Lab Validation Report

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Feedback

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Hitachi Infrastructure Adapter for Microsoft® System Center Operations Manager with Hitachi Unified Storage VM, Hitachi Virtual Storage Platform, and Hitachi Compute Blade 500

Lab Validation Report

This lab validation report covers the testing the implementation of Hitachi Infrastructure Adapter for Microsoft® System Center Operations Manager at the Hitachi Data Systems laboratory. This testing was a joint effort between Hitachi, Ltd., and Hitachi Data Systems.

This solution uses the following components:

- Hitachi Infrastructure Adapter for Microsoft System Center Operations Manager
- Microsoft Windows Server® 2012 with Microsoft Hyper-V®
- Microsoft System Center 2012 R2, with Operations Manager 2012 SP1
- Hitachi Unified Storage VM
- Hitachi Virtual Storage Platform

Microsoft System Center 2012 — Operations Manager provides performance, health, and state monitoring for your infrastructure, services, and workloads. Management packs monitor a specific set of hardware, services, or applications, reporting the information collected in the administration console of System Center. Hitachi Infrastructure Adapter for Microsoft System Center Operations Manager is a collection of management packs that monitor Hitachi storage and servers.
This lab validation tests validated the following scenarios using Infrastructure Adapter for Microsoft System Center Operations Manager:

1. Install Infrastructure Adapter for Microsoft System Center Operations Manager and verify discovery of storage for monitoring.

2. Verify discovery of Hitachi Compute Blade 500 in the Operations Manager console.

3. Install IPMI support pack for Hitachi Compute Blade 500.

4. Configure performance monitoring in Operations Manager for storage front-end ports and logical units.

5. Take Hitachi Compute Blade 500 offline to see if Operations Manager reports outage.

6. Create a condition with a dynamic provisioning pool to see if Operations Manager reports the condition.

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**Note** — Testing of this configuration was in a lab environment. Many things affect production environments beyond prediction or duplication in a lab environment. Follow the recommended practice of conducting proof-of-concept testing for acceptable results in a non-production, isolated test environment that otherwise matches your production environment before your production implementation of this solution.
### Product Features

These are the features of the key products used to validate this test environment.

### Hardware Components

Table 1 lists the detailed information about the hardware components used to validate this environment.

<table>
<thead>
<tr>
<th>Hardware</th>
<th>Description</th>
<th>Version</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hitachi Unified Storage VM</td>
<td>- Dual controller</td>
<td>73-02-02</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>- 8 × 8 Gb/sec Fibre Channel ports</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>- 64 GB cache memory</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>- 64 × 600 GB 10k RPM SAS disks, 2.5 inch SFF</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>- 48 × 3 TB 7.2k RPM SAS disks, LFF</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hitachi Virtual Storage Platform</td>
<td>- 16 × 8 Gb/sec Fibre Channel ports</td>
<td>70-06-11</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>- 256 GB cache memory</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>- 294 × 600 GB 10k RPM SAS disks, 2.5 inch SFF</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hitachi Compute Blade 500 chassis</td>
<td>- 4 server blade chassis</td>
<td>A0130-C-6655</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>- 2 Brocade 5460 Fibre Channel switch modules</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>- 2 Brocade VDX6746 10 GbE DCB switch modules</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>- 2 Management modules</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>- 6 Cooling fan modules</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>- 4 Power supply modules</td>
<td></td>
<td></td>
</tr>
<tr>
<td>520H B1 server blade (with CNA)</td>
<td>- Half-size blade</td>
<td>01-51/03-04</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>- 2 × 8-core Intel Xeon E5-2680 processor, 2.70 GHz</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>- 192 GB RAM memory per server blade</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>- 1 Hitachi Fibre Channel, 2-port mezzanine card, Slot 2</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Hitachi Unified Storage VM

Hitachi Unified Storage VM is an enterprise storage platform. It combines storage virtualization services with unified block, file, and object data management. This versatile, scalable platform offers a storage virtualization system to provide central storage services to existing storage assets.

Unified management delivers end-to-end central storage management of all virtualized internal and external storage on Unified Storage VM. A unique, hardware-accelerated, object-based file system supports intelligent file tiering and migration, as well as virtual NAS functionality, without compromising performance or scalability.

