

Setting Up the Quest™ as an OST Backup Target for Veritas™ NetBackup™

Technical White Paper

Quest Engineering

June 2018



ALL RIGHTS RESERVED.

THIS WHITE PAPER IS FOR INFORMATIONAL PURPOSES ONLY, AND MAY CONTAIN TYPOGRAPHICAL ERRORS AND TECHNICAL INACCURACIES. THE CONTENT IS PROVIDED AS IS, WITHOUT EXPRESS OR IMPLIED WARRANTIES OF ANY KIND.

This guide contains proprietary information protected by copyright. The software described in this guide is furnished under a software license or nondisclosure agreement. This software may be used or copied only in accordance with the terms of the applicable agreement. No part of this guide may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopying and recording for any purpose other than the purchaser's personal use without the written permission of Quest Software Inc.

The information in this document is provided in connection with Quest Software products. No license, express or implied, by estoppel or otherwise, to any intellectual property right is granted by this document or in connection with the sale of Quest Software products. EXCEPT AS SET FORTH IN THE TERMS AND CONDITIONS AS SPECIFIED IN THE LICENSE AGREEMENT FOR THIS PRODUCT, QUEST SOFTWARE ASSUMES NO LIABILITY WHATSOEVER AND DISCLAIMS ANY EXPRESS, IMPLIED OR STATUTORY WARRANTY RELATING TO ITS PRODUCTS INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTY OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, OR NON-INFRINGEMENT. IN NO EVENT SHALL QUEST SOFTWARE BE LIABLE FOR ANY DIRECT, INDIRECT, CONSEQUENTIAL, PUNITIVE, SPECIAL OR INCIDENTAL DAMAGES (INCLUDING, WITHOUT LIMITATION, DAMAGES FOR LOSS OF PROFITS, BUSINESS INTERRUPTION OR LOSS OF INFORMATION) ARISING OUT OF THE USE OR INABILITY TO USE THIS DOCUMENT, EVEN IF QUEST SOFTWARE HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES. Quest Software makes no representations or warranties with respect to the accuracy or completeness of the contents of this document and reserves the right to make changes to specifications and product descriptions at any time without notice. Quest Software does not make any commitment to update the information contained in this document.

If you have any questions regarding your potential use of this material, contact:

Quest Software Inc.

Attn: LEGAL Dept

4 Polaris Way

Aliso Viejo, CA 92656

Refer to our Web site (<https://www.quest.com>) for regional and international office information.

Patents

Quest Software is proud of our advanced technology. Patents and pending patents may apply to this product. For the most current information about applicable patents for this product, please visit our website at <https://www.quest.com/legal>.

Trademarks

Quest, the Quest logo, and Join the Innovation are trademarks and registered trademarks of Quest Software Inc. For a complete list of Quest marks, visit <https://www.quest.com/legal/trademark-information.aspx>. Microsoft®, Windows®, Windows Server®, Internet Explorer®, MS-DOS®, Windows Vista® and Active Directory® are either trademarks or registered trademarks of Microsoft Corporation in the United States and/or other countries. Veritas and the Veritas Logo, Backup Exec™, and NetBackup™ are trademarks or registered trademarks of Veritas Technologies LLC or its affiliates in the U.S. and other countries. Red Hat® and Red Hat® Enterprise Linux® are registered trademarks of Red Hat, Inc. in the United States and/or other countries. Novell® and SUSE® are registered trademarks of Novell Inc. in the United States and other countries. Zmanda is a trademark of Zmanda Incorporated in the USA. All other trademarks and registered trademarks are property of their respective owners.

Legend



CAUTION: A CAUTION icon indicates potential damage to hardware or loss of data if instructions are not followed.



IMPORTANT, NOTE, TIP, MOBILE, or VIDEO: An information icon indicates supporting information.

Contents

Installing and configuring QoreStor	5
Creating an OST container for NetBackup.....	6
Installing the Quest OST Plugin.....	8
Adding an OST container to Veritas NetBackup	10
Setting up the QoreStor system cleaner	23
Monitoring deduplication, compression and performance	25

Executive Summary

This white paper provides information about how to set up QoreStor as a backup target for Veritas NetBackup. This document is a quick reference guide and does not include all QoreStor deployment best practices.

For additional information, see the QoreStor documentation and other data management application best practices whitepapers at:

<http://support.quest.com/qorestor>

For more information about Veritas NetBackup, refer to the NetBackup Exec documentation at:

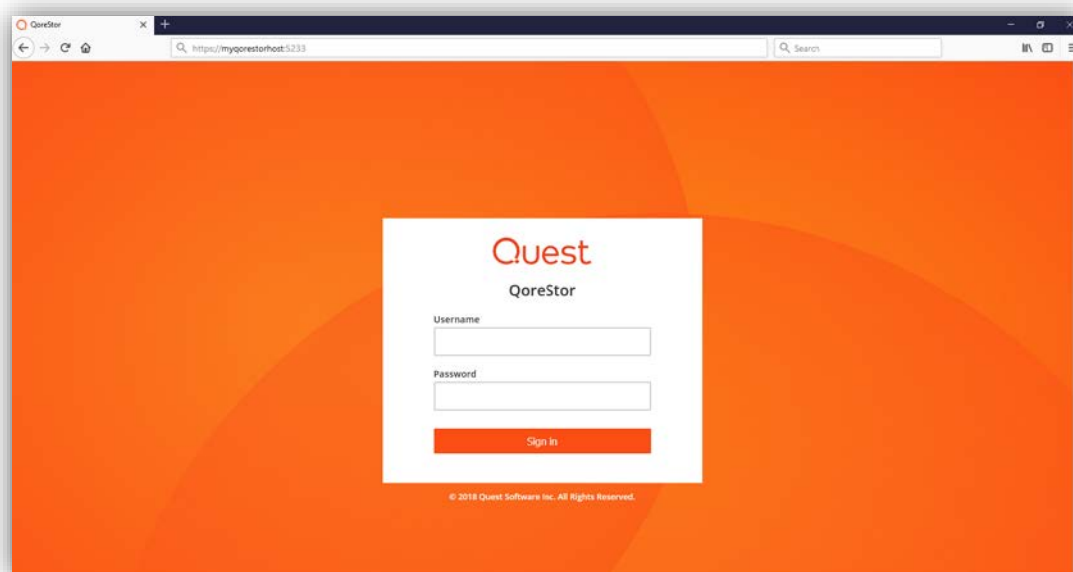
https://www.veritas.com/support/en_US/NetBackup



