Storage Manager 2018 R1

Installation Guide

DELL EMC

Notes, Cautions, and Warnings

NOTE: A NOTE indicates important information that helps you make better use of your product.

CAUTION: A CAUTION indicates either potential damage to hardware or loss of data and tells you how to avoid the problem.

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

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Contents

Preface

About This Guide

This guide describes how to install and configure Storage Manager components.

Revision History

Document number: 680-028-024

Revision	Date	Description
A	March 2018	Initial release for Storage Manager 2018 R1
B	May 2018	Updated for Storage Manager 2018 R1.2
C	August 2018	Updated for Storage Manager 2018 R1.10
D	November 2018	Updated for Storage Manager 2018 R1.20

Audience

Storage administrators make up the target audience for this document. The intended reader has a working knowledge of storage and networking concepts.

Related Publications

The following documentation is available for storage components managed using Storage Manager.

Storage Manager Documents

- *Storage Manager Installation Guide*
  Contains installation and setup information.
- *Storage Manager Administrator's Guide*
  Contains in-depth feature configuration and usage information.
- *Unisphere and Unisphere Central for SC Series Administrator's Guide*
  Contains instructions and information for managing storage devices using Unisphere and Unisphere Central for SC Series.
- *Storage Manager Release Notes*
  Provides information about Storage Manager releases, including new features and enhancements, open issues, and resolved issues.
- *Storage Manager Online Help*
  Provides context-sensitive help for the Client, Data Collector, and Server Agent.
- *Unisphere and Unisphere Central for SC Series Online Help*
  Provides context-sensitive help for Unisphere and Unisphere Central for SC Series.
- *Dell Storage REST API Getting Started Guide*
  Contains command examples and usage instructions for the Dell Storage REST API.
- *Dell Storage API PowerShell SDK Getting Started Guide*
  Contains setup instructions and examples for the Dell Storage API for PowerShell.

Storage Center Documents

- *Storage Center Release Notes*

  Contains information about features and open and resolved issues for a particular product version.
- *Storage Center Deployment Guides*

  Provides cabling instructions for Storage Center controllers, switches, and enclosures and provides instructions for configuring a new Storage Center.
- *Storage Center Software Update Guide*

  Describes how to update Storage Center software from an earlier version to the current version.
- *Storage Center Update Utility Administrator's Guide*

  Describes how to update the Storage Center software on storage systems. Updating the Storage Center software using the Storage Center Update Utility is intended for storage systems that cannot be updated using the standard Storage Center update methods.
- *Storage Center Command Utility Reference Guide*

  Provides instructions for using the Storage Center Command Utility. The Command Utility provides a command-line interface (CLI) to enable management of Storage Center functionality on Windows, Linux, Solaris, and AIX platforms.
- *Storage Center Command Set for Windows PowerShell*

  Provides instructions for getting started with Windows PowerShell cmdlets and scripting objects that interact with the Storage Center via the PowerShell interactive shell, scripts, and hosting applications. Help for individual cmdlets is available online.

FluidFS Cluster Documents

- *FluidFS FS8600 Appliance Pre-Deployment Requirements*

  Provides a checklist that assists in preparing to deploy an FS8600 appliance prior to a Dell installer or certified business partner arriving on site to perform an FS8600 appliance installation. The target audience for this document is Dell installers and certified business partners who perform FS8600 appliance installations.
- *FluidFSFS8600 Appliance Deployment Guide*

  Provides information about deploying an FS8600 appliance, including cabling the appliance to the Storage Center(s) and the network, and deploying the appliance using the Storage Manager software. The target audience for this document is Dell installers and certified business partners who perform FS8600 appliance installations.
- *FluidFS FS8600 Appliance CLI Reference Guide*

  Provides information about the FS8600 appliance command-line interface. The target audience for this document is customers.
- *FluidFSFS8600 Appliance Firmware Update Guide*

  Provides information about upgrading the FluidFS software. The target audience for this document is customers.
- *FluidFS Release Notes*

  Provides information about FluidFS releases, including new features and enhancements, open issues, and resolved issues. The target audience for this document is customers.
- *Dell FS8600 Appliance Service Guide*

  Provides information about FS8600 appliance hardware, system component replacement, and system troubleshooting. The target audience for this document is Dell installers and certified business partners who perform FS8600 appliance hardware service.
- *Dell NAS Appliance SFP+ Replacement Procedure*

  Provides information about replacing SFP+ transceivers on an inactive system. The target audience for this document is Dell installers and certified business partners who perform FS8600 appliance hardware service.
- *FluidFS FS8600 Appliance 1Gb to 10Gb Upgrade Procedure*

  Provides information about upgrading a Fibre Channel FS8600 appliance from 1Gb Ethernet client connectivity to 10Gb Ethernet client connectivity. The target audience for this document is Dell installers and certified business partners who perform FS8600 appliance hardware service.

Dell TechCenter

- *Dell TechCenter*

  Dell TechCenter has moved to other locations on the Dell support site. You can find technical white papers, best practice guides, and frequently asked questions about Dell Storage products on the following sites.

  - TechCenter Migration FAQ (more information about the TechCenter content migration)
  - Dell Support (Searchable knowledge base)
  - Dell Technical Resources (migrated TechCenter topic areas such as Networking, Servers, Storage, etc.)

Contacting Dell

Dell provides several online and telephone-based support and service options. Availability varies by country and product, and some services might not be available in your area.

To contact Dell for sales, technical support, or customer service issues, go to www.dell.com/support.

- For customized support, type your system service tag on the support page and click **Submit**.
- For general support, browse the product list on the support page and select your product.

1

Introduction to Storage Manager

Storage Manager allows you to monitor, manage, and analyze Storage Center SANs, FluidFS clusters, and PS Series groups from a centralized management console. The Storage Manager Data Collector stores data and alerts it gathers from managed storage devices in an external database or an embedded database.

To perform monitoring and administrative tasks for multiple Storage Centers, connect to the Storage Manager Data Collector using the Storage Manager Client or Unisphere Central.

To perform monitoring and administrative tasks for a single Storage Center, connect directly to a Storage Center using the Storage Manager Client or Unisphere.

Topics:

Storage Manager Components

Storage Manager consists of the following components.

