



Step-by-Step Guide

Open-E JovianDSS Advanced Metro High Availability Cluster

The aim of this document is to demonstrate an example setup of an Advanced Metro High Availability Cluster.

The Advanced Metro High Availability Cluster is using an Ethernet link for Disk Exports instead of SAS. It can work with JBOD-less hardware, so that disks are present in both cluster nodes and are mirrored via an Ethernet path.

The Advanced Metro HA Cluster uses the same Ring-Ping design for Cluster Management as the Open-E JovianDSS Standard HA Cluster. But it enables an additional functionality – the “Remote disks mirroring paths for Cluster over Ethernet” – in order to configure a special Ethernet link for disk exports.

In this example, a bond of 2 NICs is used for iSCSI Targets and SMB, NFS share exports. The bond is preferred for NFS and SMB shares, but for iSCSI path redundancy MPIO is the better choice. If Open-E JovianDSS works as a Unified Storage Appliance, providing NAS and SAN (iSCSI ,NFS, SMB), and all services need path redundancy, it will be required to configure 2 bonds. In this case, the first iSCSI path is set up via the first bond and the second iSCSI path via the second bond. In this example we show a single bond for simplicity, so that iSCSI is not redundant.

In this document, the pool is created with 4 (2-local + 2-remote) disks in every mirror group. In case of other node reboots or failure the mirror groups are still redundant with 2 disks in every mirror.

The 4-way mirror provide limited storage efficiency of only 25%. For increased storage efficiency, a hardware RAID controller and just a simple mirror over 2 disk units with a RAID array behind, can be used. JovianDSS includes built-in all RAID tools and drivers for Broadcom (LSI) and Microsemi (Adaptec). In case of Areca, a driver is included as well but the WebGUI has to be accessed via the controller’s ETH-port.

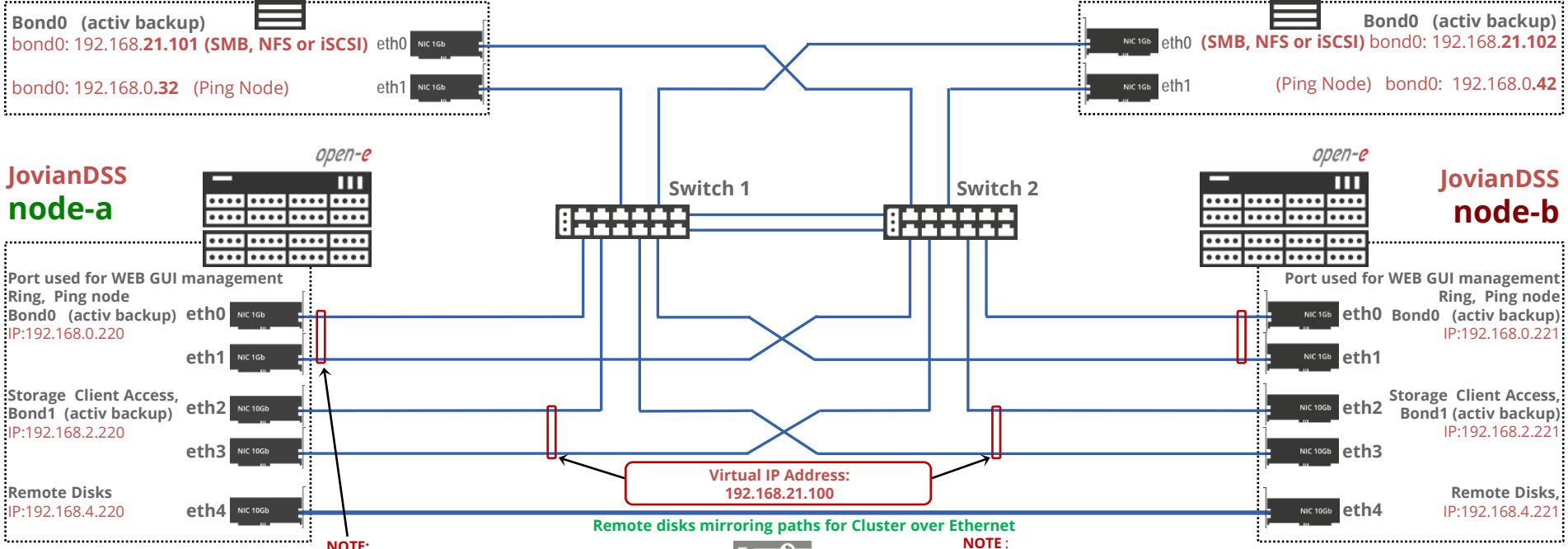
To set up an Advanced Metro HA Cluster, perform the following steps:

1. Hardware configuration
2. Network Configuration:
 - 2.1. Create Ring and Management Bond.
 - 2.2. Create Storage Export bond.
 - 2.3. Select Default gateway
 - 2.4. Second cluster node
3. Time and date settings
4. Nodes Binding
5. Ping Nodes
6. Mirroring path
7. Create new Pool
8. Enter Virtual IP
9. Critical I/O handling setup
10. Start the Cluster Service
11. System Monitoring Setup
12. Failover test

1. Hardware configuration

Client-1:
ESXi, XEN, Hyper-V

Client-2:
ESXi, XEN, Hyper-V

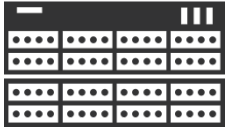


NOTE:
Ring path (heartbeat) and Ping nodes must run on Active-Backup bonding. Ring and Ping IP must be configured in the same network subnet.

NOTE:
It is strongly recommended to use direct point-to-point and if possible 10Gb connection for the remote disks paths. The Remote Disks connection can work over the switch, but the most reliable is a direct connection.

2. Network Configuration

open-e



JovianDSS: **node-a**
IP Address: 192.168.0.220

Select **System Settings** from main menu and next select **Network** tab. Click on the **Create bond interface** button.

System Settings

Administration Network MPIO System Settings management Update

Interfaces

Name	IP	DHCP	Vendor	Negotiated speed	Cable	Status	Options
eth0	192.168.0.220	No	VMware VMXNET3 Ethernet Co...	10000 Mbps	cable	Active	Options
eth1	192.168.1.220	No	VMware VMXNET3 Ethernet Co...	10000 Mbps	cable	Active	Options
eth2	192.168.2.220	No	VMware VMXNET3 Ethernet Co...	10000 Mbps	cable	Active	Options
eth3	192.168.3.220	No	VMware VMXNET3 Ethernet Co...	10000 Mbps	cable	Active	Options
eth4	192.168.4.220	No	VMware VMXNET3 Ethernet Co...	10000 Mbps	cable	Active	Options

Default gateway

Interface

Interface details

Gateway

Change

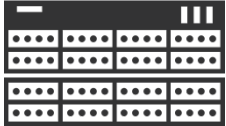
Settings

Server & Host name

Notifications 0 0 0 0

2.1. Network Configuration. Create Ring and Management Bond

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JovianDSS: **node-a**
IP Address: 192.168.0.220

Enter all required details of the Bond and click on the **Apply** button.

The screenshot shows the 'Create new channel bonding interface' configuration page in the Open-E JovianDSS web interface. The page is divided into several sections:

- Available interfaces:** A table listing network interfaces with their names, IP addresses, DHCP status, and details. The 'eth0' and 'eth1' interfaces are selected for bonding.
- Bonding options:** A section for configuring the bond type and primary interface. The 'Type' is set to 'Active-backup' and the 'Primary interface' is 'eth0'.
- Internet protocol:** A section for configuring the IP address and other network parameters. The 'Internet protocol' is set to 'Static' with an IP address of '192.168.0.220'.

