Dell Storage PowerTools Cluster Services Manager User's Guide

Dell Engineering
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1 Glossary

This section describes terms used in this document.

Term	Definition
Component	A part or module of an appliance or system (hardware or software).
Host	A physical server or node within the appliance.

2 Overview

The Dell Storage PowerTools Cluster Service Manager (CSM) plugs into the EVO:RAIL user interface to provide notification whenever a host component's firmware/software is determined to be out of date with the current CSM Update Bundle. Using the CSM's user interface, you can update the system across the cluster automatically. The CSM manages the migration of the virtual machines, performs all of the updates, and brings the host back online one at a time (also known as rolling updates).

When CSM is initially launched, an agent is installed on the hosts to perform component inventory.

The agent is used for the following:

- **Reporting** – Uses the Compatability Manager (CM) to inventory the hosts.
  CM is a utility that performs an inventory of the system BIOS, firmware, drivers and software versions. It compares the versions to a predetermined profile of expected versions and informs user of potential conflicts. The CM consists of the comparison engine, which references the appliance stack profile within the CSM Update Bundle to inventory the components and print the version status of the component. The CM does not provide functionality to update any component. It is purely a status reporting utility.
- **Updates** – Uses Update Manager (UM) to run the update.
  UM is a tool designed to simplify the delivery and execution of update packages to an appliance. The UM application consumes the Appliance Stack profile, and executes the updates. It prints out the results of the following in the stdout screen and updateLog file. It has the following three main functions and prints the output of each:
  1. Pre-update check
  2. Update
  3. Post-update report

  The UM updates the components listed in the Appliance stack profile, such as BIOS, iDRAC, device drivers, and physical drives.

- **CSM Update Bundle** – A set of rules and binaries that direct CM and UM how to inventory and update the appliance.
  The *Update Bundle* is a simple approach to help inventory and update the software and hardware

components of an appliance platform. It is available as an archive that contains scripts, applications, and binaries, which facilitate CM/UM operations. The Update Bundle may contain files of the following categories:

- o Specific version of the firmware and driver files for each supported component for a specific platform.
- o Custom application binaries or scripts for inventory and update.
  - Compatibility Manager: Command-line tool to inventory components using utilities present in the CSM Update Bundle.
  - Update Manager: Command-line tool to update the supported components using utilities/scripts present in the CSM Update Bundle.
  - Server Hardware Manager CLI: Command-line tool used by the Compatibility Manager and Update Manager to inventory and update storage controller and local media.
- o Appliance stack profile: Describes the supported components along with the commands and binaries for inventory and update.
- o ApplianceDB: Dynamically generated file containing the list of components that are listed in the appliance stack profile.

