Step-by-Step Guide

# Round the clock backup of everything with On- & Off-site Data Protection

Software Version: JovianDSS ver. 1.00 up23

Last update: November 2017

**The aim of this document is to demonstrate an example setup of a SAN volume backup which can be called Round the clock backup of everything.**

**Round the clock: Because the replication task can run every minute for 24/7/365**

**Backup of everything: Because it can backup virtual machines including operating systems, applications, databases and all kind of user data**

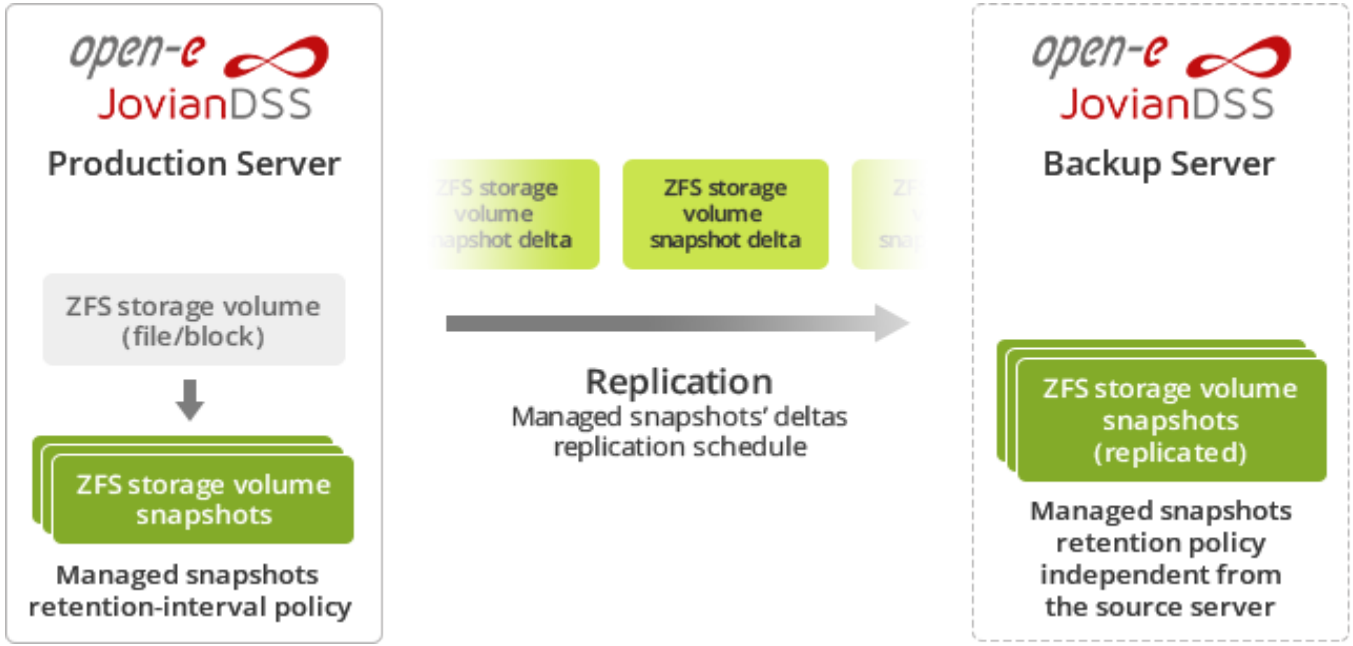
**On- & Off-site Data Protection creates the backup copy of the production volume with just a minute delay, and with guaranteed access to previous versions. The number and age of previous versions are defined by the user. The number and age of previous versions can be different on the source (production) and destination (backup). Users can also define more than one destination (backup).**

**The next slides present the technology details and the setup example starts with slide no. 18.**

# On- & Off-site Data Protection


**The On- & Off-site Data Protection feature is a strategy for Storage, Backup, Business Continuity and Archiving (optional) that allows for an instant restore of crucial company data in case of an unexpected disaster.**

# On- & Off-site Data Protection – How it works

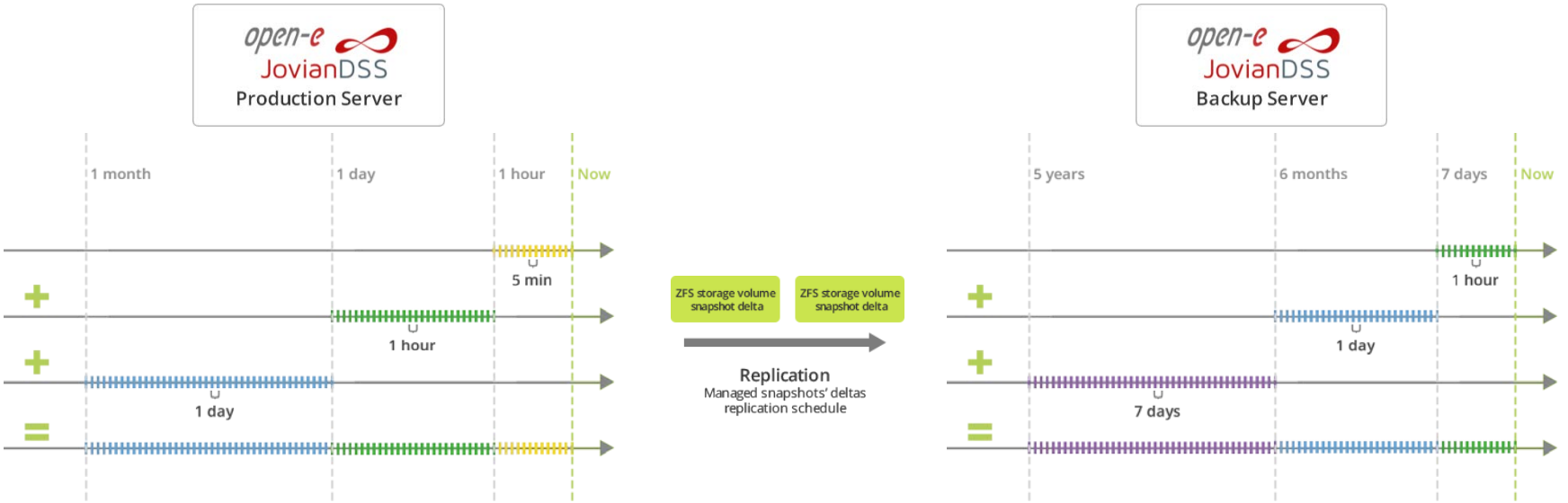



Main server used for day-to-day work with automated snapshots.

Replication of snapshot deltas to the off-site server.

Server at off-site location. Independent snapshots retention-interval policy, usually covering longer period than on main server.

# On- & Off-site Data Protection: Retention-interval plans




**On both local and Off-site locations there are independent snapshots retention policies for:**

- **Making new snapshots as often as 5 minutes**
- **Keeping snapshots even for years without running out of space**

# Disaster Recovery

## What are the key factors to measure the efficiency of disaster recovery?

**RPO – Recovery Point Objective**
Amount of time between the incident that caused data loss or corruption and the time of the last successful backup. Smaller RPO = better.

**RTO – Recovery Time Objective**
Amount of time required to restore the data and successfully resume the company's operations.
Smaller RTO = better.


**With On- & Off-site Data Protection both RPO and RTO can be counted in minutes. These parameters are among the best in the industry!**

## All-in-one storage and native backup

Built-in Enterprise-grade Backup and Disaster Recovery.

## Backup of everything

All running virtual machines with applications and data even databases backups are consistent.

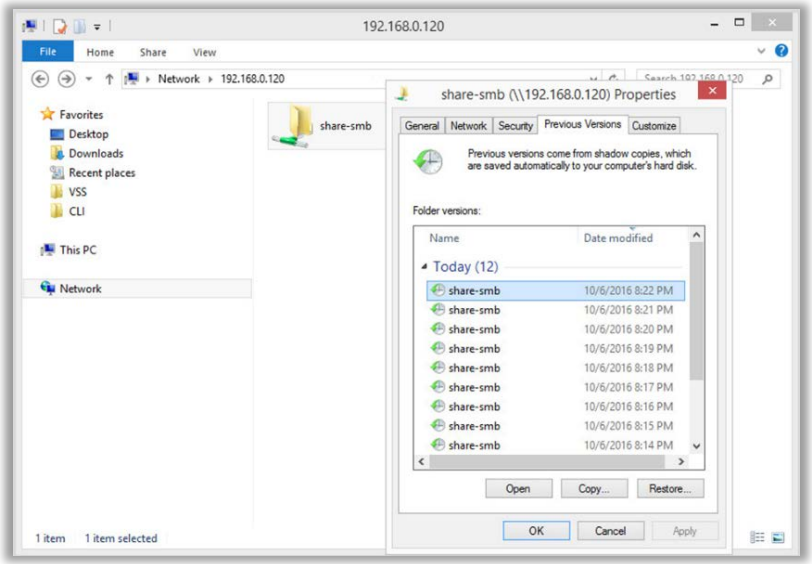
## Solved problem of Backup Window

Backup Window reduced to minutes, only delta of all-data is replicated every interval.

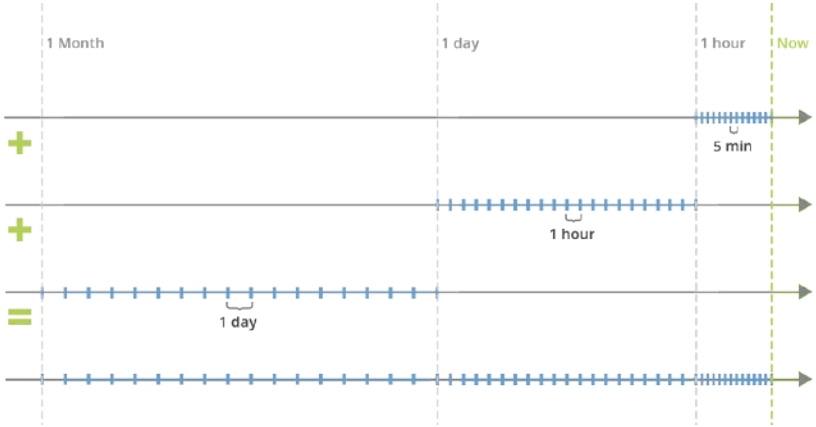
## Protection against ransomware

Very frequent snapshots with instant access to all-data provide very quick way to roll-back to the state before a virus attack.

# Features & Benefits




**Instant access to / restoration of old images**




Old images and data versions can be accessed / restored quickly. Via SMB every user has direct access to "Previous Versions" without administrator help.

## Very light backup engine

Continuous interval-based replication works in the background with insignificant influence on production. Option to skip virtual machine snapshots in very heavy load time frames. Third party backup solutions are "very heavy"  and generate high load during backup not to mention expensive.

## Optional removal and rotation of backup media

Thanks to Export/Import users can safely remove the backup media (disks) and rotate with other sets, or ship to another location.


## Encrypted transport

Data stream is sent via SSH. Easy to send via the Internet.

## On- & Off-site Data Protection complements High Availability Clusters, but does not replace them!

### On- & Off-Site Data Protection

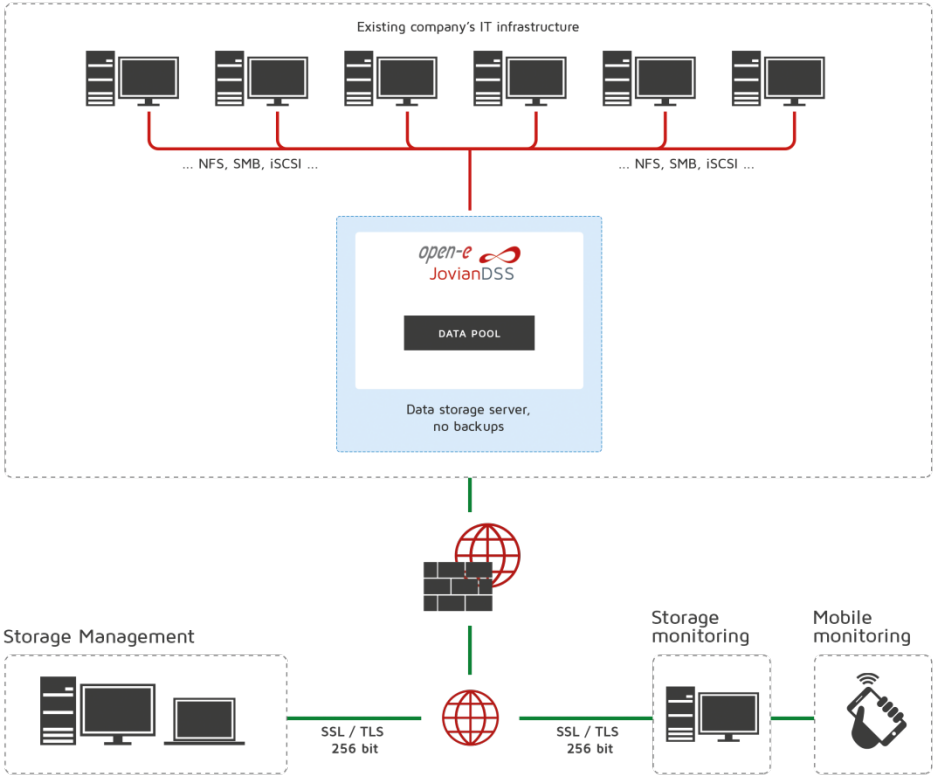
- Protects data by constantly backing it up and storing copies both locally and remotely
- Allows restoring data to a previously saved point in case of hardware failure or data corruption

### High Availability Cluster

- Ensures business continuity by providing uninterrupted access to data even during hardware failures
- Maximizes utilization of hardware and network resources

# Data safety levels
# and
# customer cases

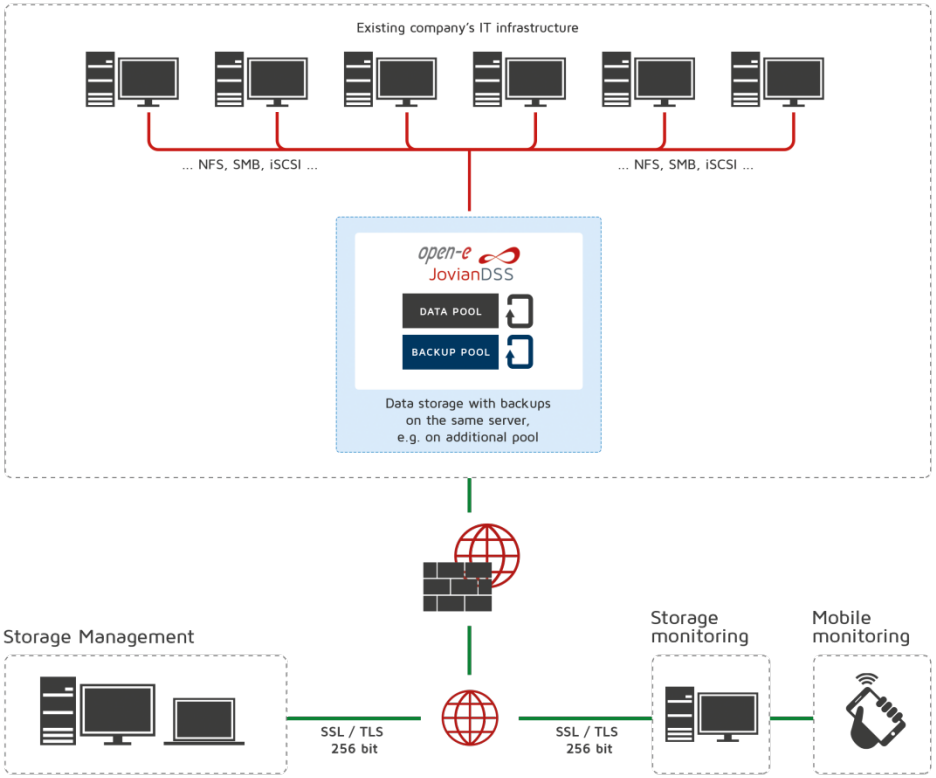
# Data safety level 1




## Open-E JovianDSS production server

| Risks | Counter measure | Restore time |
|---|---|---|
| Virus attack | Snapshots | Instant |
| Data corruption | Self-healing | Instant |
| Disk failure | RAID | Instant |
| Rebuild failure | None | None |
| System failure | None | None |
| Natural disaster | None | None |
| Theft | None | None |
| Human error | None | None |
| Downtime | None | None |

