

Quest® QoreStor™ 7.2.0

Installation Guide



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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.

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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.
QoreStor Virtual Machine Deployment Guide	Provides information on deploying the QoreStor virtual machine on VMware ESX or Microsoft Hyper-V.
Additional whitepapers	Instructions and best practices for configuring additional Quest and third-party applications to work with QoreStor.



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 documentation

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

i | **NOTE:** See the complete NetVault documentation at <https://support.quest.com/netvault>.

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 Backup Exec 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 Quest® 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.
- [Licensing QoreStor](#) - 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. 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.

- **Standalone license** - QoreStor is licensed by the amount of backend capacity required. Standalone licenses are available as either **perpetual** licenses (with no expiration), or **term** licenses, which expire after a specified period of time.

i | **NOTE:** Term licenses are intended for specific customer use cases, i.e., licensing according to yearly billing cycles. A perpetual license is appropriate for most customers.

QoreStor licenses are additive, meaning that if you purchase a 5 TB license now, and a 10 TB license in the future, you will have 15 TB 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, 1 TB 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 1 TB is **not** added to the purchased license capacity.
- **Full capacity trial** - available on the Quest Software Trial site, which provides a 30-day evaluation license for up to 360 TB 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 a longer trial period is required, please contact Quest Sales.

If you have purchased a standalone 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"**

Installing a license

You can add a license to QoreStor through either the QoreStor GUI or the command line interface.

To install a license

1. In the navigation menu, click **System**.
2. Scroll to the **License Information** section at the bottom of the page.
3. Click **Upload License**.

4. Click **Choose File** and select the license file. Click **Open**.
5. Click **Apply**.

i **NOTE:** You may also install a QoreStor license from the command line interface using the command:

```
system --license [--show] [--verbose] [--validate] [--file <path>] [--add] [--file <path>]
```

Refer to the *QoreStor Command Line Reference Guide* for more information.

QoreStor installation modes

QoreStor can be installed in one several installation modes, each with different hardware requirements and expected performance levels. When QoreStor is installed in Object Direct mode, the installation modes available are slightly different and support different capacities.

Installation modes for standard QoreStor installations

- **Large** - This is the mode of installation that will yield the highest capacity and performance. Large mode supports a back-end capacity of up to 360 TB. It also requires that the data and metadata volumes are on separate RAID sets.
- **Standard** - This is the mode of installation that will suit most environments as it supports a backend capacity of up to 150 TB.
- **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 43 TB.

i **NOTE:** When QoreStor is installed in Cloud Optimized, Archive tier is not supported.

i **NOTE:** For information on available virtual machine configurations, see "QoreStor VM Specifications" in the *QoreStor Interoperability Guide*.

Installation modes for installing QoreStor in Object Direct Configuration

- **Large** - This is the mode of installation that will yield the highest capacity and performance. Large mode supports a back-end capacity of up to 360 TB. Additionally, 18 TB of SSD storage must be configured for QoreStor metadata.
- **Standard** - This is the mode of installation that will suit most environments as it supports a back end capacity of up to 150 TB. Additionally, 8 TB of SSD storage must be configured for QoreStor metadata.
- **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 43 TB. Additionally, 2 TB of additional storage must be configured for QoreStor metadata.

- i** | **NOTE:** When QoreStor is installed in Cloud Optimized mode, Archive tier is not supported.
- i** | **NOTE:** When QoreStor is installed in an Object Direct configuration, VTL containers are not supported.
- i** | **NOTE:** When QoreStor is installed in an Object Direct configuration, the minimum required swap space is 16 GB.
- i** | **NOTE:** When QoreStor is installed in an Object Direct configuration, seed import operation is not supported.

System requirements

Installation requirements and platform support information is updated continually in the [QoreStor Interoperability Guide](#). Please refer to that document for up-to-date information.