Table 1. Storage Manager Components

Component	Description	Setup Documentation
Primary Storage Manager Data Collector	Service that gathers reporting data and alerts from Storage Centers	*Storage Manager Installation Guide*
Storage Manager Client	Windows or Linux application that connects to a single Storage Center or connects to a Storage Manager Data Collector to provide a centralized management interface for one or more storage devices.	*Storage Manager Installation Guide*
Unisphere Central for SC Series	Web application that connects to the Storage Manager Data Collector to provide a centralized management interface for one or more storage devices	*Storage Manager Installation Guide* and *Unisphere and Unisphere Central for SC Series Administrator's Guide*
Unisphere for SC Series	Web application that connects hosted on a Storage Center that provides a management interface to that storage device	*Unisphere and Unisphere Central for SC Series Administrator's Guide*
Remote Storage Manager Data Collector	Storage Manager Data Collector that is connected to the primary Storage Manager Data Collector and can be used to activate a disaster recovery site if the	*Storage Manager Administrator's Guide*

Component	Description	Setup Documentation
	primary Storage Manager Data Collector becomes unavailable	
Storage Manager Server Agent	Service for Windows that allows Storage Manager to free volume storage space from expired snapshots that would otherwise remain locked by Windows	*Storage Manager Administrator's Guide*

Management Compatibility

Storage Manager manages storage products and also provides management integration for Microsoft and VMware products.

Storage Manager is compatible with the products listed in the following table.

Product	Versions
Storage Center	6.7–7.3 **NOTE: Storage Manager 2018 R1.10 can be used to connect to a storage system running Storage Center 6.6 and update it to a later supported version of Storage Center**
PS Series group firmware	7.0–10.0
Dell FluidFS	6.0.300135 **NOTE: You must update FluidFS firmware to 6.0.300135 before updating to Storage Manager 2018 R1.**
Microsoft System Center Virtual Machine Manager (SCVMM)	2012, 2012 SP1, 2012 R2, and 2016
VMware vCenter Site Recovery Manager (SRM)	5.8, 6.0, 6.1.1, 6.5, and 8.1
Dell Storage Replication Adapter (SRA)	18.1.1.173
CITV	4.0
DSITV	4.1

Software and Hardware Requirements

The following sections list the requirements for the Storage Manager Data Collector, Storage Manager Client, and Storage Manager Server Agent .

Data Collector Requirements

The following table lists the Storage Manager Data Collector requirements.

NOTE: For best results, install the Data Collector on a Windows Server VM on a traditional volume sourced from shared storage. Do not use a VVol for the Data Collector VM.

Component	Requirements
Operating system	Any of the following 64-bit operating systems with the latest service packs: • Windows Server 2012 • Windows Server 2012 R2

Component	Requirements
	• Windows Server 2016 • Windows Server 2019 **NOTE: 32-bit operating systems are not supported, and Windows Server Core is not supported.**
Windows User Group	Administrators
CPU	64-bit (x64) microprocessor with two or more cores The Data Collector requires four cores for environments with 100,000 or more Active Directory members or groups.
Memory	Varies based on size of the storage environment: • 4 GB – One to ten Storage Centers or up to 3000 total volumes • 8 GB – More than ten Storage Centers, or up to 6000 total volumes • 16 GB – More than ten Storage Centers, or up to 12,000 total volumes • 32 GB – More than ten Storage Centers, or more than 12,000 total volumes
Disk space	At least 20 GB; additional space is required to manage FluidFS cluster software updates. **NOTE: If you chose to use an embedded database instead of an external database, an additional 64 GB is required to store the database on the file system. However, an embedded database is not recommended for a production environment.**
Software	Microsoft .NET Framework 4.5 Full
Web browser	Any of the following web browsers: • Google Chrome • Internet Explorer 11 • Microsoft Edge • Mozilla Firefox **NOTE: Google Chrome is the recommended browser. Other web browsers might work but are not officially supported.**
External database	One of the following databases: • Microsoft SQL Server 2012 • Microsoft SQL Server 2012 Express (limited to 10 GB) • Microsoft SQL Server 2014 • Microsoft SQL Server 2014 Express (limited to 10 GB) • Microsoft SQL Server 2016 • MySQL 5.6 • MySQL 5.7 **NOTE: The embedded database stored on the file system can be used instead of an external database. However, the embedded database is limited to 64 GB and retains only the last 30 days of data. The embedded database is not recommended for a production environment.**

Storage Manager Virtual Appliance Requirements

The Storage Manager Virtual Appliance has the following requirements:

Component	Requirement
VMware ESXi host version	6.0 and later
VMware vCenter Server version	6.0 and later
Datastore size	55 GB
CPU	64-bit (x64) microprocessor with two or more cores The Data Collector requires four cores for environments with 100,000 or more Active Directory members or groups.
Memory	Varies based on size of the storage environment: • 4 GB – One to ten Storage Centers or up to 3000 total volumes • 8 GB – More than ten Storage Centers, or up to 6000 total volumes • 16 GB – More than ten Storage Centers, or up to 12,000 total volumes • 32 GB – More than ten Storage Centers, or more than 12,000 total volumes
Software	• VMware vCenter Server • VMware vSphere High Availability

Storage Manager Client Requirements

The following table lists the requirements for the Storage Manager Client.

Component	Requirements
Operating system	Any of the following 32-bit or 64-bit operating systems (with the latest service packs): • Windows 8 • Windows 8.1 • Windows 10 Any of the following 64-bit operating systems: • Windows Server 2012 • Windows Server 2012 R2 • Windows Server 2016 • Windows Server 2019 • Red Hat Enterprise Linux 7.1 • Red Hat Enterprise Linux 7.2 • Red Hat Enterprise Linux 7.3 • SUSE Linux Enterprise 12 • Oracle Linux 6.5 • Oracle Linux 7.0 **NOTE: Windows Server Core is not supported.**
CPU	32-bit (x86) or 64-bit (x64) microprocessor

Component	Requirements
	NOTE: Linux versions of the Storage Manager Client support only 64-bit microprocessors.
Software	Microsoft .NET Framework 4.0 (Windows only)
Linux VM Access Client	• VMware vSphere Web Client • Hyper-V Manager
Web browser	Any of the following web browsers: • Google Chrome • Internet Explorer 11 • Microsoft Edge • Mozilla Firefox **NOTE: Google Chrome is the recommended browser. Other web browsers might work but are not officially supported.**

Unisphere and Unisphere Central Requirements

Unisphere and Unisphere Central are supported on the following web browsers:

- Google Chrome
- Internet Explorer 11
- Microsoft Edge
- Mozilla Firefox

NOTE: Google Chrome is the recommended browser. Other web browsers might work but are not officially supported.

