Connecting to PetaSAN from Windows Server 2019 using MPIO

Version 1.0

Revision History

Date	Version	Description
15-7-2019	1.0	Initial version

Contents

1. Purpose

The purpose of this guide is to show how to connect to a PetaSAN disk from Windows 2019 using MPIO and CHAP based authentication.

2. Pre-requisites

This guide assumes the reader has followed the Quick Start guide and has deployed a working PetaSAN cluster. We will be using the same subnet assignments as given in the Quick Start example.

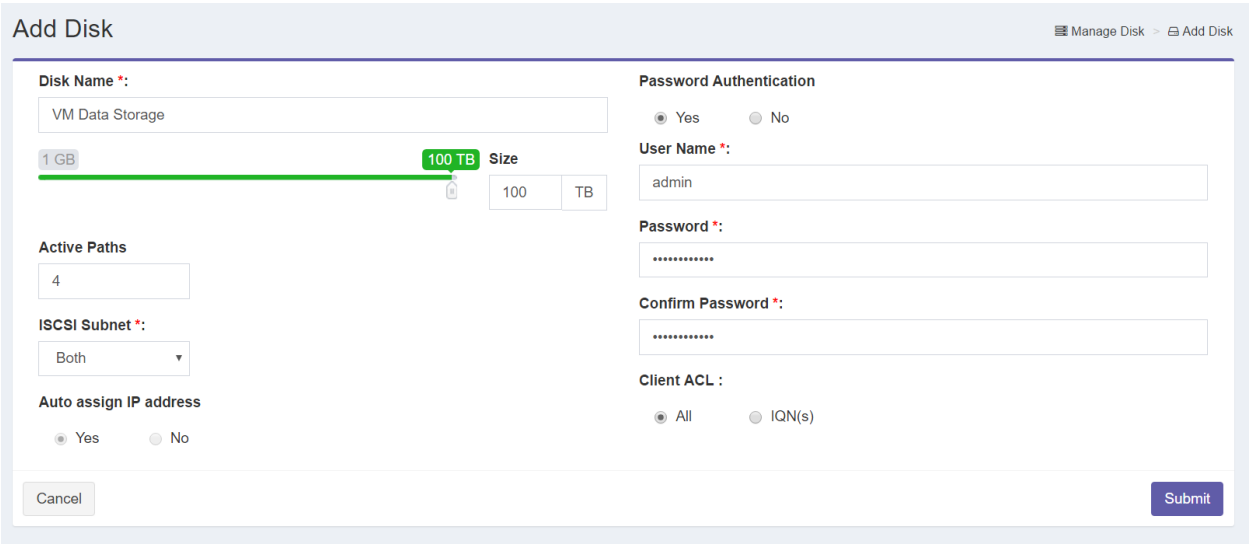
Our Windows Server 2019 needs to have interfaces on both iSCSI 1 and iSCSI 2 networks. For this demonstration, the IP addresses will be:

ISCSI 1IP: 10.0.2.51
ISCSI 2 IP: 10.0.3.51

3. Creating our disk in PetaSAN

In “Add Disk” create a 100 TB named “VM Data Storage” with 4 paths on both subnets.

We will secure the disk by enabling “Password Authentication” and specifying a username and password. This uses the iSCSI CHAP authentication protocol.

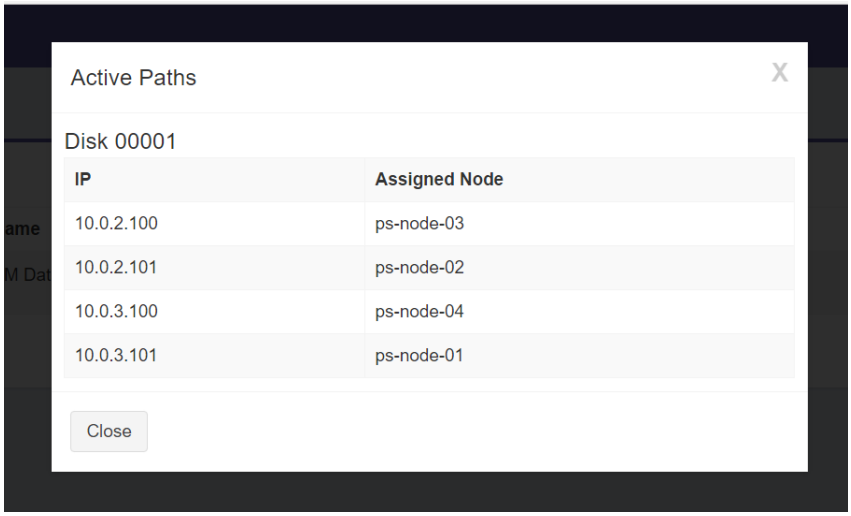


We can also further protect the disk by a entering a comma separated list of Client IQNs that are allowed to connect. However in our example, using CHAP authentication will suffice.

- *Note: Windows will give an error if the password length specified is less than 12 or more than 16 characters.*

Once done, our disk will be added to the "Disk List" page

Notice that under the "Active Paths" column, the number of paths available is listed as 4. Click on it to view the virtual IP addresses.



We need to take note of the IP addresses, we will be specifying them when connecting to our disk.

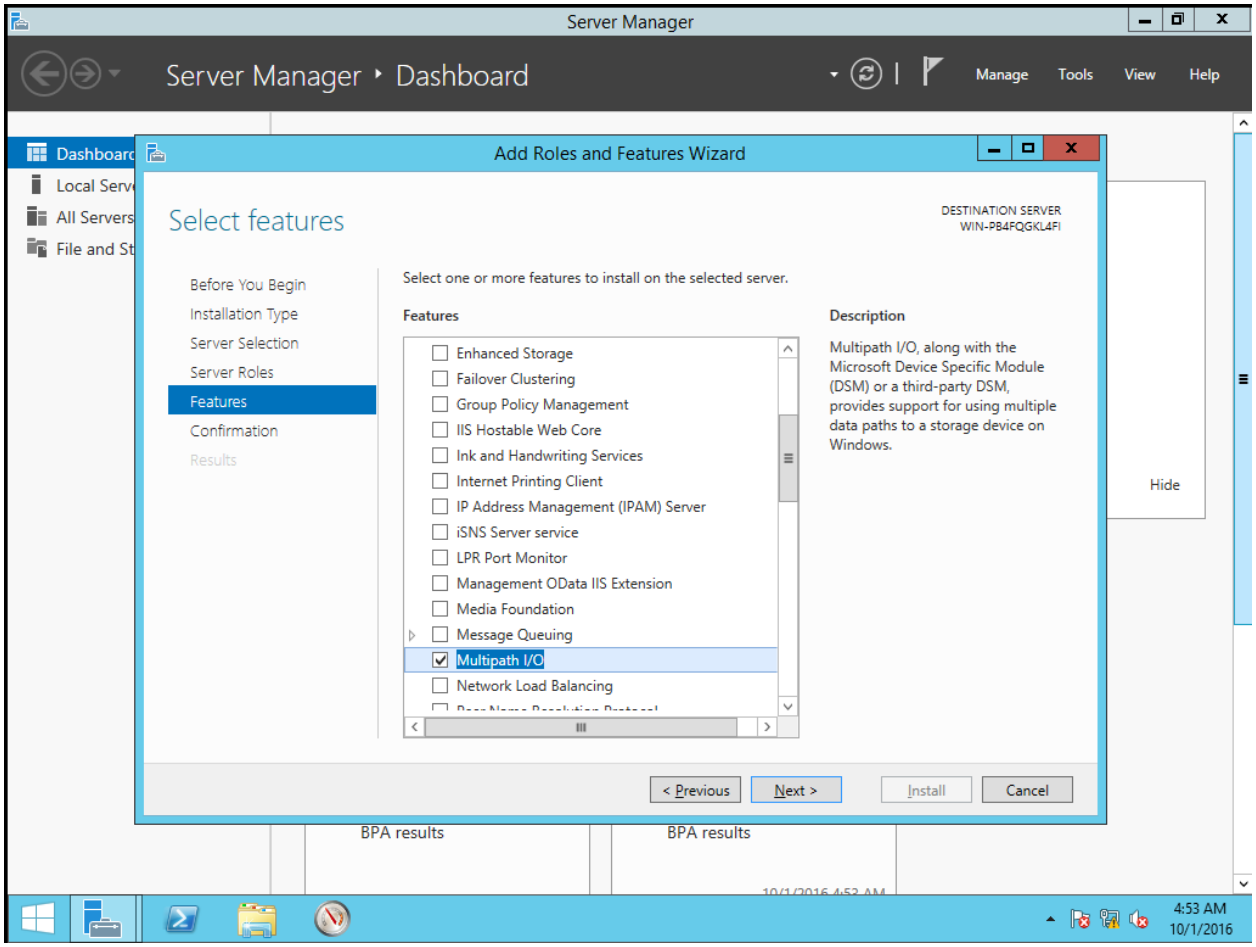
- *Note: the Assigned Node column lists the nodes currently serving the active paths. Since we are using virtual IPs, this assignment is dynamic. If a node fails, its path will be transparently assigned to another node.*

