Quest® vRanger® 7.8.5

Integration Guide for Quest® QoreStor™

Legend

■ **WARNING: A WARNING icon indicates a potential for property damage, personal injury, or death.**

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

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

vRanger Integration Guide for Quest® QoreStor™
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- vRanger integration quick start for Quest® QoreStor™
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ℹ **IMPORTANT:** The information in this topic is intended only to provide an overview of the steps and information required to configure vRanger and Quest QoreStor. Before implementing this solution, review the full vRanger and QoreStor documentation.

vRanger integration quick start for Quest® QoreStor™

Integrating vRanger with QoreStor is achieved by adding the QoreStor instance to vRanger as a Quest Rapid Data Access (RDA) repository. The following steps describe the integration process at a high level, and provide links to the remaining topics for more exploration. Before implementing this solution in a production environment, read this information thoroughly.

1   **Confirm integration requirements**: Before starting the integration, confirm that you are using supported versions of vRanger and QoreStor. For more information, see Product requirements for integration.

2   **Install and configure** QoreStor: To install QoreStor and integrate with vRanger, perform the following operations:

- **Install the QoreStor software**: Download and install the QoreStor software onto a designated, properly configured server.

- **Create a storage container**: Containers function like a shared file system, which can be assigned a connection type of None (to be defined later), NFS/CIFS, or RDA (includes Rapid Data Storage [RDS] clients). Containers can then be accessed using Network File System (NFS), Common Internet File System (CIFS), or RDA.

   ℹ **IMPORTANT:** For integration with vRanger, create an RDA container, with the RDA Type setting as RDS.

3   **Install vRanger:** Using the vRanger installer, install vRanger on a machine meeting the vRanger system requirements. For a high-level overview of the vRanger installation process, see Installing vRanger. For more information, see the *Quest vRanger Installation/Upgrade Guide*.

4   **Create a Quest RDA repository**: After vRanger is installed, add the QoreStor server to vRanger as a Quest RDA repository. Any backup written to this repository is deduplicated according to your QoreStor configuration.

Product requirements for integration

To integrate vRanger with QoreStor, you must be using one of the following supported product versions:

- vRanger:
   - 7.7 or later—for RDA, CIFS, and NFS integration

- QoreStor
    - Refer to the QoreStor Interoperability Guide.

Product overviews

The following topics provide an overview of vRanger and QoreStor, and important information about the licensing required to integrate the two products.

What is vRanger?

vRanger is the leading VMware® data protection solution that also backs up and recovers Windows® physical servers and files with blazing speed and minimal storage requirements. With vRanger, you get comprehensive protection for both virtual and physical environments that you can manage from one intuitive interface.

vRanger licensing

For virtual machine (VM) backup, a license for vRanger controls the number of source CPUs that you can configure for backup. For licensing purposes, a multi-core processor is counted as a single CPU. For physical backup, each server protected consumes one physical backup license.

Every VMware® ESXi™ host for which vRanger is expected to provide protection must be properly licensed, both by VMware and in the vRanger Host Licensing tab.

> **i** | **IMPORTANT:** A Quest vRanger license is required for integration with QoreStor.

Quest QoreStor overview

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.

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.

Understanding Quest QoreStor

- QoreStor features and concepts

  ¡ | **IMPORTANT:** The information presented in this topic is a summary of the full documentation. For more information, see the vRanger and Quest QoreStor documentation.

QoreStor features and concepts

This topic provides an overview of the primary features and concepts in QoreStor.

- Deduplication and compression
- Replication
- Supported protocols
- Rapid Data Access (RDA)

Deduplication and compression

QoreStor uses various data-reduction technologies, including advanced deduplication algorithms, in addition to the generic and custom compression solutions that prove effective across many differing file types. Data deduplication and compression is addressed in the following areas:

- **Deduplication**: This technology eliminates redundant copies of data and in the process it decreases disk capacity requirements and reduces the bandwidth needed for data transfer. Deduplication can be a major asset for companies that are dealing with increasing data volumes and require a means for optimizing their data protection.

- **Compression**: This technology reduces the size of data that is stored, protected, and transmitted. Compression helps companies improve their backup and recovery times while helping reduce infrastructure and network resource constraints.

In general, offers advanced deduplication and compression capabilities to reduce the time and cost associated with backing up and restoring data. Based on deduplication and compression technology, eliminates the need to maintain multiple copies of the same data. This lets customers keep more data online longer and reduce the need for tape backup dependency.

