

StarWind iSCSI SAN:

Configuring Global Deduplication

May 2012

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INTRODUCTION

This guide provides detailed step-by-step instructions on installing StarWind iSCSI SAN with Global Deduplication. The document is intended for experienced Window system administrators.

STARWIND SYSTEM REQUIREMENTS

CPU: Intel Xeon Processor E5620 (or later), or equal AMD Opteron processor.

It is recommended to use Intel Xeon E5620 or equivalent to meet minimum system requirements for StarWind iSCSI SAN server. To achieve maximum performance, use Intel Xeon X5650 or equal AMD Opteron CPU.

Note: It is more recommended to use a CPU with more cores per socket and lower frequency, than a CPU with less cores and higher frequency. E.g. having 6-core Intel Xeon 5660 with 2.8 GHz per core is better than having 4-core Intel Xeon 5667 with 3.02 GHz per core.

RAM: 4 GB minimum

4 GB of RAM is a required minimum for the server running StarWind iSCSI SAN. To implement StarWind High-Speed Caching upgrade RAM. The cache-dedicated RAM capacity should be equal or higher than one reserved for iSCSI targets caching.

Note: Always reserve 4 GB RAM for Windows internal processes and StarWind iSCSI SAN engine.

To calculate RAM required for proper operation of Deduplication, use the following table:

Deduplication block size	RAM per 1 GB of storage
4K	3 MB
16K	768 KB

Network: 1GbE minimum

In case of intensive workloads, either implement NIC teaming or scale network to 10GbE infrastructure. It is highly recommended to use 9K Jumbo frames capable network equipment for both 1 and 10GbE in order to maximize the SAN performance.

HA synchronization channel requires secured and fault-tolerant connections for NIC and switch.

HDD: SATA, SAS, or SSD drive-based RAID array

A RAID array type depends on required storage performance. A SAS/SSD based RAID10 is used to achieve maximum storage performance with minimum ST. To ensure higher security level for critical data, it is better to use RAID5/RAID6. Please, contact your hardware vendor to get more information on available RAID arrays and their performance.

Note: It is not recommended to use software based RAID arrays in iSCSI SAN environment.

Recommended operating system: Windows Server 2008 R2

StarWind Software recommends using latest server-class Windows operating systems. StarWind supports all Windows OS from Windows Server 2003 to Windows 2008 R2 family, including Server Core editions and free Microsoft Hyper-V Server. Please note that if you are planning to use Windows Server Core or Hyper-V Server you will not be able to install StarWind Management Console locally on a server because of GUI limitations set by OS. In this case StarWind Management Console should be installed on any other server/PC/notebook running any Windows version starting from Windows XP.

Note: To enable remote management, open 3261 port on both machines.

INSTALLING STARWIND SERVER

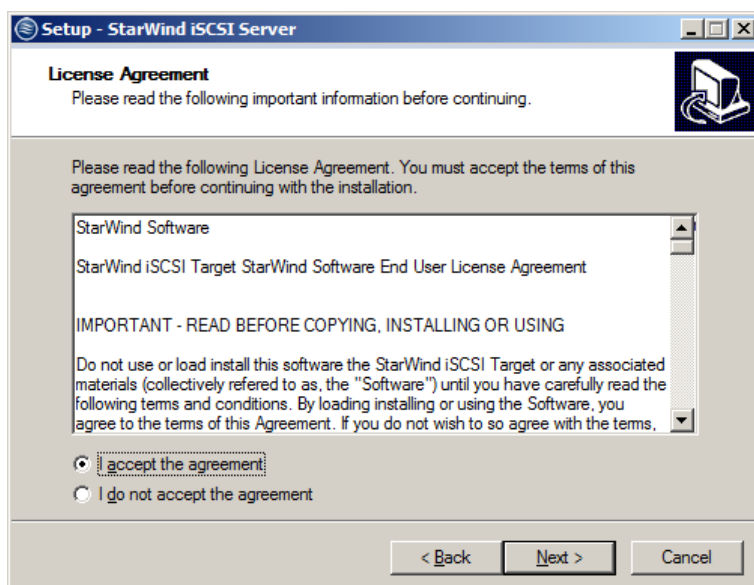
1. Download the **StarWind setup file** from our website: <http://www.starwindsoftware.com/products>

Note: The setup file is unified for x86 and x64, so that you do not need to worry about the platform compatibility.

2. Launch the downloaded executable setup file on the server that you want to turn into SAN storage. **Setup Wizard** appears.

