Implementation Guide

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Feedback

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Hitachi Unified Compute Platform Select for Microsoft® Exchange Server 2010 Implementation Guide

Hitachi Unified Compute Platform Select for Microsoft® Exchange Server 2010 Implementation Guide provides instructions to implement the following hardware and software in this solution:

- One Hitachi Compute Blade 500
- One Hitachi Unified Storage 150
- VMware vSphere Server 5.0 and vCenter Server 5.0
- Microsoft Windows Server® 2008 R2
- Microsoft Exchange Server 2010
- Hitachi Command Suite 7.4

Hitachi Unified Compute Platform Select is a family of integrated and flexible solutions. Each solution is ready for immediate deployment to run top-tier infrastructure applications without purchasing or provisioning unnecessary equipment.

The benefits of this solution include the following:

- Faster deployment
- Reduced risk
- Predictability
- Ability to scale out
- Lower cost of ownership

**Note** — These procedures were developed in a lab environment. Many things affect production environments beyond prediction or duplication in a lab environment. Follow recommended practice by conducting proof-of-concept testing for acceptable results before implementing this solution in your production environment. Test the implementation in a non-production, isolated test environment that otherwise matches your production environment.
Solution Components

This is the hardware and software components used to deploy Hitachi Unified Compute Platform Select for Microsoft Exchange Server 2010.

Hardware Components

Table 1 shows the hardware components used for this solution.

Table 1. Hardware Components

<table>
<thead>
<tr>
<th>Hardware</th>
<th>Description</th>
<th>Version</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hitachi Compute Blade 500</td>
<td></td>
<td>A0130-C-6655</td>
<td>1</td>
</tr>
<tr>
<td>chassis</td>
<td>2 Brocade 5460 8 Gb/sec Fibre Channel switch modules</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>2 Hitachi 1 GbE switch modules (32 internal ports and 8 external ports)</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>520HA1 server blade</td>
<td>Half-size blade</td>
<td>01-51/03-04</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>2 × 8-core Intel Xeon E5-2680 processor at 2.70 GHz</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>160 GB RAM</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>10 × 16 GB DIMM</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>2 Hot-swappable 2.5 inch SAS drives</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1 Broadcom 1 GbE 8-port mezzanine card</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1 Hitachi 8 Gb/sec Fibre Channel mezzanine card</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hitachi Unified Storage 150</td>
<td>Dual controller</td>
<td>0925/A-H</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>16 × 8 Gb/sec Fibre Channel ports</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>32 GB cache memory</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 2 shows the software components used for this solution.

<table>
<thead>
<tr>
<th>Software</th>
<th>Version</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hitachi Storage Navigator Modular 2</td>
<td>22.5</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>VMware vCenter Server</td>
<td>5.0.0</td>
</tr>
<tr>
<td>VMware vSphere</td>
<td>5.0.0</td>
</tr>
<tr>
<td>Microsoft Exchange 2010</td>
<td>Enterprise Edition, SP2</td>
</tr>
</tbody>
</table>
Solution Implementation

Use these procedures to configure your Hitachi Unified Compute Platform Select for Microsoft Exchange Server 2010 solution. This assumes the server chassis, server blades, storage, and switches are racked, stacked, cabled, and powered on.

Configure Hitachi Compute Blade 500

Use these procedures to configure the sever chassis, server blades, and switch modules.

Table 3 shows the dummy IP addresses used to configure the server chassis, server blades, and switch modules.

Table 3. Dummy IP Addresses

<table>
<thead>
<tr>
<th>Description</th>
<th>Default IP Address</th>
<th>New IP Address</th>
<th>Subnet Mask</th>
<th>Default Gateway</th>
</tr>
</thead>
<tbody>
<tr>
<td>Management Module</td>
<td>192.168.0.1</td>
<td>Same as default</td>
<td>255.255.255.0</td>
<td>192.168.0.1</td>
</tr>
<tr>
<td>Blade 0 BMC</td>
<td>N/A</td>
<td>192.168.0.11</td>
<td>255.255.255.0</td>
<td>192.168.0.1</td>
</tr>
<tr>
<td>Blade 1 BMC</td>
<td>N/A</td>
<td>192.168.0.12</td>
<td>255.255.255.0</td>
<td>192.168.0.1</td>
</tr>
<tr>
<td>Blade 2 BMC</td>
<td>N/A</td>
<td>192.168.0.13</td>
<td>255.255.255.0</td>
<td>192.168.0.1</td>
</tr>
<tr>
<td>Switch Module 0</td>
<td>192.168.0.60</td>
<td>Same as default</td>
<td>255.255.255.0</td>
<td>192.168.0.1</td>
</tr>
<tr>
<td>Switch Module 1</td>
<td>192.168.0.61</td>
<td>Same as default</td>
<td>255.255.255.0</td>
<td>192.168.0.1</td>
</tr>
<tr>
<td>Switch Module 2</td>
<td>192.168.0.62</td>
<td>Same as default</td>
<td>255.255.255.0</td>
<td>192.168.0.1</td>
</tr>
<tr>
<td>Switch Module 3</td>
<td>192.168.0.63</td>
<td>Same as default</td>
<td>255.255.255.0</td>
<td>192.168.0.1</td>
</tr>
</tbody>
</table>

Configure the Server Chassis

To configure the server chassis, do the following.

1. On your laptop, configure a static IP address 192.168.0.200.
2. Connect a laptop with an Ethernet cable to the management module (MGMT0) port located on the rear of the server chassis.
3. From your laptop, verify you can ping the MGMT0 port IP address, 192.168.0.1.
4. Open a browser and type the following in the Address bar:
   http://192.168.0.1/
5. Log on using the following default credentials:
   
   **User name**: administrator  
   **Password**: password

   The user interface for the management module web opens.
6. Configure the IP addresses.
   (1) Click the Resources tab.
   (2) In the Systems pane, expand Network, and then expand Management LAN.
   (3) On the IP Address tab, click Edit.
      The Edit IP Address dialog box opens.
   (4) Enter the IP address, subnet mask, and default gateway for the following (Table 3):
      - Management Module
      - Server Blade 0
      - Server Blade 1
      - Server Blade 2
      - Switch Module 0
      - Switch Module 1
      - Switch Module 2
      - Switch Module 3
   (5) For Connection Type, click Connect through management LAN port.
   (6) Click Confirm.
      The Confirm dialog box opens.
   (7) Confirm that the information is correct, and then click OK.
      This saves the IP settings.

7. Disconnect the Ethernet cable from your laptop.

Configure the Network Switch Modules
This procedure describes how to configure the port channels on the network switch modules using a command line interface.

The VLANs can be different in your network environment. Change the configuration to match your network environment.

**Note** — For redundancy, perform this procedure on Switch Module 0 and Switch Module 1.
To configure the network switch modules, do the following.

1. Connect the following to your local area network.
   - The Hitachi Compute Blade 500 chassis
   - Your management laptop

2. Connect to the SVP module.
   
   (1) On your management laptop, open a Telnet session using PuTTY.
   