The benefits of Unified Storage VM are the following:

- Enables the move to a new storage platform with less effort and cost when compared to the industry average
- Increases performance and lowers operating cost with automated data placement
- Supports scalable management for growing and complex storage environment while using fewer resources
- Achieves better power efficiency and with more storage capacity for more sustainable data centers
- Lowers operational risk and data loss exposure with data resilience solutions
- Consolidates management with end-to-end virtualization to prevent virtual server sprawl

Hitachi Virtual Storage Platform

Hitachi Virtual Storage Platform is the first 3-D scaling storage platform designed for all data types. Its storage architecture flexibly adapts for performance, capacity, and multi-vendor storage. Combined with the unique Hitachi Command Suite management platform, it transforms the data center.

- **Scale Up** — Meet increasing demands by dynamically adding processors, connectivity, and capacity in a single unit. Provide the highest performance for both open and mainframe environments.
- **Scale Out** — Meet multiple demands by dynamically combining multiple units into a single logical system with shared resources. Support increased demand in virtualized server environments. Ensure safe multi-tenancy and quality of service through partitioning of cache and ports.
- **Scale Deep** — Extend storage value by virtualizing new and existing external storage systems dynamically. Extend the advanced functions of Hitachi Virtual Storage Platform to multivendor storage. Offload less demanding data to external tiers to save costs and to optimize the availability of tier-one resources.
Hitachi Compute Blade 500

Hitachi Compute Blade 500 combines the high-end features with the high compute density and adaptable architecture you need to lower costs and protect investment. Safely mix a wide variety of application workloads on a highly reliable, scalable, and flexible platform. Add server management and system monitoring at no cost with Hitachi Compute Systems Manager, which can seamlessly integrate with Hitachi Command Suite in IT environments using Hitachi storage.

Software Components

This section describes the software components deployed for this reference architecture. Table 2 describes the software used in this reference architecture.

Table 2. Software Components

<table>
<thead>
<tr>
<th>Software</th>
<th>Version</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hitachi Storage Navigator Modular 2</td>
<td>Microcode Dependent</td>
</tr>
<tr>
<td>Hitachi Dynamic Provisioning</td>
<td>Microcode Dependent</td>
</tr>
<tr>
<td>Hitachi Command Suite</td>
<td>7.4.0</td>
</tr>
<tr>
<td>Hitachi Compute Systems Manager</td>
<td>7.4.0</td>
</tr>
<tr>
<td>Hitachi Infrastructure Adapter for Microsoft System Center Operations Manager</td>
<td>1.1.0</td>
</tr>
<tr>
<td>Microsoft Multipath I/O (MPIO)</td>
<td>006.0001.7600.16385</td>
</tr>
<tr>
<td>Microsoft Windows Server 2012</td>
<td>Datacenter edition</td>
</tr>
<tr>
<td>Microsoft SQL Server® 2012</td>
<td>Enterprise edition SP1</td>
</tr>
<tr>
<td>Microsoft System Manager — Operations Manager</td>
<td>2012 SP1</td>
</tr>
</tbody>
</table>

Hitachi Dynamic Provisioning

On Hitachi storage systems, Hitachi Dynamic Provisioning provides wide striping and thin provisioning functionalities.

Using Dynamic Provisioning is like using a host-based logical volume manager (LVM), but without incurring host processing overhead. It provides one or more wide-striping pools across many RAID groups. Each pool has one or more dynamic provisioning virtual volumes (DP-VOLs) of a logical size you specify of up to 60 TB created against it without allocating any physical space initially.

Deploying Dynamic Provisioning avoids the routine issue of hot spots that occur on logical devices (LDEVs). These occur within individual RAID groups when the host workload exceeds the IOPS or throughput capacity of that RAID group. Dynamic Provisioning distributes the host workload across many RAID groups, which provides a smoothing effect that dramatically reduces hot spots.
When used with Hitachi Unified Storage VM or Hitachi Virtual Storage Platform, Hitachi Dynamic Provisioning has the benefit of thin provisioning. Physical space assignment from the pool to the dynamic provisioning volume happens as needed using 42 MB pages, up to the logical size specified for each dynamic provisioning volume. There can be a dynamic expansion or reduction of pool capacity without disruption or downtime. You can rebalance an expanded pool across the current and newly added RAID groups for an even striping of the data and the workload.