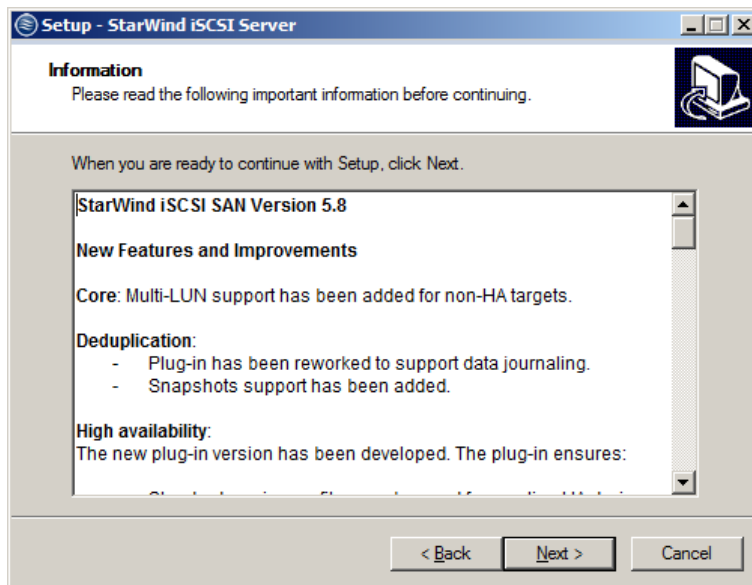


3. Click **Next** to continue.
4. Read and accept the **License Agreement**.

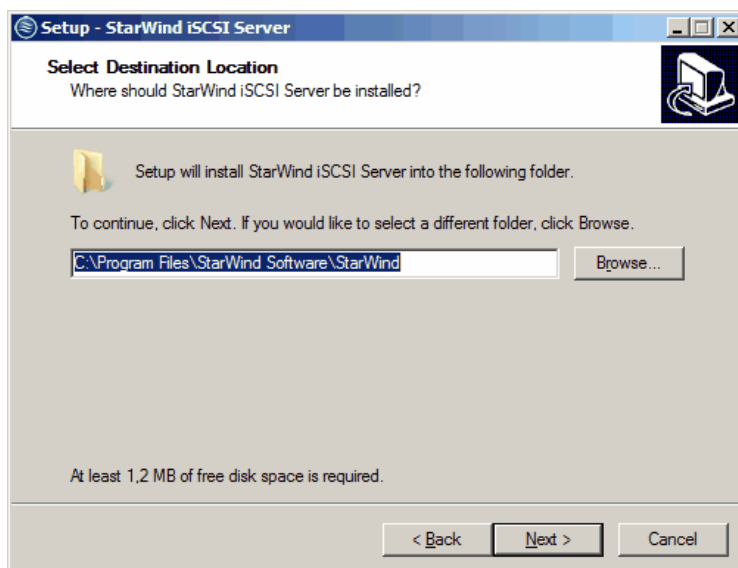


5. Click **Next** to continue.

6. Read the information.



7. Click **Next** to continue.
8. Click **Browse** to select the installation path.



9. Click **Next** to continue.
10. Specify the installation type:

StarWind iSCSI Service

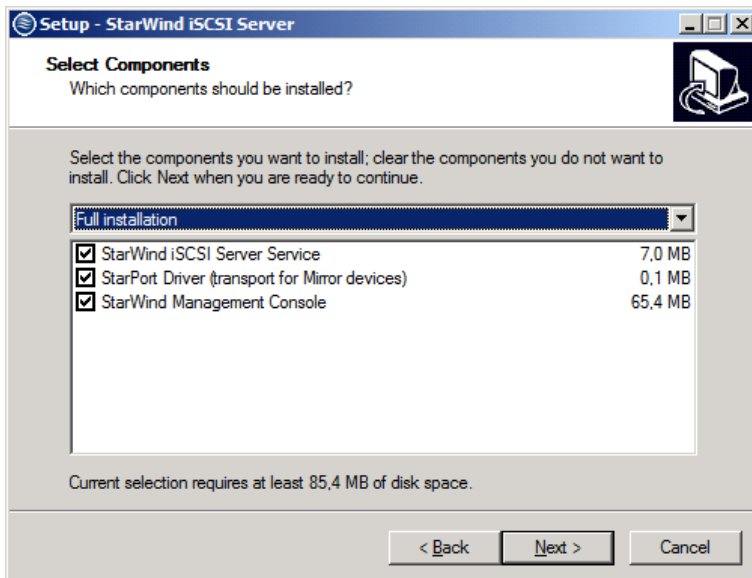
This installation type is applied to remote access servers. StarWind Service enables the creation of various devices (e.g. HA devices, Snapshot, CDP, and Mirror devices) and can be managed with StarWind Management Console from another computer.

StarWind Management Console

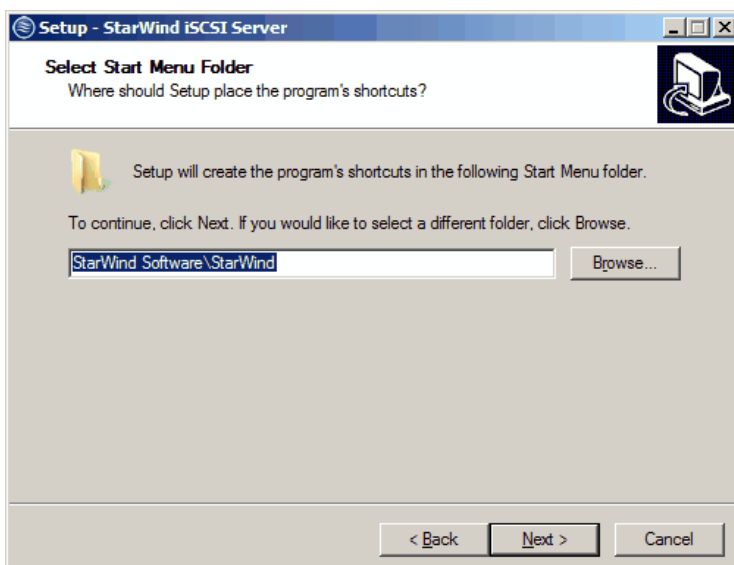
Management Console is the Graphical User Interface (GUI) part of the program that monitors and controls the storage related operations (e.g. allows for the creation of devices on the available target servers). After its installation, **Management Console** connects to **StarWind Service** remotely.

Full installation

Full installation includes both **StarWind Service** and **Management Console** elements. It allows for the management of resources from the machine with installed **StarWind Service**.