Using its deduplication and compression technology, can help achieve an expected data reduction ratio of 15:1. Achieving this reduction in data means that you need fewer incremental storage operations to run and it provides you with a smaller backup footprint.By removing redundant data, deliver fast reliable backup and restore functionality, reduce media usage and power and cooling requirements, and improve your overall data protection and retention costs.

Replication

Replication is the process by which key data is saved from storage locations, with the goal of maintaining consistency between redundant resources in data storage environments. Data replication improves the level of fault-tolerance, which improves the reliability of maintaining saved data and permits accessibility to the same stored data.

QoreStor uses an active form of replication that lets you configure a primary-backup scheme. During replication, the system processes data storage requests from a specified source to a specified replica target, which acts as a replica of the original source data.

Replicas are read-only and are updated with new or unique data during scheduled or manual replications. QoreStor can be considered to act as a form of a storage replication process in which the backup and deduplication data is replicated in real-time or via a scheduled window in a network environment. In a replication relationship between two QoreStor instances (or a QoreStor and a DR Series system), this means that a relationship exists between a number of systems. One system acts as the source and the other as a replica.

> **i** | **NOTE:** QoreStor includes version checking that limits replication to compatible QoreStor instances or DR Series systems. Replication from a DR Series system to a QoreStor instance is one-way, with the DR Series acting as the source.

Replication is done at the container level and is one directional from source to replica; however, since replication is done at the container level you can set up various containers to meet your specific replication requirements for your specific workflow. This form of replication is supported for the CIFS, NFS, Rapid CIFS, and Rapid NFS protocols and is fully handled by QoreStor.

While replication of NFS, CIFS, Rapid NFS or Rapid CIFS containers is managed by QoreStor, **RDA with vRanger** container replication is managed by vRanger

If the source and target systems (replica or cascaded replica)are in different Active Directory (AD) domains, then the data that resides on the target system may not be accessible. When AD is used to perform authentication for systems, the AD information is saved with the file. This can act to restrict user access to the data based on the type of AD permissions that are in place.

> **i** | **NOTE:** It is important to distinguish the difference between data that has been processed by backup, and data that has been processed by replication. This distinction is because backup saves a copy of data that generally remains unchanged for a long time.

Supported protocols

QoreStor supports the following file system protocols:

- Network File System (NFS)
- Common Internet File System (CIFS)
- Rapid Data Access (RDA)
- Rapid Data Storage (RDS)

> **i** | **NOTE:** QoreStor supports three container connection types: NFS, CIFS, and RDA. RDS provides a logical disk interface that can be used with network storage devices to store data and support data storage operations.

Rapid Data Access (RDA)

RDA is developed by Quest and provides a logical disk interface for use with network storage devices. RDS allows for better coordination and integration between QoreStor backup, restore, and optimized duplication operations with vRanger and Quest NetVault Backup.

QoreStor and vRanger integration is done using the Rapid OFS (ROFS) plug-in developed by Quest. The ROFS plug-in allows vRanger control over backup image creation, deletion, and duplication. RDS allows deduplication operations to happen on the client-side so that network traffic can be reduced.

The RDS protocol allows the supported backup applications to communicate directly with QoreStor and determine whether a specific chunk of data exists on the system. If the data exists, only the pointers need to be updated on QoreStor, and the duplicate chunk of data does not need to be transferred to the system. This process provides two benefits: it improves the overall backup speed, and also reduces the network load.

Installing and configuring QoreStor

- Installing QoreStor
- Configuring your QoreStor server

Installing QoreStor

> **IMPORTANT:** The information in this topic is a summary of that found in the Quest QoreStor documentation. Procedures in this topic are abbreviated to provide a high-level overview of the installation process. Before installing QoreStor, review the full set of documentation, including:
> - *Quest QoreStor Interoperability Guide*
> - *Quest QoreStor Installation Guide*
> - *Quest QoreStor User Guide*
> - *Quest QoreStor Command Line Reference Guide*

Prerequisites

Before installing QoreStor, ensure that the following requirements have been met:

- Review the *QoreStor Installation Guide* and *QoreStor Interoperability Guide* for information on system requirements and supported platforms. Ensure that the server on which you are installing QoreStor meets the installation requirements.

- You must use a supported version of vRanger and QoreStor. For more information, see the *QoreStor Interoperability Guide*.

- Review the *QoreStor Installation Guide* and *QoreStor Interoperability Guide* for networking and port requirements.