Name	IP	DHCP	Interface details	Cable	Active	Bond	Select
eth0	192.168.0.220	No	VMware VMXNET3 Ethernet Contr	cable	Yes	<input checked="" type="checkbox"/>	
eth1	192.168.1.220	No	VMware VMXNET3 Ethernet Contr...	cable	Yes	<input checked="" type="checkbox"/>	
eth2	192.168.2.220	No	VMware VMXNET3 Ethernet Contr...	cable	Yes	<input type="checkbox"/>	
eth3	192.168.3.220	No	VMware VMXNET3 Ethernet Contr...	cable	Yes	<input type="checkbox"/>	
eth4	192.168.4.220	No	VMware VMXNET3 Ethernet Contr...	cable	Yes	<input type="checkbox"/>	

Bonding options

Type: Active-backup

Primary interface: eth0

Primary reselect policy: failure (default)

MAC: Custom

2e:33:d2:4c:cb:10 [Generate MAC](#)

Internet protocol:

DHCP

Static

IP: 192.168.0.220

Netmask: 255.255.255.0

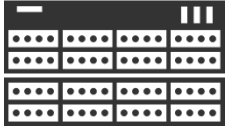
Broadcast: automatic

Gateway: 192.168.0.1

[Apply](#)

2.2. Network Configuration. Create Storage Export Bond

open-e



JovianDSS: **node-a**
IP Address: 192.168.2.220

Next, enter all required details for the second Bond and click on the **Apply** button.

Create new channel bonding interface

Available interfaces

Name	IP	DHCP	Interface details	Cable	Active	Bond	Select
eth0	N/A	No	VMware VMXNET3 Ethernet Contr...	cable	No	bond0	<input type="checkbox"/>
eth1	N/A	No	VMware VMXNET3 Ethernet Contr...	cable	No	bond0	<input type="checkbox"/>
eth2	192.168.2.220	No	VMware VMXNET3 Ethernet Contr...	cable	Yes		<input checked="" type="checkbox"/>
eth3	192.168.3.220	No	VMware VMXNET3 Ethernet Contr...	cable	Yes		<input checked="" type="checkbox"/>
eth4	192.168.4.220	No	VMware VMXNET3 Ethernet Contr...	cable	Yes		<input type="checkbox"/>

Bonding options

Type: Active-backup

Primary interface: eth2

Primary reselect policy: failure (default)

MAC: Custom

1e:d1:d3:99:06:42

Internet protocol: DHCP Static

192.168.2.220

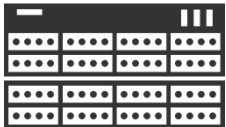
Netmask: 255.255.255.0

Broadcast: automatic

Gateway: none

2.3. Network Configuration. Select Default gateway

open-e



JovianDSS: **node-a**
IP Address: 192.168.0.220

Both Bonds are created properly. Overview is shown in the Interfaces field.

Next, in the Default gateway field, click on the **Change** button.

System Settings

Administration Network MPIO System Settings management Update

Interfaces

Name	IP	DHCP	Vendor	Negotiated speed	Cable	Status	Options
bond0	192.168.0.220	No	Ethernet Bonding Driver	10000 Mbps	cable	Active	Options
bond1	192.168.2.220	No	Ethernet Bonding Driver	10000 Mbps	cable	Active	Options
eth0 (bond0)	N/A	No	VMware VMXNET3 Ethernet Co...	10000 Mbps	cable	Bond slave	Options
eth1 (bond0)	N/A	No	VMware VMXNET3 Ethernet Co...	10000 Mbps	cable	Bond slave	Options
eth2 (bond1)	N/A	No	VMware VMXNET3 Ethernet Co...	10000 Mbps	cable	Bond slave	Options
eth3 (bond1)	N/A	No	VMware VMXNET3 Ethernet Co...	10000 Mbps	cable	Bond slave	Options
eth4	192.168.4.220	No	VMware VMXNET3 Ethernet Co...	10000 Mbps	cable	Active	Options

Default gateway

Interface

Interface details

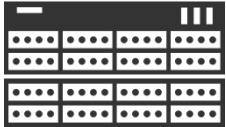
Gateway

Change

Notifications 0 0 14

2.3. Network Configuration. Select Default gateway

open-e



JovianDSS: **node-a**
IP Address: 192.168.0.220

Select proper interface and click on the **Apply** button.

System Settings

Administration Network MPIO System Settings management Update

Interfaces

Select default gateway

Available interfaces

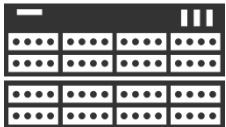
Interface	Interface details	Gateway	Active	Select
1 eth4	VMware VMXNET3 Ethernet Controller (rev 01)	static	Yes	<input type="radio"/>
2 bond0	Ethernet Bonding Driver	static	Yes	<input checked="" type="radio"/>
3 bond1	Ethernet Bonding Driver	static	Yes	<input type="radio"/>

Cancel Apply

Notifications 0 0 14

2.4. Network Configuration (second cluster node)

open-e



JovianDSS: **node-b**
IP Address: **192.168.0.221**

Go to the **second cluster node** and create both Bond interfaces accordingly.

The screenshot shows properly created Bonds and default gateway on the second node.

The screenshot shows the Open-E JovianDSS web interface for node-221. The 'System Settings' page is open to the 'Network' tab. The 'Interfaces' section shows a table of configured interfaces:

Name	IP	DHCP	Vendor	Negotiated speed	Cable	Status	Options
bond0	192.168.0.221	No	Ethernet Bonding Driver	10000 Mbps	cable	Active	Options
bond1	192.168.2.221	No	Ethernet Bonding Driver	10000 Mbps	cable	Active	Options
eth0 (bond0)	N/A	No	VMware VMXNET3 Ethernet Co...	10000 Mbps	cable	Bond slave	Options
eth1 (bond0)	N/A	No	VMware VMXNET3 Ethernet Co...	10000 Mbps	cable	Bond slave	Options
eth2 (bond1)	N/A	No	VMware VMXNET3 Ethernet Co...	10000 Mbps	cable	Bond slave	Options
eth3 (bond1)	N/A	No	VMware VMXNET3 Ethernet Co...	10000 Mbps	cable	Bond slave	Options
eth4	192.168.4.221	No	VMware VMXNET3 Ethernet Co...	10000 Mbps	cable	Active	Options

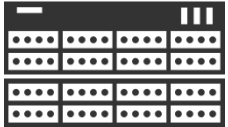
The 'Default gateway' section shows the following configuration:

- Interface: bond0
- Interface details: Ethernet Bonding Driver
- Gateway: static

A 'Change' button is visible at the bottom of the gateway configuration.

3. Time and date settings

open-e



JovianDSS: **node-a**
IP Address: 192.168.0.220

In **System** tab, in **Time and date settings**, select **Continuous NTP synchronization** and click apply.

Repeat this step for the second cluster node as well.