Since our Windows server has addresses 10.0.2.51 & 10.0.3.51 our path connections will be as follows:

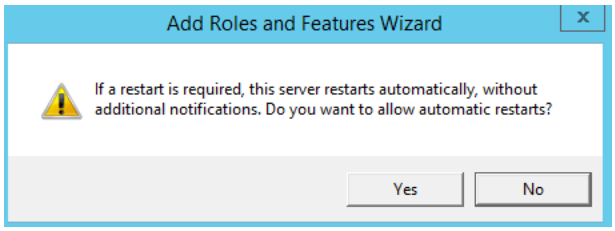
Path	Initiator IP	Target disk IP	Subnet
1	10.0.2.51	10.0.2.100	ISCSI 1
2	10.0.3.51	10.0.3.100	ISCSI 2
3	10.0.2.51	10.0.2.101	ISCSI 1
4	10.0.3.51	10.0.3.101	ISCSI 2

4. MPIO Installation

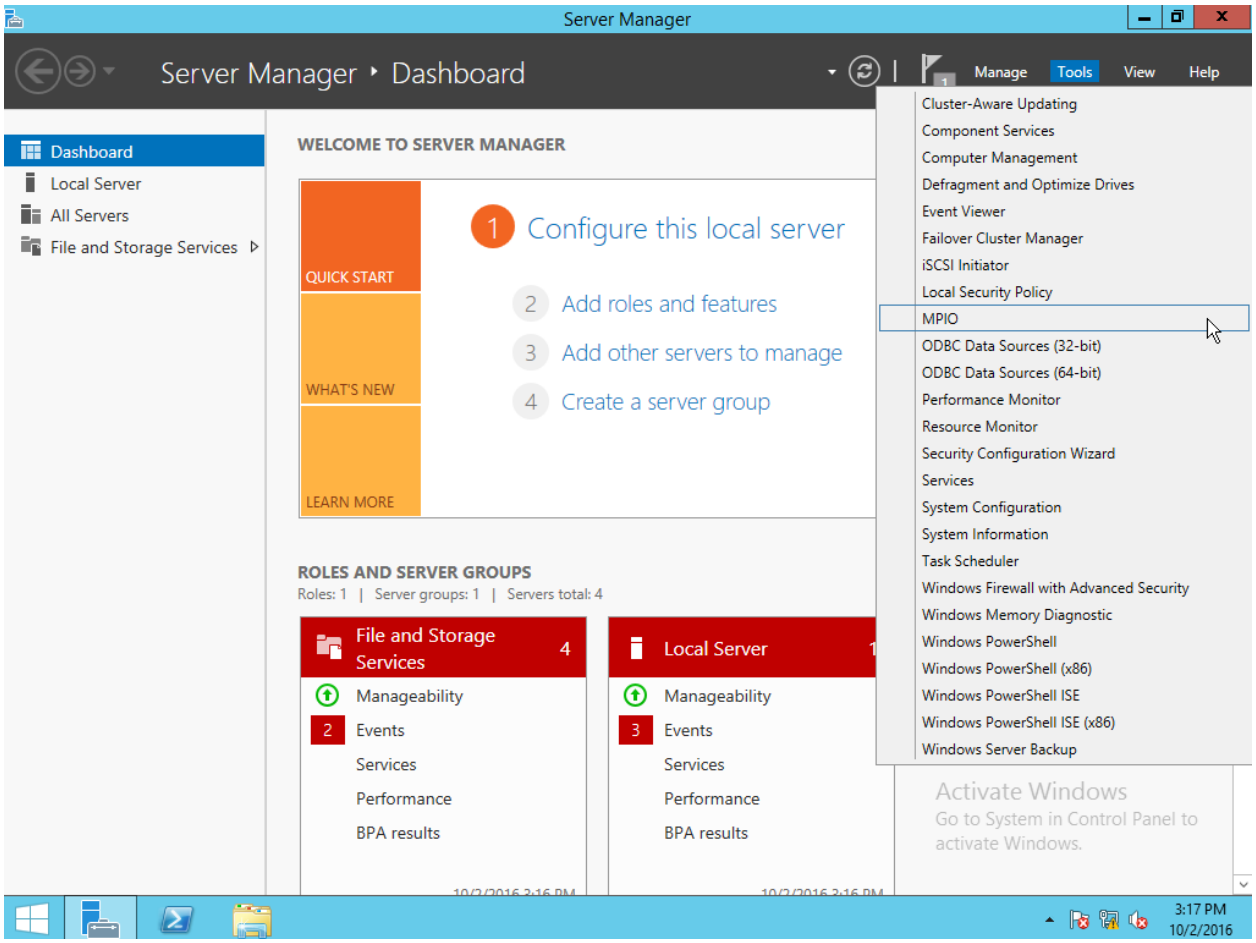
To use MPIO from Windows Server, we need to first add the MPIO feature using Server Manager



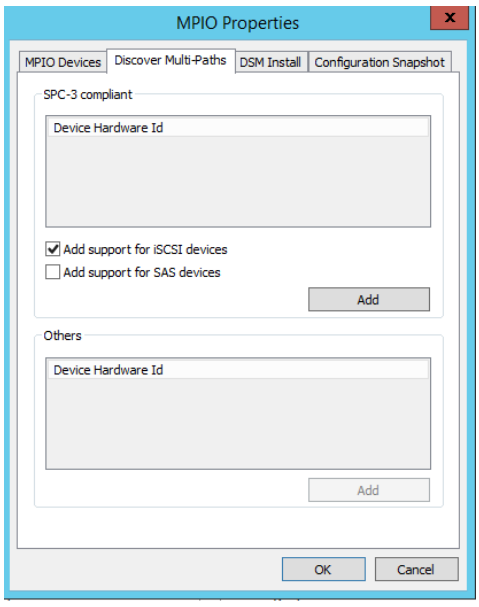
At the end of the Wizard, click “Yes” to reboot