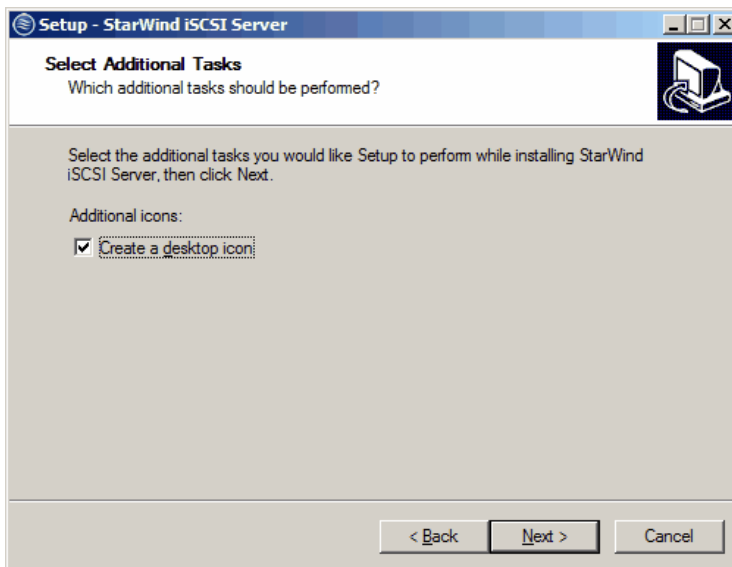


11. Click **Next** to continue.
12. Specify the **Start Menu** folder.



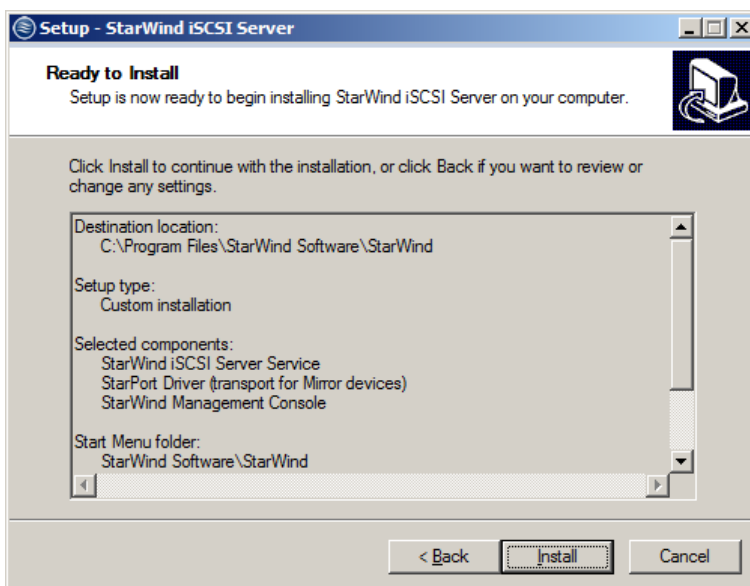
13. Click **Next** to continue.

14. Select the appropriate checkbox if you want to create a desktop icon.

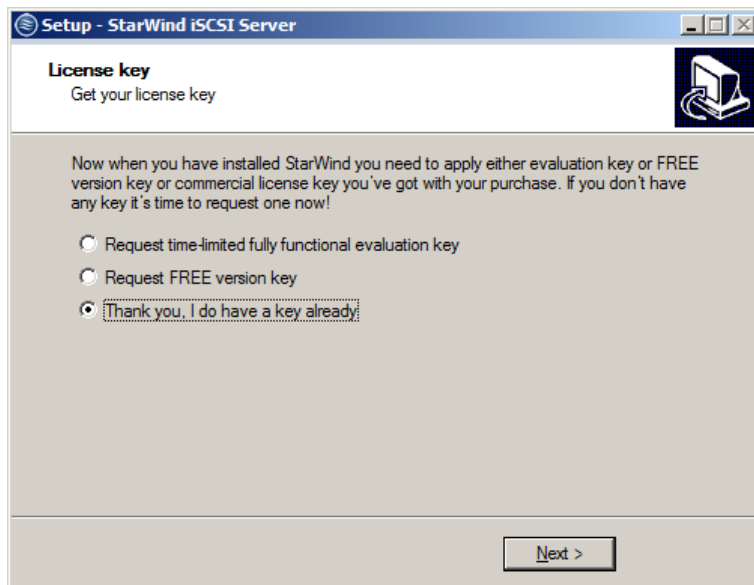


15. Click **Next** to continue.

16. Check the settings you have specified, and click **Back** if you need to make any changes. Click **Install** to continue.

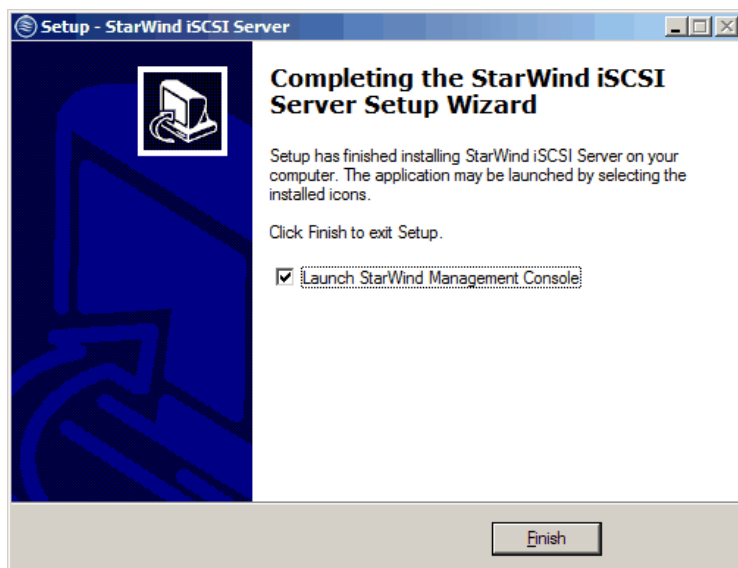


17. After the installation process is completed, you will be prompted to apply either a time-limited fully functional evaluation key, or a FREE version key, or a fully unlocked commercial license key that is supplied with an acquired StarWind product. Select the appropriate option.