System Settings

Administration Network MPIO System Settings management Update

Time and date settings

Time zone: Europe/Berlin

Set time and date: Manual

Current time: 19 39 08

Current date: 2017-02-24

Continuous NTP synchronization

NTP server: 0.pool.ntp.org,1.pool.ntp.org,2.1

Apply

Boot medium

Status: HEALTHY

Disks: 1/1

Redundancy: Single

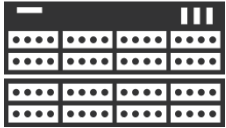
Status: No redundancy for boot medium

Action: Add at least one disk to ensure that in case your primary boot disk fails, it will be replaced by other boot disk without losing access to your data. Also, it is highly recommended to add at least one additional spare disk to ensure that if one of the mirrored disks fails, it will be replaced by this spare disk.

Notifications 0 0 18

4. Nodes Binding

open-e



JovianDSS: **node-a**
IP Address: 192.168.0.220

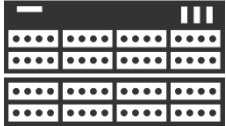
In main menu select **Failover Settings** and enter IP address of the Bond interface of the second node and enter current administrator password (default: admin) and click on the **Connect** button.

The Bond interface will function as ring path (heartbeat) and ping-path. It MUST go via network switch and ping-nodes must be external to storage nodes. It is **NOT** allowed for the ring to use nodes point-to-point connection.

The screenshot shows the 'Failover Settings' page in the Open-E JovianDSS web interface. The page title is 'Failover Settings'. On the left is a sidebar menu with items: Storage, User Management, Failover Settings (selected), Storage Settings, System Settings, and Diagnostics. The main content area shows a 'Failover status' section with a yellow warning box: 'Nodes are not bound. In order to configure and run Failover service both nodes must be connected. Note: Network interfaces used to bind the nodes must be Active-Backup bonding interfaces. Physical and Virtual IP addresses on each node must have a unique subnetwork class.' Below this is the 'Node binding' section with a form containing 'Remote node IP' (192.168.0.221) and 'Password' (masked with dots). A green 'Connect' button is at the bottom of the form. At the top of the page, there are navigation links for 'About', 'Help', and 'Logout'. At the bottom, a notification bar shows 0 errors, 0 warnings, and 18 info messages.

5. Ping Nodes

open-e



JovianDSS: **node-a**
IP Address: 192.168.0.220

In Failover settings click on the **Edit** button in Ping nodes section and enter at least two ping nodes.

Ping nodes IP addresses must be reachable from Ring interfaces. So the ping node must use the same network subnet as ring interfaces.

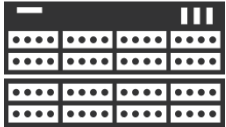
The screenshot shows the Open-E JovianDSS web interface. The main page is titled "Failover Settings" and shows a "Failover status" of "Ready to start" with a "Start Failover" button. Below this is the "Failover nodes" section, which contains a "Ping nodes" dialog box. The dialog box has a search field and an "Add ping node" button. It displays a table with two entries:

	IP	Local status	Remote status	
1	192.168.0.32	Reachable	Reachable	<input type="checkbox"/> Delete
2	192.168.0.42	Reachable	Reachable	<input type="checkbox"/> Delete

The dialog box also has a "Close" button at the bottom right. Red arrows point from the text boxes on the left to the "Edit" button in the "Ping nodes" section of the main page and to the "Add ping node" button in the dialog box.

6. Mirroring path

open-e



JovianDSS: **node-a**
IP Address: 192.168.0.220

Next, please click **Add mirroring path** button.

node-220 x node-221 x

Not secure <https://192.168.0.220>

open-e JovianDSS

About Help Logout

Storage

User Management

Failover Settings

Storage Settings

System Settings

Diagnostics

Failover Settings

Rings **1 configured**

[Details](#)

Ping nodes **2 of 2 reachable**

[Edit](#)

[Advanced failover settings](#)

Remote disks mirroring paths for Cluster over Ethernet

Remote disks mirroring paths for Cluster over Ethernet

In order to connect remote disks, add a mirroring path. You can configure one mirroring path.

[+ Add mirroring path](#)

Local node interface	Remote node interface	Local status	Remote status
No path added.			

SCSI-3 Persistent Reservation Synchronization

Enable Persistent Reservation Synchronization

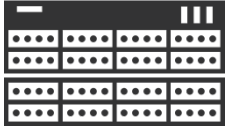
Status **Not running**

[Apply](#)

Notifications 0 0 19

6. Mirroring path

open-e



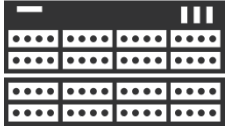
JovianDSS: **node-a**
IP Address: 192.168.0.220

In **Add mirroring path** select proper interfaces and click **Apply** button.

The screenshot displays the Open-E JovianDSS web interface. The main content area is titled "Failover Settings". Under "Rings", it shows "1 configured". Under "Ping nodes", it shows "2 of 2 reachable". A modal window titled "Add mirroring path" is open in the foreground. It contains two dropdown menus: "Local node interface" set to "eth4 (192.168.4.220)" and "Remote node interface" set to "eth4 (192.168.4.221)". There are "Cancel" and "Apply" buttons at the bottom of the modal. A red arrow points from the text box on the left to the "Apply" button. The background interface also shows a table with columns for "Local node interface", "Remote node interface", "Local status", and "Remote status", currently containing "No path added".

6. Mirroring path

open-e



JovianDSS: **node-a**
IP Address: 192.168.0.220

Mirroring path shows **Connected** status.

node-220 x node-221 x

Not secure https://192.168.0.220

open-e JovianDSS

About Help Logout

Storage

User Management

Failover Settings

Storage Settings

System Settings

Diagnostics

Failover Settings

Failover resources

Zpool name	Active on node	Status
Information about failover resources is not available until failover is started.		

Rings **1 configured**

[Details](#)

Ping nodes **2 of 2 reachable**

[Edit](#)

[Advanced failover settings](#)

Remote disks mirroring paths for Cluster over Ethernet

You can configure one mirroring path. If you want to change the path, remove the existing one and add a new one.

Local node interface	Remote node interface	Local status	Remote status	
eth4 (192.168.4.220)	eth4 (192.168.4.221)	Connected	Connected	X Remove

SCSI-3 Persistent Reservation Synchronization

Enable Persistent Reservation Synchronization

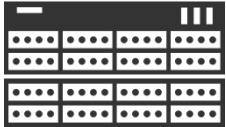
Status **Not running**

[Apply](#)

Notifications 0 1 20

7. Create new Pool

open-e



JovianDSS: **node-a**
IP Address: 192.168.0.220

Go to menu **Storage**. In the **Local disks** tab, all local disks are listed.

The screenshot shows the Open-E JovianDSS web interface. The left sidebar contains a navigation menu with the following items: Storage (selected), User Management, Failover Settings, Storage Settings, System Settings, and Diagnostics. The main content area is titled "Storage" and includes a "Rescan" button and an "Add zpool" button. A message states: "No local zpools have been found on the system. To create a zpool on this node please select an 'Add zpool' button." Below this, there is a section for "Zpools available for import" with a "Rescan required" warning. The "Unassigned disks" section is active, showing a list of local disks under the "Local disks" tab. A red arrow points from the "Local disks" tab in the text box to the "Local disks" tab in the interface.