After rebooting go to “Server Manager” ->“Tools” click “MPIO”



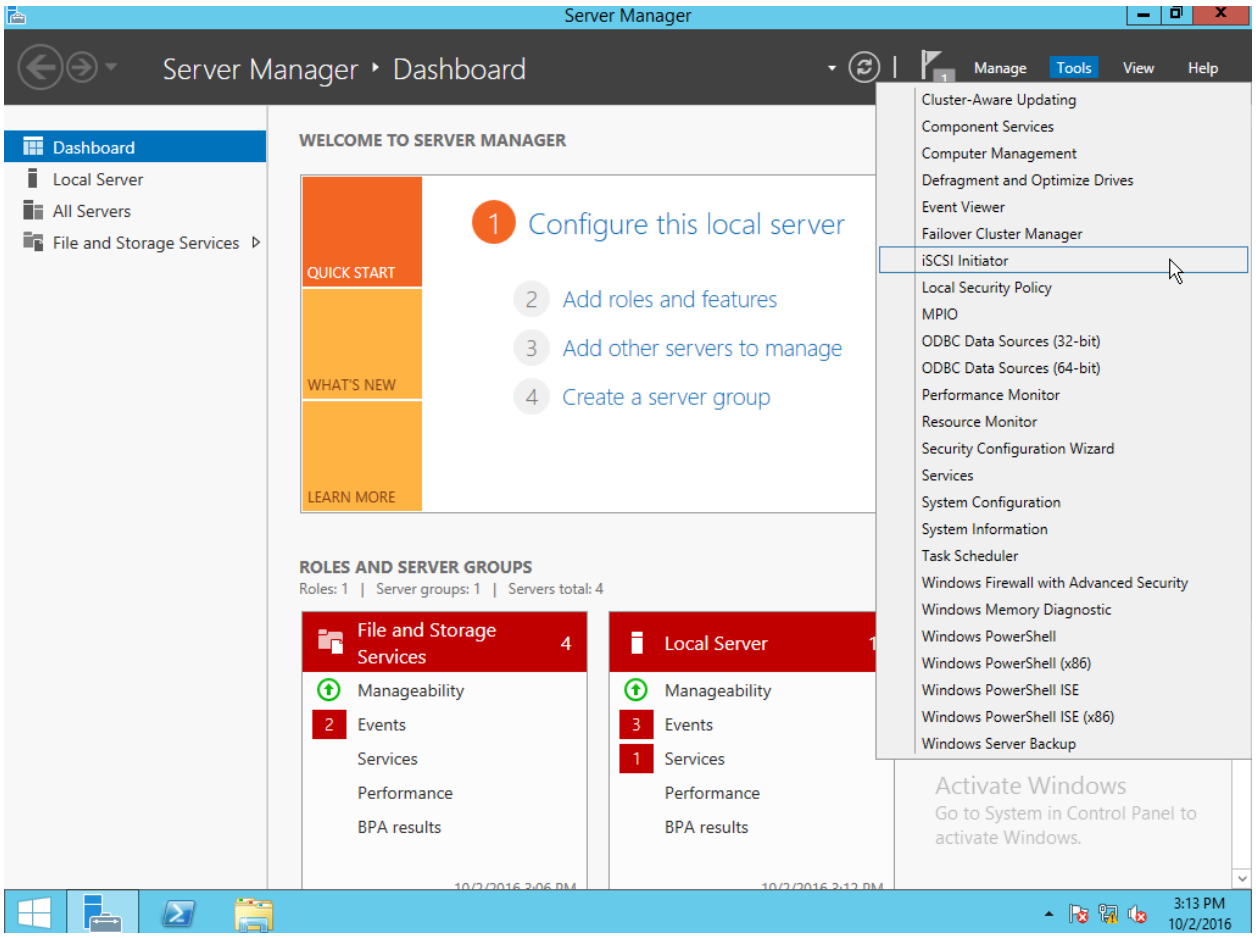
In the MPIO Properties, select the second tab labeled “Discover Multi-Paths”. Check the “Add support to ISCSI devices” and click the Add button. Then reboot the system again.



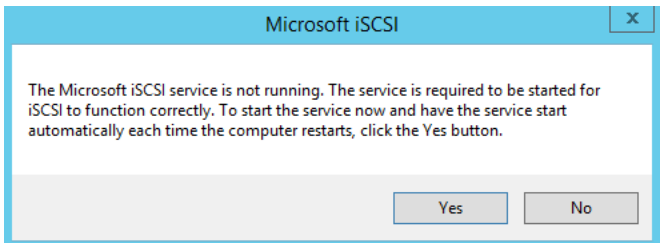
5. ISCSI Initiator

Once MPIO is setup, we are ready to connect to our ISCSI disk.

From Server Manager -> Tools Click iSCSI Initiator

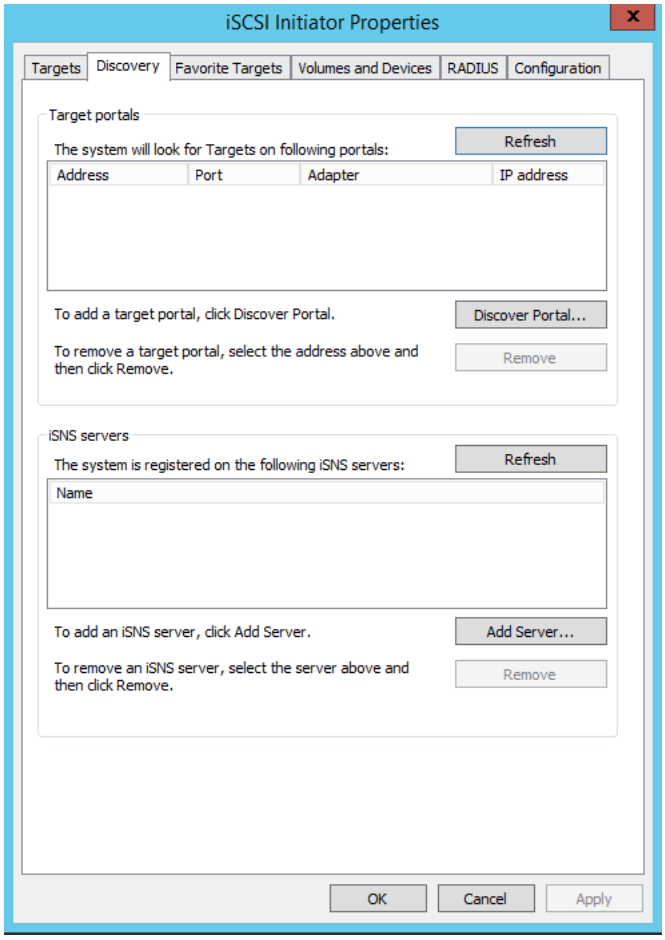


If this is the first time accessing the iSCSI Initiator, confirm we would like to run the iSCSI service by clicking Yes. This service is responsible for automatically connecting to our iSCSI disks on computer startups as well as re-connecting automatically after any connection failures.