3 Launching CSM from EVO:RAIL

1. To launch CSM from EVO:RAIL, click **DELL** on the left navigation panel.

The **Dell Storage PowerTools – Cluster Services Manager** page is displayed, which contains a **DELL** icon on the left side of the page. The numbers of notifications that need attention are highlighted in red above the icon.
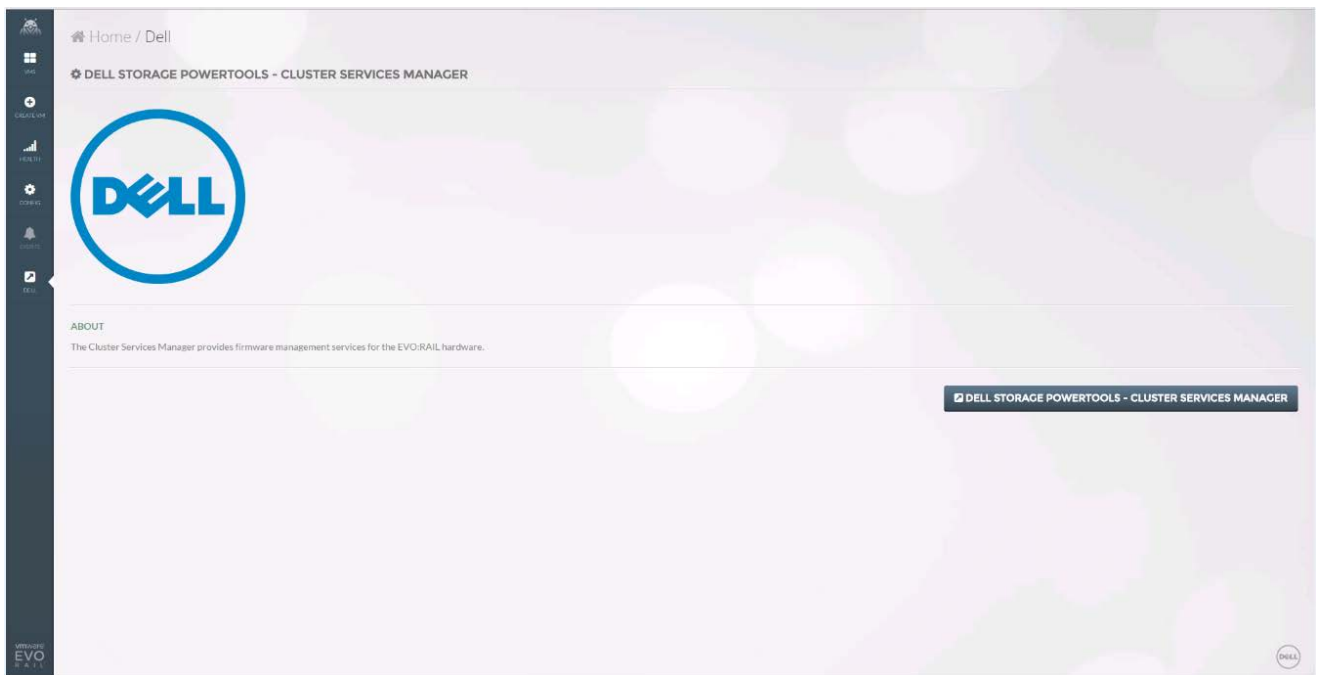

Figure 1   Dell Storage PowerTools – Cluster Services Manager

2. To open the Hosts page, click **Dell Storage PowerTools – Cluster Services Manager**.
3. Click **About** to review the CSM version and build numbers.
4. Click **Logout** to log out of CSM.

4   Getting started

This section describes the process of configuring the CSM. Complete the steps in the following sections after you prepare your system.

4.1   Configuring the appliance for the first time

This section describes the steps required for initial CSM deployment. Alternatively, if you want to import the configuration from a backup file, skip this section and go to the Importing the configuration from a backup file section.

NOTE: You must have administrative rights to configure vCenter and hosts.

1. In the **User Name** field, type `root`.
2. In the **Password** field, type `Passw0rd!`
3. Click **Log In**.
4. On the **End User License Agreement** (EULA) page, review the terms, and then click **Next**.
5. On the **vCenter Configuration** page, complete the following fields, and then click **Next**.
   - vCenter IP/Host Name
   - Username
   - Password
   - Domain
6. On the **Host Setup** page, complete the following fields, and then click **Next**.
   - Username
   - Password
   - Domain
7. On the **Summary** Page, click **Next**.

Dell recommends that you change your password after initial log in. Use the following steps to change your password.

1. From the EVO:RAIL GUI, select **VMS** from the left navigation.
2. Click the **Open Console** icon of the DellPTCSM VM.
3. From the VM console, log in as `root` using the default initial password, `Passw0rd!`
4. Type `passwd` and press Enter.
5. At the New password: prompt, type the password of your choice and press Enter.
6. Re-enter the new password to confirm.
7. Type `logout` and then press Enter.
8. Close the VM console tab in your browser.

4.2 Importing configuration from a backup file

Follow these steps if you have a previous backup file ready to restore. Backup and recovery are discussed in greater detail in the [Backup and restore](#) section of this document.

1. Click **Backup and Restore** on the left navigation panel.
2. Select the **Import the configuration from a backup file** option.
3. On the **Import file** page, click **Browse**, select the backup file, and then click **Next**.
4. After the system processes the file, on the **Summary** page, click **Next**.

