Dell Compellent Storage Center

Best Practices for Configuring the Dell Compellent SMI-S Provider for Microsoft SCVMM 2012
## Document Revisions

<table>
<thead>
<tr>
<th>Date</th>
<th>Revision</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>04/11/2012</td>
<td>A</td>
<td>First Revision</td>
</tr>
</tbody>
</table>

THIS BEST PRACTICES GUIDE IS FOR INFORMATIONAL PURPOSES ONLY, AND MAY CONTAIN TYPOGRAPHICAL ERRORS AND TECHNICAL INACCURACIES. THE CONTENT IS PROVIDED AS IS, WITHOUT EXPRESS OR IMPLIED WARRANTIES OF ANY KIND.

© 2012 Dell Inc. All rights reserved. Reproduction of this material in any manner whatsoever without the express written permission of Dell Inc. is strictly forbidden. For more information, contact Dell.

_Dell_, the _DELL_ logo, the _DELL_ badge, and Compellent are trademarks of Dell Inc. Other trademarks and trade names may be used in this document to refer to either the entities claiming the marks and names or their products. Dell Inc. disclaims any proprietary interest in trademarks and trade names other than its own.
## Contents

- Document Revisions ........................................................................................................ 2
- Contents.......................................................................................................................... 3
  - General Syntax ............................................................................................................. 6
  - Conventions ................................................................................................................. 6
- Preface ............................................................................................................................. 7
  - Audience ...................................................................................................................... 7
  - References .................................................................................................................. 7
  - Purpose. ......................................................................................................................... 8
- Introduction ...................................................................................................................... 9
  - Dell Compellent Storage Center Overview .................................................................. 9
  - Dell Compellent SMI-S Provider ................................................................................ 9
  - Microsoft SCVMM 2012 ............................................................................................ 9
- Prerequisite Steps ............................................................................................................ 10
- Enable the Dell Compellent SMI-S Server ..................................................................... 13
- Configure Dell Compellent SMI-S User Settings......................................................... 14
  - Overview ...................................................................................................................... 14
  - Create Enterprise Manager Client User ...................................................................... 16
  - Run PowerShell Script to Create the SMI-S User and the Local Windows User. ........ 18
- Configure SCVMM 2012 to Use Dell Compellent SMI-S............................................. 23
  - Add a Storage Device to SCVMM 2012 ...................................................................... 23
  - Create SCVMM 2012 Run As Account ....................................................................... 25
  - Discover and Import Storage Device Information and Assign Classification ............ 27
  - Adding Additional Dell Compellent Storage Centers to SCVMM 2012 ..................... 35
- Conclusion ....................................................................................................................... 40
- Appendix A: Manual creation of Local User Account on the Data Collector Server ........ 41

## Tables

<table>
<thead>
<tr>
<th>Table</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Document syntax</td>
<td>6</td>
</tr>
<tr>
<td>2</td>
<td>Prerequisite steps</td>
<td>10</td>
</tr>
<tr>
<td>3</td>
<td>User name password requirements</td>
<td>15</td>
</tr>
</tbody>
</table>

