

# StarWind Virtual SAN® Challenge-Handshake Authentication Protocol (CHAP)

AUGUST, 2018

TECHNICAL PAPERS



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## About StarWind

StarWind is a pioneer in virtualization and a company that participated in the development of this technology from its earliest days. Now the company is among the leading vendors of software and hardware hyper-converged solutions. The company’s core product is the years-proven StarWind Virtual SAN, which allows SMB and ROBO to benefit from cost-efficient hyperconverged IT infrastructure. Having earned a reputation of reliability, StarWind created a hardware product line and is actively tapping into hyperconverged and storage appliances market. In 2016, Gartner named StarWind “Cool Vendor for Compute Platforms” following the success and popularity of StarWind HyperConverged Appliance. StarWind partners with world-known companies: Microsoft, VMware, Veeam, Intel, Dell, Mellanox, Citrix, Western Digital, etc.

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## Introduction

StarWind implements and fully supports the Challenge-Handshake Authentication Protocol (CHAP) for the authentication of users. Challenge Handshake Authentication Protocol is a type of authentication in which the authentication agent (typically a network server) sends the client program a random value that is used only once and an ID value. Both sender and peer share a predefined secret. The peer concatenates the random value (or nonce), the ID and the secret, and calculates a one-way hash using MD5. The hash value is sent to the authenticator, which in turn builds that same string on its side, calculates the MD5 sum itself and compares the result with the value received from the peer. If the values match, the peer is authenticated. By transmitting the hash only, the secret can't be reverse-engineered. The ID value is increased with each CHAP dialogue to protect against replay attacks. The access can be limited to all server targets at once or set permissions for each target separately. In case of limiting access to certain targets only and keep other targets shared with all, the permissions need to be set for those targets only. Otherwise, the access limitation for all targets may be done by setting permissions for connection. Also, the one-side authentication or mutual authentication can be used.

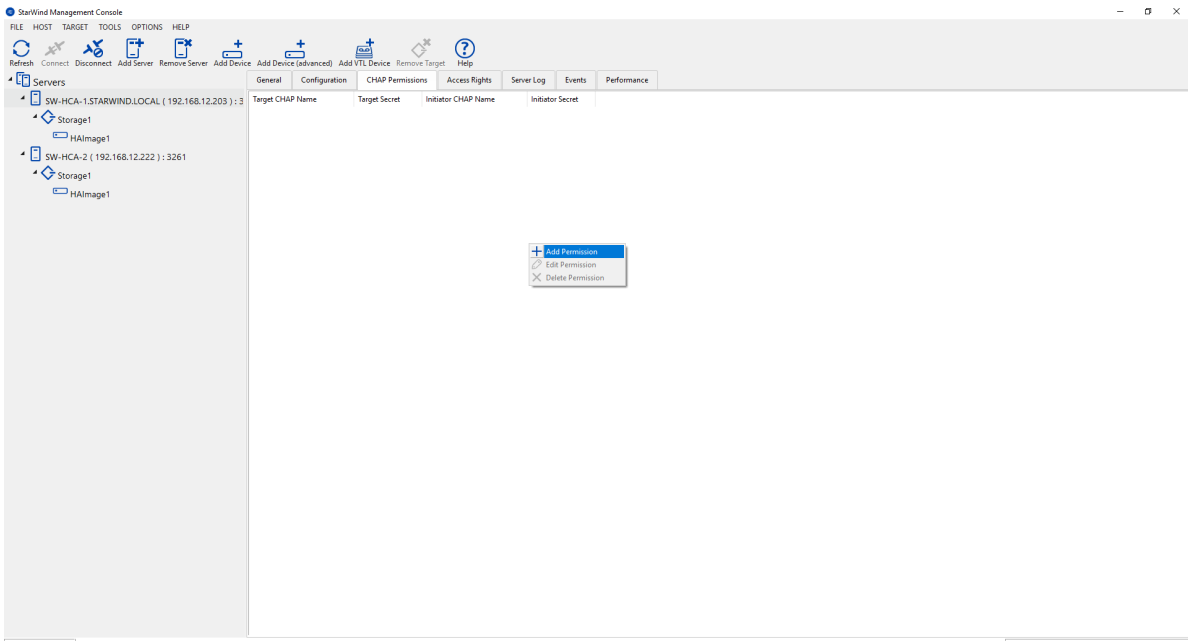
## Configuring Chap Settings In Starwind Management Console

StarWind enables global and individual access CHAP restrictions to targets. Challenge-Handshake Authentication Protocol (CHAP) authenticates a user or network host to an authenticating entity. CHAP provides protection against replay attacks by the peer through the use of an incrementally changing identifier and a variable challenge value. CHAP requires that both client and server know the plain text of the secret, although it is never sent over the network.