Name	Serial number	Size	Model	Blink
1 sdb	6000c29fa673852c4549a72393465df5	838.00 GiB	Virtual disk	●
2 sdc	6000c2901342d6ba30792c2a3ba6a9b4	838.00 GiB	Virtual disk	●
3 sdd	6000c29495d1f91ffc2f200d99de968	838.00 GiB	Virtual disk	●
4 sde	6000c29107546e7d49efadd24fd89280	838.00 GiB	Virtual disk	●
5 sdf	6000c291598c75606c9b32901b04bdc0	838.00 GiB	Virtual disk	●
6 sdg	6000c29094a80f262ac36e412bfe2f6a	838.00 GiB	Virtual disk	●
7 sdh	6000c29729c1910755bb835492724eb5	838.00 GiB	Virtual disk	●
8 sdi	6000c291d209881b5e57fc23876b2935	838.00 GiB	Virtual disk	●

7. Create new Pool

open-e



JovianDSS: **node-a**
IP Address: 192.168.0.220

In the Remote disks tab, all disks from remote node are listed.

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 includes a 'Rescan' button and an 'Add zpool' button. A message states: 'No local zpools have been found on the system. To create a zpool on this node please select an "Add zpool" button.' Below this, there is a section for 'Zpools available for import' with a 'Rescan required' warning. The 'Unassigned disks' section has two tabs: 'Local disks' and 'Remote disks'. The 'Remote disks' tab is active, showing a table of disks from a remote node.

Name	Serial number	Size	Model	Blink
1 sdj (remote)	6000c29a1dd7e19869265069bc08ae67	838.00 GiB	Virtual disk	●
2 sdk (remote)	6000c2970263eae887647a4ba6f35ffe	838.00 GiB	Virtual disk	●
3 sdl (remote)	6000c2986f1b85bf27f1b1fb81eb9276	838.00 GiB	Virtual disk	●
4 sdm (remote)	6000c29647d12bdd0bbe593de32f0154	838.00 GiB	Virtual disk	●
5 sdn (remote)	6000c29feb65abc68e076db16e1997b2	838.00 GiB	Virtual disk	●
6 sdo (remote)	6000c29f8231edaff27b3cc880639d8b	838.00 GiB	Virtual disk	●
7 sdp (remote)	6000c296d1653f4cf5a46823e2800a22	838.00 GiB	Virtual disk	●
8 sdq (remote)	6000c2981aacc5a1d1437245dfe297c3	838.00 GiB	Virtual disk	●

7. Create new Pool

open-e



JovianDSS: **node-a**
IP Address: 192.168.0.220

In menu Storage and click on **Add zpool button**. Add data groups by selecting 4 (or 2) disks and select Mirror (single group) from the pull-down menu and click on Add group button, then click on the **Next** button.

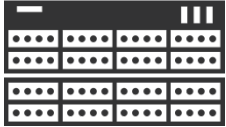
NOTE: It is recommended to set 4 (**2-local + 2-remote**) disks in every mirror group. In case of other node reboots or failure the mirror groups are still redundant with 2 disks in every mirror.

The screenshot shows the 'Zpool wizard' configuration window in the Open-E JovianDSS web interface. The wizard is at step 1: 'Add data group'. A sidebar on the left lists the steps: 1. Add data group, 2. Add write log, 3. Add read cache, 4. Add spare disks, 5. Zpool properties, and 6. Summary. The main area displays a table of 'Available disks' with columns for Name, Id, Size, and Blink. Two disks, 'sdb' and 'sdc', are selected with checkmarks. Below the table, the 'Select redundancy for group:' dropdown is set to 'Mirror (single group)'. A '+ Add group' button is visible. A warning message at the top right states: 'To add first Data Group to your zpool please select disks on the list on the left, select redundancy type and click "Add group" button.' At the bottom right, there are 'Cancel' and 'Next >' buttons. The background shows the 'Storage' menu in the JovianDSS interface.

Name	Id	Size	Blink	
<input checked="" type="checkbox"/>	sdb	www-0x600c29fa673852c4549a723...	838.00 GiB	●
<input checked="" type="checkbox"/>	sdc	www-0x600c2901342d6ba30792c2a...	838.00 GiB	●
<input type="checkbox"/>	sdd	www-0x600c29495d1f91ffc2f200d...	838.00 GiB	●
<input type="checkbox"/>	sde	www-0x600c29107546e7d49efadd2...	838.00 GiB	●
<input type="checkbox"/>	sdf	www-0x600c291598c75606c9b3290...	838.00 GiB	●
<input type="checkbox"/>	sdg	www-0x600c29094a80f262ac36e41...	838.00 GiB	●
<input type="checkbox"/>	sdh	www-0x600c29729c1910755bb8354...	838.00 GiB	●
<input type="checkbox"/>	sdj	www-0x600c291d209881b5e57fc23...	838.00 GiB	●
<input checked="" type="checkbox"/>	sdj (remote)	www-0x600c291a1dd7e19869265069...	838.00 GiB	●
<input checked="" type="checkbox"/>	sdk (remote)	www-0x600c2970263eae887647a4b...	838.00 GiB	●
<input type="checkbox"/>	sdj (remote)	www-0x600c2986f1b85bf27f1b1fb8...	838.00 GiB	●
<input type="checkbox"/>	sdm (remote)	www-0x600c29647d12bdd0bbe593d...	838.00 GiB	●
<input type="checkbox"/>	sdn (remote)	www-0x600c29feb65abc68e076db1...	838.00 GiB	●
<input type="checkbox"/>	sdo (remote)	www-0x600c29f8231edaff27b3cc88...	838.00 GiB	●

7. Create new Pool

open-e



JovianDSS: **node-a**
IP Address: 192.168.0.220

Next, add the second mirror group.

NOTE:

A 4-way mirror provide limited storage efficiency of only 25%. For increased storage efficiency, a hardware RAID controller and just a simple mirror over 2 disk units with a RAID array behind, can be used. JovianDSS includes built-in all RAID tools and drivers for Broadcom (LSI) and Microsemi (Adaptec). In case of Areca, a driver is included as well but the WebGUI has to be accessed via the controller's ETH-port.

Zpool wizard

1. Add data group
2. Add write log
3. Add read cache
4. Add spare disks
5. Zpool properties
6. Summary

Available disks

Show only unused disks Rescan disks

Name	Id	Size	Blink
<input checked="" type="checkbox"/> sdd	wwn-0x6000c29495d1f91ffc2f2f00d99d...	838.00 GiB	●
<input checked="" type="checkbox"/> sde	wwn-0x6000c29107546e7d49efadd24fd...	838.00 GiB	●
<input type="checkbox"/> sdf	wwn-0x6000c291598c75606c9b32901b...	838.00 GiB	●
<input type="checkbox"/> sdg	wwn-0x6000c29094a80f262ac36e412bf...	838.00 GiB	●
<input type="checkbox"/> sdh	wwn-0x6000c29729c1910755bb835492...	838.00 GiB	●
<input type="checkbox"/> sdi	wwn-0x6000c291d209881b5e57fc23876...	838.00 GiB	●
<input checked="" type="checkbox"/> sdl (remote)	wwn-0x6000c2986f1b85b27f1b1fb81e...	838.00 GiB	●
<input checked="" type="checkbox"/> sdm (remote)	wwn-0x6000c29647d12bd0bbe593de3...	838.00 GiB	●
<input type="checkbox"/> sdn (remote)	wwn-0x6000c29feb65abc68e076b16e1...	838.00 GiB	●
<input type="checkbox"/> sdo (remote)	wwn-0x6000c29f8231edaff27b3cc8806...	838.00 GiB	●
<input type="checkbox"/> sdp (remote)	wwn-0x6000c296d1653f4cf5a46823e28...	838.00 GiB	●
<input type="checkbox"/> sdq (remote)	wwn-0x6000c2981aaec5a1d1437245dfe...	838.00 GiB	●

Select redundancy for group: Mirror (single group) + Add group

Cancel Next >

Data groups

Mirror x

- sdb 838.00 GiB
- sdc 838.00 GiB
- sdj (remote) 838.00 GiB
- sdk (remote) 838.00 GiB

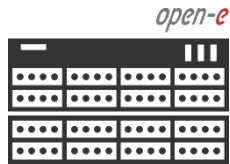
Zpool storage capacity: 838.00 GiB
Used licensed storage capacity: 838.00 GiB

Other groups

Blink

Notifications: 0 1 20

7. Create new Pool



JovianDSS: **node-a**
IP Address: 192.168.0.220

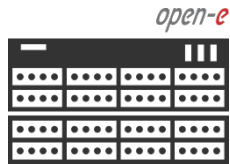
Click **Next** button.