NOTE: The QoreStor and Veritas NetBackup screenshots used in this document might vary slightly depending on QoreStor version and NetBackup version you are using.

Installing and configuring QoreStor

- 1 Before installing QoreStor, refer to the *QoreStor Interoperability Guide* to ensure your system(s) meet the installation requirements.
- 2 To install QoreStor on your system(s), follow the procedures documented in the *QoreStor Installation Guide*.
- 3 Using a supported web browser (refer to *QoreStor Interoperability Guide* for a list of supported browsers), connect to the QoreStor administrative console via https, using the host IP address/FQDN and port 5233 (<https://<hostname>:5233>).
- 4 Log in with the username `admin` and password `St0r@ge!` (The “0” in the password is the numeral zero)

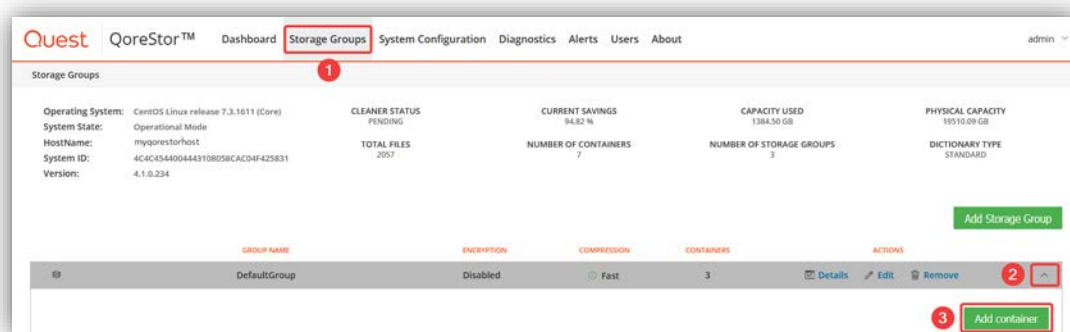


- 5 By default, QoreStor has a user with OST Role named `backup_user` and password “St0r@ge!”. Refer to the *QoreStor User Guide* for information on changing user accounts.

Creating an OST container for NetBackup

In this document, we will show how to create an OST container for NetBackup using the QoreStor administrative console. If you wish to use QoreStor CLI please refer to the *QoreStor CLI Reference Guide*.

- 1 Open the QoreStor administrative Console.
- 2 Select **Storage Groups** in the top navigation area of the QoreStor administrative console ❶.
- 3 Click on the **drop-down arrow** for the Storage Group you will be adding a container to ❷.
- 4 Click on **Add container** ❸.



NOTE: Refer to the *QoreStor User Guide* for information on creating a new Storage Group

- 5 Enter a Name for the container ❹
- 6 Select **OST** from the **Protocol** drop down menu ❺

7 Choose between **Unlimited** or **Quota** (specify Quota Capacity [GB]) for LSU Capacity ⑥

8 Click the **Add** button ⑦

The screenshot shows a dialog box titled "Add container" with a close button (X) in the top right corner. The dialog contains the following fields and controls:

- Name:** A text input field containing "OST_Container", highlighted with a red box and a red circle with the number 4.
- Protocol:** A dropdown menu showing "OST", highlighted with a red box and a red circle with the number 5.
- LSU Capacity:** A section containing two radio buttons: "Unlimited" (unchecked) and "Quota" (checked). The "Quota" option is highlighted with a red box and a red circle with the number 6.
- Quota Capacity [GB]:** A text input field with a small up/down arrow on the right, located below the "Quota" option.
- Buttons:** At the bottom, there are two buttons: "Cancel" (highlighted with a red box and a red circle with the number 7) and "Add" (highlighted with a red box).