18. Click **Next** to continue.

19. Select the appropriate checkbox to launch **StarWind Management Console** immediately.



20. Click **Finish** to close the wizard.

Registering StarWind Management Console

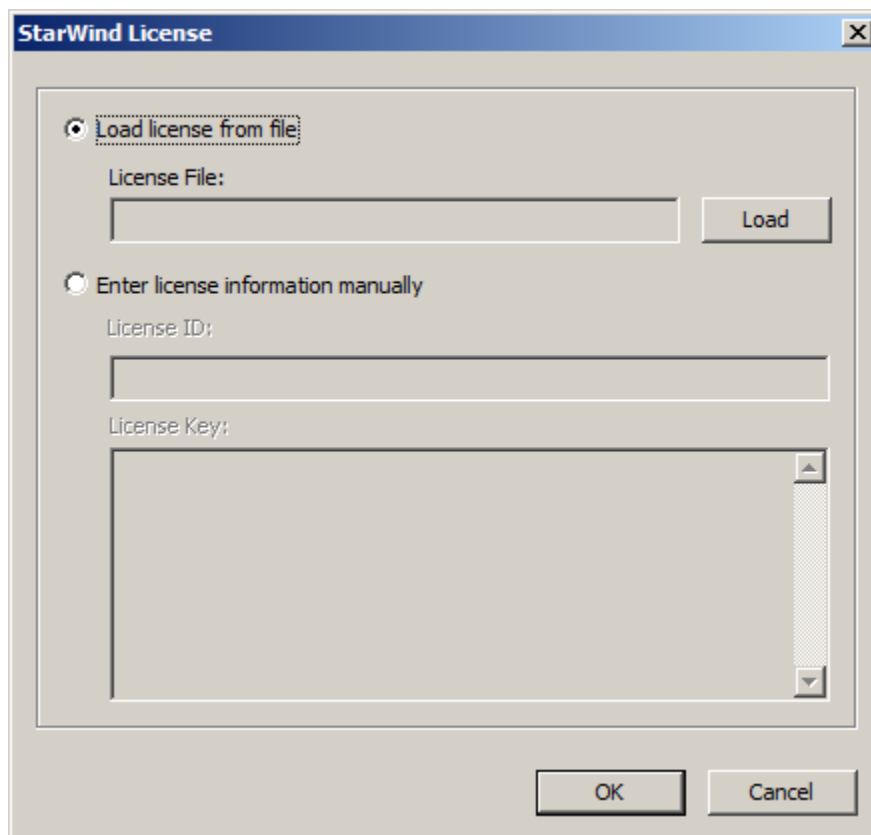
1. Launch **StarWind Management Console**: double click the **StarWind tray icon**.

StarWind Management Console allows for the management of multiple StarWind servers from one computer.