Installing QoreStor

To install QoreStor:

1 Download QoreStor from the Quest website.

2 Copy the QoreStor installation files to the QoreStor server.

3 Set execution permissions on the installation files using **chmod**. For example:

```
$ chmod a+x qs_inst_6.0.0.589.bin
```

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

```
a  qs_inst_6.0.0.589.bin -- -f -p <repository_path> -m <metadata_path> --
   mode=<demo|cloud-optimized|standard|large> --accept-eula --install deps
```

   where

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

-p <repository_path> specifies the repository path ⅼ

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

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

> **demo**: 100GB max storage, 1GB dictionary ⅼ
>
> **cloud-optimized**: 43TB max storage, 64GB dictionary ⅼ
>
> **standard**: 150TB max. storage, 256GB dictionary ⅼ
>
> **Large**: 360TB max storage; 256GB dictionary ⅼ

–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 `policycoreutils` packages if they are not already installed

b `$ sudo ./qs_inst_6.0.0.589.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

To access the UI, you must 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!

Configuring your QoreStor server

The information below is summarized for ease of use. For detailed configuration information, see the *QoreStor User Guide*.

The information presented in Managing storage groups and containers is specific to the integration with vRanger. For more information on integrating vRanger with a Quest Rapid Data Access (RDA) repository, see the *Quest vRanger User Guide*.

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 Configuration.**

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**.

> **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.

Managing storage groups and containers

To organize your data, you can easily create storage groups and create containers within those storage groups on your QoreStor system. A storage group allows you to create separate storage policies for different data groups and the different capacities utilized on a single QoreStor. After initialization, QoreStor contains a single default storage groupe named **DefaultGroup**.

In QoreStor, data is stored in containers, which are stored in storage groups. Some containers function like a shared file system. These types of containers can be assigned a specific connection type, for example, NFS/CIFS or RDA (including both OST and RDS clients). Containers can then be accessed using NFS, CIFS, or RDA.

> **IMPORTANT:** For the most beneficial integration with vRanger, an RDA connection should be used.

Creating a storage container

> **NOTE:** QoreStor does not support creating container names that begin with a 0 (zero).

Containers function like a shared file system that can be accessed using the following connection types:

- NFS/CIFS
- NFS
- CIFS
- RDA
- RDS

Creating an RDS connection type container

To create an OST or RDS connection type container, follow these steps:

1 On the navigation menu, click **Storage Groups**, and then select the storage group for which you want to create a container. (If you are only using the DefaultGroup storage group on your QoreStor system, you do not need to select a group.)

2 In the storage group list, click the storage group to which you want to add a container. Click **Add Container**.

3 For the container Name, type the name of the container, and then click **Next**.

Container names cannot exceed 32 characters in length, must start with a letter, and can be composed of any combination of the following characters: ı

- A-Z (uppercase letters)

- a-z (lowercase letters) ₁

- 0-9 (numbers). Do not start a container name with a number. ₁

- dash (-) or underscore (_) special characters

ℹ **IMPORTANT:** QoreStor does not support creating container names that begin with a 0 (zero) or that include the following special characters /, #, or @.

4 For **Protocol**, select **Quest Rapid Data Storage (RDS)**.

5 Click **Next**.

6 Leave **LSU Capacity** as **Unlimited**.

7 Click **Finish**.

Installing vRanger

- vRanger system requirements
- Installing vRanger
- Configuring vRanger
- Adding a Quest Rapid Data Access (RDA) repository

> **i** | **IMPORTANT:** The information in this topic is intended only to provide an overview of the steps and information required to configure vRanger and QoreStor. Before implementing this solution, see the full vRanger and QoreStor documentation.

vRanger system requirements

Before installing vRanger and QoreStor, ensure that you read and understand the requirements and operation of both products. The following topics summarize the system requirements for vRanger. The information is a summary only. Before implementing vRanger, review the *Quest vRanger Installation/Upgrade Guide*.

> **i** | **IMPORTANT:** You must use a supported version of vRanger and QoreStor. For more information, see Product requirements for integration.

Minimum hardware requirements

The minimum hardware requirements to run vRanger can vary widely based on several factors. Therefore, you should not do a large-scale implementation without first completing a scoping and sizing exercise.

vRanger: physical machine

The following describes the hardware recommendations for the vRanger physical machine:

Table 1. Requirements for a installing vRanger on a physical machine

CPU	Any combination equaling four cores of CPUs are recommended. Example one quad-core CPU; two dual-core CPUs.
RAM	4 GB RAM is required.
Storage	At least 4 GB free hard disk space on the vRanger machine.
HBA	For LAN-free, Quest recommends that you use two HBAs—one for read operations and one for writing.

vRanger: virtual machine (VM)

The following describes the hardware recommendations for using vRanger in a VM:

Table 2. Requirements for a installing vRanger on a virtual machine

CPU	Four vCPUs.
RAM	4 GB RAM is recommended.
Storage	At least 4 GB free hard disk space on the vRanger machine.

