Deploy an 8,000-user Microsoft Exchange 2010 Solution with Hitachi Compute Blade 2000 and Hitachi Unified Storage 130

Implementation Guide

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October 8, 2012
Feedback

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Deploy an 8,000-user Microsoft Exchange 2010 Solution with Hitachi Compute Blade 2000 and Hitachi Unified Storage 130

Implementation Guide

This implementation guide describes using Hitachi Compute Blade 2000 and Hitachi Unified Storage 130 in a Microsoft Exchange 2010 high-availability deployment for 8,000 mailboxes. It implements the environment found in Deploy an 8,000-user Microsoft Exchange 2010 Solution with Hitachi Compute Blade 2000 and Hitachi Unified Storage 130 Reference Architecture Guide. Included in this implementation guide is information for planning, recommended practice, configurations, and deployment.

This implementation guide is intended for you if you are a storage administrator or an Exchange administrator looking to design and deploy Exchange 2010 for your environment. You need familiarity with the following to benefit from this document:

- Hitachi Compute Blade 2000
- Hitachi Unified Storage 100 family
- Hitachi Storage Navigator Modular 2
- Brocade 5300 series SAN switches
- Microsoft Windows Server 2008 R2
- Microsoft Exchange Server 2010

**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

The following are the components used in this solution:

- **Hitachi Compute Blade 2000**—10U enterprise platform chassis with X55A2 server blades
- **Hitachi Unified Storage 130**—High-performance and scalable storage system
- **Hitachi Host Bus Adapter**—Dual-port Fibre Channel 8 Gb/sec HBA
- **Brocade 5300 Fibre Channel Switch**—SAN connectivity to the storage network
- **Microsoft Windows Server 2008 R2**—Multi-purpose server software designed to increase the reliability and flexibility of your infrastructure
- **Microsoft Exchange Server 2010**—Enterprise email application with database high availability and site resiliency through database availability groups

Figure 1 on page 3 shows a complete Exchange physical architecture design using Hitachi and Brocade hardware components.
Figure 1
Hardware Components

Table 1 lists the hardware used for this solution.

Table 1. Hardware Components

<table>
<thead>
<tr>
<th>Hardware</th>
<th>Detail Description</th>
<th>Firmware Version</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hitachi Compute Blade 2000 chassis</td>
<td>2 Dual-port 8 Gb/sec HBAs</td>
<td>A0195-C-6443</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>2 Management modules</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>2 × 1 Gb/sec LAN switch modules</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>8 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>Hitachi X55A2 server blade</td>
<td>2 × 6-Core Intel Xeon X5670 2.93 GHz processor</td>
<td>03-73</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>80 GB memory</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hitachi Unified Storage 130</td>
<td>Active/active controllers</td>
<td>0916/A-S</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>4 × 8 Gb/sec Fibre Channel ports</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>16 GB cache memory</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DBL Disk Box</td>
<td>LFF (3.5 inch) box to support 92 × 2 TB SAS 7.2k RPM disks</td>
<td>N/A</td>
<td>8</td>
</tr>
<tr>
<td>Brocade 5300</td>
<td>8 Gb/sec Fibre Channel switch</td>
<td>FOS v6.4.2B</td>
<td>2</td>
</tr>
</tbody>
</table>

Software Components

Table 2 lists the software used for this solution.

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>21.7</td>
</tr>
<tr>
<td>Hitachi Virtualization Manager Navigator</td>
<td>2.4.1.1</td>
</tr>
<tr>
<td>Hitachi Dynamic Link Manager</td>
<td>7.2</td>
</tr>
<tr>
<td>Hitachi Dynamic Provisioning</td>
<td>Microcode dependent</td>
</tr>
<tr>
<td>Microsoft Windows Server</td>
<td>2008 R2 Enterprise Edition SP1</td>
</tr>
<tr>
<td>Microsoft Exchange Server</td>
<td>2010 Enterprise Edition SP2</td>
</tr>
</tbody>
</table>
Solution Implementation

Before implementing this solution, you need the following items:

- Windows 2008 R2 ISO
- Driver kit version 12-12 ISO (includes driver for Hitachi HBA)
- CAT 5 LAN cables
- Fiber cables
- 13 IP addresses
  - One for the management modules
  - Two for BMC blades
  - Two for HVM
  - Four for Windows 2008 R2 OS
  - Two for the Hitachi Unified Storage 130
  - Two for Brocade SAN switches

Follow these steps to deploy this solution.

