Settings, and Diagnostics. The main content area is titled "Storage" and shows the configuration for "Pool-0".

**Pool-0 Status:**

- State: **ONLINE**
- Zpool ID: 10175652553137950093
- Total storage: 109.00 GiB
- Disks: 11

**Pool-0 Information:**

- Status: Zpool is functioning correctly.
- Action: None required.

**Shares Section:**

- Buttons: Status, Disk groups, iSCSI targets, Snapshots, Shares, Virtual IPs
- Share: **vol100** — Shares: 0 — All active
- Buttons: Edit dataset, Delete dataset, Add share

**Shares Table:**

Share name	Path	Access protoco	Comments	Status	Options
No shares found.					

**Zpools available for import:**

- Rescan required**: Press Rescan storage button above to scan disks for new zpools.



## 6. Create new iSCSI volume (zvol)

open-e



(JovianDSS – backup-local)  
IP Address: 192.168.0.62

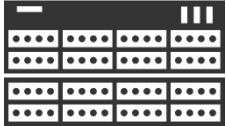
If the zvol details are not shown, please click on the arrow icon.

In the pool menu select **iSCSI targets** and click on the **Add new zvol** button.

The screenshot shows the Open-E JovianDSS web interface. The left sidebar contains navigation options: Storage, User Management, Failover Settings, Storage Settings, System Settings, and Diagnostics. The main content area is titled 'Storage' and shows details for 'Pool-0'. The pool status is 'ONLINE' with a Zpool ID of 10175652553137950093, 109.00 GiB total storage, and 11 disks. A status message indicates 'Zpool is functioning correctly'. Below this, there are tabs for Status, Disk groups, iSCSI targets, Snapshots, Shares, and Virtual IPs. The 'iSCSI targets' tab is active, showing 'No targets found' and a section for 'Zvols not attached to targets' with 0 zvols. At the bottom right of the iSCSI targets section, there is a '+ Add new zvol' button. A red box highlights this button, and red arrows point from the text boxes on the left to it.

## 6. Create new iSCSI volume (zvol)

open-e



(JovianDSS – backup-local)  
IP Address: 192.168.0.62

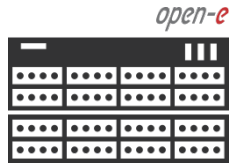
Enter the zvol name **zvol00** and size and click on the **Add** button.

The screenshot shows the Open-E JovianDSS web interface. The browser tabs include 'node-a', 'node-b', 'backup-local', and 'backup-remote'. The address bar shows 'https://192.168.0.62'. The main navigation menu on the left includes Storage, User Management, Failover Settings, Storage Settings, System Settings, and Diagnostics. The 'Storage' section is active, showing 'Pool-0' and 'Zvols not attached'. A modal window titled 'Add new zvol' is open, displaying the following configuration:

- Name: zvol00
- Size: 5000 GiB (76.31 GiB physical available)
- Provisioning:  Thin provisioned (default)
- Deduplication: Disabled (default)
- Copies: 1 (default)
- Compression: lz4 (default)
- Volume block size: 128 KiB (default)
- Sync: Disabled
- Log bias: Latency (default)
- Primary cache: All (default)
- Secondary cache: All (default)
- Attach to target

At the bottom of the dialog are 'Cancel' and 'Add' buttons. A red arrow points from the 'Add' button to the '5000 GiB' size field.

## 6. Create new iSCSI volume (zvol)



(JovianDSS - backup-local)  
IP Address: 192.168.0.62

New zvol00 has been created.

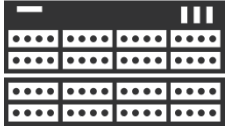
The screenshot shows the Open-E JovianDSS web interface. The left sidebar contains navigation options: Storage, User Management, Failover Settings, Storage Settings, System Settings, and Diagnostics. The main content area is titled 'Storage' and shows details for 'Pool-0'. The pool status is 'ONLINE' with a Zpool ID of 10175652553137950093, a total storage of 109.00 GiB, and 11 disks. A message indicates the pool is functioning correctly. Below this, there are tabs for Status, Disk groups, iSCSI targets, Snapshots, Shares, and Virtual IPs. The 'iSCSI targets' tab is active, showing 'No targets found.' and a section for 'Zvols not attached to targets' with 1 zvol listed. A table below shows the details of the zvol:

Name	Type	Logical size	Physical size	Compression	Provisioning
1 zvol00	zvol	4.88 TiB	146.25 KiB	1.00	thin

At the bottom of the interface, it says 'Zpools available for import'.