Server Agent Requirements

The following table lists the requirements for running the Storage Manager Server Agent on Windows servers.

Component	Requirements
Operating system	Any of the following 64-bit operating systems (with the latest service packs): • Windows Server 2012 (full or core installation) • Windows Server 2012 R2 (full or core installation) • Windows Server 2016 • Windows Server 2019
CPU	64-bit (x64) microprocessor
Software	Microsoft .NET Framework 4.5 Full

Default Ports Used by Storage Manager

The Storage Manager components use network connections to communicate with each other and with other network resources. The following tables list the default network ports used by the Storage Manager Data Collector, Storage Manager Client, and Storage Manager Server Agent. Many of the ports are configurable.

NOTE: Some ports might not be needed for your configuration. For details, see the Purpose column in each table.

Data Collector Ports

The following tables list the ports used by the Storage Manager Data Collector:

Inbound Data Collector Ports

The Data Collector accepts connections on the following ports:

Port	Protocol	Name	Purpose
3033	TCP	Web Server Port	Receiving: • Communication from all clients, including the Storage Manager Client, Unisphere Central, and Dell Storage Replication Adapter (SRA) • Alerts from FluidFS clusters
3034	TCP	Web Server Port	Receiving vCenter/ESXi communication for VASA and VVol provisioning and administration
8080	TCP	Legacy Web Services Port	Receiving: • Storage Manager Server Agent communication • Alerts forwarded from Storage Center SANs
5989	TCP	SMI-S over HTTPS	Receiving encrypted SMI-S communication

Outbound Data Collector Ports

The Data Collector initiates connections to the following ports:

Port	Protocol	Name	Purpose
25	TCP	SMTP	Sending email notifications
443	TCP	SSL	• Communicating with managed Storage Centers • Sending diagnostic data with SupportAssist
1199	TCP	SIMS RMI	Communicating with managed PS Series groups
1433	TCP	Microsoft SQL Server	Connecting to an external Microsoft SQL Server database
3033	TCP	SSL	Communicating with managed Storage Centers
3306	TCP	MySQL	Connecting to an external MySQL database
8080	TCP	VMware SDK	Communicating with VMware servers
27355	TCP	Server Agent Socket Listening Port	Storage Manager Server Agent communication
35451	TCP	FluidFS	Communicating with managed FluidFS clusters
44421	TCP	FluidFS diagnostics	Retrieving diagnostics from managed FluidFS clusters

Client Ports

Storage Manager clients use the following ports:

Inbound Ports

The Storage Manager Client and Unisphere Central do not use any inbound ports.

Outbound Ports

The Storage Manager Client and Unisphere Central initiate connections to the following port:

Port	Protocol	Name	Purpose
3033	TCP	Web Server Port	Communicating with the Storage Manager Data Collector

Server Agent Ports

The following tables list the ports used by the Storage Manager Server Agent.

Inbound Server Agent Port

The Server Agent accepts connections on the following port.

Port	Protocol	Name	Purpose
27355	TCP	Server Agent Socket Listening Port	Receiving communication from the Data Collector

Outbound Server Agent Port

The Server Agent initiates connections to the following port.

Port	Protocol	Name	Purpose
8080	TCP	Legacy Web Services Port	Communicating with the Data Collector

IPv6 Support

The Storage Manager Data Collector can use IPv6 to accept connections from Storage Manager Client and to communicate with managed Storage Center SANs.

To use IPv6, assign IPv6 addresses as described in the following table.

IPv6 Connection	Requirements
Storage Manager Client to Data Collector	• Storage Manager Client computer must have an IPv6 address.

IPv6 Connection	Requirements
	• Data Collector server must have both an IPv4 address and an IPv6 address.
Data Collector to Storage Center	• Data Collector server must have both an IPv4 address and an IPv6 address. • Storage Center SAN must have both an IPv4 address and an IPv6 address on the management interface.

2

Planning and Preparation

Before you install Storage Manager, plan your configuration and install the required software.

NOTE: If you plan to install a new Storage Manager Data Collector instead of updating an existing Data Collector installation, a new Data Collector database must be created during the installation.

NOTE: If you plan to use an existing Data Collector database, follow the steps in this guide to migrate from an existing Data Collector installation to a new installation of the Storage Manager Data Collector or Storage Manager Virtual Appliance.

Topics:

Choose a Data Storage Method

You can configure the Data Collector to store data in an external database or in an embedded database on the file system of the host server.

Choose the option that is most appropriate for your environment:

- **External database**: If you decide to use an external database, select the supported database type that best suits your needs.
  The following external databases are supported:

  – Microsoft SQL Server 2012
  – Microsoft SQL Server 2012 Express (limited to 10 GB)
  – Microsoft SQL Server 2014
  – Microsoft SQL Server 2014 Express (limited to 10 GB)
  – Microsoft SQL Server 2016
  – MySQL 5.6
  – MySQL 5.7

  Storage Manager uses a database administrator account to create a database user named compmsauser and a database named compmsadb, which uses a custom schema.

  NOTE: To protect data stored on the database, including VVols metadata, configure the external database to take consistent snapshots.
- **Embedded database**: If you decide to use the embedded database, the Data Collector can retain only 30 days worth of data, and the database size cannot exceed 64 GB.

  NOTE: The embedded database is not recommended for a production environment.

Related link

Data Collector Requirements

Gather Required Installation Information

Before installing Storage Manager components, print this page and record the following information.

Record Database Information

If you plan to use an SQL database, record database information that is needed for installation.

Item	Write down your information
Database version	
Name of server that hosts the database	
Database server port	
Database user name	For security reasons, only record the database username in a secure location.
Database password	For security reasons, only record the database password in a secure location.

Prepare the Database

If you plan to use an external database, prepare the database by performing the task that corresponds to your database type.

NOTE: If you want to store Data Collector data in the embedded database, skip this step.

- Prepare a Microsoft SQL Server Database
- Prepare a MySQL Database

Prepare a Microsoft SQL Server Database

Set up the Microsoft SQL Server database or Microsoft SQL Server Express database for the Data Collector.

1. If necessary, install the database software.
2. Make sure you have the credentials for a database administrator account with privileges equivalent to the default sa account.
3. Configure the database for mixed-mode authentication (SQL Server and Windows Authentication mode).
4. Start the **SQL Server Configuration Manager** application.
5. Set the TCP/IP ports.
   a. In the navigation pane, expand **SQL Server Network Configuration**.
   b. Click **Protocols for MSSQLSERVER** or **Protocols for SQLEXPRESS**.
   c. Right-click **TCP/IP** and select **Properties**. The **TCP/IP Properties** dialog box appears.
   d. Click the **IP Addresses** tab.