Figures

Figure 1: Enable the Dell Compellent SMI-S Server .......................................................... 13
Figure 2: Stop and restart the Data Collector service .................................................... 13
Figure 3: SMI-S user configuration ...................................................................................... 14
Figure 4: Create an Enterprise Manager user ...................................................................... 16
Figure 5: Add a Storage Center for the SMIS Enterprise Manager user .............................. 16
Figure 6: Storage Centers added to the Enterprise Manager client .................................. 17
Figure 7: Verify that the Enterprise Manager user has been created ................................. 17
Figure 8: Launch the SMIS User Configuration Script ..................................................... 18
Figure 9: Trusted script prompt ......................................................................................... 19
Figure 10: .Net warning message ...................................................................................... 19
Figure 11: PowerShell Script Main Menu ........................................................................... 19
Figure 12: Create user accounts with PowerShell SMI-S Configuration Script .................. 20
Figure 13: Verify SMI-S Server configuration settings ..................................................... 21
Figure 14: Add SSL certificate and associate it with the SMI-S user ................................ 22
Figure 15: SCVMM 2012 Administrator console ............................................................... 23
Figure 16: Add storage devices to SCVMM 2012 ............................................................... 24
Figure 17: Specify the storage devices discovery scope ................................................... 24
Figure 18: Create Run As account for SCVMM 2012 ........................................................ 25
Figure 19: Provide details for the SCVMM 2012 Run As account ..................................... 25
Figure 20: Select the new SCVMM 2012 Run As account ............................................... 26
Figure 21: Server information and account information for SCVMM 2012 ....................... 27
Figure 22: SCVMM 2012 Discover and import storage device information progress bar ...... 27
Figure 23: Import the SSL certificate into SCVMM 2012 .................................................. 28
Figure 24: Issue with Microsoft KB2585542 may cause authentication failure ............... 28
Figure 25: Dell Compellent array shows as imported storage device ............................... 29
Figure 26: Create new storage classification ...................................................................... 30
Figure 27: Assign a classification to the disk pool ............................................................. 31
Figure 28: Confirm settings on the Summary screen ......................................................... 31
Figure 29: SCVMM 2012 Jobs status window .................................................................... 32
Figure 30: Successful completion of Sets Storage Array job ............................................. 33
Figure 31: Storage pool assigned to a Classification ......................................................... 34
Figure 32: Additional Storage Center added to the Enterprise Manager client .................. 35
Figure 33: Discover an additional Storage Center by refreshing the Provider object .......... 35
Figure 34: Monitor the Jobs screen until Reads Storage Provider Job finishes .................. 36
Figure 35: Additional Storage Center Array added to SCVMM 2012 ................................. 36
Figure 36: Storage Properties General page ...................................................................... 37
Figure 37: Create and assign a Classification to additional storage pool ........................................... 37
Figure 38: Sets Storage Array Job ........................................................................................................ 38
Figure 39: Classifications and Pools..................................................................................................... 38
Figure 40: Volumes listed under an assigned storage pool................................................................. 39
Figure 41: Rename managed Storage Pools....................................................................................... 39
Figure 42: Create a local user account on the Data Collector server ................................................. 41
Figure 43: Add the local user to the local administrators group....................................................... 42
Figure 44: Grant local user the “Log on as a service” right .............................................................. 43
General Syntax

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
This document is highly technical and intended for storage and server administrators, as well as other information technology professionals interested in learning more about how to configure the Dell Compellent SMI-S Provider version 1.4 for Microsoft SCVMM 2012.

This document assumes the reader has read, has formal training, or has advanced working knowledge of the following:

- Configuration and operation of the Dell Compellent Storage Center
- Configuration and operation of the Dell Compellent Enterprise Manager Client and Data Collector Server
- Configuration and operation of Microsoft SCVMM 2012

References
Reviewing the following documentation is highly recommended prior to referencing this best practices guide:

- Microsoft System Center Technical Documentation Library

- Microsoft SCVMM 2012 Technical Documentation Library

- Dell Compellent Documentation:
  - Enterprise Manager Installation and Users Guides
  - Storage Center Users Guide
  http://knowledgecenter.compellent.com
Purpose
The purpose of this document is to provide best practices for how to configure Microsoft System Center Virtual Machine Manager 2012 (SCVMM 2012) to work with the Dell Compellent SMI-S Provider version 1.4.

Please note that the information contained within this document provides general recommendations only and may not be applicable to all environments. Configurations may vary based upon individual circumstances, environments, or business needs.
Introduction

Dell Compellent Storage Center Overview
The Dell Compellent Storage Center is an enterprise class storage area network (SAN) that significantly lowers capital expenditures, reduces storage management and administration time, provides continuous data availability and enables storage virtualization. Storage Center’s industry-standard hardware and sophisticated software manage data at the block-level, maximizing utilization, automating tiered storage, simplifying replication and speeding data recovery.

Dell Compellent SMI-S Provider
Storage Management Initiative Specification (SMI-S) is a standard interface specification developed by the Storage Networking Industry Association (SNIA). Based on the Common Information Model (CIM) and Web-Based Enterprise Management (WBEM) standards, SMI-S defines common protocols and data models that enable interoperability between storage vendor software and hardware.