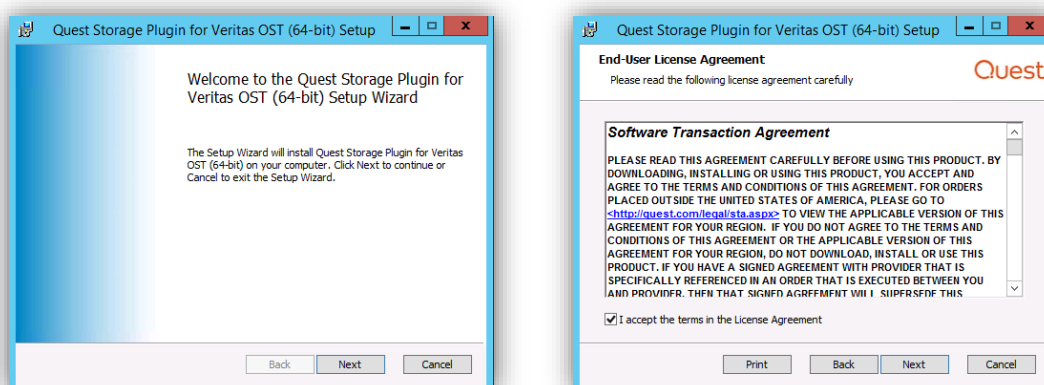
Installing the Quest OST Plugin

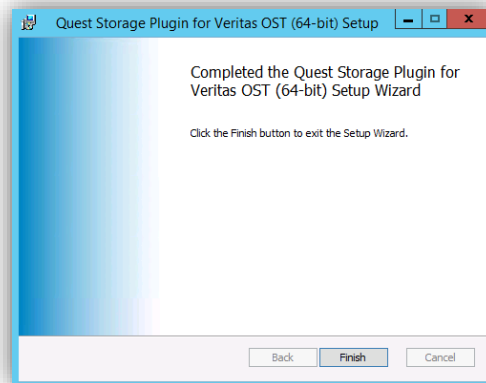
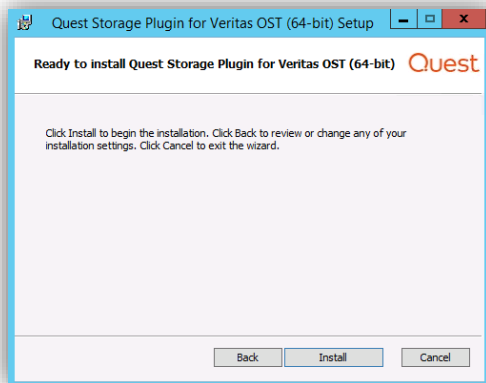
In order to enable NetBackup to use QoreStor, the Quest OST Plugin must be installed in the NetBackup Media Server(s).

Before proceeding, refer to the *QoreStor Interoperability Guide* for a list of supported Operating Systems, NetBackup and OST Plugin versions. Once identified, download the OST Plugin at <https://support.quest.com/qorestor/>.

Installing the OST Plugin on Windows

- 1 Download the Quest OST Plugin onto the server you wish to install
- 2 Execute the OST Plugin .msi installer and follow the screen prompts





Installing the OST Plugin on Linux

- 1 Download the Quest OST Plugin onto the server you wish to install
- 2 Extract the `.bin` file from the `.gz` package and give it executable permission
- 3 Execute the `.bin` file adding `-install` switch

```
gunzip ./QuestOSTPlugin-X.X.X.X-x86_64-RHEL/SLES.bin.gz
chmod +x ./QuestOSTPlugin-X.X.X.X-x86_64-RHEL/SLES.bin.gz
./QuestOSTPlugin-X.X.X.X-x86_64-RHEL/SLES.bin.gz -install

Starting, please wait...

OST Plugin Installation requires nbrmms service to be stopped.
Checking if nbrmms service is running...

nbrmms service is not running, proceeding with Installation...

Preparing... #####
QuestOSTPlugin #####
oca-libs #####

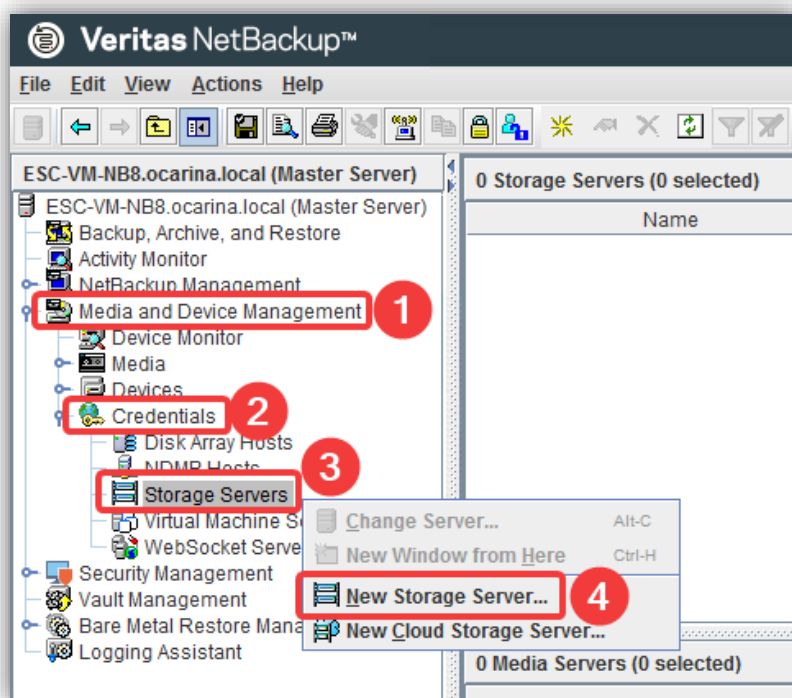
Installation successful!

Log for this operation is /var/log/libstspioca_install.log
```

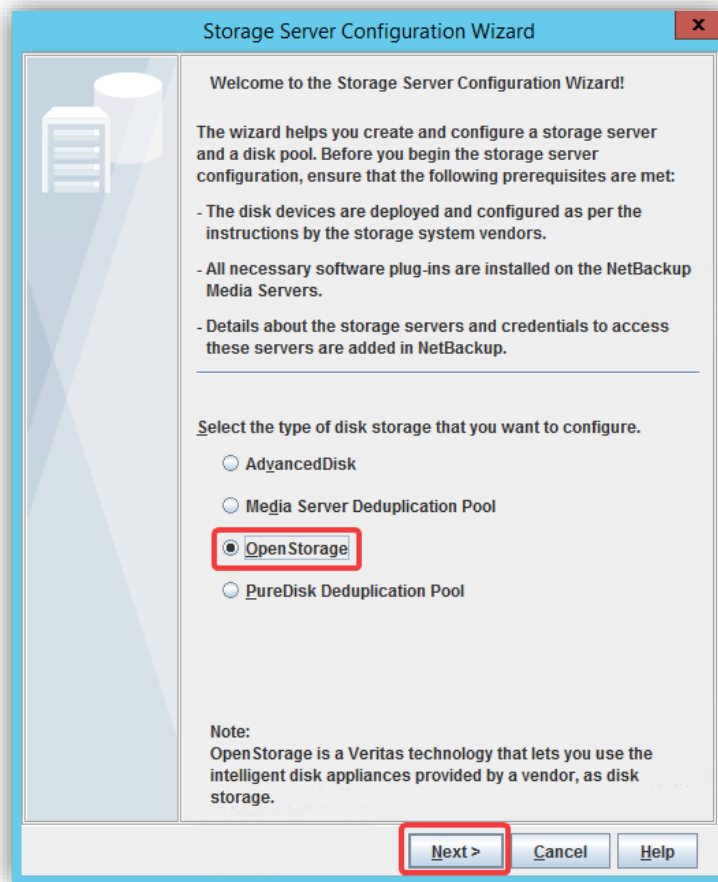
Adding an OST container to Veritas NetBackup