5 Host management

The main page of the user interface displays all of the hosts that are in the cluster. To find a particular system, you can use the search option located on the right side of the page.

The pie graph on the left side depicts the number of hosts that need updates while the pie graph on the right depicts the number of components that need an update.
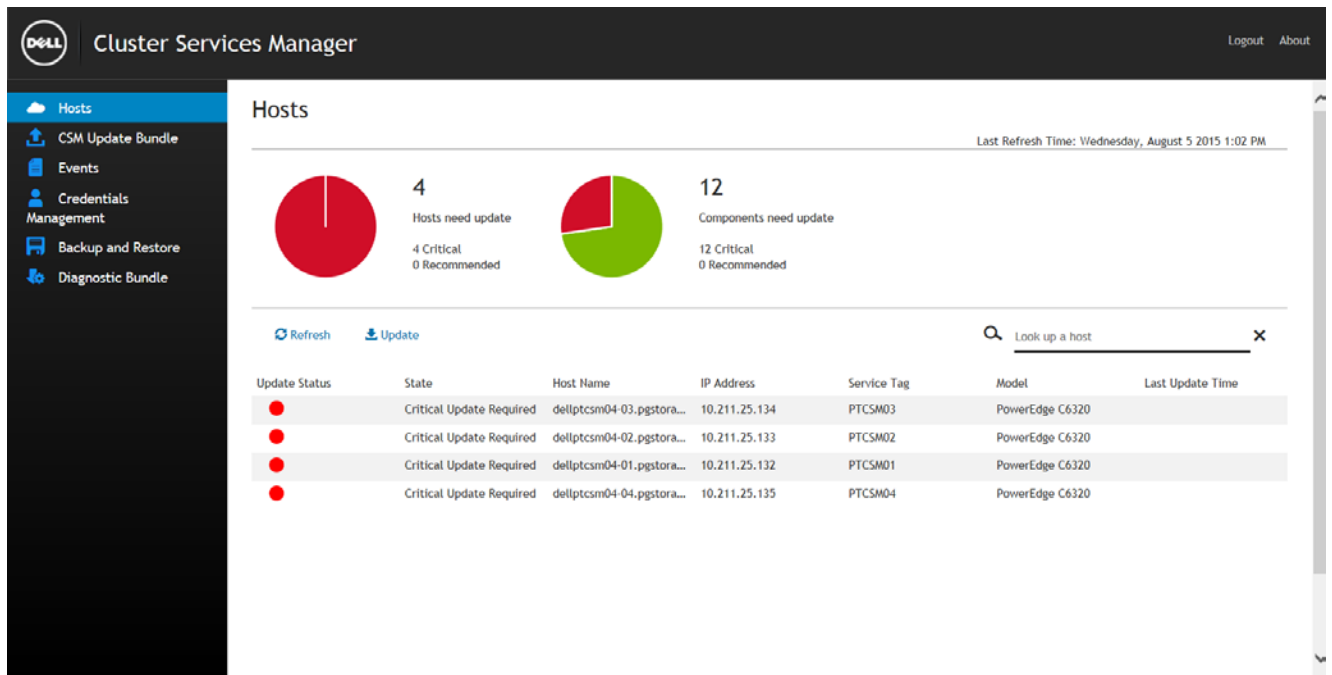

Figure 2   Hosts

The pie graphs use the following colors:

Table 1   Pie graph colors

Color	Status
Green	No updates needed
Yellow	Recommended update needed
Red	Critical update needed

You can also find the **Last Refresh Time** on the top-right side of the page, which displays the time and date of the last refresh.

5.1 Columns and fields (Hosts)

The following table describes the fields on **Hosts** page.