The Dell Compellent SMI-S Provider version 1.4 works with the open source OpenPegasus CIM Server, which is included with the Enterprise Manager Data Collector. SMI-S can be configured during initial Data Collector installation or post-installation by modifying the Data Collector Manager properties. When SMI-S is enabled and configured, the Data Collector automatically installs and manages the Dell Compellent SMI-S Provider and the OpenPegasus CIM Server; no additional installation is required.

For more information about Dell Compellent SMI-S, please refer to the Dell Compellent Enterprise Manager Installation and Setup Guide.

Microsoft SCVMM 2012
Microsoft System Center 2012 is a cloud and datacenter management solution that provides a common management toolset for public and private cloud services and applications.

Virtual Machine Manager 2012 (as a component of the Microsoft System Center 2012 cloud and datacenter management suite) allows administrators to:

- Deliver Infrastructure as a Service (IaaS). Datacenter resources such as processing, networking, and storage can be pooled and virtualized and made available via self-service role-based user access.
- Apply cloud principles to provisioning and servicing datacenter applications with techniques like service modeling, service configuration and image based management.
- Server application virtualization allows applications and services to be managed independently from the underlying infrastructure.
- Optimize and manage multi-hypervisor environments such as Hyper-V, Xen and VMware.
- Dynamic optimization of datacenter resources based on workload demands.
### Prerequisite Steps

This best practices guide assumes that the following steps have been completed. Complete the steps below before proceeding with this guide. Please refer to the documentation listed in References as required to complete the below steps.

#### Table 2. Prerequisite steps

<table>
<thead>
<tr>
<th>Step</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Verify that the Dell Compellent Enterprise Manager (EM) Data Collector version 5.5.5 has been installed on a server. This server will be referred to as the “Data Collector” server. The Data Collector server and the SCVMM 2012 server must be installed on separate physical or virtual servers that are members of the same Active Directory domain.</td>
</tr>
</tbody>
</table>
| 2    | If the Windows firewall is enabled on the Data Collector server, then create firewall exceptions to allow the following TCP ports inbound. In the example, a single Inbound Rule was created to allow these 5 TCP ports:  
  - TCP:3033 inbound (allows the Enterprise Manager Client Install to run from a different server)  
  - TCP:8080 inbound (web service port)  
  - TCP:7342 inbound (allows the Enterprise Manager Client (if installed on a different server) to communicate with the Data Collector Server)  
  - TCP:5988 inbound (allows SCVMM 2012 to communicate with SMI-S on the Data Collector server via http)  
  - TCP:5989 inbound (allows SCVMM 2012 to communicate with SMI-S on the Data Collector server via https) |
| 3    | Verify that an instance of version 5.5.5 of the Enterprise Manager Client has been installed. The Client can be installed on the Enterprise Manager Data Collector server or a different server by running the installer located at: https://<ip_of_data_collector_server>:3033 |
| 4    | Verify that PowerShell has been installed on the Data Collector server. PowerShell is installed by default on Windows Server 2008. |
## Table 2: Prerequisite steps (continued)

<table>
<thead>
<tr>
<th>Step</th>
<th>Details</th>
</tr>
</thead>
</table>
| 5 | Verify that the LocalMachine PowerShell ExecutionPolicy on the Data Collector server is set to something other than Undefined or Restricted. To verify the policy settings, open a PowerShell window and type the following command and press Enter.  
   
   ```plaintext
   Get-ExecutionPolicy -list
   ```  
   If the LocalMachine policy needs to be changed, use the following command where <policy> represents the ExecutionPolicy desired. In the example below, AllSigned is set as the LocalMachine Policy.  
   