2. Activate **StarWind Management Console** by applying your license key: Click **Apply key...** to proceed.

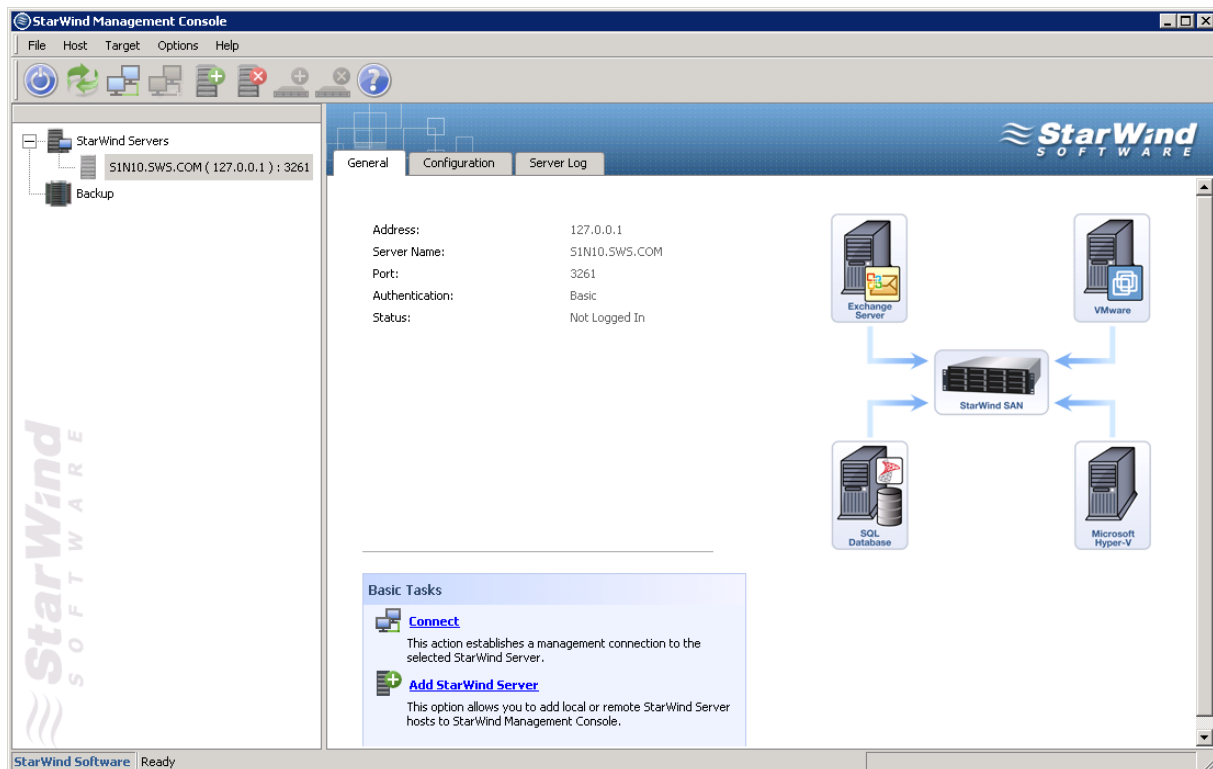


3. Click **Load** to select and open the license file that you have received.

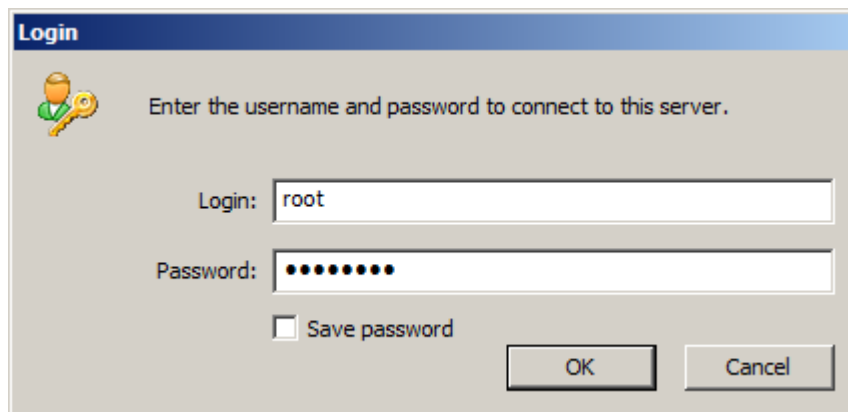


4. Click **OK** to continue.

- The locally installed StarWind Service server is listed in the **Servers** item of the **Console tree**.



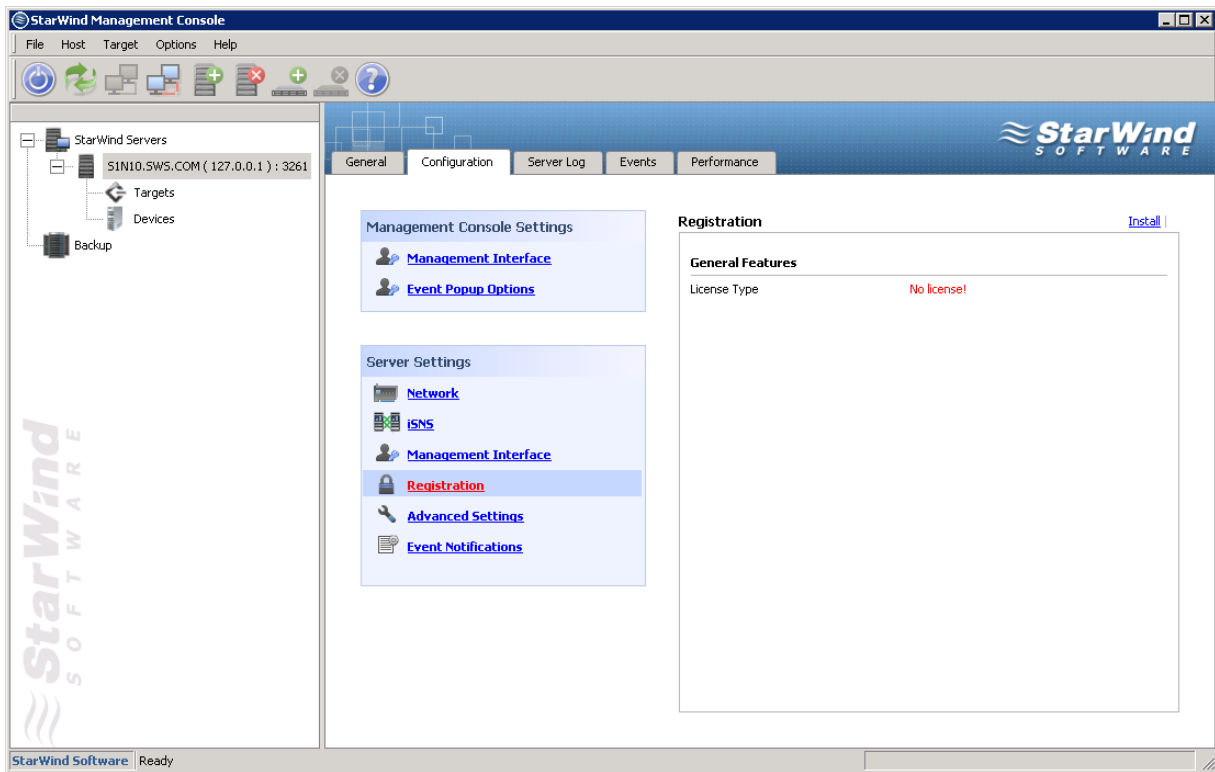
- Click **Connect** in the toolbar to connect to the server.
- You will be prompted to enter login and password. The default login and password are “**root**” and “**starwind**”. You can always change them later.