Hitachi Command Suite
Hitachi Command Suite manages virtualized storage and server infrastructures. With usability, workflow, performance, scalability, and private cloud enablement, Hitachi Command Suite lets you build sustainable infrastructures with leading storage technologies. It helps you flexibly align with changing business requirements and maximize return on IT investments.

Hitachi Compute Systems Manager
Hitachi Compute Systems Manager is the management software for Hitachi servers. Compute Systems Manager can be purchased with an optional Server Management Module, Network Management Module, or Server Deployment Module. Use Compute System Manager, to introduce new servers into your data center environment.

Hitachi Infrastructure Adapter for Microsoft System Center Operations Manager
Hitachi Infrastructure Adapter for Microsoft System Center Operations Manager includes storage and server management packs for Hitachi storage and servers. These management packs integrate with Microsoft System Center 2012 — Operations Manager.

Microsoft Windows Server
Microsoft Windows Server is a multi-purpose server that increases the reliability and flexibility of your server or private cloud infrastructure.

Microsoft Hyper-V
Microsoft Hyper-V is a hypervisor-based virtualization technology that is integrated into Microsoft Windows Server. It allows for the reduction of hardware footprints and capital expenses through server consolidation.

Microsoft SQL Server
Microsoft SQL Server is a complete set of enterprise-ready technologies and tools to derive value from information. Enjoy high levels of performance, availability, and security. Employ more productive management and development tools. Deliver pervasive insight with self-service business intelligence (BI).

With Microsoft Visual Studio®, the Microsoft .NET Framework, and Microsoft SQL Server, developers use integrated development tools to build rich, intuitive, and connected applications quickly.
Microsoft System Center — Operation Manager

Microsoft System Center solutions can help you capture and aggregate knowledge about your infrastructure, policies, processes, and best practices so that your IT staff can build manageable systems and automate operations.

Operations Manager enables you to monitor services, devices, and operations for many computers in a single console. Gain rapid insight into the state of the IT environment and the IT services running across different systems and workloads. See the state, health, and performance information of the environment. Operations Manager displays alerts generated for availability, performance, configuration, and security situations.
Test Environment Configuration

This is the configuration of the test environment.

Figure 1
Storage Configuration

This section describes the storage configuration used for testing.

All LUNs used for this testing were allocated in dynamic provisioning pools using Hitachi Dynamic Provisioning. Table 3 is the dynamic provisioning pool configuration.

Table 3. Dynamic Provisioning Pool Configuration

<table>
<thead>
<tr>
<th>Pool Number</th>
<th>Size</th>
<th>Use</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>1 TB</td>
<td>SQL operating system volumes and SQL databases for the Hitachi command device</td>
</tr>
<tr>
<td>5</td>
<td>1 TB</td>
<td>SQL Logs 1</td>
</tr>
<tr>
<td>6</td>
<td>1 TB</td>
<td>SQL Logs 2</td>
</tr>
<tr>
<td>7</td>
<td>2.1 TB</td>
<td>Cluster shared volume pool for Microsoft Windows Server 2012</td>
</tr>
</tbody>
</table>

Table 4 is the LUN configuration for this solution.

Table 4. LUN Configuration

<table>
<thead>
<tr>
<th>LUN Number</th>
<th>Size</th>
<th>Use</th>
<th>Dynamic Provisioning Pool</th>
</tr>
</thead>
<tbody>
<tr>
<td>01</td>
<td>200 GB</td>
<td>SQL operating system volumes</td>
<td>4</td>
</tr>
<tr>
<td>02</td>
<td>600 GB</td>
<td>SQL databases</td>
<td>4</td>
</tr>
<tr>
<td>03</td>
<td>150 GB</td>
<td>SQL Logs 1</td>
<td>5</td>
</tr>
<tr>
<td>04</td>
<td>150 GB</td>
<td>SQL Logs 2</td>
<td>6</td>
</tr>
<tr>
<td>06</td>
<td>1 GB</td>
<td>Hitachi command device</td>
<td>4</td>
</tr>
</tbody>
</table>

Table 5 is the storage path configuration.