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.
- The **Samba4**, **windbind**, and **libwbclient** packages are incompatible with QoreStor . These packages must be removed from the QoreStor server before installing QoreStor.
- If your operating system is distributed with a system-provided NFS server, it must be disabled prior to installing QoreStor.
- QoreStor requires the **nfs-utils**, **policycoreutils**, **glibmm24**, **krb5-libs**, **libsemanage**, **libaio**, **perl**, **mutt**, **yum-utils**, **bind-utils**, **attr**, **sqlite**, and **libxml2** packages to be installed prior to installation. Additionally, for RHEL, CentOS, and Oracle Linux 7.x systems, the following packages: **tar**, **nfs-utils**, **policycoreutils**, **krb5-libs >= 1.15.1.18**, **libsemanage >=2.5.8**, **glibmm24**, **libaio**, **perl**, **mutt**, **yum-utils**, **screen**, **bind-utils**, **attr**, **sqlite**, **OpenSSL**, and **libxml2**. RHEL/CentOS/OL/Alma/Rocky 8.x systems require **tar**, **nfs-utils**, **policycoreutils**, **glibmm24**, **krb5-libs >= 1.15.1.18**, **libsemanage >= 2.5.8**, **libaio**, **perl**, **mutt**, **yum-utils**, **libnsl**, **boost**, **xmlrpc-c**, **xmlrpc-c-client**, **bzip2-devel**, **rpcbind**, **libidn**, **attr**, **sqlite**, **libxml2**, **OpenSSL**, and **rsyslog**. If they are not installed, the installer will prompt for permission to download and install these packages before installing or upgrading QoreStor.

Downloading the software

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

To download the software

1. Log in to your Quest Support account.
2. Navigate to the QoreStor portion of the Quest Support website: <https://support.quest.com/qorestor>
3. In the **Download Software** section, click **See all Downloads**.
4. Find the version of QoreStor you wish to download, and click the download icon.
5. 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 in Object Direct mode

Installing QoreStor in Object Direct configuration utilizes a volume layout different from a standard installation and the installation script requires additional cloud-configuration information. Before installing QoreStor, refer to [QoreStor installation modes](#) and the *QoreStor Interoperability Guide* for additional information.

NOTE: QoreStor requires the **nfs-utils**, **polycoreutils**, **glibmm24**, **krb5-libs**, **libsemanage**, **libaio**, **perl**, **mutt**, **yum-utils**, **bind-utils**, **attr**, **sqlite**, and **libxml2** packages to be installed prior to installation. Additionally, for RHEL, CentOS, and Oracle Linux 7.x systems, the following packages: **tar**, **nfs-utils**, **polycoreutils**, **krb5-libs >= 1.15.1.18**, **libsemanage >= 2.5.8**, **glibmm24**, **libaio**, **perl**, **mutt**, **yum-utils**, **screen**, **bind-utils**, **attr**, **sqlite**, **OpenSSL**, and **libxml2**. RHEL/CentOS/OL/Alma/Rocky 8.x systems require **tar**, **nfs-utils**, **polycoreutils**, **glibmm24**, **krb5-libs >= 1.15.1.18**, **libsemanage >= 2.5.8**, **libaio**, **perl**, **mutt**, **yum-utils**, **libnsl**, **boost**, **xmlrpc-c**, **xmlrpc-c-client**, **bzip2-devel**, **rpcbind**, **libidn**, **attr**, **sqlite**, **libxml2**, **OpenSSL**, and **rsyslog**. If they are not installed, the installer will prompt for permission to download and install these packages before installing or upgrading QoreStor.

To install QoreStor in Object Direct mode

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_7.2.0.308.bin
```
3. With elevated privileges (either as root or with the **sudo** command), run the installation script with the desired parameters, using the below information as a guide. To install QoreStor in Object Direct mode, use the **--object-direct** parameter:

```
qs_inst_7.2.0.308.bin -- -f -p <repository_path> -m <metadata_path> --object-direct  
--mode=<cloud-optimized|standard|large> --accept-eula --install-deps -e <cloud-  
provider> -t <cloud-container-name> -w <cloud-connection-string>
```

Use the following table to define the parameters:

Table 5: Object Direct mode installation parameter definitions

Parameter	Definition
-f	enables firewall configuration
-h, --help	displays this help message
-p, --repository_path=<pathname>	is the path to the repository storage
-m, --metadata_path=<pathname>	is the path to the metadata storage
--accept-eula	accepts the EULA agreement
--install-deps	resolves missing package dependencies
--fix-mount-opts	adds any required mount options to fstab entries
--object-direct	installs support for object-direct storage
--no-object-direct	does not install support for object-direct storage
-e, --cloud_provider_name=<name>	object storage provider (e.g. AWS-S3, AZURE, S3-Compatible, etc.)
-t, --cloud_container_name=<name>	cloud container name for object storage
-w, --cloud_connection_string=<password>	cloud connection string for the object storage account
--mode=<large standard cloud-optimized>	selects the type of storage configuration
--install-vtl	install support for VTL
--no-vtl	do not install support for VTL
--install-cifs	install support for CIFS and AD
--no-cifs	do not install support for CIFS or AD
--install-nfs	install support for NFS
--no-nfs	do not install support for NFS
--install-object-container	install Object Container support
--no-object-container	do not install Object Container support

Or

- `$ sudo ./qs_inst_7.2.0.308.bin`

and follow the prompts to :

- configure storage location (local, or object direct)
- select an installation mode. Refer to [QoreStor installation modes](#) for more information
- install QoreStor in object direct mode, and enter the required cloud connection information
- [Optional] add firewall exceptions

Installing QoreStor

Before installing QoreStor, refer to [System requirements](#) and [Installing QoreStor](#) for additional information. To install QoreStor in Object Direct mode, refer to [Installing QoreStor in Object Direct mode](#).

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_7.2.0.308.bin
```
3. With elevated privileges (either as root or with the sudo command), run the installation script according to one of the two options below