# Data safety level 2

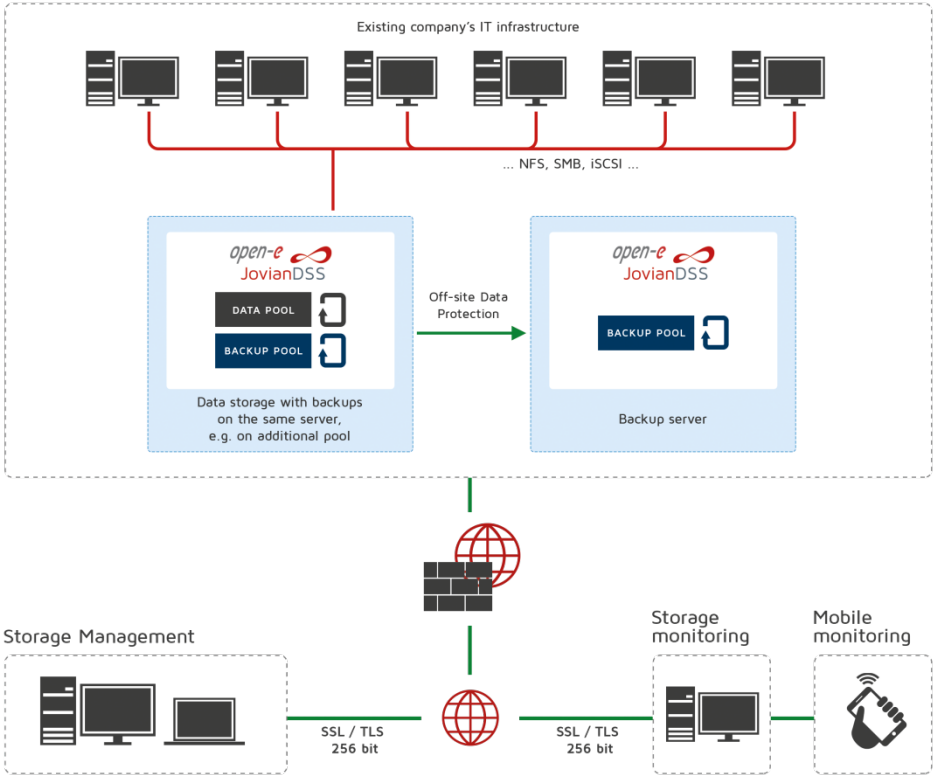



## Open-E JovianDSS production server

## Backup on local pool

| 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 | None | None |
| Natural disaster | None | None |
| Theft | None | None |
| Human error | None | None |
| Downtime | None | None |

# Data safety level 3



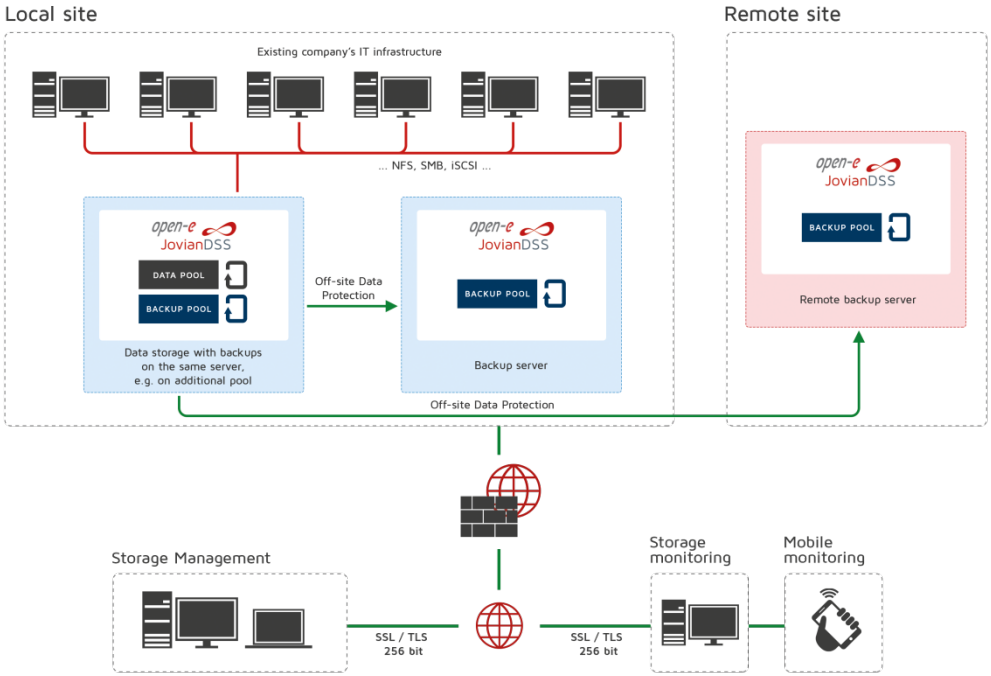

**Open-E JovianDSS production server**

**Backup on local pool**

**Backup on system in same location**

| 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 | None | None |
| Theft | None | None |
| Human error | None | None |
| Downtime | None | None |

# Data safety level 4




**Open-E JovianDSS production server**

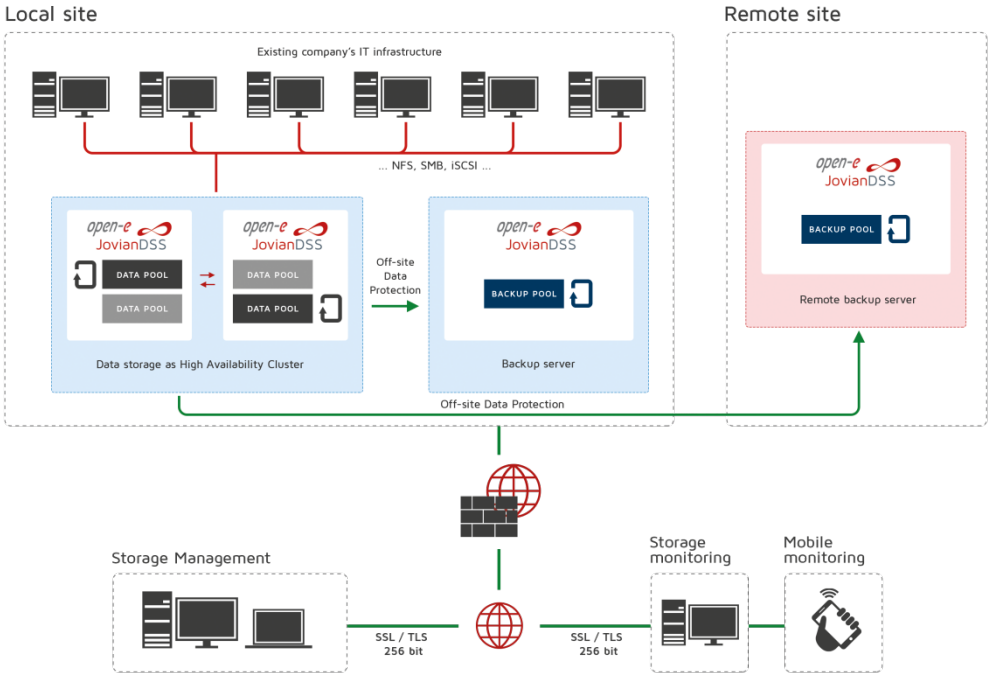
**Backup on local pool**

**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 | **None** | **None** |

# Data safety level 5




**High-Availability Open-E JovianDSS production server**

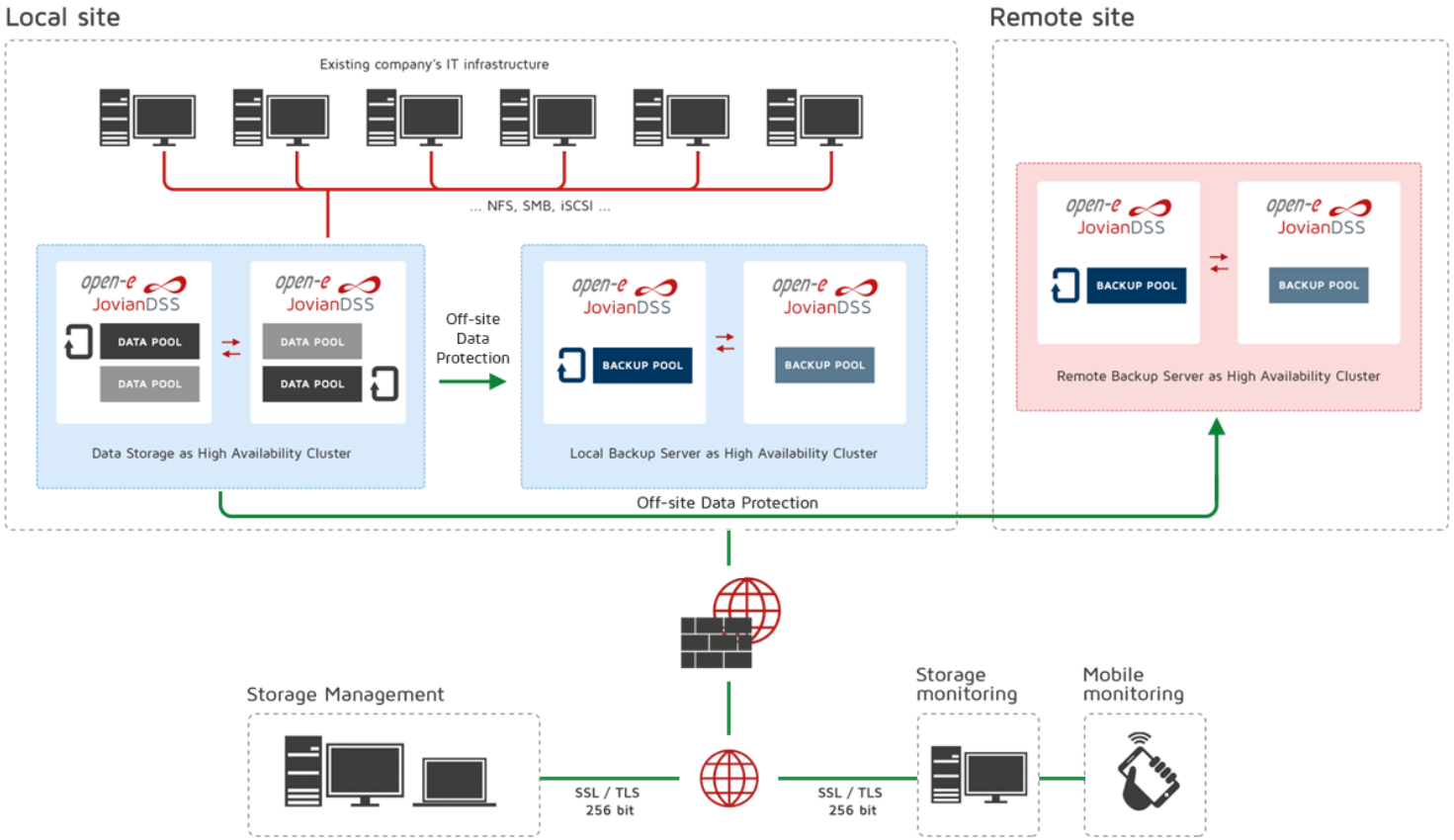
**Backup on local pool**

**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 |

# Data safety level 6



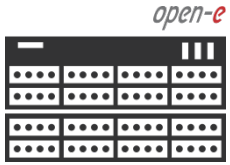
## To set up a backup of everything with On- & Off-site Data Protection, perform the following steps:

1. Create a Zpool and iSCSI target on source and destination nodes
2. Detach the backup destination volume on the Backup node
3. Create a Replication task
4. List all created snapshots
5. Export the backup volume via a target in order to access or restore the data
6. Detach the volume network-export on the Backup node
7. Clone snapshots in order to access or restore the data

**NOTE:** This document is using iSCSI volume (zvol) only. The backup of NAS volumes (dataset) will be analogical. The only difference is that the NAS volumes are exported via a share and the SAN volumes are exported via an iSCSI target.

# Round the clock backup of everything with On- & Off-site Data Protection

## 1. Creating a Zpool and iSCSI target on both nodes

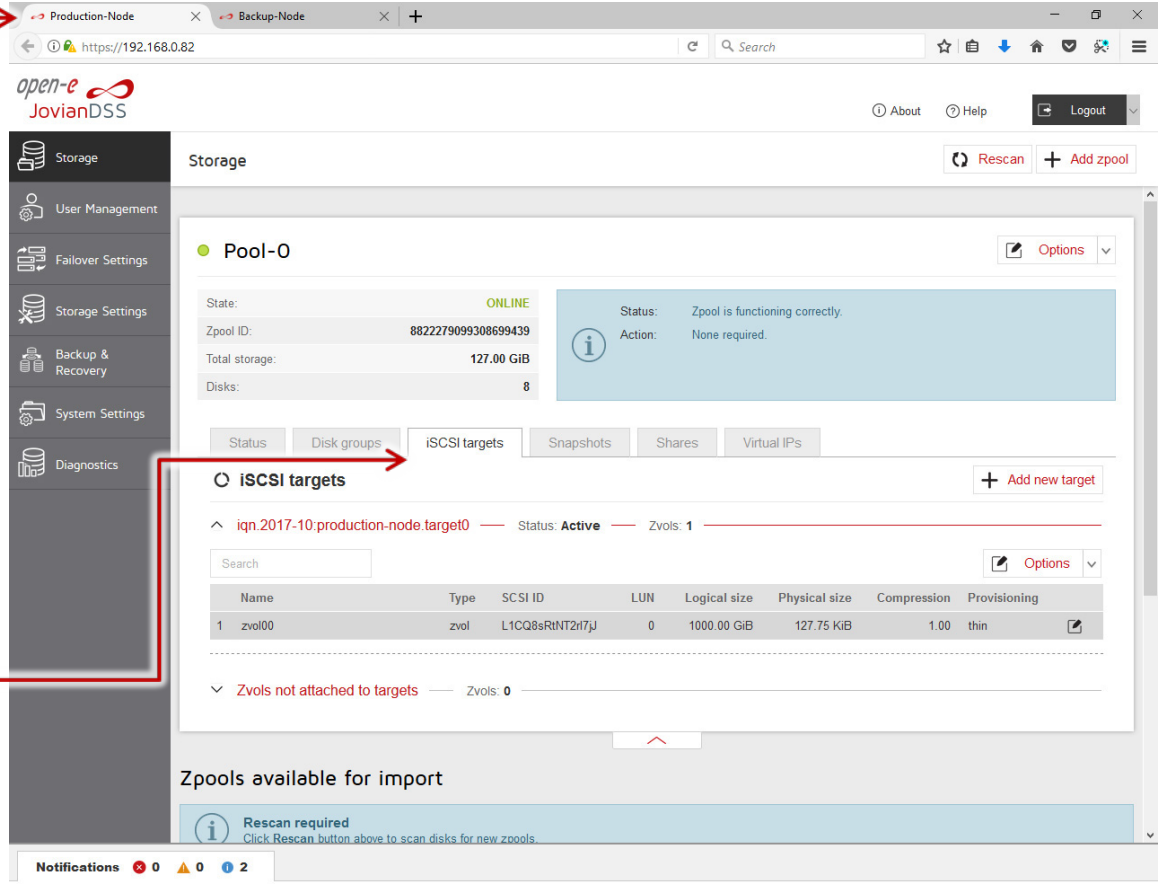


JovianDSS: **Production node**
IP Address: 192.168.0.82

This step-by-step assumes that a pool and a target have already been created.

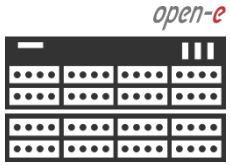
**NOTE:** Please refer to JovianDSS Jump-Start in order to create a Zpool and iSCSI target.

In the **production node**, please go to the Storage menu.
The **iSCSI targets** tab shows the configured zvol00 on the Production node.