Table 5. Path Configuration

<table>
<thead>
<tr>
<th>Server Blade HBA and Port Number</th>
<th>Switch</th>
<th>Zone Name</th>
<th>Storage System Port</th>
<th>Storage System Host Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blade 0 HBA 1 Port 1</td>
<td>FCSW-0</td>
<td>Blade_0_HBA1_1_SW0_HUSVM_1B_2B</td>
<td>1B 2B</td>
<td>Hyper-V cluster</td>
</tr>
<tr>
<td>Blade 0 HBA 1 Port 2</td>
<td>FCSW-1</td>
<td>Blade_0_HBA1_2_SW1_HUSVM_1B_2B</td>
<td>1B 2B</td>
<td>Hyper-V cluster</td>
</tr>
<tr>
<td>Blade 1 HBA 1 Port 1</td>
<td>FCSW-0</td>
<td>Blade_1_HBA1_1_SW0_HUSVM_1B_2B</td>
<td>1B 2B</td>
<td>Hyper-V cluster</td>
</tr>
<tr>
<td>Blade 1 HBA 1 port 2</td>
<td>FCSW-1</td>
<td>Blade_1_HBA1_2_SW1_HUSVM_1B_2B</td>
<td>1B 2B</td>
<td>Hyper-V cluster</td>
</tr>
</tbody>
</table>
Server Configuration

Hitachi Compute Blade 500 hosted the server configuration. Table 6 has the configuration of each server blade. All virtual machines and the Microsoft Hyper-V host on each server blade are running Microsoft Windows Server 2012 Datacenter.

<table>
<thead>
<tr>
<th>Server Blade</th>
<th>Server Name</th>
<th>Server Type</th>
<th>CPU</th>
<th>RAM</th>
<th>Software and Role</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blade 0</td>
<td>CB500-07-B0</td>
<td>Physical</td>
<td>8-Core Xeon E5-2680 processor, 2.70 GHz</td>
<td>192 GB</td>
<td>Microsoft Windows Server 2012 with Hyper-V</td>
</tr>
<tr>
<td></td>
<td>AD01</td>
<td>Virtual</td>
<td>1 vCPU</td>
<td>8 GB</td>
<td>Active Directory/DNS</td>
</tr>
<tr>
<td></td>
<td>SQL2</td>
<td>Virtual</td>
<td>4 vCPU</td>
<td>16 GB</td>
<td>Microsoft SQL Server 2012 SP1 Standard</td>
</tr>
<tr>
<td></td>
<td>HCS</td>
<td>Virtual</td>
<td>2 vCPU</td>
<td>8 GB</td>
<td>Hitachi Command Suite</td>
</tr>
<tr>
<td>Blade 1</td>
<td>CB500-07-B1</td>
<td>Physical</td>
<td>8-core Xeon E5-2680 processor, 2.70 GHz</td>
<td>192 GB</td>
<td>Microsoft Windows Server 2012 with Hyper-V</td>
</tr>
<tr>
<td></td>
<td>AD02</td>
<td>Virtual</td>
<td>1 vCPU</td>
<td>16 GB</td>
<td>Active Directory/DNS</td>
</tr>
<tr>
<td></td>
<td>SQL1</td>
<td>Virtual</td>
<td>4 vCPU</td>
<td>16 GB</td>
<td>Microsoft SQL Server 2012 SP1 Standard</td>
</tr>
<tr>
<td></td>
<td>SCOM01</td>
<td>Virtual</td>
<td>2 vCPU</td>
<td>8 GB</td>
<td>Microsoft System Center 2012 — Operation Manager</td>
</tr>
</tbody>
</table>

Network Configuration

This solution defines the following networks:

- A dedicated management network to manage the Microsoft Hyper-V hosts to avoid competition with the virtual machine guest traffic
- A dedicated CSV and cluster communication network to ensure that when losing storage connectivity to CSVs due to a failure in the Fibre Channel network, the I/O can be re-directed using the cluster network
- A live migration network to ensure the high-speed transfer of virtual machines between nodes in the Microsoft Hyper-V failover cluster
- A network dedicated to virtual machine LAN traffic
Network Switch Module Configuration
Each 520H B1 server blade has a single on-board, two-channel 10 GbE CNA card for network traffic.

Each CNA card can be split into two channels. This allows up to four physical NICs per channel, for a total of eight physical NICs per server blade.