- `qs_inst_7.2.0.308.bin -- -f -p <repository_path> -m <metadata_path> --mode=<cloud-optimized|standard|large> --accept-eula --install-deps [--install-vtl]`

where the following parameter definitions are true:

- **-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=<cloud-optimized|standard|large>** specifies the installation mode. Refer to [QoreStor installation modes](#) for more information.
 - **cloud-optimized**: 43TB max storage, 64 GB dictionary
 - **standard**: 150 TB max. storage, 256 GB dictionary
 - **Large**: 360 TB max storage; 256 GB dictionary
- **--accept-eula**: implicitly accepts the EULA and bypasses the prompt to accept the terms and conditions of the EULA
- **--install-deps**: implicit permission to download and install the nfs-utils and polycoreutils packages if they are not already installed
- **--install-vtl**: [Optional] installs components required for VTL support.

OR

- `$ sudo ./qs_inst_7.2.0.308.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
- [Optional] install VTL support
- [Optional] add firewall exceptions

i | **NOTE:** To install VTL support, it is recommended to boot the QoreStor system with secure boot disabled..

Installing Qorestor with Protocols of Choice

For QoreStor fresh installation, the RDS protocol support is mandatory while NFS, CIFS, VTL, and Object Container protocol support is optional. QoreStor installer will not add the missing protocol package/s at the time of upgrading software to a newer version. However, the user can choose to install the missing protocol support at a later stage using following options:

```
qs_installer.bin [--install-nfs|--install-cifs |--install-vtl |--install-object-container] option.
```

After the installation of selected protocol, QoreStor enables the support for respective container types.

QoreStor installation with protocols of choice is done with one of the following methods.

Interactive mode standard QoreStor installation with protocols of choice

To perform interactive mode installation of QoreStor with protocols of choice, execute the following command and continue with supported navigation

```
# ./qs_inst_7.2.0.308.bin
```

i | **NOTE:**User is advised to accept the EULA. Continue with the further navigation.

Following is the CLI output displayed while installation.

```
Install/Upgrade Version: 7.2.0.308
Getting object direct parameters...
Object Direct Storage is available for storing data in the cloud.
If you choose this option, you would be expected to enter a valid cloud
connection string at a later stage.
NOTE: VTL is not supported with Object Direct Storage. If you choose
this option, VTL support will not be installed.
Would you like to configure Object Direct Storage for storing data?
yes/no: no
Getting path information...
Please provide the path for the storage repository: [/] /Qorestor
Optionally, please provide a path for metadata storage: [/Qorestor]
Please select a storage configuration:
  Large: 360TB maximum storage capacity, 256GB dictionary
  Standard: 150TB maximum storage capacity, 256GB dictionary
  Small (Cloud-Optimized): 43TB maximum storage capacity, 256GB
dictionary
1) Large
2) Standard
3) Small (Cloud-Optimized)
#? 2
#Standard configuration selected
=== Configuration Mode: standard ===
iSCSI and NDMP VTL support is available for this kernel.
Note: Installing support for iSCSI and NDMP VTL will consume additional
```

```

memory and introduce a kernel dependency. As a result, kernel upgrades
will be limited while QoreStor is present. Choose this option only if
you require iSCSI and NDMP VTL.
Do you wish to install support for VTL? yes/no: yes
VTL support will be installed.
CIFS support is available.
Do you wish to install CIFS support? yes/no: yes
CIFS support will be installed.
NFS support is available.
Do you wish to install NFS support? yes/no: yes
NFS support will be installed.
Object Container support is available.
Do you wish to install Object Container support? yes/no: yes
Object Container support will be installed.
Checking boot mode...
.. Done.
=== Evaluating System...
--
Supported Linux Distributions: centos rhel ol rocky almalinux
Found Linux Distribution: rocky
OS Test: PASS
--
Supported Kernel Versions: 4.18.0-193 4.18.0-240 4.18.0-305 4.18.0-348
4.18.0-372 4.18.0-425
Found Kernel: 4.18.0-425
Kernel Test: PASS
Min. Required # of CPU Cores: 4
Actual # of CPU Cores: 40
CPU Test: PASS
--
Min. Required System Memory (GB): 32
Actual System Memory (GB): 64
Memory Test: PASS
--
Min. Required Available Space in /QoreStor (GB): 500
Actual Available Space in /QoreStor (GB): 9246
Available Space Test: PASS
=== Running IOPS tests...
Min. Required Seq. Write IOPS for /QoreStor: 450
Actual Seq. Write IOPS for /QoreStor: 105088
Seq. IOPS Test: PASS
Min. Required Random Write IOPS for /QoreStor: 450
Actual Random Write IOPS for /QoreStor: 1576
Random IOPS Test: PASS
--
... Done ===
Required Mount Options for /QoreStor: noatime dirsync
Found Options for /QoreStor: noatime dirsync

