



# Replication Guide

Version 1.0



## Revision History

Date	Version	Description
28-04-2019	1.0	Initial version



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## Replication Overview

Replication enables you to asynchronously replicate a source disk to a destination disk located in a different (typically remote) cluster. This is also referred to as geo-replication.

Replication is enabled by creating a replication job on the source cluster. The first time a replication job runs, it will transfer all data from the source disk to the destination disk, later jobs instances will only transfer the changes/differences done since the previous replication instance.

The system uses snapshots to provide a point-in time view of the data during replication and for the computation of differences.

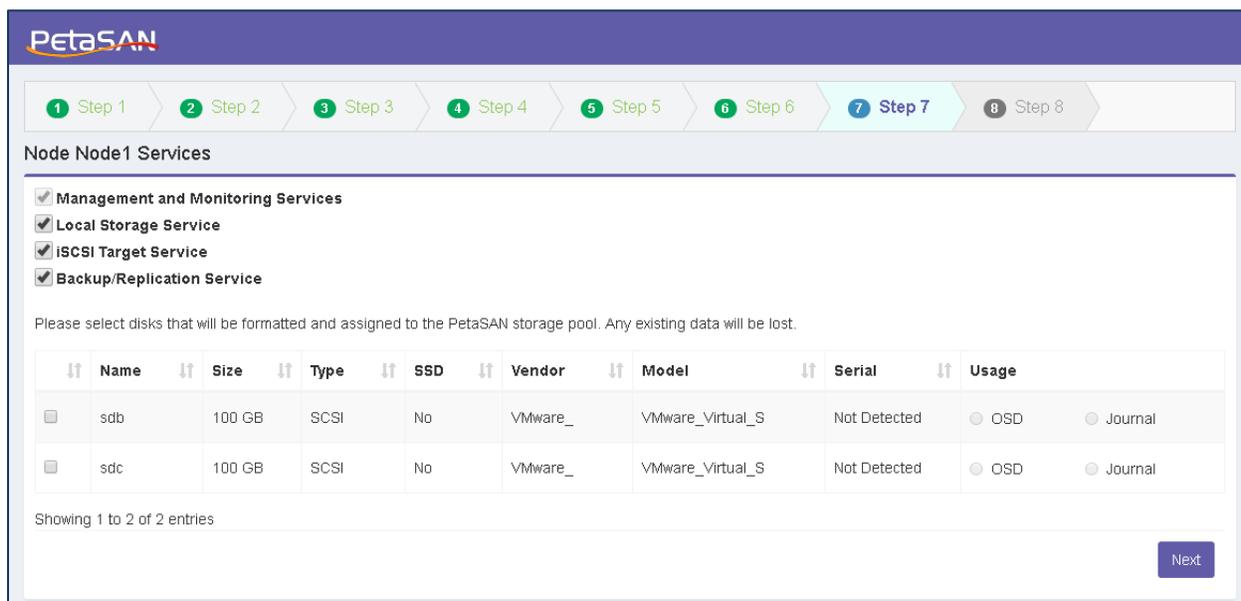
Note that any data present on the destination disk will be overwritten by the source disk data, so you should not write on the destination disk.

You can setup replication between Source and Destination Clusters by applying the following steps (Refer to Administrator Guide for more detail):

## Steps at Destination Cluster

### 1. Enable Backup/Replication Nodes

You should assign one or more nodes to run the Backup/Replication service; you can select this service during the deployment wizard



**Node Node1 Services**

- Management and Monitoring Services
- Local Storage Service
- iSCSI Target Service
- Backup/Replication Service

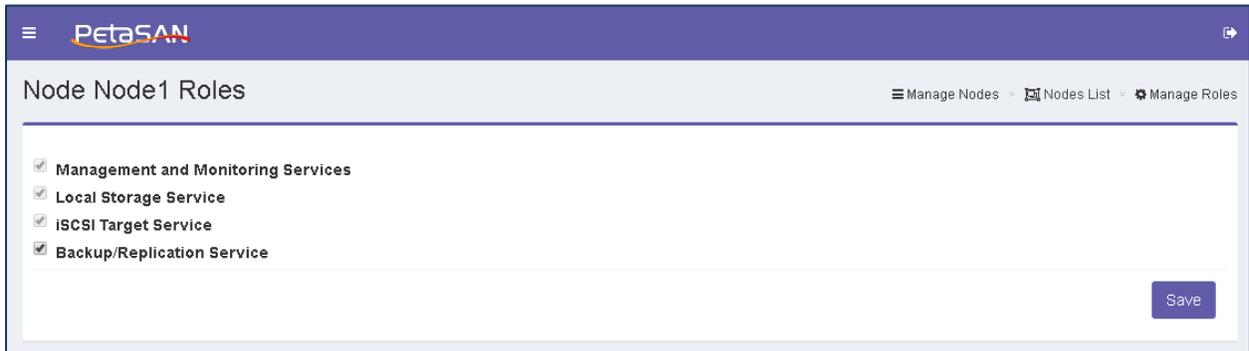
Please select disks that will be formatted and assigned to the PetaSAN storage pool. Any existing data will be lost.