1. “Configure Hitachi Compute Blade 2000” on page 6
2. “Configure Hitachi Unified Storage 130” on page 8
3. “Configure Storage Area Network (SAN)” on page 18
4. “Create and Configure LPARs using Hitachi Virtualization Manager Navigator” on page 18
5. “Install Software” on page 26
6. “Configure Microsoft Exchange 2010” on page 28

Your implementation checklist may vary, based on your environment and your requirements.
Configure Hitachi Compute Blade 2000

This is how to configure Hitachi Compute Blade 2000. These procedures required the completion of the following before you start:

- Racking of the blade chassis
- Installation of the blades into the chassis
- Completion of all cabling (LAN and SAN)

Configure Management Module (SVP) IP Addresses

To remotely manage the management module (SVP), blade servers, and LPARs, connect it to a LAN switch. To configure the IP addresses for the management module and the blades using the management module web GUI, do the following:

1. Connect a system console (laptop or desktop computer) to the **MGMT0 port** of the management module with an Ethernet cable.
   - If two management modules are installed, connect to the management module with the MSR LED that is lit solid green.
2. Open a browser and type http://192.168.0.1/ in the Address bar.
   - A log on screen displays.
3. Log on using the default administrator user account credentials.
   - User name: administrator
   - Password: password
   - The management module web GUI opens.
4. Configure the IP addresses.
   (1) Click the **Settings** tab.
   (2) On the left navigation tree, click the **configuration of network** link.
       - The Management LAN network pane opens.
   (3) On the Management LAN network pane, Scroll down and click **Edit**.
       - The boxes become available to edit.
   (4) Type an IP address, subnet mask, and default gateway for the management LAN network.
   (5) Type an IP address, subnet mask, and default gateway for Partition 0 and Partition 1.
   (6) To save the IP settings, click **Confirm**, and then click **Apply**.
Set Up Logical Partitioning

This procedure requires that you are connected to the management LAN.

To set up logical partitioning, do the following.

1. Open a browser and type the server blade IP address in the Address bar.
2. Log on to the server blade GUI using the following default user credentials.
   
   User name: user01
   
   Password: pass01

   The server blade GUI opens.

3. Complete the EFI settings.
   
   (1) Click the **EFI Setup** link.
   
   The EFI Setup pane opens.

   (2) For **SMT (Simultaneous Multi-Threading)**, click the **Disable** option.

   (3) For **PCI Error Handling Mode**, click the **Legacy** option.

   (4) Keep the default values for the other EFI settings.

   (5) Click **Modify**.

   The EFI Setup (Confirm) pane opens.

   (6) Click **Confirm**.

   The EFI settings are updated.

4. Complete the HVM settings.

   (1) Click the **HVM Setup** link.

   The HVM Setup pane opens.

   (2) For **OS Mode**, click the **HVM Mode** option.

   (3) Click **Modify**.

   A confirmation window opens.

   (4) Click **Confirm**.

   The confirmation window closes.
5. Power the server blade on.
   (1) Click the **Power and LEDs** link.
       The Power and LEDs pane opens.
   (2) Click **Power on**.
       The blade is powered on.

Configure Hitachi Unified Storage 130

This is how to configure Hitachi Unified Storage 130. These procedures require the completion of the following before you start:

- Racking and cabling of the storage
- Installation of all licenses on your storage system

Configure Fibre Channel Port Settings

Before starting this process, verify the following:

- Connection of both HBAs on the server to the Fibre Channel switches
- Zoning of the storage system ports

To configure the Fibre Channel port settings for Port 0A, Port 1A, Port 0B, and Port 1B, do the following.