**NOTE:** More information about CHAP can be found [here](#).

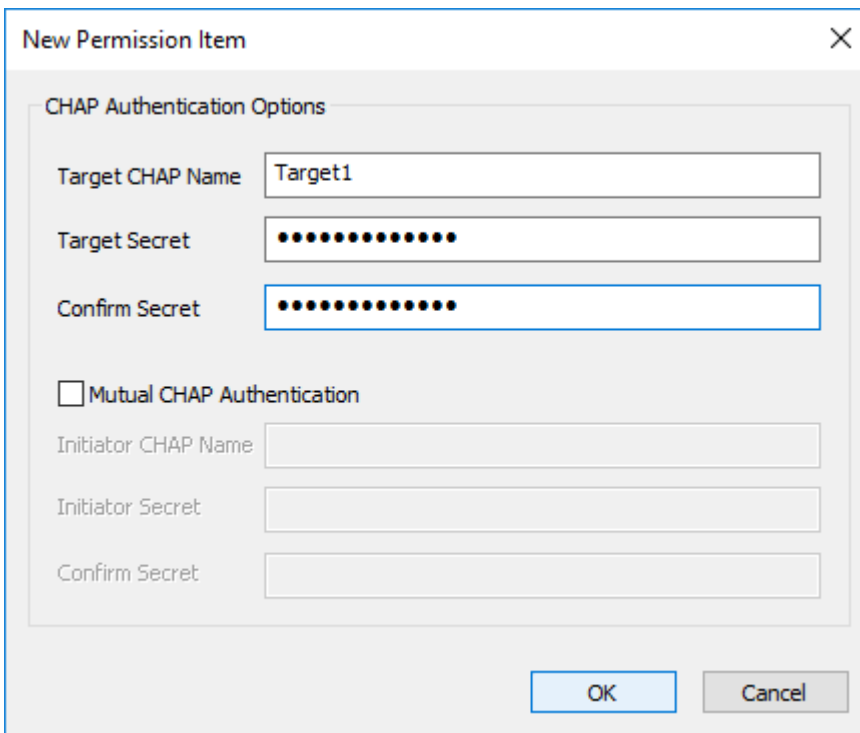
### Setting global permissions

1. Select one of the hosts in the StarWind Management Console tree.
2. Click the **CHAP Permissions** tab. Right-click the main tab area and select **Add Permission** from the shortcut menu.



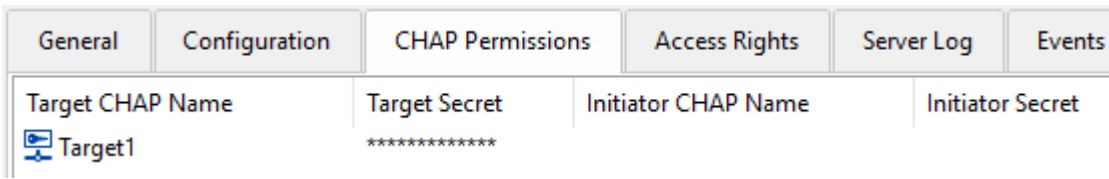
3. In **New Permission Item**, specify the required settings:

- **Target CHAP name:** is a name used by CHAP for initiator authentication.
- **Target secret:** is a secret that is used by CHAP for initiator authentication.
- **Initiator CHAP name:** is a name for the CHAP mutual authentication.
- **Initiator secret:** is a secret for the CHAP mutual authentication.



Click **OK**.

4. Check the new **CHAP Permission** tab.



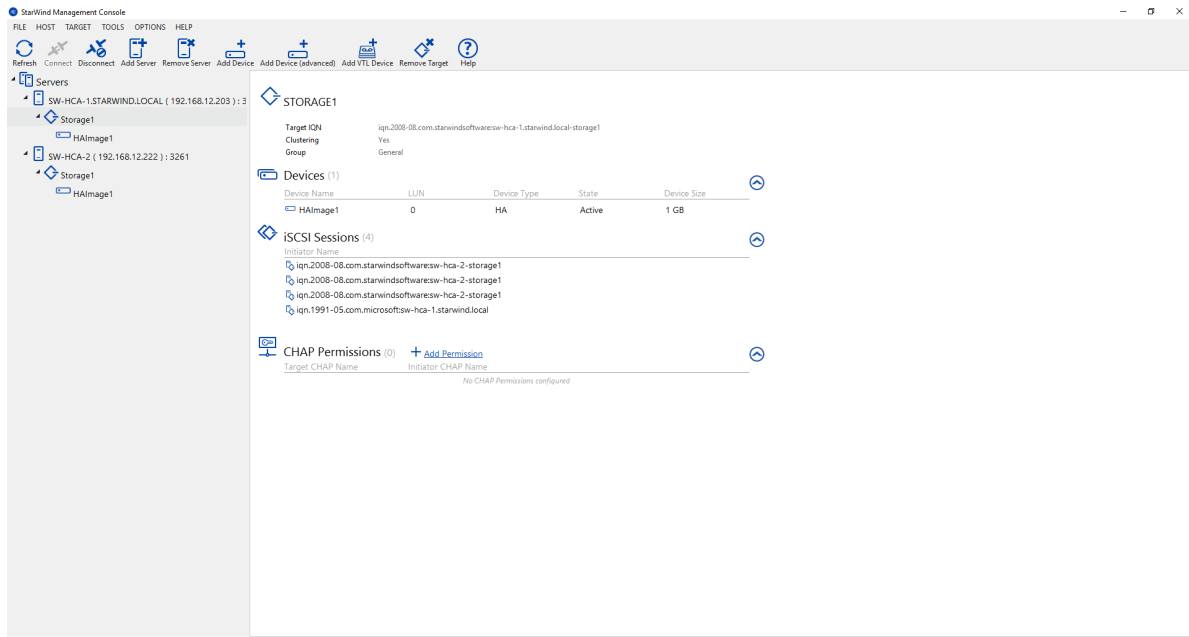
**NOTE:** Repeat this step to add as many permissions as needed. Now all clients need to provide CHAP settings to access any target on this server.

**NOTE:** If the partner authentication settings are not changed, StarWind will not be able to synchronize HA devices to the partner node after the service restart.

## Setting individual target permissions

1. Select the required target in the StarWind Management Console tree.

2. Click **Add Permission** in the **CHAP Permissions** area.



3. In the **New Permission Item** window, specify the required settings:

- **Target CHAP name:** is a name used by CHAP for initiator authentication.
- **Target secret:** is a secret that is used by CHAP for initiator authentication.
- **Initiator CHAP name:** is a name for the CHAP mutual authentication.
- **Initiator secret:** is a secret for the CHAP mutual authentication.

Click **OK**.

