Quest® QoreStor™ 4.1

Installation Guide

Patents

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Legend

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

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

Contents

About this Installation Guide

The Quest® QoreStor™ Installation Guide provides instructions and reference information needed for a successful QoreStor installation. This guide contains information on:

- Hardware and software requirements for the QoreStor installation machine
- Infrastructure requirements
- Port configurations
- Pre-installation requirements
- Installation procedures
- Removal procedures

Other information you may need

The following table lists the documentation available for QoreStor. The documents listed in this table are available on the Quest support website by selecting your specific QoreStor version at:

http://support.quest.com/QoreStor

Table 1: QoreStor documentation

Document	Description
QoreStor Installation Guide	Provides information on installation and operation requirements, supported platforms as well as procedures for installing QoreStor.
QoreStor User Guide	Provides information on configuring and using QoreStor.
QoreStor Release Notes	Provides the latest information about new features and known issues with a specific product release.
QoreStor Command Line Reference Guide	Provides information about managing QoreStor data backup and replication operations using the QoreStor command line interface (CLI).
QoreStor Interoperability Guide	Provides information on supported infrastructure components.

Document	Description
Additional whitepapers	Instructions and best practices for configuring additional Quest and third-party applications to work with QoreStor.

> **ℹ NOTE:** Check for the latest documentation updates and release notes at http://support.quest.com/qorestor. Read the release notes first because they contain the most recently documented information about known issues with a specific product release.

Information on compatible products

QoreStor offers direct integration with Quest Software's NetVault® Backup and vRanger, as well as Veritas NetBackup and Backup Exec. For more information on those products refer to the documents below.

Table 2: Quest NetVault Backup documentation

Document	Description
NetVault Backup Installation Guide	Provides information about installing and upgrading the NetVault Backup server and client software.
NetVault Backup Administration Guide	Decribes how to configure and use NetVault Backup to protect your data. This document also provides information on configuring QoreStor repositories and migrating NetVault SmartDisk data to the new QoreStor repository.
NetVault Backup Release Notes	Provides the latest information about new features and known issues with a specific product release.

> **ℹ NOTE:** See the complete NetVault Backup documentation at https://support.quest.com/netvault-backup.

Table 3: Quest vRanger documentation

Document	Description
vRanger Installation/Upgrade Guide	This document provides information on supported platforms, system requirements, and instructions on installing and upgrading vRanger.
vRanger User Guide	This document provides information and procedures on configuring and using vRanger to protect virtual and physical environments.
vRanger Release Notes	This document details the issues resolved in this release, the known issues as of this release, and the third party components in vRanger.

> **ℹ NOTE:** See the complete vRanger documentation at https://support.quest.com/vranger.

Table 4: Veritas documentation

Document	Description
Veritas NetBackup	For information on Veritas NetBackup, refer to the NetBackup product documentation.
Veritas Backup Exec	For information on Veritas Backup Exec, refer to the NetBackup product documentation.

Getting started with QoreStor

This chapter provides an introduction to QoreStor, and provides other important information that you may need before you begin to deploy the application. Information on the following topics is included:

- Introducing QoreStor - provides an introductory description of the QoreStor application.
- System requirements - provides information on the hardware and software requirements for installation, as well as compatibility information for the larger QoreStor infrastructure.
- **Setting up Licensing** - provides information about how to properly license your QoreStor deployment.

Introducing Quest® QoreStor™

Quest® QoreStor™ is a software-defined secondary storage platform based on Quest's proven DR Appliance's resilient deduplication and replication technologies. With QoreStor, you can break free of backup appliances and accelerate backup performance, reduce storage requirements and costs, and replicate safer and faster to the cloud for data archiving, disaster recovery and business continuity.

QoreStor supports all of the major backup software applications in use today and can lower your backup storage costs to as little as $.16/GB while reducing your total cost of ownership. (For a complete list of supported backup software, see Supported backup applications) .QoreStor achieves these results using patented Rapid technology as well as built-in, variable block-based deduplication and compression.

Lower costs and maximize the return on your IT investment by leveraging virtually any storage hardware, virtualization platform or cloud provider. QoreStor also supports many backup software solutions — so it's not just for Quest. Simple to deploy and easy to manage, QoreStor enables you to shrink replication time, improve data security and address compliance requirements.

QoreStor helps you to:

- Reduce on-premises and cloud storage costs with industry-leading deduplication and compression.
- Accelerate backup completion with protocol accelerators and dedupe.
- Shrink replication time by transmitting only changed data.
- Improve data security and comply with FIPS 140-2.