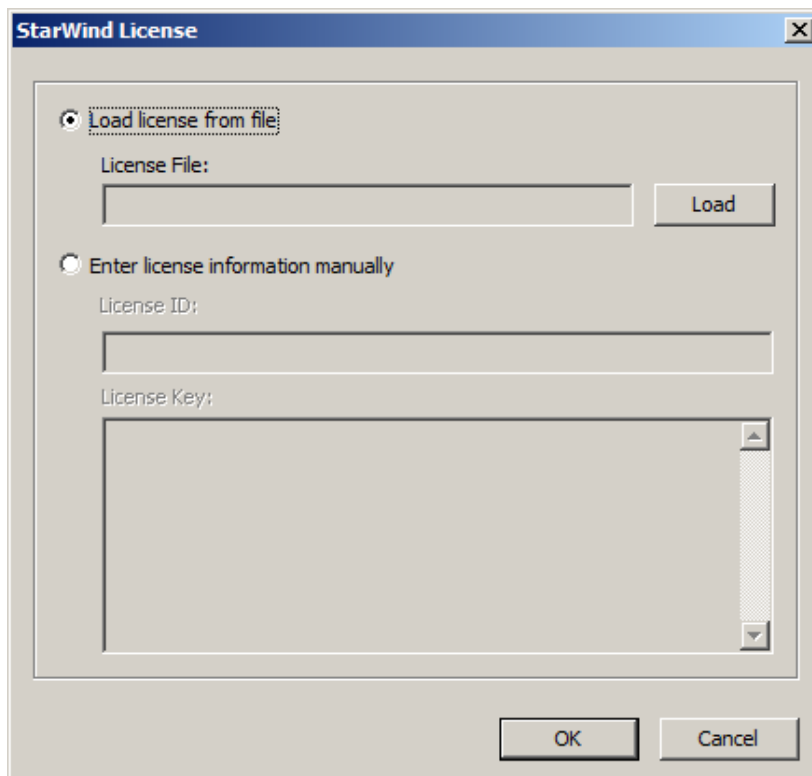
- Click **OK** to continue.

Registering StarWind Software

1. Select the connected server and go to the **Configuration** tab.
2. Click **Registration**. You will see the information about the license applied to this server.



3. Click **Install** to apply the license.
4. Click **Load** to select and open the license file that you have received.



5. Click **OK** to continue.

Preparing Storage

1. Launch **StarWind Management Console: Start -> All Programs -> StarWind Software -> StarWind Management Console**

Note: When the **Management Console** is running, its icon appears in the system tray. To access **StarWind Management Console:**

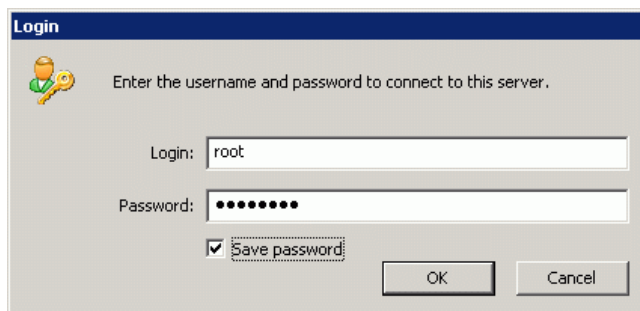
Double-click the **StarWind Management Console** icon

Right click the **StarWind Management Console** icon and select **Start Management Console** from the pop-up menu

2. On the **Console tree** select a server, where iSCSI target device is to be created. Double-click it to connect.

3. In the **Login** dialog that appears specify login and password in the corresponding text fields.

Note: The default login and password are “root” and “starwind”, respectively. You can change them later.



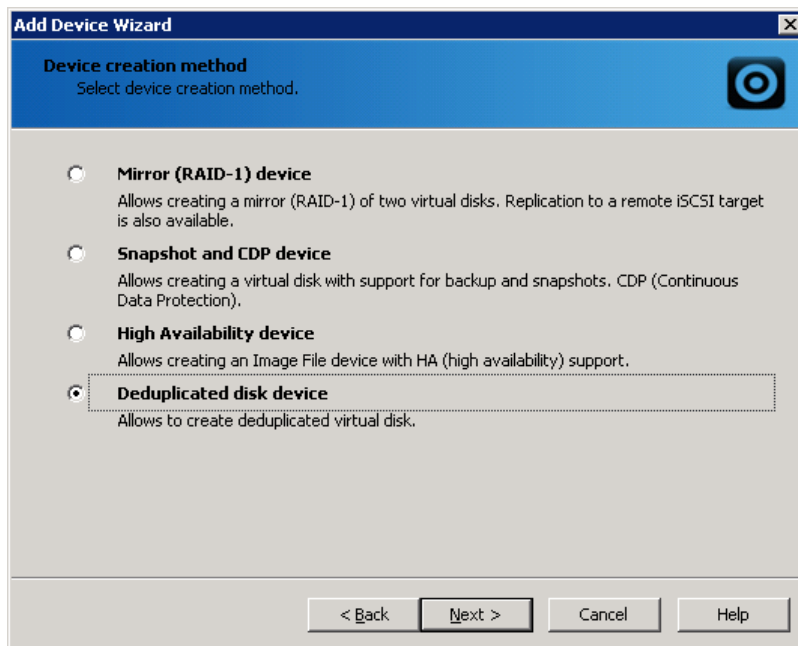
4. Optionally select the **Save password** check box to log in automatically next time.

5. Click **OK** to continue.

6. As you are connected to the **StarWind Service**, click **Add Device** button to add a device to the selected server.

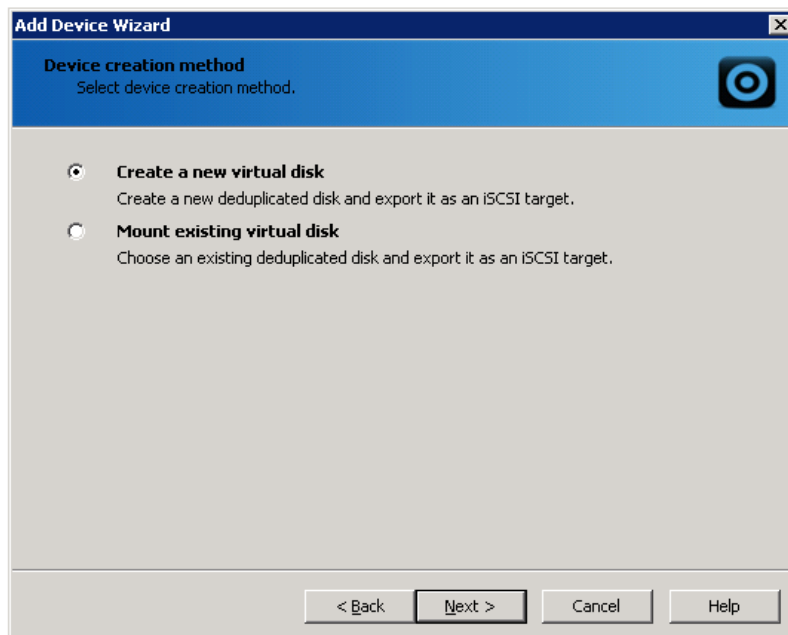
7. **Add Device Wizard** appears. Please, follow the Wizard's steps to complete creation of a new HA device.

