SCOM 2012 with Dell Compellent Storage Center Management Pack 2.0

Best Practices
Document revision

<table>
<thead>
<tr>
<th>Date</th>
<th>Revision</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>4/30/2012</td>
<td>A</td>
<td>Initial Draft</td>
</tr>
</tbody>
</table>

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Table 1. Document syntax

<table>
<thead>
<tr>
<th>Item</th>
<th>Convention</th>
</tr>
</thead>
<tbody>
<tr>
<td>Menu items, dialog box titles, field names, keys</td>
<td>Bold</td>
</tr>
<tr>
<td>Mouse click required</td>
<td>Click:</td>
</tr>
<tr>
<td>User Input</td>
<td>Monospace Font</td>
</tr>
<tr>
<td>User typing required</td>
<td>Type:</td>
</tr>
<tr>
<td>Website addresses</td>
<td><a href="http://www.compellent.com">http://www.compellent.com</a></td>
</tr>
<tr>
<td>Email addresses</td>
<td><a href="mailto:info@compellent.com">info@compellent.com</a></td>
</tr>
</tbody>
</table>

Conventions

Notes are used to convey special information or instructions.

Timesavers are tips specifically designed to save time or reduce the number of steps.

Caution indicates the potential for risk including system or data damage.

Warning indicates that failure to follow directions could result in bodily harm.
Preface

Audience
The target audience for this document is System Administrators who monitor Dell Compellent Storage Center from the Microsoft Systems Center Operations 2012 (SCOM) Management Console. The intended reader has a working knowledge of Dell Compellent Storage Center and SCOM 2012 functionality.

Purpose

Customer support
Dell Compellent provides live support 1-866-EZSTORE (866.397.8673), 24 hours a day, 7 days a week, 365 days a year. For additional support, email Dell Compellent at support@compellent.com. Dell Compellent responds to emails during normal business hours.
Introduction

Introduction to Microsoft Systems Center Operations Manager 2012

Microsoft Systems Center Operations Manager 2012 (SCOM) is a robust, comprehensive monitoring tool that has no single points of failure and that can provide comprehensive monitoring for Windows Systems, some UNIX/Linux systems, network and storage devices. SCOM monitors services, devices and operations for many computers and devices from a single console. SCOM enables checks for health, performance and availability for all monitored objects in the environment, and helps identify and resolve problems.

Dell Compellent Storage Center Management Pack Overview

The Dell Compellent Storage Center Management Pack is a collection of monitors, rules, tasks, views and reports specifically designed to provide accurate and timely information obtained from Storage Center to the SCOM server. Utilizing the Dell Compellent Storage Center Management Pack, SCOM can monitor active alerts, disk class performance, volume performance, disk class space usage, volume space usage, and controller states for Storage Center.

SCOM traditionally acquires data via the use of a monitoring agent that is installed on a client device, such as a server or workstation. Using the Windows Management Instrumentation (WMI) Provider on the local machine, the SCOM agent collects discovery, performance and usage data from information published to WMI, and collects alerts from WMI events. Using the SCOM Management Console, Systems Administrators can view information collected from installed agents.

Unlike the traditional SCOM data collection model, a monitoring agent cannot be installed locally on a Storage Center Controller. In order for SCOM to acquire data from Storage Center, the Dell Compellent Storage Center Monitor must be installed on a server monitored by SCOM. The Storage Center Monitor runs as a local service, and collects data from Storage Center through secure, web-based (API) inquiries. The Storage Center Monitor Service acts as a WMI Provider and publishes collected Storage Center data to WMI in order for the SCOM server to access it via WMI calls.

SCOM Data Collection Overview

As shown in Table 2 below, SCOM uses three methods to gather and collect data.

- **Discoveries**: runs every four hours and reports any new information found since last run. SCOM will report changes to the Storage Center, such as addition of a new controller or new volume creation. When SCOM discovers a new controller it will initiate discoveries of the controller configuration, such as volumes and replications.

- **Performance Collection Tasks**: the default polling interval for these tasks is 15 minutes. Performance Collection Tasks collect performance and usage data for defined objects in SCOM.

- **Event Collection Tasks**: event Collection Tasks run every 60 seconds and collect alerts.
Table 2. Data Collection Methods

<table>
<thead>
<tr>
<th>Data Collection Method</th>
<th>Default Polling Interval</th>
</tr>
</thead>
<tbody>
<tr>
<td>Discoveries</td>
<td>Every 4 hours</td>
</tr>
<tr>
<td>Performance Collection</td>
<td>Every 15 minutes</td>
</tr>
<tr>
<td>Event Collection</td>
<td>Every 60 seconds</td>
</tr>
</tbody>
</table>

Configuring the Management Pack

Configuring Storage Center Systems Information
1. Log on to the server where the Dell Compellent Storage Center Monitor is installed.
2. Open the Dell Compellent Storage Center Monitor Configurator by clicking:
   - Start → All Programs → Compellent Technologies → Compellent Management Pack for Microsoft SCOM → Configure Compellent Storage Center Monitor

The Dell Compellent Storage Center Monitor Configuration Startup window appears:

Figure 1: Startup
3. Click Next to configure systems information.