Requirements for physical backup and restore

When backing up from and restoring to a physical server, vRanger uses a client run on that server to perform backup and restore operations. To process the backup workload effectively, the physical server must meet the following requirements:

Table 3. Requirements for physical backup and restore

CPU	Any combination equaling four cores of CPUs are recommended. Example one quad-core CPU; two dual-core CPUs.
RAM	2 GB RAM is required.

Additional requirement for repository replication

If you set up repository replication, increase the Task Timeout setting beyond the default 24 hours for the initial synchronization. If the initial synchronization involves the transfer of many terabytes of data, you might need to increase the task timeout to over a hundred hours.

1   On the Main toolbar, click **Tools > Options**.

2   Under the My Jobs node, click **Configuration**.

3   In the **Timeout** section, change the **Task Timeout** field to **100** or more, depending on the size of the environment.

   After the initial synchronization of the repositories is finished, you can update this field to an appropriate number.

4   Click **OK**.

Supported operating systems for installation

The following operating systems are supported for installation of vRanger.

Table 4. Supported operating systems

Operating system	Service pack level	Bit level
Windows Server 2008 R2[ab]	SP1 or later	x64
Windows Server 2012[b]	All service packs	x64
Windows Server 2012 R2[bc]	All service packs	x64
Windows Server 2016[b]	All service packs	x64
Windows Server 2019[b]	All service packs	x64
Windows Server 2022[b]	All service packs	x64

   a.   Windows 2008 R2 SP1 requires Windows Management Framework 3.0. Refer to Known Issue VR-177 in the vRanger Release Notes for more information.
   b.   The Windows Storage Server edition is not supported as an installation platform for vRanger.
   c.   Before installing vRanger on Windows Server 2012 R2, the updates listed in Additional required software must be installed.

Additional required software

In addition to a supported version of Windows® and a supported VMware® Infrastructure, you may need some additional software components, depending on your configuration.

- **Microsoft® .NET Framework**: vRanger requires the .NET Framework 4.5. The vRanger installer installs it if not detected.

- **SQL Server**: [Optional] vRanger utilizes two SQL Server® databases for application functionality. vRanger can install a local version of SQL Express 2014 SP3 or you can choose to install the vRanger databases on your own SQL instance.

- **Windows PowerShell 3 or above.** If you are installing vRanger on Windows 2008 R2 SP1, you will need to install Windows PowerShell 3 or above before installing vRanger

- **vRanger virtual appliance (VA)**: The vRanger VA is a small, pre-packaged Linux® distribution that serves as a platform for vRanger operations away from the vRanger server. vRanger uses the VA for the following functions:

  - Replication to and from VMware® ESXi™ hosts.

  - File-level restore (FLR) from Linux machines.

  - Optionally for backups and restores.

- **Updates for Windows Server 2012 R2**: Before installing vRanger on Windows Server 2012 R2, ensure that the Windows updates listed below are installed:

  - KB2939087

  - KB2975061

  - KB2919355

  - KB2999226

Installing vRanger

The installation of vRanger has several options. Unless you have a valid reason not to, accept the defaults wherever possible. The installation follows this sequence:

1 Launch the installer, and accept the vRanger license.

  The install process does not continue until the license is accepted.

2 Enter the credentials under which the vRanger services should run.

  The credentials used need to have local administrator privileges on the vRanger machine.

3 Choose an installation directory.

4 Select the vRanger database.

  You may choose to install vRanger with a new instance of SQL Server® Express or on an existing SQL Server.

5 Configure the runtime credentials for the vRanger Database.

6 [Optional] Install the vRanger Catalog Service.

  The installation completes.

For more information, see the *Quest vRanger Installation/Upgrade Guide*.

Configuring vRanger

vRanger requires some basic configuration before data protection can begin. The bulk of this configuration is driven by the Startup Wizard which starts the first time the application is opened. For more information, see the *Quest vRanger Installation/Upgrade Guide*.

The following lists the primary configurations you need to make.

- **Add source servers:** Before you can begin backups, you must add one or more source objects to the vRanger inventory. Source objects can include VMware® vCenter™ or ESXi™ hosts, Hyper-V® clusters or hosts, or physical machines.

- **Add vRanger virtual appliances (VAs):** vRanger VAs allow you to distribute the backup workload and gain direct access to target VM's storage for improved performance.