8. Go to **Hard Disk->Advanced Virtual-> Deduplicated disk device**.



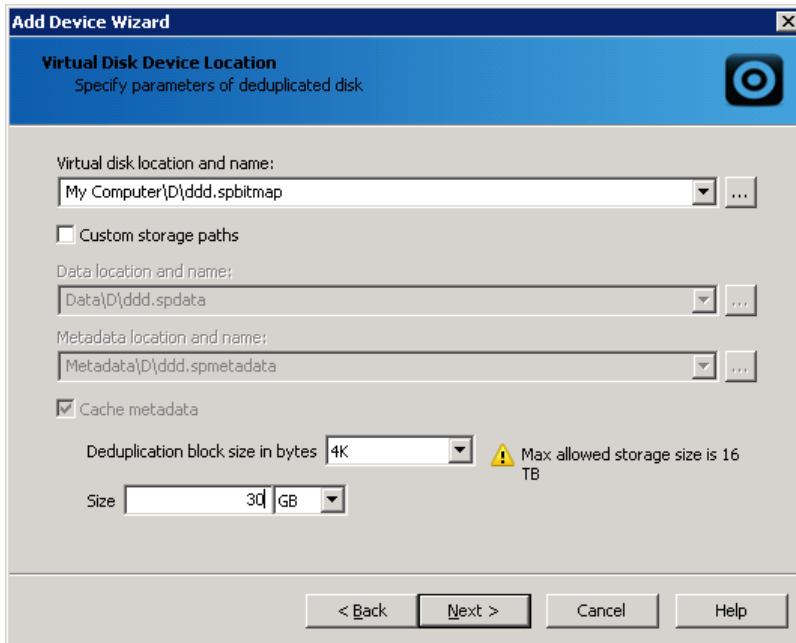
9. Click **Next** to continue.

10. If you decided to create a new virtual disk select **Create a new virtual disk**.



11. Click **Next** to continue.

- Specify the virtual disk location and name in the appropriate text field. Specify the deduplication block size and the virtual disk size.

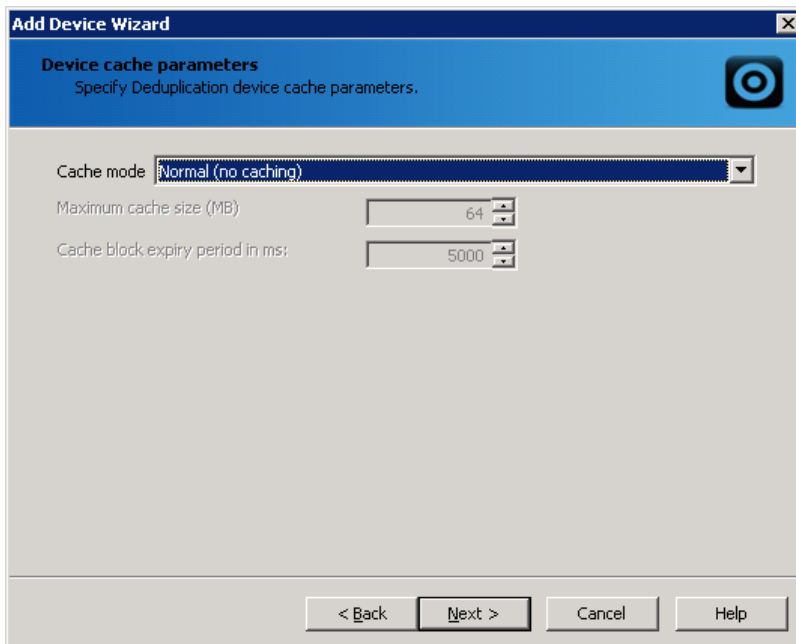


The screenshot shows the 'Add Device Wizard' dialog box with the 'Virtual Disk Device Location' step selected. The title bar reads 'Add Device Wizard' and the subtitle is 'Virtual Disk Device Location Specify parameters of deduplicated disk'. The main area contains the following fields and options:

- 'Virtual disk location and name:' dropdown menu with 'My Computer\D\ddd.spbitmap' selected.
- 'Custom storage paths' checkbox.
- 'Data location and name:' dropdown menu with 'Data\D\ddd.spdata' selected.
- 'Metadata location and name:' dropdown menu with 'Metadata\D\ddd.spmetadata' selected.
- 'Cache metadata' checkbox.
- 'Deduplication block size in bytes' dropdown menu with '4K' selected. A warning icon and text 'Max allowed storage size is 16 TB' are visible.
- 'Size' dropdown menu with '30 GB' selected.

At the bottom, there are four buttons: '< Back', 'Next >', 'Cancel', and 'Help'.

- Click **Next** to continue.
- Select cache mode of deduplication device.