1. Open Hitachi Storage Navigator Modular 2.
   (1) Open a web browser and type the following in the Address bar:
       http://127.0.0.1:23015/StorageNavigatorModular/Login
   (2) Log on using these user credentials.
       User ID: system
       Password: manager

2. Open the Fibre Channel port settings.
   (1) Click the **Array Name** link to open the storage system.
   (2) Expand the **Settings** heading and click the **FC Settings** link.
   (3) Click **FC Port <port name>**.
       The Fibre Channel port properties display with an option to edit the Fibre Channel port.
3. Edit the Fibre Channel port settings.
   
   (1) Click **Edit FC Port**.
   
   (2) Click **8Gbps** from the **Transfer Rate** menu.
   
   (3) Click **Point-to-Point** from the **Topology** menu.
   
   (4) Click **OK**.
   
   A message displays indicating that the change interrupts I/O between any
   hosts that are connected to the port at this time.
   
   (5) 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 host group security ports, do the following.

1. Open Hitachi Storage Navigator Modular 2.
   
   (1) Open a web browser and type the following in the address bar:
   
   `http://127.0.0.1:23015/StorageNavigatorModular/Login`
   
   (2) Log on using these user credentials.
   
   User ID:  **system**
   
   Password:  **manager**

2. Open the host group settings.
   
   (1) Click the **Array Name** link to open the storage system.
   
   (2) Expand the **Groups** heading and click the **Host Groups** link.

3. Edit the host group security.
   
   (1) Select ports **0A, 1A, 0B, and 1B**.
   
   (2) Click **Change Host Group Security**.
   
   (3) Select the **Yes** check box.
   
   (4) Click **OK**.
   
   Now host security group is enabled on those ports.
Create Dynamic Provisioning Pools

This solution uses RAID-10 (2D+2D) RAID groups for the dynamic provisioning pool configurations given in Table 3.

Table 3. 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 Pool Capacity (TB)</th>
<th>Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>1</td>
<td>4</td>
<td>3.5</td>
<td>SAN OS Boot</td>
</tr>
<tr>
<td>1</td>
<td>10</td>
<td>40</td>
<td>35.5</td>
<td>Database (active)</td>
</tr>
<tr>
<td>2</td>
<td>10</td>
<td>40</td>
<td>35.5</td>
<td>Database (passive)</td>
</tr>
<tr>
<td>3</td>
<td>1</td>
<td>4</td>
<td>3.5</td>
<td>Log (active)</td>
</tr>
<tr>
<td>4</td>
<td>1</td>
<td>4</td>
<td>3.5</td>
<td>Log (passive)</td>
</tr>
</tbody>
</table>

A dynamic provisioning pool does the following:

- Spread I/O workloads across multiple physical disks to balance workloads
- Eliminate bottlenecks
- Reduce the costs of managing performance and capacity

Use this process to create Pool 0, Pool 1, Pool 2, Pool 3, and Pool 4—one pool at a time. Start with Pool 0.

To create each dynamic provisioning pool using the pool configuration information in Table 3, do the following.

1. Open Hitachi Storage Navigator Modular 2.
   (1) Open a web browser and type the following in the Address bar:
       http://127.0.0.1:23015/StorageNavigatorModular/Login
   (2) Log on using these user credentials.
       User ID: system
       Password: manager

2. Open the volumes settings.
   (1) Click the Array Name link to 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, as shown in Figure 2:

   - **RAID 1+0** from the **RAID Level** list
   - **2D+2D** from the **Combination** list

   ![Create DP Pool Window](image)

   **Figure 2**

   The **Number of drives** changes automatically, based on what you click for the RAID level and combination.
(3) Click **Manual Selection** or **Automatic Selection** for Drives.