   ```plaintext
   Set-ExecutionPolicy <policy>
   ``` |
| 6 | Verify that .NET 3.5 is installed on the Data Collector server. For example, on Server 2008, install from Start ➔ Administrative Tools ➔ Server Manager ➔ Features. |
| 7 | Verify that Microsoft SCVMM 2012 has been installed according to Microsoft best practices. The SCVMM 2102 server must be installed on a separate physical or virtual server than the Data Collector server, and both servers must be members of the same Active Directory domain. |
Table 2: Prerequisite steps (continued)

<table>
<thead>
<tr>
<th>Step</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td>The SCVMM 2012 Server does not accept the format of the Dell Compellent SSL certificate “CN” name when discovering storage with https (SSL) enabled. This causes the SCVMM 2012 discovery of the Dell Compellent storage via https (SSL) to fail. If communication between the SCVMM 2012 server and the Data Collector server will be configured to use SSL (https) (recommended), then disable CN name verification on the SCVMM 2012 server by adding a DWORD (32-bit) value to HKLM\Software\Microsoft\Storage Management per the documentation found at: <a href="http://technet.microsoft.com/en-us/library/gg610563.aspx">http://technet.microsoft.com/en-us/library/gg610563.aspx</a></td>
</tr>
</tbody>
</table>

Once all the prerequisite steps are completed, then please proceed to the next section.
Enable the Dell Compellent SMI-S Server

Enable the SMI-S Server in the Enterprise Manager Data Collector GUI.

1) On the Data Collector server, launch the Data Collector Manager GUI and complete the following steps, as shown in Figure 1:

- Click on SMI-S in the left pane
- Click on Change in the lower right corner of the Data Collector GUI screen
- Check the box for Enable SMI-S Server
- Leave the box for Use SMI-S Server SLP Service unchecked
- Choose whether to use http or https for SMI-S Server Connections
  - To use https (recommended), check the box Use Https for SMI-S Server Connections
  - To use http, leave the box unchecked
- If the ports 5988 and/or 5989 are changed from the defaults, then make any necessary adjustments to allow the ports through the Windows firewall (see Table 2: Prerequisite Steps for more information Windows firewall settings)

2) Click on Apply Changes in the lower right corner of the Data Collector GUI. When prompted, click Yes to restart the Data Collector service as shown in Figure 2.
Configure Dell Compellent SMI-S User Settings

Overview
Before SCVMM 2012 can access Dell Compellent Storage, a user account with the same name has to be configured in four places.

In this document, a user named “SMIS” will be configured in the examples. Using the name “SMIS” is not required but is recommended for ease of management.

Figure 3: SMI-S user configuration
As shown in Figure 3, these four user instances are:
- Local Windows user account on the Data Collector server (that is a member of the local administrators group and is granted the “log on as a service” right)
- OpenPegasus SMI-S user
- Enterprise Manager Client user
- “run as” account on the SCVMM 2012 server (created using the SCVMM 2012 administrator console)
Table 3. User name password requirements

<table>
<thead>
<tr>
<th>User Name</th>
<th>Instance</th>
<th>Password length restriction?</th>
<th>Passwords must match other instances of the SMIS user?</th>
</tr>
</thead>
<tbody>
<tr>
<td>SMIS</td>
<td>Local User account on the Data Collector server</td>
<td>No (determined by the server’s local password policy)</td>
<td>No</td>
</tr>
<tr>
<td>SMIS</td>
<td>Enterprise Manager Client user</td>
<td></td>
<td>Yes (8 characters or less) (these three SMIS user instances must all have matching passwords)</td>
</tr>
<tr>
<td>SMIS</td>
<td>OpenPegasus SMI-S user</td>
<td>Yes (8 characters or less)</td>
<td></td>
</tr>
<tr>
<td>SMIS</td>
<td>“run as” account on the SCVMM 2012 server</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

As shown in Table 3 above, there are some password requirements for the four instances of the SMIS user account.

- The user name must be the same for all four instances of the SMIS user
- The passwords must match for three of the four instances of the SMIS user as shown in Table 3
- It is possible for all four passwords to be set the same, however the password chosen must be eight characters or less and be able to satisfy the minimum password complexity requirements per the local password policy on the Data Collector server
  - For example, if the local password policy on the Data Collector server requires a minimum of 9 characters, then that instance of the SMIS user would have to use a different password than the password used for the other three instances

Below are the step-by-step instructions to create and configure these four user instances.
Create Enterprise Manager Client User

1) Create a new Enterprise Manager User by using the logon screen of the Enterprise Manager Client (if using open security, as in Figure 4) or the Data Collector Manager GUI (if using enhanced security).