This section provides information needed to add an existing or newly created OST container to NetBackup.

- 1 Open the NetBackup administration console.
- 2 Expand Media and Device Management ❶, then Credentials ❷. Right-click Storage Servers ❸ and click on New Storage Server... ❹.



- 3 In the **Storage Server Configuration Wizard** select **OpenStorage** and click **Next**.



- a Select the desired **Media server** from the dropdown, write **QUEST** on the **Storage server type** and specify the QoreStor host IP/hostname or FQDN for **Storage server name**; enter the OST **User name**, **Password** and **Confirm password** (the default OST username is backup_user and the default password is St0r@ge!) and click **Next**.

Storage Server Configuration Wizard

Add Storage Server
Provide storage server details.

Select a media server that has the vendor's OpenStorage plug-in installed.
NetBackup uses this media server to determine the storage server capabilities.

Media server:

Storage server type:

QUEST

Storage server name:

Enter storage server credentials

User name:

Password:

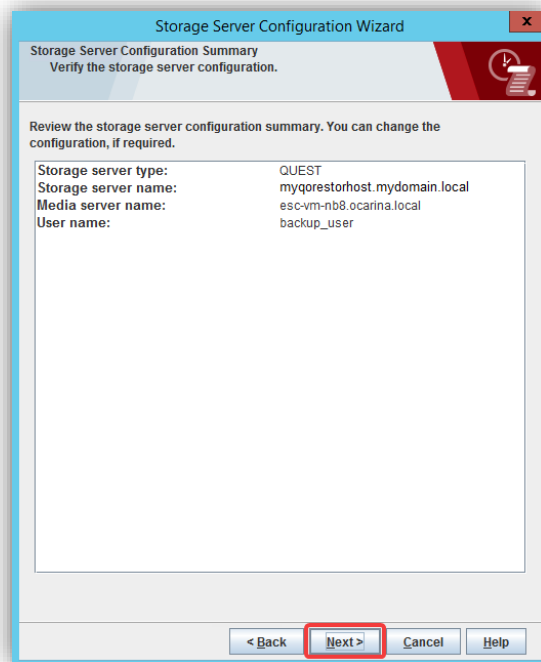
Confirm password:

< Back **Next >** Cancel Help

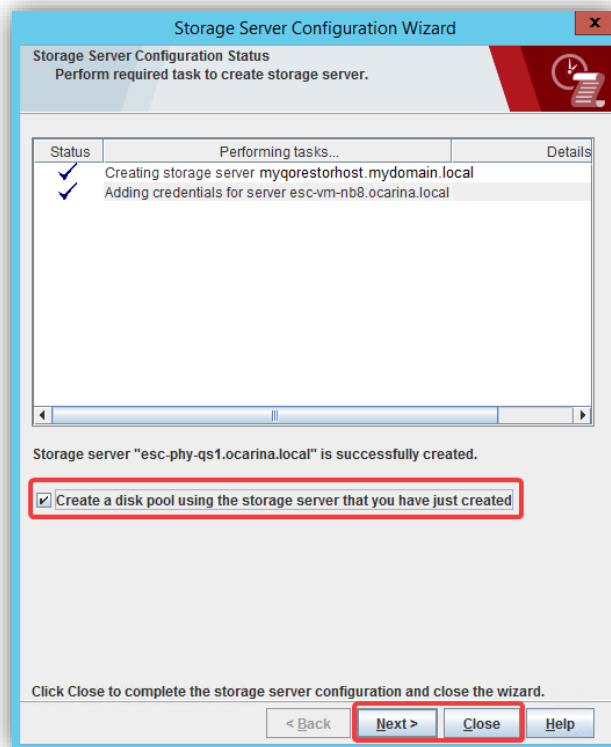


NOTE: If additional media servers are available, you will see an additional step where you can choose which media servers to add.