- **Manual Selection**—Click this option if you have different types of drives installed in the storage system. This could be SATA and SAS drives, or drives of different capacities. Then select the correct drive type in the **Assignable Drives** table so that Hitachi Storage Navigator Modular 2 selects the correct type of hard drive.

- **Automatic Selection**—Click this option to have Hitachi Storage Navigator Modular 2 select the next available drives shown in **Assignable Drives** table.

Hitachi Data Systems recommends use **Automatic Selection** when all your drives are the same type.

(4) Click the **Advanced** tab, to modify any of the settings based on your environment requirements, 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.

5. If necessary, increase the capacity of the dynamic pool using data from Table 3 on page 10. Do this for Pool 1 and Pool 2.

Any pool created from more than one RAID group needs to have its capacity increased, as follows.

    (1) Click the **DP Pools** tab.

    (2) Select the check box for the pool.

    (3) Click **Add Pool Capacity**.

    (4) Click the **Automatic Selection** option.

    (5) Click **OK**.
Create Volumes
Create volumes from the dynamic provisioning pools for presenting to each host in order to store data for these purposes:

- SAN OS boot
- Exchange database
  - DB1
  - DB2
  - DB3
  - DB4
  - DB5
  - DB6
- Log volumes
  - LOG1
  - LOG2
  - LOG3
  - LOG4
  - LOG5
  - LOG6

Table 4 on page 14 has the volume configuration for this solution.
Use this process to create Volumes 1, 2, and 22 through 44 in Table 4. Start with Volume 1.

<table>
<thead>
<tr>
<th>Host</th>
<th>DP Pool</th>
<th>Volume</th>
<th>Size (GB)</th>
<th>Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td>MBX1</td>
<td>0</td>
<td>1</td>
<td>200</td>
<td>SAN OS Boot</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>21</td>
<td>2000</td>
<td>DB1 (active)</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>22</td>
<td>2000</td>
<td>DB2 (active)</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>23</td>
<td>2000</td>
<td>DB3 (active)</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>24</td>
<td>2000</td>
<td>DB4 (passive)</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>25</td>
<td>2000</td>
<td>DB5 (passive)</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>26</td>
<td>2000</td>
<td>DB6 (passive)</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>27</td>
<td>200</td>
<td>LOG1 (active)</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>28</td>
<td>200</td>
<td>LOG2 (active)</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>29</td>
<td>200</td>
<td>LOG3 (active)</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>30</td>
<td>200</td>
<td>LOG4 (passive)</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>31</td>
<td>200</td>
<td>LOG5 (passive)</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>32</td>
<td>200</td>
<td>LOG6 (passive)</td>
</tr>
<tr>
<td>MBX2</td>
<td>0</td>
<td>2</td>
<td>200</td>
<td>SAN OS Boot</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>33</td>
<td>2000</td>
<td>DB1 (passive)</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>34</td>
<td>2000</td>
<td>DB2 (passive)</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>35</td>
<td>2000</td>
<td>DB3 (passive)</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>36</td>
<td>2000</td>
<td>DB4 (active)</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>37</td>
<td>2000</td>
<td>DB5 (active)</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>38</td>
<td>2000</td>
<td>DB6 (active)</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>39</td>
<td>200</td>
<td>LOG1 (passive)</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>40</td>
<td>200</td>
<td>LOG2 (passive)</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>41</td>
<td>200</td>
<td>LOG3 (passive)</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>42</td>
<td>200</td>
<td>LOG4 (active)</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>43</td>
<td>200</td>
<td>LOG5 (active)</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>44</td>
<td>200</td>
<td>LOG6 (active)</td>
</tr>
</tbody>
</table>
To create each volume in Table 4 on page 14, do the following.

1. Open Hitachi Storage Navigator Modular 2.
   
   (1) Open a web browser and type the following in the Address bar:
   
   http://127.0.0.1:23015/StorageNavigatorModular/Login
   
   (2) Log on using these user credentials.
   