The Configure System Information window appears:

![Configure System Information Window]

Figure 2: Configure System Information

4. Add a New System.

   a. In the Systems pane, under Add New Definition, click [Add New System].

   b. In the Systems Information pane, enter the host, user name, and password for the system.

![System Information Window]

Figure 3: System Information

The specified user must have administrator privileges on the Storage Center.

   c. Click Add.
The newly added system will appear under Defined Systems:

<table>
<thead>
<tr>
<th>Systems:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Add New Definition</td>
</tr>
<tr>
<td>Defined Systems</td>
</tr>
</tbody>
</table>

![Defined Systems](image)

**Figure 4: Defined Systems**

SCOM will monitor all Storage Centers listed in Defined Systems. Do not add systems unrequired for monitoring, as this will add additional overhead to the SCOM server.

It is not recommended to monitor more than 10 Storage Centers per Compellent Storage Center Monitor.

**Configuring Polling Intervals**

The Configure Polling Intervals screen enables adjustment to how often the Compellent Storage Center Monitor Service polls a Storage Center.

![Configure Polling Intervals](image)

**Figure 5: Configure Polling Intervals**
Polling interval values should be less than or equal to the default values in SCOM. Alerts are collected every 60 seconds, performance and usage data on the remaining controller objects is collected every 15 minutes (please refer to Table 1).

Performance and usage data for volumes is disabled by default. On systems with a high number of volumes, enabling monitoring can cause a spike in CPU usage on the associated controller.

## Using the Management Pack

1. From the SCOM Monitoring Pane, expand **Compellent Storage Center**

### Monitoring

- **Compellent Storage Center**
  - **Active Alerts**
  - **Performance Graphs**
    - **Disk Class Performance Graph**
    - **Volume Performance Graph**
  - **Space Usage Graphs**
    - **Disk Class Space Usage**
    - **Volume Space Usage**
  - **States**
    - **Controller View**
    - **Monitoring Services**
  - **Items**
    - **Asynchronous Replication States**
    - **Enclosure States**
    - **Page Pool States**
    - **Server Connections States**
    - **Synchronous Replication States**
    - **Volume States**

#### Figure 6: Monitoring Navigation Tree

2. Select the monitoring item to view.

### Monitoring Active Alerts

The Dell Compellent Management Pack enables monitoring of information for active Storage Center alerts.

All Active Alerts are displayed in the Active Alerts Pane. Highlight an alert to display more information in the Alert Details Pane:
### Alert Details

**Some server paths are not available**

| Sources: | HYTEST01 [EC]  
| Full Path Name: | KPSCOM01.Sbi [local]KPSCOM01.SCS  
| Alert Monitor: | Available Connection Paths  
| Created: | 4/21/2012 11:51:59 PM  

**Alert Description:**

Not all paths configured between the controller and the server are available. Percent Available: 50% Paths Up: 2 Paths Down: 2

---

**Summary**

Monitors the percentage of available communication paths available to a server. The percentage includes both Fibre Channel and iSCSI paths.

**Configuration**

Default setting is:

Possible states are:

---

**Figure 7: Alert Details**

1. Double-click an alert to open the Alert Properties window:

   ![Alert Properties](image)

   **Key Details:**
   - **Alert source:** HYTEST01 [EC]  
   - **Severity:** Warning  
   - **Priority:** Medium  
   - **Age:** 3 Days, 1 Hour, 45 Minutes  

   **Alert Description:**
   Not all paths configured between the controller and the server are available. Percent Available: 50% Paths Up: 2 Paths Down: 2

   **Alert Status:**
   Once you have identified the problem and taken corrective action, you can select 'Closed' which will remove the Alert from the system once changes are committed.

---

**Figure 8: Alert Properties**
Alert behavior can be changed through the use of Overrides (See the Configuring Overrides to Modify Rules section below).

2. To remove an Alert from the Active Alerts Pane, right-click the Alert select Close Alert.

Performance Graphs
The Dell Compellent Management Pack enables viewing graphs for Disk Class Space Performance and Volume Performance. By default, performance data for volumes is disabled.

This graph can show Performance Data for all disk classes defined on the Storage Center. Data includes Reads, Writes, Read Blocks and Written Blocks.

Use of this graph can show spikes in disk usage, and be useful for troubleshooting.

Space Usage Graphs
The Dell Compellent Management Pack enables viewing graphs for Disk Class Space Usage and Volume Usage. By default, usage data for volumes is disabled.

This graph can show space usage for all disk classes defined on the Storage Center. Data includes Total Space (GB), Used Space (GB) and Percent Free Space.

Use of this graph will show which disk classes are using the most space, and can be useful for capacity planning.

Monitoring States
This view shows a holistic view of Storage Center object states. Storage Center objects are listed in either critical, warning, or healthy states.

The States View is the quickest way to gauge the overall health of defined Storage Centers and objects.