- Maximize return on investment for existing data protection technologies.
- Lower total cost of ownership through all-inclusive licensing.

QoreStor includes the following features:

- Hardware- and software-agnostic platform
- Next-generation storage dedupe engine
- Built-in protocol accelerators
- Support for a wide variety of data backup installations and environments.

Licensing QoreStor

QoreStor offers a backend capacity licensing model to allow for simple integration with other Quest Data Protection products. A single QoreStor server can have multiple license types. For example, one QoreStor server can support both NetVault Backup and standalone licenses.

- **Standalone license** - QoreStor is licensed by the amount of backend capacity required.

QoreStor licenses are additive, meaning that if you purchase a 5TB license now, and a 10TB license in the future, you will have 15TB total capacity.

i | **NOTE:** Licenses for QoreStor are specific to the QoreStor server. When installing a license, the System ID for your QoreStor server is required. You can obtain the System ID with the command **system --show | grep "System ID"**

Evaluating QoreStor

QoreStor offers two methods for evaluation:

- **Default installation** - If no license is installed, QoreStor defaults to a no-cost, 1TB capacity installation supported by the QoreStor Community. This option requires no license and does not expire.
  - If a license is applied to a server running in this mode, the free 1TB is **not** added to the purchased license capacity.
  - When installed in Demo mode, the capacity is limited to 100GB.
- **Full capacity trial** - available on the Quest Software Trial site, which provides a 30-day evaluation license for up to 150TB and access to Quest Support. After the evaluation period has expired, the QoreStor server will operate in Manual Intervention mode until a license is applied. To use QoreStor beyond that time frame, you will need to purchase a perpetual standalone license.
  - If installed in Demo mode, the capacity is limited to 100GB
  - If a longer trial period is required, please contact Quest Sales.

If you have purchased a perpetual license, you can install it using the **system --license** command, as described in the *QoreStor Command Line Reference Guide*.

i | **NOTE:** When ordering a license, the System ID for your QoreStor server is required. You can obtain the System ID with the command **system --show | grep "System ID"**

QoreStor installation modes

QoreStor can be installed in one of three installation modes, each with different hardware requirements and expected performance levels.

- **Standard** - This the mode of installation that will yield the highest performance. Unless you know that Cloud Optimized or Demo mode is appropriate for your use-case, use Standard mode to avoid performance issues. Standard mode supports a back end capacity of up to 150TB.
- **Cloud Optimized** - This is a smaller footprint installation designed to maximize cost-effectiveness for operation in cloud environments. The data dictionary size is reduced to reflect the lower backend capacity limit of 43TB.
- **Demo** - Demo mode is the least hardware-intensive option used for initial evaluation or lightweight testing. Demo mode can easily be installed on a virtual machine running on most workstations. Demo mode is not suitable for any production application. Demo mode supports a back end capacity of up to 100GB.

System requirements

This chapter provides information on the hardware and software requirements for installation of QoreStor, as well as platform compatibility information necessary to ensure an optimized QoreStor infrastructure. Information on the following topics is included:

- Hardware requirements for installation - provides information the hardware specifications necessary to install and run QoreStor.
- Supported installation platforms - provides information on the operating systems supported for installation, and any additional software that is required.
- Storage requirements - provides information on the type of storage devices supported by QoreStor.
- Networking requirements - details the network configurations required for a successful QoreStor deployment.
- Supported backup applications - provides information on the Quest and third-party applications compatible with QoreStor.

Hardware requirements for installation

QoreStor can be installed in one of three modes: Standard, Cloud Optimized, and Demo. Each installation mode has different minimum installation requirements, as described below. Refer to QoreStor installation modes for more information on the installation modes.

i | NOTE: The table below lists the minimum hardware requirements for installation. Refer to QoreStor sizing guidelines for information on sizing your QoreStor server.