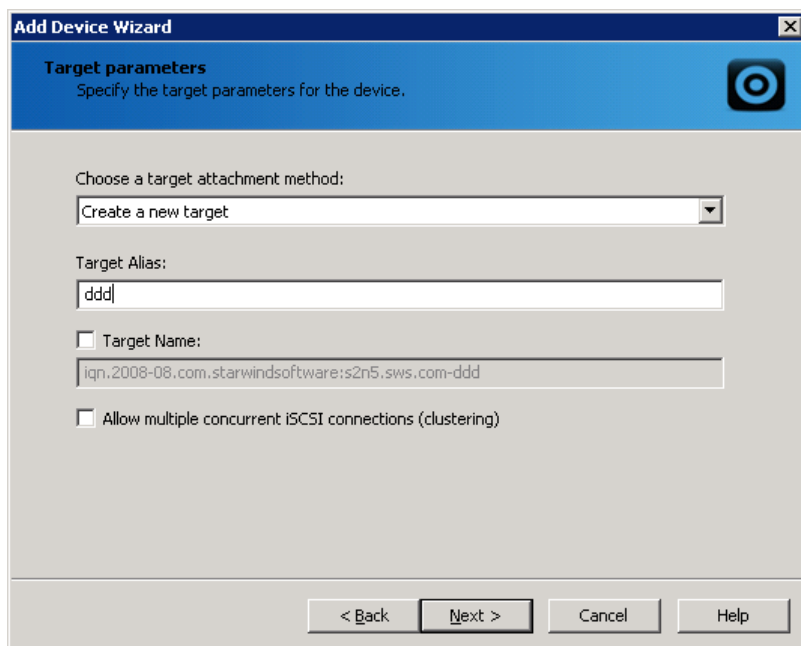
The screenshot shows the 'Add Device Wizard' dialog box with the 'Device cache parameters' step selected. The title bar reads 'Add Device Wizard' and the subtitle is 'Device cache parameters Specify Deduplication device cache parameters.'. The main area contains the following fields and options:

- 'Cache mode' dropdown menu with 'Normal (no caching)' selected.
- 'Maximum cache size (MB)' spinner box with '64' entered.
- 'Cache block expiry period in ms:' spinner box with '5000' entered.

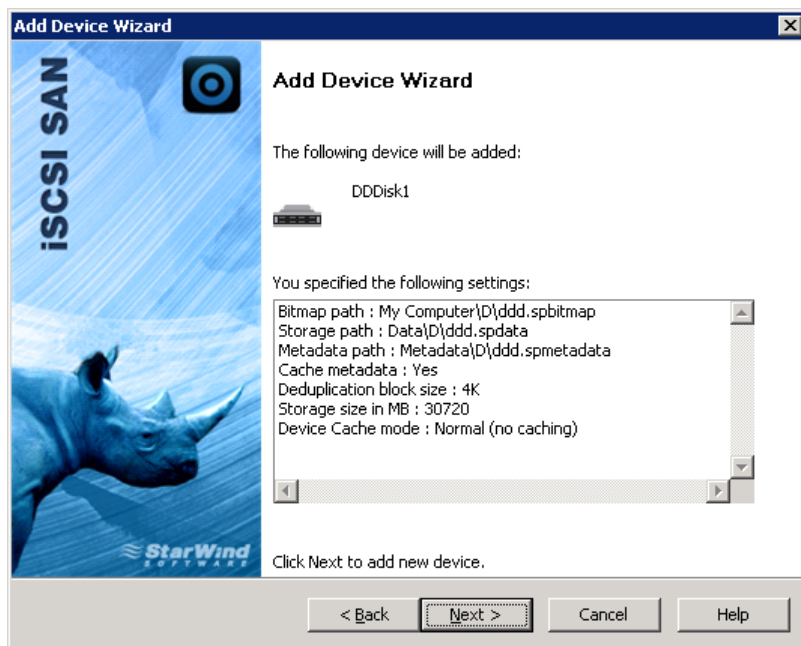
At the bottom, there are four buttons: '< Back', 'Next >', 'Cancel', and 'Help'.

- Click **Next** to continue.

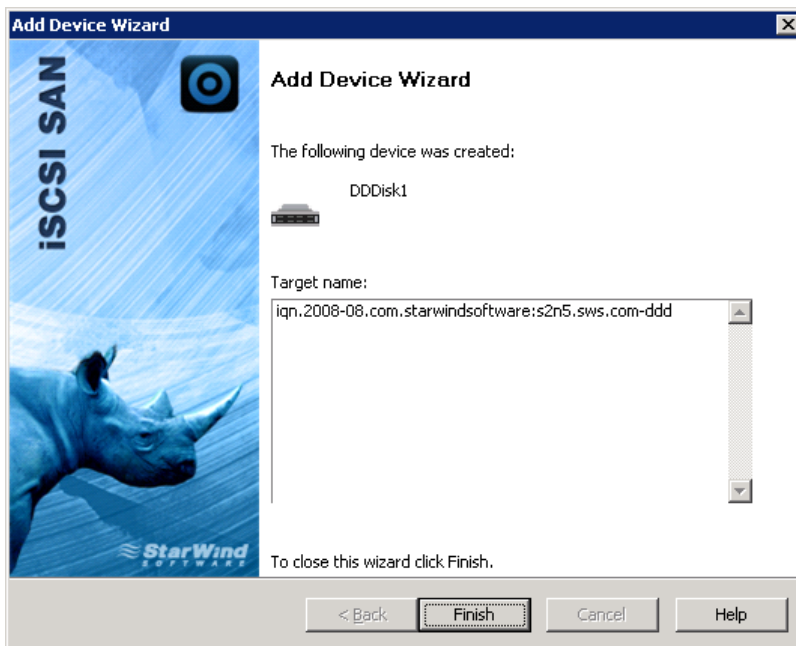
- Specify a target alias and name. The name must be a unique. Under this name the device is declared to the iSCSI initiators connecting to the **StarWind Service** over an IP network.



- Click **Next** to continue.
- Check the specified device parameters. Click **Back** to make any changes.



19. Click **Next** to continue.



20. Click **Finish** to close the wizard.

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