  > **IMPORTANT:** To be able to run in Deduplication Mode, the vRanger VA should be configured with four vCPUs and 2 GB of RAM. This configuration lets you run four backup jobs per VA.

- **Add repositories:** Repositories are where vRanger stores the savepoints created by each backup job. For the purposes of this integration, a Quest Rapid Data Access (RDA) repository should be used.

Adding a Quest Rapid Data Access (RDA) repository

QoreStor optimizes storage utilization and reduces network bandwidth requirements with in-line deduplication, server-side compression, and compressed and deduplicated replication.

QoreStor supports CIFS, NFS, and RDA protocols. The RDA protocol provides a logical disk interface for QoreStor. The RDA protocol also enables better coordination and integration between vRanger and QoreStor and provides for client-side deduplication of vRanger backups.

> **NOTE:** Quest recommends that you use the RDA protocol when using QoreStor as a repository.

For more information about QoreStor, see the QoreStor documentation at support.quest.com/qorestor.

This topic describes the process for adding a Quest Rapid Data Access (RDA) repository. The following procedure assumes that:

- You have a properly configured QoreStor server that is accessible to the vRanger machine.

- You created at least one storage container to be used as a Logical Storage Unit. When creating the storage container, use the options:
  - Connection type: RDA
  - RDA type: RDS

- You have designated an RDA User account.

- You configured your firewall to enable the following TCP ports.
  - 9904
  - 9911
  - 9915
  - 9916
  - 9920

> **NOTE:** For information on setting up the preceding configurations, see the Quest QoreStor documentation.

To add a QoreStor server as a Quest RDA repository:

1   In the **My Repositories** pane, right-click anywhere, and click **Add > Quest Rapid Data Access (RDA)**.

2   In the **Add Quest Rapid Access Repository** dialog box, complete the following fields:

- **Repository Name**: Enter a descriptive name for the repository.

- **Description**: [Optional] Enter a long-form description for the repository.

- **DNS Name or IP**: Enter the DNS name or IP address of the QoreStor server.

- **RDA Username**: Enter a user account that can be used to log in to the device. The default account is **backup_user**.

- **RDA Password**: Enter the password for the **backup_user** account—the default is: **St0r@ge!**

- **Logical Storage Unit**: Enter the name of the storage container. Ensure that the container is created before you add the device. You cannot add the device if the specified container does not exist on the device. When creating the storage container, use the options:

    - Connection type: RDA

    - RDA type: RDS

- **Port Number**: Leave this value at 0 to use the default.

3   Click **OK**.

The connection to the repository is tested and the repository is added to the **My Repositories** pane and the **Repository Information** dialog box.

vRanger checks the configured repository location for existing manifest data to identify existing savepoints.

4   If vRanger finds existing savepoints, click the applicable button:

- **Import as Read-Only:** To import all savepoint data into the vRanger database, but only for restores, click this button. You cannot back up data to this repository.

- **Import:** To import all savepoint data into the vRanger database, click this button. vRanger is able to use the repository for backups and restores. vRanger requires read and write access to the directory.

- **Overwrite:** To retain the savepoint data on the disk and not import it into vRanger, click this button. vRanger ignores the existence of the existing savepoint data and treats the repository as new.

Configuring repository replication

Replication is configured through the My Repositories pane of the vRanger interface.

> **i** | **TIP:** For more information on repository replication, see the *Quest QoreStor User Guide.*

The following procedure assumes that:

- You have configured at least one Quest RDA repository in vRanger.

- At least one other QoreStor server is available in your environment to serve as the replication target. You do not have to add this device to vRanger.

To configure Replication:

1   In the **My Repositories** pane, right-click the Quest Rapid Data Access (RDA) repository, and select **Configure Replication**.

2   In the **Configure Replication** dialog box, complete the following fields:

- **Repository Name**: Enter a descriptive name for the repository.

- **Description**: [Optional] Enter a long-form description for the repository.

- **DNS Name or IP**: The DNS name or IP address of the QoreStor server.

- **RDA Username**: Enter a user account that can be used to log in to the device. The default account on a QoreStor server is **backup_user**.

- **RDA Password**: Enter the password for the **backup_user** account—the default is: **St0r@ge!**

- **Logical Storage Unit**: Enter the name of the storage container. Ensure that the container is created before you add the device. You cannot add the device if the specified container does not exist on the device. When creating the storage container, use the options:

  - Connection type: RDA

  - RDA type: RDS

- **Port Number**: Leave this value at 0 to use the default.

3   Click **OK**.

   The connection to the device is tested and the device is added as a repository is added to the **My Repositories** pane and the **Repository Information** dialog box.