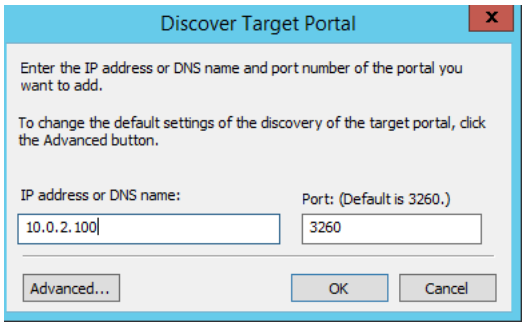


5.1 Target discovery

In the iSCSI Initiator Properties window select the “Discovery” tab.



Click on “Discover Portal” button and enter the first ip address of the iSCSI disk we created in PetaSAN, in our case this would be 10.0.2.100:

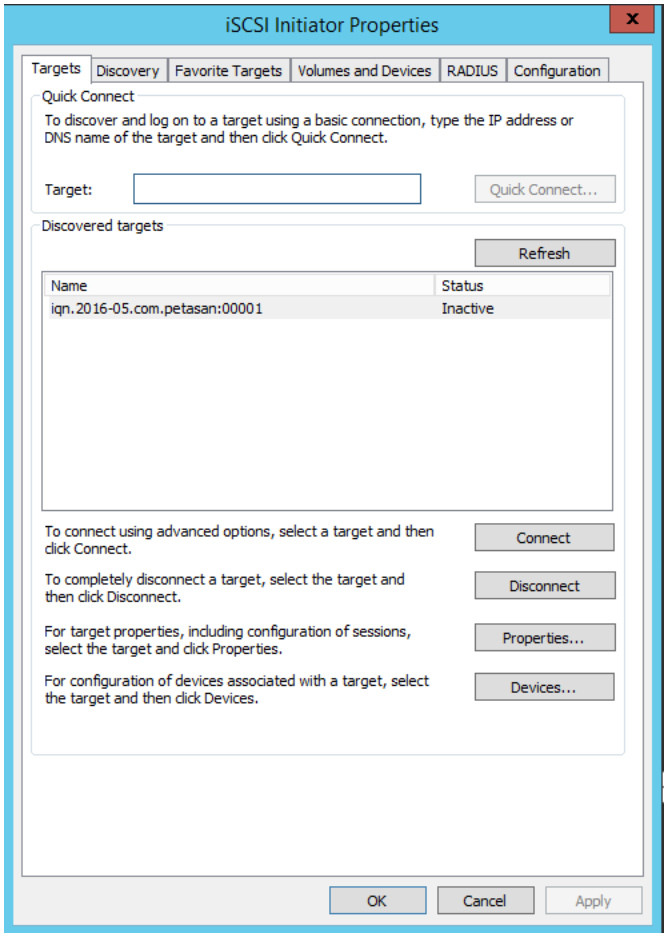


If all goes well, our Windows client has now discovered our target disk, but has not connected to it yet.

Next select the first tab labeled “Target”, we should see our PetaSAN disk listed with its iqn name. The iqn name is composed of our base prefix (which by default is “iqn-2016-05.com.petasan:” and is configurable In the PetaSAN Cluster Management application) followed by the disk id.

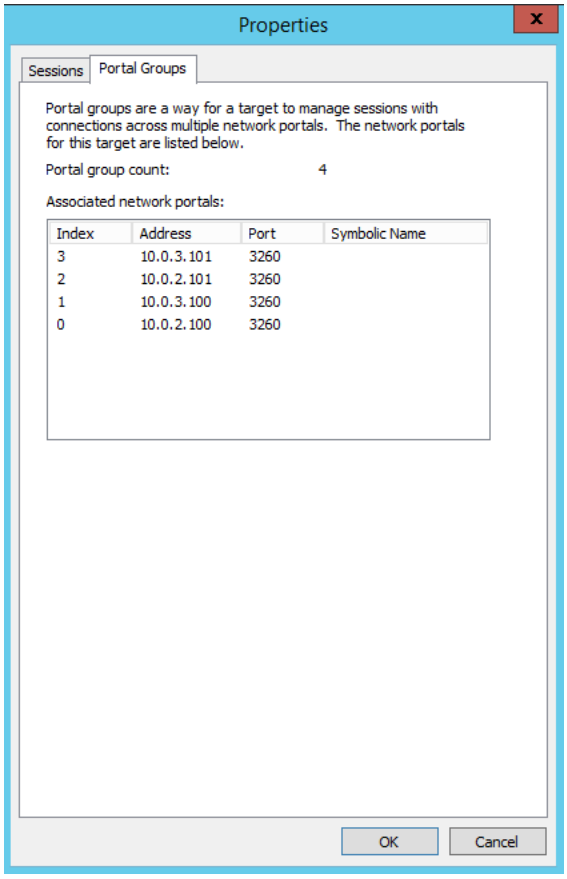
Select the disk and click on the “Properties..” button

- *Note: Do not click the “Connect” button, as this will setup a single path connection.*



This will open the “Properties” window for our discovered but yet to be connected iSCSI disk.

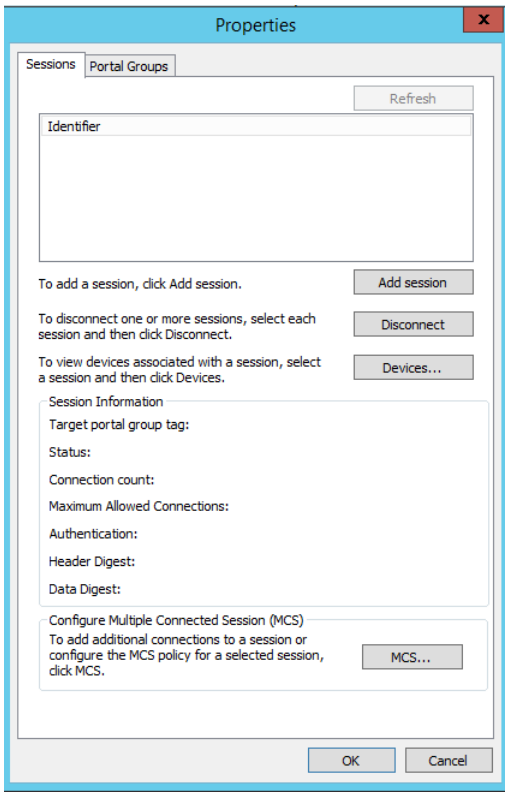
To view the available paths for our disk, select the “Portal Groups” tab



5.2 Session connections

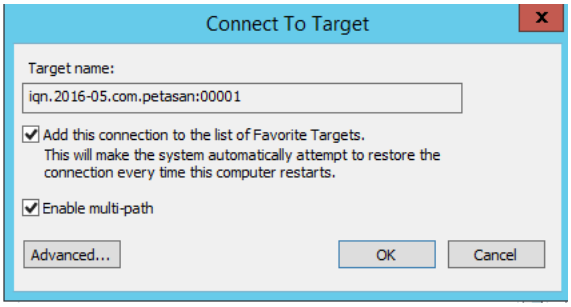
To connect to our different paths, we need to add connection sessions. Each session is a separate login from our client initiator to our iSCSI target disk over a specific path. In PetaSAN, the different paths for our disk are actually virtual ips clustered across different physical machines.