## 7. Configure CLI access

open-e



(JovianDSS – node-a)  
IP Address: 192.168.0.60

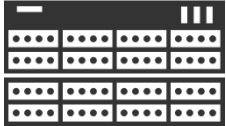
Next, go to **System Settings**. In **CLI access** enter password and click **Apply** button. Please make these settings the same for all nodes.

The screenshot shows the Open-E JovianDSS web interface. The browser tabs include 'node-a', 'node-b', 'backup-local', and 'backup-remote'. The address bar shows 'https://192.168.0.60'. The page title is 'open-e JovianDSS'. The navigation menu on the left includes Storage, User Management, Failover Settings, Storage Settings, System Settings (highlighted), and Diagnostics. The main content area is titled 'System Settings' and contains the 'CLI access' section. This section has a 'Use CLI access' checkbox which is checked. Below it are input fields for 'Allowed network addresses', 'Port' (set to 22223), 'Password', and 'Password confirmation'. The 'Advanced options' section includes instructions to generate and download a key, with a 'Generate and download' button and a 'Download' button. A green 'Apply' button is at the bottom right of the settings area. Red arrows point from the text box on the left to the 'System Settings' menu item, the 'CLI access' section, and the 'Apply' button.



## 8. Issuing ODPS commands

*open-e*



(JovianDSS - node-a)  
IP Address: 192.168.0.60

The **help** command output show all currently available JovianDSS cli-commands

In order to list **odps** command syntax and examples, enter:

```
plink -pw admin -P 22223 -l cli 192.168.0.60 odps
```

```
Administrator: Command Prompt
C:\CLI>
C:\CLI>plink.exe -pw admin -P 22223 -l cli 192.168.0.60 help

Available commands:
attach_volume_to_iscsi_target
check_mk_agent
create_clone_for_given_snapshot
create_iscsi_target
create_pool
create_snapshot
create_volume
delete_clone
delete_iscsi_target
delete_pool
delete_snapshot
delete_volume
detach_volume_from_iscsi_target
get_clones_for_given_snapshot
get_iscsi_targets_for_given_pool
get_pools
get_snapshots_for_given_volume
get_volumes_assigned_to_iscsi_target
get_volumes_for_given_pool
help
node_bind
node_unbind
odps
reboot
shutdown

Run:
command_name --help
to see help for selected command

C:\CLI>
```

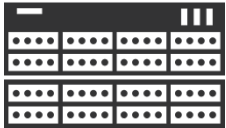


## 9. Odps command examples

```
## plink (ssh) using key file with „-i“ option (please refer to Quick Start Guide in order to learn how to generate the key)
plink.exe -i node-a.ppk -P 22223 -l cli 192.168.0.60 odps (it will list all available commands and usage examples )
## plink (ssg) using password with „-pw“ option
plink.exe -pw admin -P 22223 -l cli 192.168.0.60 odps
## node 192.168.0.60
plink.exe -pw admin -P 22223 -l cli 192.168.0.60 odps attach-backup-node 192.168.0.62 node-password admin
plink.exe -pw admin -P 22223 -l cli 192.168.0.60 odps attach-backup-node 192.168.0.64 node-password admin
## node 192.168.0.61
plink.exe -pw admin -P 22223 -l cli 192.168.0.61 odps attach-backup-node 192.168.0.62 node-password admin
plink.exe -pw admin -P 22223 -l cli 192.168.0.61 odps attach-backup-node 192.168.0.64 node-password admin
## NOTE: the following command must be entered as single line. The vol and zvol on destination mode must be created before creating the odps task.
plink.exe -pw admin -P 22223 -l cli 192.168.0.60 odps create-task source=Pool-0/vol00
    plan=4h_every_1min,2w_every_1h destination=192.168.0.62:Pool-0/vol00
    plan=1d_every_1min,2w_every_5min,3m_every_1h
    destination=192.168.0.64:Pool-0/vol00 plan=3w_every_5min,6m_every_1d mbuffer
Task has been successfully created
```