	Name	Size	Type	SSD	Vendor	Model	Serial	Usage
<input type="checkbox"/>	sdb	100 GB	SCSI	No	VMware_	VMware_Virtual_S	Not Detected	<input type="radio"/> OSD <input type="radio"/> Journal
<input type="checkbox"/>	sdc	100 GB	SCSI	No	VMware_	VMware_Virtual_S	Not Detected	<input type="radio"/> OSD <input type="radio"/> Journal

Showing 1 to 2 of 2 entries

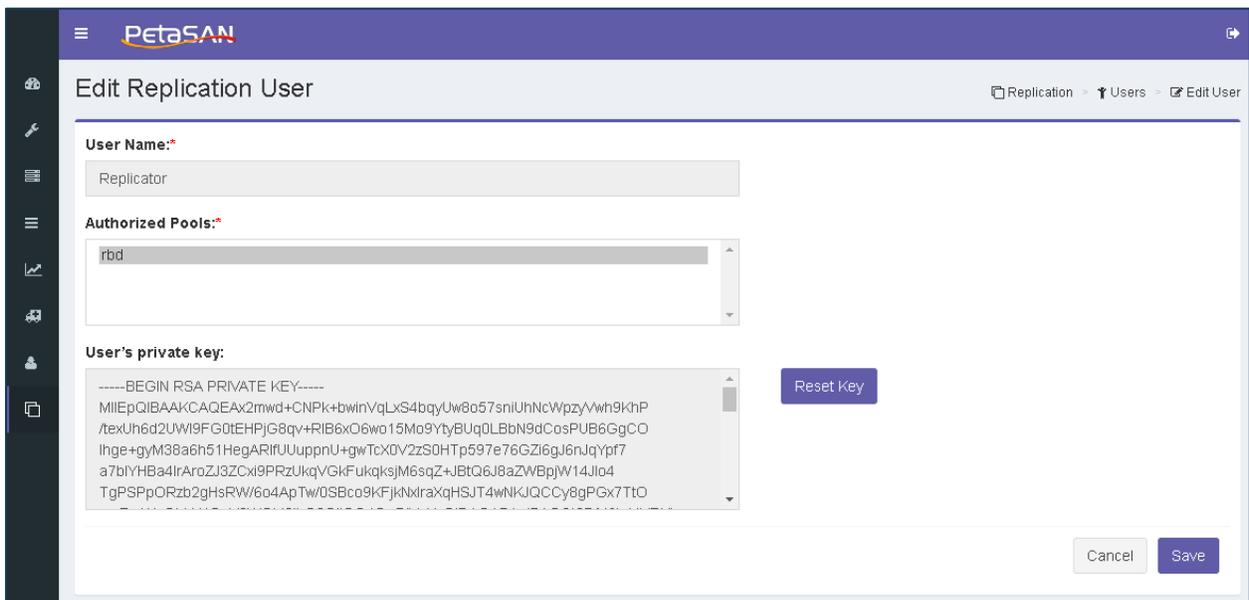
[Next](#)

Or you can add the service after deployment using the Nodes List > Manage Roles Form.



## 2. Create Replication User

On the destination cluster, you need to create a replication user to be used by the system during replication and authorize this user on the pool(s) containing the destination disk(s) you wish to replicate. For a disk using EC pool, you need to give the user access to the replicated pool only.



### 3. Create Destination Disk

For the destination disk, you can either create a new disk or use an existing one; you need to enable the replication option to flag the disk as a replication target. The disk needs to be the same size as the source.

➤ **Notes:**

- *You should not write to the destination disk because data will be over-written when the next replication job is running, as the disk data will be synched from the source disk.*
- *System will stop the destination disk when its replication job runs.*



#### **4. Provide information to Source Cluster Administrator**

You need to provide the following information to the source cluster Administrator:

- Cluster Name
- Backup Node Remote IP
- Replication user name and private key
- Destination disk id

## Steps at Source Cluster

### 1. Enable Backup/Replication Nodes

You should assign one or more nodes to run the Backup/Replication service; you can select the service during the deployment wizard

**Node Node1 Services**

- Management and Monitoring Services
- Local Storage Service
- iSCSI Target Service
- Backup/Replication Service

Please select disks that will be formatted and assigned to the PetaSAN storage pool. Any existing data will be lost.