The Controller View shows the state of all Storage Centers defined in the Compellent Storage Center Monitor. Each defined Storage Center will show the state of the Enclosure, Page Pool, Server Connection, Async Replication, Sync Replication and Volume.

Figure 9: Controller View
Highlighting a Storage Center will enable Detail View, which lists information such as the Controller Serial Number and Storage Center Code Version.

**Detail View**

<table>
<thead>
<tr>
<th>Display Name</th>
<th>sc17</th>
</tr>
</thead>
<tbody>
<tr>
<td>Full Path Name</td>
<td>KPSCOM01.techsol.local\KPSCOM01\sc17</td>
</tr>
<tr>
<td>Host Name</td>
<td>sc17</td>
</tr>
<tr>
<td>Alias</td>
<td>SC 17</td>
</tr>
<tr>
<td>Serial Number</td>
<td>14</td>
</tr>
<tr>
<td>Version</td>
<td>05.05.06</td>
</tr>
</tbody>
</table>

**Figure 10: Detail View**

The **Items** view enables a view of the state of all objects associated with the monitor.

To see a detailed view of the object, right-click on it and choose **Properties**.

Viewing Object Properties is a quick and easy way to see detailed information about an object. For example, viewing the properties of a volume shows information about the servers the volume is mapped to, and the size of the volume.

**Figure 11: Object Properties**
Double-clicking an entry on the detail view pane will open the Health Explorer.

![Health Explorer](image)

**Figure 12: Health Explorer**

Use Health Explorer to help pinpoint the exact time an object’s state changed. Highlight an object and then select the **State Change Events** tab to see alert and state history for that object.

![State Change Events Tab](image)

**Figure 13: State Change Events Tab**
Configuring Overrides to Modify Rules

Introduction
Rules in SCOM can be used to collect data, filter alerts as they arrive, and to generate alerts. Dell Compellent’s Management Pack is pre-configured with rules that do not require any configuration, although overrides can be used to modify the default configuration. Override a current rule configuration in two ways:

- Disable an entire rule through an override. For example, disable a rule for all targets of a specified type.
- Override one or more parameters of a rule thought an override. For example, change the threshold value for an alert.

Creating Overrides
Overrides can be created from the Monitoring Pane and also from the Authoring Pane.

Creating an Override from the Monitoring Pane:
Right-click an active alert to see a drop-down menu. Select Overrides from the menu, and then select which option to create an Override for:

- For the specific alerted object
- For all objects of the class the object belongs to
- For a group
- For a specific object of the current class
- For all objects of another class

Pay careful attention to which option is chosen from the list. Choosing the wrong option could result in SCOM no longer reporting critical alerts from Storage Center.

Creating an Override from the Authoring Pane:
1. From the SCOM Console, click the Authoring button:

Figure 14: Authoring Button
2. Expand and highlight **Management Pack Objects**.

![Management Pack Objects](image1)

**Figure 15: Management Pack Objects**

3. The **Management Pack Objects** window will appear:

![Management Pack Objects Pane](image2)

**Figure 16: Management Pack Objects Pane**

4. To narrow the targets to be used, click the **Scope** button located on the menu bar.

![Scope Button](image3)

**Figure 17: Scope Button**
5. The Scope Management Pack Objects by target(s) window appears:

![Scope Management Pack Objects](image)

Figure 18: Scope Management Pack Objects

6. The **Look for** field contains options to:
   - Filter down to a specific target
   - Sort all targets by Management Pack

7. To look for a specific target, leave the **View common targets** radio button selected, and type in a specific target.
8. To see all targets of a specific management pack, select the View all targets radio button and type in the name of the management pack.
9. Select which Management Pack target(s) to edit and click **OK**.

After a scope has been defined a message similar to the following will appear in the Management Pack Objects Pane:

![Figure 21: Scope Notification](image)

10. To modify the existing scope, click **Change Scope**...

Overrides can only be created for targets in the following Management Pack Objects: Monitors, Object Discoveries and Rules.

11. Create an override in one of three ways:
   - Right-click on the target.
   - Select Overrides on the Action Pane.
   - Click the Overrides tab located on the menu bar.

![Figure 22: Override Menu](image)

12. Select an Override option from the menu. Be sure to select the correct option.
Figure 23: Override Properties
13. Select which parameter(s) to override. A corresponding **Override Value** must be applied to the parameter(s).

![Override Properties](image)

**Figure 24: Override Value Selection**

14. Select the destination management pack to save the override to:

![Management Pack](image)

**Figure 25: Destination Management Pack**

It is not recommended to save overrides to the Default Management Pack. SCOM 2012 allows the creation of a new Management Pack to save changes to, or enables changes to be saved to an existing Management Pack.
15. Click OK to save changes.

**Important Information about Overrides**

As mentioned previously, performance and usage data for volumes is disabled by default. If a need arises to track volume performance and usage data, create an override for only the volume(s) needed to monitor. Failure to do so could cause the Dell Compellent Storage Center Monitor to fail.

It is not recommended to override options for the Storage Center Disk Class Performance Object. Doing so could cause incorrect alerts to be generated from the Storage Center.