The password chosen for this Enterprise Manager user must be 8 characters or less (please refer to Table 3). Record this password in a safe place and keep it handy as it will be needed in future steps below.

2) Choose the desired Data Collector Server from the drop-down list. If the desired Data Collector server is not listed, then create a new connection to the Data Collector server as shown in Figure 4 by entering the server name and the IP address. The Port field should be pre-populated with 7342 (which is the default port).

Figure 5: Add a Storage Center for the SMIS Enterprise Manager user
3) After logging in to Enterprise Manager with the new user SMIS, add one or more Dell Compellent Storage Centers that will be made available to SCVMM 2012, as shown in Figure 5.
   - Select from the available listing of Storage Centers, or
   - Choose Add Storage Center if the desired Storage Center is not listed, and provide the Host Name or IP address of the Storage Center, along with valid administrator user credentials to that storage center.

   ![Figure 6: Storage Centers added to the Enterprise Manager client](image)

4) Once one or more Storage Centers have been added, close out of the Enterprise Manager client. In this example, three Storage Centers have been added as shown in Figure 6.

   It is possible to add additional storage arrays later on if that becomes necessary. To do so, simply log in to the Enterprise Manager client as the SMIS user and add additional Storage Centers by repeating steps 2 and 3 above. They will then become available to SCVMM 2012 after refreshing the storage provider in SCVMM 2012.

   ![Figure 7: Verify that the Enterprise Manager user has been created](image)

5) On the Data Collector server, under User Viewer in the Data Collector GUI, verify that the new user is listed as shown in Figure 7. If the user is not yet listed, click on the Refresh button.
Run PowerShell Script to Create the SMI-S User and the Local Windows User

The Launch SMIS User Configuration Script via PowerShell script does two things:

- Creates the Dell Compellent SMI-S OpenPegasus user
- Automates the process of creating a matching local Windows user account on the Data Collector server (if this user account does not already exist)

The recommendation is to allow the PowerShell script to create the local Windows user account on the Data Collector server. If manual creation of this Windows user is preferred, please follow the steps in Appendix A before running the PowerShell script below. When the PowerShell Script runs, it will verify the presence of the local Windows user account and skip the steps associated with the creation of that user. The example below assumes that the PowerShell Script will be used to create the local Windows user account.

![Image: Launch SMIS User Configuration Script]

Figure 8: Launch the SMIS User Configuration Script

1) As shown in Figure 8, on the Data Collector server, go to Start → All programs → Compellent Technologies → Compellent Enterprise Manager and select Launch SMIS User Configuration Script via PowerShell.

If the PowerShell Script fails to launch, verify that the PowerShell LocalMachine Execution Policy is set correctly. For more information on how to verify and set the LocalMachine Execution Policy, see Table 2: Prerequisite Steps.
2) Depending on the LocalMachine Execution Policy for PowerShell on the Data Collector server, a security prompt may appear as shown in Figure 9. Type R or A and press Enter to continue. For more information on PowerShell ExecutionPolicy settings, see Table 2: Prerequisite steps.

3) If a .Net v3.5 warning message appears as shown in Figure 10, press Enter to exit the script. Install .Net 3.5, and then rerun the PowerShell Script staring at Step 1 in this section. For more information, see Table 2: Prerequisite steps.

4) The Script Main Menu will then be displayed as shown in Figure 11.
Referring to Figure 12, complete the steps 5 - 15 below:

5) At the Main Menu, type U to manage users and press Enter.

6) Under Manage Users, type A and press Enter to add an SMI-S User.

7) Select the number of the Enterprise Manager (EM) user, which in this example is 2 (for the user SMIS) and press Enter. This is the same user that was created on page 16.

8) Enter the EM user password (same password used on Page 16) and press Enter.

This password must match the password that was used for the SMIS user created on page 16. See Table 3 for more information on password requirements.

9) Enter the password a second time to confirm it, and press Enter.