- 4 Confirm all the information is accurate and click **Next**



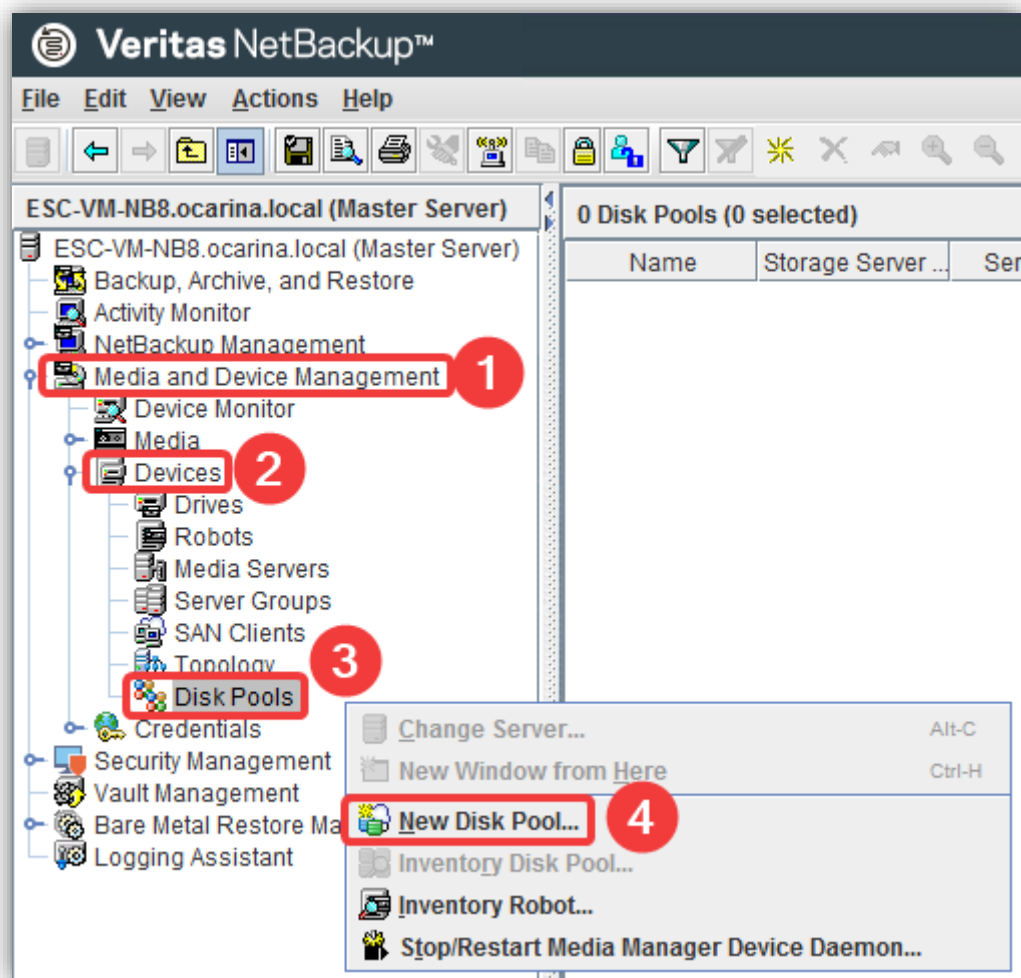
- 5 If you wish to Create a disk pool using the storage server that you have just created, check the checkbox and click Next, otherwise uncheck the checkbox and click Close. The steps to create a disk pool will be demonstrated in the next section.



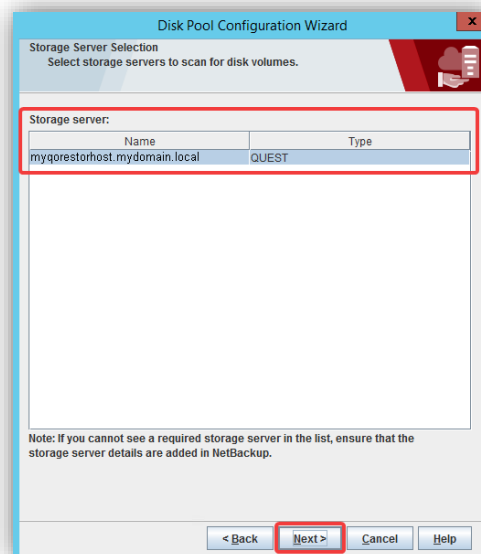
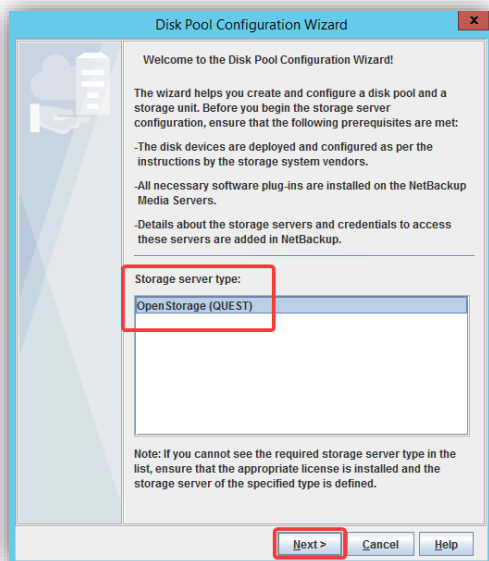
Creating a Disk Pool

After adding the QoreStor host as a Storage Sever, the next stage will be to create a Disk Pool. The following steps will demonstrate how to do this.

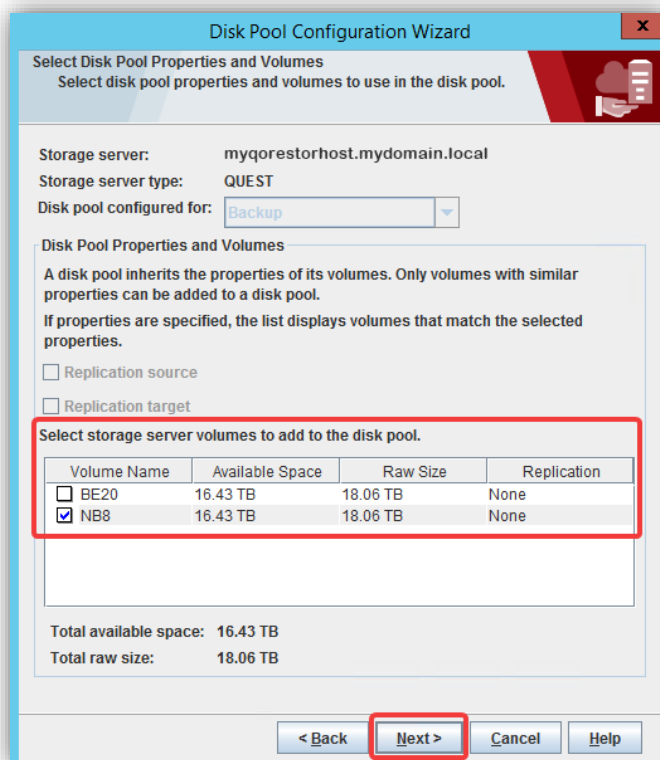
- 1 If not continuing from the previous section, where Create a disk pool using the storage server that you **have just created** checkbox would have been checked, expand **Media and Device Management** ❶, then **Devices** ❷, right-click **Disk Pools** ❸ and select **New Disk Pool...** ❹



