

Storage Center 6.6 Software Update Guide



Notes, Cautions, and Warnings

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

 **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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About this Guide

This guide describes the contents of the Storage Center update packages and provides the instructions needed to update the Storage Center software and firmware.

Revision History

Document Number: 22W85

Revision	Date	Description
A00	March 2015	Initial release in support of version 6.6

Audience

Storage administrators responsible for updating Storage Center software are the target audience for this guide. The intended reader has a working knowledge of storage and networking concepts.

Contacting Dell

Dell provides several online and telephone-based support and service options. Availability varies by country and product, and some services may 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, enter 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.

Related Publications

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

Storage Center Documents

- *Storage Center Release Notes*
Contains information about features and open and resolved issues for a particular product version.
- *Storage Center Deployment Guide*
Provides cabling instructions for Storage Center controllers, switches, and enclosures and provides instructions for configuring a new Dell Storage Center using the System Manager Startup wizard.
- *Storage Center System Manager Administrator's Guide*
Describes the Storage Center System Manager software that manages an individual Storage Center.
- *Storage Center Software Update Guide*
Describes how to upgrade Storage Center software from an earlier version to the current version.
- *Storage Center Maintenance CD Instructions*
Describes how to install Storage Center software on Storage Center controllers. Installing Storage Center software using the Storage Center Maintenance CD is intended for use only by sites that

cannot update Storage Center using the standard update options available through the Storage Center System Manager.

- *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 PowerShell hosting applications. Help for individual cmdlets is available online.


Getting Started

This section of the Software Update Guide provides information about the contents of Storage Center update packages and how to prepare for installing updates.

Updating Storage Center Software

Storage Center updates are bundled together as a single downloadable update package. An update package includes the latest updates for the following Storage Center software and firmware:

- Storage Center System Manager software
- Storage Center firmware
- Enclosure firmware
- Disk firmware

 **NOTE:** When performing an update of both the Storage Center operating system and the Enterprise Manager software, update the Enterprise Manager software before updating the Storage Center operating system.

Minimum Configuration

Before you install the update package, ensure that Storage Center meets the minimum hardware and software requirements.


- **Hardware:**
Only SC040, SC4020, and SC8000 controllers can run Storage Center version 6.6.
- **Software:**
The current version of Storage Center on the controller must be 6.5 or later to update to Storage Center version 6.6.

Requirements for System Manager

Storage Center System Manager is a Java applet that requires the use of a Java plugin to run. The following table provides the minimum software requirements for running System Manager.


Table 1. System Manager Requirements

Component	Requirements
Web browser	<ul style="list-style-type: none"> • Windows Internet Explorer versions 7, 8, 9, and 11 • Windows Internet Explorer Desktop version 10 (Internet Explorer Modern version 10 is <i>not</i> supported) • Mozilla Firefox on Microsoft Windows • Google Chrome on Microsoft Windows

Component	Requirements
Java	<p> NOTE: Other web browsers may work but are not officially supported.</p> <p>Java version 7 and 8. When using Java, open the Java Control Panel and make sure that the option Enable Java content in the browser is selected.</p>


Validate Host Best Practices

To reduce the impact of the controller restart operation on the host operating system and applications when applying Service Optional updates, verify that the correct configuration and best practices are applied to the host.


 **NOTE:** Dell recommends that each host has at least one failover test where the redundancy of the HBAs, fabrics, and storage controllers is tested and validated. Validate every newly configured host that is accessing Storage Center volumes or when large update packages are applied to the host operating system. See the *Storage Center System Manager Administrator's Guide* for more information about HBA server settings and iSCSI settings best practices.

Types of Components

Within an update package, an individual update component is classified according to how it can be installed.

 **NOTE:** The method you use to install updates affects your infrastructure differently. Before applying updates, understand the impact of the update on Storage Center infrastructure and plan the update process carefully to avoid unplanned downtime.