   User ID: system
   
   Password: manager
   
2. Open the volumes settings.
   
   (1) Click the **Array Name** link to open the storage system.
   
   (2) Expand the **Groups** heading and 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** menu, click the pool number from Table 4.
   
   ▪ For example, for Volume 1, click **000**.
   
   (4) In **Vol**, type the volume number in Table 4.
   
   ▪ For example, for Volume 1, type **1**.
   
   (5) For **Capacity**, type the size in the box and then click the unit from the menu.
   
   ▪ For example, for Volume 1, type **200** in the box and then click **GB** from the menu.
   
   (6) Leave the **Accelerate Wide Striping Mode** check box clear (unchecked).
   
   (7) Click **OK**.
   
   The **Create Volume** pane refreshes, populated with the new **Volume** information.
Create Host Groups

Create the host groups so there are multiple paths available to the volumes for high availability and failover.

Table 5 has the host group names as part of the SAN configuration.

Table 5. SAN Configuration Details

<table>
<thead>
<tr>
<th>Blade</th>
<th>Host</th>
<th>Host HBA Name</th>
<th>Storage Host Group Name</th>
<th>Storage Port</th>
<th>Zone Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blade 0</td>
<td>MBX1</td>
<td>HBA1_1</td>
<td>MBX1_Os</td>
<td>0A</td>
<td>MBX1_HBA1_1_0A</td>
</tr>
<tr>
<td></td>
<td></td>
<td>HBA1_2</td>
<td>MBX1_Os</td>
<td>1A</td>
<td>MBX1_HBA1_2_1A</td>
</tr>
<tr>
<td></td>
<td></td>
<td>HBA1_1</td>
<td>MBX1_EX</td>
<td>0B</td>
<td>MBX1_HBA1_1_0B</td>
</tr>
<tr>
<td></td>
<td></td>
<td>HBA1_2</td>
<td>MBX1_EX</td>
<td>1B</td>
<td>MBX1_HBA1_2_1B</td>
</tr>
<tr>
<td></td>
<td>CASHT1</td>
<td>HBA1_1</td>
<td>CASHT1_Os</td>
<td>0A</td>
<td>CASHT1_HBA1_1_0A</td>
</tr>
<tr>
<td></td>
<td></td>
<td>HBA1_2</td>
<td>CASHT1_Os</td>
<td>1A</td>
<td>CASHT1_HBA1_2_1A</td>
</tr>
<tr>
<td></td>
<td>Blade 1</td>
<td>MBX2</td>
<td>HBA1_1</td>
<td>0A</td>
<td>MBX2_HBA1_1_0A</td>
</tr>
<tr>
<td></td>
<td></td>
<td>HBA1_2</td>
<td>MBX2_Os</td>
<td>1A</td>
<td>MBX2_HBA1_2_1A</td>
</tr>
<tr>
<td></td>
<td></td>
<td>HBA1_1</td>
<td>MBX2_EX</td>
<td>0B</td>
<td>MBX2_HBA1_1_0B</td>
</tr>
<tr>
<td></td>
<td></td>
<td>HBA1_2</td>
<td>MBX2_EX</td>
<td>1B</td>
<td>MBX2_HBA1_2_1B</td>
</tr>
<tr>
<td></td>
<td>CASHT2</td>
<td>HBA1_1</td>
<td>CASHT2_Os</td>
<td>0A</td>
<td>CASHT2_HBA1_1_0A</td>
</tr>
<tr>
<td></td>
<td></td>
<td>HBA1_2</td>
<td>CASHT2_Os</td>
<td>1A</td>
<td>CASHT2_HBA1_2_1A</td>
</tr>
</tbody>
</table>

Use this process to create each host group. Use Table 5 for the host group names. Start with Host Group MBX1_Os.

To create each host group in Table 5, do the following.