Name	Size	Type	SSD	Vendor	Model	Serial	Usage
sdb	100 GB	SCSI	No	VMware_	VMware_Virtual_S	Not Detected	<input type="radio"/> OSD <input type="radio"/> Journal
sdc	100 GB	SCSI	No	VMware_	VMware_Virtual_S	Not Detected	<input type="radio"/> OSD <input type="radio"/> Journal

Showing 1 to 2 of 2 entries

[Next](#)

Or you can add the service after deployment using the Nodes List> Manage Roles Form.

**Node Node1 Roles**

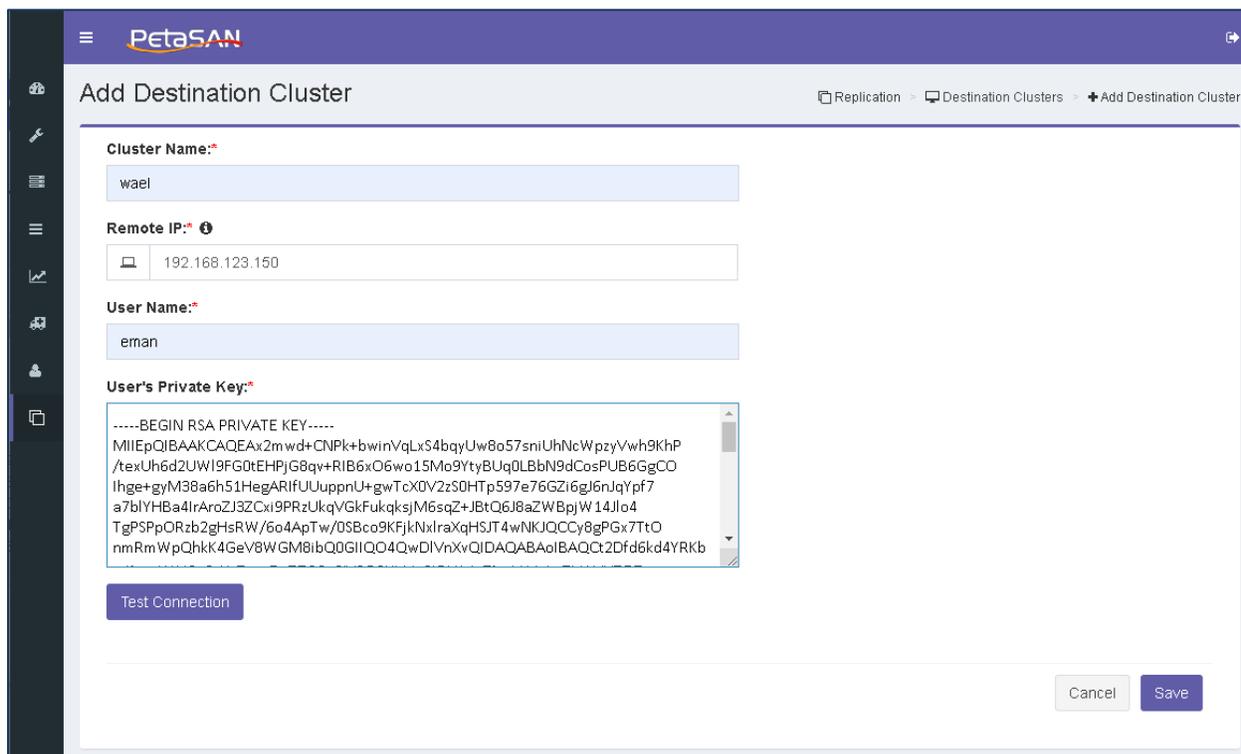
- Management and Monitoring Services
- Local Storage Service
- iSCSI Target Service
- Backup/Replication Service

[Save](#)

## 2. Create Destination Cluster

You need to define a target destination cluster using the Cluster Name, Remote IP, Replication User Name and Private Key provided by the destination cluster administrator.

It is recommended you test the connection first before saving.