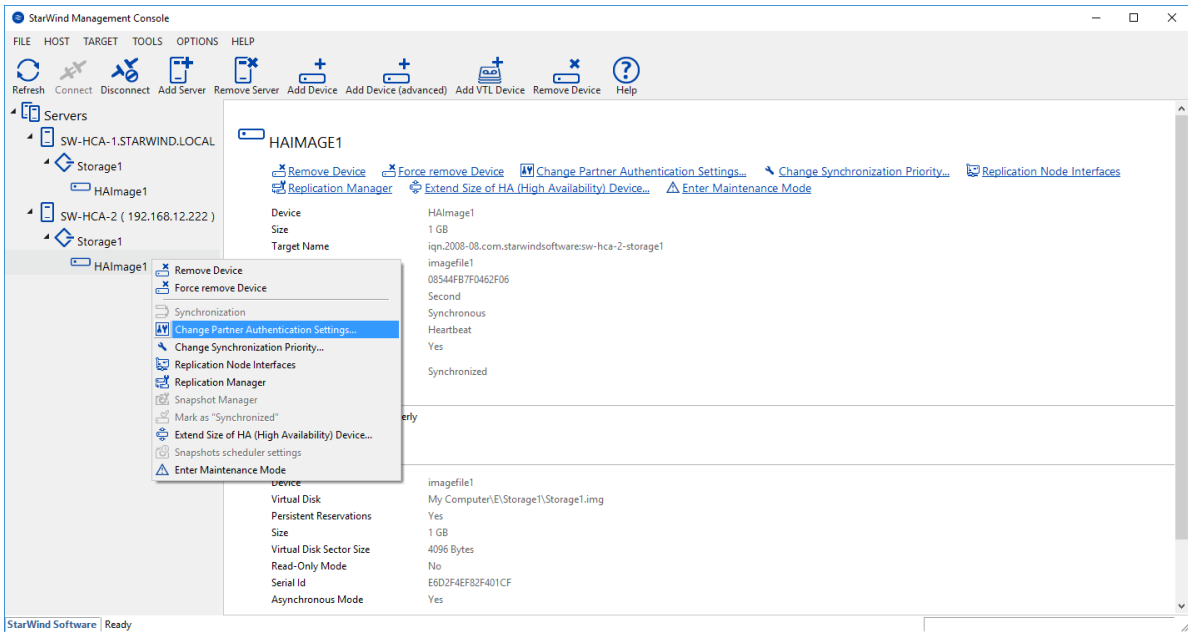
**NOTE:** Repeat this step to add as many permissions as needed. Now all clients need to provide CHAP settings to access target on this server.



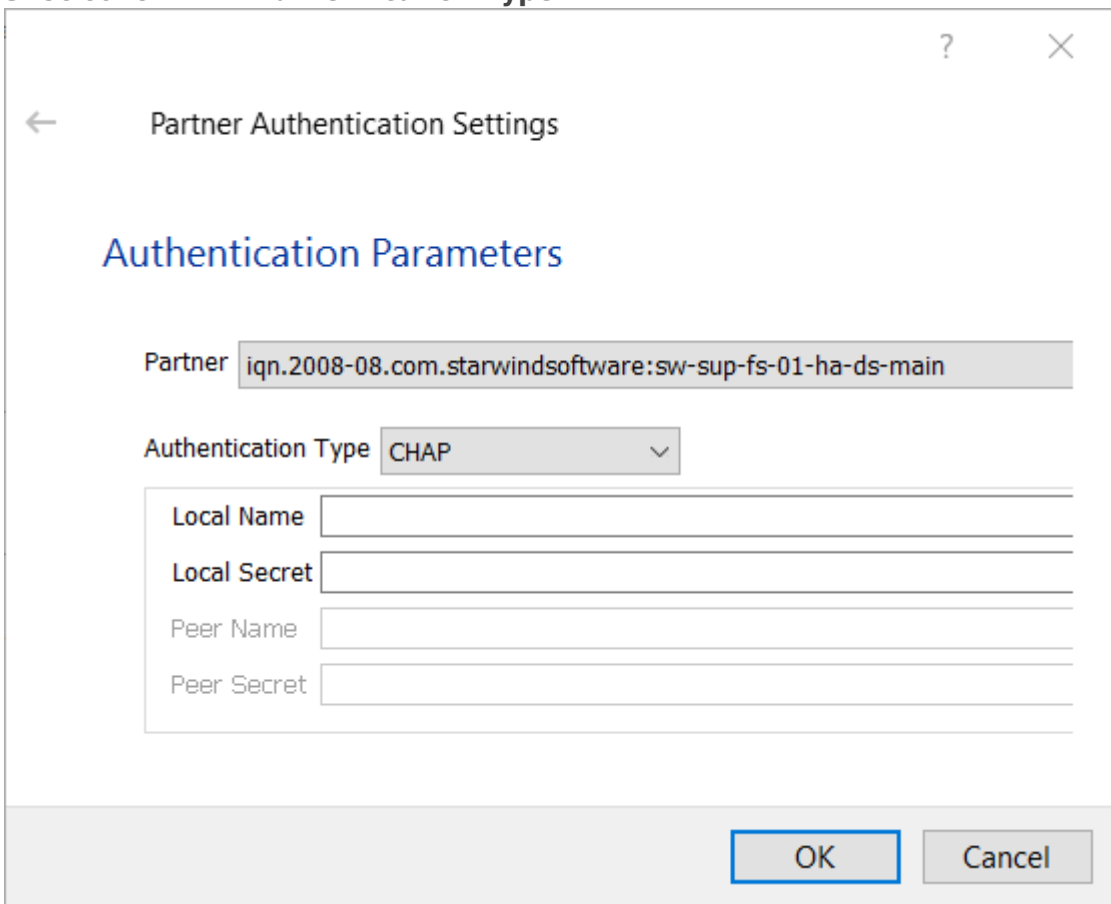
**NOTE:** If the partner authentication settings are not changed, StarWind will not be able to synchronize HA devices to the partner node after the service restart.