After replication is configured for a repository, the **Configure Replication** option is disabled for that repository.

> **i** | **IMPORTANT:** After a repository is configured for replication, you must select a synchronization method before replication occurs. For more information, see Managing repository replication.

Editing a replication configuration

You may edit an existing replication configuration to update credentials or timeout values. You may also use the **Edit Repository Details** dialog box to view free space for the repository.

1   In the **My Repositories** pane, right-click the Quest Rapid Data Access (RDA) repository, and select **Edit Replication Configuration**.

2   In the **Edit Quest Rapid Data Access (RDA)** dialog box, edit any of the following fields:

- **Repository Name**

- **User Name**

- **Password**

3   Alternatively, view the **Free Space** field for up-to-date information about this repository.

4   If you edited any of the fields, click **Update**.

Managing repository replication

vRanger supports repository replication. Repositories configured for replication can be synchronized in one of three ways:

- Automatically, after a successful backup task to that repository.

- As a separate job on a scheduled basis.

- Manually, using the Synchronize option.

Configuring a repository for automatic replication

When a managed repository is configured for savepoint replication, and a backup task completes successfully, each savepoint is also replicated to the replication repository.

To enable automatic savepoint replication:

1   From the **Tools** menu on the vRanger toolbar, select **Options**.

2   Under the **Repositories** node, select **Replication**.

> **ℹ | TIP:** You may also right-click the target repository in the **My Repositories** pane, and select **Repository Replication Options**.

3   Select **Enable savepoint replication for a successful backup job task, and c**lick **Ok**.

Scheduling repository synchronization

When using scheduled repository synchronization, savepoints are replicated to the replication repository according to a configured schedule.

> **ℹ | NOTE:** When scheduling repository synchronization, ensure that the synchronization activity does not occur at the same time as backup jobs using the synchronized repository.

To schedule a repository synchronization:

1   From the **Tools** menu on the vRanger toolbar, select **Options**.

2   Under the **Repositories** node, select **Replication**.

3   In the **Repository Replication Configuration** pane, find the **Repository Name** column, and select the applicable repository.

The repositories listed are the target repositories.

4   Select **Schedule repository synchronization**.

5   Configure the replication schedule as desired, using the following information as a guide.

   a   **Start**: In the drop-down list, select the time for the replication task to begin.

   b   **Recurrence Pattern**: Establish how often the changes should be synchronized. There are five options within this section:

   ▫   **Daily**: The daily option can be scheduled to synchronize the repository every weekday or every *x* number of days.

   ▫   **Weekly**: Repository synchronization can be configured to run on weekly intervals, from every week to every 99 weeks. The day of the week on which to run synchronization tasks can be configured.

   ▫   **Monthly**: The monthly option offers the following configurations:

   -   **Day *[x]* of every *[y]* month:**

   x can be any value from 1 to 31. This value determines the day of the month on which the synchronization job occurs.

   y can be any value from 1 to 99. This value determines the monthly interval—for example, every two months sets the job to run every other month.

   -   **The *[f] [d]* of every *[y]* month(s)**:

   f can be either: first, second, third, fourth or last.

   d can be: weekday, weekend day, Sunday, Monday, Tuesday, Wednesday, Thursday, Friday, or Saturday.

   y can be any value from 1 to 99. This value determines the monthly interval—for example, every two months sets the synchronization task to run every other month.

   ▫   **Yearly**: The yearly option offers the following configurations:

   -   **Every *[m] [x]*:**

   m is any month of the year. This value determines the month of the year in which the synchronization occurs.

   x can be any value from 1 to 31. This value determines the day of the month on which the synchronization occurs.

- **The *[f] [d]* of *[m]***:

  f can be either: first, second, third, fourth, or last.

  d can be: day, weekday, weekend day, Sunday, Monday, Tuesday, Wednesday, Thursday, Friday, or Saturday.

  m is any month of the year. This value determines the month of the year in which the synchronization occurs.

  ▫ **Interval**: The interval option lets you select the number of days, hours, and minutes that should pass between synchronization jobs. The interval selected must be greater than or equal to five minutes.

6 Click **OK** to schedule the job.

Synchronizing a repository manually

1 In the **My Repositories** pane, right-click the source or replication repository, and select **Synchronize**.

2 When the confirmation prompt appears, click **Yes**.

Disabling repository replication

To disable repository replication:

1 Do one of the following:

   ▪ From the **Tools** menu on the vRanger toolbar, select **Options**. Under the **Repositories** node, select **Replication**.

   ▪ Right-click the replication repository, and select **Repository Replication Options**.