   (2) Connect to the server chassis (SVP) at this IP address: 192.168.0.1
   
   (3) Log on to the SVP using the default user credentials:
       
       **User name:** administrator  
       **Password:** password

3. Enter configuration mode on the switch module.
   
   (1) Connect to the switch module.
       
       - For Switch Module 0, type the following:
         `change console -s 0`
       
       - For Switch Module 1, type the following:
         `change console -s 1`
   
   (2) To confirm, type the following:
       
       `Y`
   
   (3) To enable administrator mode, type the following:
       
       `enable`
       
       The command prompt changes to this: `#`
   
   (4) To enter configuration mode, type the following:
       
       `configure terminal`
       
       The command prompt changes to this: `(config)#`

4. Configure the switch module.
   
   (1) To create VLANs, type the following:
       
       `vlan 100,167,200,243`
   
   (2) Configure Port 9, Port 10, and Port 11.
       
       i. To select Port 9, Port 10, and Port 11, type the following:
           
           `interface range gigabitethernet 0/9-11`
The command prompt changes to this: (config-if)#

ii. To configure the ports as trunk ports, type the following:
   
   switchport mode trunk

iii. To assign the VLANs to the trunk ports, type the following:
   switchport trunk allowed vlan 100,167,200,243

iv. To exit the configuration mode, type the following:
   exit

   The command prompt changes to this: (config)#

(3) Configure Port 17, Port 18, and Port 19.

i. To select Port 17, Port 18, and Port 19, type the following:

   interface range gigabitethernet 0/17-19

   The command prompt changes to this: (config-if)#

ii. To configure the ports as trunk ports, type the following:

   switchport mode trunk

iii. To assign the VLANs to the trunk ports, type the following:

   switchport trunk allowed vlan 100,167,200,243

iv. To exit the configuration mode, type the following:

   exit

   The command prompt changes to this: (config)#

(4) Configure Port 27, Port 26, and Port 27.

i. To select Port 25, Port 26, and Port 27, type the following:

   interface range gigabitethernet 0/25-27

   The command prompt changes to this: (config-if)#

ii. To configure the ports as trunk ports, type the following:

   switchport mode trunk

iii. To assign the VLANs to the trunk ports, type the following:

   switchport trunk allowed vlan 100,167,200,243

iv. To exit the configuration mode, type the following:

   exit

   The command prompt changes to this: (config)#
(5) Configure Port 33, Port 34, and Port 35.
   i. To select Port 33, Port 34, and Port 35, type the following:
      ```
      interface range gigabitethernet 0/33-35
      ```
      The command prompt changes to this: (config-if)#
   ii. To configure the ports as trunk ports, type the following:
      ```
      switchport mode trunk
      ```
   iii. To assign the VLANs to the trunk ports, type the following:
      ```
      switchport trunk allowed vlan 100,167,200,243
      ```
   iv. To exit the configuration mode, type the following:
      ```
      exit
      ```
      The command prompt changes to this: (config)#

5. Save the configuration of the switch module and exit.
   (1) To save the configuration, type the following:
      ```
      write
      ```
   (2) To exit the configuration mode, type the following:
      ```
      exit
      ```
      The command prompt changes to this: (config-if)
   (3) To check the configuration, type the following:
      ```
      show
      ```
   (4) To exit switch configuration, type the following:
      ```
      exit
      ```

**Configure the Server Blades**
Perform these procedures to configure the server blades.

**Configure the Server Blade BIOS**

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**Note** — Perform this procedure on Server Blade 1 and Sever Blade 2.
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To configure the server blade BIOS, do the following.
1. Turn on the server blade.
   (1) Open a browser and type the following in the Address bar.
      ```
      http://192.168.0.11
      ```
(2) Log on using the default user account credentials:

**User name:** user01  
**Password:** pass01

(3) To open the console, click **Launch Remote Console**.

(4) To turn on the server blade, from the **Remote Console** on the **Power tab**, click **Power On**.

(5) To open the server blade BIOS settings, during the boot process, press F1.

2. Change the BIOS settings.

   (1) On the **System Configuration and Boot Management** menu, select **System Settings** and press Enter.

   (2) On the **System Settings** menu, select **Processors** and press Enter.

   (3) On the **Processors** menu, verify that **Hyper-Threading** and **Intel Virtualization Technology** are set to **Enable**.

3. Save the settings and exit.

   (1) To return to the **System Settings** menu, press Esc.

   (2) To return to the **System Configuration and Boot Management** menu, press Esc.

   (3) To save the settings and exit, select **Save Settings**.

   (4) To confirm exiting the setup utility, press Y.

*Configure the LSI RAID BIOS*

Each 520A1 server blade comes with two local 135 GB 10k RPM SAS drives configured default as RAID-1. Use the local drives to install VMware vSphere 5.0.

*Configure the HBA BIOS on the Server Blade*

For multi-path redundancy, repeat this procedure on Server Blade 1 and Server Blade 2 for each of the following HBAs:

- HBA1_1
- HBA1_2

To configure the BIOS on the HBA, do the following.

1. Open the HBA BIOS settings.

   (1) Start or reboot the server blade.

   (2) During the boot process, press Ctrl+R.

   (3) On the **Select Operation** menu, select **Select HBA** and press Enter.
2. Configure the BIOS.
   (1) On the Select HBA menu, select HBA # 00 and press Enter.
   (2) Select Set HBA BIOS and press Enter.
   (3) To change the setting to Enable, press Enter, and then press Esc.
       You return to the main menu.
   (4) Select Set Connection Type and press Enter.
   (5) Select Point to Point and press Enter.
       You return to the main menu.
   (6) Select Set Data Rate and press Enter.
   (7) Select 8Gbps and press Enter.
       You return to the main menu.

3. Save the changes and exit.
   (1) Select Exit.
   (2) Press Enter.

Record the Server Blade WWNs
You need the WWNs for all the HBAs when zoning the SAN switches.
Repeat this procedure for Server Blade 0, Server Blade 1, and Server Blade 2.
To record the WWNs of the HBAs for later use, do the following.
1. On the management laptop, open a web browser and type the IP address of the server chassis in the Address bar. See Table 3 on page 4.
2. Log on using the default user credentials:
   User name: administrator
   Password: password
3. Click the Resources tab.
4. Display the WWNs.

   (1) In the **Systems** pane, click **WWN Management**.

   (2) To display the WWN for Server Blade 0, click **Server Blade 0**, click **Show Current WWN**, and record the WWN.

   (3) To display the WWN for Server Blade 1, click **Server Blade 1**, click **Show Current WWN**, and record the WWN.

   (4) To display the WWN for Server Blade 2, click **Server Blade 2**, click **Show Current WWN**, and record the WWN.

**Configure Hitachi Unified Storage 150**

The following procedures show how to configure the storage system using Hitachi Storage Navigator Modular 2.