# Round the clock backup of everything with On- & Off-site Data Protection

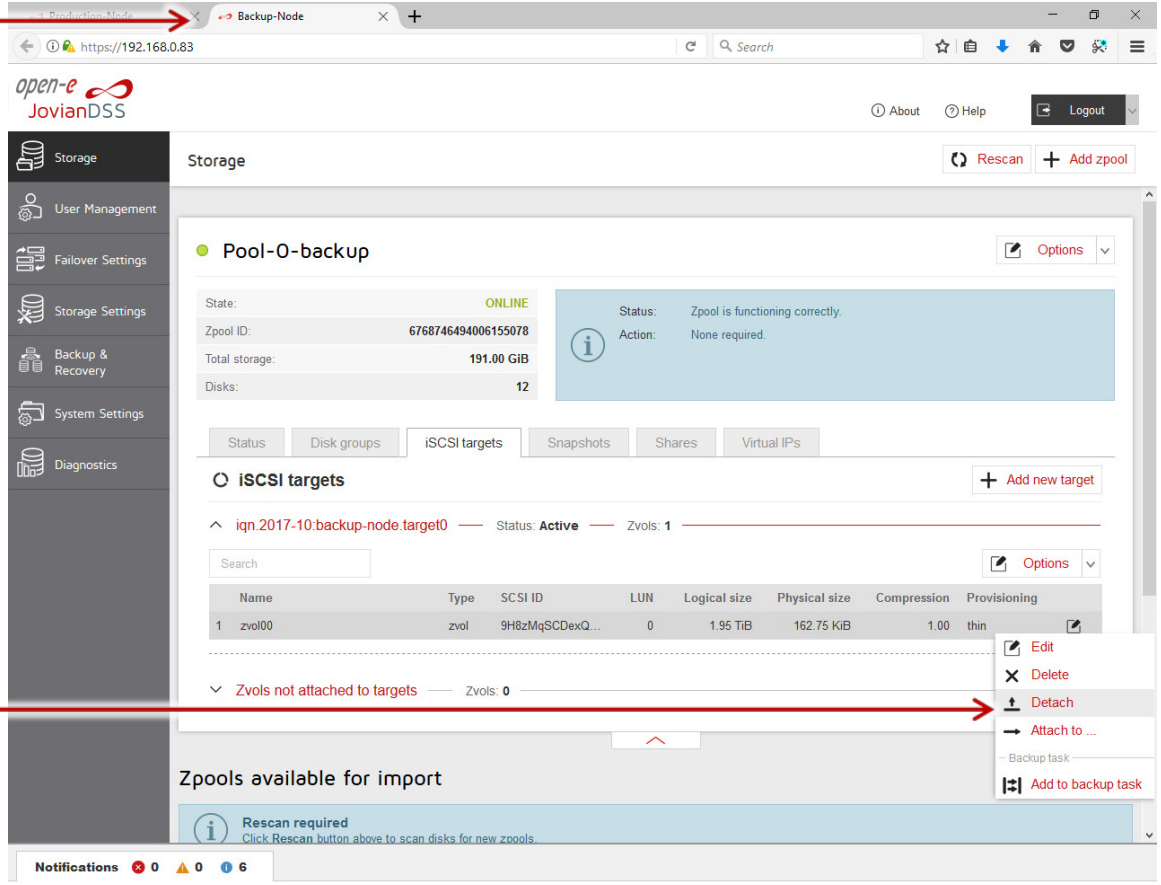
## 2. Detaching the backup destination volume on Backup node



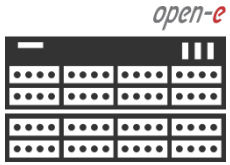

JovianDSS: **Backup node**
IP Address: 192.168.0.83

Next, in the **Backup node** go to the Storage menu, and select the **iSCSI targets** tab.

The backup destination volume schould be not avilable on the network. In order to hide the volume on the network, click the **Options** drop-down menu and select **Detach**.

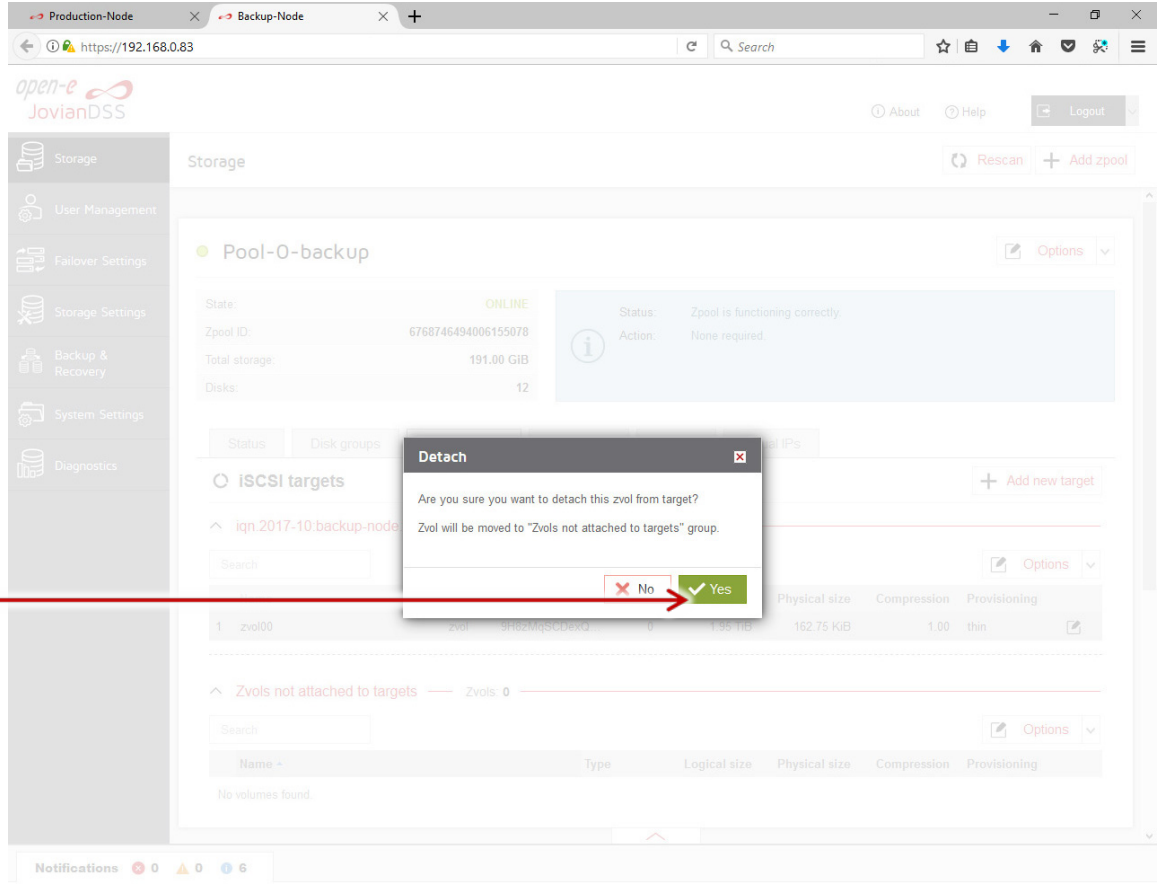


## 2. Detaching the backup destination volume on the Backup node



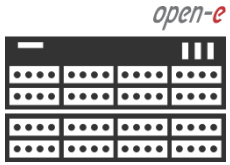

JovianDSS: **Backup node**
IP Address: 192.168.0.83

Next, click the **Yes** button to confirm the detachment.



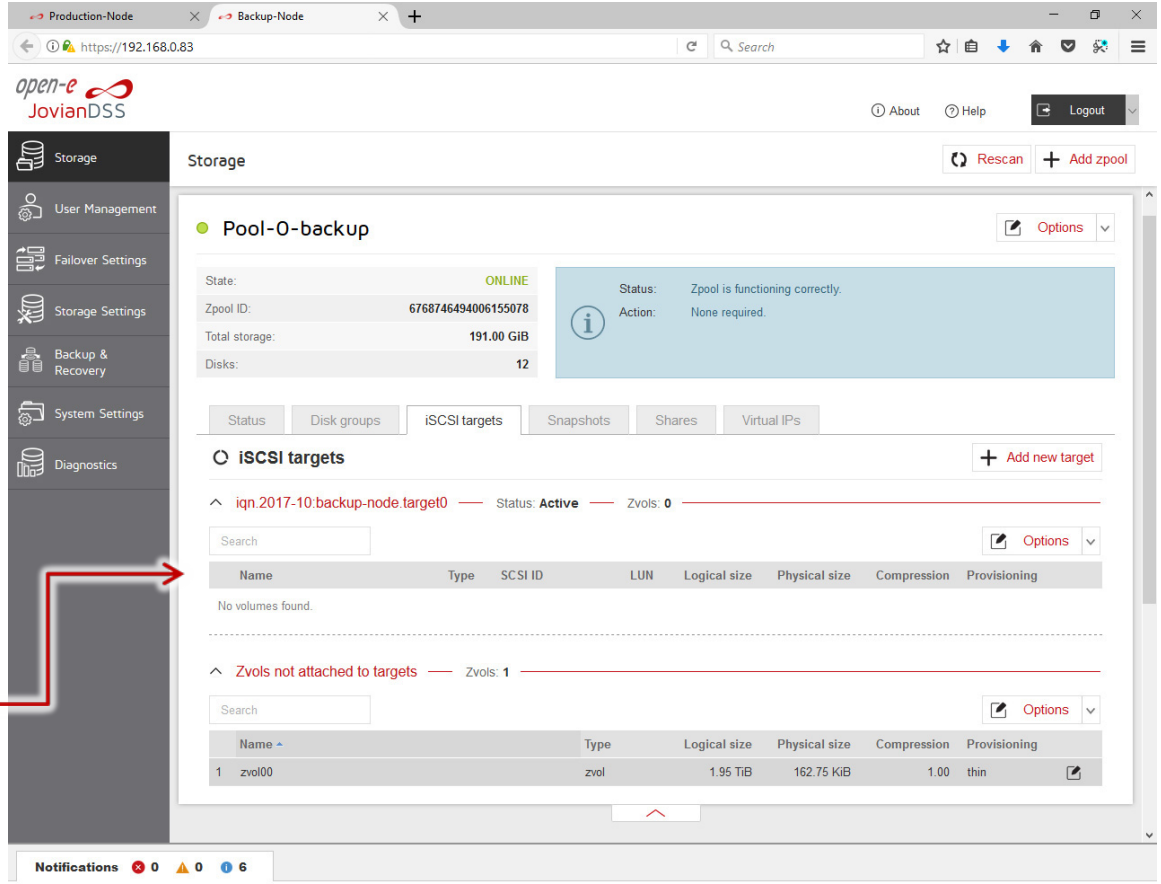
# Round the clock backup of everything with On- & Off-site Data Protection

## 2. Detaching the backup destination volume on the Backup node

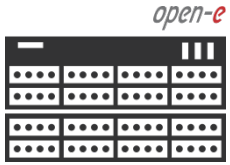



JovianDSS: **Backup node**
IP Address: 192.168.0.83

Now, the zvol00 is listed in the **Zvols not attached to targets** section.

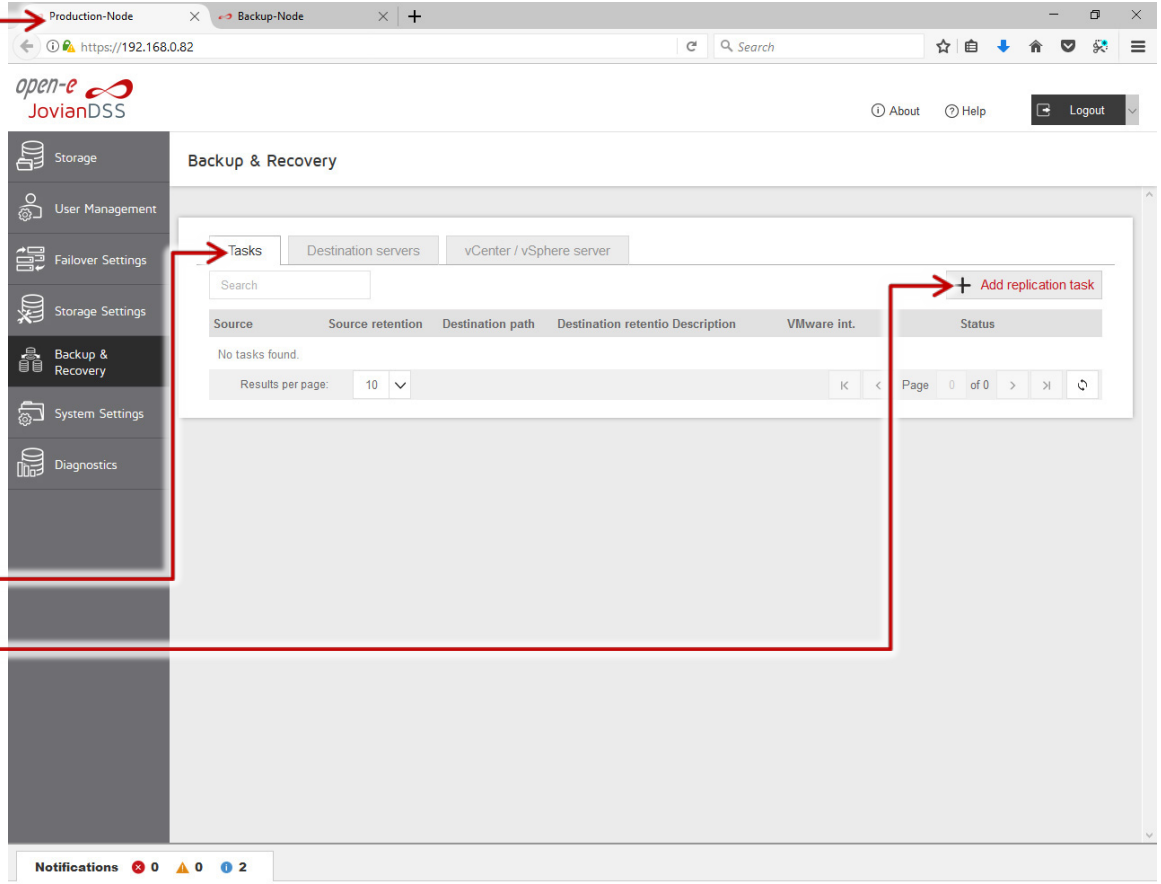


## 3. Backup task setting

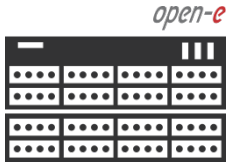


JovianDSS: **Production node**
IP Address: 192.168.0.82

Go back to the Production node. In the menu **Backup & Recovery -> Tasks** , click the **Add replication task** button in order to start the **Backup task wizard**.

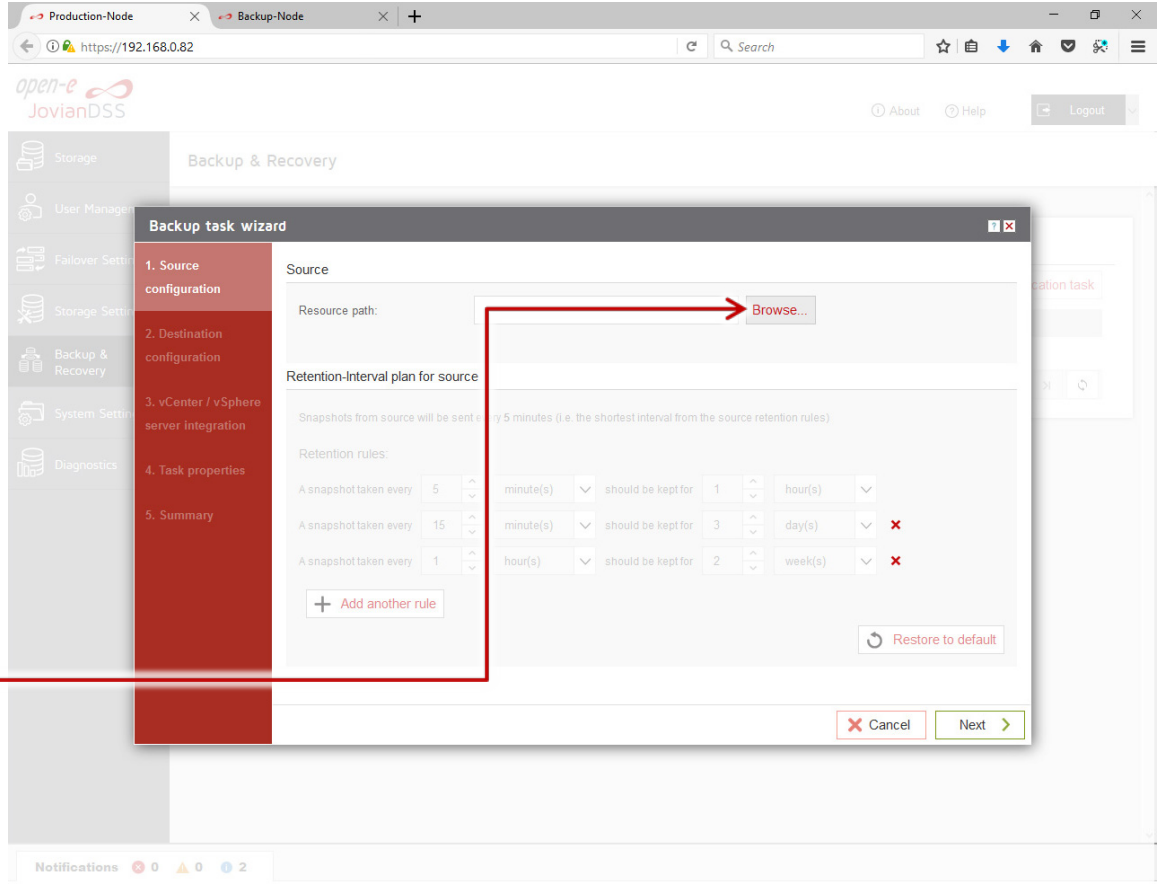


## 3. Backup task setting

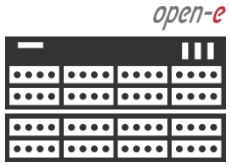


JovianDSS: **Production node**
IP Address: 192.168.0.82

In the first wizard step, click the **Browse** button.