- **Required:** Required components must be installed as part of the update.
- **Deferrable:** Deferrable components can be installed later; however, doing so can negatively affect the reliability of the components whose firmware is not being updated.
- **Service Affecting:** Service Affecting components can be installed only when Storage Center is temporarily taken out-of-service. During the outage, all systems and services using volumes from Storage Center must be powered down correctly to avoid data loss and unplanned system disruption.
- **Service Optional:** Service Optional components can be installed either when Storage Center is in service or during a scheduled outage. Although these components are designed to not cause system disruption, the way in which Storage Center is configured can affect performance. During a Service Optional update, the firmware update process occurs as a rolling controller update. This process results in a controller failover event that causes the host initiators to log out and then log back in to the volumes connected to the SAN. If you have implemented the Dell Storage best practices for host settings (for example, multipath IO, HBA settings, time-outs) and fabric design (cabling, number of front-end ports, and so on), the logout/login process has minimal effect on host volumes. The update process should not affect data access, data integrity, or result in any data loss.

 **NOTE:** When performing a Service Optional update, reduce the impact of the controller restart operation on the host OS and applications by verifying that the correct configuration and best practices are applied to each newly configured host. Dell recommends that every host that accesses Storage Center volumes or that has large updates applied to its OS, has at least one failover test.


The following table shows which components affect service during installation.

Table 2. Storage Center with a Single Controller

	Service Affecting	Service Optional
Storage Center Firmware Update	Yes	
Enclosure Firmware Update. Depending on the components for a specific release, enclosure firmware may or may not be Service Optional.	Yes	Yes
Disk Firmware Update. Disk firmware upgrades may be service affecting or nonservice affecting depending on the drive. A drive that supports an in-service upgrade, is a drive that can: <ul style="list-style-type: none"> • Process IOs and other commands while receiving firmware blocks. • Boot and ready new firmware in three seconds. 	Yes	Yes


Table 3. Storage Center with Dual Controllers

	Service Affecting	Service Optional
Storage Center Firmware Update		Yes
Enclosure Firmware Update. Depending on the components for a specific release, enclosure firmware may or may not be Service Optional.	Yes	Yes
Disk Firmware Update. Disk firmware upgrades may be service affecting or nonservice affecting depending on the drive. A drive that supports an in-service upgrade, is a drive that can: <ul style="list-style-type: none"> • Process IOs and other commands while receiving firmware blocks. • Boot and ready new firmware in three seconds. 	Yes	Yes

 **NOTE:** For a Storage Center disk firmware update, Service Affecting only applies to Storage Center version 5.5.12 or earlier.

Checking Update Status

The Update Status wizard compares your Storage Center software version to the latest version available from Dell, and then provides options to proceed.

 **NOTE:** Dell SupportAssist must be enabled to use the Update Status wizard.

1. From the **Storage Management** menu, select **System**→ **Update**→ **Update Status**. The Update Status wizard starts.