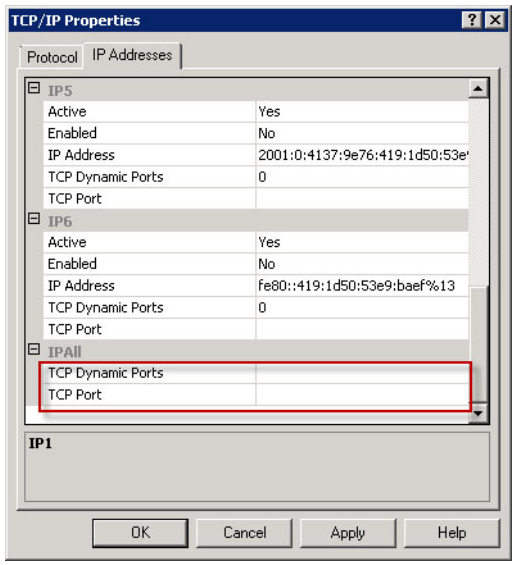

Figure 1. TCP/IP Properties Dialog Box IP Addresses Tab

e Under **IPALL**, make sure the **TCP Port** is set to a valid port number. The default TCP port for SQL Server is 1433.

f Click **Apply** and click **OK** to close the dialog box.

6 Enable TCP/IP protocol:

a In the navigation pane, click **Protocols for MSSQLSERVER** or **Protocols for SQLEXPRESS**.

b Right-click **TCP/IP** and select **Enable**.

7 Restart SQL Server.

a In the navigation pane, click **SQL Server Services**.

b Right-click **SQL Server** and select **Restart**.

Prepare a MySQL Database

Set up the database permissions for the Data Collector.

1 If necessary, install the database software.

2 Make sure that you have administrator rights from remote servers (preferably root user).

3 Make sure the database admin user has the global CREATE USER, RELOAD, and SELECT permissions, and has full permissions to the compmsadb database.

Enter the following commands from the MySQL admin tool, where **root** is the name of the admin user:

- `grant create user, reload, select on *.* to 'root'@'%';`
- `grant all privileges on compmsadb.* to 'root'@'%' with grant option;`
- `flush privileges;`

3

Installing and Configuring the Data Collector

Install the Data Collector and configure settings using the Data Collector Setup Wizard.

Install the Data Collector

Install the Data Collector on a Windows server that has network connectivity to your Storage Centers.

Prerequisites

- The Windows server must meet the requirements described in Data Collector Requirements.
- The tasks described in Planning and Preparation must be complete.
- The user installing the Data Collector must be a member of the Administrators group on the Windows server.

Steps

1. Download the Storage Manager Data Collector software to the Windows server.
2. Unzip the software, and double-click the Storage Manager Data Collector Setup file.

   The Storage Manager Data Collector - InstallShield Wizard opens.
3. Select a language from the drop-down menu, and click **OK**.
4. Click **Next**.

   The **License Agreement** page appears.
5. Read the license agreement and click **Yes** to accept it.
6. (Optional) Change the folder in which to install the Data Collector:
   a. Click **Browse**.
   b. Navigate to the folder in which to install the Data Collector.
   c. Click **OK**.
7. Click **Next**.

   The **Data Collector** page is displayed.
8. Select the **Primary Data Collector** radio button.
9. Click **Next**.

   The **Admin User** page is displayed.

   a. Type a user name for the administrator user in the **Dell Storage Manager User** field.
   b. Type a password for the administrator user in the **New Password** and **Confirm Password** fields.
10. Click **Next**.

    The **Database** page is displayed.

    a. Select **Microsoft SQL Server** or **MySQL** from the **Type** drop-down menu.
    b. Type the host name or IP address of the database server in the **Server** field.
    c. Type the TCP port number of the database in the **Port** field.

       The default port for Microsoft SQL Server is 1433, and the default port for MySQL is 3306.
    d. Type the user name of a database user that has administrator rights to create databases in the **User Name** field..
    e. Type the password of the database user that has administrator rights to create databases in the **Password** field.
    f. (Optional) To specify a password for the Data Collector database user (compmsauser), select the **Use Custom Password** checkbox, then type a password in the **DSM DB User Password** and **Confirm Password** fields.

       If you do not specify a password, Data Collector Initial Setup creates a default 13-character password for database user (compmsauser).

11 Click **Next**.

The **Ports** page is displayed.

a To specify a different port number for the Web server service, type the port number in the **Enable Web Server Service Port** field.

b To enable or disable Server Agent services, select or clear the **Enable Server Agent Services Port** checkbox.

To specify a different port number for the Server Agent services, type the port number in the **Enable Server Agent Services Port** field.

c To enable or disable the VASA service, select or clear the **Enable VASA Service Port** checkbox.

To specify a different port number for the VASA service, type the port number in the **Enable VASA Service Port** field.

d To enable or disable the SMI-S service, select or clear the **Enable SMI-S Service Port** checkbox.

To specify a different port number for the SMI-S service, type the port number in the **Enable SMI-S Service Port** field.

12 Click **Next**.

The **Network and Memory** page is displayed.

a If the Windows server that hosts the Data Collector has multiple network adapters, select the adapter to use for Data Collector communication.

- To allow the installation wizard to automatically select the network adapter for the Data Collector, select the **Automatically Select Network Adapter** checkbox.
- To specify the network adapter for the Data Collector, clear the **Automatically Select Network Adapter** checkbox and select a network adapter from the drop-down menu.

b In the **Max Memory Settings** area, select a radio button to specify the maximum amount of memory that the Data Collector can use. If the Data Collector manages more than ten Storage Centers, increasing the maximum amount of memory can improve performance.

NOTE: Select a memory setting that is less than the total amount of memory available on the Windows server that hosts the Data Collector.

13 Click **Next**.

The **SupportAssist** page is displayed.

14 Read the SupportAssist System State Information Collection and Storage agreement and select the **I accept the terms of the license agreement** radio button to accept it.

NOTE: SupportAssist collects diagnostic data from Storage Manager then sends it to technical support. If you do not accept the agreement, proactive technical support services that rely on SupportAssist will not be available to you.

15 Click **Next**

The **Summary** page is displayed.

16 Click **Install**.

17 To access the Data Collector after the installation is complete:

a Double-click the Unisphere Central shortcut.

b Log in to Unisphere Central as the administrator user.

c Click Data Collector.