Select the “Sessions” tab



5.2.1 Path 1 session

Click on “Add session”



In the “Connect To Target” dialog, check “Enable multi-path” box and click on the “Advanced..” button.

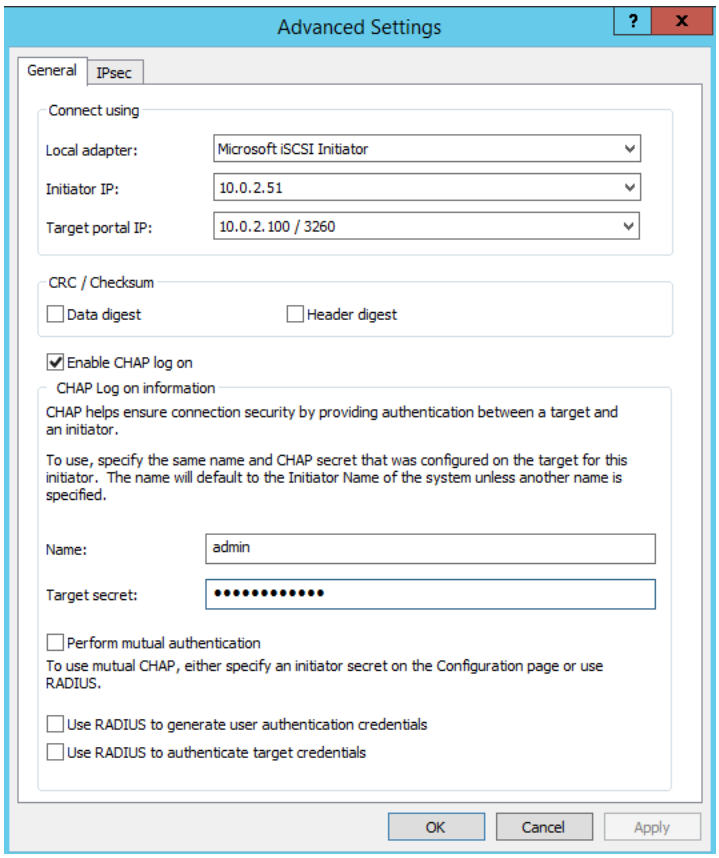
In “Local adapter:” select “Microsoft iSCSI Initiator”

In “Initiator IP:” this is the client ip we will connect from, for our first path this is 10.0.2.51

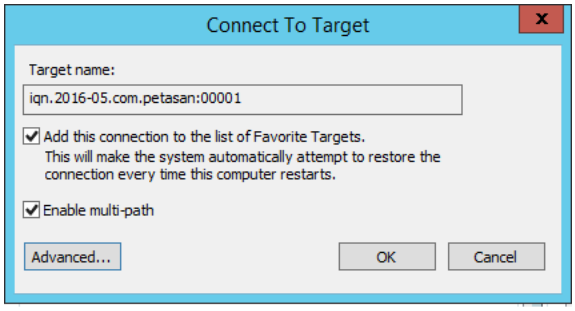
In “Target portal IP:” this is the ip of the first path 10.0.2.100

Since we have created a secure disk in PetaSAN, check the “Enable CHAP log-in” and type the username and password we specified when we created our disk.

The settings for our first session should be as follows:

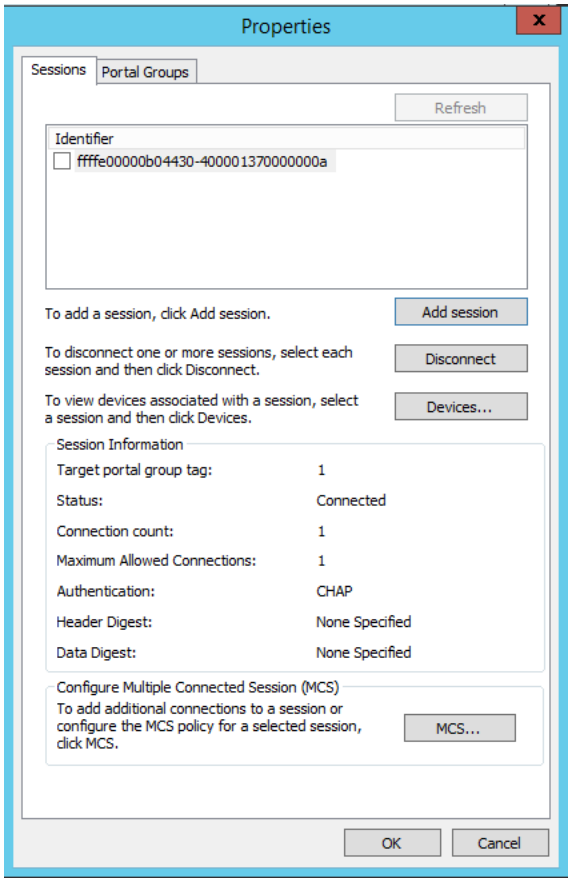


Click “OK”



Click “Ok” again

If all goes well, we are now connected with our first session



We need to repeat the same steps for our remaining paths as will be shown in the next sections.

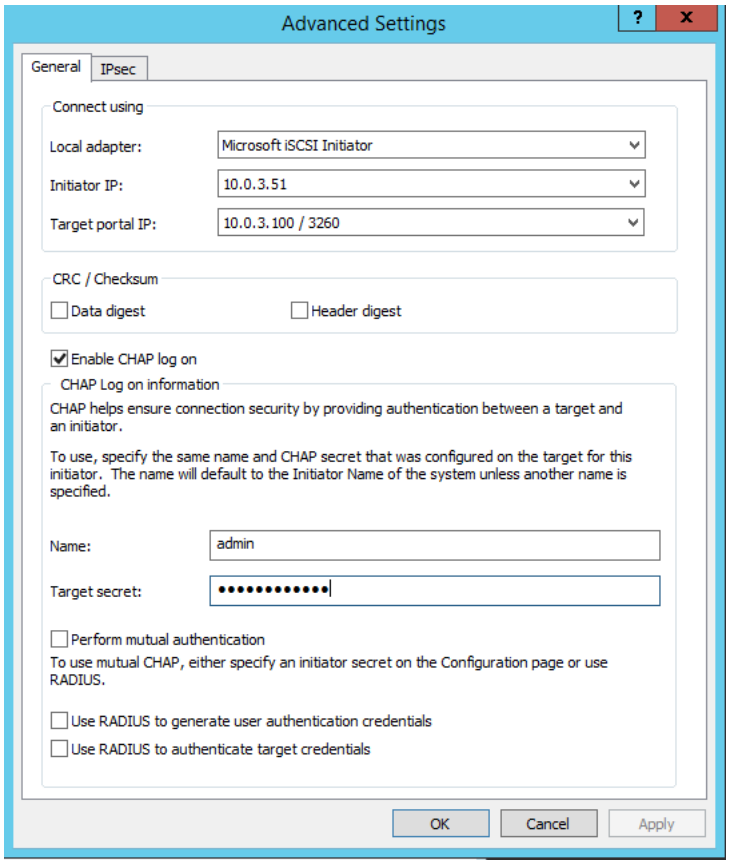
- *Note: when repeating the steps for paths 2 to 4, take special note of the different initiator and target ips for each path.*

5.2.2 Path 2 session

“Initiator IP:” 10.0.3.51

“Target portal IP:” 10.0.3.100

Remaining settings are the same as path 1.