## 8. Issuing ODPS commands



(JovianDSS - node-a)  
IP Address: 192.168.0.60

The **odps set** on node-a (192.168.0.60) show attached backup-local server and configured backup-task with source: Pool-0/vol00 and 2 destinations:

192.168.0.62:Pool-0/vol00  
192.168.0.64:Pool-0/vol00

```
Administrator: Command Prompt
C:\CLI>
C:\CLI>plink.exe -pw admin -P 22223 -l cli 192.168.0.60 odps set
Current ODPS settings:

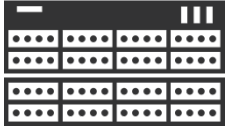
Backup nodes:
  192.168.0.62
  192.168.0.64

Task defaults:
  Default retention plan: 1h_every_5min,3d_every_1h,1m_every_1d

Tasks:
  Source: Pool-0/vol00
  Enabled: yes
  Retention plan: 4hours_every_1minute,2weeks_every_1hour
  Destination: odp@192.168.0.64:Pool-0/vol00
                Retention plan: 3weeks_every_5minutes,6months_every_1day
  Destination: odp@192.168.0.62:Pool-0/vol00
                Retention plan: 1day_every_1minute,2weeks_every_5minutes,3months_every_1hour
  Mbuffer: on
  Mbuffer size: 1G

C:\CLI>
```

## 8. Issuing ODPS commands

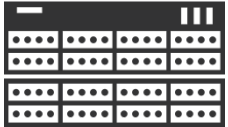


(JovianDSS - node-a)  
IP Address: 192.168.0.60

The **odps status** command show most recent **odps** events.

```
Administrator: Command Prompt
C:\CLI>plink.exe -pw admin -P 22223 -l cli 192.168.0.60 odps status
Service running: Yes
Last service logs:
[Mon Feb 13 19:18:11 2017] [debug] cleaning up snapshots on Pool-0/vo100
[Mon Feb 13 19:18:11 2017] [info] running post snapshot command on Pool-0/vo100
[Mon Feb 13 19:18:11 2017] [info] done with backupset Pool-0/vo100 in 10 seconds
[Mon Feb 13 19:18:11 2017] [debug] send/receive worker for Pool-0/vo100 done (4424)
[Mon Feb 13 19:19:00 2017] [debug] snapshot worker for Pool-0/vo100 spawned (8190)
[Mon Feb 13 19:19:00 2017] [info] creating snapshot on Pool-0/vo100
[Mon Feb 13 19:19:00 2017] [info] running post snapshot command on Pool-0/vo100
[Mon Feb 13 19:19:01 2017] [debug] snapshot worker for Pool-0/vo100 done (8190)
[Mon Feb 13 19:19:01 2017] [debug] send/receive worker for Pool-0/vo100 spawned (8199)
[Mon Feb 13 19:19:01 2017] [info] starting work on backupSet Pool-0/vo100
[Mon Feb 13 19:19:01 2017] [debug] sending snapshots from Pool-0/vo100 to odp@192.168.0.64:Pool-0/vo100
[Mon Feb 13 19:19:04 2017] [debug] cleaning up snapshots on odp@192.168.0.64:Pool-0/vo100
[Mon Feb 13 19:19:05 2017] [info] running post snapshot command on Pool-0/vo100
[Mon Feb 13 19:19:05 2017] [debug] sending snapshots from Pool-0/vo100 to odp@192.168.0.62:Pool-0/vo100
[Mon Feb 13 19:19:08 2017] [debug] cleaning up snapshots on odp@192.168.0.62:Pool-0/vo100
[Mon Feb 13 19:19:09 2017] [info] running post snapshot command on Pool-0/vo100
[Mon Feb 13 19:19:10 2017] [debug] cleaning up snapshots on Pool-0/vo100
[Mon Feb 13 19:19:10 2017] [info] running post snapshot command on Pool-0/vo100
[Mon Feb 13 19:19:11 2017] [info] done with backupset Pool-0/vo100 in 10 seconds
[Mon Feb 13 19:19:11 2017] [debug] send/receive worker for Pool-0/vo100 done (8199)
C:\CLI>
```