Table 2   Column and fields

Column	Field	Status
Update Status		
State		
	OFFLINE	Initial state or missing info to connect; for example, IP.
	OK	System is stable.
	UNREACHABLE_IP	Cannot connect to host IP.
	CREDENTIAL_ERROR	Cannot log in to host with given credentials.
	CRITICAL_UPDATE_REQ	Critical components require an update.
	NON_CRITICAL_UPDATE_REQ	Non-critical components require an update.
	INVENTORY_FAILED	Failed to run inventory on host.
	UPDATE_PENDING	Host in queue for update.
	UPDATE_IN_PROGRESS	Host update in progress.
	UPDATE_FAILED	Failed to update the host. This status is overwritten by next inventory status.
	ERROR	An internal error occurred; for example, CSM Update Bundle file corrupter.
	UNKNOWN	Unknown issue.
Host Name		The host name of the server.
IP Address		The IP address of the server.
Service Tag		The Service Tag of the server.
Model		The model of the server.
Last Update Time		The time of the last update.

5.2 Refreshing the host information

The inventory gathering is a reoccurring background process. By default, an inventory occurs once each day. If a change has been made to a server or component and an inventory has not been run, you can

manually force an inventory by clicking **Refresh**. This step reinventories each host and the components. It also gathers the latest information on firmware versions.

5.3   Detail report for each host

To see the host details, click on the host name. You can interactively select an item and view the complete details, including:

- Versions (for example, 2.5.3)
- Components (for example, BIOS, firmware, or drivers)
- Subcomponents (for example, system drives or enclosures)
- Status (for example, no updates needed)

NOTE: An in-progress bar displays after the system begins to process the update.

From subcomponents, you can view additional details, including:

- Update Status
- Name
- Current version
- Expected Version

Figure 3   Host Details

> **NOTE**: In addition, an in-progress bar does **not** display for subcomponents once the system begins to process the update.

5.4 Updating hosts and components

If you want the hosts in the cluster to update all of the firmware to the version specified in the CSM Update Bundle, on the Hosts page, click Update. A confirmation page displays and if you click Yes, rolling updates on cluster starts.

The system performs the following steps:

1. The application (CSM) updates the cluster one host at a time, first placing the initial host in maintenance mode.
2. After the host successfully enters Maintenance Mode, the update is applied and the host restarts.
3. The host is then taken out of Maintenance Mode.
4. After the host has successfully exited Maintenance Mode, the process repeats on the next host in the cluster.

The update progress is reported on the Hosts page.

> **NOTE:**
>
> - The update process may require 45 minutes or more per host depending on many factors, such as number of updates required, cluster utilization, or issues impacting vMotion (which would delay hosts entering maintenance mode).
>
> - If an update on a host fails, the system remains in Maintenance Mode and the update process stops and is not applied to subsequent systems. If this happens, retrieve the diagnostic bundle, and then contact Dell.

6 Uploading Update Bundle using the GUI

Before updating the bundle, download the most recent CSM Update Bundle from **Dell.com/Support**.