```



```

=== Installing additional packages: nfs-utils glibmm24 perl mutt
yum-utils bind-utils libnsl boost xmlrpc-c xmlrpc-c-client bzip2-
devel rpcbind libidn attr sqlite rsyslog...
... Done.
=== Preparing components for install/upgrade...
=== Installing Version 7.2.0.308...
Stopping service: ...

Installing component: samba
Installing component: PBIS-OPEN
Installing component: vtl
Installing component: oca-libs
Installing component: choam-prod-1
Installing component: storage-server-el
Installing component: qs-libfuse3-3
Installing component: minio-0
Installing component: objstor-minio-20230313194617
Installing component: qorestor-ui
... Done.

=== Configuring system...
Repository Path: /QoreStor
Metadata Path: /QoreStor
Would you like to automatically add firewall exceptions for ports used
by storage-server? yes/no:yes
[Fri Apr 21 16:39:44 EDT 2023] Initializing configuration files...
[Done]
[Fri Apr 21 16:39:44 EDT 2023] Creating and initializing ingest
buffer...[Done]
[Fri Apr 21 16:40:29 EDT 2023] Creating and initializing de-duplication
dictionary... [Done]
[Fri Apr 21 16:40:29 EDT 2023] Checking for and generating self-signed
certificate...[Done]
[Fri Apr 21 16:40:29 EDT 2023] Checking for and generating SAML SP
certificate...[Done]
[Fri Apr 21 16:40:29 EDT 2023] Installing services... [Done]
[Fri Apr 21 16:40:29 EDT 2023] Initializing services... [Done]
[Fri Apr 21 16:40:30 EDT 2023] Adding firewall exceptions... [Done]
... Done.

=== Server installed/upgraded 7.2.0.308 successfully.
=== Starting services ===
Starting service: choam ...
Stopping service: ...
Starting service: ocards ...
... Done.

=== Management interface: https://qspl-4300-19:5233 ===

```

Silent mode installation with protocols of choice

Silent mode installation with protocols of choice executes QoreStor installation in cloud optimized mode with support for CIFS and NIS protocols along with mandatory RDS protocol installation. To

choose correct mode, size of installation, and required protocol support, refer to [Installing QoreStor in Object Direct mode](#), table number 5.

The following example shows the above mentioned installation process.

```
# ./qs_inst_7.2.0.308.bin -- -f -p /Qorestor -m /QSmetadata --accept-eula --install-deps --fix-mount-opts --no-vtl --no-object-container --no-object-direct --mode=cloud-optimized --install-cifs --install-nfs
```

Adding protocol support post QoreStor installation

You can add the missing protocol support to the installation by passing the appropriate arguments to the installer from the following options

```
[--install-nfs|--install-cifs |--install-vtl |--install-object-container]
```

Example:-

For installing VTL support

```
# ./qs_inst_7.2.0.308.bin -- --install-vtl
```

For installing the CIFS protocol

```
# ./qs_inst_7.2.0.308.bin -- --install-cifs
```

Logging in to QoreStor

To access the QoreStor UI, you must connect via a supported browser.

To access the QoreStor UI

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!

i | **NOTE:** Change the default password when you first log in to QoreStor.

To access the QoreStor command line interface

1. Using the terminal emulation application of your choice, connect to your QoreStor server.
2. Starting with version 7.1, the `qsadmin` and `qsservice` users are not created on a fresh installation of QoreStor. Create a new user or employ an existing account to dedicate a user for QoreStor administration with the following command:

```
/opt/qorestor/bin/setup_qs_user.sh <provide-user-namehere>
```

For QoreStor instances created with OVAs or from Azure Marketplace, refer to the respective guides.

3. At the system prompt, enter the username for an account with super user privileges.
4. For a list of QoreStor CLI commands, refer to the *Quest QoreStor Command Line Reference Guide*.