10) If a corresponding local Windows user does not exist, then enter O and press Enter to allow the script create this user.

11) Type Y to use the same password, or N to enter a different password. Using the same password is possible only if it meets the minimum complexity requirements for your Windows environment. For more information on password requirements, see Table 3.
12) To grant the local Windows user the logon-as-a-service right, type O and press Enter.

13) To set the password to never expire (recommended), type Y and press Enter.

14) To verify the creation of these user accounts, use the List menu options in the script (if desired).

15) When finished, Type X and press Enter to return to the PowerShell script main menu.

16) If SMI-S was configured to use Https, then an SSL certificate needs to be associated with the SMI-S user. To verify whether http or https was selected, view the SMI-S Server Configuration settings in the Data Collector GUI as shown in Figure 13.

   a) If the option Use Https for SMI-S Server Connections is enabled as shown, then continue with Step 17 below to use the PowerShell Script to assign an SSL certificate to the SMIS user.

   b) If the box is left unchecked, then http will be used and therefore assigning an SSL certificate is unnecessary. Type X and press Enter to close out of the PowerShell Script and go to the next section on page 23, Configure SCVMM 2012 to Use Dell Compellent SMI-S.

Figure 13: Verify SMI-S Server configuration settings
Figure 14: Add SSL certificate and associate it with the SMI-S user

17) To add an SSL certificate and associate it with the SMI-S user, refer to Figure 14 while completing steps 18 - 24 below.

18) From the PowerShell Script Main Menu, type C and press Enter to manage certificates.

19) From the Manage Certificates menu, type A and press Enter to add an SSL certificate to the SMI-S trust store.

20) When prompted to associate a user, select the desired SMI-S user (the user “SMIS” in this example). Type the number for that user and press Enter to select the user.

21) The PowerShell Script will return the result Certificate Added Successfully and then return to the Manage Certificates menu.

22) Type L and press Enter to verify the certificate details.

23) Type X and press Enter to return to the main menu.

24) Type X and press Enter twice to close out of the PowerShell command window.
Configure SCVMM 2012 to Use Dell Compellent SMI-S

Now that the SMI-S user settings along with the SMI-S Server configuration have been set up correctly on the Data Collector server, Microsoft SCVMM 2012 can now be configured to work with the Dell Compellent SMI-S Provider to manage Dell Compellent storage.

The Data Collector server and the SCVMM 2012 server must be members of the same domain but reside on separate physical or virtual servers.

Add a Storage Device to SCVMM 2012

1) On the server hosting Microsoft SCVMM 2012, start the SCVMM 2012 Administrator console. Under the Home tab, select the Fabric workspace as shown in Figure 15.
2) Expand Storage, right click on Arrays and choose Add Storage Devices from the drop down list as shown in Figure 16.

Figure 16: Add storage devices to SCVMM 2012

3) In the Add Storage Devices Wizard screen, enter the IP address or fully qualified domain name (FQDN) of the Data Collector server along with the correct port number.

   - For http, uncheck the box for Use Secure Sockets Layer (SSL) connection and specify the correct port (5988 is the default)
   - For https, check the box for Use Secure Sockets Layer (SSL) connection and specify the correct port (5989 is the default)

If using https (SSL), a registry change needs to be made to the SCVMM 2012 server to disable CN name verification, otherwise the SSL certificate import will fail. To make the registry change, please insure that step 8 in Table 2 under Prerequisite Steps has been completed before continuing.
4) Click on the **Browse** button to the right of the **Run As account** field.

**Create SCVMM 2012 Run As Account**

![Figure 18: Create Run As account for SCVMM 2012](image)

1) At the **Select a Run As Account** screen, click on the **Create Run As Account** button as shown in Figure 18.

![Figure 19: Provide details for the SCVMM 2012 Run As account](image)
2) As shown in Figure 19, provide a descriptive name (and description if desired) for the Run As account.

3) Enter the user name and password.

Provide the same user name and password that were used to create the EM user (page 16) and the OpenPegasus SMI-S user and local Windows user (created using the PowerShell Script on page 20). See Table 3 for more information on user and password requirements.

4) Click on the OK button to return to the previous screen.