The screenshot shows the 'Zpool wizard' interface in a web browser. The wizard is at step 1: 'Add data group'. The 'Available disks' table is as follows:

Name	Id	Size	Blink
<input type="checkbox"/> sdh	wwn-0x600c29729c1910755bb835492...	838.00 GiB	●
<input type="checkbox"/> sdi	wwn-0x600c291d209881b5e57fc23876...	838.00 GiB	●
<input type="checkbox"/> sdp (remote)	wwn-0x600c296d1653f4cf5a46823e28...	838.00 GiB	●
<input type="checkbox"/> sdq (remote)	wwn-0x600c2981aaec5a1d1437245dfe...	838.00 GiB	●

The 'Data groups' panel on the right shows two 'Mirror' groups with disks sdb, sdc, sdj (remote), and sdk (remote) in the first group, and sdd, sde in the second group. The total Zpool storage capacity is 2.46 TiB, and the used licensed storage capacity is 2.46 TiB. The 'Next' button is highlighted with a red arrow pointing to it from a text box on the left.

7. Create new Pool



JovianDSS: **node-a**
IP Address: 192.168.0.220

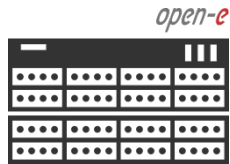
Select 2 disks (**local + remote**) for the write log and click on **Add group** button, then click on the **Next** button.

The screenshot shows the Zpool wizard interface in a browser window. The wizard is at step 2, "Add write log". The "Available disks" table is shown below:

Name	Id	Size	Blink	
<input checked="" type="checkbox"/>	sdh	wwn-0x6000c29729c1910755bb835492...	838.00 GiB	●
<input type="checkbox"/>	sdi	wwn-0x6000c291d209881b5e57fc23876...	838.00 GiB	●
<input checked="" type="checkbox"/>	sdp (remote)	wwn-0x6000c296d1653f4cf5a46823e28...	838.00 GiB	●
<input type="checkbox"/>	sdq (remote)	wwn-0x6000c2981aaec5a1d1437245dfe...	838.00 GiB	●

The "Add group" button is highlighted in red. The "Next" button is also highlighted in red. The "Data groups" panel on the right shows a list of disks and their sizes. The "Zpool storage capacity" is 2.46 TiB and the "Used licensed storage capacity" is 2.46 TiB. The "Other groups" panel is empty.

7. Create new Pool



JovianDSS: **node-a**
IP Address: 192.168.0.220

Click **Next** button.

Zpool wizard

1. Add data group
2. Add write log
3. Add read cache
4. Add spare disks
5. Zpool properties
6. Summary

Available disks

Show only unused disks Rescan disks

Name	Id	Size	Blink
<input type="checkbox"/> sdi	wwn-0x6000c291d209881b5e57fc23876...	838.00 GiB	<input type="checkbox"/>
<input type="checkbox"/> sdj (remote)	wwn-0x6000c2981aaec5a1d1437245dfe...	838.00 GiB	<input checked="" type="checkbox"/>
<input type="checkbox"/> sdq (remote)	wwn-0x6000c2981aaec5a1d1437245dfe...	838.00 GiB	<input type="checkbox"/>

Select redundancy for group: Mirror + Add group

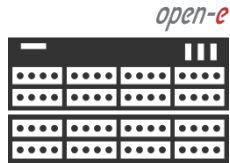
Cancel Back Next

Zpool storage capacity: 2.46 TiB
Used licensed storage capacity: 2.46 TiB

Other groups

Group	Size	Blink
<input type="checkbox"/> Mirrored write log		<input type="checkbox"/>
<input type="checkbox"/> sdh	838.00 GiB	<input type="checkbox"/>
<input type="checkbox"/> sdq (remote)	838.00 GiB	<input checked="" type="checkbox"/>

7. Create new Pool



JovianDSS: **node-a**
IP Address: 192.168.0.220

Select local SSD disk for level-2 read cache and click on the **Add group** button, then click on the **Next** button.

Zpool wizard

1. Add data group
2. Add write log
3. Add read cache
4. Add spare disks
5. Zpool properties
6. Summary

Available disks

Show only unused disks Rescan disks

Name	Id	Size	Blink
<input checked="" type="checkbox"/> sdi	wwn-0x6000c291d209881b5e57fc23876...	838.00 GiB	●
<input type="checkbox"/> sdj (remote)	wwn-0x6000c2981aaec5a1d1437245dfe...	838.00 GiB	●

Select redundancy for group: Single + Add group

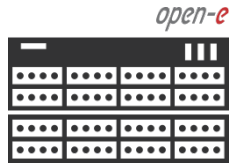
Cancel Back Next

Data groups

Group	Size
Mirror	838.00 GiB
Mirror	838.00 GiB
Mirrored write log	838.00 GiB

Zpool storage capacity: 2.46 TiB
Used licensed storage capacity: 2.46 TiB

7. Create new Pool



JovianDSS: **node-a**
IP Address: 192.168.0.220

Click **Next** button.

The screenshot shows the Open-E JovianDSS web interface. The main navigation menu on the left includes Storage, User Management, Failover Settings, Storage Settings, System Settings, and Diagnostics. The 'Storage' section is active, and the 'Zpool wizard' is open. The wizard has six steps: 1. Add data group, 2. Add write log, 3. Add read cache, 4. Add spare disks, 5. Zpool properties, and 6. Summary. Step 1 is currently selected. The 'Available disks' section shows a table with one disk selected:

Name	Id	Size	Blink
<input type="checkbox"/> sdq (remote)	vwn-0x6000c2981aaec5a1d1437245dfe...	838.00 GiB	<input checked="" type="checkbox"/>

Below the table, there is a 'Select redundancy for group:' dropdown set to 'Single' and an '+ Add group' button. On the right, a 'Data groups' panel shows a list of disks grouped into 'Mirror' and 'Other groups' sections. At the bottom of the wizard, there are 'Cancel', 'Back', and 'Next' buttons. A red arrow points from the 'Next' button to the text 'Click Next button.' in the previous block.

7. Create new Pool

open-e

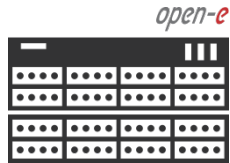


JovianDSS: **node-a**
IP Address: 192.168.0.220

To confirm the pool name click on the **Next** button then click on the next screen, and click on the **Add zpool** button.