1. Open Hitachi Storage Navigator Modular 2.
   (1) Open a web browser and type the following in the Address bar:
   http://127.0.0.1:23015/StorageNavigatorModular/Login
   (2) Log on using these user credentials.
   User ID: system
   Password: manager

2. Open the host group settings.
   (1) Click the **Array Name** link to 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**.
       Leave **Host Group No.** unchanged. Hitachi Storage Navigator Modular 2 automatically uses the next number.
   (2) In **Name**, type the host group name using Table 5.
       This name identifies the connected hosts.
   (3) Select the ports for the host group using Table 5.
       - For example, for Host Group MBX1_OS, use Port **0A** and Port **1A**.
   (4) Select the **World Wide Names** to add to the host group, 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 and the added WWNs display in the **Selected WWNs** column.

4. Add volumes to the host group.
   (1) Click the **Volumes** tab.
   (2) Select all the volumes to be added.
   (3) Click **Add**.

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

5. Set the operating system.
   (1) Click the **Options** tab.
   (2) From the **Platform** menu, click **Windows**.
   (3) Click **OK**.
Configure Storage Area Network (SAN)

Configure the storage area network (SAN) after configuring Hitachi Compute Blade 2000 and Hitachi Unified Storage 130.

Zone SAN Switches

Recommended practice is to configure each port on a dual-port HBA to use a different switch for redundancy. However, the guidelines for your organization need to follow for zoning might vary. Check with your IT department.

Use Table 5 on page 16 as a guideline to zone the SAN switches.

To zone the SAN switches, do the following.
1. Create aliases for ports.
2. Create zones.
3. Add members (aliases) to the zones.
4. Save the zones.
5. Enable the zones.

Create and Configure LPARs using Hitachi Virtualization Manager Navigator

This is how to create and configure LPARs using Hitachi Virtualization Manager Navigator.

Use these procedures to create and configure LPAR 1 and LPAR 2 on Blade 0 and on Blade 1.

Install Hitachi Virtualization Manager Navigator

Hitachi Virtualization Manager Navigator provides enhanced usability and manageability of logical partitions (LPAR) on Hitachi Compute Blade 2000. Use this to manage and monitor logical partitions within a graphical user interface instead of using a command line interface.

Install the following before installing Virtualization Manager Navigator:

- Microsoft .Net Framework 3.5
- Oracle Java 6u31 or later
- Microsoft Chart
- PuTTY Plink
- Remote console on the Hitachi Compute Blade 2000
- Hitachi Virtualization Manager Navigator firmware version 58-82 or later
To install Hitachi Virtualization Manager Navigator, do the following:

1. Download Hitachi Virtualization Manager Navigator from the Hitachi Data System portal, saving the compressed installation files on your desktop.

2. Extract the compressed installation files and open to the bin directory.

3. Right-click the Virtualization Manager Navigator file, and then click Run as Administrator.
   
The Virtualization Manager Navigator log on appears.

4. Log on using these user credentials.
   
   User ID: user00
   
   Password: pass00

5. Click Login.

**Add Hitachi Virtualization Manager Navigator**

To add Hitachi Virtualization Manager Navigator, do the following:

1. From Hitachi Virtualization Manager Navigator window, click the Profile tab and then click Add.
   
The Configuration Registration window opens.

2. Select the IP Range Specification check box.

3. Type the HVM IP addresses and then click Search.

4. To add the Virtualization Manager Navigator to the system configuration, click Add.

5. To register the selected items, click OK.

**Set Up the Management Module (SVP) and the BMC Server Information**

To set up the management module (SVP) and the BMC server information, do the following.

1. From the Hitachi Virtualization Manager Navigator menu, click the LPAR Configuration tab.

2. Click Related Console.
   
   This opens a window to set the SVP and BMC information.
3. Set the SVP information.
   (1) Click **Set SVP Info**.
   (2) Type the **SVP IP address**.
   (3) Log on using these user credentials.
      - User ID: administrator
      - Password: password
   (4) To save and close the window, click **OK**.