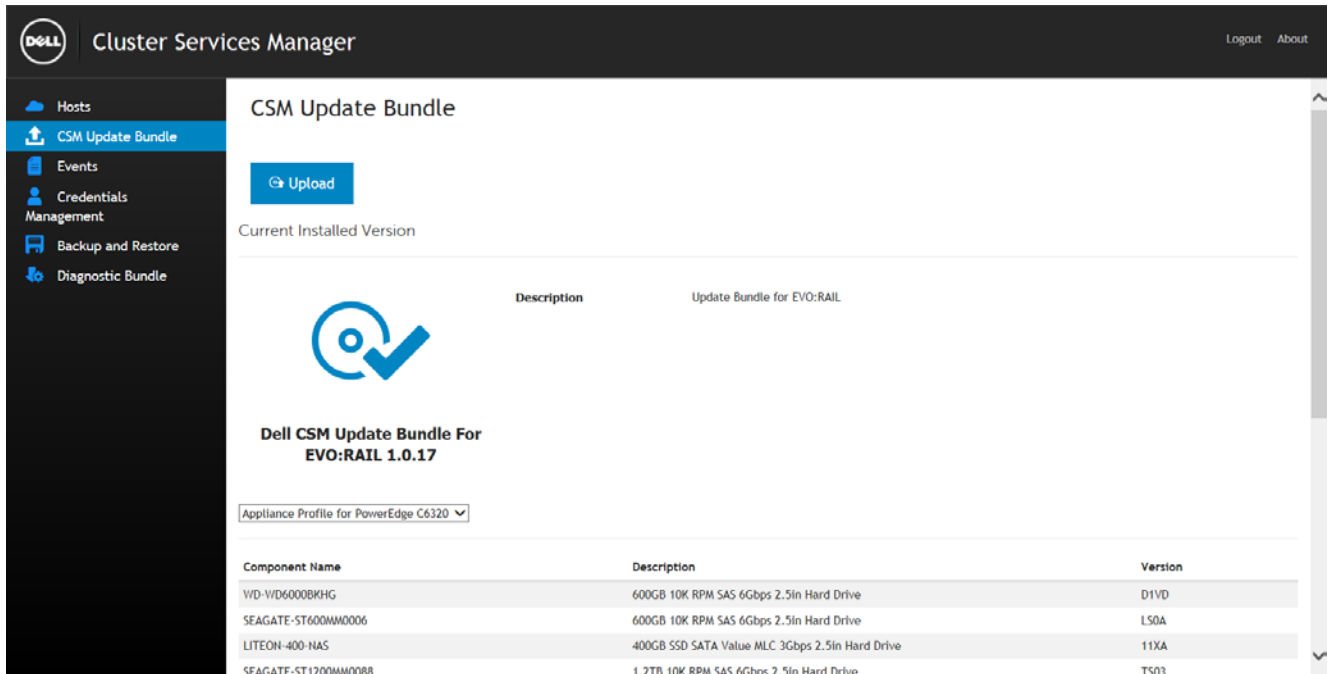1. To update the CSM Update Bundle, on the left menu, click **CSM Update Bundle**.

Figure 4   CSM update Bundle

2. On the **Upload Update Bundle** page, click **Upload**.
3. On the **Update Bundle** page, click **Browse.**
4. Browse to file and click **Open**.

> **NOTE:** The page displays the content of that particular CSM Update Bundle. At this point, you can either save or cancel the upload. Also, you can find more information about the update bundle in section 11.

5. After the CSM Update Bundle processes, on the **Upload Update Bundle** page, click **Upload**. Alternatively, to cancel the upload and return to the **CSM Update Bundle** page, click **Cancel**.