## 8. Issuing ODPS commands



(JovianDSS - node-b)  
IP Address: 192.168.0.61

The **odps set** on node-b (192.168.0.61) show attached backup nodes and configured backup-task with source: Pool-1/zvol00 and 2 destinations:

192.168.0.62:Pool-0/zvol00  
192.168.0.64:Pool-0/zvol00

```
Administrator: Command Prompt
C:\CLI>
C:\CLI>plink.exe -pw admin -P 22223 -l cli 192.168.0.61 odps set
Current ODPS settings:

Backup nodes:
  192.168.0.62
  192.168.0.64

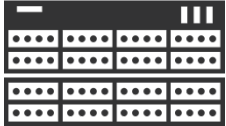
Task defaults:
  Default retention plan: 1h_every_5min,3d_every_1h,1m_every_1d

Tasks:
  Source: Pool-1/zvol00
  Enabled: yes
  Retention plan: 4hours_every_1minute,2weeks_every_1hour
  Destination: odp@192.168.0.64:Pool-0/zvol00
                Retention plan: 3weeks_every_5minutes,6months_every_1day
  Destination: odp@192.168.0.62:Pool-0/zvol00
                Retention plan: 1day_every_1minute,2weeks_every_5minutes,3months_every_1hour
  Mbuffer: on
  Mbuffer size: 1G



C:\CLI>
C:\CLI>
```

## 10. Testing of auto-snapshot functions

open-e



(JovianDSS - backup-local)  
IP Address: 192.168.0.62

Once odps task is running, in the pool menu in **Snapshots** tab, a  icon show that snapshots are created. Please click on the  icon in order to list created snapshots.

The screenshot shows the Open-E JovianDSS web interface. The browser address bar shows `https://192.168.0.62`. The page title is "open-e JovianDSS". The navigation menu on the left includes Storage, User Management, Failover Settings, Storage Settings, System Settings, and Diagnostics. The main content area is titled "Storage" and shows the configuration for "Pool-0".

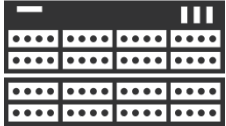
**Pool-0 Configuration:**

- State: ONLINE
- Zpool ID: 10175652553137950093
- Total storage: 109.00 GiB
- Disks: 11

A status message indicates: "Status: Zpool is functioning correctly. Action: None required." Below this are tabs for Status, Disk groups, iSCSI targets, Snapshots, Shares, and Virtual IPs. The "Snapshots" tab is active, showing two sections: "Snapshots of zvols" and "Snapshots of datasets". Each section has a search bar and a table with one entry: "vol00". An "Add new snapshot" button is next to each entry. A red arrow points from the text box on the left to the "vol00" entry in the "Snapshots of datasets" table.

## 10. Testing of auto-snapshot functions

open-e



(JovianDSS – backup-local)  
IP Address: 192.168.0.62

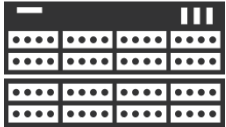
Auto-Snapshots created on backup-local server (192.168.0.62)

The screenshot shows the Open-E JovianDSS web interface. The browser tabs are labeled 'node-a', 'node-b', 'backup-local', and 'backup-remote'. The address bar shows 'https://192.168.0.62'. The interface includes a navigation sidebar with options: Storage, User Management, Failover Settings, Storage Settings, System Settings, and Diagnostics. The main content area is titled 'Storage' and displays a table of auto-snapshots. A red arrow points from the 'Storage' sidebar item to the table. Below the table, there is a section for 'Snapshots of datasets' with a search input field.

Snapshot Name	Options
zvol00@autosnap_2017-02-13-201900	Options
zvol00@autosnap_2017-02-13-202000	Options
zvol00@autosnap_2017-02-13-202100	Options
zvol00@autosnap_2017-02-13-202200	Options
zvol00@autosnap_2017-02-13-202300	Options
zvol00@autosnap_2017-02-13-202400	Options
zvol00@autosnap_2017-02-13-202500	Options
zvol00@autosnap_2017-02-13-202600	Options
zvol00@autosnap_2017-02-13-202700	Options
zvol00@autosnap_2017-02-13-202800	Options
zvol00@autosnap_2017-02-13-202900	Options
zvol00@autosnap_2017-02-13-203000	Options
zvol00@autosnap_2017-02-13-203100	Options
zvol00@autosnap_2017-02-13-203200	Options
zvol00@autosnap_2017-02-13-203300	Options
zvol00@autosnap_2017-02-13-203600	Options
zvol00@autosnap_2017-02-13-203700	Options