2 Clear the check box for **Enable savepoint replication for a successful backup job task** or **Schedule repository synchronization**, or both**.**

3 Click **OK**.

   Replication is disabled as indicated by a red circle icon containing a white exclamation point.

Changing a replication repository to a primary repository

If your primary repository becomes corrupt or otherwise unavailable, you can quickly change your replication repository to a primary repository to continue backup and recovery operations.

To change a replication repository to a primary repository:

1 In the **My Repositories** pane, right-click the replication repository, and click **Remove**.

   ⓘ | IMPORTANT: Ensure that **Delete all savepoints in this repository** is not selected.

2 Click **OK**.

3 In the **My Repositories** pane, click **Add**.

4 Select the applicable repository type.

5 Complete the **Add Repository** dialog box, and click **OK**.

6 When vRanger detects that the repository being added contains savepoint data and displays the **Warning: Existing Repository Found** dialog box, click **Import** to reconfigure the repository as a primary repository.

Removing a Quest Rapid Data Access (RDA) repository

The process for removing a Quest Rapid Data Access (RDA) repository is the same as removing any other repository type.

To remove a Quest Rapid Data Access (RDA) repository:

1   In the **My Repositories** pane, right-click the Quest Rapid Data Access (RDA) repository, and select **Remove**.

    The **Remove Repository** dialog box appears, showing the savepoints in the selected repository.

    When removing a repository, you have the option of keeping the savepoints on disk or deleting them. If replication is configured for this repository, you are also given the option to delete the savepoints in the replicated repository.

2   Select **Delete all savepoints in this repository**.

> **!** | **CAUTION: This step deletes the savepoints from the repository disk, not just the vRanger database. Exercise caution when deleting savepoints.**

3   To delete the savepoints in a replicated repository, select **Delete all savepoints in replication repository**.

4   Click **OK**.

5   When the **Delete Savepoints** dialog box appears, click **OK**.

    The savepoints are deleted.

Adding QoreStor as a CIFS repository

> **i** | **NOTE:** Adding QoreStor as a CIFS repository does not take advantage of the full function of QoreStor. Quest recommends adding QoreStor as an RDA repository.

To add QoreStor as a CIFS repository:

1   In the **My Repositories** pane, right-click anywhere, and click **Add > Windows Share (CIFS)**.

2   In the **Add Windows Network Share Repository** dialog box, complete the following fields:

    ▪   **Repository Name**: Enter a name for the repository.

    ▪   **Description**: [Optional] Enter a long-form description for the repository.

    ▪   **User Name** and **Password**: Enter the credentials for accessing the CIFS share.

    ▪   **Security Protocol**: Select a protocol, **NTLM** (default) or **NTLMv2**.

    ▪   **Server**: Enter the UNC path to the applicable repository directory. Alternatively, you may enter a partial path and click **Browse** to find the target directory.

    > **i** | **NOTE:** You must enter a valid username and password before using the browse functionality.

    > **i** | **IMPORTANT:** Do *not* select **Encrypt all backups to this repository.** Using encryption or compression with deduplicated repositories limits or disables deduplication. Encryption and compression should not be used with any repository type that provides deduplication.

3   Click **OK**.

    The connection to the repository is tested and the repository is added to the **My Repositories** pane and the **Repository Information** dialog box.

    vRanger checks the configured repository location for existing manifest data to identify existing savepoints.

4   If vRanger finds existing savepoints, click the applicable button:

- **Import as Read-Only:** To import all savepoint data into the vRanger database, but only for restores, click this button. You cannot back up data to this repository.

- **Import:** To import all savepoint data into the vRanger database, click this button. vRanger is able to use the repository for backups and restores. vRanger requires read and write access to the directory.

- **Overwrite:** To retain the savepoint data on the disk and not import it into vRanger, click this button. vRanger ignores the existence of the existing savepoint data and treats the repository as new.

5   Click **Next**.

Adding QoreStor as an NFS repository

i | **NOTE:** Adding QoreStor as a Network File System (NFS) repository does not take advantage of the full function of QoreStor. Quest recommends adding QoreStor as an RDA repository.

To add QoreStor as an NFS repository:

1   In the **My Repositories** pane, right-click anywhere, and click **Add > NFS**.

2   In the **Add Network File Share Repository** dialog box, complete the following fields:

- **Repository Name**: Enter a descriptive name for the repository.

- **Description**: [Optional] Enter a long-form description for the repository.

- **DNS Name or IP**: Enter the IP or FQDN for the repository.

- **Export Directory**: Specify the export directory, which is similar in concept to a network share. You must create a target subdirectory in the export directory.