## Setting permissions for HA target

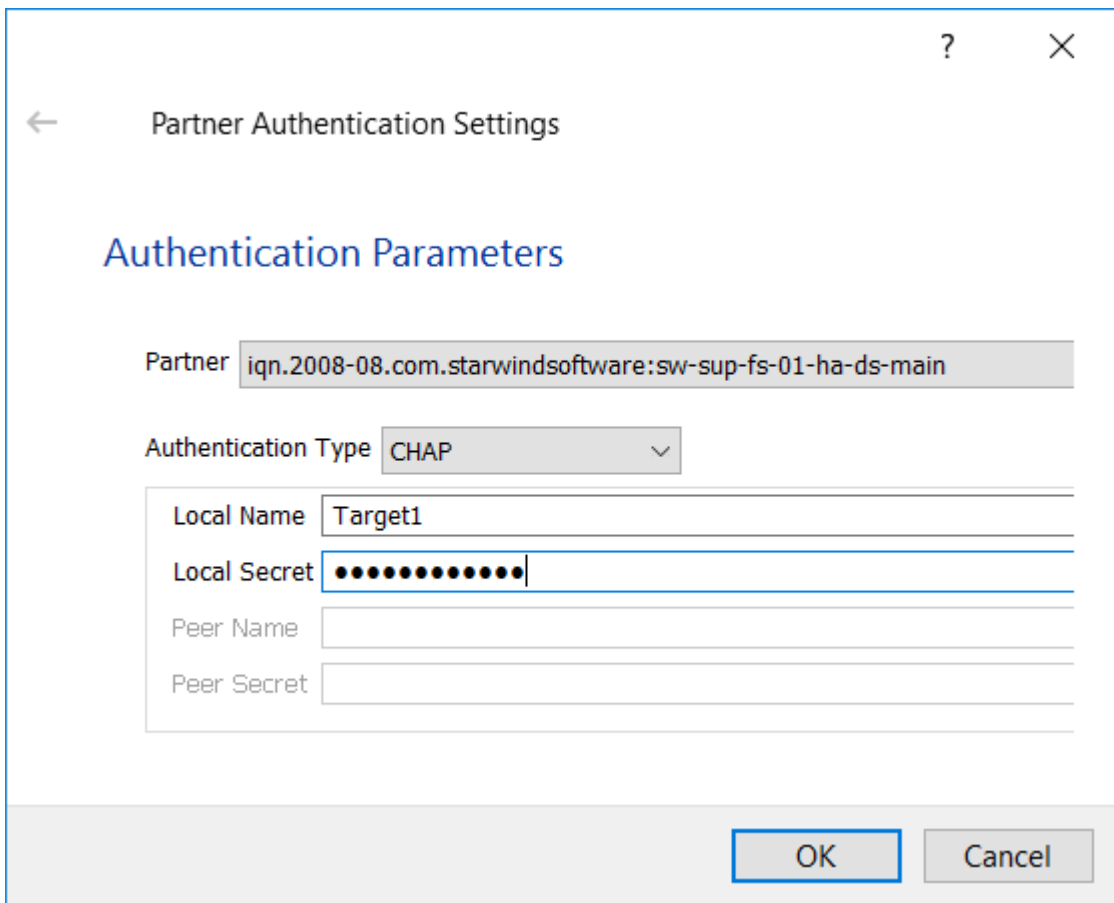
1. Open StarWind Management Console.
2. Choose partner device. Click **Change Partner Authentication Settings** or right-click the device and select **Change Partner Authentication Settings** from the shortcut menu.