This design only uses three physical NICs per channel. This allows the maximum bandwidth for the virtual machine network.

The bandwidth allocation setting for each NIC was as follows:

- **Channel 0 and 1 NIC 0**
  - Cluster management networks
    - VMHOST network virtual switch
    - 1 GbE per NIC, for a total of 2 GbE

- **Channel 0 and 1 NIC 1**
  - Live migration network
    - Live migration virtual switch
    - 2 GbE per NIC, for a total of 4 GbE

- **Channel 0 and 1 NIC 2**
  - Virtual machine network
    - Virtual machine network virtual switch
    - 7 GbE per NIC, for a total of 14 GbE

Figure 2 illustrates the CNA and Fibre Channel to switch module mapping for Hitachi Compute Blade 500.
Figure 3 shows the network configuration for Switch Module 0 and Switch Module 1, connected to the Brocade switches, using Brocade Data Center Bridging.
Microsoft System Center Configuration

These are the high level steps used to integrate Hitachi Infrastructure Adapter for Microsoft System Center Operations Manager with Microsoft System Center 2012 R2, Operations Manager 2012 SP1.

Infrastructure Adapter for Microsoft System Center Operations Manager was installed on the SCOM 2012 SP1 server, providing the communications link.

Discover Storage System

After installation of Hitachi Infrastructure Adapter for Microsoft System Center Operations Manager, do the following to discover the storage system.

1. From the Start menu, click Hitachi, Hitachi Storage Management for SCOM, and then Hitachi Storage Connector Configuration.

   The Hitachi Storage Connector for Configuration window displays, as shown in Figure 4.

   
   Figure 4


   3. From the Select Model menu in the Subsystem area, click the model of storage system. See Figure 5 on page 14.
This test protocol used **HUS VM**.

![Add Subsystem](image)

**Figure 5**

4. In the **Device manager information** area, type the following information:
   - HDvM Server IP
   - HDvM User Name
   - HDvM Password
   - HUS VM Serial #
   - User name (for the Hitachi Unified Storage VM subsystem)
   - Password

5. Click **OK**.
Configure Storage Connection

To configure the connection between Hitachi Infrastructure Adapter for Microsoft System Center Operations Manager and the SCOM 2012 server, do the following.

1. Under **Hitachi Storage Connector Configuration**, click the **Connection Configuration** tab, as shown in Figure 6.

![Figure 6](image-url)
2. In the Operations Manager Setup Information area, type the information for Enter Server address:
   - If Microsoft Operations Manager runs on the same server as Hitachi Infrastructure Adapter for Microsoft System Center Operations Manager, use Localhost.
   - If Operations Manager runs on a different server as Infrastructure Adapter for Microsoft System Center Operations Manager, use the IP address of the SCOM 2012 SP1 server.

   The Connector service status in the Status Information area changes from “Not Running,” to “Starting,” and then to “Running.” See Figure 6 on page 15.
   Starting the connector service for the first time installs the Infrastructure Adapter for Microsoft System Center Operations Manager management packs with the connector setting on the SCOM 2012 SP1 server.

4. To test the connection between Infrastructure Adapter for Microsoft System Center Operations Manager and the SCOM 2012 server, under Actions, click Test connection.

5. To update the setting to the configuration file, click Save Configuration.

Configure Storage Monitoring
To verify the installation of the Hitachi Infrastructure Adapter for Microsoft System Center Operations Manager management packs on the SCOM 2012 server, do the following.

1. Under Administrator on the administration console for Microsoft Operations Manager, open Administrator, Device Management, and then Management Packs. The Infrastructure Adapter for Microsoft System Center Operations Manager management packs display, as in Figure 7.

   ![Figure 7](image)

2. From the Start menu, click Hitachi, Hitachi Storage Management for SCOM, and then Hitachi Storage Connector Configuration.
   The Hitachi Storage Connector for Configuration window displays.
3. Under **Hitachi Storage Connector Configuration**, click the **Performance** tab.

4. Type the information for **Data collection interval** and click **Save Configuration**.

   The Testing of this environment in the lab environment used the default of 300 seconds.

**Install and Configure Server Monitoring**

The following steps were performed before importing the Hitachi Infrastructure Adapter for Microsoft System Center Operations Manager management packs for Hitachi Compute Blade 500 into SCOM 2012 SP1:

To configure Hitachi Infrastructure Adapter for Microsoft System Center Operations Manager for the Hitachi Compute Blade 500, do the following.