## 10. Testing of auto-snapshot functions

open-e



(JovianDSS – backup-local)  
IP Address: 192.168.0.62

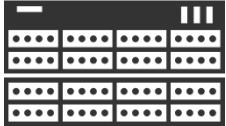
Auto-Snapshots created on backup-local server (192.168.0.62)

The screenshot shows the Open-E JovianDSS web interface. The browser tabs are labeled 'node-a', 'node-b', 'backup-local', and 'backup-remote'. The address bar shows 'https://192.168.0.62'. The page title is 'open-e JovianDSS'. The navigation menu on the left includes 'Storage', 'User Management', 'Failover Settings', 'Storage Settings', 'System Settings', and 'Diagnostics'. The main content area is titled 'Storage' and displays a list of auto-snapshots. Each row in the list contains a volume ID (e.g., 'vol00@autosnap\_2017-02-13-201600') and an 'Options' button. A red arrow points from the 'Auto-Snapshots created on backup-local server (192.168.0.62)' text to the first row of the snapshot list.

Volume ID	Options
vol00@autosnap_2017-02-13-201600	Options
vol00@autosnap_2017-02-13-201700	Options
vol00@autosnap_2017-02-13-201800	Options
vol00@autosnap_2017-02-13-201900	Options
vol00@autosnap_2017-02-13-202000	Options
vol00@autosnap_2017-02-13-202100	Options
vol00@autosnap_2017-02-13-202200	Options
vol00@autosnap_2017-02-13-202300	Options
vol00@autosnap_2017-02-13-202400	Options
vol00@autosnap_2017-02-13-202500	Options
vol00@autosnap_2017-02-13-202600	Options
vol00@autosnap_2017-02-13-202700	Options
vol00@autosnap_2017-02-13-202800	Options
vol00@autosnap_2017-02-13-202900	Options
vol00@autosnap_2017-02-13-203000	Options
vol00@autosnap_2017-02-13-203100	Options
vol00@autosnap_2017-02-13-203200	Options
vol00@autosnap_2017-02-13-203300	Options
vol00@autosnap_2017-02-13-203400	Options
vol00@autosnap_2017-02-13-203500	Options
vol00@autosnap_2017-02-13-203600	Options

## 10. Testing of auto-snapshot functions

open-e



(JovianDSS - backup-remote)  
IP Address: 192.168.0.64

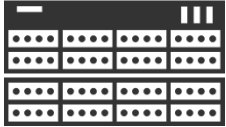
Auto-Snapshots created on backup-remote server (192.168.0.64)

The screenshot shows the Open-E JovianDSS web interface. The browser tabs include 'node-a', 'node-b', 'backup-local', and 'backup-remote'. The address bar shows 'https://192.168.0.64'. The interface has a sidebar with navigation options: Storage, User Management, Failover Settings, Storage Settings, System Settings, and Diagnostics. The main content area is titled 'Storage' and displays a list of snapshots for the dataset 'zvol00'. Each snapshot entry includes a name, a timestamp, and an 'Options' button. A red arrow points from the 'Auto-Snapshots created on backup-remote server (192.168.0.64)' text to the list of snapshots.

Name	Options
zvol00@autosnap_2017-02-13-192600	Options
zvol00@autosnap_2017-02-13-193000	Options
zvol00@autosnap_2017-02-13-193500	Options
zvol00@autosnap_2017-02-13-194000	Options
zvol00@autosnap_2017-02-13-194500	Options
zvol00@autosnap_2017-02-13-195000	Options
zvol00@autosnap_2017-02-13-195600	Options
zvol00@autosnap_2017-02-13-200000	Options
zvol00@autosnap_2017-02-13-200500	Options
zvol00@autosnap_2017-02-13-201000	Options
zvol00@autosnap_2017-02-13-201600	Options
zvol00@autosnap_2017-02-13-202000	Options
zvol00@autosnap_2017-02-13-202500	Options
zvol00@autosnap_2017-02-13-203000	Options
zvol00@autosnap_2017-02-13-203600	Options
zvol00@autosnap_2017-02-13-203700	Options