The Data Collector view is displayed.

Migrating an Existing Data Collector to a New Data Collector

To use a new Data Collector as the primary Data Collector, migrate an existing Data Collector to a new Data Collector.

These Data Collector objects are transferred during a migration:

- Users and user groups
- Storage Center mappings
- Password configuration settings

- Internal database information

Data Collector Migration Requirements

The following requirements must be met to migrate an existing Data Collector to a new Data Collector.

- If the existing Data Collector uses a Microsoft SQL Server database, the firewall on the Windows server that will host the new Data Collector must be configured to allow outbound communication on port 1433.
- If the existing Data Collector uses a MySQL database, the firewall on the Windows server that will host the new Data Collector must be configured to allow outbound communication on port 3306.
- The Windows server that will host the new Data Collector must meet the requirements described in Data Collector Requirements.
- The Windows server that will host the new Data Collector must be different than the server that hosts VMware vCenter.
- The tasks described in Planning and Preparation must be complete.
- The user installing the Data Collector must be a member of the Administrators group on the Windows server.
- The existing Data Collector and new Data Collector must be running the same version of the Storage Manager Data Collector software.
- The existing Data Collector must not have any ongoing tasks. These tasks may not be reflected in the new installation of the Data Collector after the migration.
- If using VVols, unregister the VASA provider before migrating the Data Collector.

Migrate an Existing Data Collector to a New Data Collector

Perform the following steps to migrate an existing Data Collector on a Windows server to a new Data Collector on a Windows server.

1. Backup the database for the existing Data Collector.
2. Download the Storage Manager Data Collector software to the Windows server on which to install the new Data Collector.
3. Unzip the software, and double-click theStorage Manager Data Collector Setup file.

   The Storage Manager Data Collector - InstallShield Wizard opens.
4. Select a language from the drop-down menu, and click **OK**.
5. Click **Next**.

   The **License Agreement** page appears.
6. Read the license agreement and click **Yes** to accept it.
7. (Optional) Change the folder in which to install the Data Collector:
   a. Click **Browse**.
   b. Navigate to the folder in which to install the Data Collector.
   c. Click **OK**.
8. Click **Next**.

   The **Data Collector** page is displayed.
9. Select the **Migrate from an existing Data Collector** radio button.
   a. Type the hostname or IP address of the existing Data Collector in the **Hostname or IP Address** field.
   b. In the **Web Server Port** field, type the port number of the existing Data Collector web service.

      The default port is 3033.
   c. Type the user name of the administrator user on the existing Data Collector in the **User Name** field.
   d. Type the password of the administrator user on the existing Data Collector in the **Password** field.
   e. Select a time zone for the existing Data Collector from the **Timezone** drop-down menu.
10. Click **Next**.

    The **Ports** page is displayed.

    a. To specify a different port number for the Web server service, type the port number in the **Enable Web Server Service Port** field.
    b. To enable Server Agent services, select the **Enable Server Agent Services Port** checkbox.

To specify a different port number for the Server Agent services, type the port number in the **Enable Server Agent Services Port** field.

c To enable the VASA service, select the **Enable VASA Service Port** checkbox and type a port number for the service in the field.

To specify a different port number for the VASA service, type the port number in the **Enable VASA Service Port** field.

d To enable the SMI-S service, select the **Enable SMI-S Service Port** checkbox and type a port number for the service in the field.

To specify a different port number for the SMI-S service, type the port number in the **Enable SMI-S Service Port** field.

11 Click **Next**.

The **Network** page is displayed.

If the Windows server has multiple network adapters, select the adapter to use for Data Collector communication.

- To allow the installation wizard to automatically select the network adapter for the Data Collector, select the **Automatically Select Network Adapter** checkbox.
- To specify the network adapter for the Data Collector, clear the **Automatically Select Network Adapter** checkbox and select a network adapter from the drop-down menu.

12 Click **Next**.

The **Summary** page is displayed.

13 Verify the information on the **Summary** page.

14 Click **Install**.

15 When the migration is complete, connect to the Windows server with the existing Data Collector and stop the Storage Manager Data Collector service.

4

Installing and Configuring the Storage Manager Virtual Appliance

This section includes instructions for installing and configuring the Storage Manager Virtual Appliance.

Virtual Appliance Requirements for vSphere

The Storage Manager Virtual Appliance requires the following conditions from the vSphere server.

- The Virtual Appliance must be deployed on a standard datastore. Do not deploy the Virtual Appliance on a VVols datastore.
- The vSphere server must be configured to take regular snapshots of the datastore.

Deploying the Storage Manager Virtual Appliance

Use the VMware vSphere Web Client to deploy the Storage Manager Virtual Appliance as a virtual machine on an ESXi server. After deploying the Virtual Appliance, configure the Data Collector settings.

Deploy the Virtual Appliance

Deploy the Storage Manager Virtual Appliance on a VMware vCenter server.

Prerequisites

- The VMware ESXi host and VMware vCenter Server must meet the requirements in Storage Manager Virtual Appliance Requirements.
- The local computer used to deploy the Virtual Appliance must have the VMware Client Integration plug-in installed.

Steps

1 Log on to the VMware vCenter server with the vSphere Web Client.
2 In the right pane, click **Host and Clusters**.
3 Right-click on ESXi and select **Deploy OVF Template**.
The **Deploy OVF Template** wizard opens.
4 Select the **Local File** radio button.
5 Click **Choose Files** and select the Virtual Appliance .ova template file.
6 Click **Next**.
The **Select a name and folder** page is displayed.
7 Type a name for the virtual machine in the **Virtual machine name** field and select a location for the Virtual Appliance.
8 Click **Next**.
The **Select a compute resource** page is displayed.
9 Select a the destination compute resource on which to deploy the Virtual Appliance.
10 Click **Next**.
The **Review details** page is displayed.
11 Confirm the details for the Virtual Appliance and click **Next**.
The **License agreements** page is displayed.
12 Select the **I accept all license agreements** checkbox and click **Next**.

13 Click **Next**.

The **Select storage** page is displayed.

14 Select **Thin Provision** from the **Select virtual disk format** drop-down menu.

15 Select the datastore in which to store the Virtual Appliance data.

16 Click **Next**.

The **Select networks** page is displayed.