- 2 Select **Open Storage (QUEST)** for **Storage server type** and click **Next**. Select the QoreStor **Storage server** and click **Next**



- 3 Select the OST container(s) you wish to add by ticking the corresponding **checkbox** and click **Next**



- 4 Choose a **Disk Pool name** and if desired, set the **Limit I/O streams** number **per volume** and click **Next**

Disk Pool Configuration Wizard

Additional Disk Pool Information
Provide additional disk pool information.

Storage server: myqorestorhost.mydomain.local

Storage server type: QUEST

Disk pool configured for: Backup

Disk Pool Size

Total available space: 16.43 TB

Total raw size: 18.06 TB

Disk Pool name: QS-OST-Disk-Pool

Comments:

High water mark: 98 %

Low water mark: 80 %

Maximum I/O Streams

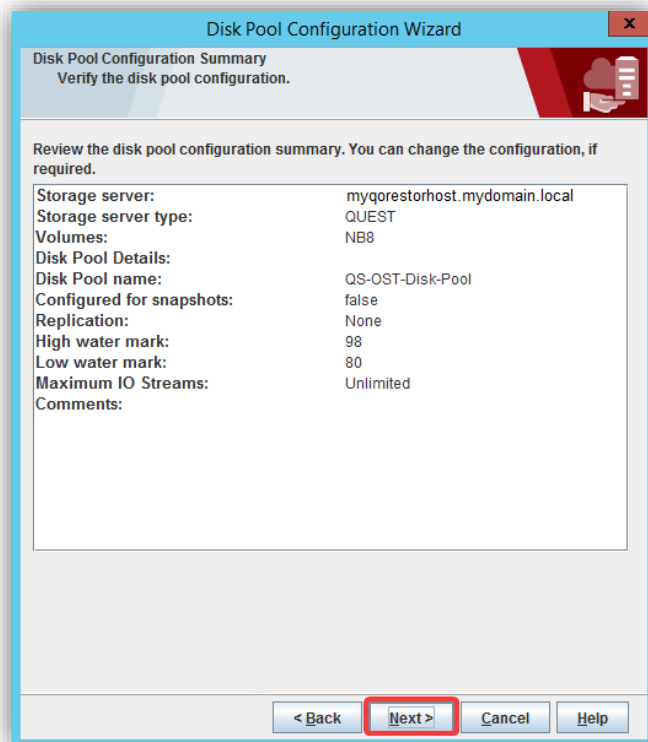
Concurrent read and write jobs affect disk performance.

Limit I/O streams to prevent disk overload.