Upgrading your QoreStor software

This section is applicable to all QoreStor instances, including Virtual Machine instances (ESX and Hyper-V), AWS and Azure Marketplace instances, and DR Series migrated systems.

Depending on your environment and your comfort level with working in the Linux command line, you can upgrade using one of the following methods:

- The **Linux shell** - Through the Linux shell you can manually upload the binaries, verify and change file permissions, and run the installer with additional parameters. Refer to [Upgrading your QoreStor software using Linux shell](#)
- The **QoreStor UI** - In circumstances where access to the QoreStor server is restricted (or for those that choose not to upload the QoreStor binaries via the Linux shell), you may use the QoreStor UI to upload the QoreStor binary and signature files from your workstation. After uploading the files, you must run the upgrade from the Linux shell. Refer to [Upgrading QoreStor Software using the QoreStor UI](#).

Both upgrade methods require that you download the new binaries from the Quest website and run them on the QoreStor server.

Prior to upgrading, review the best practices and recommendations in [Before you upgrade](#).

Before you upgrade

Before upgrading your QoreStor instance, please review and follow the guidelines below:

- Make sure that all backup jobs which use the QoreStor server as a target are paused for the duration of the upgrade.
- Make sure that the QoreStor system has at least 1GB of free space on the root partition.
- If the existing installation of QoreStor uses the default passwords for the **UI admin** login, **qsservice** user, or **qsadmin** user, then you must update these passwords before upgrading to QoreStor 7.2.0.
 - To update the **UI admin** login password, run `/opt/qorestor/bin/user --setpassword --name admin`.
 - To update the **qsadmin** user password, run `passwd qsadmin`.
 - To update the **qsservice** user password, run `passwd qsservice`.

i **NOTE:** When upgrading, if the installer discovers default passwords configured for any of the **qsadmin**, **qsservice**, or **UI admin** users, the installer exits and does not complete the installation.

- There are some preliminary configuration steps that must be followed to prepare your DR Series for upgrade. Refer to [Preparing your DR Series for migration](#) for more information.

Downloading the QoreStor Software

You can download the executable for the new QoreStor software from the Quest Support Portal by completing the following steps.

To download the QoreStor software

1. Log into the Quest Support Portal at <https://support.quest.com/qorestor>.
2. In the Download Software section, click **See All Downloads**.
3. Under the Platform Install section, find the row containing the appropriate version of QoreStor. Click **Download**.
4. Select the appropriate QoreStor installer, and click either **Download Now** to download the software immediately, or **Add to my Downloads**.
5. If you selected **Add to my Downloads**, click the **My Downloads** icon to view your download cart.
6. Select the software to download and click **Download Selected**.

Upgrading your QoreStor software using Linux shell

To upgrade a current installation of QoreStor, complete the following steps.

To upgrade your QoreStor software using the Linux shell

1. Download the new QoreStor executable. Refer to [Downloading the QoreStor Software](#) for detailed information.
2. Using the appropriate utility (pscp on Windows / scp on Mac or Linux) copy the QoreStor installation files to the server.
i **NOTE:** You may use the **Upgrade** page of the QoreStor to UI to upload binaries to the QoreStor server.
3. Set execution permission on the installation files using **chmod**. For example,

```
$ chmod a+x qs_inst_7.2.0.308.bin
```
4. With elevated privileges (either as root or with the sudo command), run the installation script according below

```
$ sudo ./qs_inst_7.2.0.308.bin
```

and follow the prompts to complete the upgrade.
5. After the upgrade script completes, some QoreStor processes will continue behind the scenes. The system will not be operational until these processes complete. Run the command **watch /opt/qorestor/bin/system —show** to monitor the progress of QoreStor services.

i **NOTE:** In some instances, some DMAs may experience timeout errors when trying to access QoreStor containers after an upgrade. If this occurs, wait until QoreStor is fully online, then restart the DMA.

Upgrading QoreStor Software using the QoreStor UI

The QoreStor user interface includes the option to upload the new QoreStor binary and signature files to the QoreStor server via the browser. To upgrade a current installation of QoreStor, follow the steps below:

1. Download the new QoreStor executable and signature file. Refer to [Downloading the QoreStor Software](#) for detailed information.
2. In the QoreStor UI, click System to expand the menu. Click **Upload**.
3. On the **Upload** page, perform one of the following actions:
 - Drag the QoreStor binary and signature file to the Add new binary package area
 - Click **Upload binary package** to open a file explorer. Browse to select the QoreStor binary and signature file and click **Open**.
4. Connect to machine via ssh, launch the installer and follow the installer steps.