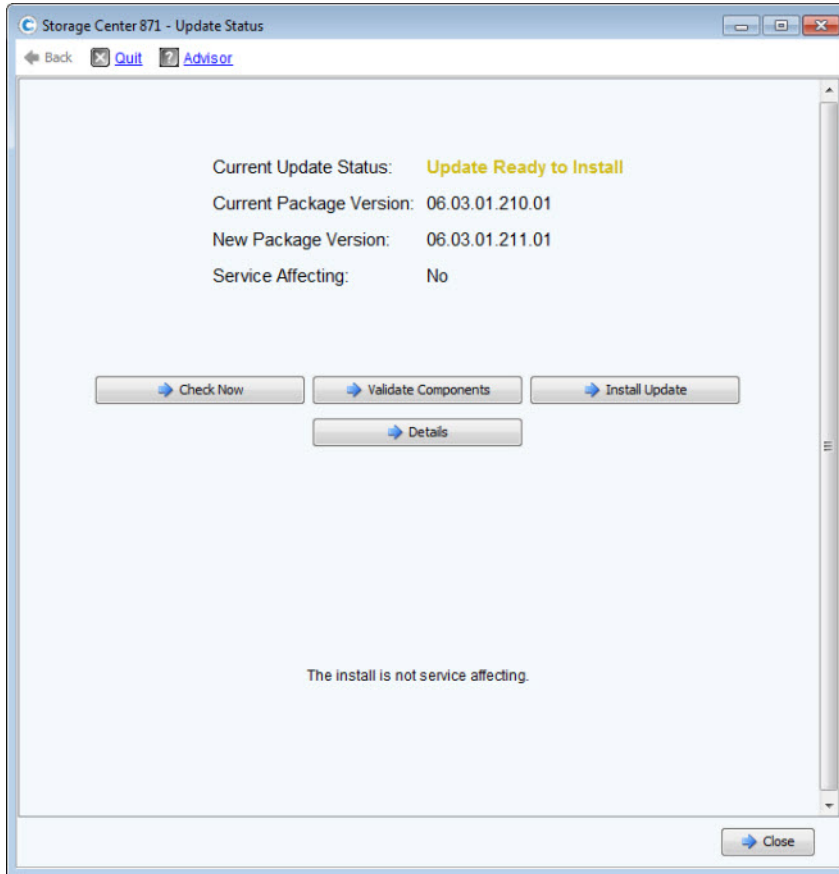



Figure 1. Update Status Wizard

The Update Status page displays the current update status and whether the updates are service affecting and provides update options and details.

2. Select the appropriate option for your installation.

 **NOTE:** When checking for updates for the first time on an SC8000 running Storage Center 6.1.1 and the Update Status is **No Update Available**, contact Dell Technical Support Services.

Update Status Messages

When the Update Status wizard starts, the initial page displays Storage Center status messages.

Table 4. Update Status Messages

Field	Description
Current Update Status	<p>Status of the Check Update, Download Update, or Install Update process:</p> <ul style="list-style-type: none"> • Checking for Update: Storage Center is checking for updates. • Controller Down: A controller is down. Installation cannot proceed when a controller is down. • Downloading Update: Storage Center is downloading an update. • Error Checking or Downloading: An error occurred during Check Update or Download Update.

Field	Description
	<ul style="list-style-type: none"> • Error Installing Update: An error occurred while installing an update component. Click Install Report to view details on the installation error. • Installing Update: Storage Center is installing an update. • No Updates Available: Last Check Update process found no available updates. Click Check Now to check again for updates. • Update Available for Download: An update is available for download. Click Download Now to download the update. • Update Ready to Install: A downloaded update is ready to install. Click Install Update to install the update. • Validating Components: Storage Center is verifying each component status to determine if a component is ready for installation.
Current Package Version	OS version currently running on the Storage Center.
New Package Version	Version of the OS ready to download or install.
Service Affecting	Indicates whether package installation affects Storage Center service: <ul style="list-style-type: none"> • Yes: Package installation affects Storage Center service. • No: Package installation does not affect Storage Center service. • Deferrable: Package contains service-affecting components that can be installed later.
Controller Reset	Indicates whether the update package installation requires rebooting the controllers: <ul style="list-style-type: none"> • Single-controller Storage Center: Rebooting the controller always affects service. • Clustered-controller Storage Center: If the upgrade is service affecting, the controllers are rebooted simultaneously. If the upgrade is not service affecting, the controllers are rebooted in sequence.
Last Check Time	Shows the date and time when Storage Center last successfully checked for updates.
Validation Errors	Shows the number of validation warnings or errors, if any, encountered during a validate update process.
Installation Errors	Shows the number of installation errors and warnings, if any, that occurred during installation.

Update Status Actions

The Update Status wizard available options depend on the reported status.

Table 5. Update Status Wizard Actions

Option	Description
Check Now	Check for updates.
Validate Components	Validate update components.
Install Update	Install the downloaded update package.
Details	View details for a downloaded update package.

Viewing Update Package Details

When a downloaded update package is ready to install, you can view details for the package before installing it.

1. From the **Storage Management** menu, select **System**→ **Update**→ **Update Status**. The Update Status wizard starts.
2. Click **Details**. The **Update Details** page appears. This page provides details for all components included in the update package.