Table 5: Hardware requirements for installation

	Standard Mode	Cloud Optimized Mode	Demo Mode
CPU cores	4	4	4

RAM	24 GB	14 GB	4 GB
Storage capacity	Minimum of 500 GB free space on repository disk	Minimum of 500 GB free space on repository disk	Minimum of 50 GB free space on repository disk
Additional storage reqirements	• Storage backend should support 2000 IOPS for sequential writes and 850 IOPS with random writes. • Recommended backend configuration is RAID 6 with 6 disks. 4 of these disks will be usable. • Maximum supported physical capacity is 150TB	• Storage backend should support 2000 IOPS for sequential writes and 850 IOPS with random writes. • Recommended backend configuration is RAID 6 with 6 disks. 4 of these disks will be usable. • Maximum supported physical capacity is 43TB	When installing in Demo mode, QoreStor does not peform a pre-check for IOPS

QoreStor sizing guidelines

When sizing a QoreStor implementation, the two primary factors to consider are the expected **ingest rate** and the desired **backend capacity.** With estimates for these two data points, you can select the corresponding reference architecture for evaluation.

- **ingest rate** - the data throughput of the QoreStor system. Ingest rate is a function of network throughput, processing power, and deduplication functions.

- **backend capacity** - the amount of data stored after deduplication has occurred.

Table 6: Sizing guidelines - physical server installation

Performance	Ingest rate (TB/Hour)	Dictionary size (GB)	CPU Cores	Memory	Network	Storage Infrastructure	Random IOPs	Sequential IOPS
Low	<.5	256	4	16	2 x 1GbE	RAID-5 + Spare	850	2000
Medium	2	256	8	32	4 x 1GbE	RAID-6 + Spare	2000	10000
High	10+	256	32	128	4 x 10GbE	RAID-6 + Spare	50000	100000

Table 7: Sizing guidelines - cloud optimized installation

Performance	Ingest rate (TB/Hour)	Dictionary size (GB)	CPU Cores	Memory	Network	Storage Infrastructure	Random IOPs	Sequential IOPS

Low	<.5	64	4	16	1GbE	JBOD	850	2000
Medium	2	64	8	32	2GbE	JBOD	2000	10000

Supported installation platforms

QoreStor is supported on the following platforms:

Table 8: Operating systems supported for installation

Operating System	Bit level
CentOS Linux 7.3 or higher	64-bit
RHEL Linux 7.3 or higher	64-bit

Supported file systems

Only the file system listed below is supported for the QoreStor server.

- XFS

Networking requirements

The following network configurations need to be made in order to succesfully install and run QoreStor.

Port configuration

The ports below need to be available for the QoreStor service:

- 5233
- 9901
- 9904
- 9911
- 9920
- 11000
- 10011

Verify connectivity

The usage of the QoreStor repository requires stableTCP/IP connectivity between the backup application server and the QoreStor repository server.

i NOTE: The QoreStor repository and backup application server need to be on the same local network.

Supported backup software

This section lists the supported backup applications and protocols for QoreStor.

Table 9: Supported backup applications and protocols

Data Management Application (DMA)	RDA	OST
NetVault Backup1		
v11.4.5	✔	
v12.0	✔	
v12.0.1	✔	
vRanger1		
v7.6	✔	
v7.6.5	✔	
Backup Exec		
BE16		✔
BE20		✔
NetBackup		
v7.7		✔
v8.0		✔
v8.1		✔

[1]Refer to NetVault Backup and vRanger Feature Compatibility for more detailed information on NetVault Backup Support

Installing QoreStor

The process of installing QoreStor involves these steps:

- Review the System requirements and verify your intended installation platform satisfies these requirements.
- Download the QoreStor software.
- Obtain your QoreStor license key.
- Install QoreStor.
- Add your new QoreStor repository to a supported backup product.

Pre-installation configurations

- Set appropriate OS permissions on target machines to allow users to install software.
- Select multiuser run level
- Verify storage devices are properly connected to the QoreStor server.

Downloading the software

The QoreStor installer is available for download from the Quest website.

1. Navigate to the QoreStor portion of the Quest Support website: https://support.quest.com/qorestor
2. In the **Download Software** section, click **See all Downloads**.
3. Find the version of QoreStor you wish to download, and click the download icon.
4. Log in to your Quest Support account.
5. Select the appropriate QoreStor installer, and click either **Download Now** to download the software immediately, or **Add to my Downloads**.
6. If you selected **Add to my Downloads**, click the **My Downloads** icon to view your download cart.
7. Select the software to download and click **Download Selected**.

Installing QoreStor

Before installing QoreStor, refer to System requirements and Installing QoreStor for additional information.

