Open-E Advanced **Metro HA Cluster**

- 1Gbps, 10Gbps, 40Gbps, 100Gbps Ethernet support for maximum speed
- Perfect for both rack (from 12” / 30cm) and metro (up to 50 miles / 80km) clusters
- Allows using less expensive SATA drives
- Easy to configure and manage
- Compared to SAS or FibreChannel, JBODs are not required for Ethernet clusters
- Optional use of RAID controllers
Advanced Metro High Availability cluster for iSCSI, FC and NFS, SMB (CIFS)

Open-E JovianDSS includes failover functionality for iSCSI, FC and NFS, SMB (CIFS), enabling you to set up High Availability Load-Balanced Storage Clusters that ensure reliability and redundancy through failover in case of a server crash. By using the Open-E JovianDSS Advanced Metro High Availability Cluster Feature Pack, you can create High Availability for two server nodes with storage mirror over Ethernet using a storage at each location (Dual Storage). Since the connection of cluster communication and data mirroring between nodes works over Ethernet, the nodes might be located far from each other as a (stretched) metro storage cluster. It can be 50 miles (80 km) in case of point to point fibre optic connection, or even more when using an additional switch between nodes – provided that network latency will not exceed 5 ms. The Feature Pack also supports configurations of the Open-E JovianDSS Standard HA Cluster Feature Pack.

SAN (iSCSI, FC) Failover

<table>
<thead>
<tr>
<th>HA availability architecture</th>
<th>Physical drives shared between nodes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Metro storage cluster</td>
<td>Yes (iSCSI, FC and NFS, SMB (CIFS))</td>
</tr>
<tr>
<td>Independent Virtual IPs for HA Cluster</td>
<td>Yes</td>
</tr>
<tr>
<td>Max. clustered volume size</td>
<td>Unlimited</td>
</tr>
<tr>
<td>Max. clustered storage size</td>
<td>Unlimited</td>
</tr>
<tr>
<td>Persistent Reservation Synchronization</td>
<td>Yes</td>
</tr>
<tr>
<td>Node replacement without cluster downtime</td>
<td>Yes</td>
</tr>
</tbody>
</table>

Advanced HA cluster management

With the HA cluster management software functionalities you can quickly access all features related to your cluster setup. Whether for initial configuration or re-configuration after a failover – everything is in one place and guarantees ease of use for the storage administrator.

High availability architecture examples:

- Cluster in a Box (CiB)
- Common Storage Cluster over SAS
- Cluster over SAS with internal expander
- Cluster with multiple JBODs over FC
- Cluster with multiple JBODs over SAS/FC (with ATTO bridges)
- Cluster over Ethernet
- Cluster with multiple JBODs over SAS

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Examples of deployments

With Open-E JovianDSS you can easily setup a Metro Cluster that best fits your individual needs, using various protocols, hardware components and virtualization platforms.

**Single VIP over Bond**
Bonding for NFS / SMB, single iSCSI Path

**Double VIP**
Multipath iSCSI, single NFS / SMB Path
Double VIP over Bonds
Multipath iSCSI, Bonding for NFS / SMB

Client-1:
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)
JovianDSS
node-a
Port used for WEB GUI management
Storage Client Access, bond0: 192.168.0.220 (iSCSI-MPIO)
Storage Client Access, bond0: 192.168.2.220 (iSCSI-MPIO)
Ring, Ping Node bond2: 192.168.4.220
Remote Disks IP: 192.168.6.220

Switch 1
Remote disks mirroring paths for Cluster over Ethernet

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: 192.168.21.102 (SMB, NFS or iSCSI)
eth1: 192.168.31.102 (SMB, NFS or iSCSI)
eth0 or eth1: 192.168.4.102 (Ping Node)
JovianDSS
node-b
Port used for WEB GUI management
Storage Client Access, bond0: 192.168.0.221 (iSCSI-MPIO)
Storage Client Access, bond0: 192.168.2.221 (iSCSI-MPIO)
Ring, Ping Node bond2: 192.168.4.221
Remote Disks IP: 192.168.6.221

Switch 2
Remote disks mirroring paths for Cluster over Ethernet

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.

Double VIP
Multipath iSCSI, single NFS / SMB Path, Bond for mirroring

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Remote Disks bond3: 192.168.6.220

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