The screenshot shows the Open-E JovianDSS web interface. The browser address bar shows the URL `https://192.168.0.220`. The page title is "open-e JovianDSS". The navigation menu includes "Storage", "User Management", "Failover Settings", "Storage Settings", "System Settings", and "Diagnostics". The "Zpool wizard" dialog is open, showing a list of steps: 1. Add data group, 2. Add write log, 3. Add read cache, 4. Add spare disks, 5. Zpool properties, and 6. Summary. The "Add write log" step is currently selected. The main content area says "Please set properties for zpool:" and has a "Zpool name:" field with the value "Pool-0". Below the field, it says "Zpool name: Defines name of the zpool in the system." At the bottom of the wizard, there are three buttons: "Cancel", "Back", and "Next". A red arrow points from the instruction box on the left to the "Next" button.

7. Create new Pool



JovianDSS: **node-a**
IP Address: 192.168.0.220

Click **Add zpool** button.

The screenshot shows the Open-E JovianDSS web interface. The main navigation menu on the left includes Storage, User Manager, Failover Settings, Storage Settings, System Settings, and Diagnostics. The 'Storage' section is active, and the 'Add zpool' button is visible in the top right. The 'Zpool wizard' dialog is open, showing the 'Summary' step. The wizard configuration is as follows:

Data groups	Redundancy	Size
Mirror	Mirror	[icon]
Mirror	Mirror	[icon]
Mirror	Mirror	[icon]

Data group total capacity: 2 TiB
Used licensed storage capacity: 2.46 TiB

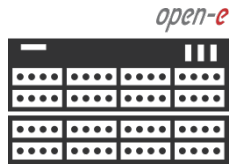
Other groups	Redundancy	Size
Mirrored write log	Mirror	[icon]
Read cache	[icon]	[icon]

Zpool properties

Zpool name: Pool-0 [icon]

At the bottom of the wizard, there are three buttons: 'Cancel', 'Back', and 'Add zpool'. A red arrow points to the 'Add zpool' button.

7. Create new Pool



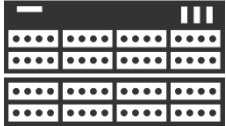
JovianDSS: **node-a**
IP Address: 192.168.0.220

The **Pool-0** is 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 'Pool-0' details. The pool status is 'ONLINE'. A summary 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 'Groups' section lists several disk groups: 'mirror-0' (Redundancy: mirror, Disks: 4), 'mirror-1' (Redundancy: mirror, Disks: 4), 'mirror-2' (Redundancy: mirror, Disks: 4), 'Write logs' (Disks: 2), and 'Read caches' (Disks: 2). At the bottom, there is a 'Rescan required' notification bar and a notification area showing 0 errors, 1 warning, and 21 info messages.

8. Enter Virtual IP

open-e



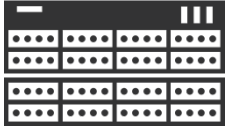
JovianDSS: **node-a**
IP Address: 192.168.0.220

Click on **Virtual IPs** tab.

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' section for 'Pool-0', which is in an 'ONLINE' state. Below this, there are tabs for 'Status', 'Disk groups', 'iSCSI targets', 'Snapshots', 'Shares', and 'Virtual IPs'. The 'Virtual IPs' tab is active, showing a search bar, an 'Add virtual IP' button, and a table with columns for Virtual IP, Name, Netmask, Network interface, Remote network interface, State, and Options. Below the table, it states 'No virtual IPs found.' At the bottom of the interface, there are sections for 'Zpools available for import' (with a 'Rescan required' message) and 'Unassigned disks' (with 'Local disks' and 'Remote disks' sub-sections). A notification bar at the very bottom shows 0 errors, 1 warning, and 21 info messages.

8. Enter Virtual IP

open-e



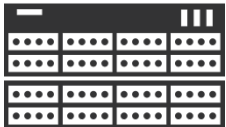
JovianDSS: **node-a**
IP Address: 192.168.0.220

In main menu **Storage**, select **Virtual IPs** tab then click on the **Add virtual IP** button and enter the virtual IP address and assign it to the required interfaces. Next, click **Apply** button.

The screenshot shows the Open-E JovianDSS web interface. The main menu on the left includes Storage, User Management, Failover Settings, Storage Settings, System Settings, and Diagnostics. The 'Storage' section is active, showing 'Pool-0' with a status of 'ONLINE'. Below this, there is a 'Virtual IPs' section with a search bar and a table. A modal dialog titled 'Add virtual IP' is open, displaying the following fields: Virtual IP address (192.168.21.100), Name (vip21), Netmask (255.255.255.0), Network interface (bond1 (192.168.2.220)), and Remote network interface (bond1 (192.168.2.221)). The 'Apply' button is highlighted with a red arrow. The background shows the 'Storage' menu on the left and the 'Virtual IPs' table in the center. A notification at the bottom indicates 'Rescan required'.

9. Critical I/O handling setup

open-e



JovianDSS: **node-a**
IP Address: 192.168.0.220

It is strongly recommended to select **Immediate** option in order to execute immediate reboot in case of a critical I/O error.

node-220 x node-221 x

Not secure https://192.168.0.220

open-e JovianDSS

About Help Logout

Storage

User Management

Failover Settings

Storage Settings

System Settings

Diagnostics

System Settings

Apply

Remote Log Server

Log events to a remote server

Apply

Critical I/O errors

Reboot procedure

System may require reboot when critical I/O errors occur. Please select how such errors should be handled:

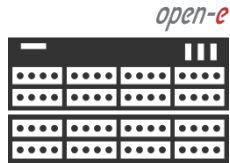
Reboot policy

- Immediate**
System will reboot the machine immediately after a pool has I/O suspended state. No event will be recorded about the reason of it. This option is recommended for cluster configurations because it immediately triggers the failover and therefore it's the fastest way to restore the access to the data.
- Automatic
System will restart in 30 seconds from when the errors appear.
- Manual
System will prompt for manual restart.

Apply

Notifications 11 1 46

10. Start the Cluster Service



JovianDSS: **node-a**
IP Address: 192.168.0.220

Now, the Cluster is ready to start.
In order to start the cluster please
click on **Start Failover** button.

The screenshot shows the Open-E JovianDSS web interface. The left sidebar contains navigation options: Storage, User Management, Failover Settings (highlighted), Storage Settings, System Settings, and Diagnostics. The main content area is titled 'Failover Settings' and shows the following information:

- Failover status: Ready to start
- A green button labeled 'Start Failover' with a checkmark icon.
- Failover nodes table:

Node	Connection status	Failover status
node-220 (IP: 192.168.0.220, node ID: 2224e8b0)	Reachable	N/A
node-221 (IP: 192.168.0.221, node ID: d4f88fb1)	Reachable	N/A

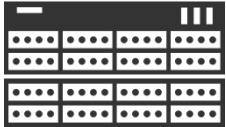
Below the table is a 'Disconnect nodes' button. The 'Failover resources' section shows:

- Zpool name: Active on node
- Status: Information about failover resources is not available until failover is started.
- Rings: 1 configured (with a 'Details' button)
- Ping nodes: 2 of 2 reachable (with an 'Edit' button)

At the bottom of the interface, there is a notifications bar showing 0 errors, 1 warning, and 21 info messages.

10. Start the Cluster Service

open-e



JovianDSS: **node-a**
IP Address: 192.168.0.220

After a while the HA-cluster is started.
The Failover status shows: **Started**.

open-e JovianDSS

About Help Logout

Storage User Management Failover Settings Storage Settings System Settings Diagnostics

Failover Settings

Failover status

Failover status **Started** [Stop Failover](#)

Failover nodes

Node	Connection status	Failover status
node-220 (IP: 192.168.0.220, node ID: 2224e8b0)	Reachable	Online
node-221 (IP: 192.168.0.221, node ID: d4f88fb1)	Reachable	Online

[Disconnect nodes](#)

Failover resources

Zpool name	Active on node	Status
Information about failover resources is not available until failover is started.		