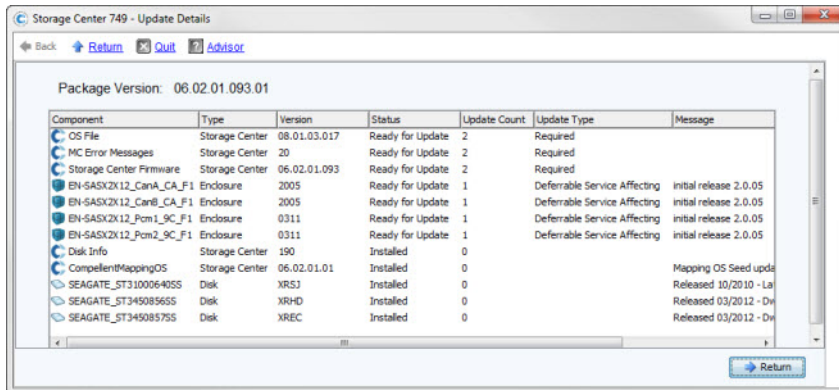


Figure 2. Update Details Page

Table 6. Update Package Details


Column	Description
Component	Name of component to update.
Type	Type of component to update: <ul style="list-style-type: none"> • Storage Center: Updates Storage Center software. • Enclosure: Updates enclosure firmware. • Disk: Updates disk firmware.
Version	Version number of the update component.
Status	Status of the component update: <ul style="list-style-type: none"> • Ready for Update: Component is ready for update. • Installed: Component has been installed.
Update Count	Number of components on the Storage Center to which the update component applies. For example, for a controller firmware update, the count is 1 for a single-controller Storage Center and 2 for a dual-controller Storage Center.
Update Type	Indicates whether the installation of the update component is required or deferrable: <ul style="list-style-type: none"> • Required: Update must be applied. For a single-controller Storage Center, the update component affects service.

Column	Description
	<p>For a dual-controller Storage Center, the update component can be performed without disruption of service.</p> <ul style="list-style-type: none"> • Deferrable Service Affecting: Update is deferrable and applying the update affects service on all systems. Schedule a service outage to apply the update. • Deferrable Service Optional: Update is deferrable and applying the update can be done either without affecting service or during a scheduled service outage.
Message	Shows informational messages, if any, that further describe the update component.

Decide How to Apply Updates

Within an update package, an individual update component is classified by how the update component can be installed.

- The installation process automatically reboots Storage Center controller(s) when required by the components being updated.
- Disk firmware, when applied in-service, does not require a system boot.
- For dual-controller Storage Centers, installation reboots the controllers in sequence or simultaneously, depending on the components being updated. A service outage is required when controllers are rebooted simultaneously.

 **NOTE:** Do not manually restart the Storage Center controllers during the update process. Updating is a software-controlled process.


1. After downloading an update package, view the **Update Details** to determine how the update affects service.
 - a. From the **Storage Management** menu, select **System** → **Update** → **Update Status**. The **Update Status** wizard starts.
 - b. Click **Details**. The **Update Details** page appears.
2. On the **Update Details** page, view the **Update Type** column for each component.

Table 7. Software Update Types

Update Type	Description
Required	<p>Component must be installed.</p> <ul style="list-style-type: none"> • For a single-controller Storage Center, the update component affects service. • For a dual-controller Storage Center, the update component can be performed without disruption of service.
Deferrable Service Affecting	<p>Component installation can be deferred. Applying the update affects service on all Storage Centers. Schedule a service outage to apply the update.</p>
Deferrable Service Optional	<p>Component installation can be deferred. Applying the update can be done either without</p>

Update Type	Description
	affecting service or during a scheduled service outage.

- After viewing the **Update Type** for all components included in the update package, determine how to apply the updates:
 - If you intend to install components that affect service, plan for and schedule a service outage during which to apply the updates. You may also want to install components that are service optional during the schedule outage.
 - If you intend to install components that do not affect service, plan for applying the updates during a time at which the Storage Center is least busy.

 **NOTE:** If you do not install deferrable components when you install the required components, it can negatively impact the reliability of the components whose firmware is not being updated. Dell recommends that you schedule a service outage and apply deferrable component updates as soon as possible.

Downloading an Available Update


Storage Center can be configured to automatically download updates; otherwise, updates must be downloaded manually.