The screenshot shows the 'Add Destination Cluster' form in the PetaSAN web interface. The form has the following fields and values:

- Cluster Name:** wael
- Remote IP:** 192.168.123.150
- User Name:** eman
- User's Private Key:** -----BEGIN RSA PRIVATE KEY-----  
MIIEpQIBAAKCAQEAx2mwd+CNPk+bwinVqLxS4bqyUw8o57sniUhNcWpzyVwh9Khp  
/texUh6d2UWI9FG0tEHPjG8qv+RIB6xO6wo15Mo9YtyBUq0LBbN9dCosPUB6GgCO  
lhge+gyM38a6h51HegARIfUUppnU+gwTcXDY2zS0HTp597e76GZi6gl6nJqYpf7  
a7blYHBA4lrAroZJ3ZCxi9PRzUkqVGkFukqksjM6sqz+JBtQ6J8aZW BpjW 14Jlo4  
TgPSPpORzb2gHsRW/6o4ApT w/0SBco9KFjkNlraXqHSJT4wNKJQCCy8gPGx7TtO  
nmRmWpQhkk4GeV8W GM8ibQ0GIIQO4QwDlVnXvQIDAQABAolBAQct2Dfd6kd4YRkb

At the bottom of the form, there is a 'Test Connection' button, and at the very bottom right, there are 'Cancel' and 'Save' buttons.

## 3. Create Replication Job

Create a replication job by entering the following:

- Select one of the backup/Replication nodes on the source cluster.
- Define the job schedule.
- Select the source disk and make sure it is the same size as the destination disk.
- Select the destination cluster you created.
- Select the destination disk id provided by the destination cluster administrator.
- You can choose to compress data during transfers by enabling compression and selecting the desired compression algorithm.
- In case you need to run custom scripts during a replication job, you can define external URLs to be called at specific stages of replication, such as prior to performing disk snapshots or after job completion. These could be used in more advanced setups to flush files, lock database tables or send email on job completion.

**Add Replication Job**

Name: DB Rep

Use Node: Node3

Source Cluster Name: test

Source Disk: 00001

Schedule: Daily every 6 Hours

Destination Cluster Name: wael

Destination Disk: 00001

Compression:  Enabled  Disabled

+Advanced

Cancel Save

#### 4. Monitor Active Jobs

At any time you can view the currently running jobs and monitor their progress using the Active Jobs List.

You can cancel a running job if needed using the cancel button.

If a replication job fails, you will receive an email notification (if you enabled notifications).

Active Replication Jobs

Show 10 entries Search:

Id	Name	Start Time	Elapsed Time	Transfer Rate	Transferred	Compression	Progress	Actions
00001	DB Rep	2019-04-28 14:20:08	0:02 hh:mm	1.6 MB/s	0.05 GB	1.25	4%	✖

Showing 1 to 1 of 1 entries

Previous 1 Next

Close

## 5. Manage Replication Jobs

You can stop/start replication jobs, modify schedules and view job logs.

The screenshot shows the 'Replication Jobs' management page in the PetaSAN web interface. At the top, there are buttons for '+ Add Job' and 'Active Jobs'. Below these, a search bar and a 'Show 10 entries' dropdown are visible. The main content is a table with the following columns: Job Id, Name, Frequency, Source Disk, Destination Cluster, Destination Disk, Status, and Actions. A single job is listed with Job Id '00003', Name 'Test', Frequency 'daily', Source Disk '00001', Destination Cluster 'wael', Destination Disk '00002', and Status 'Started'. The Actions column contains icons for stop, refresh, delete, and details. At the bottom, it says 'Showing 1 to 1 of 1 entries' and has 'Previous 1 Next' navigation buttons.

Job Id	Name	Frequency	Source Disk	Destination Cluster	Destination Disk	Status	Actions
00003	Test	daily	00001	wael	00002	Started	[Stop] [Refresh] [Delete] [Details]

The screenshot shows the 'Job DB Rep Log' page in the PetaSAN web interface. The page title is 'Job DB Rep Log'. The log content is as follows:

```

2019-04-28 14:31:52 - Job 00001 | Job instance (2019-04-28 14:30:02) | Job Succeeded.
2019-04-28 14:31:14 - Job 00001 | Job instance (2019-04-28 14:30:02) | Executing replication job.
2019-04-28 14:31:09 - Job 00001 | Job instance (2019-04-28 14:30:02) | Creating new snapshot at source disk.
2019-04-28 14:31:07 - Job 00001 | Job instance (2019-04-28 14:30:02) | Started.
2019-04-28 14:30:10 - Job 00001 | Rolling back destination disk to existed snapshot.
2019-04-28 14:30:10 - Job 00001 | Rolling back destination disk to existed snapshot.
2019-04-28 14:30:10 - Job 00001 | Matched source and destination disks snapshots.
2019-04-28 14:30:10 - Job 00001 | Getting source disk snapshots list.
2019-04-28 14:30:08 - Job 00001 | Getting destination disk snapshots list.
2019-04-28 14:30:05 - Job 00001 | Getting metadata of source disk.
2019-04-28 14:30:03 - Job 00001 | Getting metadata of destination disk.
2019-04-28 14:30:02 - Job 00001 | Stopping destination disk.
2019-04-28 14:30:02 - Job 00001 | Run replication job ...

```