1. Configure the Hitachi Compute Blade 500 chassis as an SNMP device.

2. Enable SMASH support on Hitachi Compute Blade 500.

3. Configure an IPMI/SMASH user account on Hitachi Compute Blade 500.

4. Install and import the Hitachi server management packs for Infrastructure Adapter for Microsoft System Center Operations Manager.

5. Discover Hitachi Compute Blade 500 in Microsoft Operations Manager.

For further detail on configuring Hitachi Compute Blade 500 and installing and importing the Infrastructure Adapter for Microsoft System Center Operations Manager management packs for Microsoft Operations Manager, see Hitachi Server Management Packs for SCOM 2012 User's Guide.

**Discover Server**

To discover Hitachi Compute Blade 500 after installing and importing the management packs, do the following.

1. Under **Administration** on the Microsoft Operations Manager console, open **Administration, Device Management**, and then **Management Packs**. The management packs for Hitachi Infrastructure Adapter for Microsoft System Center Operations Manager display.

2. Under **Administration**, right-click **Network Management** and then click **Discovery Wizard**. See Figure 8 on page 18.
Figure 8

3. Complete the Discovery Wizard.

   (1) On the **Discovery Type** tab, click **Network Devices** and then click **Next**.

   (2) On the **General Properties** tab, do the following:

   - Type the **Name** of the discovery.
   - Click the name of the SCOM server in the **Available servers** list.
   - Click **Next**.

   Do not create a resource pool.

   See Figure 9 on page 19.
(3) On the **Discovery Method** tab, click **Explicit discovery** and then click **Next**.

(4) On the **Default Accounts** tab, create a Run As account by clicking **Create Account**.

The Create Run as Account wizard displays.
(5) In the Create Run as Account wizard, do the following:

i. On the **General Properties** tab, update the **Display name** text box to the following: **SNMP_Discovery_Run_As**

ii. On the **Credentials** tab in the **Community string** text box, type the community string to be used and then click **Create**. Verify that the community string used matches the community string SNMP setting on Hitachi Compute Blade 500.

iii. Click **OK**. The account should now be ready for use.

(6) On the Devices tab, do the following:

- To add the Hitachi Compute Blade 500 chassis, click **Add**.
- To enter the IP address of the Hitachi Compute Blade 500 service processor (SVP), click **Add**.

The **Add a Device** dialog box displays.

(7) On the **Add a Device** dialog box, type the IP address of the following:

- The Hitachi Compute Blade 500 SVP to discover
- The **Run As account** that was created

(8) (Optional) On the **Schedule Discovery** tab, set the schedule to execute this discovery, if desired, and then click **Next**.

The **Summary** page will display.

(9) On the **Summary** tab, to store the discovery, click **Save**.

The **Completion** screen will display.

(10) On the Completion tab, do the following:

- Select the **Run the discovery** check box (if not selected already).
- Click **Close**.

The discovery runs immediately after closing the wizard, unless another time has scheduled.

---

**Note** — It takes a minimum of 30 minutes before discovery starts to push and populate the monitoring data within Microsoft Operations Manager for Hitachi Compute Blade 500.

After importing the Hitachi server management packs, view the state of Hitachi Compute Blade 500 by clicking the **Chassis State View** under Monitoring View. This view displays the status of all components within the Hitachi Compute Blade 500 chassis. Show further information on the state of a component by clicking the on a specific component.
IPMI Configuration

The IPMI support pack for Hitachi Compute Blade 500 allows the execution of various tasks on the Hitachi Compute Blade 500 server blades using the Microsoft Operation Manager user interface. This includes the following:

- Hard reset
- Launch the server blade management web console
- Power functions and resets
- Turn server location LEDs on or off
Test Methodology

This is the test methodology used to validate this environment.

Test Scenarios

Table 7 lists the test scenarios.