4. Set the BMC information.
   (1) Click **Set BMC Info**.
   (2) Type the **BMC IP address**.
   (3) Log on using these user credentials.
      - User ID: user01
      - Password: pass01
   (4) To save and close the window, click **OK**.

Create an LPAR
To create an LPAR, do the following:

1. From the Hitachi Virtualization Manager Navigator menu, click the **LPAR Configuration** tab
   The Hitachi Virtualization Manager Navigator details display.
2. Select the **HVM # 0** check box and then click **HVM Console**.
   This opens a window to configure the LPARs.
3. From the list, click **Logical Partition Configuration**.
4. Add the first LPAR.
   (1) Click **Add LPAR**.
   (2) Select the **LPAR # 1** check box and then click **OK**.
   (3) To confirm, click **OK** again.
5. Add the second LPAR.
   (1) Click **Add LPAR**.
   (2) Select the **LPAR # 2** check box and then click **OK**.
   (3) To confirm, click **OK** again.
Configure the LPARs

Configuration settings are made in text boxes that appear to be part of a spreadsheet. Unlike most text boxes, you must double-click the text box before you type the entry. Type your entry for each setting in the row for the LPAR under that setting.

To configure an LPAR processor and memory, do the following:

1. Configure LPAR #1.

   (1) Double-click the **Name** text box for LPAR 1 to make it available for renaming and then type **BS-MBX1** in the text box.

   (2) Double-click the **Proc** text box to make it available for changing and then type **6** in the text box.

   (3) Double-click the **Memory** text box to make it available for changing and then type **64000** in the text box.

   (4) Double-click **Auto Act** to make it available for changing and then type **1** in the text box.

2. Configure LPAR #2.

   (1) Double-click the **Name** text box for LPAR 2 text box to make it available for renaming and then type **BS-CASHT1** in the text box.

   (2) Double-click the **Proc** text box to make it available for changing and then type **6** in the text box.

   (3) Double-click the **Memory** text box to make it available for changing and then type **14080** in the text box.

   (4) Double-click the **Auto Act** text box to make it available for changing and then type **2** in the text box.

3. To commit the changes, click **Commit** and then click **OK** to confirm.

4. To save the changes, click **Save Config** and then click **OK** to confirm.

Figure 3 shows two LPARs configuration for blade 0 following configuration.

![Figure 3](image-url)
Configure the LPAR Virtual NICs
Configuration settings are made in text boxes that appear to be part of a spreadsheet. Unlike most text boxes, you must double-click the text box before you type the entry. Type your entry for each setting in the row for the LPAR under that setting.

To configure the virtual NICs on the LPARs, do the following:

1. From the **HVM Menu** list, click **VNIC Assignment**.

2. Configure LPAR 1.
   
   (1) Double-click the 0 text box to make it available for changing and type 1a in the text box.
   
   (2) Double-click the 1 text box to make it available for changing and type 1b in the text box.

3. Configure LPAR 2.
   
   (1) Double-click the 0 text box to make it available for changing and then type 1a in the text box.
   
   (2) Double-click the 1 text box to make it available for changing and then type 1b in the text box.

4. To commit the changes, click **Commit** and then click **OK** to confirm.

5. Click **Save Config** to save the changes and then click **OK** to confirm.

Figure 4 shows the LPAR configuration for virtual NICs.
Configure the LPAR Virtual Fibre Channel HBA

Configuration settings are made in text boxes that appear to be part of a spreadsheet. Unlike most text boxes, you must double-click the text box before you type the entry. Type your entry for each setting in the row for the LPAR under that setting.

To configure the virtual Fibre Channel HBA for the LPARs, do the following:

1. From the HVM Menu list, click **Shared FC Assignment**.

2. Configure LPAR 1.
   
   (1) Double-click the 0 text box to make it available for changing and type 1 in the text box.
   
   (2) Double-click the 1 text box to make it available for changing and type 1 in the text box.