To do these procedures, the following must be true:

- Install Hitachi Storage Navigator Modular 2 on your management laptop
- Add the storage system to Hitachi Storage Navigator Modular 2 using the default IP addresses: 192.168.0.16 and 192.168.0.17

**Configure Fibre Channel Port Settings**

To configure the Fibre Channel port settings, do the following.

1. On your management laptop, open a web browser and type the following in the Address bar:

   `http://localhost:23015/StorageNavigatorModular/Login`

2. Log on using the default credentials:

   **User name:** system
   
   **Password:** manager

   The graphical user interface of the management module opens.

3. Open the Fibre Channel port settings.

   (1) To open the storage system, click the **Array Name** link.

   (2) Expand the **Settings** heading.

   (3) Expand the **Port Settings** and click the **FC Settings** link.
4. Edit the Fibre Channel port settings.

   Repeat this for these Fibre Channel ports: Port 0A, Port 0B, Port 0C, Port 1A, Port 1B, and Port 1C.

   (1) Click the Fibre Channel port.

   The Fibre Channel port properties display with an option to edit the Fibre Channel port.

   (2) Click **Edit FC Port**.

   (3) From the **Transfer Rate** menu, click **8Gbps**.

   (4) From the **Topology** menu, click **Point-to-Point**.

   (5) Click **OK**.

   A message displays saying that making this change interrupts I/O between any hosts that are connected to the port at this time.

   (6) Click **Confirm** and wait a few seconds for the change to take place.

After establishing the connection between the storage system and the host, the FC Settings window shows all ports with the status **LinkUp(F_Port Connected)**.

**Enable Host Group Security**

Enabling host group security allows you to create multiple host groups on a single storage port. This allows you to isolate traffic for an HBA.

To enable the ports for host group security, do the following.

1. Log on to Hitachi Storage Navigator Modular 2 and open the storage system.

2. Expand the **Groups** heading and click the **Host Groups** link.

   The right pane has three tabs: **Host Groups**, **Host Group Security**, and **WWNs**.

3. Click the **Host Group Security** tab.

   (1) Edit the host group security.

   (2) Select these ports:

      - 0A
      - 0B
      - 0C
      - 1A
      - 1B
      - 1C
Create Dynamic Provisioning Pools

A dynamic provisioning pool does the following:

- Spreads I/O workloads across multiple physical disks to balance workloads
- Eliminates bottlenecks
- Reduces the costs of managing performance and capacity

Use Table 4 to create Pool 0, Pool 1, Pool 2 Pool 3, and Pool 4. Start with Pool 0.

Table 4. Dynamic Provisioning Pool Configuration

<table>
<thead>
<tr>
<th>Dynamic Provisioning Pool</th>
<th>Number of RAID Groups</th>
<th>Number of Drives</th>
<th>Usable Capacity (TB)</th>
<th>Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>1</td>
<td>4</td>
<td>3.6</td>
<td>Windows Server operating system</td>
</tr>
<tr>
<td>1</td>
<td>20</td>
<td>80</td>
<td>71.2</td>
<td>Exchange databases (active)</td>
</tr>
<tr>
<td>2</td>
<td>20</td>
<td>80</td>
<td>71.2</td>
<td>Exchange databases (passive)</td>
</tr>
<tr>
<td>3</td>
<td>2</td>
<td>8</td>
<td>7.1</td>
<td>Exchange logs (active)</td>
</tr>
<tr>
<td>4</td>
<td>2</td>
<td>8</td>
<td>7.1</td>
<td>Exchange logs (passive)</td>
</tr>
</tbody>
</table>

To create a dynamic provisioning pool, do the following.

1. Log on to Hitachi Storage Navigator Modular 2 and open the storage system.
2. Expand the Groups heading and then click the Volumes link.
   - The right pane has three tabs: Volumes, RAID Groups, and DP Pools.
3. Create a dynamic provisioning pool.
   - (1) Click the DP Pools tab and then click Create Pool.
     - The Create DP Pool window opens.
   - (2) Click the following from each list:
     - From the RAID Level list: RAID 1+0
     - From the Combination list: 2D+2D
   - The Number of drives changes automatically, based on the selected RAID level and combination.
(3) For **Drives**, click **Automatic Selection**.

(4) From the list, click **Drive Type** and **Drive Capacity**.

(5) To modify any of the settings based on the requirements of your environment, click the **Advanced** tab, change the settings, and then click **OK**.

A message displays indicating successful creation of the dynamic provisioning pool.

4. Click **Close**.

The pool immediately starts the formatting process in the background.

**Expand the Capacity of a Dynamic Provisioning Pool**

Use Table 4 on page 13 to add pool capacity to Pool 1 and Pool 2. Start with Pool 1.

To expand the capacity of a dynamic provisioning pool, do the following.

1. Log on to Hitachi Storage Navigator Modular 2 and open the storage system.

2. Expand the **Groups** heading and then click the **Volumes** link.

3. Click the **DP Pools** tab on the right pane.

4. Click the DP pool that you are expanding.

   The DP pool properties displays in the right pane.

5. Click the **DP RAID Group** tab.

6. Click **Add Pool Capacity**.

   The **Add Pool Capacity** window opens.

7. On **Drives**, click **Automatic Selection** and enter the number of drives.

8. Click **OK**.
Create Volumes from Dynamic Provisioning Pool

Use Table 5 to create the volumes for the following:

- Microsoft Windows Server operating system
- Microsoft Exchange databases and logs

### Table 5. Volume Configuration

<table>
<thead>
<tr>
<th>Dynamic Provisioning Pool</th>
<th>Volume Number</th>
<th>Volume Size (GB)</th>
<th>Volume Purpose</th>
<th>VMware Volume Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0</td>
<td>3000</td>
<td>Windows Server operating system</td>
<td>VMDK</td>
</tr>
<tr>
<td>1</td>
<td>1</td>
<td>2000</td>
<td>Active db1</td>
<td>RDM</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>2000</td>
<td>Active db2</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>2000</td>
<td>Active db3</td>
<td></td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>2000</td>
<td>Active db4</td>
<td></td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>2000</td>
<td>Active db5</td>
<td></td>
</tr>
<tr>
<td></td>
<td>6</td>
<td>2000</td>
<td>Active db6</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>7</td>
<td>200</td>
<td>Active log1</td>
<td>RDM</td>
</tr>
<tr>
<td></td>
<td>8</td>
<td>200</td>
<td>Active log2</td>
<td></td>
</tr>
<tr>
<td></td>
<td>9</td>
<td>200</td>
<td>Active log3</td>
<td></td>
</tr>
<tr>
<td></td>
<td>10</td>
<td>200</td>
<td>Active log4</td>
<td></td>
</tr>
<tr>
<td></td>
<td>11</td>
<td>200</td>
<td>Active log5</td>
<td></td>
</tr>
<tr>
<td></td>
<td>12</td>
<td>200</td>
<td>Active log6</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>13</td>
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<td>Passive db7</td>
<td>RDM</td>
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<td>Passive db8</td>
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<td>Passive db9</td>
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<td>16</td>
<td>2000</td>
<td>Passive db10</td>
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<td>17</td>
<td>2000</td>
<td>Passive db11</td>
<td></td>
</tr>
<tr>
<td></td>
<td>18</td>
<td>2000</td>
<td>Passive db12</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>19</td>
<td>200</td>
<td>Passive log7</td>
<td>RDM</td>
</tr>
<tr>
<td></td>
<td>20</td>
<td>200</td>
<td>Passive log8</td>
<td></td>
</tr>
<tr>
<td></td>
<td>21</td>
<td>200</td>
<td>Passive log9</td>
<td></td>
</tr>
<tr>
<td></td>
<td>22</td>
<td>200</td>
<td>Passive log10</td>
<td></td>
</tr>
<tr>
<td></td>
<td>23</td>
<td>200</td>
<td>Passive log11</td>
<td></td>
</tr>
<tr>
<td></td>
<td>24</td>
<td>200</td>
<td>Passive log12</td>
<td></td>
</tr>
</tbody>
</table>
To create volumes from the dynamic provisioning pools, do the following.