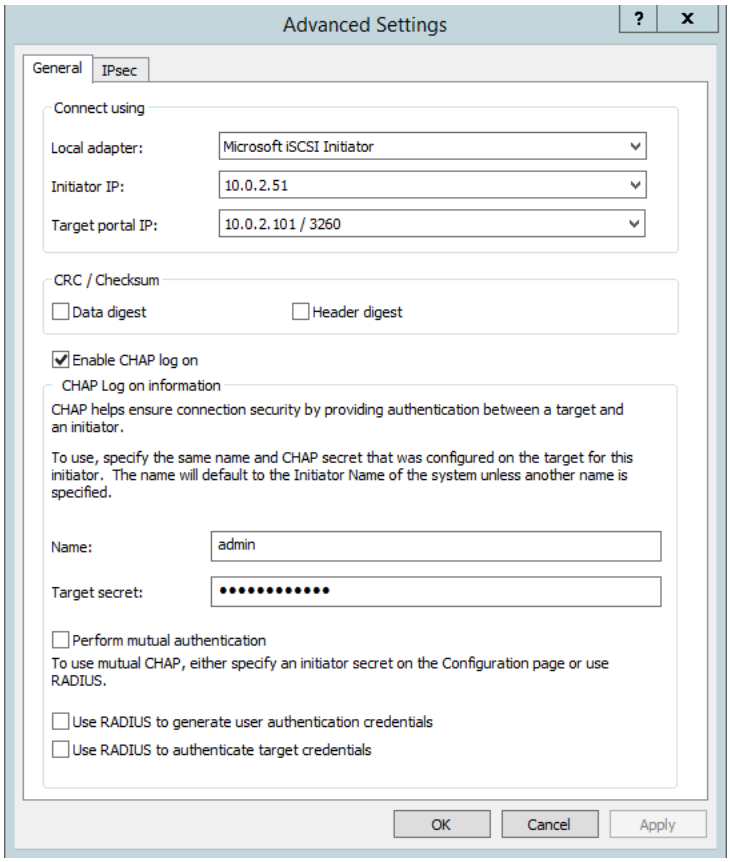


5.2.3 Path 3 session

“Initiator IP:” 10.0.2.51

“Target portal IP:” 10.0.2.101

Remaining settings are the same as path 1.

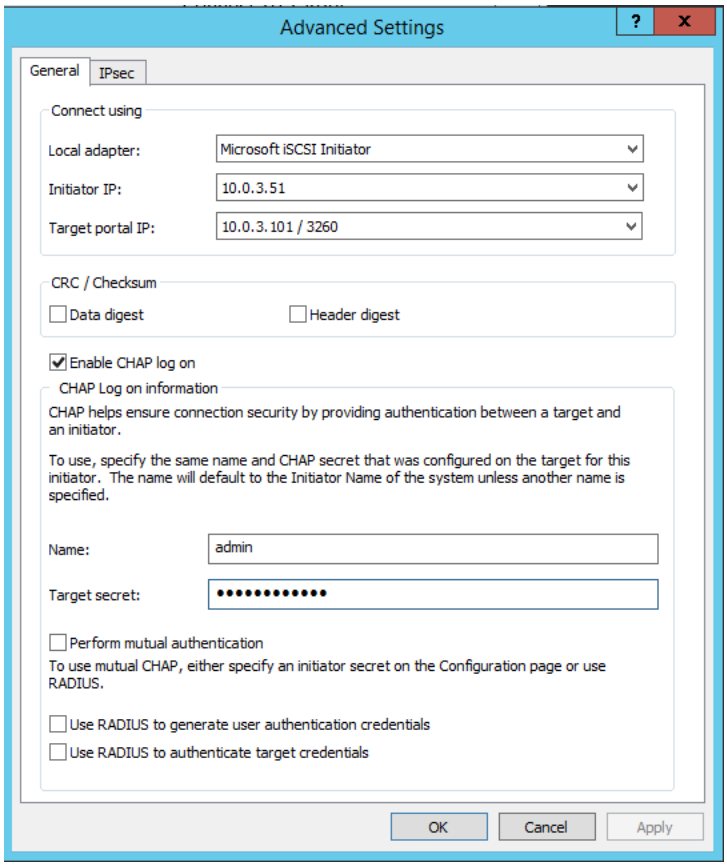


5.2.4 Path 4 session

“Initiator IP:” 10.0.3.51

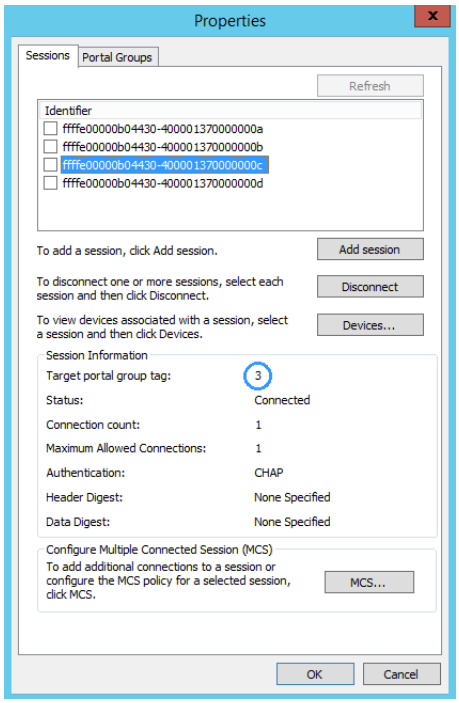
“Target portal IP:” 10.0.3.101

Remaining settings are the same as path 1.

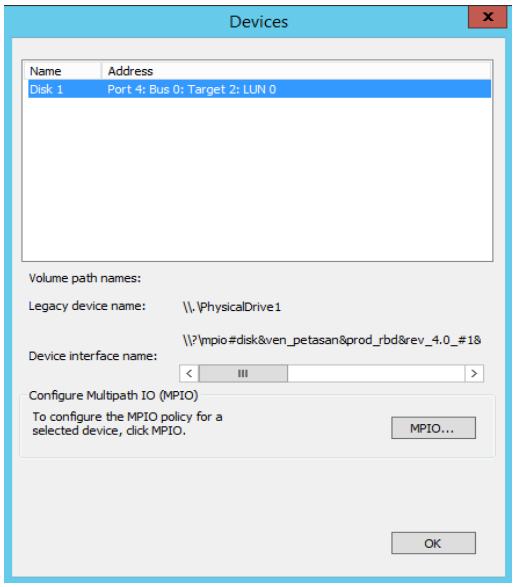


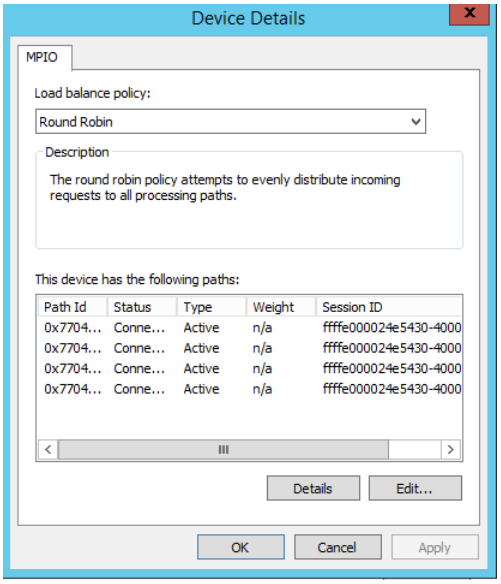
5.3 Reviewing Connections

Review the 4 different sessions; make sure each session is associated with the correct path number



Click on “Devices…” then “MPIO…” double check that Windows set each path as “Active” and set a “Load balance policy” to “Round Robin”.