Figure 20: Select the new SCVMM 2012 Run As account

5) Click on the new Run As Account to highlight it, and then click on the OK button, as shown in Figure 20.
6) Verify that the new user is displayed in the Run As account field as shown in Figure 21. Also verify that the IP Address (or fully qualified domain name) followed by the port number is still listed correctly, and if https is desired, that the SSL box is checked. Then click on the Next button.

Discover and Import Storage Device Information and Assign Classification

Figure 22: SCVMM 2012 Discover and import storage device information progress bar
1) As shown in Figure 22, SCVMM 2012 will display a progress bar as it begins to import the storage device information. The import process may require several minutes to complete.

Figure 23: Import the SSL certificate into SCVMM 2012

2) If using https, SCVMM 2012 will need to import the SSL certificate. Click on the Import button as shown in Figure 23 when prompted. If using http, this prompt will not occur.

Figure 24: Issue with Microsoft KB2585542 may cause authentication failure

If using https (SSL), it may be necessary to address an authentication failure (content is empty) caused by the January 2012 Microsoft Security Update KB2585542 for Server 2008 R2. If this error as shown in Figure 24 is experienced, follow the instructions at [http://support.microsoft.com/kb/2643584](http://support.microsoft.com/kb/2643584) to modify the system registry to add a new DWORD (32-bit) value to HKLM\System\CurrentControlSet\Control\SecurityProviders\SCHANNEL as shown in Figure 24.
Figure 25: Dell Compellent array shows as imported storage device

3) Once the import process has finished, the Dell Compellent Storage Center will be displayed as shown in the example in Figure 25. In this example, three storage centers have been discovered and imported. Click on the Next button.
4) On the next screen, click on the **Create Classification** button to define one or more classifications for your imported Storage Centers. A “classification” is meant to describe the capabilities of the selected storage pool. Because Dell Compellent Storage Centers typically feature automated disk tiering within a single disk pool, the description might include a summary of the types of disk and tiers in the array, or other attributes, such as the array’s primary use or location, as shown in Figure 26.

5) Once a name and description have been provided for the storage classification, then click on the **Add** button as shown in Figure 26.

6) Repeat steps 4 and 5 to create additional storage classifications. In this example, three classifications were created: one for each of the three Storage Centers SC5, SC12 and SC13.
Figure 27: Assign a classification to the disk pool

7) Now that one or more classifications have been defined, check the box in front of Assigned, and then click on the drop down arrow under the Classification column and choose the desired storage classification as shown in Figure 27. Then click on the Next button.

Assign storage classifications to Storage Centers one at a time. Allow the job to finish, and then assign a classification to the next Storage Center. Assigning classifications to multiple Storage Centers at the same time may result in storage discovery failures with SCVMM 2012.

Figure 28: Confirm settings on the Summary screen

8) A summary screen will display the details for the managed storage pool. Click on Finish to complete the wizard.
9) The Jobs status window will display the Sets Storage Array job with a progress bar under the Status column. If the Jobs window is not set to display automatically, then job history and status can be viewed by clicking on Jobs in the left navigation pane of the SCVMM 2012 Administrator console.

10) The Duration line as shown in Figure 29 will indicate the Job’s run time. Refresh the screen to update the run time. Depending on the configuration of the Storage Center, the Job may require up to 30 minutes or more to complete.

The Job progress bar in SCVMM 2012 will not show incremental progress as the Job runs, so it may appear as though the Job has stopped responding. It will stay at 0% and jump to 100% when it has finished. If a Storage Center has a large number of volumes, discovery will require extra time, up to 30 minutes or more per Storage Center.
Figure 30: Successful completion of Sets Storage Array job

11) When the Sets Storage Array job finishes, the Status column should display a status of Completed. Note that the job in this example took 27.5 minutes as shown in Figure 30. Close out of the Jobs window.
Figure 31: Storage pool assigned to a Classification

12) Under Classifications and Pools as shown in Figure 31, verify that the Storage Center volumes are now listed under the associated Storage Classification, SC5 (All Tiers) in this example. This Storage Center array can now be managed by SCVMM 2012.
Adding Additional Dell Compellent Storage Centers to SCVMM 2012

Figure 32: Additional Storage Center added to the Enterprise Manager client

1) If an additional Dell Compellent Storage Center needs to be managed by SCVMM 2012, then log in to the Enterprise Manager Client as the SMIS user and select Add Storage Center from the Management menu drop down. As shown in Figure 32 in this example, a second Storage Center named SC12 was added.