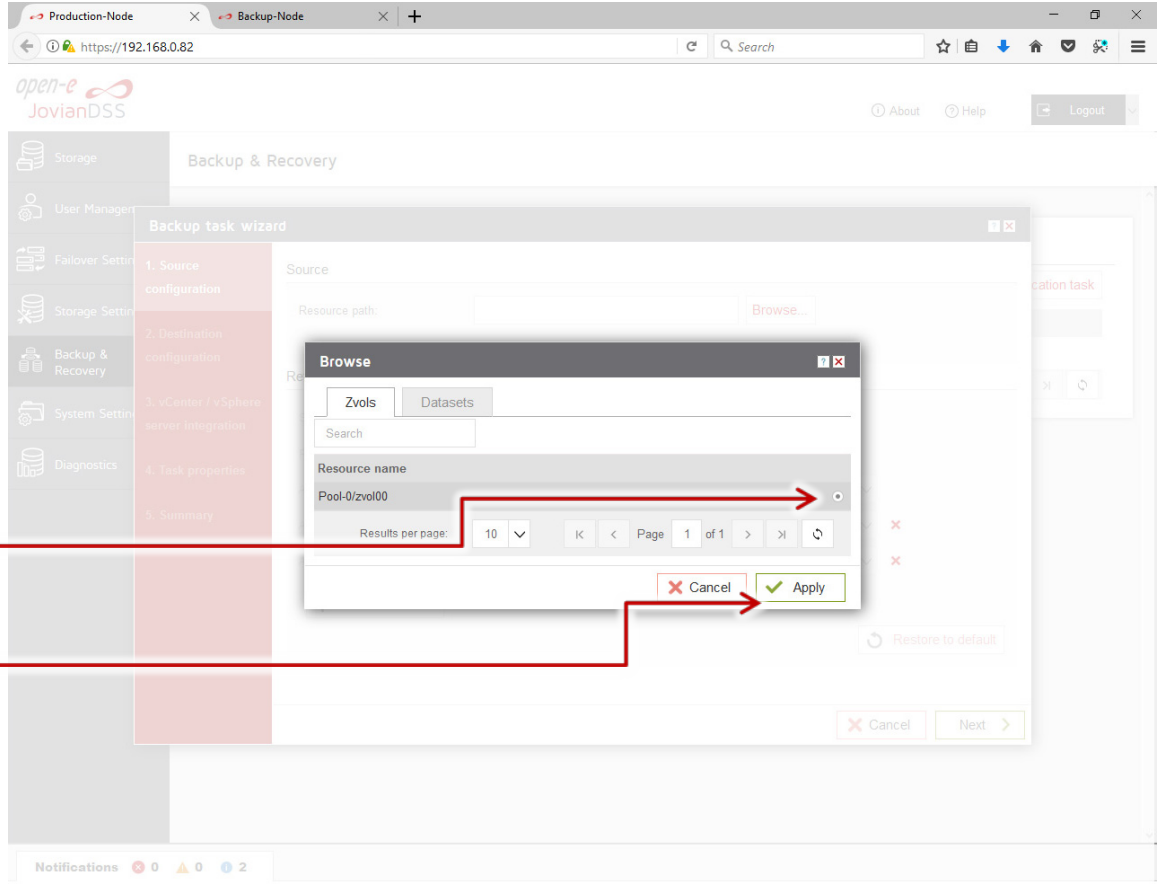


## 3. Backup task setting

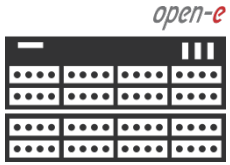



JovianDSS: **Production node**
IP Address: 192.168.0.82

Now, select the **Pool-0/zvol00** as the source volume and click the **Apply** button.

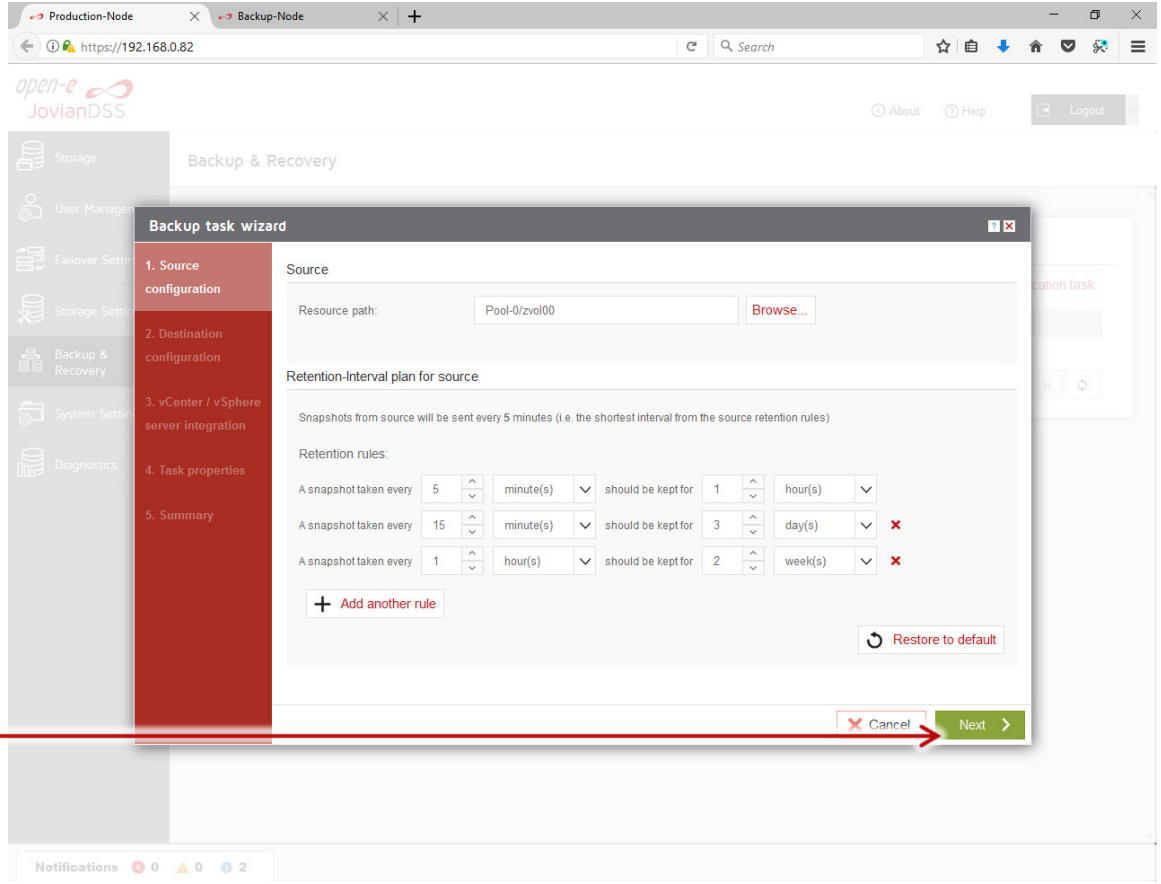


## 3. Backup task setting

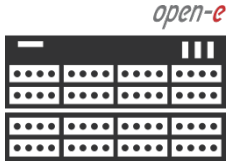



JovianDSS: **Production node**
IP Address: 192.168.0.82

The wizard will show the default retention-interval plan. It can be modified any time.
Then, please click the **Next** button.

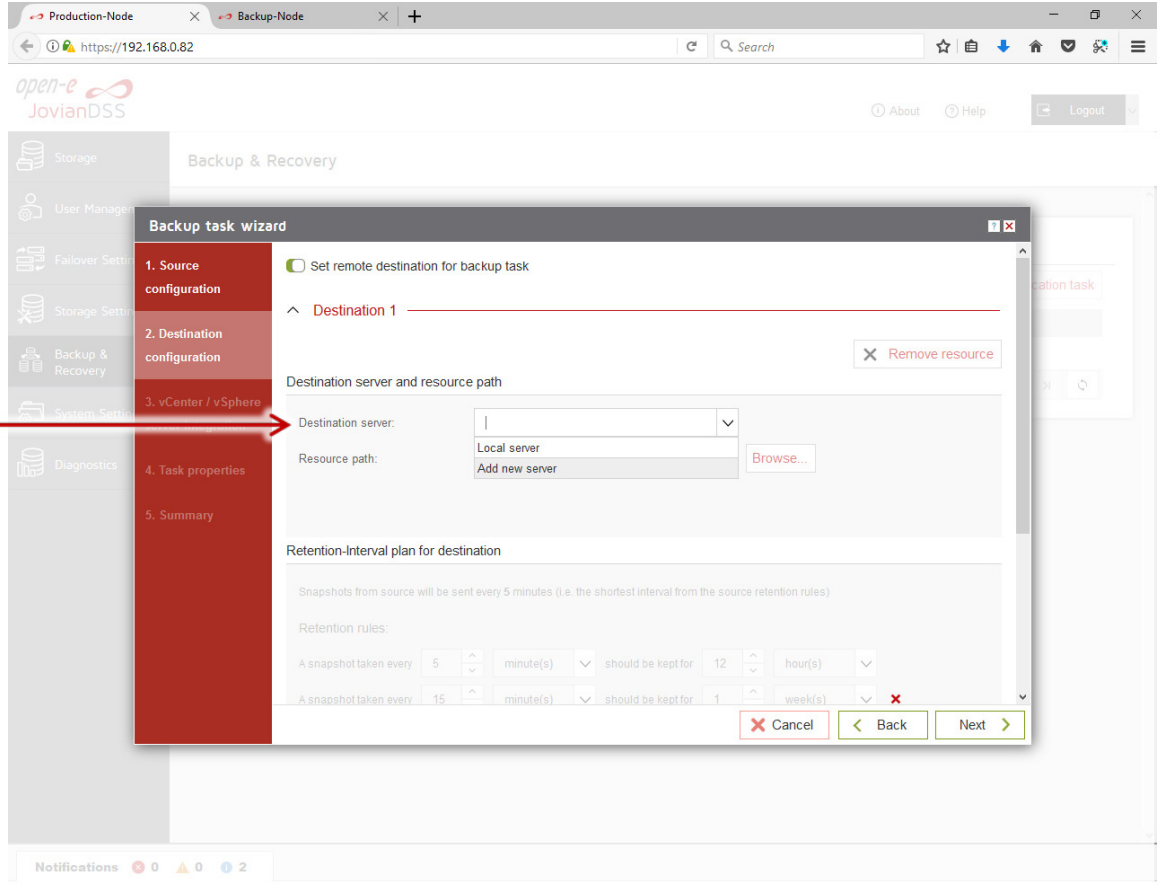


## 3. Backup task setting

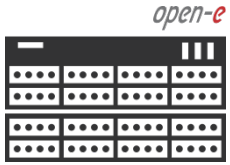


JovianDSS: **Production node**
IP Address: 192.168.0.82

In the **Destination configuration** step select the **Destination server.**

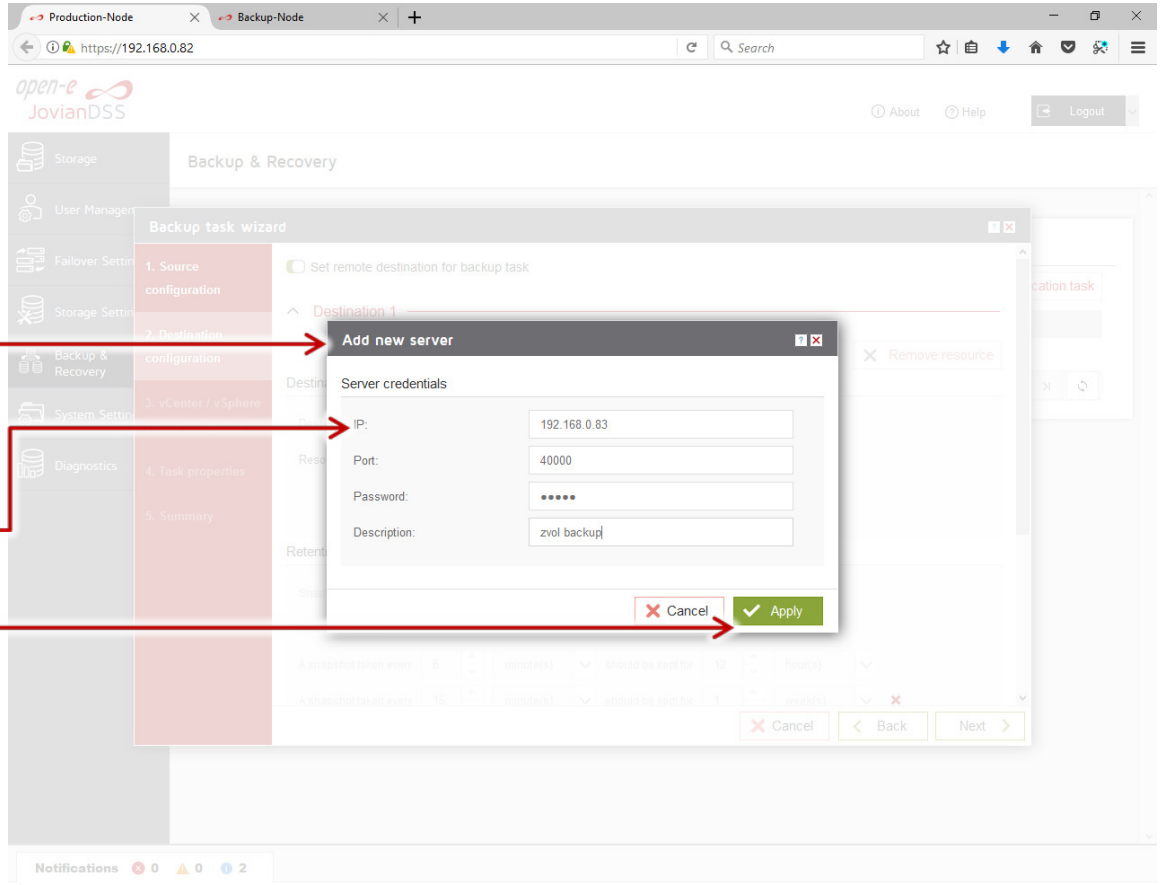


## 3. Backup task setting

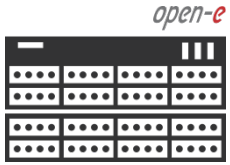



JovianDSS: **Production node**
IP Address: 192.168.0.82

Now add the new server information credentials of the **Backup node**.
In this example the **IP** Address: 192.168.0.83
Default port = 40000 can be changed as well. In the Password field enter the current GUI password of the of **Backup node**.
Next, click the **Apply** button.

