QUEST SOFTWARE®

vRanger®

Version 5.4.1

System Requirements Guide

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Table of Contents

Introduction to this Guide **4**
About vRanger 5
vRanger Documentation Suite 5
About Quest Software, Inc. 5
Contacting Quest Software 6
Contacting Quest Support 6

vRanger System Requirements **7**
..... Requirements for the vRanger Machine 8
Hardware Requirements 8
Supported Operating Systems 9
Additional Required Software 9
Supported Platforms 11
Supported Linux File Systems for Linux FLR 12
Supported Software Versions for Data Domain 12
Feature Level Requirements 13
Standard Backup, Restore, and Replication 13
HotAdd 13
File-Level Recovery - Windows 14
File-Level Recovery - Linux 14
VSS 14
Configuration Requirements 15
Supported Disk Types 15
Password Security Setting Policy 15
Port Requirements 15

Index **17**

Introduction to this Guide

This chapter provides information about what is contained in *System Requirements Guide*. It also provides information about the vRanger ® documentation and Quest Software.

This chapter contains the following sections:

About vRanger 5
vRanger Documentation Suite 5
About Quest Software, Inc. 5

About vRanger

vRanger is the market-leading backup, recovery and backup management solution for virtual environments. Featuring a new platform technology, vRanger reduces the backup window, provides smarter backup options, and offers more scalability features while using fewer resources. Additionally, available replication functionality offers the ability to replicate a virtual machine to more than one destination, allowing you to accomplish multiple HA and DR objectives based on your specific needs.

vRanger capabilities:

- Performs incremental, differential or full image backups of virtual machines.
- Quickly restores the entire virtual machine or just specific files.
- Manages disaster recovery strategies and protects critical data in virtual environments.

vRanger Documentation Suite

The documentation suite is made up of the core set plus documents intended for advanced configurations. Documentation is provided in a combination of online help and PDF.

- **Online Help:** You can access online help through Help in the Menu bar on the four main screens of the interface.
- **PDF:** The *Getting Started Guide*, *What's New Guide*, *System Requirements Guide, Installation and Setup Guide,* and *User Guide*, are provided as PDF files. The PDF guides are included in the zip file downloaded from Quest. Adobe® Reader® is required.

About Quest Software, Inc.

Quest Software simplifies and reduces the cost of managing IT for more than 100,000 customers worldwide. Our innovative solutions make solving the toughest IT management problems easier, enabling customers to save time and money across physical, virtual and cloud environments. For more information about Quest go to *www.quest.com.*

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Contacting Quest Support

Quest Support is available to customers who have a trial version of a Quest product or who have purchased a Quest product and have a valid maintenance contract. Quest Support provides unlimited 24x7 access to our support portal. Visit our support portal at: *www.quest.com/support.*

From our support portal, you can do the following:

- Retrieve thousands of solutions from our Knowledge Base
- Download the latest releases and service packs
- Create, update and review Support cases

View the Global Support Guide for a detailed explanation of support programs, online services, contact information, policies and procedures. The guide is available at: *www.quest.com/support.*

vRanger System Requirements

This chapter outlines the hardware and software requirements for installing vRanger.

This chapter contains the following sections:

Requirements for the vRanger Machine 8
Supported Platforms 11
Feature Level Requirements 13
Configuration Requirements 15

Requirements for the vRanger Machine

In order to maximize application performance, and to ensure error-free operation, you must ensure that the machine on which vRanger is installed meets the requirements as documented in this section.

Requirements for the vRanger machine are divided among three sections:

- Hardware Requirements
- Supported Operating Systems

Please review each of these sections thoroughly before installing vRanger.

Note Refer to HotAdd for LAN-Free and Hot Add installation requirements.

Hardware Requirements

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

vRanger - Physical Machine

The hardware recommendations for the vRanger physical machine are described below.

CPU	• Two dual-core CPUs are recommended.
RAM	• 2 GB RAM is required
Storage	• At least 4 GB free hard disk space on the vRanger machine.
HBA	• For LAN-Free, it is recommended to use two HBAs - one for read operations and one for writing.

vRanger - Virtual Machine

The hardware recommendations for using vRanger in a virtual machine are described below.

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

Supported Operating Systems

The following operating systems are supported for installation of vRanger.