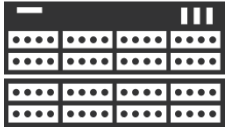
Rings **1 of 1 active** [Details](#)

Ping nodes **2 of 2 reachable** [Edit](#)

Notifications 0 1 25

11. System Monitoring Setup

open-e



JovianDSS: **node-a**
IP Address: 192.168.0.220

Setup proper **E-mail notifications**.

node-220 x node-221 x

Not secure https://192.168.0.220

open-e JovianDSS

About Help Logout

Storage

User Management

Storage Settings

System Settings

Diagnostics

System Settings

E-mail notifications

Enable e-mail notifications

E-mail:

Use authentication:

SMTP server:

SMTP port:

Encryption:

Destination e-mail: Use default e-mail address Use alternative e-mail address

Remote Log Server

Log events to a remote server

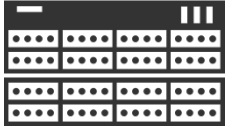
Critical I/O errors

Reboot procedure

Notifications 0 0 0

11. System Monitoring Setup

open-e



JovianDSS: **node-a**
IP Address: 192.168.0.220

It is recommended to setup the system monitoring with **Remote Log Server** or SNMP.

node-220 x node-221 x

Not secure https://192.168.0.220

open-e JovianDSS

About Help Logout

Storage

User Management

Failover Settings

Storage Settings

System Settings

Diagnostics

System Settings

Encryption:

Destination e-mail: Use default e-mail address Use alternative e-mail address

[Send test message](#)

[Apply](#)

Remote Log Server

Log events to a remote server

IP address:

Set port:

Communication protocol: TCP UDP

[Apply](#)

Critical I/O errors

Reboot procedure

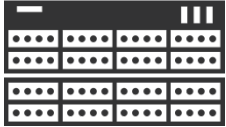
System may require reboot when critical I/O errors occur. Please select how such errors should be handled:

Reboot policy: Immediate

Notifications 11 2 90

12. Failover test

open-e



JovianDSS: **node-a**
IP Address: 192.168.0.220

Now, in order to test failover, select **Storage** from main menu and in the **Options** drop-down menu select **Move**.

The pool will be exported on the current node and will be imported on the second node.

Storage

Storage

Pool-0

State: ONLINE

Zpool ID: 17476578527970846996

Total storage: 2.44 TiB

Disks: 16

Status: Zpool is functioning correctly.

Action: None required.

Options

Delete Zpool

Export Zpool

Clear error counters

Move

Virtual IPs

Virtual IP	Name	Netmask	Network interface	Remote network interface	State	Options
1	192.168.21.100	255.255.255.0	bond1 (192.168.2.220)	bond1 (192.168.2.221)	Active	Options

Zpools available for import

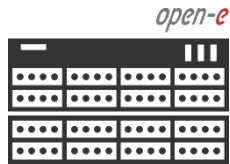
Rescan required

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

Unassigned disks

Notifications 0 1 21

12. Failover test



JovianDSS: **node-a**
IP Address: 192.168.0.220

Click on **Move** button to start the failover.

Storage

Pool-0

State: ONLINE

Zpool ID: 17476578527970846996

Total storage: 2.44 TiB

Disks: 16

Status: Zpool is functioning correctly.

Action: None required

Virtual IPs

Virtual IP	Name	IP	Disk	Network Interface	State	Options	
1	192.168.21.100	vip21	255.255.255.0	bond1 (192.168.2.220)	bond1 (192.168.2.221)	Active	Options

Confirmation

Are you sure you want to move the resource?

Cancel Move

Zpools available for import

Rescan required

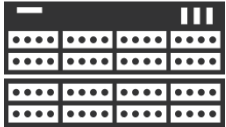
Press Rescan storage button above to scan disks for new zpools.

Unassigned disks

Notifications 0 1 25

12. Failover test

open-e



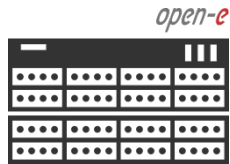
JovianDSS: **node-a**
IP Address: 192.168.0.220

The Pool was exported from Node-220 and imported on Node-221. Node-220 (node-a) GUI show the **Pool-0** is active on node-221 (node-b).

In order to move pool activity back to node-220 (node-a), please click on **Move to this node** button.

The screenshot shows the Open-E JovianDSS web interface. The browser address bar shows the URL https://192.168.0.220. 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 a message: 'No local zpools have been found on the system. To create a zpool on this node please select an "Add zpool" button.' Below this, 'Pool-0' is listed as 'Active on node node-221'. A red arrow points to the 'Move to this node' button. The 'Status' is 'ONLINE' and the 'Zpool ID' is '17476578527970846996'. The 'Zpools available for import' section shows 'No external zpools available for the import have been found.' The 'Unassigned disks' section shows 'No unassigned disks found.'

12. Failover test

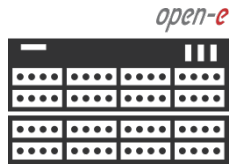


JovianDSS: **node-a**
IP Address: 192.168.0.220

Click on **Move** button to start failover. It will start exporting the pool at Node-221 (node-b) and next it will be importing back on Node-220 (node-a).

The screenshot shows the Open-E JovianDSS web interface. The main content area displays the 'Storage' section for 'Pool-0', which is currently 'Active on node node-221'. A 'Move to this node' button is visible. A 'Confirmation' dialog box is overlaid on the screen, asking 'Are you sure you want to move the resource?' with 'Cancel' and 'Move' buttons. A red arrow points from the 'Move' button in the dialog to the 'Move to this node' button in the interface. The left sidebar contains navigation options: Storage, User Management, Failover Settings, Storage Settings, System Settings, and Diagnostics. The top navigation bar includes 'About', 'Help', and 'Logout' links. The bottom status bar shows 'Notifications: 0 1 30'.

12. Failover test



JovianDSS: **node-a**
IP Address: 192.168.0.220

Now, the failover test is completed. The **Pool-0** is active back on Node-220 (node-a)
Please create iSCSI target or NFS, SMB shares and connect storage clients. Once storage clients are connected, run one more failover test with reboot of the first node and next after successful failover, with reboot of the second node.

The screenshot shows the JovianDSS web interface for 'node-220'. The main content area displays the configuration for 'Pool-0', which is in an 'ONLINE' state. Key details include:

- State: ONLINE
- Zpool ID: 17476578527970846996
- Total storage: 2.44 TiB
- Disks: 16

 A status message indicates: 'Status: Zpool is functioning correctly. Action: None required.' Below this, there are sections for 'Zpools available for import' (showing no external zpools) and 'Unassigned disks' (showing no unassigned disks found).

NOTE:

The step-by-step guide is based on configuration from page 4, use VIP's addresses on bond1 for storage access this will work with SMB, NFS or iSCSI.

Next on page 42 will show setup with two storage access paths and two virtual IPs. This setup can be used for iSCSI Initiators with multipath. It can be used also without multipath, just to separate load on 2 separate network paths.

On page 43 instead of just two storage paths, there are two bonding. This setup can be used also for iSCSI Initiators with multipath or for mixed iSCSI/SMB/NFS environments.