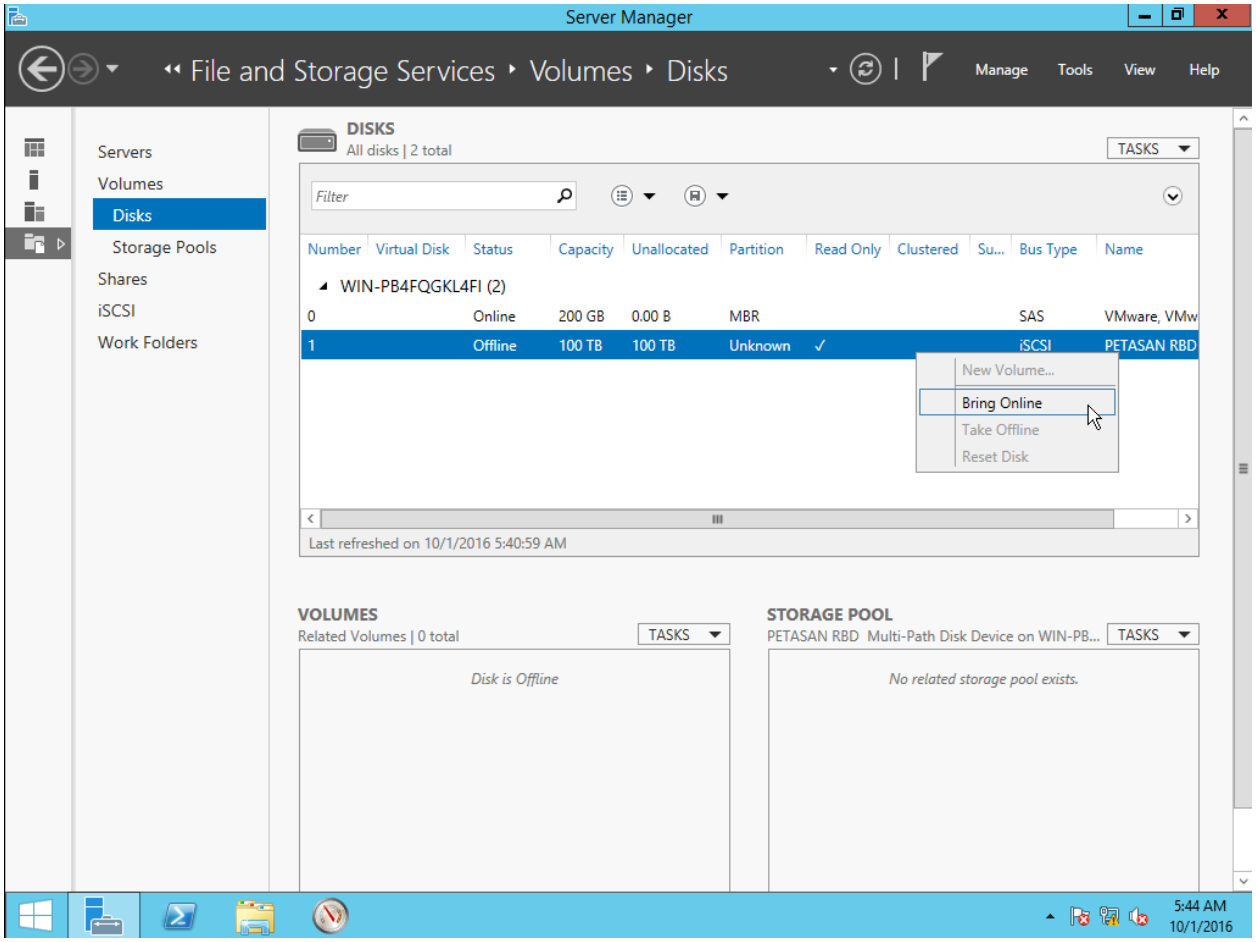


6. Formatting our disk

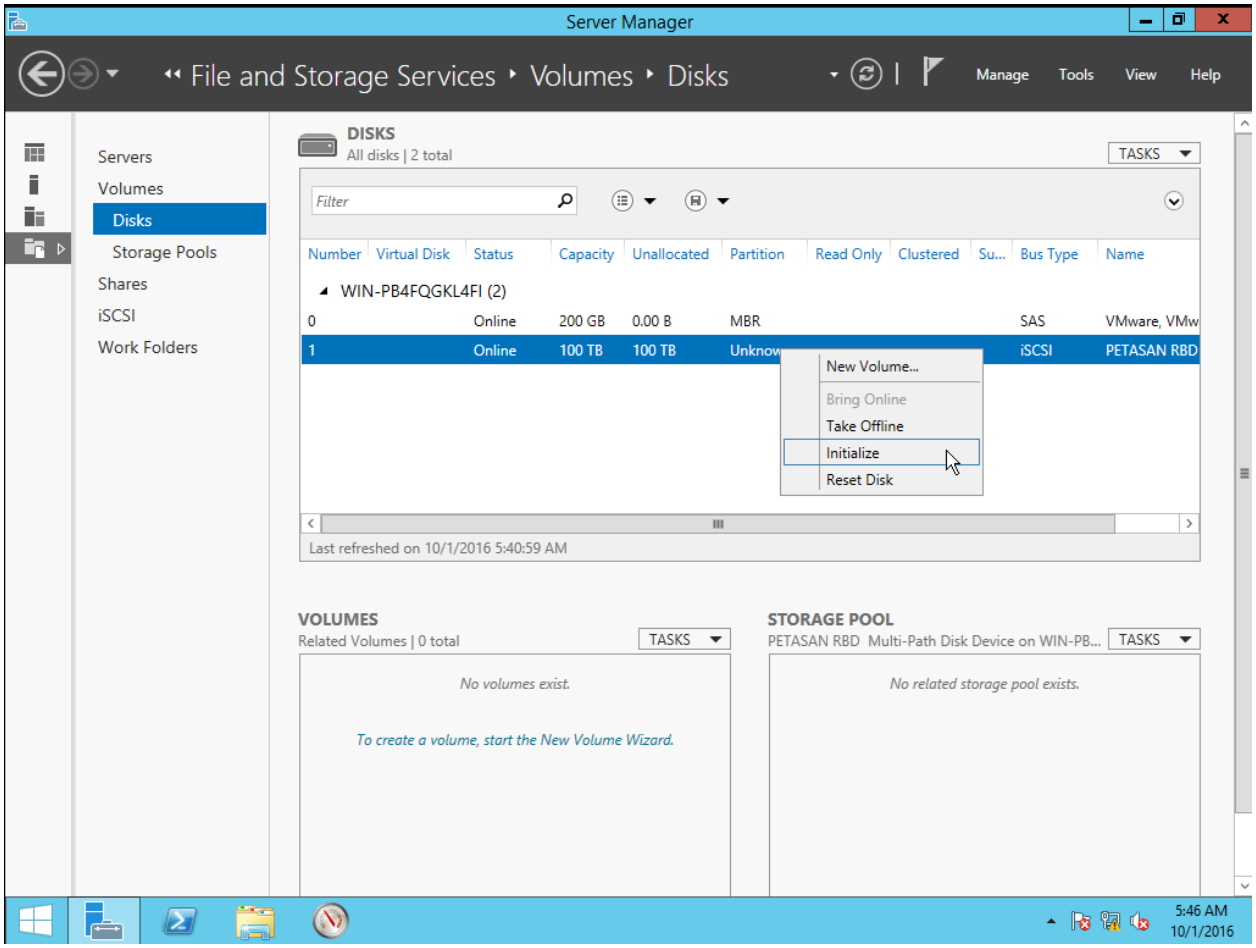
To format the disk, go to “Server Manager” -> “File and Storage Services” -> “Disks”