Migrating a DR Series Appliance to QoreStor

Starting with QoreStor 6.0, it is possible to perform an in-place upgrade that converts your DR Series appliance to a QoreStor server. This in-place process preserves your data and storage configuration, and migrates any applicable settings without the need for an intermediate staging server.

i | **IMPORTANT:** The procedures in this section are provided for reference only. To ensure a proper migration, you must contact [Quest Sales](#) to ensure proper licensing and for further guidance in the migration process.

Upgrade overview

The in-place upgrade process utilizes a bootable image that can be used with either a USB key or as iDRAC virtual media. The image includes:

- Oracle Linux 7.3
- QoreStor 7.1.0.245
- Upgrade and migration scripts.

The migration requires that you boot the DR Series system to the migration image. At that point, the installer will capture your DR Series settings and configuration, install the operating system and QoreStor application, and import your storage and configuration details. After the installation, QoreStor will be in maintenance mode for some time while consistency checks are performed.

After migration, the QoreStor server will contain two default accounts, with the default credentials as listed below. You must change the default credentials upon logging in.

- **root** - the default password is generated in the format of "qorestor-<SERVICE TAG>". As an example, a machine with a service tag of 2ZQYBX1 would have a default root password of **qorestor-2ZQYBX1**. Root logins over SSH are disabled. Only console logins are allowed.
- **qsservice** - the default password is "changeme", and must be changed after logging in.

i | **IMPORTANT:** You must have a valid QoreStor license sufficient for the converted capacity before beginning the conversion process.

Prerequisites for migration

Before migrating your DR Series appliance to QoreStor, ensure that the following prerequisites are met:

- You must have a valid QoreStor license for the desired capacity prior to migration. The converted QoreStor server must be licensed before operations can resume. Contact [Quest Sales](#) to ensure that you have the appropriate licensing.
 - Your DR Series appliance must be one of the versions below supported for migration:
 - DR4100 (with WAM-2)
 - DR4300
 - DR4300e
 - DR6000 (with WAM-2)
 - DR6300
 - Your DR Series software version must be updated with build 4.0.4. This build includes preparation scripts necessary for the migration.
 - The configurations below are not supported by the migration process, and will cause the migration pre-checks to fail.
 - Storage groups containing more than 63 containers
 - Cascaded replications
 - Fibre channel connections.
 - Rapid Air Gap
- i** | **NOTE:** This list is not exhaustive. Any configuration that causes the migration pre-checks to fail must be corrected before migration can continue.
- Your DR Series is recommended to be connected to the internet.
 - All data ingests must be completed.

Preparing your DR Series for migration

Before migrating your DR Series system to QoreStor 7.0.1.245, install the DR Series upgrade file 4.0.4 using the following steps.

Upgrading your DR Series software

You can obtain the latest DR Series system software binary package from the Quest website. You would then upload this file in the DR Series system GUI for the system software upgrade.

- i** **NOTE:** The DR Series system only supports the copying of upgrade images and diagnostics files to and from the system using WinSCP. The DR Series system does not support the copying or deleting of any other file types using WinSCP. To use WinSCP to copy DR Series software upgrade and diagnostics log files, ensure that the File Protocol mode is set to SCP (Secure Copy) mode.
- i** **NOTE:** You can use other SCP tools with the DR Series system, but you cannot use these other SCP tools to copy other types of files to or from the DR Series system.

To upgrade the DR Series system software, complete the following steps.

1. Using your browser, go to support.quest.com/dr-series, select your specific DR model and then navigate to **Download Software** and click **See All Downloads**.
2. Under **Upgrade File**, locate the version you want to download, and click the **Download** button. If you are not logged in, you may be prompted to log in with your registered Quest account.
3. Save the latest system software upgrade file to a network location accessible by the DR Series system that is running the browser session started by the DR Series administrator.
4. In the DR Series system GUI, in the left navigation menu, click **Support > Software Upgrade**. The Software Upgrade page is displayed.
5. Click the button, Select **DR Binary Package**.
6. Browse to the location of the file you downloaded, select the file, and click **Open**. The system verifies that the file is the proper format.
7. Once the file has been uploaded, on the Software Upgrade page, click **Start Upgrade**.

Preparing for migration

After updating the DR Series software to patch 4.0.4, follow the steps below to prepare your DR Series for migration.