1. Log on to Hitachi Storage Navigator Modular 2 and open the storage system.

2. Expand the Groups heading and then click the Volumes link.

3. Create a volume.
   (1) Click Create Vol.
   The Create Volume window displays.
   (2) For Type, click the DP Pool option.
   (3) From the RAID Group/DP Pool Number, click a pool number from the list.

### Table 5. Volume Configuration (Continued)

<table>
<thead>
<tr>
<th>Dynamic Provisioning Pool</th>
<th>Volume Number</th>
<th>Volume Size (GB)</th>
<th>Volume Purpose</th>
<th>VMware Volume Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>25</td>
<td>2000</td>
<td>Passive db1</td>
<td>RDM</td>
</tr>
<tr>
<td>26</td>
<td>2000</td>
<td>Passive db2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>27</td>
<td>2000</td>
<td>Passive db3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>28</td>
<td>2000</td>
<td>Passive db4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>29</td>
<td>2000</td>
<td>Passive db5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>30</td>
<td>2000</td>
<td>Passive db6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>31</td>
<td>200</td>
<td>Passive log1</td>
<td>RDM</td>
</tr>
<tr>
<td>32</td>
<td>200</td>
<td>Passive log2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>33</td>
<td>200</td>
<td>Passive log3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>34</td>
<td>200</td>
<td>Passive log4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>35</td>
<td>200</td>
<td>Passive log5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>36</td>
<td>200</td>
<td>Passive log6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>37</td>
<td>2000</td>
<td>Active db7</td>
<td>RDM</td>
</tr>
<tr>
<td>38</td>
<td>2000</td>
<td>Active db8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>39</td>
<td>2000</td>
<td>Active db9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>40</td>
<td>2000</td>
<td>Active db10</td>
<td></td>
<td></td>
</tr>
<tr>
<td>41</td>
<td>2000</td>
<td>Active db11</td>
<td></td>
<td></td>
</tr>
<tr>
<td>42</td>
<td>2000</td>
<td>Active db12</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>43</td>
<td>200</td>
<td>Active log7</td>
<td>RDM</td>
</tr>
<tr>
<td>44</td>
<td>200</td>
<td>Active log8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>45</td>
<td>200</td>
<td>Active log9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>46</td>
<td>200</td>
<td>Active log10</td>
<td></td>
<td></td>
</tr>
<tr>
<td>47</td>
<td>200</td>
<td>Active log11</td>
<td></td>
<td></td>
</tr>
<tr>
<td>48</td>
<td>200</td>
<td>Active log12</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
(4) In the **Vol** box, type the number from Table 5.

(5) For the **Capacity** box, type the size from Table 5 and then click the unit from the list.

(6) Leave the **Accelerate Wide Striping Mode** check box unchecked.

(7) Click **OK**.

The **Create Volume** pane refreshes with the new **Volume** information.

### Create Host Groups
Create host groups to provide multiple paths to the volumes for redundancy.

Use Table 6 as a guide to create the host groups.

**Table 6. Host Group Configuration**

<table>
<thead>
<tr>
<th>Blade</th>
<th>vSphere Host</th>
<th>HBA Name</th>
<th>Storage Host Group Name</th>
<th>Storage Port</th>
<th>Zone Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>1</td>
<td>B0_HBA1_1</td>
<td>B0_vSphere1_HBA1_1</td>
<td>0A</td>
<td>vSphere1_HBA1_1_0A</td>
</tr>
<tr>
<td></td>
<td></td>
<td>B0_HBA1_2</td>
<td>B0_vSphere1_HBA1_2</td>
<td>1A</td>
<td>vSphere1_HBA1_1_1A</td>
</tr>
<tr>
<td>1</td>
<td>2</td>
<td>B1_HBA1_1</td>
<td>B1_vSphere1_HBA1_1</td>
<td>0B</td>
<td>vSphere2_HBA1_1_0B</td>
</tr>
<tr>
<td></td>
<td></td>
<td>B1_HBA1_2</td>
<td>B1_vSphere1_HBA1_2</td>
<td>1B</td>
<td>vSphere2_HBA1_1_1B</td>
</tr>
<tr>
<td>2</td>
<td>3</td>
<td>B2_HBA1_1</td>
<td>B2_vSphere1_HBA1_1</td>
<td>0C</td>
<td>vSphere3_HBA1_1_1C</td>
</tr>
<tr>
<td></td>
<td></td>
<td>B2_HBA1_2</td>
<td>B2_vSphere1_HBA1_2</td>
<td>1C</td>
<td>vSphere3_HBA1_1_1C</td>
</tr>
</tbody>
</table>

To configure the host groups, do the following.

1. Log on to Hitachi Storage Navigator Modular 2 and open the storage system.

2. Expand the **Groups** heading and click the **Host Groups** link.

3. Create a host group.

   (1) Click **Create Host Group**.

   (2) Leave **Host Group No.** unchanged. Hitachi Storage Navigator Modular 2 automatically uses the next number.

   (3) In **Name**, type the host group name.

      This name identifies the connected hosts.

   (4) In the **Available Ports** area, select one or more ports.
(5) Select the **World Wide Names** to add to the host group (see Record the Server Blade WWNs), and then click **Add**.

- If the storage system does not detect the HBA ports, their WWNs are not in the **Detected WWNs** window. In that case, troubleshoot the environment to verify the settings for the storage ports, host HBAs, and switches.

The window automatically refreshes with the added WWNs in the **Selected WWNs** column.

4. Add volumes to the host group.

   (1) Click the **Volumes** tab.

   (2) Select the volumes to add to the host group.

   (3) Following best practice, make the H-LUN number the same as the volume number.

   (4) Click **Add**.

   The screen automatically refreshes and the added volumes display in the **Assigned Volumes** column.

   (5) Set the operating system.

   (6) Click the **Options** tab.

   (7) From the **Platform** menu, select **VMware**.

   (8) Click **OK**.

**Record Storage Port WWNs**

Record the storage port WWNs for zoning the SAN switches.

To record the storage port WWNs, do the following.