- **Target Directory**: Enter a subdirectory of the NFS export directory. This directory is the location to which savepoints are written.

i | **IMPORTANT:** Do *not* select **Encrypt all backups to this repository.** Using encryption or compression with deduplicated repositories limits or disables deduplication. Encryption and compression should not be used with any repository type that provides deduplication.

3   Click **OK**.

The connection to the repository is tested and the repository is added to the **My Repositories** pane and the **Repository Information** dialog box.

vRanger checks the configured repository location for existing manifest data to identify existing savepoints.

4   If vRanger finds existing savepoints, click the applicable button:

- **Import as Read-Only:** To import all savepoint data into the vRanger database, but only for restores, click this button. You cannot back up data to this repository.

- **Import:** To import all savepoint data into the vRanger database, click this button. vRanger is able to use the repository for backups and restores. vRanger requires read and write access to the directory.

- **Overwrite:** To retain the savepoint data on the disk and not import it into vRanger, click this button. vRanger ignores the existence of the existing savepoint data and treats the repository as new.

i | **NOTE:** For instructions on additional configurations and scheduling backup jobs, see the *Quest vRanger User Guide*.

Maintaining QoreStor

- Setting up the QoreStor Cleaner

- Monitoring performance

i | **IMPORTANT:** The procedures for maintaining the QoreStor server are covered in the *QoreStor User Guide*. The information provided in the following topic is a summary of common maintenance tasks.

Setting up the QoreStor Cleaner

Performing scheduled disk space reclamation operations are recommended as a method for recovering disk space from system containers in which files were deleted as a result of deduplication. The best method is to schedule a time when you can run the Cleaner on your QoreStor system with no other planned processes running. Alternately, another method lets the Cleaner process run whenever it determines that there are no active data ingests.

To schedule Cleaner operations on your system:

1   On the navigation menu, click **System Configuration** .In the **Cleaner Schedule** pane, click **Edit Schedule**.

 The schedule lists a Start Time and End Time for each day of the week.

2   For any day on which you do not want the Cleaner to run, click **Remove** in the **Action** colum.

3   For remaining days, edit the **Start Time** and **End Time** to set the Cleaner window.

4   Click **Submit.**

i | **NOTE:** Even if no Cleaner schedule is set, but the system detects that there is disk space that can be reclaimed, the Cleaner process runs. However, the Cleaner will not start until the following conditions are met: it detects that there are no active data ingests, that two minutes of system idle time have elapsed since the last data file ingest was completed, and that the Replication process is not running (the Cleaner process runs as a lower system priority operation than the Replication process).

Quest recommends that you do not schedule the running of any Cleaner operations during the same time period when replication or ingest operations are running. Failure to follow this practice affects the time required to complete the system operations and impacts your QoreStor performance.

Displaying Cleaner statistics

To display additional Cleaner statistics, you can use the QoreStor CLI **stats --cleaner** command to show Cleaner statistics.

For more information about QoreStor CLI commands, see the *Quest QoreStor Command Line Reference Guide*.

Monitoring performance

The Dashboard page contains graphics that show key information about the current state of your QoreStor instance. This page automatically refreshes every 30 seconds.

To use the Dashboard page, follow these steps.

1   Click **Dashboard** in the navigation menu of the QoreStor GUI.

2   You can view the following graphs:

- **Physical Capacity**—displays total used space, free space, and used and encrypted space in GBs and TBs.

- **Storage Savings**—displays a total savings in percentage (combining both deduplication and compression) over a time period (for example, every hour, which is the default).

- **Throughput**—displays the throughput volume (reads and writes) in Mebibytes/second (MiB/s) based on time (for example, every hour, which is the default).

- **System Usage**—displays information about memory and CPU usage.

- **Network Interfaces**—displays performance information for the configured NICs

- **Number of RDA Connections**—displays information about the number of RDA connections made to the QoreStor server.

3   At the top of the Dashboard page, you can also view the System Summary section, which lists key information about the current QoreStor system, including:

- **Cleaner status—**The current cleaner status as one of the following states:

    - **Pending**—displayed when there is any scheduled window set and the current time is outside the scheduled window for the Cleaner operation.

    - **Running**—displayed when the Cleaner operation is running during a scheduled window.

    - **Idle**—displayed only if there is no Cleaner operation running during a scheduled window.

- **Total number of files in all containers**

- **Current savings**

- **Number of containers**

- **Capacity used**

- **Number of Storage Groups**

- **Physical Capacity**

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 https://www.quest.com/company/contact-us.aspx or call +1-949-754-8000.

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.