17 Select a network for the Virtual Appliance from the **Destination Network** drop-down menu.

18 Click **Next**.

The **Customize template** page is displayed.

a Type the hostname for the Virtual Appliance in the **Hostname** field.

b If **DHCP** is selected from the **IP Address Type** drop-down menu, skip to the next step.

c If **Static** is selected from the **IP Address Type** drop-down menu, type the **IP Address**, **Netmask**, **Default Gateway**, and **DNS** servers for the Virtual Appliance, and click Next.

19 Click **Next**.

The **Ready to complete** page is displayed.

20 Click **Finish**.

21 Power on the Virtual Appliance after it is deployed.

After a Virtual Appliance is deployed using a static IP address, a different IP address might be displayed in the web console. If this issue occurs, reset the Virtual Appliance to force the correct IP address to be displayed in the web console.

Configuring the Storage Manager Virtual Appliance

Connect to the Storage Manager Virtual Appliance to set up the database and complete the setup of the Data Collector.

Configure the Virtual Appliance as a Primary Data Collector

The Storage Manager Virtual Appliance uses a database to store Primary Data Collector information.

Prerequisite

The Virtual Appliance must be deployed and powered on.

Steps

1 In a web browser, navigate to https://*virtual_appliance_IP_address*/ui/.

NOTE: Depending on your web browser settings, you may need to acknowledge security alerts to continue.

2 Log in to Storage Manager using the following temporary user:

- User name: config
- Password: dell

The **Getting Started** page of the **Data Collector Initial Setup** wizard is displayed.

3 Click **Next**.

4 Select the **Configure as a Primary Data Collector** radio button.

5 Select a time zone for the Data Collector from the **Timezone** drop-down menu.

6 Click **Next**.

The **Ports** page is displayed.

7 To change the port number of a service or enable/disable a service:

a Select the service to modify and click **Edit**.

The **Edit Port** dialog box open.

b To change the port number of the service, type a different port number in the **Port** field.

c To enable or disable the service, select or clear the **Enabled** check box.

d Click **OK**.

8 Click **Next**.

The **Database** page is displayed.

a Select **Microsoft SQL Server** or **MySQL** from the **Database Type** drop-down menu.
b Type the host name or IP address of the database server in the **Hostname or IP Address** field.
c Type the TCP port number of database server in the **Port** field.

The default port for Microsoft SQL Server is 1433, and the default port for MySQL is 3306.

d Type the user name of a database user that has administrator rights to create databases in the **User Name** field.
e Type the password of the database user that has administrator rights to create databases in the **Password** field.
f To automatically create a password for the Data Collector database user (compmsauser), select the **Auto-Create Database Password** radio button.

NOTE: The Data Collector Initial Setup creates a default 13-character password for database user (compmsauser).

g (Optional) To specify a password for the Data Collector database user (compmsauser), select the **Specify Database Password** radio button, then type a password in the **DSM DB User Password** and **Confirm Password** fields.

9 Click **Next**.

The **Administrator Account** page is displayed.

10 Set up the administrator account.

a In the **User Name** field, type the name of the administrator account.
b In the **Password** field, type a password for the administrator account.
c In the **Confirm Password** field, type the password again to confirm the password.

11 Click **Next**

The **Summary** page is displayed.

12 Verify the information on the **Summary** page.

13 Click **Finish**.

A confirmation dialog box is displayed.

14 Click **Yes**.

After the Primary Data Collector setup is complete, the Data Collector restarts, and the login page for Unisphere Central is displayed.

Migrating an Existing Data Collector to the Storage Manager Virtual Appliance

Migrate an existing Data Collector to the Storage Manager Virtual Appliance to use the Storage Manager Virtual Appliance as the primary Data Collector.

These Data Collector objects are transferred during a migration:

- Users and user groups
- Storage Center mappings
- Password configuration settings
- Internal database information

Data Collector Migration Requirements

The following requirements must be met to migrate from a Windows installation of the Data Collector to a Storage Manager Virtual Appliance.

- The Data Collector and Storage Manager Virtual Appliance must be running the same version of the Storage Manager Data Collector software.
- The Windows installation of the Data Collector must not have any ongoing tasks. These tasks may not be reflected in the Storage Manager Virtual Appliance after the migration.

- If using VVols, unregister the VASA provider before migrating the Data Collector.

Migrate an Existing Data Collector

Migrate an existing Data Collector to the Storage Manager Virtual Appliance to use the Storage Manager Virtual Appliance as the primary Data Collector with existing Data Collector information.

Prerequisite

The Virtual Appliance must be deployed and powered on.

Steps

1 Take a snapshot of the Storage Manager Virtual Appliance instance in VMware vSphere.

2 In a web browser, navigate to https://*virtual_appliance_IP_address*/ui/.

NOTE: Depending on your web browser settings, you may need to acknowledge security alerts to continue.

3 Log in to Storage Manager using the following temporary user:

- User name: config
- Password: dell

The **Getting Started** page of the **Data Collector Initial Setup** wizard is displayed.

4 Click **Next**.

5 Select the **Migrate from an existing Data Collector** radio button.

a Type the hostname or IP address of the existing Data Collector in the **Hostname or IP Address** field.

b In the **Web Server Port** field, type the port number of the existing Data Collector web service.

The default port is 3033.

c Type the user name of the administrator user on the existing Data Collector in the **User Name** field.

d Type the password of the administrator user on the existing Data Collector in the **Password** field.

e Select a time zone for the existing Data Collector from the **Timezone** drop-down menu.

6 Click **Next**.

The **Ports** page is displayed.

7 To change the port number of a service or enable/disable a service:

a Select the service to modify and click **Edit**.

The **Edit Port** dialog box open.

b To change the port number of the service, type a different port number in the **Port** field.

c To enable or disable the service, select or clear the **Enabled** check box.

d Click **OK**.

8 Click **Next**.

The **Summary** page is displayed.

9 Verify the information on the **Summary** page.

10 Click **Finish**.

A confirmation dialog box is displayed.

11 Click **Yes**.

The Data Collector restarts, and the login page for Unisphere Central is displayed.

12 When the migration is complete, stop the Storage Manager Data Collector service on the Windows server.

Next Steps After Migration

Depending on the configuration of the existing Data Collector, you may need to perform some additional setup tasks.

- Configure Active Directory
- Import SSL certificates or generate new SSL certificates

5

Installing and Configuring the Storage Manager Client

Install the Client on a Windows computer and use it to connect to the Data Collector.

Connect to the Storage Manager Applications Page

After installing and configuring the Storage Manager Data Collector, you can connect to the Storage Manager Applications page and download the Storage Manager Client.