1. On Hitachi Storage Navigator Modular 2, expand **Groups**.

2. Under Groups, click **Host Groups**.

3. Click the **WWNs** tab.

4. Record of the WWNs of the following storage ports:

   - 0A/1A
   - 0B/1B
   - 0C/1C
Configure Brocade VDX 6720 Ethernet Switches

Configure two Brocade 6720 Ethernet switches for local area network (LAN) connectivity to the servers and storage.

Use Table 7 to configure the dummy IP addresses on the Brocade VDX 6720 Ethernet switches.

Table 7. Dummy IP Addresses for the Brocade VDX 6720 Ethernet Switches

<table>
<thead>
<tr>
<th>Description</th>
<th>Default IP Address</th>
<th>New IP Address</th>
<th>Subnet Mask</th>
<th>Default Gateway</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brocade 6720 SW 1</td>
<td>N/A</td>
<td>192.168.0.20</td>
<td>255.255.255.0</td>
<td>192.168.0.1</td>
</tr>
<tr>
<td>Brocade 6720 SW 2</td>
<td>N/A</td>
<td>192.168.0.21</td>
<td>255.255.255.0</td>
<td>192.168.0.1</td>
</tr>
</tbody>
</table>

Refer to the Brocade VDX 6720 Hardware Reference Manual to configure the switches for your LAN environment.

Configure Brocade 6510 Fibre Channel Switches

Configure two Brocade 6510 Fibre Channel switches for storage area network (SAN) connectivity to the servers and storage.

Use Table 8 to configure the dummy IP addresses for the Brocade 6510 Fibre Channel switches.

Table 8. Dummy IP Addresses for the Brocade 6510 Fibre Channel Switches

<table>
<thead>
<tr>
<th>Description</th>
<th>Default IP Address</th>
<th>New IP Address</th>
<th>Subnet Mask</th>
<th>Default Gateway</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brocade 6510 SW 1</td>
<td>N/A</td>
<td>192.168.0.22</td>
<td>255.255.255.0</td>
<td>192.168.0.1</td>
</tr>
<tr>
<td>Brocade 6510 SW 2</td>
<td>N/A</td>
<td>192.168.0.23</td>
<td>255.255.255.0</td>
<td>192.168.0.1</td>
</tr>
</tbody>
</table>

Refer to the Brocade 6510 Hardware Reference Manual to configure the switches for your SAN environment.
Zone the Fibre Channel Switches

**Note** — This solution uses the Brocade SAN fabric for zoning. Your SAN environment can use a different fabric. Change this zoning configuration for your environment.

Prior to zoning your environment, delete the default zone and zone configuration files. This reduces confusion.

Use the following procedures to create the aliases, zones, and zone configuration.

Create Aliases

An alias is an easier name to use for repetitive port numbers or WWN entries. For instance, you can use an alias to identify a WWN as "B0_HBA0" instead of "23:10:00:00:87:D1:40:00" in zoning operations.

For each of the Fibre Channel ports on each server blade, create alias names with the format By_HBAz, using the following:

- **y** is the blade number
- **z** is the port number

For each Hitachi Unified Storage 150 Fibre Channel port, create alias names with the format HUS_zz, using the following:

- **zz** is a storage Fibre Channel port, such as 1A or 1B

Table 9 shows the zoning configuration. Use it to create new alias and zone names.

### Table 9. Zoning Configuration

<table>
<thead>
<tr>
<th>Blade Number</th>
<th>HBA Port</th>
<th>Alias</th>
<th>Storage Port</th>
<th>Zone Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blade 0</td>
<td>HBA1_1</td>
<td>B0_HBA1_1</td>
<td>0A</td>
<td>B0_HBA1_1_HUS_0A</td>
</tr>
<tr>
<td></td>
<td>HBA1_2</td>
<td>B0_HBA1_2</td>
<td>1A</td>
<td>B0_HBA1_2_HUS_1A</td>
</tr>
<tr>
<td>Blade 1</td>
<td>HBA1_1</td>
<td>B1_HBA1_1</td>
<td>0B</td>
<td>B1_HBA1_1_HUS_0B</td>
</tr>
<tr>
<td></td>
<td>HBA1_2</td>
<td>B1_HBA1_2</td>
<td>1B</td>
<td>B1_HBA1_2_HUS_1B</td>
</tr>
<tr>
<td>Blade 2</td>
<td>HBA1_1</td>
<td>B1_HBA1_1</td>
<td>0C</td>
<td>B2_HBA1_1_HUS_0C</td>
</tr>
<tr>
<td></td>
<td>HBA1_2</td>
<td>B1_HBA1_2</td>
<td>1C</td>
<td>B2_HBA1_2_HUS_1C</td>
</tr>
</tbody>
</table>
To create each alias name, do the following.

1. Open a web browser and type the Fibre Channel Switch 0 IP address in the Address bar:
   
   http://192.168.0.62

2. Log on using the default credentials:

   - **Username**: admin
   - **Password**: password

3. To open the **Zone Administration** dialog box, click **Zone Admin**.

4. Create each new alias.

   Create each new alias in Table 9 on page 20.

   (1) Click the **Alias** tab.

   (2) To create a new alias, click **New Alias**.

   (3) Type the alias name.

5. Assign each alias name.

   Assign each alias in Table 9 to each WWN.

   (1) On the **Alias** tab, click the name from the list.

   (2) Click **Add Other** and type the **WWN** to assign to the alias name.

   (3) Click **OK**.

**Create Zones**

To create each zone name and add members to each zone, do the following.

1. Create each zone name.

   (1) Click the **Zone** tab.

   (2) Click **New Zone**.

   (3) Type the zone name.

2. Add members to each new zone.

   (1) On the **Zone** tab, click a zone name from the list.

   (2) Click the **Aliases** plus sign to expand the selection list.

   (3) Select the aliases for the HBA and the storage port.

   (4) Click **Add Member**.
Create Zone Config
Use this procedure to create and enable each zone in Table 9 on page 20.

To create and enable the zone configurations, do the following.

1. Create and add each zone name.
   Repeat this for each zone name in Table 9.
   (1) Click the Zone Config tab.
   (2) Click New Zone Config.
   (3) Type the Zone Name.
   (4) On the Zone Config tab, click the zone name from the list.
   (5) Click the Zones plus sign to expand the selection list.
   (6) Click the zone name.
   (7) Click Add Member.

2. Save and enable the configuration.
   (1) To save this configuration, click Save Config (Figure 1).
   (2) To enable this configuration, click Enable Config (Figure 1).

![Basic Zones](image)

**Figure 1**

Install and Configure Software
Use these procedures to install software for this solution.
Use Table 10 to configure the IP addresses for the software.