3. Select **CHAP** in **Authentication Type**.



4. Indicate **Local Name** and **Local Secret**. Click **OK**.



Partner Authentication Settings

Authentication Parameters

Partner

Authentication Type

Local Name

Local Secret

Peer Name

Peer Secret

OK Cancel

## Selecting The Hypervisor

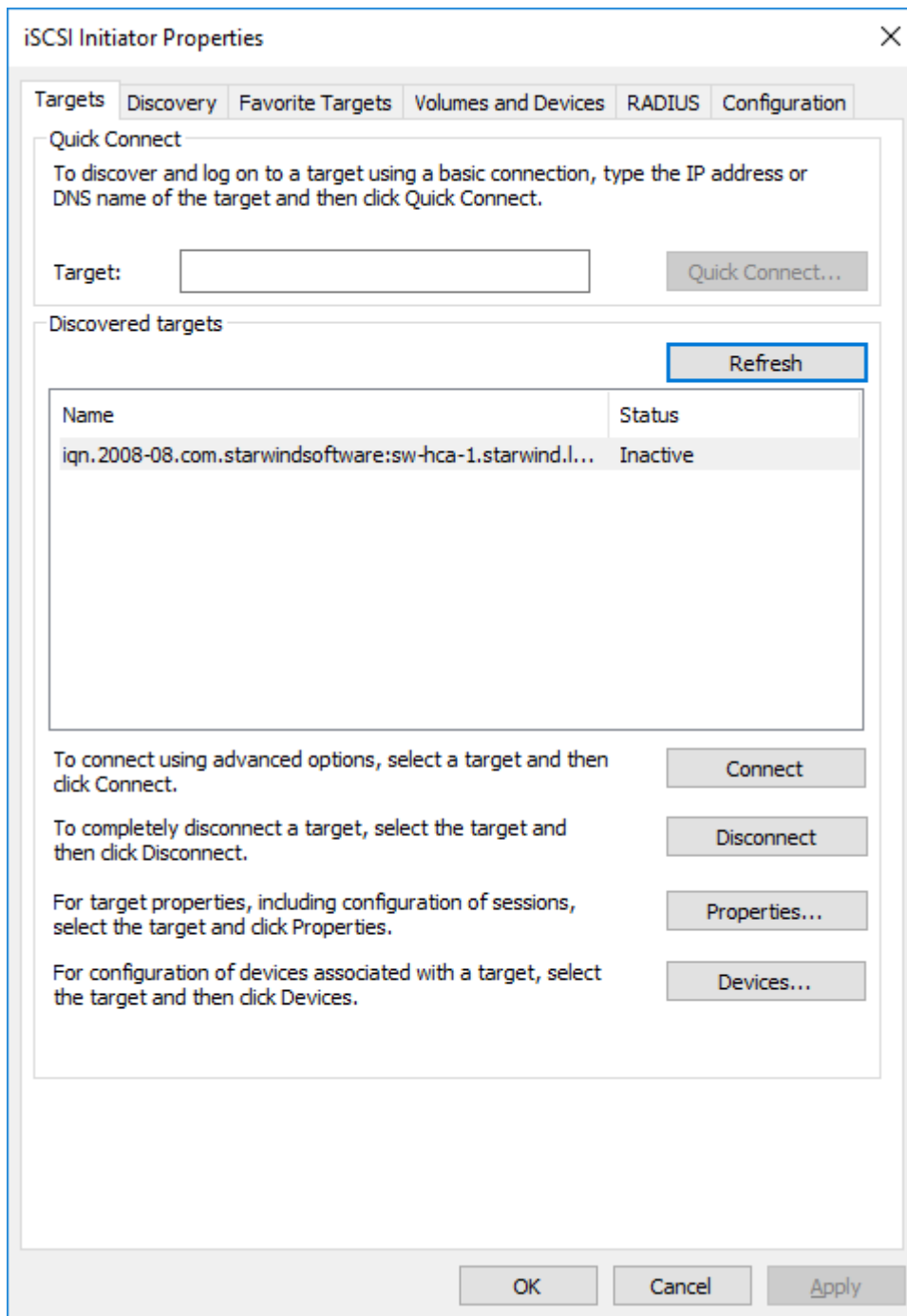
Please select the required option:

## Configuring Chap Settings On Hyper-V

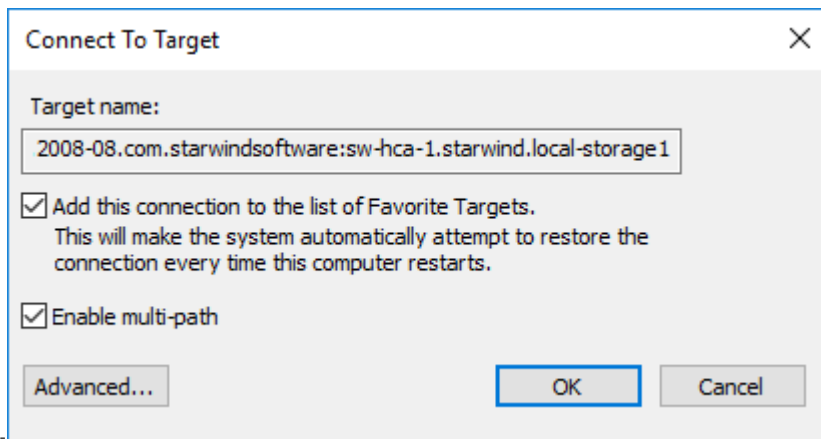
### Setting target permissions

1. Open iSCSI Initiator.
2. Select **Target** in the **Discovered targets** area. Click **Connect**.



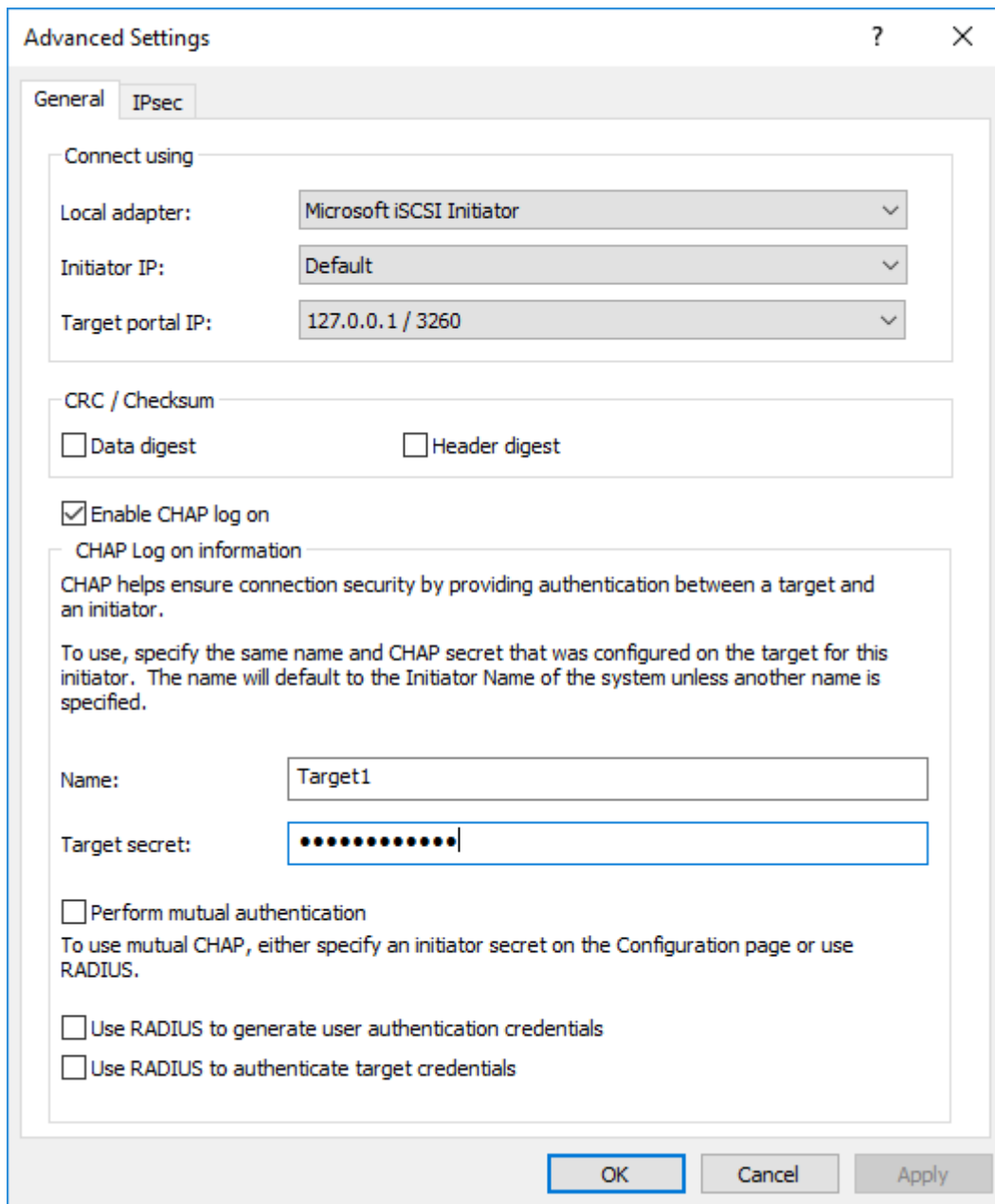


3. Click **Advanc**



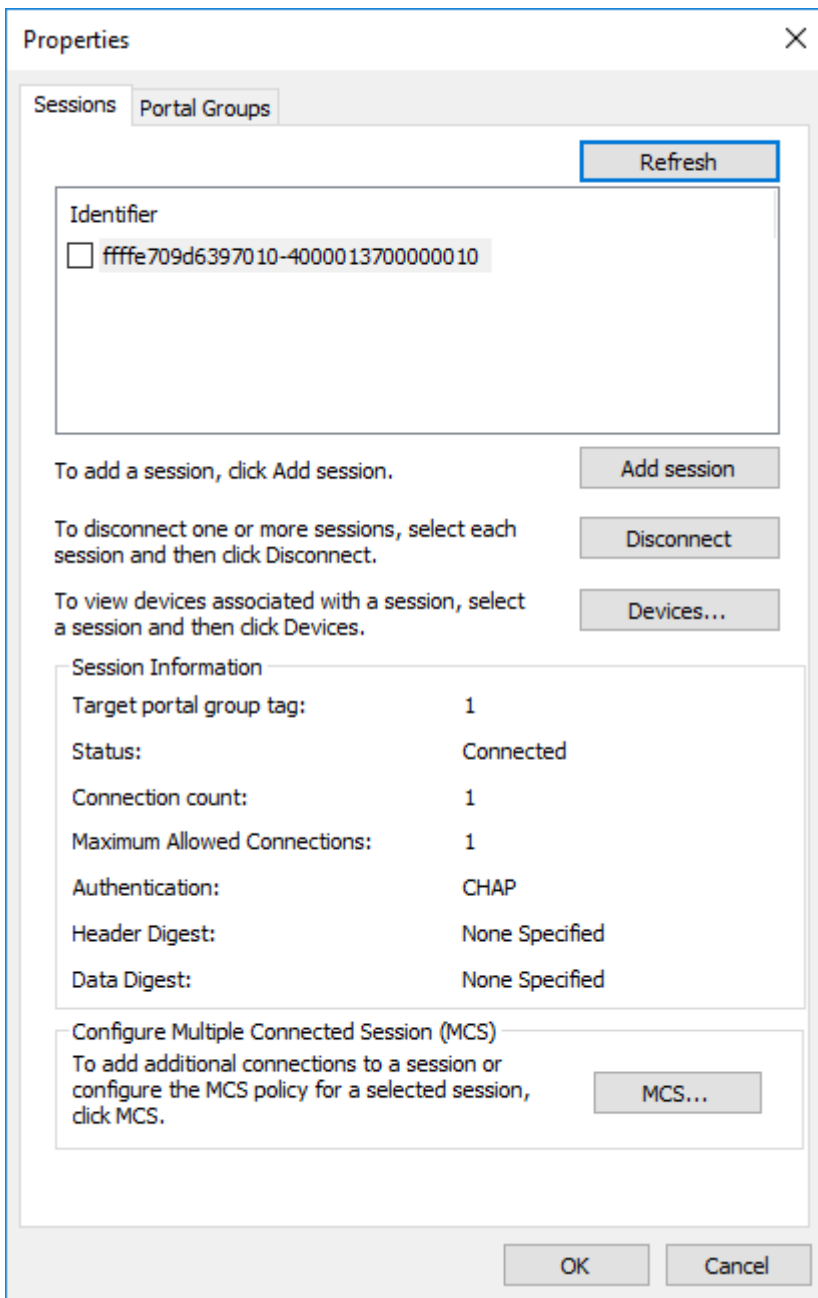
ed... 4. To enable CHAP, select the **Enable CHAP log on** checkbox.