## 10. Testing of auto-snapshot functions

open-e



(JovianDSS - backup-remote)  
IP Address: 192.168.0.64

Auto-Snapshots created on backup-remote server (192.168.0.64)

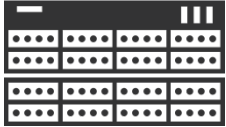
The screenshot shows the Open-E JovianDSS web interface in a browser window. The browser tabs include 'node-a', 'node-b', 'backup-local', and 'backup-remote'. The address bar shows 'https://192.168.0.64'. The interface has a sidebar with navigation options: Storage, User Management, Failover Settings, Storage Settings, System Settings, and Diagnostics. The main content area is titled 'Storage' and displays a table of auto-snapshots. A red arrow points from the 'Auto-Snapshots created on backup-remote server (192.168.0.64)' text to the table.

Snapshot Name	Options
vol00@autosnap_2017-02-13-191000	Options
vol00@autosnap_2017-02-13-191500	Options
vol00@autosnap_2017-02-13-192000	Options
vol00@autosnap_2017-02-13-192500	Options
vol00@autosnap_2017-02-13-193000	Options
vol00@autosnap_2017-02-13-193500	Options
vol00@autosnap_2017-02-13-194000	Options
vol00@autosnap_2017-02-13-194500	Options
vol00@autosnap_2017-02-13-195000	Options
vol00@autosnap_2017-02-13-195500	Options
vol00@autosnap_2017-02-13-200000	Options
vol00@autosnap_2017-02-13-200500	Options
vol00@autosnap_2017-02-13-201000	Options
vol00@autosnap_2017-02-13-201500	Options
vol00@autosnap_2017-02-13-202000	Options
vol00@autosnap_2017-02-13-202500	Options
vol00@autosnap_2017-02-13-203000	Options
vol00@autosnap_2017-02-13-203500	Options
vol00@autosnap_2017-02-13-203700	Options



## 11. Testing data restore

open-e



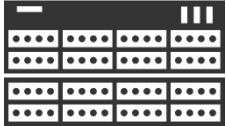
(JovianDSS - backup-local)  
IP Address: 192.168.0.62

In case of required data restore or a disaster recovery of an iSCSI volume, go to backup-local server and select **Attach to target** function in order to make the **zvol00** available on the network.

The screenshot shows the Open-E JovianDSS web interface. The browser address bar shows <https://192.168.0.62>. The page title is "open-e JovianDSS". The navigation menu on the left includes Storage, User Management, Failover Settings, Storage Settings, System Settings, and Diagnostics. The main content area is titled "Storage" and shows "Total storage: 3.24 GiB" and "Disks: 2". There are tabs for Status, Disk groups, iSCSI targets, Snapshots, Shares, and Virtual IPs. The "iSCSI targets" section shows one target: "iqn.2017-02.jdss62.target0" with Status: Active and Zvols: 0. Below this is a table for "Zvols not attached to targets" with one entry: "zvol00" with Logical size 1000.00 GiB, Physical size 216.00 KiB, and Provisioning thin. A red arrow points from the text box to the "Attach to target" button in the context menu for "zvol00". At the bottom, there is a "Zpools available for import" section with a "Rescan required" message: "Press Rescan storage button above to scan disks for new zpools."

## 11. Testing data restore

open-e



(JovianDSS - backup-local)  
IP Address: 192.168.0.62

Select previously created target.

The screenshot shows the Open-E JovianDSS web interface. The browser address bar shows 'https://192.168.0.62'. The interface includes a sidebar with navigation options: Storage, User Management, Failover Settings, Storage Settings, System Settings, and Diagnostics. The main content area is titled 'Storage' and shows 'Disks: 2'. Below this, there are tabs for 'Status', 'Disk groups', 'iSCSI targets', 'Snapshots', 'Shares', and 'Virtual IPs'. The 'iSCSI targets' tab is active, displaying a search bar and a table of targets. A dialog box titled 'Attach zvol00 to target' is open, showing the following fields:

- Target name:
- SCSI ID:
- LUN:
- Access mode:

At the bottom of the dialog are 'Cancel' and 'Add' buttons. Below the dialog, a table lists available Zvols:

Name	Type	Logical size	Physical size	Compression	Provisioning
1 zvol00	zvol	1000.00 GiB	216.00 KiB	1.00	thin

At the bottom of the interface, there is a section for 'Zpools available for import' with a 'Rescan required' message: 'Please Rescan storage button above to scan disks for new zpools.'