- From the **Storage Management** menu, select **System**→**Update**→**Update Status**. The Update Status wizard starts and checks for available updates. When complete, if an update is available you can download it for installation.
- Click **Download Now**. As Storage Center downloads the update, the status appears in the **Update Status** main page. When Storage Center is finished downloading updates, results are displayed in the **Update Status** main page.
- After downloading an update package, review the Update Details page to determine how the update affects service.

Adding or Upgrading Enclosures

If you are adding or upgrading enclosures, check the update status and install software updates before discovering the new or changed enclosures in System Manager.

- Check update status.
- Install updates as needed.
- Cable the enclosure. For more information, see the storage controller *Deployment Guide* or the *Connectivity Guide*.
- Use Storage Center System Manager to scan for new disks. For more information, see the *Storage Center System Manager Administrator's Guide*.

 **NOTE:** Storage Center does not automatically detect new disks or enclosures. You must use System Manager to manually scan for new disks.

Related Links

[Checking Update Status](#)

[Installing the Update](#)

Installing an Update

This section of the Software Update Guide provides instructions for installing Storage Center update packages and performing the tasks required to finalize the update process. The Storage Center update process runs without intervention. When the software update finishes, some final tasks are required to complete the update.

Prepare for the Update


Before installing update components to the Storage Center, follow these procedures to prepare the Storage Center for the update.

1. Enable Dell SupportAssist and use it to send diagnostic data to Dell Technical Support Services.
2. Contact Dell Technical Support Services to get a preupdate system check.
3. Back up the system. Verify that backups are up-to-date and replications are synchronized.
4. Validate the update components before installing an update.

 **NOTE:** When updating both the Enterprise Manager software and the Storage Center operating system, update Enterprise Manager before updating Storage Center.

Send Data Using SupportAssist

Use Dell SupportAssist to send diagnostic data about Storage Center to Dell Technical Support Services.

 **NOTE:** Dell SupportAssist must be enabled to use the SupportAssist wizard. For instructions, see the *Dell Storage Center System Manager Administrator's Guide*.

1. From the **Storage Management** menu, select **System**→ **SupportAssist**→ **SupportAssist**. The SupportAssist wizard starts.
2. Click **Send SupportAssist Data Now**. The **SupportAssist In Progress** dialog box appears.
3. When the dialog box displays the message *SupportAssist Started*, click **OK**.
4. When the system reports success for all SupportAssist transfers, click **Close** to exit the SupportAssist wizard.

Validate Components


Validate the update components before installing an update.

1. From the **Storage Management** menu, select **System**→ **Update**→ **Update Ready to Install – Install Now**.
2. Click **Validate Components**. If Storage Center detects a problem when validating update components, the **Validate Components** page displays a summary of validation problems. To revalidate an update package, when validation results are displayed, click **Revalidate Components**.

Storage Center re-validates the update components and returns the results. Validation problems are classified as warnings or errors. In general:

- Validation warnings indicate a connection or cabling issue with a component that prevents the component from being updated.
- Validation errors indicate that a file required by an update component cannot be found.


When a validation warning or error is displayed, resolve the issue before continuing with the installation.

 **NOTE:** If validation warnings and/or errors cannot be resolved, contact Dell Technical Support Services for assistance in resolving the errors. Do not force an installation without assistance.

Installing the Update

After the system reports that all installation components have been successfully validated, install the update.

- The installation process automatically reboots Storage Center controller(s) when required by the components being updated.

 **NOTE:** Do not manually reboot the Storage Center controllers during the update process. Updating is a software-controlled process.