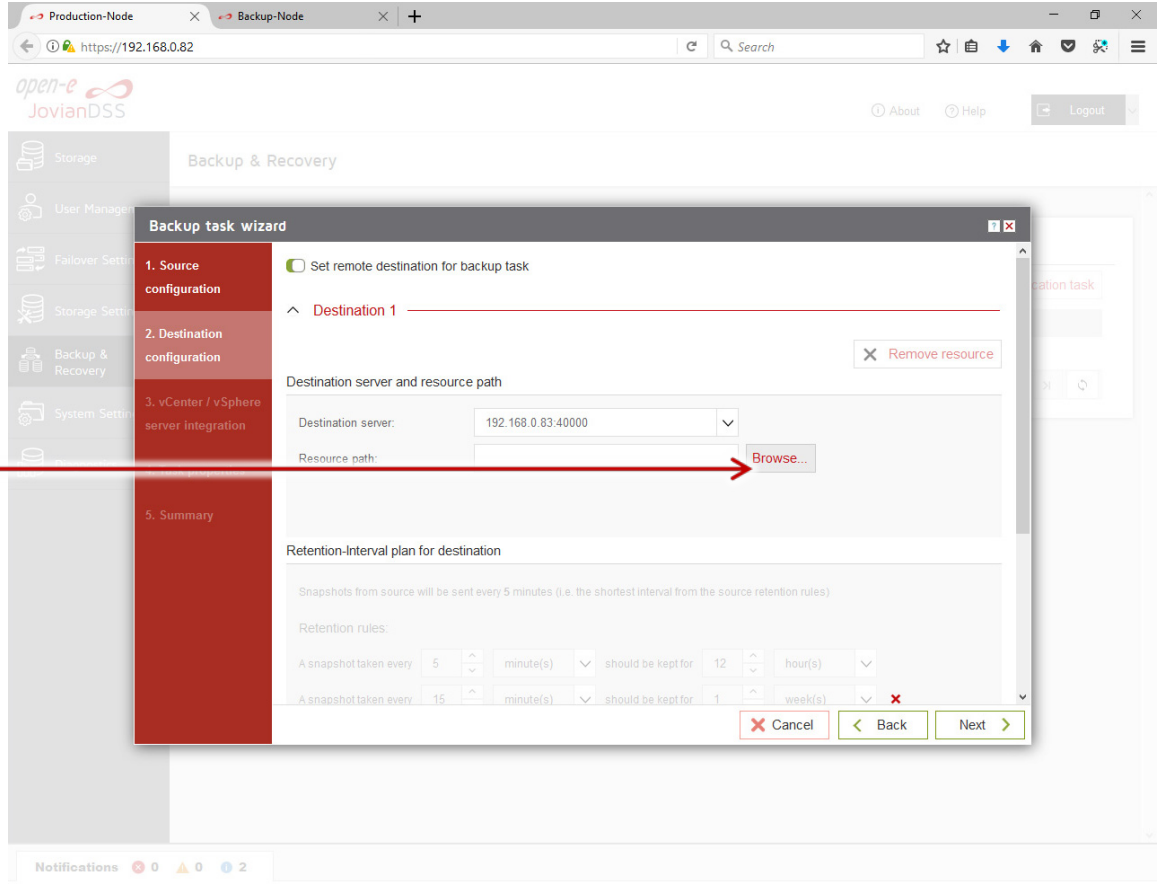


## 3. Backup task setting

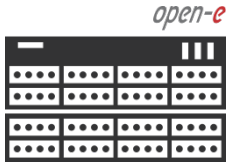


JovianDSS: **Production node**
IP Address: 192.168.0.82

In the **Resource path** click the **Browse** button.

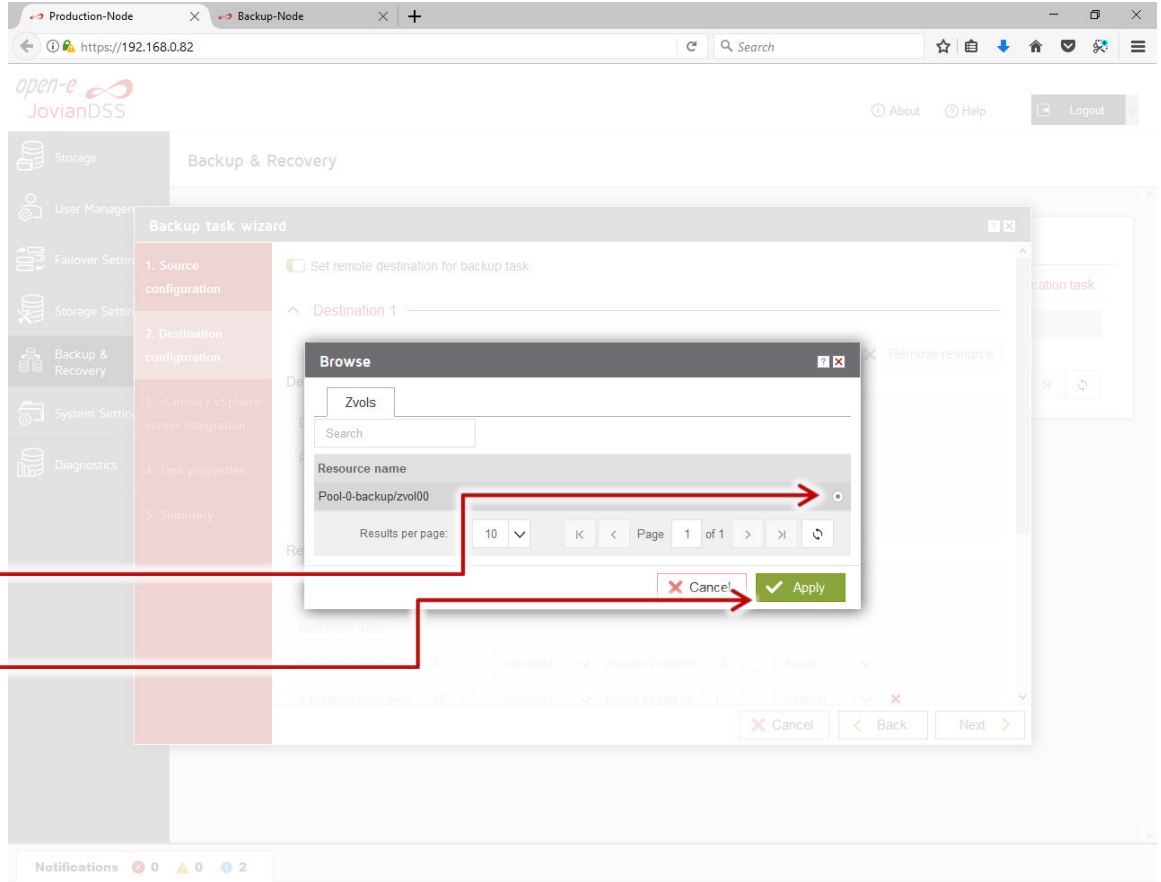


## 3. Backup task setting



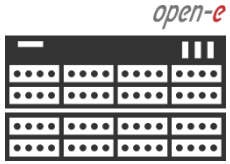

JovianDSS: **Production node**
IP Address: 192.168.0.82

In the **Browse** window select the **Pool-0-backup/zvol** and click the **Apply** button.



# Round the clock backup of everything with On- & Off-site Data Protection

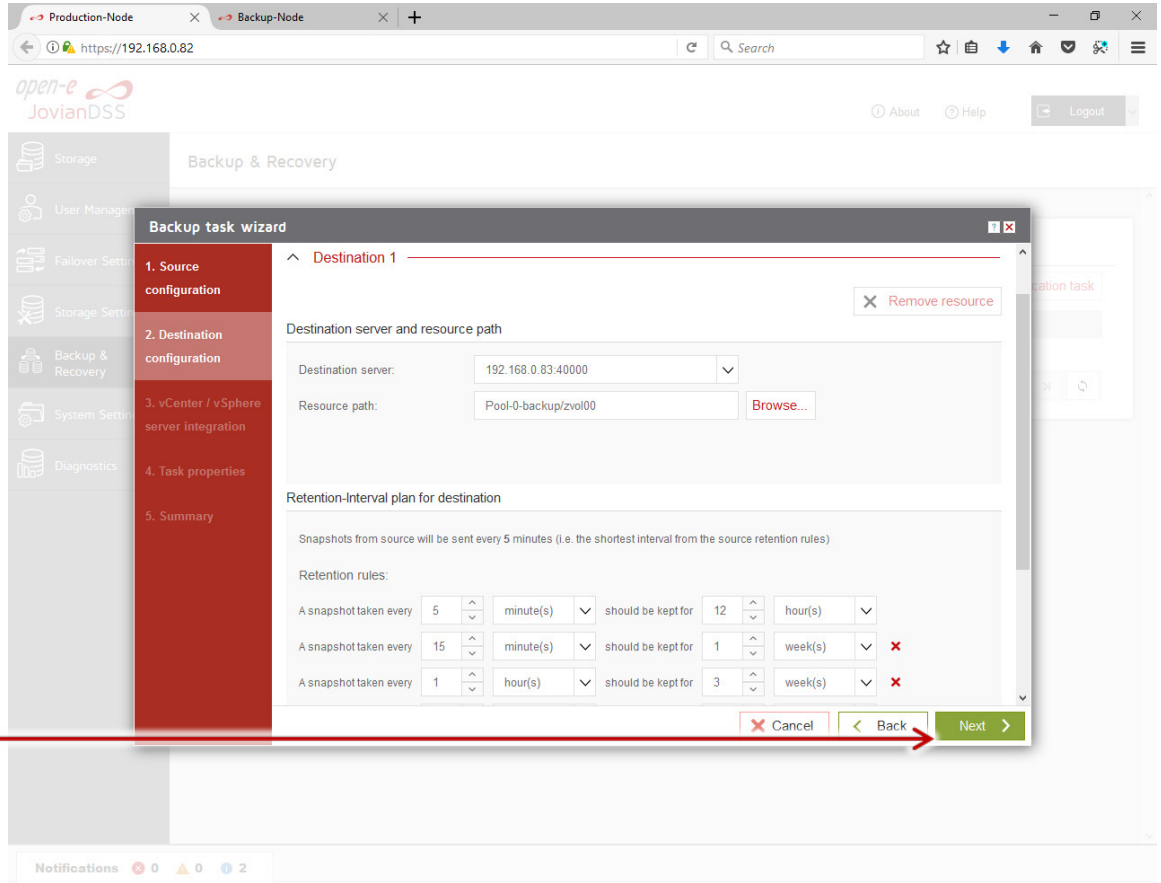
## 3. Backup task setting



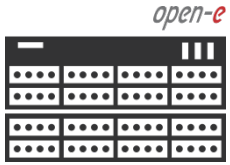

JovianDSS: **Production node**
IP Address: 192.168.0.82

The wizard will show the default retention-interval plans. The destination default retention is much longer than on the source volume. This is why the destination volume requires more storage capacity than the source. The retention-interval plans can be modified any time.

Now click the **Next** button.

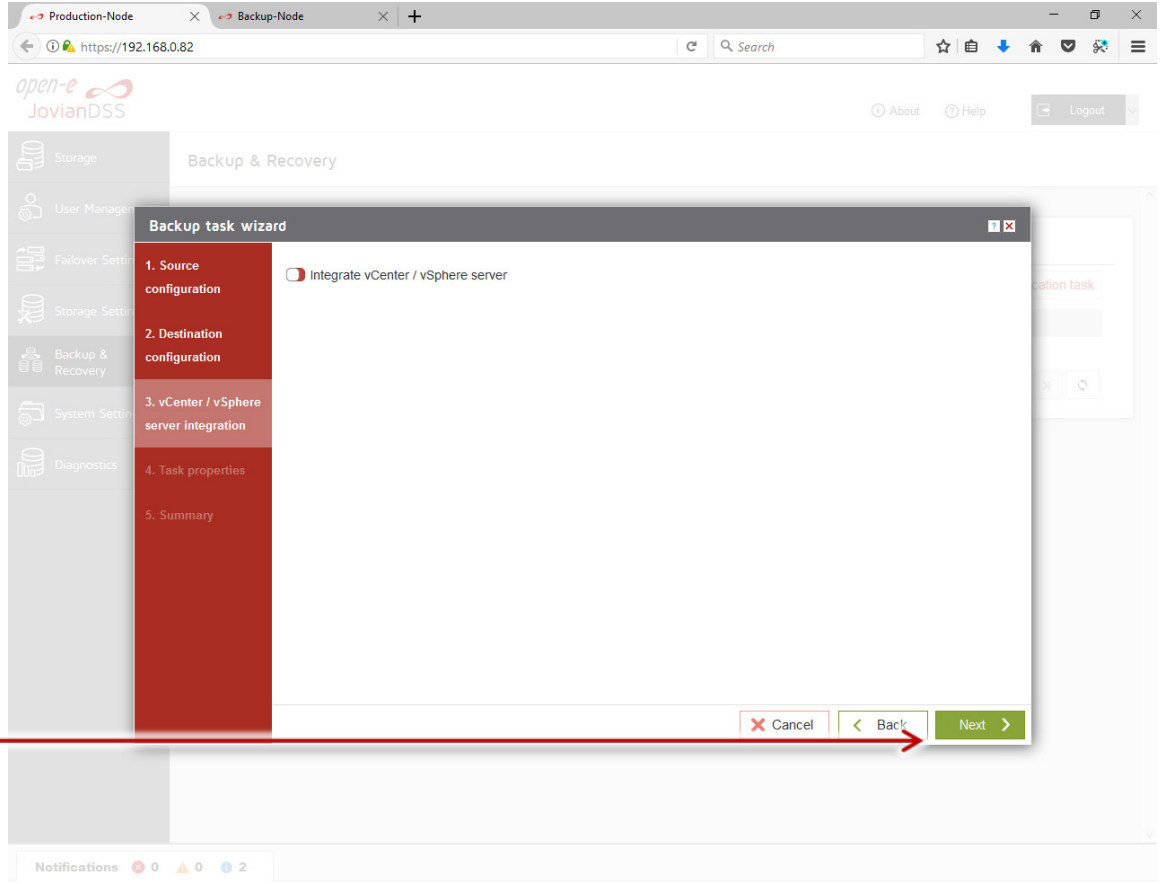


## 3. Backup task setting

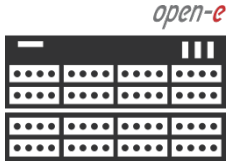



JovianDSS: **Production node**
IP Address: 192.168.0.82

In the **vCenter / vSphere server integration,** click the **Next** button in order to skip this step.

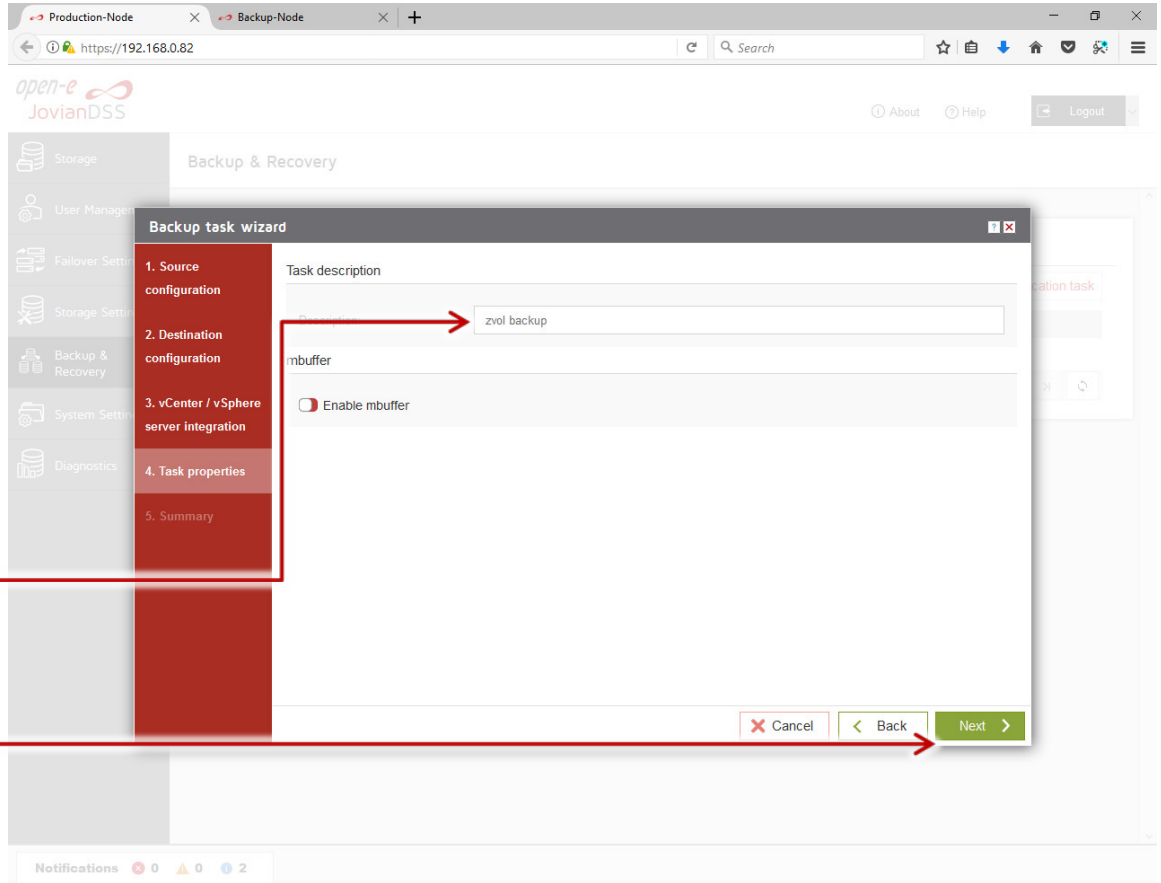


## 3. Backup task setting

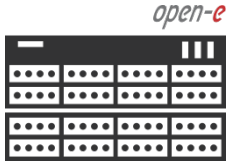


JovianDSS: **Production node**
IP Address: 192.168.0.82

In the **Task Properties** please enter the task description, and click the **Next** button.
**NOTE:** It is possible to assign extra RAM for buffering the replication data stream with the mbuffer option.