1. [Optional] From the DR command line interface, run the command below. This command evaluates the system to ensure that migration requirements are met. These pre-checks are also performed by the `--prepareMigration` command during the preparation process.

```
maintenance --hardware --migrationPreChecks
```

2. From the DR command line interface, run the command below.

```
maintenance --hardware --prepareMigration
```

The prompt below will be displayed

```
This operation will make the filesystem read-only until migrated to QS and  
pause all active replications.
```

```
Do you want to continue (yes/no) [n]?
```

3. Type "y" to continue, "n" to exit. The preparation process will continue, and the DR Series will shutdown when complete.

Performing the DR Series Migration

Follow the steps in the sections below to migrate your DR Series appliance. You may boot the image using either a USB key or as virtual media using iDRAC.

Creating the DR Series Migration USB

To create a DR Series Migration Image USB key, you must first contact [Quest Sales](#) to ensure proper licensing and obtain the DR Series Migration Image (.iso file). You may then transfer the image to a USB key. The USB key must be a minimum of 8 GB (Gigabytes) in size or larger.

Windows USB image tools can be used to transfer the DR Series Migration Image when they meet the following conditions:

- Support using the .iso file format
- Support using a direct block-to-block device copy to ensure that the USB key is bootable

i **NOTE:** There are no system-provided Windows® utilities for creating a bootable USB drive from an IMG file. Follow the instructions for your third-party application.

To transfer the DR Series Migration Image to the USB key on a Linux or Unix system, perform the following:

1. Copy the downloaded DR Series Migration Image iso file to a Linux or Unix system.
2. Insert the USB key into an available USB port on the Linux or Unix system. Make note of the device name that is reported by the operating system (for example, /dev/sdc4).
3. Do not locally mount the USB device to a file system at this time.
4. Copy the DR Series Migration Image to the USB key using the **dd** command, where sdX is the device name for the USB key:

```
dd if=QoreStor_Migration_7.1.0.245.iso of=/dev/sdX bs=1M
```

For example:

```
dd if=/root/QoreStor_Migration_7.1.0.245.iso of=/dev/sdc4 bs=4096
```

Migrating your DR Series Appliance using a USB key.

1. Insert the DR Series Migration Image USB key into an available USB port on the system.
2. Boot the DR Series system using the DR Series Migration Image USB key.
3. During the time when the Power-On Self-Test (POST) screen displays, press F11 to load the Boot Manager.
4. Within the Boot Manager, navigate to the system hard drive (C:), select the USB key as the boot device, and press <Enter>.
5. The DR Series Migration Image loads and immediately begins the migration.
6. After multiple reboots, QoreStor will initially be in maintenance mode to fix refcounts, after which the server will move to operational mode.

7. Refer to the section [Initial login and changing your password](#) for information on accessing QoreStor for the first time. Refer to [Configuring QoreStor with the Configuration Menu](#) for information on making any required configuration changes.
8. After migration, the QoreStor server will contain two default accounts, with the default credentials as listed below. You must change the default credentials upon logging in.
 - **root** - the default password is generated in the format of "qorestor-<SERVICE TAG>". As an example, a machine with a service tag of 2ZQYBX1 would have a default root password of **qorestor-2ZQYBX1**. Root logins over SSH are disabled. Only console logins are allowed.
 - **qsservice** - the default password is "changeme", and must be changed after logging in.

Migrating your DR Series Appliance using iDRAC virtual media.

The iDRAC connection requires a network connection between the integrated Dell Remote Access Control (iDRAC) management port on the DR Series system and another computer running the iDRAC remote console session in a supported browser. Refer to the section **iDRAC connection** in the *DR Series System Administrator's Guide*.

1. Using the iDRAC web interface, open the Virtual Console.
2. Click on **Virtual Media**, then **Launch Virtual Media**.
3. Click **Add Image**. Select the DR Series Migration Image iso file, then click **Open**.
4. Select **Mapped** for connect the virtual image to the DR Series appliance.
5. Restart the system. During the time when the Power-On Self-Test (POST) screen displays, press F11 to load the Boot Manager.
6. Within the Boot Manager, navigate to the system hard drive (C:), select the USB key as the boot device, and press <Enter>.
7. The DR Series Migration Image loads and immediately begins the migration.
8. After multiple reboots, QoreStor will initially be maintenance mode to fix refcounts, after which the server will move to operational mode.
9. Refer to the section [Initial login and changing your password](#) for information on accessing QoreStor for the first time. Refer to [Configuring QoreStor with the Configuration Menu](#) for information on making any required configuration changes.
10. After migration, the QoreStor server will contain two default accounts, with the default credentials as listed below. You must change the default credentials upon logging in.
 - **root** - the default password is generated in the format of "qorestor-<SERVICE TAG>". As an example, a machine with a service tag of 2ZQYBX1 would have a default root password of **qorestor-2ZQYBX1**. Root logins over SSH are disabled. Only console logins are allowed.
 - **qsservice** - the default password is "changeme", and must be changed after logging in. .