Operating System	Service Pack Level	Bit Level
Microsoft Windows 2003 Server	SP2	(x86 or x64)
Microsoft Windows 2003 R2	SP2	(x86 or x 64)
Windows Server 2008	SP2	(x86 or x64)
Windows 2008 R2	SP1	(x64)

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 3.5 SP1. The vRanger installer will install it if not detected.
- **SQL Server [optional]**- vRanger utilizes two SQL databases for application functionality. vRanger can install a local version of SQL Express 2008 or you can chose to install the vRanger databases on your own SQL 2005 or 2008 instance. See Supported SQL Versions below.

Supported SQL Versions

The default installation option is to install vRanger with the SQL Express 2005 database, but you may use your own SQL instance if you prefer.

If you chose to use your own SQL instance, and wish to use the vRanger Cataloging function, you will need to install the SQL instance on the vRanger server as the Catalog database must be local to vRanger.The following versions of Microsoft SQL are supported by vRanger.

Version	Service Pack Level
SQL Express 2005 [Embedded option]	SP 2
SQL Express 2005	SP2, SP 4
SQL Express 2008	SP 3
SQL Express 2008 R2	SP1
SQL Express 2012	N/A

SQL 2005 Enterprise	SP 4
SQL 2008 Enterprise	SP3
SQL 2008 R2 Enterprise	SP1
SQL 2012 Enterprise	N/A

Multiple vRanger Versions

There are three levels of vRanger Licensing, each with different available features:

- vRanger Standard
- vRanger Pro
- vReplicator

	vRanger Standard	vRanger Pro	vReplicator
Backup	X	X	
Restore	X	X	
VA-Based Backup/Restore		X	
Replication		X	X
CBT	X	X	X
ABM	X	X	X
LAN Free (Proxy SAN)*		X	
LAN Free (HotAdd)	X	X	
Catalog		X	
Windows FLR	X	X	
Linux FLR		X	

*Note that in the vRanger UI, “LAN Free” is used to encompass both traditional LAN-Free (with vRanger on a physical proxy connected to your Fibre SAN) and LAN-Free via HotAdd (with vRanger in a VM). Traditional LAN-Free operations are restricted to vRanger Pro licenses only. vRanger Standard can still perform LAN-Free backups and restores via VMware’s HotAdd API.

Caution vRanger is available in three versions: vRanger SE, vRanger Pro, and vReplicator. Please note that only one version of vRanger can be installed on a machine at any one time. For example, you cannot install vRanger SE and vReplicator on the same machine.

A license for vRanger controls the number of source CPUs that you can configure for backup. For licensing purposes, a dual-core processor is counted as a single CPU. Therefore, one ESX Server with two dual-core processors would use two CPUs of a license.

Supported Platforms

vRanger supports backup, restore, and replication operations against the following versions of VMware Infrastructure:

ESX(i) Server*	vCenter	VCB
• 4.0 Update 3 • 4.0 Update 4 • 4.1 • 4.1 Update 1 • 4.1 Update 2 • 5.0 • 5.0 Update 1	• 4.1 Update 2 • 5.0 • 5.0 Update 1	VCB integration is not supported in this release.

* See Notes Regarding VMware ESXi Support below.

HotAdd functionality requires VMware Enterprise or higher licensing. HotAdd is not supported on VMware Standard hosts.

Caution vRanger only supports VMware ESX Servers running in English. No other language packs are supported.

Notes Regarding VMware ESXi Support

- Both ESX and ESXi Servers are supported.
- ESXi replication requires the use of the vRanger virtual appliance.

Required vSphere Licensing Levels

vRanger relies on several vSphere APIs to provide backup and replication functionality. Those APIs are restricted by VMware to certain license editions.

- vRanger does not support any operation against free versions of ESX(i). These versions do not provide the necessary APIs for vRanger to function.
- The vStorage API components used for Hot Add backup, restore, and replication are not supported by vSphere Standard licensing. To use Hot Add, you must have either vSphere Enterprise or Enterprise Plus licensing.

vRanger and VM Snapshots

vRanger's backup and replication functionality requires the ability to create a snapshot. In certain circumstances, the creation of VM snapshots is not supported by VMware. In these cases, backup and replication of these VMs or disks is not possible. Some common examples are:

- RDM Disks in physical compatibility mode
- Disks in independent mode
- Fault tolerant VMs.

Note This list is not exhaustive. Any configuration in which snapshots are not supported by VMware, or not possible, is not supported by vRanger.