5. Indicate **Name** and **Target secret**. Click **OK**.

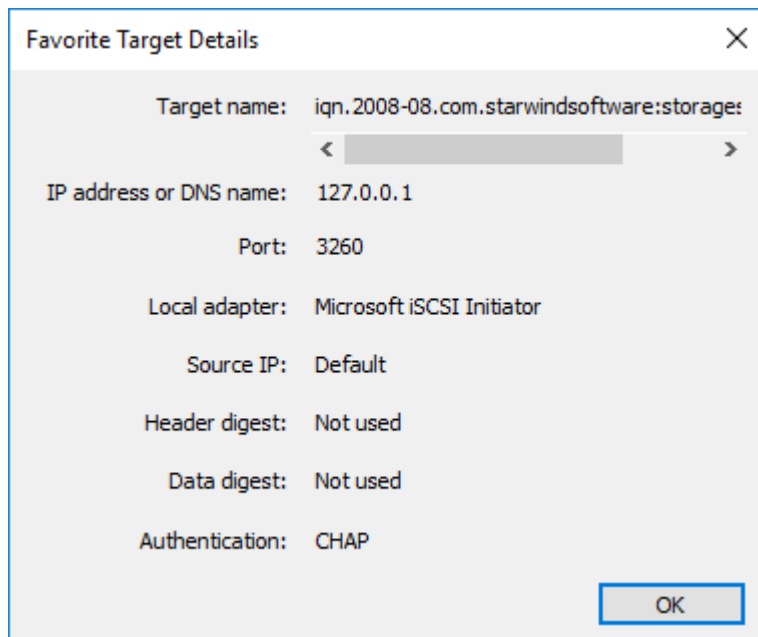


6. Open

**Properties...** in the iSCSI Initiator and check **Authentication** of the connected session.



7. Check **Favorite Target**

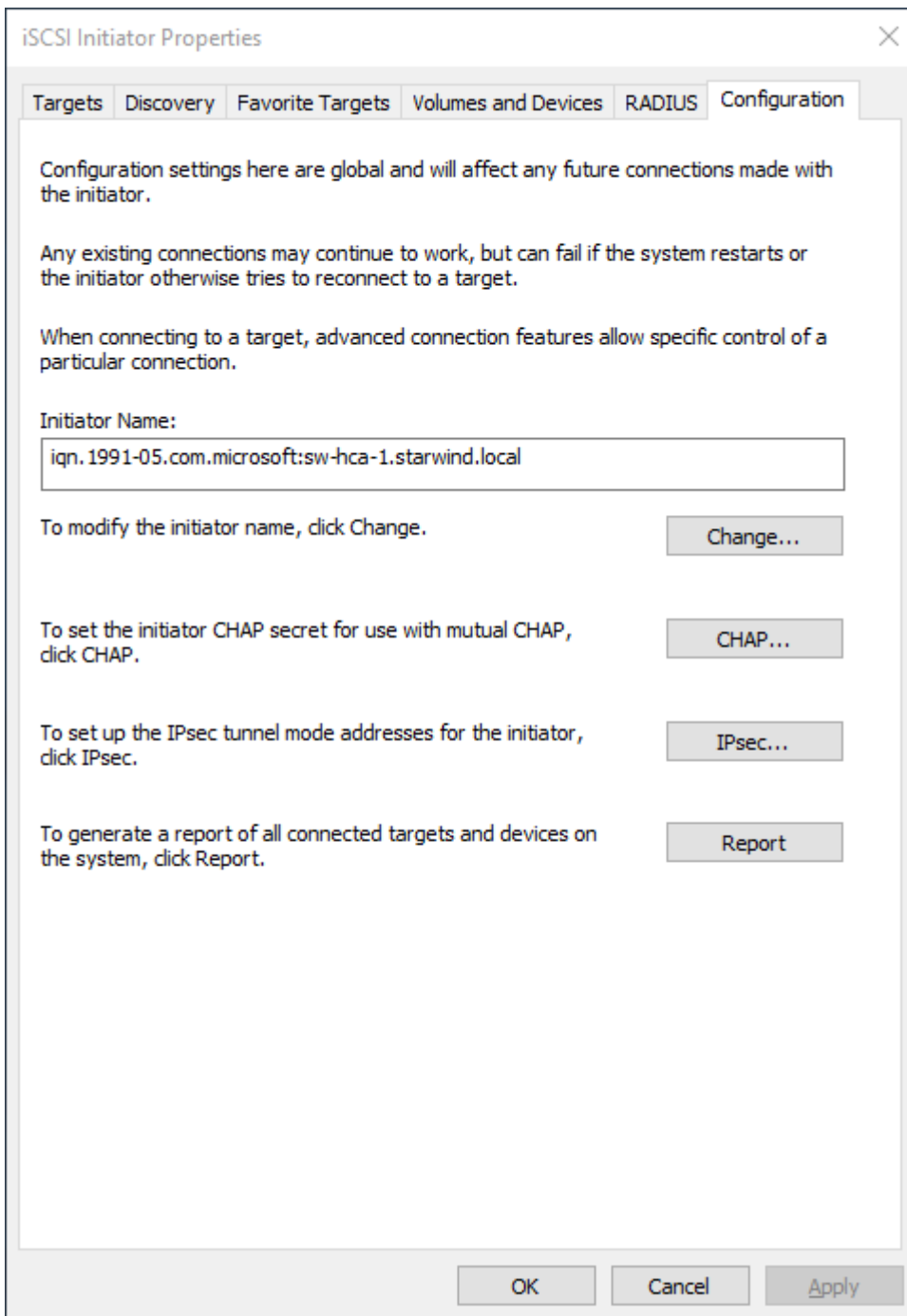


**Details.**

**NOTE:** Target will not be reconnected after the service restart in case it does not have CHAP Authentication.

## Changing CHAP initiator configuration

1. Open iSCSI initiator and click **Configuration**.



**NOTE:** Click **Change...** to modify the initiator name. Click **CHAP...** to set the initiator CHAP secret.

## Configuring Chap Settings On Esxi

1. Click **Add dynamic target** in **Dynamic Targets**. Click **Edit Settings**.

## 2. Uncheck **Inherit from parent**.

3. Write **Name** and **Secret** in the corresponding fields. Click **Save**.

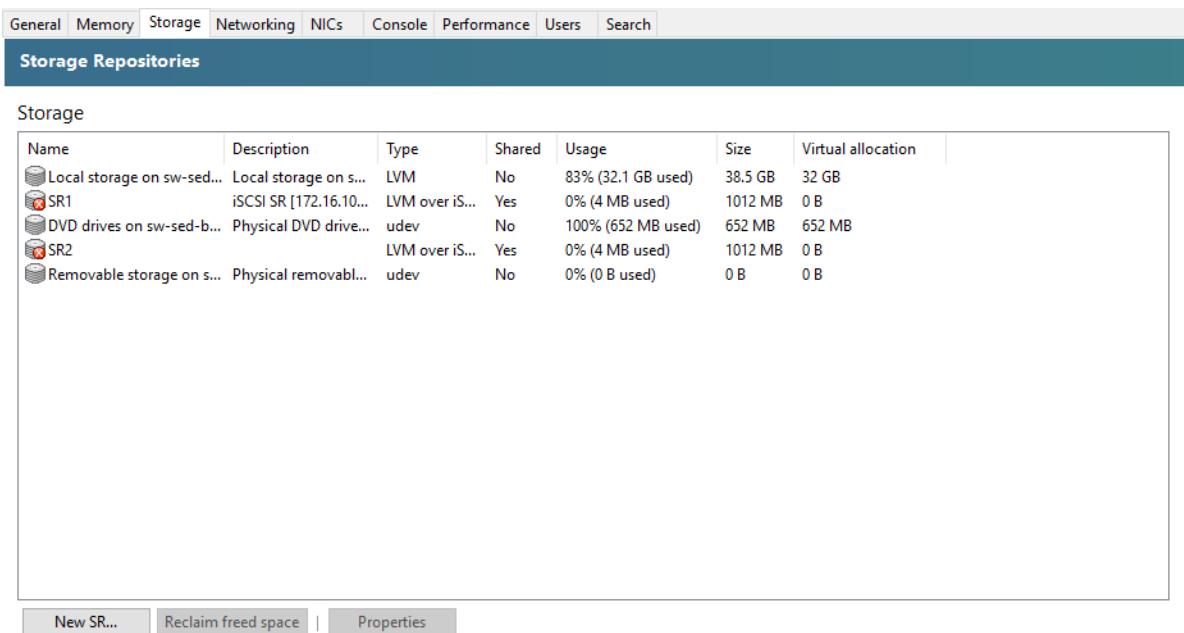
4. Click the **Save configuration** button.

**NOTE:** Target will not be reconnected after the service restart if it does not have CHAP

Authentication.

## Configuring Chap Settings On Xen

1. Open XenCenter and click on the **Server** tab. Then select **Storage** tab and click **New SR...**



The screenshot shows the 'Storage Repositories' window in XenCenter. At the top, there are tabs for 'General', 'Memory', 'Storage', 'Networking', 'NICs', 'Console', 'Performance', 'Users', and 'Search'. The 'Storage' tab is selected. Below the tabs, the title 'Storage Repositories' is displayed. Underneath, the word 'Storage' is shown. A table lists the existing storage repositories:

| Name                       | Description            | Type           | Shared | Usage              | Size    | Virtual allocation |
|----------------------------|------------------------|----------------|--------|--------------------|---------|--------------------|
| Local storage on sw-sed... | Local storage on s...  | LVM            | No     | 83% (32.1 GB used) | 38.5 GB | 32 GB              |
| SR1                        | iSCSI SR [172.16.10... | LVM over iS... | Yes    | 0% (4 MB used)     | 1012 MB | 0 B                |
| DVD drives on sw-sed-b...  | Physical DVD drive...  | udev           | No     | 100% (652 MB used) | 652 MB  | 652 MB             |