Post-migration configurations and considerations

Some configuration data is not maintained during the migration. After the migration completes, some additional configurations may be required.

- Domain membership is not maintained. Your new QoreStor system must be added to your domain after the migration. Refer to **Configuring Active Directory Settings** in the *QoreStor User Guide*.
- Advanced network configurations, such as MTU configurations and NIC bonding must be reconfigured.
- Any network changes made in the `sysctl.conf` file must be reconfigured after migration.
- In addition, QoreStor uses different data display conventions than the DR Series. Historical data for DR Series graphs not used in QoreStor is not maintained after migration.

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_uninst` located in the `/opt/qorestor/bin` directory. The script can be run unmodified to retain your QoreStor data, or with the argument `-a` to delete all data.

Uninstalling QoreStor while maintaining configuration and backup data

Follow the procedure below to maintain your data repositories, application, and configuration data.

1. To uninstall QoreStor, run the uninstall script with one of the options below:
 - Use the absolute path to the command - `/opt/qorestor/bin/qs_uninst`.
 - Change directory to `/opt/qorestor/bin` and run commands by prepending with `./`, as in `./qs_uninst`.

2. You will receive the prompt below.

```
To completely remove the application, user data, and configuration files,  
answer 'no' below,  
and rerun the uninstaller with the '-a' option.  
Do you wish to continue? yes\nno [no]:
```

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

Uninstalling QoreStor and removing configuration and backup data

Follow the procedure below to uninstall QoreStor and remove all application and repository data.

i **NOTE:** When a QoreStor instance is installed in object direct mode, uninstalling QoreStor may not delete the bucket and associated metadata existing on cloud storage. Manually delete the bucket and data through your cloud provider console.

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

1. To uninstall QoreStor, run the uninstall script with one of the options below:
 - Use the absolute path to the command - `/opt/qorestor/bin/qs_uninst -a`.
 - Change directory to `/opt/qorestor/bin` and run commands by prepending with `./`, as in `./qs_uninst -a`.

2. You will receive the prompt below.

```
This operation will remove the application as well as all repository,
dictionary, and journal data.
This operation is not recoverable.
Enter DELETEALL to begin the operation, or no to cancel. DELETEALL
```

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

! **CAUTION:** This operation is not recoverable.

Uninstalling protocols of choice from QoreStor

Protocols that are not required can be uninstalled from QoreStor by providing the required options to the uninstaller. QoreStor systems running software version less than 7.1.3, should first upgrade to 7.1.3 or higher to have the option available to uninstall the selective protocol stack from their QoreStor systems.

The uninstaller located at `/opt/qorestor/bin/qs_uninst` provides this option for selective removal of the protocol support. Execute following command to uninstall:

```
# ./qs_uninst -help
For example:
usage: qs_uninst [-a]
```

Use the following table to define the uninstall options:

Table 6: QoreStor uninstall protocol option definitions

Option	Definition
-a [optional]	complete removal of the application, data, metadata, and configuration

Option	Definition
-h [optional]	print this help
--remove-cifs [optional]	remove support for CIFS
--remove-nfs [optional]	remove support for NFS
--remove-object-container [optional]	remove support for the object container service
--remove-vtl [optional]	remove support for VTL/NDMP/ISCSI

i **NOTE:** Uninstaller checks for any existing containers of given protocol before proceeding with removal of those packages.
RDS Containers used for CDP backups requires NFS protocol support for Instant Restore to succeed.

Example Usage:

For removal CIFS protocol support

```
# /opt/qorestor/bin/qs_uninst --remove-cifs
```

For removal NFS protocol support

```
# /opt/qorestor/bin/qs_uninst --remove-nfs
```

For removal of support for the object container service

```
# /opt/qorestor/bin/qs_uninst --remove-object-container
```

To remove support for VTL/NDMP/ISCSI

```
# /opt/qorestor/bin/qs_uninst --remove-vtl
```

About us

Quest provides software solutions for the rapidly-changing world of enterprise IT. We help simplify the challenges caused by data explosion, cloud expansion, hybrid datacenters, security threats, and regulatory requirements. We are a global provider to 130,000 companies across 100 countries, including 95% of the Fortune 500 and 90% of the Global 1000. Since 1987, we have built a portfolio of solutions that now includes database management, data protection, identity and access management, Microsoft platform management, and unified endpoint management. With Quest, organizations spend less time on IT administration and more time on business innovation. For more information, visit www.quest.com.

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