<table>
<thead>
<tr>
<th>Description</th>
<th>Default IP Address</th>
<th>New IP Address</th>
<th>Subnet Mask</th>
<th>Default Gateway</th>
</tr>
</thead>
<tbody>
<tr>
<td>vSphere 1</td>
<td>N/A</td>
<td>192.168.0.24</td>
<td>255.255.255.0</td>
<td>192.168.0.1</td>
</tr>
<tr>
<td>vSphere 2</td>
<td>N/A</td>
<td>192.168.0.25</td>
<td>255.255.255.0</td>
<td>192.168.0.1</td>
</tr>
<tr>
<td>vSphere 3</td>
<td>N/A</td>
<td>192.168.0.26</td>
<td>255.255.255.0</td>
<td>192.168.0.1</td>
</tr>
<tr>
<td>AD/DC/DNS 1</td>
<td>N/A</td>
<td>192.168.0.27</td>
<td>255.255.255.0</td>
<td>192.168.0.1</td>
</tr>
<tr>
<td>AD/DC/DNS 2</td>
<td>N/A</td>
<td>192.168.0.28</td>
<td>255.255.255.0</td>
<td>192.168.0.1</td>
</tr>
<tr>
<td>vCenter</td>
<td>N/A</td>
<td>192.168.0.29</td>
<td>255.255.255.0</td>
<td>192.168.0.1</td>
</tr>
</tbody>
</table>
Install VMware vSphere 5.0
Repeat these procedures to install VMware ESXi 5.0 on Server Blade 1 and Server Blade 2.

Before starting, download to your management laptop the VMware ESXi 5.0 ISO installer bundled with the Hitachi HBA driver from this link:

To install vSphere, do the following.

1. Launch Remote Console.
   (1) From your management laptop, open a web browser and type the IP address of the server blade BMC in the Address bar. See Table 3 on page 4.
   (2) Log on using the default user credentials.
      **User name:** user01
      **Password:** pass01
   (3) To open Remote Console, click **Launch Remote Console**.

2. Install VMware ESXi on the server blade.
   (1) From Remote Console, from the **Tools** menu, click **Launch Virtual Media**.
      The **Virtual Media Session** window opens.
   (2) Click **Add Image**.
   (3) Browse to the ESXi ISO file and then click **Open**.
   (4) Select the **Mapped** check box next to the ESXi ISO file.
      Leave this window open for the entire installation session.
   (5) On Remote Console, on the **Power** menu, click **Power On**.
      * If the server blade power is already on, click **Hard Reset** instead of **Power On**.
(6) To accept the license agreement, press F11.

(7) On Select a Disk to Install or Upgrade, select LSI Logical Volume and press Enter.

**Note** — The 520HA1 server blade is equipped with two SAS disks that are pre-configured as RAID-1 devices. During the ESXi installation, these drives appear to be a single remote drive.

(8) Follow the instructions on the screen to complete the installation. For more information, visit the VMware vSphere 5 Documentation Center.

### Create the Guest Virtual Machines

This assumes a datastore is presented to all three vSphere hosts. A datastore is a storage container for virtual machine files.

This is the procedure to create guest virtual machines. Use Table 11 to assign the vCPU, vRAM, and vNIC for each virtual machine.

#### Table 11. Virtual Machine Configuration

<table>
<thead>
<tr>
<th>vSphere Host</th>
<th>Virtual Machine Name</th>
<th>Role</th>
<th>vCPU</th>
<th>vRAM (GB)</th>
<th>vNIC Qty.</th>
<th>Windows Server 2008 R2</th>
</tr>
</thead>
<tbody>
<tr>
<td>vSphere 1</td>
<td>DC1</td>
<td>Active Directory and DNS Server</td>
<td>1</td>
<td>4</td>
<td>1</td>
<td>Standard Edition</td>
</tr>
<tr>
<td></td>
<td>DC2</td>
<td>Active Directory and DNS Server</td>
<td>1</td>
<td>4</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>vCenter</td>
<td>vCenter Server</td>
<td>2</td>
<td>8</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>HCS</td>
<td>Hitachi Command Suite and Hitachi Compute Systems Manager</td>
<td>2</td>
<td>12</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>vSphere 2</td>
<td>MBX1</td>
<td>Mailbox server</td>
<td>8</td>
<td>128</td>
<td>2</td>
<td>Enterprise Edition</td>
</tr>
<tr>
<td></td>
<td>CASHT1</td>
<td>Client access and hub transport server</td>
<td>8</td>
<td>24</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>vSphere 3</td>
<td>MBX2</td>
<td>Mailbox server</td>
<td>8</td>
<td>128</td>
<td>2</td>
<td>Enterprise Edition</td>
</tr>
<tr>
<td></td>
<td>CASHT2</td>
<td>Client access and hub transport server</td>
<td>8</td>
<td>24</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>

Create each virtual machine in Table 11.

To create a new virtual machine, do the following.

1. On your management laptop, open the vSphere client and connect to the vSphere host of the virtual machine.

2. Log on using a root account.

3. In the pane for the host for the virtual machine, right-click the host name and then click **New Virtual Machine**.
4. Create a new virtual machine.
   (1) Save the virtual machine files on the datastore.
   (2) From the Create a disk list, click Thick Provision Eager Zeroed and then click Next.
   (3) Follow the Create New Virtual Machine wizard to complete the process.

5. Load the operating system on the new virtual machine.
   (1) Right-click the new virtual machine and then click Edit Settings.
   (2) Click CD/DVD drive 1 and then click Datastore ISO file.
   (3) Download the Windows Server 2008 R2 installation (ISO) file.
      ▪ Verify which version of the ISO file you need for the virtual machine from Table 11.
   (4) Save the ISO file on the datastore.
   (5) Click Browse and open the path to the ISO file.
   (6) Click OK to confirm.

   This closes the window.

Install Microsoft Windows Server 2008
Repeat this procedure to install Microsoft Windows Server for each virtual machine listed in Table 11 on page 24.

To install Microsoft Windows Server 2008, do the following.

1. On your management laptop, open the vSphere client and connect to the vSphere host of the virtual machine.

2. Log on using a root account.

3. In the pane for the vSphere host, right-click the virtual machine and then click Power On.
   The Windows Server installation starts automatically.

4. Complete the installation of Windows Server.
   (1) After the installation begins, click Next.
   (2) To start the installation, click Install now.
   (3) Click Windows Server 2008 R2 Standard (Full Installation) and then click Next.
   (4) Select the I accept the license terms check box and then click Next.
   (5) To complete the installation, follow the wizard.
5. Update Windows Server with the latest update files.

6. For the changes to take effect, reboot the server.


**Install VMware vCenter Server 5.0**

Before installing VMware vCenter Server 5.0 on a virtual machine, create the vCenter virtual machine and install Microsoft Windows Server.

To install VMware vCenter, do the following.

1. On the vCenter virtual machine, download the VMware vCenter Server software from this IP address:
   

2. Save and extract the installation file (ISO) on the desktop of the virtual machine.

3. To launch the installer, click **Autorun**.

4. To start the vCenter install process, click **Install**.

5. To complete the installation process, follow the installation wizard.

For more information, see [VMware vSphere 5 Documentation Center](https://pubs.vmware.com/vsphere-50/index.jsp).