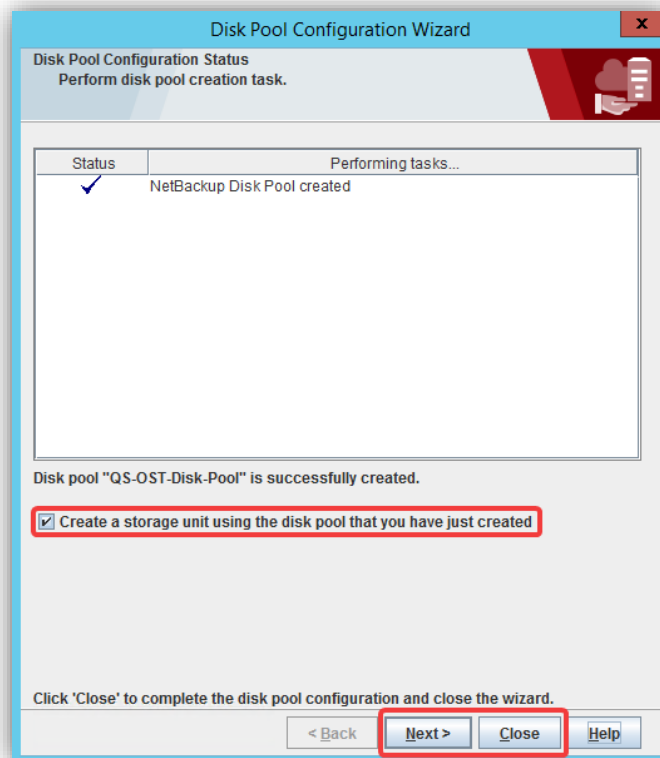
☒ Limit I/O streams: -1 per volume

< Back Next > Cancel Help

- 6 Verify the disk pool configuration and click **Next**



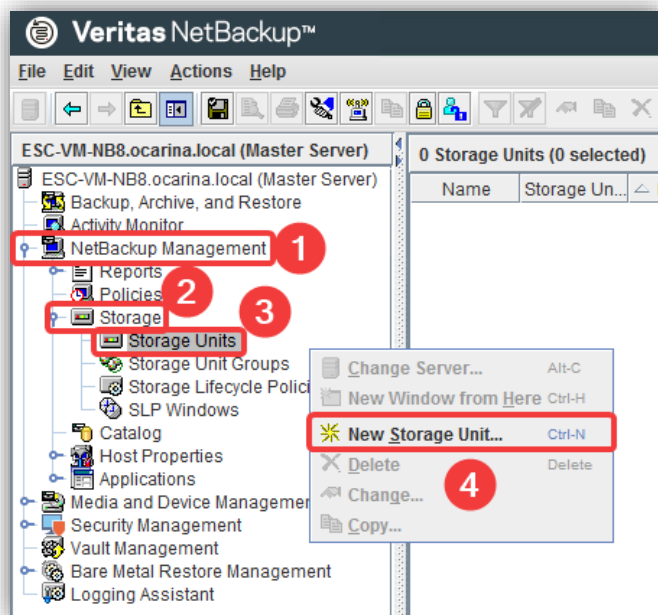
- 7 If you wish to **Create a storage unit using the disk pool that you have just created**, check the **checkbox** and click **Next**, otherwise uncheck the **checkbox** and click **Close**. The steps to create a storage unit will be demonstrated in the next section.



Creating a Storage Unit

After adding the QoreStor host as a Storage Server and creating a Disk Pool, the final stage before enabling the OST container to be used, will be to create a Storage Unit. The following steps will demonstrate how to do this.

- 1 If not continuing from the previous section, where **Create a storage unit using the disk pool that you have just created** checkbox would have been checked, expand **NetBackup Management** ❶, then **Storage** ❷, right-click **Storage Units** ❸ and select **New Storage Unit...** ❹.



- 2 Specify a **Storage unit name**, select **Disk** and **Open Storage (QUEST)** from the Storage unit type and Disk type respectively and **Select disk pool disk** using the drop down button.
Chose if you want to **Use any available media server** or **Only use the following media servers** (and check the ones you wish to use). Adjust the **Maximum concurrent jobs** field if needed. Finally click OK

New Storage Unit

Storage unit name: QS_Storage_Unit

Storage unit type: Disk ☐ On demand only

Disk type: OpenStorage (QUEST)

Properties and Server Selection

Storage unit configured for: Backup

A storage unit inherits the properties of its disk pool. If properties are specified, only those disk pools that match the specified properties will be available below.

☐ Replication source

☐ Replication target

Select disk pool: QS-OST-Disk-Pool [View Properties](#)

Media server:

☒ Use any available media server

☐ Only use the following media servers

Media Servers

☐ esc-vm-nb8.ocarina.local

Maximum concurrent jobs: 1

Maximum fragment size: 524288 Megabytes

OK **Cancel** **Help**

i NOTE: If you are continuing from the Disk Pool Configuration Wizard, the pop-up window is slightly different, since it assumes the values from the previously created disk pool:

The screenshot shows a Windows-style dialog box titled "Disk Pool Configuration Wizard" with a close button (X) in the top right corner. The main heading is "Storage Unit Creation" with the instruction "Enter details to create storage unit." Below this, the "Disk pool:" is set to "QS-OST-Disk-Pool" and the "Storage server type:" is set to "QUEST". The "Storage unit name:" field contains "QS-OST-Disk-Pool-stu". A section titled "Media Server" contains two radio buttons: "Use any available media server to transport data" (which is selected) and "Only use the selected media servers:". Below the second radio button is a list box titled "Media Servers" containing one entry, "esc-vm-nb8.ocarina.local", which is preceded by an unchecked checkbox. At the bottom of the dialog, there are four buttons: "< Back", "Next >", "Cancel", and "Help". The "Maximum concurrent jobs:" is set to "1" and the "Maximum fragment size:" is set to "524288 Megabytes".

i NOTE: When choosing the number of maximum concurrent jobs, both the QoreStor and the hosting Hardware limits need to be considered to prevent job failures should those limits be exceeded. Refer to the *QoreStor Interoperability Guide* for more information