- Disk firmware, when applied in-service, does not require a system reboot.
 - For a dual-controller Storage Center, the installation process reboots the controllers in sequence or simultaneously, depending on the components being updated. A service outage is required when controllers are rebooted simultaneously.
1. Before updating Storage Center software, clear the Java cache in the Java Control Panel.
 2. Click **Install Update**. Update package components are validated.
 3. When complete, click **Continue**.
 4. Select the updates you want to apply to the Storage Center:
 - **Apply the required portion of the update package:** Applies only the required portion of the update package.
 - **Apply updates that will not affect service:** Applies the required portion of the update package and all components that are Service Optional (components that can be installed in-service).
 - **Apply updates that will disrupt service (exclude Service Optional):** Applies the required portion of the update package and all components that are Service Affecting (components that cannot be installed in-service).
 - **Apply all updates:** Applies all updates in the update package, including all deferrable updates, Service Affecting components, and Service Optional components. When applying all updates, you should be aware of the following:
 - A service outage is taken, regardless of components.
 - Disk firmware is updated across all disks in parallel during the service outage.
 5. After you have selected the manner in which to apply updates, view information for the update you have selected:
 - **Service Affecting:** Displays whether the installation of the selected components affects service.
 - **Controller Reset:** Displays whether the installation causes a controller reboot.

- **Estimated Completion Time:** Time estimate for the installation.
6. Click **Continue**. A summary of the selected installation options appears.
 - ✎ **NOTE:** The installation process automatically reboots the Storage Center. Do not click **Install Now** until you are ready to reboot the Storage Center.
 7. Depending on whether the installation affects service or not, do one of the following:
 - For an installation that does not affect service:
The **Install Update** page displays the message, Non-Service Affecting Install Confirmation. Click **Install Now**.
 - For an installation that affects service:
 - a. Read the summary screen messages, and click **Continue**.
 - b. Halt all IO to the Storage Center.
The best way to ensure that IO is stopped is to shut down servers connected to the Storage Center.
 - c. Click **Install Now**.
 8. After successfully installing the update, reconnect to the Storage Center and validate the installation.

Completing the Update

After successfully applying update components to the Storage Center, follow the steps in this procedure to finish the update process.

Reconnect to the Storage Center

After installing the updates, reconnect to the Storage Center.

- If the browser was left running during the update, at the end of the update, the browser may report a loss of connection. Refresh the browser to reconnect to the Storage Center.
- If the browser was closed during the update, open a browser and enter the name or IP address of the Storage Center.


Rebalance Ports on Dual-Controller Storage Centers

For dual-controller Storage Centers, rebalance ports.

1. Click on the **Controllers** icon to view controller status.
2. When both controllers are up, the local port condition may be unbalanced. If so, click **Rebalance Ports**. The system rebalances the ports.
3. Verify that both controllers are running the new version of code. From the **Help** menu, select **About Compellent Storage Center**. A dialog box appears displaying the Storage Center version for each controller.

Enable System Cache

When the update is complete and the system is rebooted, enable read and write cache.

 **NOTE:** Cache settings for individual volumes override global cache settings. To enable caching for some volumes and not others, enable caching system-wide and then disable caching for individual volumes.

1. From the **Storage Management** menu, select **Properties**→ **System**.
2. Click the **Cache** tab.
3. Select **Enable Read Cache** and/or **Enable Write Cache**.
4. Click **OK**.

Check for Additional Updates

After the update is complete, check for Storage Center updates that may have become available after the Storage Center release.


1. From the **Storage Management** menu, select **System**→ **Update**→ **Update Status**.
2. Click **Check Now**. As Storage Center checks for updates, status appears in the Update Status wizard.
3. If an update is available, follow the installation instructions. If the software update process is complete, use SupportAssist to send diagnostic data to Dell Technical Support Services.

Related Links

[Installing the Update](#)

Send Data Using SupportAssist

Use Dell SupportAssist to send diagnostic data about Storage Center to Dell Technical Support Services.

 **NOTE:** Dell SupportAssist must be enabled to use the SupportAssist wizard. For instructions, see the *Dell Storage Center System Manager Administrator's Guide*.

1. From the **Storage Management** menu, select **System**→ **SupportAssist**→ **SupportAssist**. The SupportAssist wizard starts.
2. Click **Send SupportAssist Data Now**. The **SupportAssist In Progress** dialog box appears.
3. When the dialog box displays the message *SupportAssist Started*, click **OK**.
4. When the system reports success for all SupportAssist transfers, click **Close** to exit the SupportAssist wizard.

Get a System Check

Contact Dell Technical Support Services for a post-update system check.