**Configure VMware vCenter Server 5.0**

Repeat this procedure to add these hosts to the cluster:

- vSphere1
- vSphere2
- vSphere3

To configure VMware vCenter, do the following.

1. Open the vSphere client and then connect to vCenter Server.

2. In the **vCenter Server pane**, right-click vCenter Server, and then click **New Datacenter**.

3. Create a new cluster.
   
   (1) In the **New Datacenter** pane, right-click and then click **New Cluster**.

   (2) Type a name for the cluster.

   (3) Select the **Turn on vSphere HA** check box.

   (4) Select the **Turn on vSphere DRS** check box.

   (5) To complete the process, follow the New Cluster wizard.
4. Add the host.
   (1) In the New Cluster pane, right-click and then select Add Host.
   (2) Type the IP address for host (Table 3 on page 4).
   (3) To complete the process, follow the Add Host wizard.

Setup Microsoft Active Directory® (Optional)
Only use this procedure if your environment does not have a Microsoft Active Directory domain infrastructure.

For redundancy, repeat this procedure on these virtual machines (Table 11 on page 24):
- DC1
- DC2

To install a new Microsoft Active Directory domain, do the following.
1. Log on to the virtual machine using an administrator account.
2. To open the Run dialog box, on the Start menu, click Run.
3. To start Active Directory setup, in Open, type the following:
   dcpromo
4. The Active Directory wizard opens.
5. Click Create a new domain in a new forest and then click Next.
6. To complete the setup of Active Directory, follow the wizard.
7. After completing the setup, reboot the server.

Install Microsoft Exchange 2010 Enterprise Edition on the following virtual machines (Table 11 on page 24):
- MBX1
- MBX2
- CASHT1
- CASHT2

To install Microsoft Exchange on a virtual machine, do the following.
1. Load the Microsoft Exchange Server 2010 installation file (ISO) to the virtual machine, saving the file to the desktop.
2. Load Microsoft Exchange on the virtual machine.
   (1) Using the VMware vSphere client, right-click the virtual machine and then click Edit Settings.
(2) Click **CD/DVD drive 1** and then click **Datastore ISO file**.

(3) Click **Browse** and open the path to the Exchange Server 2010 ISO file.

(4) Click **OK**.

This closes the window.

3. Join the virtual machine to a domain.

   (1) Log on using an administrator account.

   (2) Join the virtual machine from a workgroup to a domain.

   (3) Reboot the virtual machine for the changes to take effect.

4. Set up Microsoft Exchange.

   (1) Log on to the domain using an administrator account.

   (2) Install **Microsoft Filter Pack 2.0**.

   (3) Install the Internet Information Servers (IIS) components needed for Exchange.

   (4) To launch the installation, click **Setup**.

   (5) Click the **Choose Exchange Language** option and click your language from the list.

   The Exchange setup begins.

   (6) Click **Next**.

   (7) To select the role manually, click **Custom Exchange Server Installation** and then select the role or roles.

      - **MBX1, MBX2** — Mailbox server

      - **CASHT1, CASHT2** — Client access and hub transport server

   (8) To complete the install, follow the wizard.

   (9) Reboot the server for the changes to take effect.

5. Complete the installation.

   - Download Microsoft Exchange SP2 and then update Exchange.

For more information, see the Microsoft TechNet article, **Deploying Exchange 2010**.
Install Hitachi Command Suite 7.4 and Hitachi Compute Systems Manager 7.4

Install Hitachi Command Suite 7.4 and Hitachi Compute Systems Manager 7.4 on the virtual machine specified in Table 11 on page 24.

To install Hitachi Command Suite and Hitachi Compute Systems Manager, do the following.

1. Download the Hitachi Command Suite installation file (ISO) from this location:
   https://portal.hds.com

2. On the specified virtual machine, mount the ISO.

3. Install Hitachi Command Suite.
   (1) To launch Hitachi Command Suite 7, click index.html.
   (2) On the Hitachi Command Suite One-Click Installer, click Install.
   The Install Shield Wizard opens.
   (3) Click Next.
   (4) Select which software to install and then click Next.
      - Hitachi Command Suite — Select (selected for installation by default)
      - Hitachi Tuning Manager — Clear (do not install)
      - Hitachi Compute Systems Manager — Select (install)
   (5) Click Install.
   The installation takes anywhere from 10 to 15 minutes to finish.
   (6) To close the screen, click Finish.

Configure Hitachi Command Suite 7.4

To configure Hitachi Command Suite 7.4, do the following.

1. On your management laptop, open a web browser and type the following in the Address bar:
   http://192.168.0.30:23015/DeviceManagerWebService/index.jsp

2. Log on using the credentials for the default user account.
   User ID: system
   Password: manager
3. Configure Hitachi Command Suite.
   (1) To display the configuration resources, click the Administrator tab.
   (2) At the bottom of the screen, click Add Storage System.
   (3) For Storage System Type, click HUS.
   (4) For IP Address (Controller 0), type the IP address for controller 0.
   (5) For IP Address (Controller 1), type the IP address for controller 1.
   (6) For User ID, type the user ID.
   (7) For Password, type the password.
   (8) To confirm, click OK.

   The storage discovery starts.

Once the storage discovery is complete, you can manage the storage using Hitachi Command Suite. To view the storage, click Resources.

Configure Hitachi Compute Systems Manager 7.4
To configure Hitachi Compute Systems Manager 7.4, do the following.

1. On your management laptop, open a web browser and type the following into the Address bar:
   
   http://localhost:23015/DeviceManagerWebService/index.jsp

2. Log on using the credentials for the default user account.
   
   User ID: system
   Password: manager

3. Configure Hitachi Compute Systems Manager.
   (1) Click the Administrator tab to display the configuration resources.
   (2) In the Administrator pane, click the Discovered Resources tab.
   (3) Click the Chassis tab.
   (4) At the bottom of the screen, click Discover Resources.

   The Specify IP Range window opens.

   (5) In the IP Address Range box, type the IP address of the server chassis management module and then click Next.
(6) To complete the discovery, follow the wizard.

(7) To close the window, click **Finish**.

The storage discovery starts.

Once the server chassis and server blade discovery are complete, you can manage the storage using Hitachi Compute Systems Manager. To view the server chassis and server blades, click **Resources**.

**Configure Microsoft Exchange 2010**

Follow these procedures to create an Exchange DAG and configure replication.

**Create a Database Availability Group**

A database availability group (DAG) is a high availability feature in Microsoft Exchange 2010 that supports the following:

- Mailbox database replication
- Database and server switchovers and failovers

Each DAG supports up to 16 mailbox servers. Any server within a DAG can host a copy of a mailbox database from any other server within the DAG.

Table 12 shows the configuration for the active and passive Microsoft Exchange databases and logs. Use this as a guide for the database copies layout.