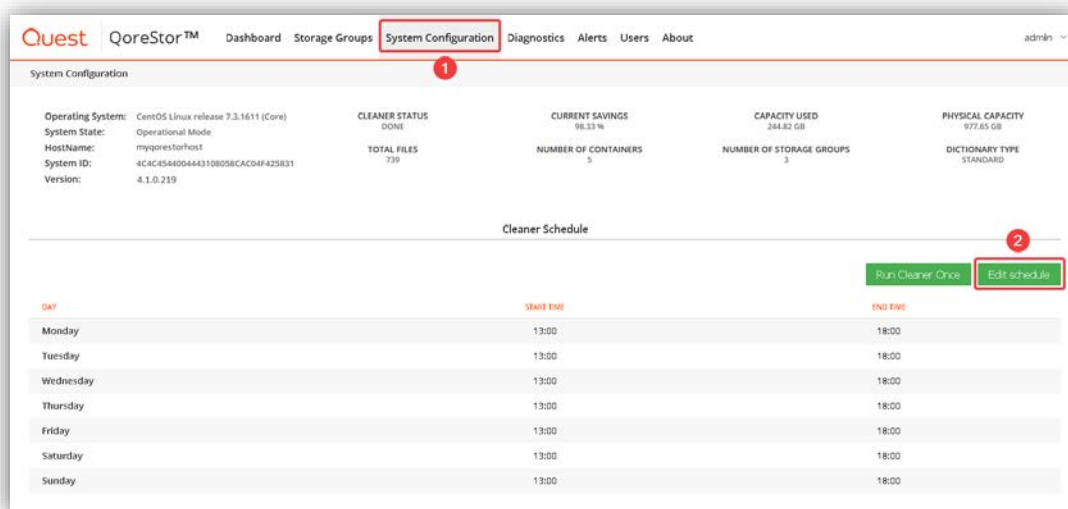
Appendix A

Setting up the QoreStor system cleaner

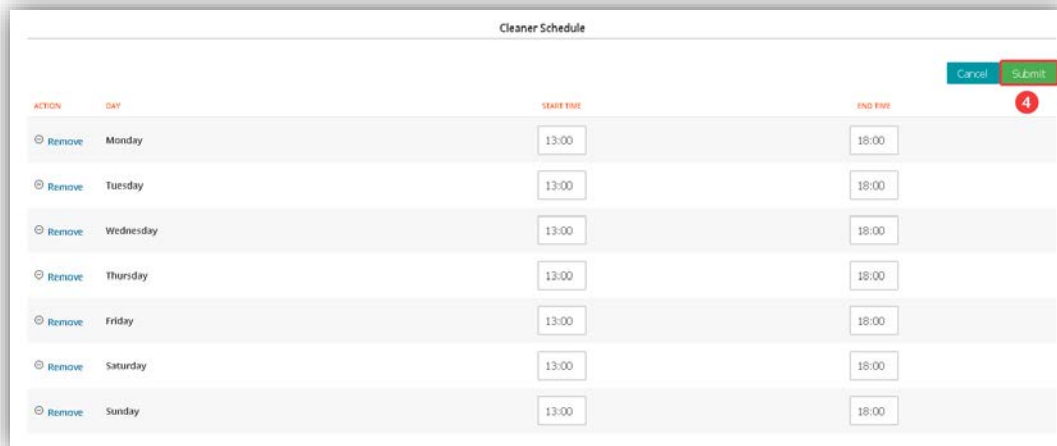
Performing scheduled disk space reclamation operations is needed as a method for recovering disk space from system containers in which files were deleted as a result of deduplication. Ideally, the QoreStor cleaner should complete a full cycle at least once a week. This will be accomplished in most cases by the predefined QoreStor cleaner schedule. The cleaner also runs during idle time.

In case you wish to change the predefined cleaner schedule times, perform the following steps:

1. Open the QoreStor administrative console.
2. Select **System Configuration** in the top navigation area ❶.
3. Click **Edit Schedule** ❷.



- 1 Define the schedule and click **Submit** 4.

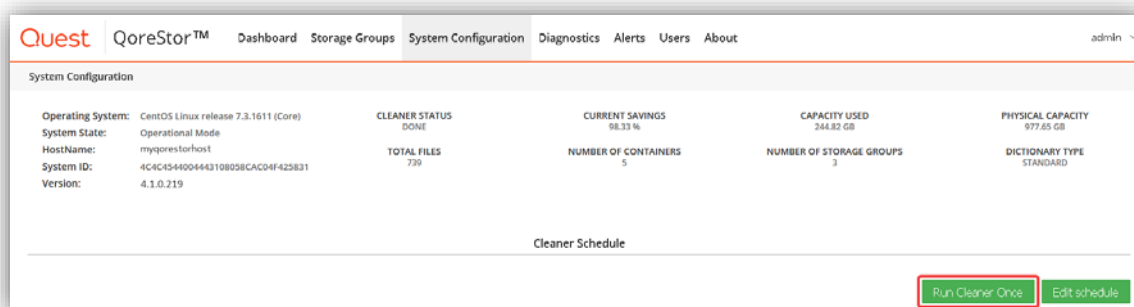


The image shows a 'Cleaner Schedule' configuration window. It has a table with columns: ACTION, DAY, START TIME, and END TIME. There are 'Cancel' and 'Submit' buttons at the top right. A red circle with the number '4' is next to the 'Submit' button. The table contains rows for each day of the week, with 'Remove' as the action and '13:00' to '18:00' as the time range.

ACTION	DAY	START TIME	END TIME
Remove	Monday	13:00	18:00
Remove	Tuesday	13:00	18:00
Remove	Wednesday	13:00	18:00
Remove	Thursday	13:00	18:00
Remove	Friday	13:00	18:00
Remove	Saturday	13:00	18:00
Remove	Sunday	13:00	18:00

If necessary, you can also perform a full cleaner cycle manually using either the QoreStor Administrative Console or QoreStor CLI.

Figure 1: QoreStor Administrative Console



The image shows the 'System Configuration' page of the QoreStor Administrative Console. It displays various system metrics and a 'Cleaner Schedule' section at the bottom. The 'Cleaner Schedule' section has a 'Run Cleaner Once' button highlighted with a red box and an 'Edit schedule' button.

System Configuration		CLEANER STATUS	CURRENT SAVINGS	CAPACITY USED	PHYSICAL CAPACITY
Operating System:	CentOS Linux release 7.3.1611 (Core)	DONE	98.33 %	244.82 GB	977.65 GB
System State:	Operational Mode				
HostName:	myqorestorhost				
System ID:	4C4C4544004443108058CAC04F423831	TOTAL FILES	NUMBER OF CONTAINERS	NUMBER OF STORAGE GROUPS	DICTIONARY TYPE
Version:	4.1.0.219	739	5	3	STANDARD

Cleaner Schedule

[Run Cleaner Once](#) [Edit schedule](#)

Figure 2: QoreStor CLI

```
# maintenance --filesystem --reclaim_space
# Successfully started cleaner.
```


Appendix B

Monitoring deduplication, compression and performance

After backup jobs have run, QoreStor tracks capacity, storage savings, and throughput. To view the historical representation of these values is shown in the dashboard of the QoreStor administrative console. This information is valuable in understanding the benefits of QoreStor.



NOTE: Deduplication ratios increase over time. It is not uncommon to see a 2-4x reduction (25-50% total savings) on the initial backup. As additional full backup jobs are completed, the ratios will increase. Backup jobs with a 12-week retention will average a 15x ratio in most cases.