7   Backup and restore

This section describes how to create a backup of CSM events and stored credentials. It also describes how to restore this CSM data from a backup file.
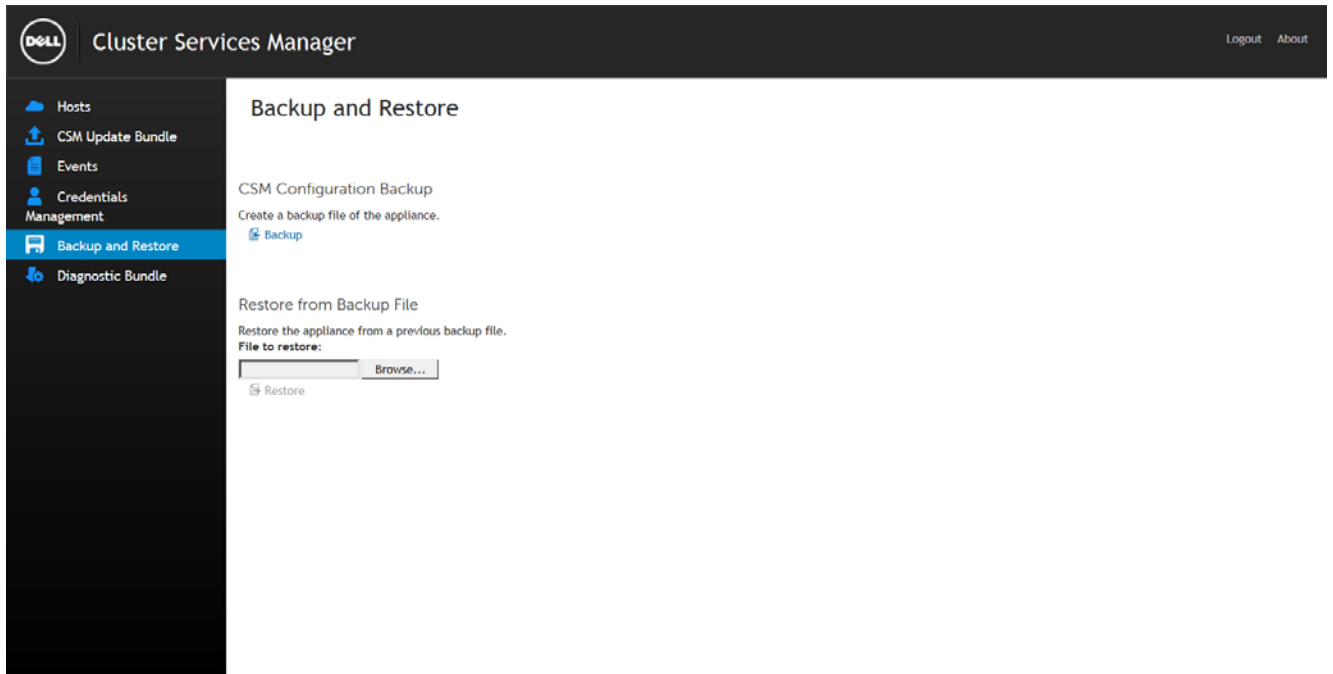
Figure 5   Backup and Restore

7.1   Creating a backup file

When you create a backup file, you are backing up the system history (credentials and events).

1. On the menu, click **Backup and Restore**.
2. Under the **CSM Configuration Backup** section, click **Backup**.
3. When prompted to save the backup.json file, click **Save**.
4. Browse to the folder where you want to save the file.
5. Click **OK**.

7.2   Restoring CSM configuration

When you restore, you are restoring the previous history of the machine.

1. To restore a backup file, on the left menu, click **Backup Restore**.
2. From the **Restore from Backup file** section, click **Browse.**
3. From the **Choose File to Upload** window, select your backup file, and then click **Open**.
4. Click **Restore**.

8   Modifying credentials

You can modify stored credentials from the Manage Credentials page. The system only uses one host credential, which applies to all hosts.
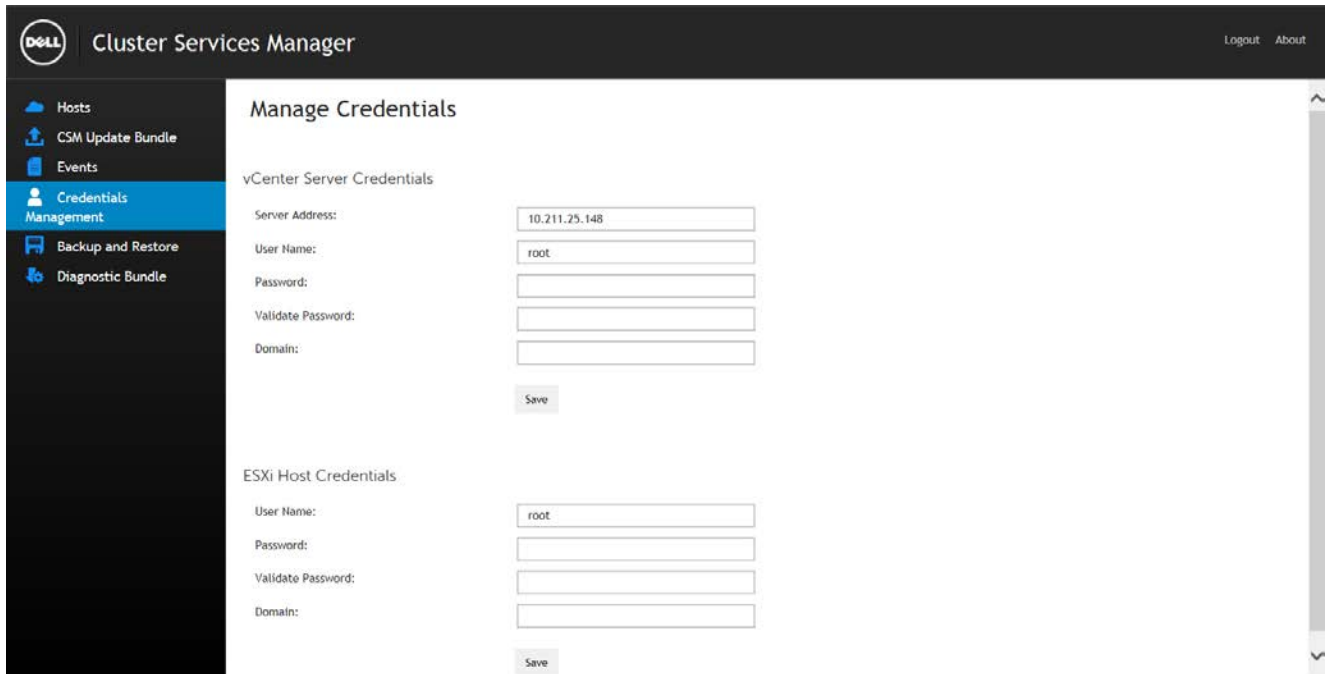
Figure 6   Credentials Management