Supported Linux File Systems for Linux FLR

These file systems are supported for Linux FLR.

- EXT 2, 3 and 4
- ReiserFS
- JFS
- XFS
- Logical Volume Manager (LVM) is supported in vRanger 5.3 and later versions.
  - LVM is supported for FLR only for Volume Groups containing a single physical disk.

Note When performing a linux file-level recovery from a NetVault SmartDisk repository, only the EXT 2, 3 and 4 file systems are supported. LVM is supported by NetVault SmartDisk.

Supported Software Versions for Data Domain

The following versions of DDOS are supported for use as vRanger repositories:

For configuration as a DD Boost repository, vRanger supports the use of:

- DD OS 5.0
- DD OS 5.1

For configuration as a CIFS repository, vRanger supports the use of:

- DD OS 5.0
- DD OS 5.1

Feature Level Requirements

Some vRanger features and functions have requirements or limitations that do not apply to the rest of the product. Please review this list to ensure that all requirements are understood. The features and functions described here are:

- Standard Backup, Restore, and Replication
- HotAdd
- File-Level Recovery - Windows
- File-Level Recovery - Linux
- VSS

Standard Backup, Restore, and Replication

For basic backup and replication functions, vRanger supports any Guest OS that is supported by VMware. For a complete list, see VMware's *Guest Operating System Installation Guide.*

For advanced functions, such as file-level recovery or additional application consistency, please see the requirements in the sections below.

- File-Level Recovery - Windows
- File-Level Recovery - Linux
- VSS

Replication

The following limitations and requirements apply to replication:

- vRanger replication will not operate with servers that are behind a NAT firewall. In order to properly replicate through an NAT firewall, you must have an IP tunnel in place between two NAT'ed subnets. Contact your ISP provider to see if this option is available to you. See the *vRanger Deployment Guide* for more information on network setup for replication.
- Hybrid replication is not supported for ESXi, nor for ESX when using the Virtual Appliance.
- The virtual machine hardware cannot be downgraded during replication. For example, a VM with hardware version 8 on an ESX 5 host cannot be replicated to an ESX 4 host, as the VM hardware level is not supported by the target host.

HotAdd

In order to perform backup/restore/replication tasks using HotAdd, vRanger must be installed on a virtual machine. Additionally:

- HotAdd requires VMware Enterprise or higher licensing. HotAdd is not supported with VMware Standard licenses.
- HotAdd only works on SCSI disks. IDE disks and vRDMs are not supported.
- Datastores for the target virtual machines must be accessible to the vRanger VM.

- vRanger can only perform operations on VMs within the same datacenter.
- HotAdd cannot be used if the VMFS block size of the datastore containing the virtual machine folder for the target virtual machine does not match the VMFS block size of the datastore containing the vRanger VM. For example, if you back up a virtual disk on a datastore with 1MB blocks, the proxy must also be on a datastore with 1MB blocks.
- Backing up thick disk requires the maximum disk size to be available. When backing up a thick disk, the vRanger VM's datastore must have at least as much space available as the maximum configured disk size for the virtual machine to be backed up.

File-Level Recovery - Windows

In order to perform a file-level recovery from a windows VM, the VM must meet the following requirements:

- The VMs must be using basic disks,
- The VMs must use an MBR partition. GPT partitions are not supported.

File-Level Recovery - Linux

Please review the information below in order to understand the functions and limitations of vRanger's Linux FLR feature

- Linux FLR requires the vRanger virtual appliance.
- vRanger requires you to recover the linux files to an intermediate Windows machine. When you recover linux files to a Windows machine, you will lose the file permissions.
- The source VM properties needs to show the OS type as Linux. If this is not configured properly, vRanger will not identify the savepoint as a Linux VM.
- See Supported Linux File Systems for Linux FLR for a list of supported file systems.

VSS

vRanger uses VMware Tools for VSS backups. To use VSS, you must be running ESX 4 (or later) with updated VMware Tools and one of these OSs:

- MS Windows Server 2003
- MS Windows Server 2003 SP1
- MS Windows Server 2003 SP2
- MS Windows Server 2003 R2
- MS Windows Server 2003 R2 SP1
- MS Windows Server 2003 R2 SP2
- MS Windows Server 2008
- MS Windows Server 2008 SP2

- MS Windows Server 2008 R2

Note See “Determining Application Consistency” in the “Backup” chapter of the *vRanger User Guide* for more information.