You can download the Storage Manager Client for Windows or Storage Manager Client for Linux from the Storage Manager Applications page.

The URL to the Storage Manager Applications page is `https://data_collector_hostname_ip:web_server_port/dc/Server/`

- *data_collector_hostname_IP*: Host name or IP address of the Data Collector.
- *web_server_port*: Web server port of the Data Collector. The default port is 3033.

Install the Storage Manager Client on Windows

The Storage Manager Client is an application that connects to a Data Collector or directly to a Storage Center. The Storage Manager Client allows you to view and manage Storage Centers. You can install the Storage Manager Client on the Data Collector server or a computer that has network connectivity to the Data Collector server.

Prerequisite

The host computer must meet the requirements listed in Storage Manager Client Requirements.

Steps

1. In a web browser, go to the Storage Manager Applications page.

   The URL for this page is `https://data_collector_hostname_ip:web_server_port/dc/Server/`.

   - *data_collector_hostname_IP*: Host name or IP address of the Data Collector.
   - *web_server_port*: Web server port of the Data Collector. The default port is 3033.

   If a certificate warning appears, acknowledge the warning and continue.
2. Click **Download Windows Installer (.exe)** to save the installer file to your computer.
3. When the download is complete, open the **Storage Manager Client Setup.exe** file.
4. If a Windows security dialog box is displayed, click **Yes** to start the installation.

   The InstallShield Wizard opens.
5. (Optional) If you are updating the Storage Manager Client, click **Yes** on the confirmation dialog box to perform the update.
6. Following the steps in the wizard to install the Storage Manager Client

Install the Storage Manager Client on Linux

The Storage Manager Client is an application that connects to a Data Collector or directly to a Storage Center. The Storage Manager Client allows you to view and manage Storage Centers. Install the Storage Manager Client on a Linux computer that has network connectivity to the Data Collector server.

Prerequisites

- The host computer must meet the requirements in Storage Manager Client Requirements.
- The user must have root access to the Linux computer.
- The Linux computer must have a full X-windows environment.

Steps

1 Download the Storage Manager Client installer from the Data Collector.

a Change directories to a download directory using the following command:

```
$ cd download_directory
```

b Download the Storage Manager Client rpm file using the following command:

```
$ wget data_collector _hostname_IP:web_server_port --no-check-certificate https://
data_collector_hostname_IP:web_server_port/dc/Server/web/apps/client/SmClient.rpm
```

- *data_collector_hostname_IP* – Host name or IP address of the Data Collector.
- *web_server_port* – Web server port of the Data Collector. The default port is 3033.

2 Install the Storage Manager Client using the following command:

```
# rpm -U SmClient.rpm
```

Use the Client to Connect to the Data Collector

After the Storage Manager Client is installed, use it to connect to the Data Collector.

1 Start the **Storage Manager Client** application.

NOTE: On a Linux computer, use the terminal to navigate to the application directory by running:

```
$ cd /var/lib/dell/bin
```

Then launch the client by running:

```
$ ./Client
```

2 If the Welcome screen appears, select a language then click **Log into a Storage Center or Data Collector**.

3 To change the language displayed in the Storage Manager Client, select a language from the **Display Language** drop-down menu.

4 Complete the following fields:

- **User Name:** Type the name of the Storage Manager user that was created during Data Collector installation. You can also use the name of a Storage Manager user that was previously created.
- **Password:** Type the password for the user. You can also use the password of a Storage Manager user that was previously created.
- **Host/IP:** Type the host name or IP address of the server that hosts the Data Collector. If the Data Collector and Client are installed on the same system, you can type `localhost` instead.
- **Web Server Port:** If you changed the Web Server Port during installation, type number of the updated port. The default port is 3033.

NOTE: Do not select the Use Windows Credentials check box (if present) at this time. To use this feature, the Data Collector must be configured for Active Directory and Kerberos.

5 Click **Log In**.

The Client connects to the Data Collector and displays the **Storage (SAN/NAS)** view.

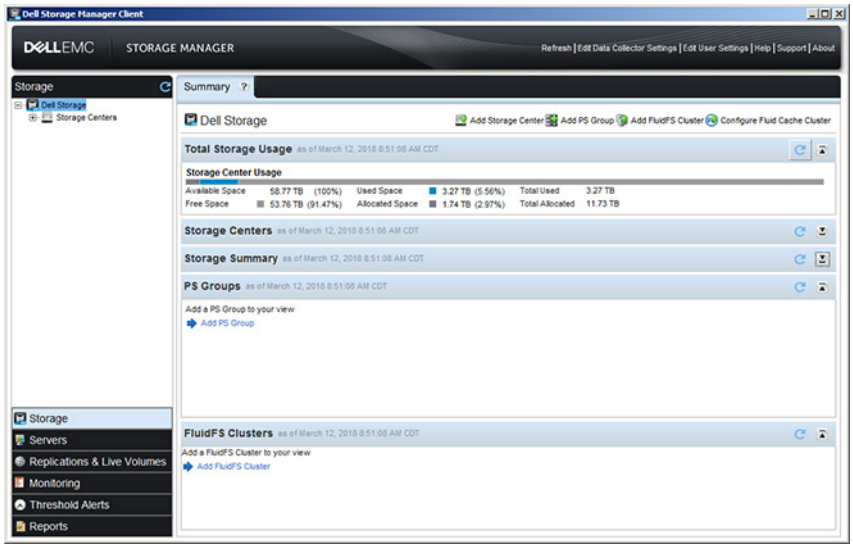

Figure 2. Storage Manager Client Storage (SAN/NAS) View

Add Storage Centers to Storage Manager

Use the Storage Manager Client to add the Storage Centers that you want to centrally manage in the Storage Manager Data Collector.

Prerequisites

- You must have the hostname or IP address of the Storage Center.
- You must have the user name and password for a Storage Center user account.
  - The first time a Storage Center is added to the Storage Manager Data Collector, you must specify a Storage Center user account that has the Administrator privilege. When the Storage Center is subsequently added for other Storage Manager users, you can specify Storage Center user accounts of any privilege level.
  - If your Storage Manager user account has the Reporter privilege, you must specify a Storage Center user account that has the Reporter privilege.
- The Storage Manager Data Collector must have connectivity to the Storage Center management interface.
- The Storage Center certificate must contain the host name or management IP address that is used to add the Storage Center to Storage Manager. For instructions on regenerating an SSL certificate, see the *Storage Manager Administrator's Guide*.