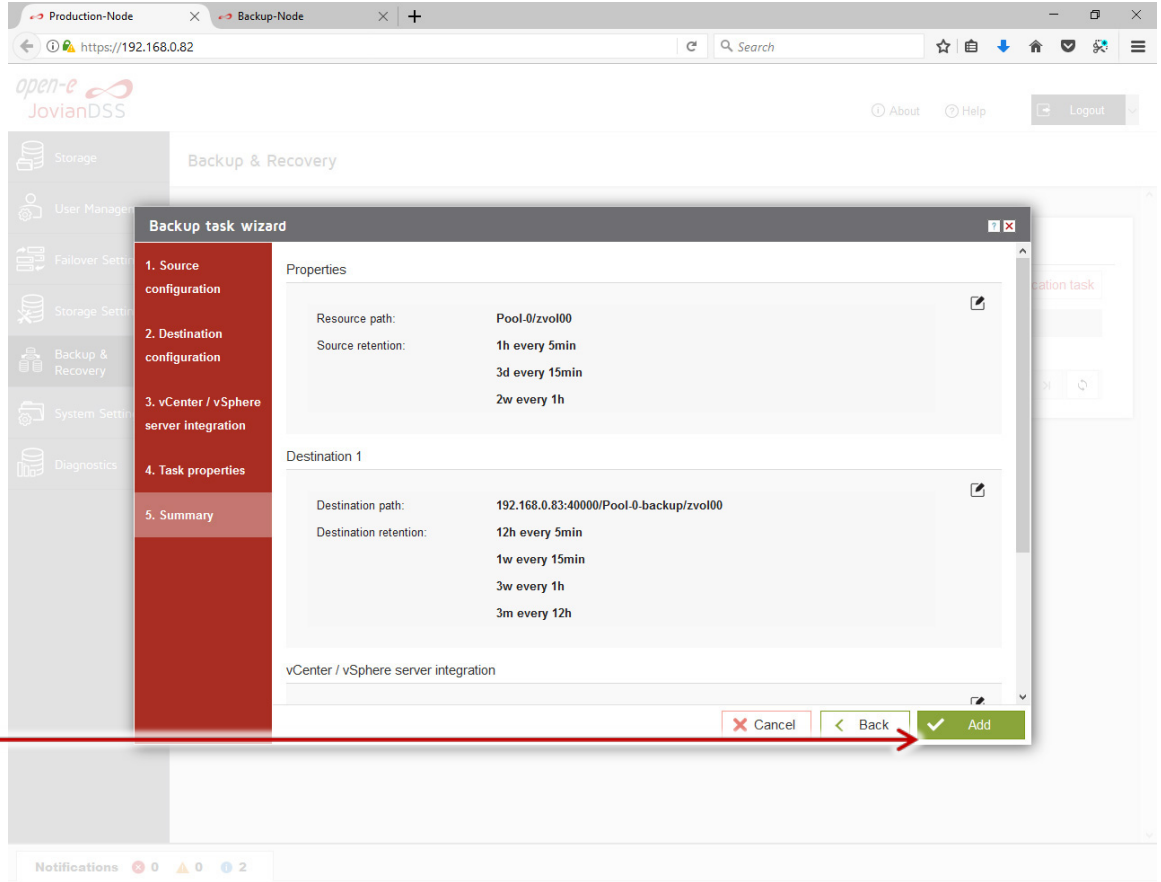


## 3. Backup task setting

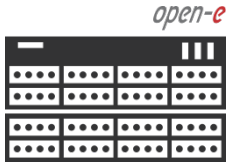


JovianDSS: **Production node**
IP Address: 192.168.0.82

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

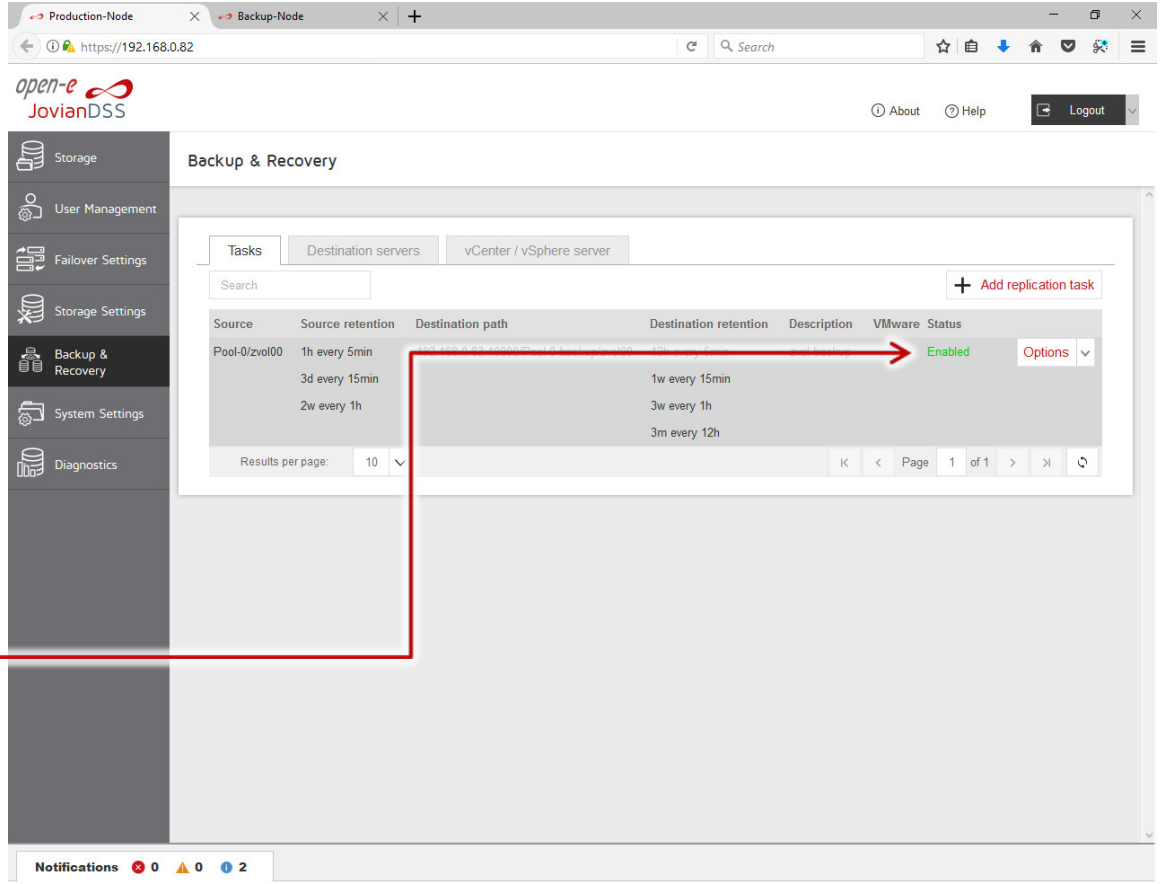


## 3. Backup task setting

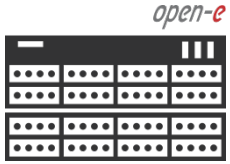


JovianDSS: **Production node**
IP Address: 192.168.0.82

After completing the **Backup task wizard**, return to the **Backup & Recovery**. It shows all the details of the backup tasks. The **Task** has the **Enabled** status. The status can be either disabled or all settings can be edited, or the task can be deleted using the **Options** menu.

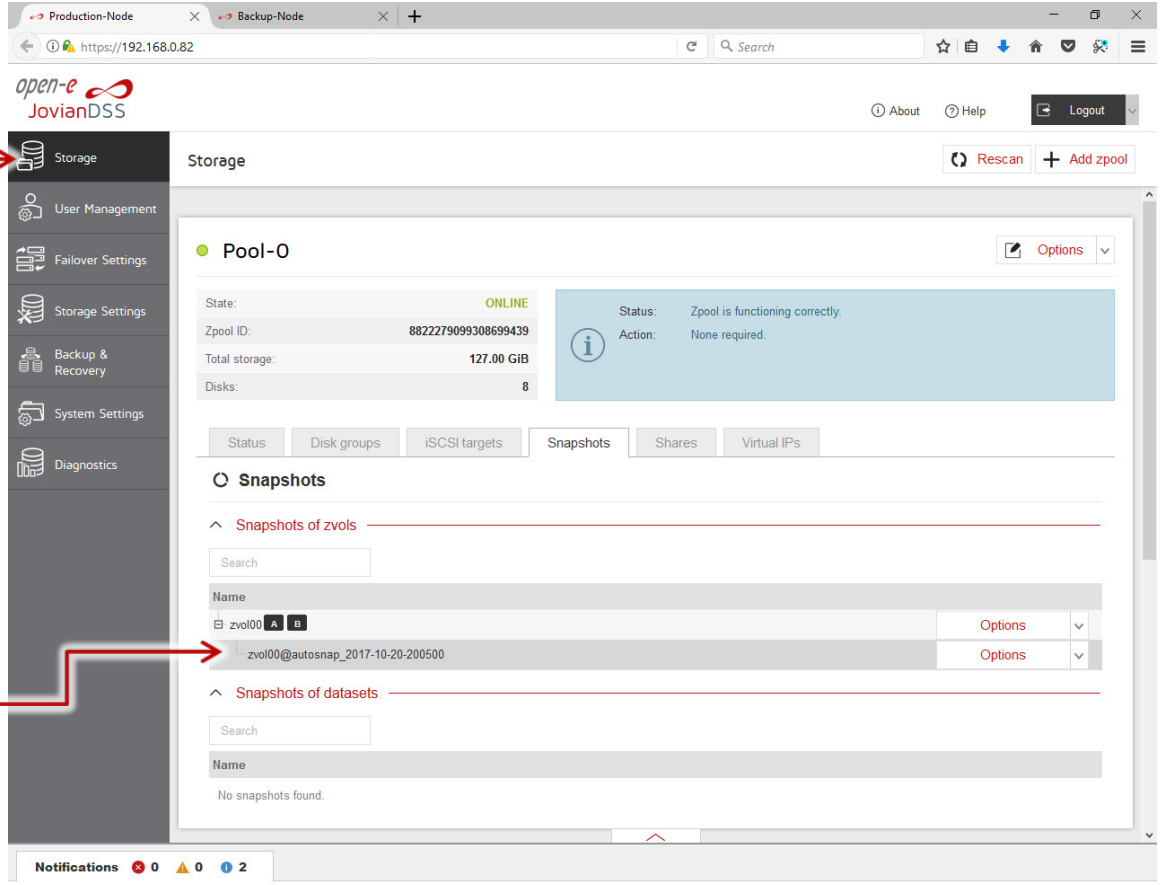


## 4. List all created snapshots

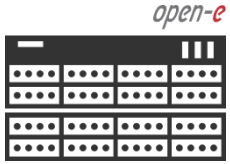



JovianDSS: **Production node**
IP Address: 192.168.0.82

Next, go to the **Storage** menu. In the **Snapshot** tab, the zvol00 includes A and B icons. **A** for Auto-snapshots and **B** for Backup functionality. Once the first auto-snapshot is created the **+** icon appears. After clicking the **+** icon, the GUI will list all the created snapshots.



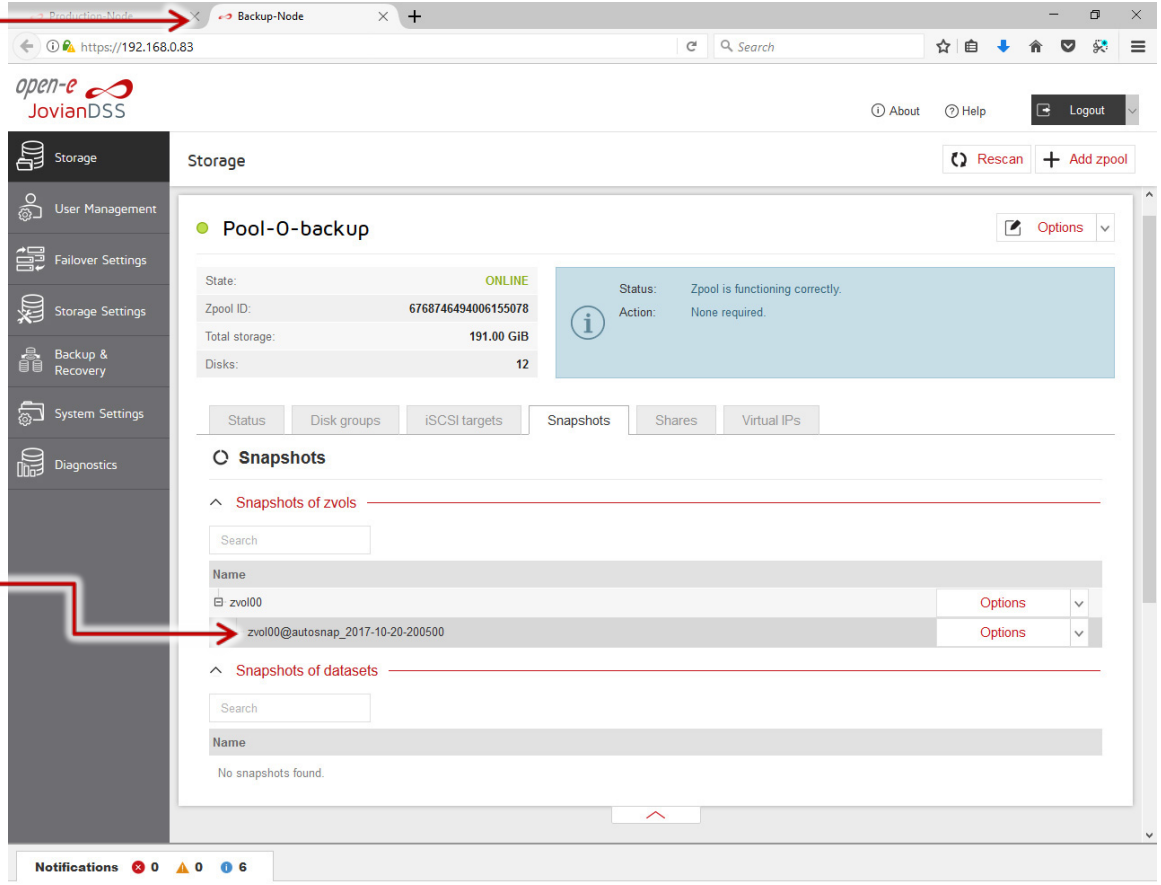
## 4. List all created snapshots



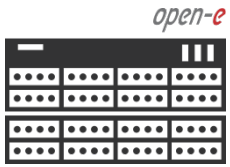

JovianDSS: **Backup node**
IP Address: 192.168.0.83

Next, go to the **Backup node**. In the **Storage** menu select the **Snapshot** tab.

Once the first auto-snapshot backup is **COMPLETED** the **+** icon appears. After clicking the **+** icon the GUI will list all the **REPLICATED** snapshots on the backup volume.