Configuration Requirements

Supported Disk Types

For image-level backup and restore, any partition or disk type supported by VMware is supported. For file-level restore capability, the following limitations apply:

- Dynamic disks are not supported
- GPT partitions are not supported

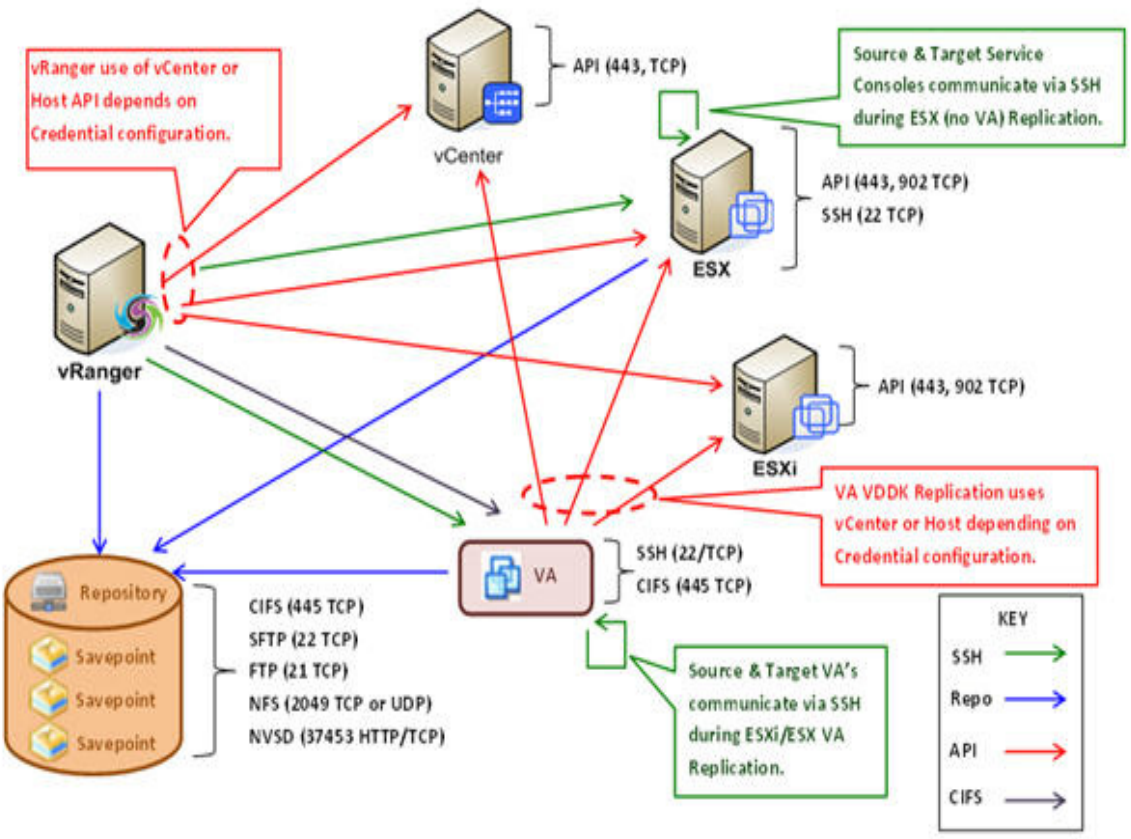
Password Security Setting Policy

Weak passwords compromise system security. When you create and update passwords in vRanger, follow as many of these guidelines as your environment allows:

- A password should not include a significant portion of a user or account name.
  - A password should be at least six characters long and should contain several characters from these categories:
    -Uppercase letters in English (A-Z)
    -Lowercase letters in English (a-z)
    -Digits (0-9)
    -Non-alphabetic characters (for example, $, !, #, %)

Port Requirements

The diagram below depicts the ports used by each of the vRanger components.



Additional Port Requirements

- For the virtual appliance designated for Linux FLR, the firewall must be configured to allow ICMP (ping) packets.
- If the virtual appliance will need to resolve DNS addresses, TCP port 53 must be open from the VA(s) to the DNS server.

Index

A

About vRanger 5

L

Licensing
vSphere Editions 11

P

ports 15

R

Requirements
hardware 8
port 15

S

support 6
Supported
DD OS versions 12
disk types
File level recovery 15
platforms 11

T

technical support 6
text conventions 5