Table 7. Test Scenarios

<table>
<thead>
<tr>
<th>Scenario</th>
<th>Scenario Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Install the storage management packs using Hitachi Storage Adapter for Microsoft System Center Operations Manager and verify discovery of storage for monitoring.</td>
</tr>
<tr>
<td>2</td>
<td>Install the server management packs using Storage Adapter for Microsoft System Center Operations Manager and verify discovery of Hitachi Compute Blade 500 in the Microsoft Operations Manager console.</td>
</tr>
<tr>
<td>3</td>
<td>Install IPMI support pack for Hitachi Compute Blade 500.</td>
</tr>
<tr>
<td>4</td>
<td>Configure performance monitoring for storage using Microsoft Operations Manager, with focus on front-end ports and logical units (LUNs).</td>
</tr>
<tr>
<td>5</td>
<td>Take Hitachi Compute Blade 500 offline to see if Microsoft Operations Manager reports outage.</td>
</tr>
<tr>
<td>6</td>
<td>Create a condition with a dynamic provisioning pool to see if Microsoft Operations Manager reports the condition.</td>
</tr>
</tbody>
</table>
Analysis

This lab validation report shows that you can expect the following benefits when using Microsoft System Center Operations Manager in concert with Microsoft System Center 2012 R2 — Operations Manager.

- Monitoring and generating of alerts for Hitachi Unified Storage VM
- Monitoring and generating of alerts for Hitachi Compute Blade 500
- Allowing for the execution of various tasks on the server blades on Hitachi Compute Blade 500 using the Operations Manager user interface
Complete Test Results

Functional test results for all of the scenarios with the success/fail criteria. The test results are described in the following sections.

Scenario 1 and Scenario 2

Table 8 lists the results for scenario 1 and scenario 2.

Table 8. Results for Scenario 1 and Scenario 2

<table>
<thead>
<tr>
<th>Scenario</th>
<th>Scenario Description</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Install the storage management packs using Hitachi Storage Adapter for Microsoft System Center Operations Manager and verify discovery of storage for monitoring.</td>
<td>Pass.</td>
</tr>
<tr>
<td></td>
<td>▪ Successful installation of the storage management packs.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>▪ Successful discovery of storage for monitoring.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>▪ Correct display of storage metrics.</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Install the server management packs using Storage Adapter for Microsoft System Center Operations Manager and verify discovery of Hitachi Compute Blade 500 in the Microsoft Operations Manager console.</td>
<td>Pass.</td>
</tr>
<tr>
<td></td>
<td>▪ Successful installation of the server management packs.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>▪ Successful discovery of server blades.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>▪ Correct display of server metrics.</td>
<td></td>
</tr>
</tbody>
</table>

Scenario 3

Table 9 below lists the results for scenario 3.

Table 9. Results for Scenario 3

<table>
<thead>
<tr>
<th>Scenario</th>
<th>Scenario Description</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>Install IPMI support pack for Hitachi Compute Blade 500.</td>
<td>Pass.</td>
</tr>
<tr>
<td></td>
<td>▪ Successful installation of the IPMI support pack for Hitachi Compute Blade 500.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>▪ Successful execution of various tasks was completed.</td>
<td></td>
</tr>
</tbody>
</table>
**Scenario 4**

Table 10 lists the results for scenario 4.

<table>
<thead>
<tr>
<th>Scenario</th>
<th>Scenario Description</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>Configure performance monitoring for storage using Microsoft Operations Manager, with focus on front-end ports and logical units (LUNs).</td>
<td>Pass.</td>
</tr>
<tr>
<td></td>
<td>▪ Confirm that performance monitoring data is being pushed to Operations Manager for reporting.</td>
<td></td>
</tr>
</tbody>
</table>

**Scenario 5 and Scenario 6**

Table 11 lists the results for scenario 5 and scenario 6.

<table>
<thead>
<tr>
<th>Scenario</th>
<th>Scenario Description</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>Take Hitachi Compute Blade 500 offline to see if Microsoft Operations Manager reports outage</td>
<td>Pass.</td>
</tr>
<tr>
<td></td>
<td>▪ A server blade on Hitachi Compute Blade 500 was powered off and an alert was generated by Operations Manager and reported.</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Create a condition with a dynamic provisioning pool to see if Microsoft Operations Manager reports the condition.</td>
<td>Pass.</td>
</tr>
<tr>
<td></td>
<td>▪ A dynamic provisioning pool condition was generated by Operations Manager and reported.</td>
<td></td>
</tr>
</tbody>
</table>
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