- *Note: When preparing the disk for use in a clustered scenario where multiple Windows machines access the disk concurrently (example: when using Clustered Shared Volumes with Hyper-V or with Scale Out File Server) , this step is done from the first machine only.*

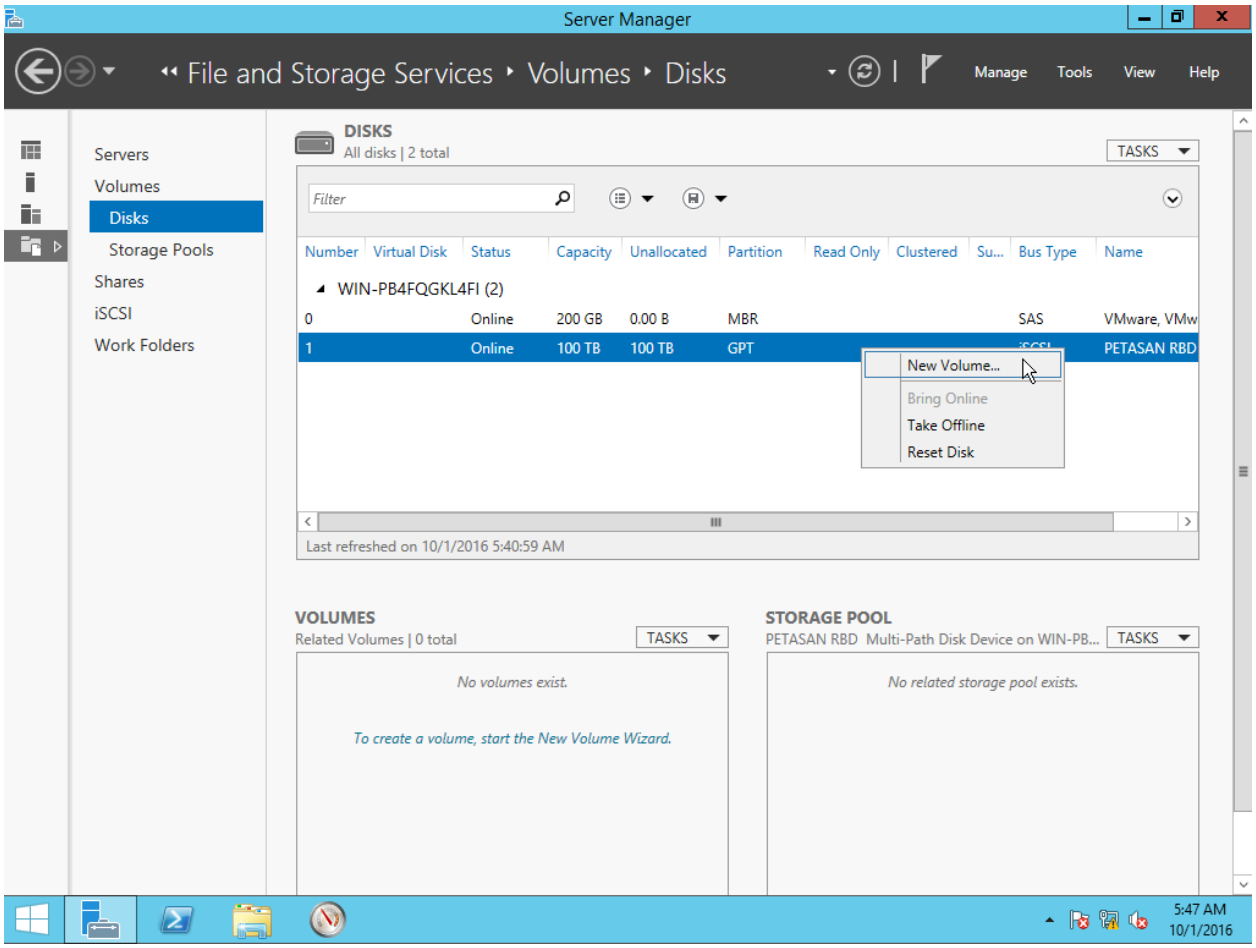
First bring the disk online:



Then initialize the disk to create the partition table and boot record

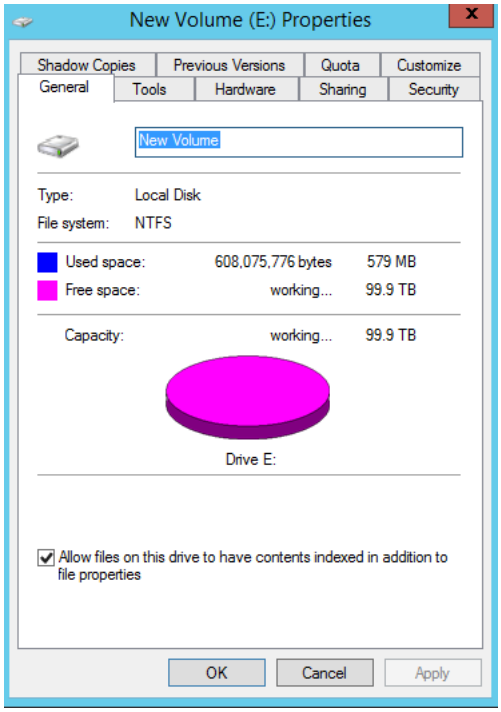


Now click “New Volume…” to format the disk as NTFS.



This will open the “New Volume Wizard”, go through all steps accepting the default values. This will format the disk as NTFS and assign a drive letter to it.

Congratulations! We have successfully prepared our 100 TB 4 Active paths disk.



- *Note: Don't forget that PetaSAN uses cloud technology which allows us to over-commit storage. We need to regularly check the PetaSAN Dashboard and find out how much physical storage has actually been used and add physical disks as necessary. As far as Windows is concerned, the 100 TB disk is fully available from day one and will not warn us if its usage is approaching the physical storage available, it is actually oblivious to this.*