1. From the menu, click **Credentials Management**.
2. Change credentials and then click **Save**.

9   Downloading the Diagnostic Bundle

The Diagnostic Bundle is created to assist technical staff at Dell Support when you have an issue. The bundle contains all log and configuration files in a complete package.
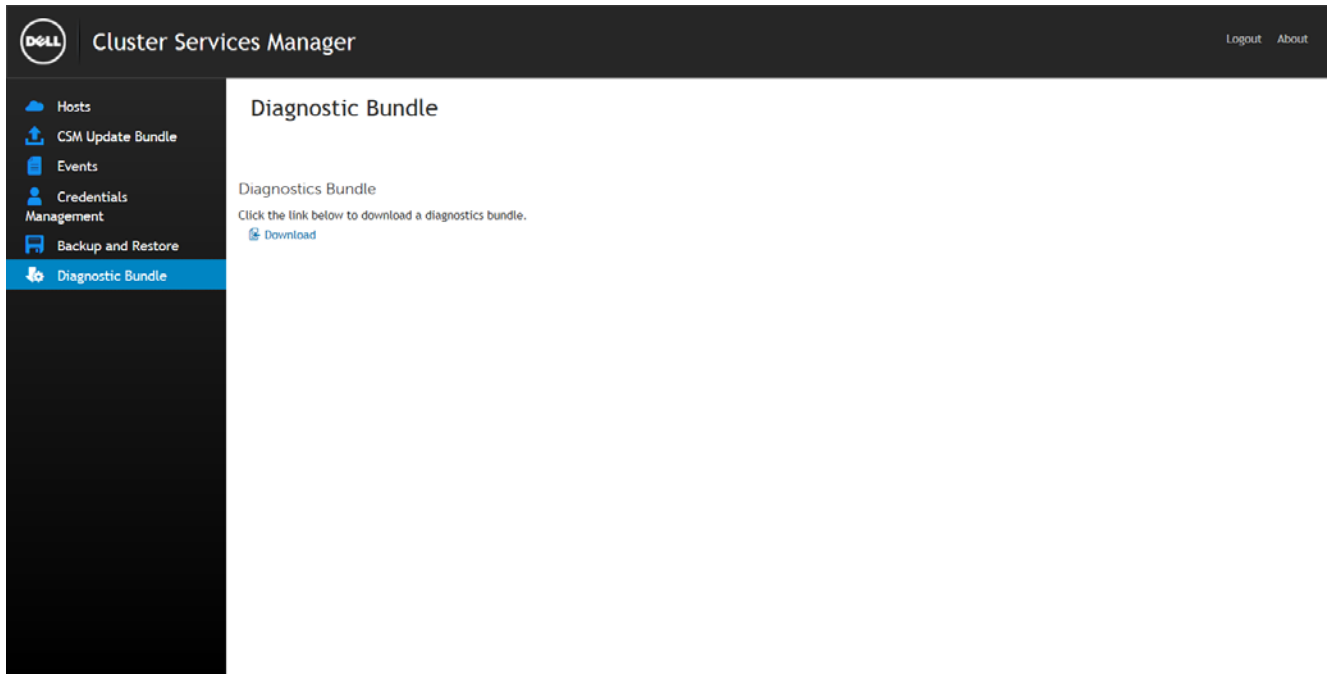
Figure 7   Diagnostic Bundle