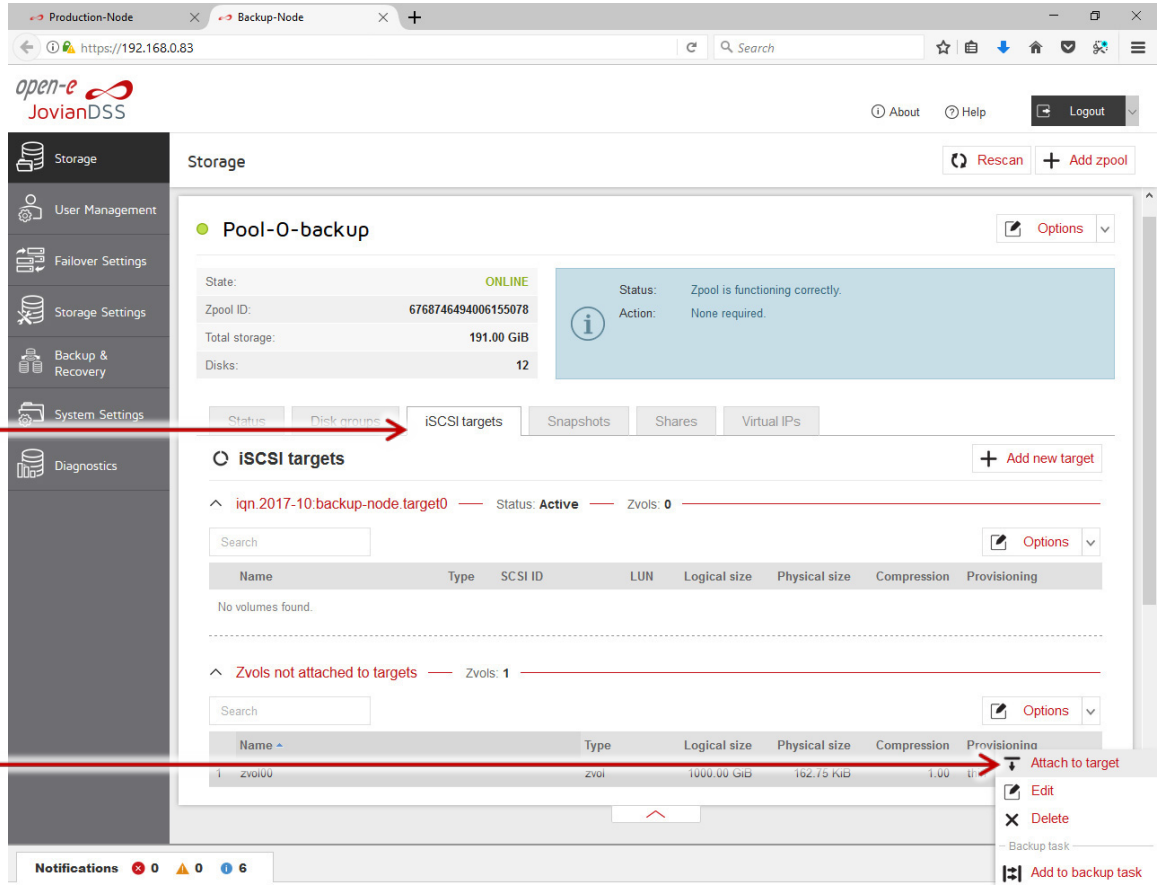
## 5. Exporting of the backup volume to the target



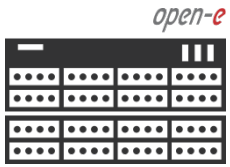

JovianDSS: **Backup node**
IP Address: 192.168.0.83

In order to access the most recent data backup, the backup volume will need to be exported via a target.

On the backup node, select the **iSCSI targets** tab, then click the **Options** drop-down menu and select the **Attach to target.**

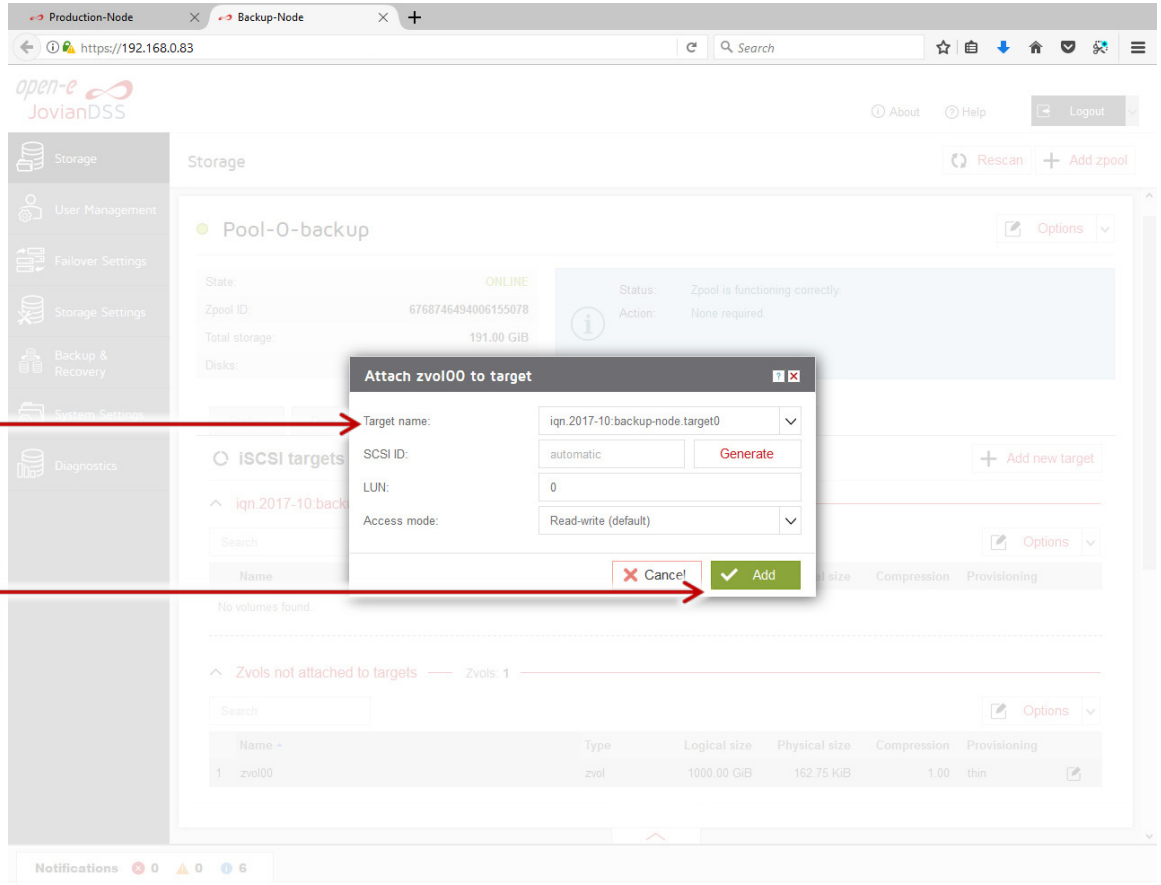


## 5. Exporting of the backup volume to the target



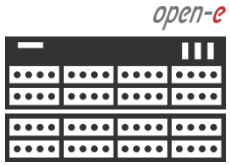

JovianDSS: **Backup node**
IP Address: 192.168.0.83

In the **Attach zvol00 to target,** select the **Target** in drop-down menu and click the **Add** button.



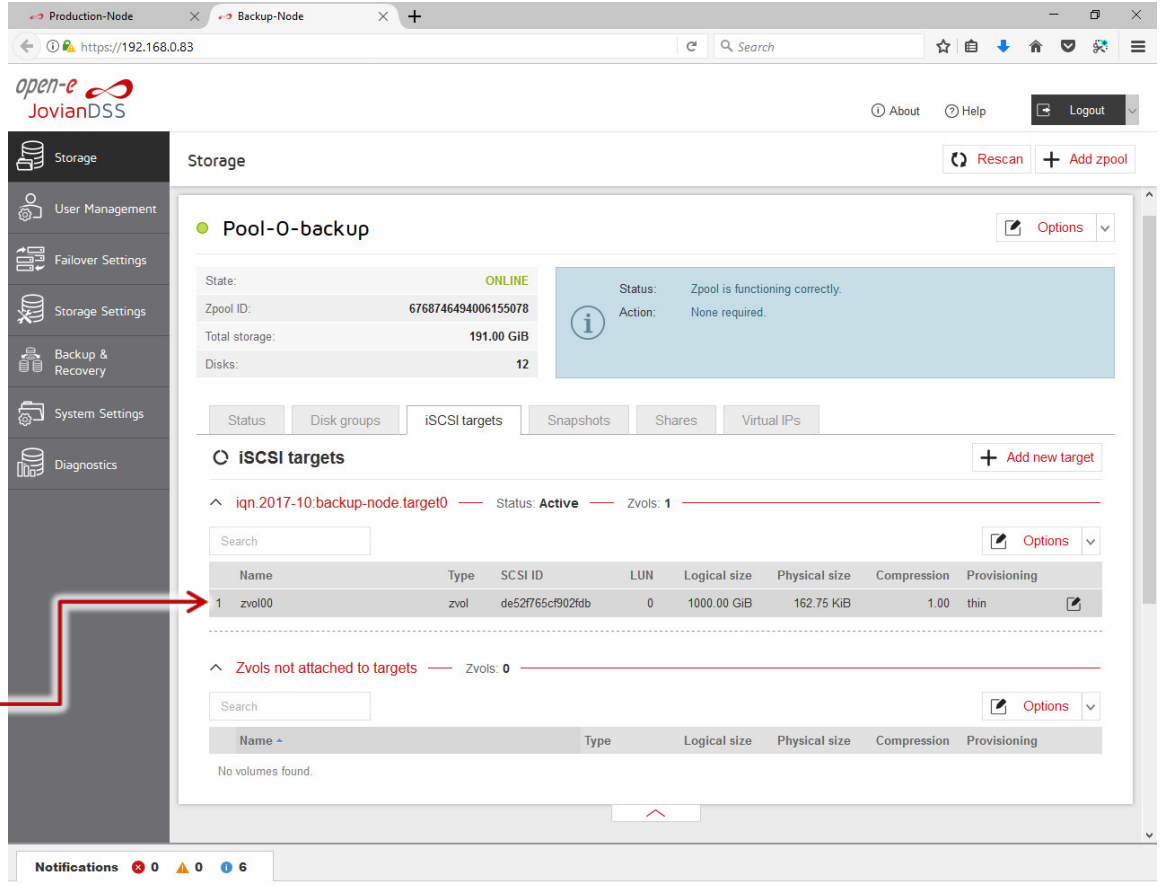
# Round the clock backup of everything with On- & Off-site Data Protection

## 5. Exporting of the backup volume to the target

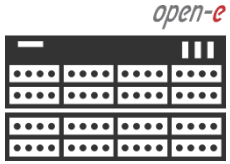



JovianDSS: **Backup node**
IP Address: 192.168.0.83

Now the **zvol00** is listed under the volume attached to the target section.
The **zvol00** can be connected via an iSCSI initiator on the client's computer.
The user data can be accessed and restored if required.

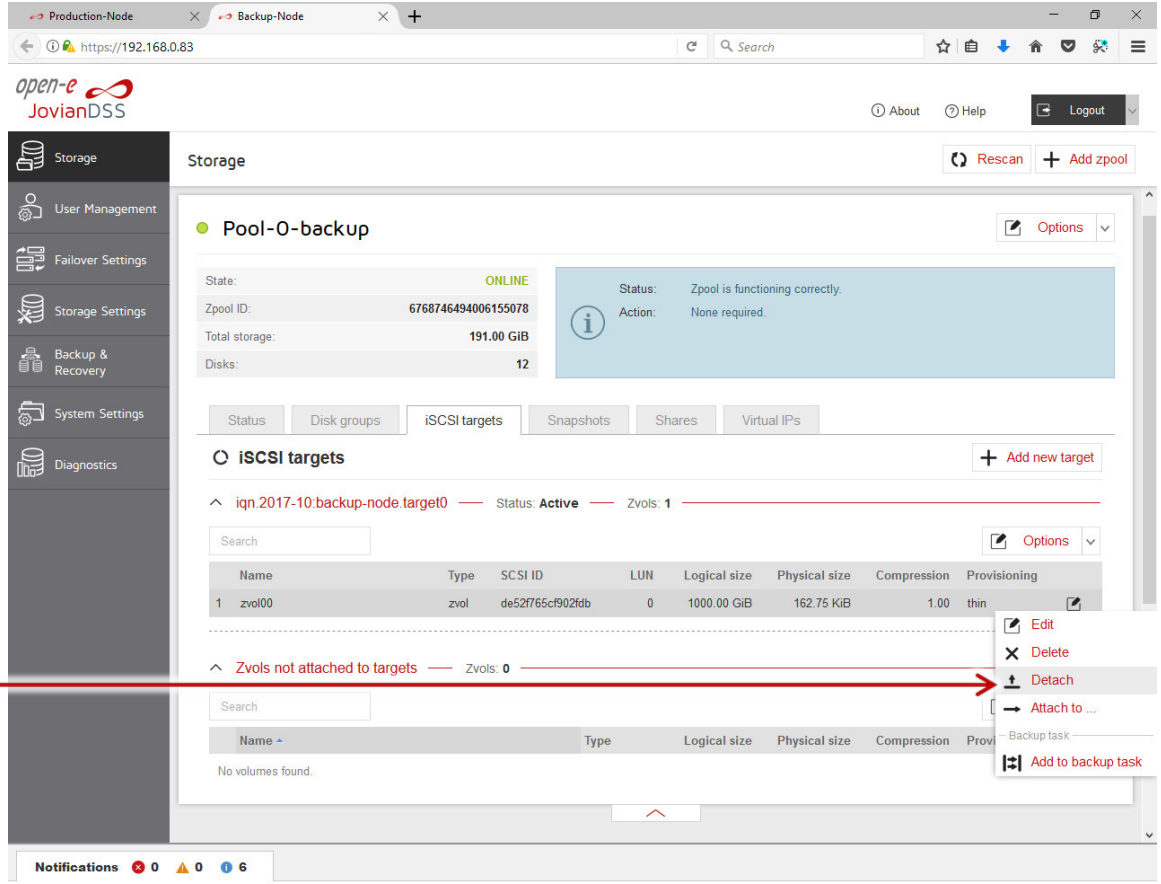


## 6. Detaching the volume network-export on Backup node

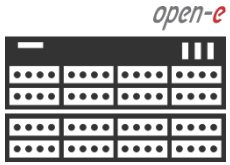



JovianDSS: **Backup node**
IP Address: 192.168.0.83

Once the data restore is completed, the volume network-export should be disabled again. In order to disable the network export of the volume , click the **Options** drop-down menu and select the **Detach** and confirm it by clicking the **Yes** button.