| SR2                        | LVM over iS...         | LVM over iS... | Yes    | 0% (4 MB used)     | 1012 MB | 0 B                |
| Removable storage on s...  | Physical removabl...   | udev           | No     | 0% (0 B used)      | 0 B     | 0 B                |

At the bottom of the window, there are three buttons: 'New SR...', 'Reclaim freed space', and 'Properties'.

2. Select **iSCSI** as **Virtual disk storage** and click **Next**.



**Choose the type of new storage**

| Type     | Virtual disk storage                                  | iSCSI   |
|----------|---|---|
| Name     | <input type="radio"/> NFS                             | iSCSI   |
| Location | <input checked="" type="radio"/> iSCSI                | iSCSI or Fibre Channel access to a shared LUN can be configured using LVM.  |
|          | <input type="radio"/> Hardware HBA                    | Using an LVM for a shared SR provides the same performance benefits as a unshared LVM for local disk storage but also enables VM agility. |
|          | <input type="radio"/> Software FCoE                   |   |
|          | <b>ISO library</b>                                    |   |
|          | <input type="radio"/> Windows File Sharing (SMB/CIFS) |   |
|          | <input type="radio"/> NFS ISO                         |   |

< Previous    Next >    Cancel

3. Indicate **Name** in **New Storage Repository**. Click **Next** to proceed.

**What do you want to call this Storage Repository?**

Provide a name and a description (optional) for your SR.

Name:

Autogenerate description based on SR settings (e.g., IP address, LUN etc.)

Description:

< Previous    Next >    Cancel

4. Indicate **Target host name/IP address** and check **Use CHAP**. Type username and password. Click **Finish**.

New Storage Repository - StarWind

**Enter a path for your iSCSI storage**

Type  
Name  
**Location**

Provide a target host for your iSCSI storage, indicating your target IQN and your target LUN before proceeding.

Target host name/IP address: 192.168.10.103 : 3260

Use CHAP

CHAP username: Target1

CHAP password: ●●●●●●●●

Scan Target Host

iSCSI target






Target IQN: [dropdown]

Target LUN: [dropdown]

CITRIX

< Previous Finish Cancel

## Contacts

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