1. From the menu, click **Diagnostic Bundle**.
2. From the **Diagnostic Bundle** page, click **Download**.

10   Events

Events provide a system audit history, which is used for support and administrative purposes.

Figure 8   Events

On the **Events** page, you can review:

- Date and Time
- Severity
- Description
- Event ID

You can sort events by column by clicking on the column name.

The following events are logged in CSM:

Table 3   Events

Event Number	Event Name	Event Description
101	USER_LOGIN	User log in
104	CLUSTER_UPDATES_STARTED	Cluster updates started
105	CLUSTER_UPDATES_FAILED	Cluster updates failed
107	HOST_UPDATE_FAILED	Host update failed
108	HOST_UPDATE_SUCCESS	Host update success
110	HOST_ADDED	Host added
111	HOST_REMOVED	Host removed
114	PAYLOAD_UPDATED	Payload updated
115	CLUSTER_UPDATES_FINISHED	Cluster updates finished

11   Update Bundle Details

The update bundle discussed in section 6 includes software to help inventory and update targeted versions of some key system components. Refreshed update bundles can be obtained from the EVO:RAIL page on **Dell.com/support**. It is recommended to obtain and apply updates using this method because Dell engineers work closely with VMware to ensure that only certified firmware and software updates are applied. There are six firmware/software components which require VMware certification:

- Server BIOS
- SAS Controller Firmware
- SAS Controller Driver
- NIC Firmware
- NIC Driver
- HDD/SSD Firmware

Other items are tested internally by Dell and included for optimal functionality and reliability. See Table 4 below for all CSM Update Bundle components. It is also important to note that some firmware and software items are not updateable via CSM at this time. An offline update bundle is available from Dell Support for these (see Table 5). After deploying CSM and running a complete inventory and update cycle, if any components listed in Table 5 are displayed as outdated (i.e., shown as red in color and listed as "Critical" in CSM), please contact Dell support to request the offline update bundle.

Table 4   CSM Update Bundle Matrix

PowerEdge Platform	Component Description	Certified Version	Update Bundle Version
C6220II	LSI 2008 SAS Controller Firmware	19.00.00	19.00.00
C6220II	LSI 2008 SAS Controller Driver	19.00.00	19.00.00
C6320	System BIOS	1.0.3	1.0.3
C6320	iDRAC Firmware	N/A	2.14.14.12
C6320	LSI 2008 SAS Controller Firmware	20.00.03	20.00.03
C6320	LSI 2008 SAS Controller Driver	20.00.00	20.00.00
Common	Intel 10Gb NIC (X520, X540) Driver	3.21.4.3	3.21.4.3
Common	SSD, HDD Firmware	Various	Various

Table 5   Offline Update Bundle Matrix

PowerEdge Platform	Component Description	Certified Version	Offline Bundle Version
C6220II	System BIOS	2.5.3, 2.6.0	2.6.0
C6220II	Intel 10Gb PCI NIC (X520, X540) Firmware	16.5.20	16.5.20
C6320	Intel 10Gb Integrated NIC (X520) Firmware	16.5.20	16.5.20

12   Troubleshooting CSM

If you encounter any issues accessing and using CSM, contact Dell Support.