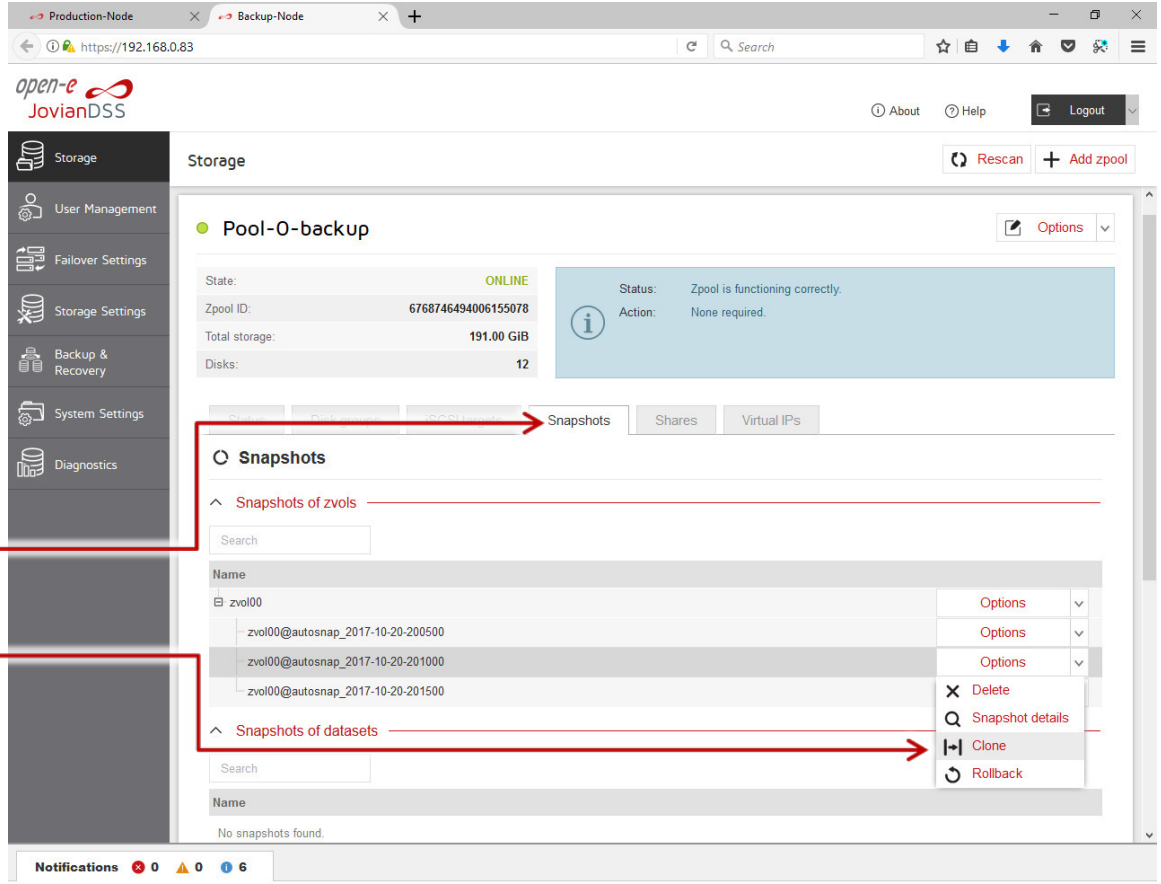
## 7. Cloning of snapshots backup data



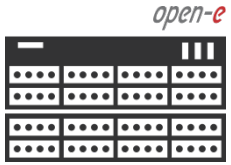

JovianDSS: **Backup node**
IP Address: 192.168.0.83

In order to access **not** the most recent but previous data backup, the requested snapshot will need to be cloned first.

In the **Snapshots** tab, click the **Options** drop-down menu and select the **Clone.**

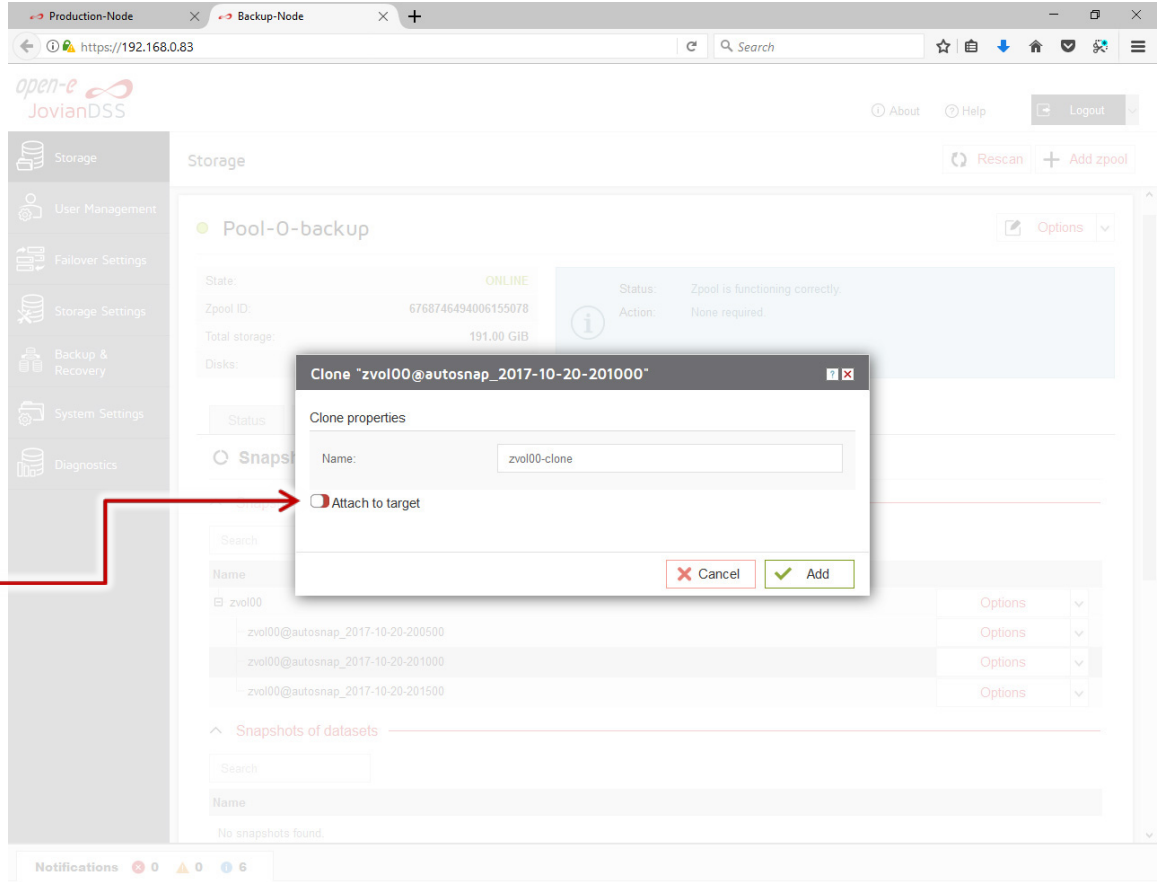


## 7. Cloning of snapshots backup data

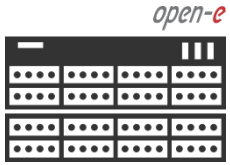



JovianDSS: **Backup node**
IP Address: 192.168.0.83

Enter the volume-clone name and select the **Attach to target**

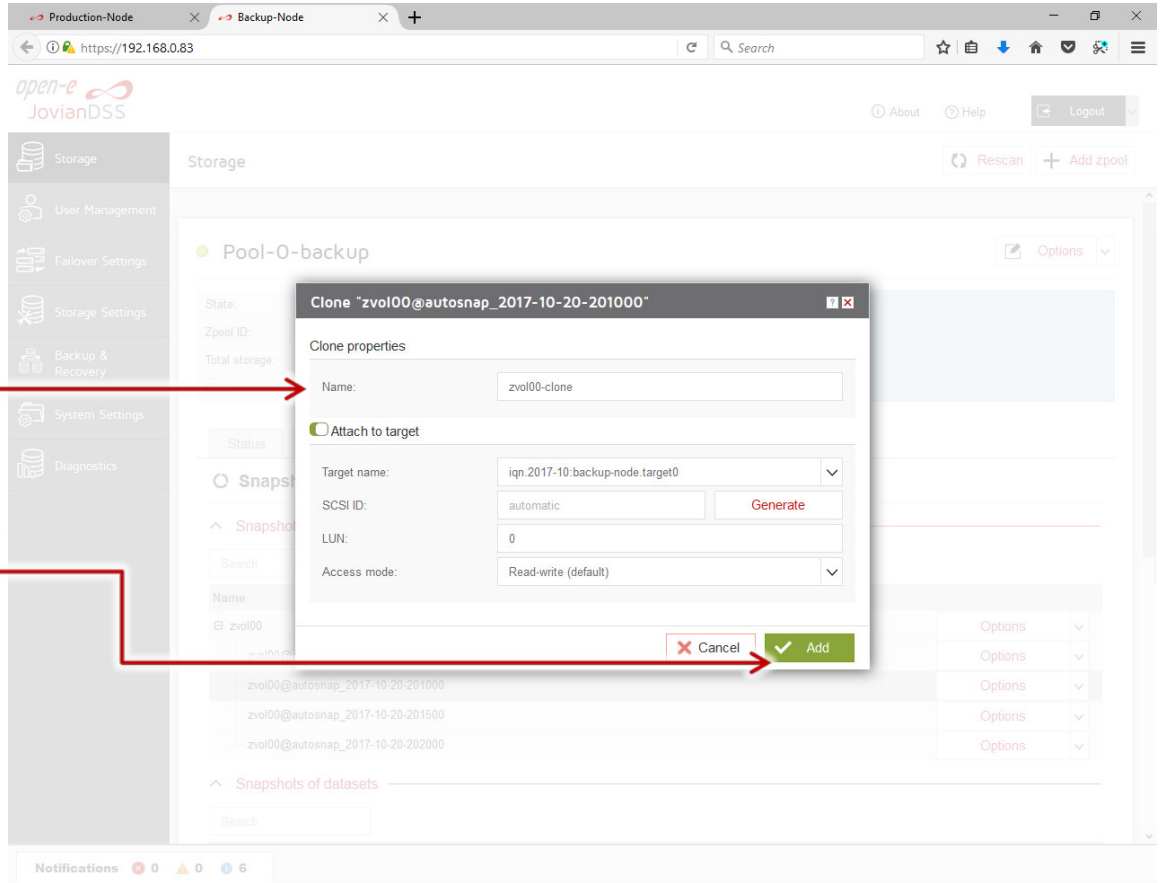


## 7. Cloning of snapshots backup data

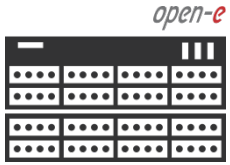



JovianDSS: **Backup node**
IP Address: 192.168.0.83

Select the target from the drop-down menu and click the **Add** button.

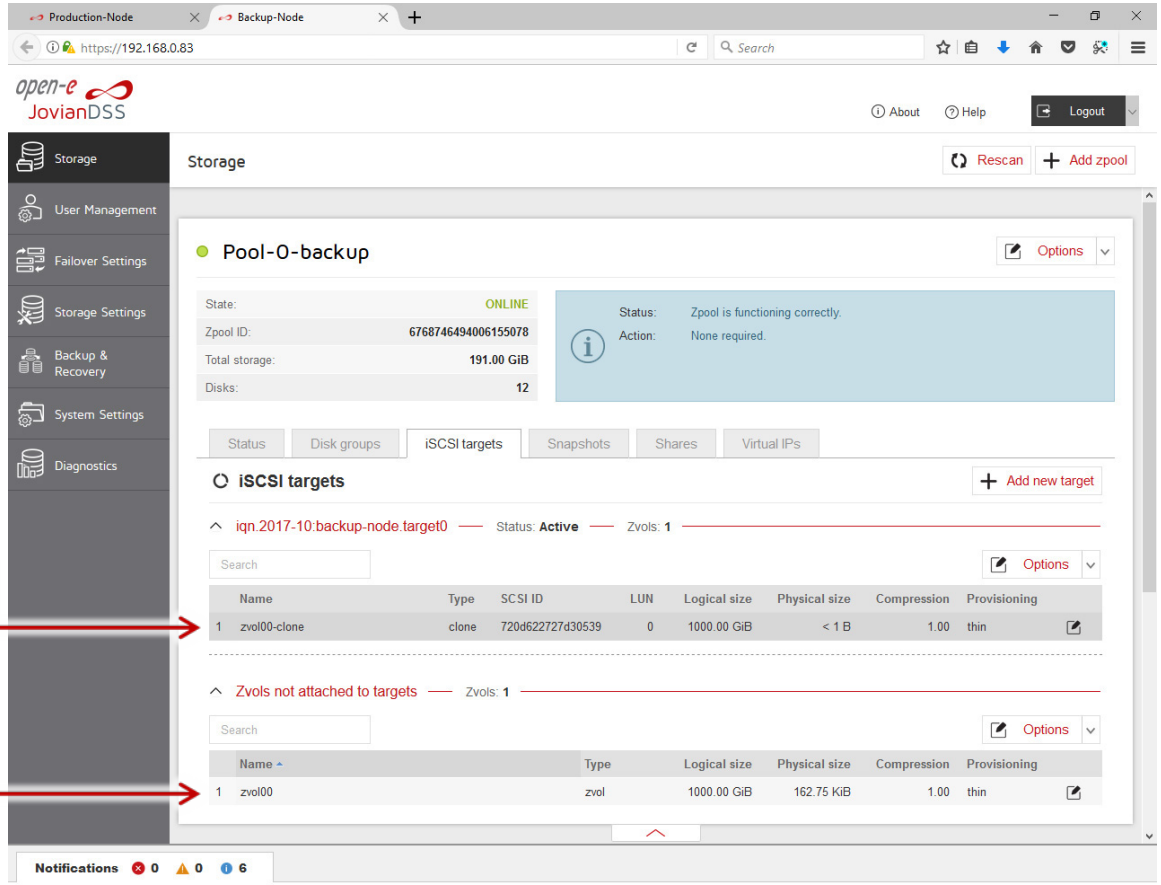


## 7. Cloning of snapshots backup data

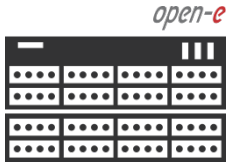



JovianDSS: **Backup node**
IP Address: 192.168.0.83

A new zvol00-clone has been created and attached to the target.
The **zvol00-clone** can be connected via an iSCSI initiator on the client's computer.
The user data can be accessed and restored if requred.

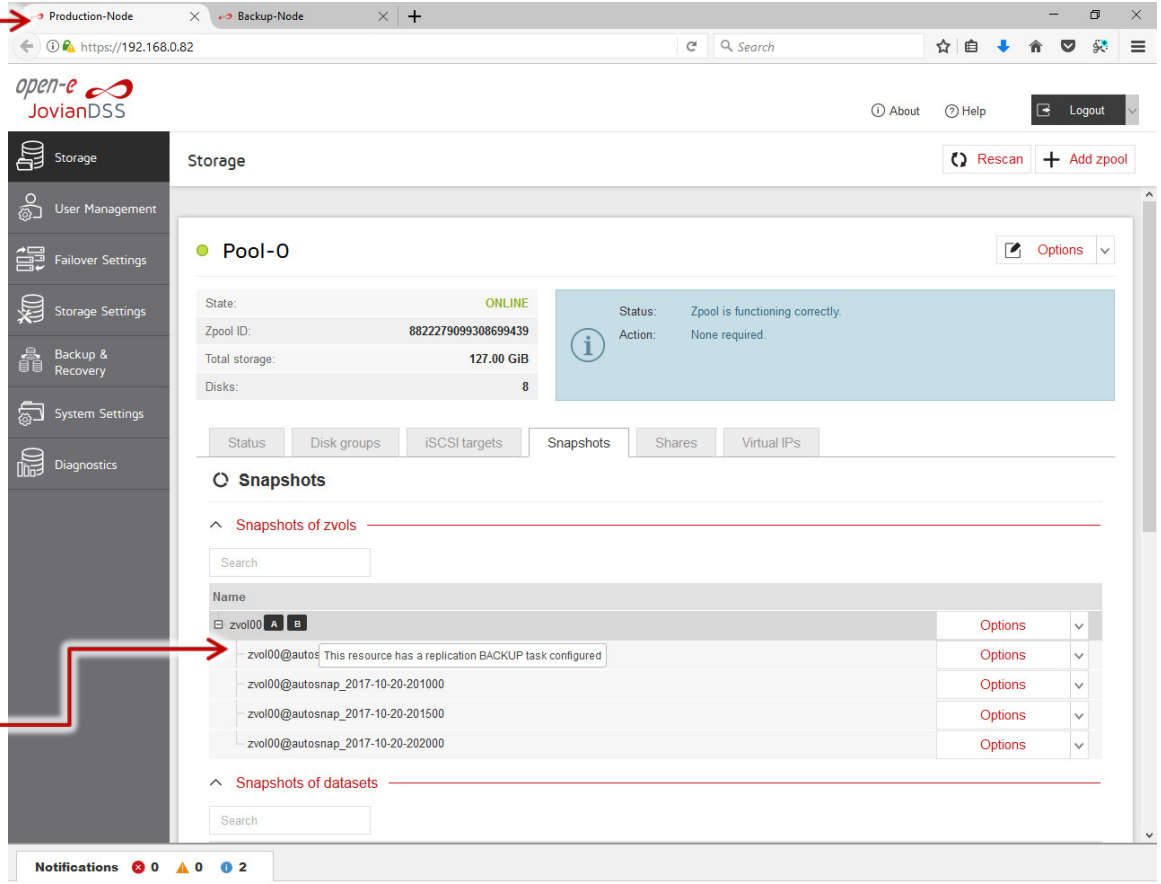


## 7. Cloning of snapshots backup data




JovianDSS: **Production node**
IP Address: 192.168.0.82

After a while the GUI will list more auto created snasphots, accordingly to the retention-interval plans defined in the replication tasks.




Thank you!