<table>
<thead>
<tr>
<th>Virtual Machine</th>
<th>Database Name</th>
<th>Database Path</th>
<th>Log Name</th>
<th>Log Path</th>
</tr>
</thead>
<tbody>
<tr>
<td>MBX1</td>
<td>Db1 (active)</td>
<td>C:\mountpt\db1</td>
<td>Log1 (active)</td>
<td>C:\mountpt\log1</td>
</tr>
<tr>
<td></td>
<td>Db2 (active)</td>
<td>C:\mountpt\db2</td>
<td>Log2 (active)</td>
<td>C:\mountpt\log2</td>
</tr>
<tr>
<td></td>
<td>Db3 (active)</td>
<td>C:\mountpt\db3</td>
<td>Log3 (active)</td>
<td>C:\mountpt\log3</td>
</tr>
<tr>
<td></td>
<td>Db4 (active)</td>
<td>C:\mountpt\db4</td>
<td>Log4 (active)</td>
<td>C:\mountpt\log4</td>
</tr>
<tr>
<td></td>
<td>Db5 (active)</td>
<td>C:\mountpt\db5</td>
<td>Log5 (active)</td>
<td>C:\mountpt\log5</td>
</tr>
<tr>
<td></td>
<td>Db6 (active)</td>
<td>C:\mountpt\db6</td>
<td>Log6 (active)</td>
<td>C:\mountpt\log6</td>
</tr>
<tr>
<td></td>
<td>Db7 (passive)</td>
<td>C:\mountpt\db1</td>
<td>Log7 (passive)</td>
<td>C:\mountpt\log1</td>
</tr>
<tr>
<td></td>
<td>Db8 (passive)</td>
<td>C:\mountpt\db2</td>
<td>Log8 (passive)</td>
<td>C:\mountpt\log2</td>
</tr>
<tr>
<td></td>
<td>Db9 (passive)</td>
<td>C:\mountpt\db3</td>
<td>Log9 (passive)</td>
<td>C:\mountpt\log3</td>
</tr>
<tr>
<td></td>
<td>Db10 (passive)</td>
<td>C:\mountpt\db4</td>
<td>Log10 (passive)</td>
<td>C:\mountpt\log4</td>
</tr>
<tr>
<td></td>
<td>Db11 (passive)</td>
<td>C:\mountpt\db5</td>
<td>Log11 (passive)</td>
<td>C:\mountpt\log5</td>
</tr>
<tr>
<td></td>
<td>Db12 (passive)</td>
<td>C:\mountpt\db6</td>
<td>Log12 (passive)</td>
<td>C:\mountpt\log6</td>
</tr>
</tbody>
</table>
To create a DAG for a mailbox server, do the following.

1. Open Exchange Management Console.

2. From the Action menu, click New DAG

   The wizard automatically creates a witness server and witness directory to store the DAG information.

3. After creating the DAG, right-click the DAG and then click Properties.

4. On the IP Addresses tab, assign a static IP to the DAG.

5. On the General tab, configure an alternate witness server and witness directory to the default drive C on the local machine.

   This is for redundancy.

6. Right-click the DAG, and click Manage DAG Membership.

7. Click Add and then select MBX1 and MBX2.

8. To confirm, click OK.

Table 12. Microsoft Exchange Databases and Logs Configuration (Continued)

<table>
<thead>
<tr>
<th>Virtual Machine</th>
<th>Database Name</th>
<th>Database Path</th>
<th>Log Name</th>
<th>Log Path</th>
</tr>
</thead>
<tbody>
<tr>
<td>MBX2</td>
<td>Db1 (passive)</td>
<td>C:\mountpt\db1</td>
<td>Log1 (passive)</td>
<td>C:\mountpt\log1</td>
</tr>
<tr>
<td></td>
<td>Db2 (passive)</td>
<td>C:\mountpt\db2</td>
<td>Log2 (passive)</td>
<td>C:\mountpt\log2</td>
</tr>
<tr>
<td></td>
<td>Db3 (passive)</td>
<td>C:\mountpt\db3</td>
<td>Log3 (passive)</td>
<td>C:\mountpt\log3</td>
</tr>
<tr>
<td></td>
<td>Db4 (passive)</td>
<td>C:\mountpt\db4</td>
<td>Log4 (passive)</td>
<td>C:\mountpt\log4</td>
</tr>
<tr>
<td></td>
<td>Db5 (passive)</td>
<td>C:\mountpt\db5</td>
<td>Log5 (passive)</td>
<td>C:\mountpt\log5</td>
</tr>
<tr>
<td></td>
<td>Db6 (passive)</td>
<td>C:\mountpt\db6</td>
<td>Log6 (passive)</td>
<td>C:\mountpt\log6</td>
</tr>
<tr>
<td></td>
<td>Db7 (active)</td>
<td>C:\mountpt\db1</td>
<td>Log7 (active)</td>
<td>C:\mountpt\log1</td>
</tr>
<tr>
<td></td>
<td>Db8 (active)</td>
<td>C:\mountpt\db2</td>
<td>Log8 (active)</td>
<td>C:\mountpt\log2</td>
</tr>
<tr>
<td></td>
<td>Db9 (active)</td>
<td>C:\mountpt\db3</td>
<td>Log9 (active)</td>
<td>C:\mountpt\log3</td>
</tr>
<tr>
<td></td>
<td>Db10 (active)</td>
<td>C:\mountpt\db4</td>
<td>Log10 (active)</td>
<td>C:\mountpt\log4</td>
</tr>
<tr>
<td></td>
<td>Db11 (active)</td>
<td>C:\mountpt\db5</td>
<td>Log11 (active)</td>
<td>C:\mountpt\log5</td>
</tr>
<tr>
<td></td>
<td>Db12 (active)</td>
<td>C:\mountpt\db6</td>
<td>Log12 (active)</td>
<td>C:\mountpt\log6</td>
</tr>
</tbody>
</table>
Configure Replication

Use Table 12 on page 31 as a guide to configure the layout of the database copies.

To configure replication, the following must be true for the active databases:

- They must be mounted
- They must be in a healthy state

---

**Note** — Before a passive database can be in a healthy state, the Copy Queue Length and Replay Queue Length need to be 0 (zero).

---

Repeat these procedures for each of the database copies in Table 12.

To configure replication, do the following.

1. On Exchange Management Console, under Organization Configuration, click Mailbox.

   The mailbox objects display showing the configuration tabs.

2. Click the Database Management tab.

3. Right-click an active virtual machine and database name pair from Table 12 and then click Add Mailbox Database Copy.

   - For example, click MBX1, DB1.

   The Add Mailbox Database Copy wizard opens.

4. Click Browse and then click the other virtual machine.

5. Click OK to confirm.

6. Click Add.

   The replication process starts. Depending on your network bandwidth and the database size, replication can take from minutes to hours.

The active database on the first virtual machine replicates to a passive database on the other virtual machine. Once completed, the Exchange Management Console shows a mounted active database and a healthy passive database with the same name.
For More Information

Hitachi Data Systems Global Services offers experienced storage consultants, proven methodologies and a comprehensive services portfolio to assist you in implementing Hitachi products and solutions in your environment. For more information, see the Hitachi Data Systems Global Services website.

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