On page 44, the mirroring path use point-to-point Round-Robin bond instead of single Ethernet connection. The Round-Robin bond provide better reliability and better mirror performance.

Open-E JovianDSS Advanced Metro High Availability Cluster



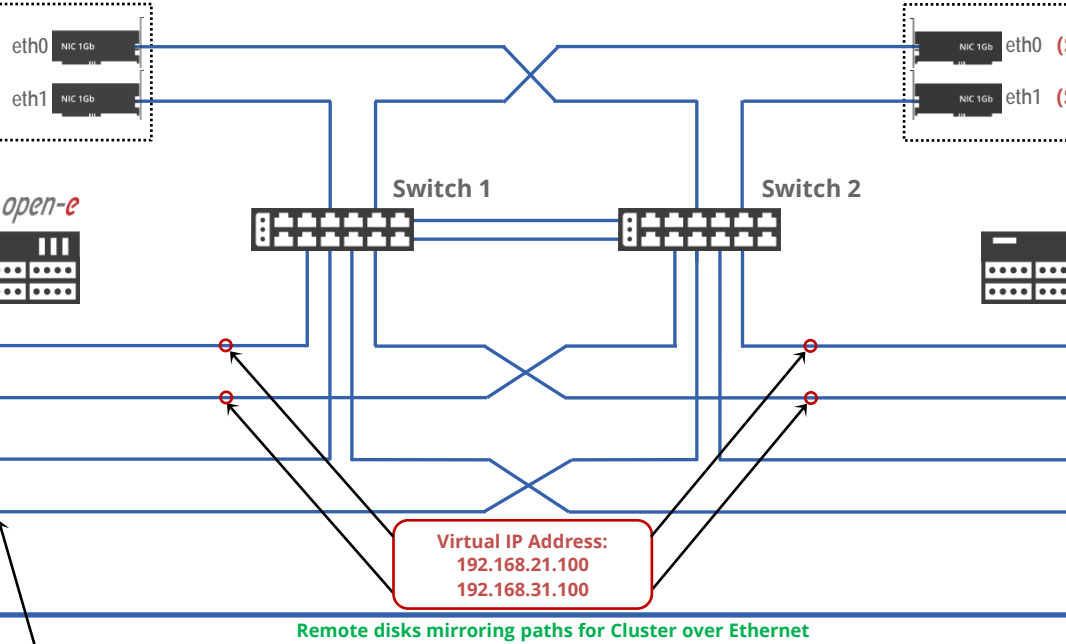
**Client-1: ESXi,
XEN, Hyper-V**



**Client-2: ESXi,
XEN, Hyper-V**



eth0:192.168.21.101 (SMB, NFS or iSCSI)
eth1:192.168.31.101 (SMB, NFS or iSCSI)
eth0 or eth1:192.168.2.101 (Ping Node)



**JovianDSS
node-a**



Storage Client Access,
eth0:192.168.0.220 (iSCSI-MPIO)
eth1:192.168.1.220 (iSCSI-MPIO)
Port used for WEB GUI
management, Ring,
Ping node
Bond (active backup)
bond0:192.168.2.220

Remote Disks
IP:192.168.4.220

**JovianDSS
node-b**



Storage Client Access,
eth0:192.168.0.221 (iSCSI-MPIO)
eth1:192.168.1.221 (iSCSI-MPIO)
Port used for WEB GUI
management, Ring,
Ping node
Bond (active backup)
bond0:192.168.2.221

Remote Disks,
IP:192.168.4.221

NOTE:
Ring path (heartbeat) and Ping nodes must run on Active-Backup bonding. Ring and Ping IP must be configured in the same network subnet.

NOTE:
It is strongly recommended to use direct point-to-point and if possible 10Gb connection for the remote disks paths. The Remote Disks connection can work over the switch, but the most reliable is a direct connection.

Open-E JovianDSS Advanced Metro High Availability Cluster



**Client-1: ESXi,
XEN, Hyper-V**



NOTE:

Ring path (heartbeat) and Ping nodes must run on Active-Backup bonding. Ring and Ping IP must be configured in the same network subnet.

**Client-2: ESXi,
XEN, Hyper-V**



eth0:192.168.21.101 (SMB, NFS or iSCSI)
eth1:192.168.31.101 (SMB, NFS or iSCSI)
eth0 or eth1:192.168.4.101 (Ping Node)

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eth0 (SMB, NFS or iSCSI) eth0:192.168.21.102
eth1 (SMB, NFS or iSCSI) eth1:192.168.31.102
(Ping Node) eth0 or eth1:192.168.4.102

open-e

**JovianDSS
node-a**



Switch 1

Switch 2

**JovianDSS
node-b**



Storage Client Access
bond0:192.168.0.220
(iSCSI-MPIO)

eth0
NIC 1Gb

Virtual IP Address:
192.168.21.100

Storage Client Access
bond0:192.168.0.221
(iSCSI-MPIO)

eth0
NIC 1Gb

Storage Client Access
bond1:192.168.2.220
(iSCSI-MPIO)

eth1
NIC 1Gb

Storage Client Access
bond1:192.168.2.221
(iSCSI-MPIO)

eth1
NIC 1Gb

Port used for WEB GUI
management, Ring,
Ping node
Bond (active backup)
bond2:192.168.4.220

eth2
NIC 1Gb

Virtual IP Address:
192.168.31.100

Storage Client Access
bond2:192.168.4.221

eth2
NIC 1Gb

Remote Disks
IP:192.168.6.220

eth3
NIC 1Gb

Port used for WEB GUI
management, Ring,
Ping node
Bond (active backup)
bond2:192.168.4.221

eth3
NIC 1Gb

Remote Disks,
IP:192.168.6.221

eth4
NIC 1Gb

eth5
NIC 1Gb

eth6
NIC 10Gb

Remote disks mirroring paths for Cluster over Ethernet



Open-E JovianDSS Advanced Metro High Availability Cluster



**Client-1: ESXi,
XEN, Hyper-V**



NOTE:

Ring path (heartbeat) and Ping nodes must run on Active-Backup bonding. Ring and Ping IP must be configured in the same network subnet.

**Client-2: ESXi,
XEN, Hyper-V**



eth0:192.168.21.101 (SMB, NFS or iSCSI)
eth1:192.168.31.101 (SMB, NFS or iSCSI)
eth0 or eth1:192.168.4.101 (Ping Node)

eth0 (SMB, NFS or iSCSI) eth0:192.168.21.102
eth1 (SMB, NFS or iSCSI) eth1:192.168.31.102
(Ping Node) eth0 or eth1:192.168.4.102

**JovianDSS
node-a**



Switch 1

Switch 2

open-e

**JovianDSS
node-b**



Storage Client Access
bond0:192.168.0.220
(iSCSI-MPIO)



Virtual IP Address:
192.168.21.100

Virtual IP Address:
192.168.31.100

Storage Client Access
bond0:192.168.0.221
(iSCSI-MPIO)



Storage Client Access
bond1:192.168.2.220
(iSCSI-MPIO)



Storage Client Access
bond1:192.168.2.221
(iSCSI-MPIO)



Port used for WEB GUI
management, Ring,
Ping node,
Bond (active backup)
bond2:192.168.4.220



Port used for WEB GUI
management, Ring,
Ping node
Bond (active backup)
bond2:192.168.4.221



Remote Disks
Bond (round-robin)
bond3:192.168.6.220



Remote Disks,
Bond (round-robin)
bond3:192.168.6.221



Remote disks mirroring paths for Cluster over Ethernet



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Thank You!