## 11. Testing data restore

open-e



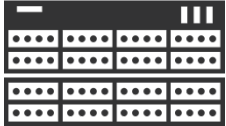
(JovianDSS - backup-local)  
IP Address: 192.168.0.62

In case of required data restore or a disaster recovery of an **NAS** volume, go to backup-local server **Shares** tab and select **Add share** function in order to make the **dataset** available on the network.

The screenshot shows the Open-E JovianDSS web interface. The browser tabs include 'node-a', 'node-b', 'backup-local', and 'backup-remote'. The address bar shows 'https://192.168.0.62'. The interface has a sidebar with navigation options: Storage, User Management, Failover Settings, Storage Settings, System Settings, and Diagnostics. The main content area is titled 'Storage' and shows a 'Shares' tab selected. The 'Shares' section displays 'vol00' with 'Shares: 0' and 'All active' status. There is an 'Add share' button. A red dashed box highlights the 'Add share' button and the 'Shares' section. Red arrows point from the text in the dashed box to the 'Add share' button and the 'Shares' section. A 'Rescan required' message is also visible at the bottom of the interface.

## 11. Testing data restore

open-e

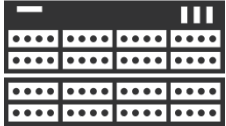


(JovianDSS - backup-local)  
IP Address: 192.168.0.62

Enter required share name.

## 11. Testing data restore

open-e



(JovianDSS - backup-local)  
IP Address: 192.168.0.62

Click **Next** button.

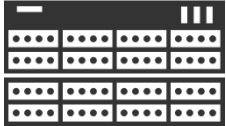
The screenshot shows the Open-E JovianDSS web interface. The browser address bar shows `https://192.168.0.62`. The page title is "open-e JovianDSS". The main navigation menu includes "Storage", "User Manager", "Failover Settings", "Storage Settings", "System Settings", and "Diagnostics". The "Storage" section is active, showing a "Share wizard" dialog box. The wizard has four steps: "1. Share properties", "2. Access protocols", "3. User/group access", and "4. Summary". The "Access protocols" step is selected, showing options for NFS and SMB. The "SMB" section is expanded, showing the following options:

- Enable NFS service
- Enable SMB service
- Read only
- Visible
- Handling large directories
- User access permissions:
  - Guest (anyone without password)
  - Users with password
- Advanced:
  - Inherit owner
  - Inherit permissions
  - Map ACL inherit

At the bottom of the wizard, there are three buttons: "Cancel", "Back", and "Next". A red arrow points from the "Next" button to a text box on the left that says "Click Next button."

## 11. Testing data restore

open-e



(JovianDSS - backup-local)  
IP Address: 192.168.0.62

Click **Next** button. Next, in Summary, click on the **Add** button.

The screenshot shows the Open-E JovianDSS web interface. The browser tabs include 'node-a', 'node-b', 'backup-local', and 'backup-remote'. The URL is 'https://192.168.0.62'. The page title is 'open-e JovianDSS'. The main navigation menu includes 'Storage', 'User Manager', 'Failover Settings', 'Storage Settings', 'System Settings', and 'Diagnostics'. The 'Storage' section is active, showing a list of storage pools. A 'Share wizard' dialog box is open, displaying the following steps: 1. Share properties, 2. Access protocols, 3. User/group access, and 4. Summary. The 'User/group access' step is currently selected. It shows a search bar and a list of users with checkboxes for access. The users listed are: AD-DEMO+administrator, AD-DEMO+demo, AD-DEMO+guest, AD-DEMO+januszbak, and AD-DEMO+krbtgt. Below the list, there are 'Results per page' and 'Page 1 of 1' indicators. At the bottom of the dialog, there are 'Cancel', 'Back', and 'Next' buttons. A red arrow points from the 'Next' button in the dialog to the 'Next' button in the text box on the left.



*open-e*

Thank You!

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