To install QoreStor

1. Copy the QoreStor installation files to the server.
2. Set execution permission on the installation files using **chmod**. For example,

```
$ chmod a+x qs_inst_4.1.0.199.bin
```

3. With elevated privileges (either as root or with the sudo command), execute the installation script according to one of the two options below

- ```
  qs_inst_4.1.0.182.bin -- -f -p <repository_path> -m <metadata_path> --
  mode=<demo|cloud-optimized|standard>
  ```

  where

  - **-f** specifies that the installer should automatically apply firewall rules to open the necessary ports

  - **-p** <repository_path> specifies the repository path

  - **-m** <metadata_path> specifies where the dictionary and journals should be stored.If not specified, the repository path will be used.

  - **--mode**=<demo|cloud-optimized|standard> specifies the installation mode. Refer to QoreStor installation modes for more information.

    - **demo:** 100GB max storage, 1GB dictionary

    - **cloud-optimized**: 43TB max storage, 64GB dictionary

    - **standard**: 150TB max. storage, 256GB dictionary

OR

- ```
  $ sudo ./qs_inst_4.1.0.181.bin
  ```

  and follow the prompts to :

  - provide a path for the storage directory

  - [Optional] provide a separate path for metadata storage

  - select an installation mode. Refer to QoreStor installation modes for more information

  - add firewall exceptions

Logging in to QoreStor

The QoreStor user interface service does not run by default. To access the UI, you must first enable the service, then connect via a supported browser.

1. In a supported browser, navigate to **https://<hostname:5233>**

   i | NOTE: You can use either the host IP or hostname.

2. Log in with the default credentials:

   - username: admin

   - password: St0r@ge!

Uninstalling QoreStor

This section provides information about uninstalling QoreStor.

Before uninstalling QoreStor

> ❗ **CAUTION:** Uninstalling QoreStor will remove all installation and configuration files as well as any data in the repository. Before uninstalling QoreStor, you should first carefully consider whether you still need the data in the repository. Before uninstalling QoreStor, you should take steps to preserve this data using another means of long-term retention. Once QoreStor is uninstalled, the deduplicated data cannot be retrieved.

Uninstalling QoreStor

QoreStor can be removed by executing the script **qs_ininst** located in the **/opt/qorestor/bin** directory. The script can be executed unmodified to retain your QoreStor data, or with the argument **-a** to delete all data.

> ◼ **WARNING:** Once QoreStor data is deleted it cannot be recovered. Exercise caution when uninstalling QoreStor.

To uninstall QoreStor

1. The QoreStor uninstall script is located in the **/opt/qorestor/bin** directory. In order to execute the uninstall script, you must either:

    a. Use the absolute path to the command (`# /opt/qorestor/bin/qs_uninst`, for example)

    b. Change directory to **/opt/qorestor/bin** and execute commands by prepending with "./" (`./qs_uninst`, for example)

2. Execute the script by entering

    `./qs_uninst`

    OR

    `./qs_uninst -a`

    > ◼ **WARNING:** This option will remove all QoreStor data. This is an irreversible operation.

3. Confirm the uninstall by entering **Yes** at the prompt.

About us

We are more than just a name

We are on a quest to make your information technology work harder for you. That is why we build community-driven software solutions that help you spend less time on IT administration and more time on business innovation. We help you modernize your data center, get you to the cloud quicker and provide the expertise, security and accessibility you need to grow your data-driven business. Combined with Quest's invitation to the global community to be a part of its innovation, and our firm commitment to ensuring customer satisfaction, we continue to deliver solutions that have a real impact on our customers today and leave a legacy we are proud of. We are challenging the status quo by transforming into a new software company. And as your partner, we work tirelessly to make sure your information technology is designed for you and by you. This is our mission, and we are in this together. Welcome to a new Quest. You are invited to Join the Innovation™.

Our brand, our vision. Together.

Our logo reflects our story: innovation, community and support. An important part of this story begins with the letter Q. It is a perfect circle, representing our commitment to technological precision and strength. The space in the Q itself symbolizes our need to add the missing piece — you — to the community, to the new Quest.

Contacting Quest

For sales or other inquiries, visit www.quest.com/contact.

Technical support resources

Technical support is available to Quest customers with a valid maintenance contract and customers who have trial versions. You can access the Quest Support Portal at https://support.quest.com.

The Support Portal provides self-help tools you can use to solve problems quickly and independently, 24 hours a day, 365 days a year. The Support Portal enables you to:

- Submit and manage a Service Request
- View Knowledge Base articles
- Sign up for product notifications
- Download software and technical documentation
- View how-to-videos
- Engage in community discussions
- Chat with support engineers online
- View services to assist you with your product