Steps

1 In the Storage Manager Client, click **Add Storage Center**. The **Add Storage Center** dialog box appears.

> **NOTE: If one or more Storage Centers are associated with other Storage Manager users, the dialog box allows you to select an existing Storage Center or add a new Storage Center.**

2 Type Storage Center logon information.

- **Host Name:** Type the host name or IP address of a Storage Center controller. For a dual-controller Storage Center, type the IP address or host name of the management controller.
- **User Name** and **Password:** Type the user name and password for a Storage Center user.

  If you specify a Storage Center user with the Reporter or Volume Manager privilege, access to the Storage Center from Storage Manager is restricted based on the privilege and user groups assigned to the Storage Center user.
- **Folder**: Select the parent folder for the Storage Center.

3 (Optional) Configure the Storage Center to use settings applied to another Storage Center by selecting the **Inherit settings from existing Storage Center** check box. If this check box is selected, after the wizard closes, the Inherit Settings wizard appears.

4 Click **Finish**.

- If the **Inherit settings from existing Storage Center** check box was not selected, the Storage Center is added to Storage Manager.

- If the **Inherit settings from existing Storage Center** check box was selected, the Inherit Settings dialog box appears.

5 (Inherit settings only) Choose the Storage Center settings to inherit.

a Select the Storage Center from which you want to inherit settings, then click **Next**. The wizard advances to the next page.

b Select the check box for each category of settings that you want to inherit.

c When you are done, click **Finish**.

- If passwords are not configured for the SupportAssist proxy, Secure Console proxy, or SMTP server, the dialog box closes.
- If passwords for the SupportAssist proxy, Secure Console proxy, or SMTP server are configured, you are prompted to retype the required passwords.

d Type the required passwords to complete the wizard.

Next Steps

After installation is complete, perform basic tasks to configure Storage Manager for your environment. These tasks depend on the configuration, so some of them might not apply to your site.

See the *Storage Manager Administrator's Guide* or *Unisphere and Unisphere Central for SC Series Administrator's Guide* for detailed configuration instructions, including how to:

- Add Storage Manager users.
- Configure the Data Collector to authenticate Storage Manager users using an Active Directory or OpenLDAP directory service.
- Add a Storage Center to Storage Manager.
- Create Storage Center volumes.
- Add servers to Storage Centers.
- Add FluidFS clusters to Storage Manager.
- Configure email notifications.
- Set up remote Storage Centers and Replication QoS.
- Configure replications and Live Volumes.
- Predefine your disaster recovery plan.
- Configure VMware vSphere Virtual Volumes.

6

Updating Storage Manager Software

Use the following tasks to update the Storage Manager Data Collector, Storage Manager Client, Storage Manager Server Agent, and Storage Manager Virtual Appliance.

Update the Storage Manager Data Collector

Follow these steps to update the Storage Manager Data Collector to a newer version.

Prerequisites

- The Storage Manager Data Collector that you are updating must be version 15.3.1 or later.
- The server that hosts the Data Collector must be running a 64-bit operating system. If the Data Collector is installed on a 32-bit server, migrate to a 64-bit operating system.
- For each managed Storage Center, the Storage Center certificate must contain the host name or management IP address used to add the Storage Center to Storage Manager.

Steps

1 Download the Storage Manager software.

2 Unzip the Storage Manager Data Collector Setup file.

3 Run the Storage Manager Data Collector Setup file to update the Data Collector.

Data Collector Manager opens , and the Data Collector service attempts to start.

NOTE: Allow at least 60 minutes for the Data Collector service to start. If the service takes longer than 60 minutes, contact technical support.

4 If you are using a remote Data Collector, repeat the previous steps on the server that hosts the remote Data Collector.

Update the Storage Manager Client

Follow these steps to update an existing installation of the Storage Manager Client to a newer version.

1 Use the Storage Manager Client to connect to the updated Data Collector.

The Storage Manager Client prompts you to download the Storage Manager Client installation file.

2 Click **Yes**.

3 Run the installer and follow the steps.

Update the Storage Manager Server Agent

Follow these steps to update the Storage Manager Server Agent. Update the Storage Manager Server Agent on all servers managed by the Data Collector.

Prerequisites

- The Server Agent must be connected to a Data Collector.
- The Data Collector must be updated to the newer version.

Steps

1 Open the Server Agent Manager.

2 Click **Check for Upgrades**.

The server downloads the Server Agent installer from the Data Collector.

3 Open the Server Agent installer and follow the instructions to update the Server Agent.

Update the Storage Manager Virtual Appliance

Perform the following steps to update the Storage Manager Virtual Appliance:

About this task

Updating the Storage Manager Virtual Appliance does not change the version number shown in the VMware vSphere Client. The VMware vSphere Client always displays the version number of the Storage Manager Virtual Appliance that was initially deployed.

Steps

1 Download the update for the Storage Manager Virtual Appliance.

The filename of the update package is **DSM-VA-*x.x.x.x*.zip**, where *x.x.x.x* is the version number of the Storage Manager software.

NOTE: If you are updating from Storage Manager Virtual Appliance 2016 R2 or earlier, change the last number of the update package filename to 999 before performing the update. For example, if the filename of the update package is DSM-VA-18.1.2.1.zip, change the filename to DSM-VA-18.1.2.999.zip.

2 In a web browser, navigate to https://*virtual_appliance_IP_address*/ui/.

NOTE: Depending on your web browser settings, you may need to acknowledge security alerts to continue.

3 Log in to the Storage Manager Virtual Appliance using a user with Administrator privileges.

The Unisphere Central **Home** page is displayed.

4 Click **Data Collector**.

The **Data Collector** view is displayed.

5 Click the **General** tab, then click the **Summary** subtab.

6 Click **Install Update**.

The **Upload Package** dialog box opens.

7 Click **Choose File**.

The **Open** dialog box opens.

8 Select the Storage Manager Virtual Appliance update package .zip file and click **Open**.

9 Click **OK**.

The **Install Package** confirmation dialog box opens.

10 Click **Yes**.

The Storage Manager Virtual Appliance is updated.

NOTE: The Storage Manager Virtual Appliance might take up to 15 minutes to update. The Unisphere Central login page is displayed when the update is complete.

NOTE: When performing an update from Storage Manager Virtual Appliance 2016 R3 or earlier to Storage Manager Virtual Appliance 2018 R1 or later, close the browser, wait up to 15 minutes, then reopen the browser and log in to the Storage Manager Virtual Appliance.