Figure 33: Discover an additional Storage Center by refreshing the Provider object

2) Once another Storage Center has been added to the Enterprise Manager Client, then using the SCVMM 2012 Administrator console, right-click on the storage provider object under Providers and click on Refresh as shown in Figure 33.
Figure 34: Monitor the Jobs screen until Reads Storage Provider Job finishes

3) Monitor the Jobs window in SCVMM 2012 until the **Reads Storage Provider** Job completes as shown in Figure 34. It may require up to 30 minutes or longer to finish.

Figure 35: Additional Storage Center Array added to SCVMM 2012

4) Once the additional Storage Center has been discovered, it will be displayed as shown in Figure 35 under **Fabric**→**Storage**→**Arrays**. Right click on the new storage array and select **Properties**.
5) On the Properties window, click on Storage Pools as shown in Figure 36.

![Figure 36: Storage Properties General page](image)

6) On the Managed Storage Pools screen, check the box in front of Assigned. If necessary, create a new classification by clicking on the Create Classification button, or if the desired one already exists, choose it from the Classification drop-down list. In his example, a new Classification for SC12 was created and selected as shown in Figure 37. Then click on OK.

![Figure 37: Create and assign a Classification to additional storage pool](image)
Figure 38: Sets Storage Array Job

7) Click on the Jobs in the left navigation pane, and monitor the Sets Storage Array job until it completes with a status of 100%. This may take up to 30 minutes or longer.

Figure 39: Classifications and Pools

8) Once the job has completed, click on Fabric ➔ Storage ➔ Classifications and Pools. The newly added storage array should now be listed under the Classification it was assigned to.
9) Click on the “+” in front Assigned and a list of existing volumes in the storage pool should be displayed as shown in Figure 39.

10) For ease of management, if multiple Dell Compellent Storage Centers are managed as separate storage pools in SCVMM, then it is recommended that the Assigned object for each storage pool be renamed. To do so, right click on Assigned and edit the Name field under Properties. In the example shown in Figure 41, each instance of Assigned was changed to reflect the name of the associated Storage Center.

11) Repeat Steps 1 - 10 above to add additional Storage Centers to SCVMM 2012.

Multiple Dell Compellent Storage Centers can be discovered by SCVMM 2012 at the same time. However, assigning a classification to a discovered Storage Center in SCVMM should be done one at a time to avoid storage discovery failures.
Conclusion

Hopefully this document has proved helpful and has accomplished its purpose by providing administrators with answers to commonly asked questions associated with configuring the Dell Compellent SMI-S Provider 1.4 to work with Microsoft SCVMM 2012.
Appendix A: Manual creation of Local User Account on the Data Collector Server

If manual local Windows user creation is preferred on the Data Collector server, then follow the steps listed below. When completed, return to Page 18 above and run the PowerShell script to complete the creation of the OpenPegasus SMI-S user.

Figure 42: Create a local user account on the Data Collector server

1) On the Data Collector server, go to Start → Administrative Tools → Server Manager. In the Users folder under Local Users and Groups, create a local user account as shown in Figure 42. Provide a password that meets the minimum complexity requirements for your environment. For more information about user name and password requirements, see Table 3.
Figure 43: Add the local user to the local administrators group

2) As shown in Figure 43, once the local user has been created, add this new user to the local Administrators user group on the Data Collector server.
Figure 44: Grant local user the “Log on as a service” right

3) On the Data Collector server, go to Start ➔ Administrative Tools ➔ Local Security Policy. Expand Local Policies, and as shown in Figure 44, grant the local user the “Log on as a service” right under User Rights Assignments.

4) Return to Page 18 to run the PowerShell Script to create the OpenPegasus SMI-S User.