3. Configure LPAR 2.
   
   (1) Double-click the 0 text box to make it available for changing and type 2 in the text box.
   
   (2) Double-click the 1 text box to make it available for changing and type 2 in the text box.

4. To commit the changes, click **Commit** and then click **OK** to confirm.

5. To save the changes, click **Save Config** and then click **OK** to confirm.

Figure 5 shows the shared Fibre Channel configuration for the LPARs.

![Figure 5](image-url)
Mount the Microsoft Windows 2008 R2 Installation Files
To mount the Microsoft Windows 2008 R2 installation files, do the following:

1. From the HVM Menu list, click Logical Partition Configuration.
2. Click Remote KVM.

   The Remote KVM window opens.
3. Click LPAR 1 and then click OK.
4. To confirm, click OK.
5. Log on to remote KVM.
   
   User ID: user01
   
   Password: pass01
6. To display the KVM console, press Alt+G.
7. Click Remote CD/DVD and open the directory with the Windows 2008 R2 installation file.

Figure 6 shows the remote KVM console and the administration option.

---

Configure SAN Boot Device
To configure the SAN boot device, do the following:

1. From the HVM Menu list, click Boot Setting.
2. In the Boot Setting area, click LPAR 1 from the list.
3. Update the boot order information.

   (1) Click Boot Order Update.

   (2) In the FC HBA Setting pane, double-click the boot function text box for Port 0 to make it available for changing, and then type Enable.

   (3) In the Boot Device List Setting pane, double-click the following text boxes in Row 1 to make them available for changing, and then type the information for each:

      - Storage port WWPN information
      - The LU# that was previously zoned

   (4) In the Excluded Boot Order pane, add LU 2 and CD/DVD-KVM to the boot order.
(5) In the **Boot Order** pane, make these changes:

- Move the CD/DVD-KVM to boot priority 1.
- Move LU 2 to boot priority 2.

4. To commit the changes, click **Commit** and then click **OK** to confirm.

5. To save the changes, click **Save Config** and then click **OK** to confirm.

Figure 7 shows the SAN boot configuration for LPAR 1.

---

**Figure 7**

**Activate an LPAR**

To activate an LPAR, do the following:

1. From the **HVM Menu** list, click **Logical Partition Configuration**.

2. Activate LPAR 1.

   - Click **Active LPAR**, click **OK**, and then click **OK** to confirm.

3. Activate LPAR 2.

   - Click **Active LPAR**, click **OK**, and then click **OK** to confirm.

Within a few minutes, Hitachi Virtualization Manager Navigator powers on both LPARs.
Install Software

Follow these processes to install software for this solution.

Install Microsoft Windows 2008 R2

This assumes the Windows ISO is still mounted and the KVM console is still active from the previous steps. Start with Blade 0 of LPAR 1. The installation starts automatically as each LPAR activates.

Follow these procedures to install Windows on all the LPARs.

To install Microsoft Windows 2008 R2, do the following:

1. After the Windows installation begins, click **Next** to continue.
2. Click **Install now** to start the installation.
3. Click **Windows Server 2008 R2 Enterprise (Full Installation)** and then click **Next** to continue.
4. Select the box **I accept the license terms** and then click **Next** to continue.
5. Click **Custom (advanced)**.
6. Click **Load Driver** to change from the Windows installation files to the Hitachi installation files (includes HBA driver) and then click **Browse**.
7. Open the **X55A2\WIN2008R2\FibreChannel\HFC_01\x64** folder and then click **OK**.
8. Click **Hitachi HBA driver** and then click **Next**.
9. Click **Refresh** and then click **Next** to continue.
10. Follow the wizard to complete the Windows installation.

For more information, see the Microsoft TechNet article “Installing Windows Server 2008 R2.”
Install Hitachi Dynamic Link Manager
Hitachi Dynamic Link Manager provides comprehensive multipathing, robust path failover, load balancing and integrated path management.

Start by installing Hitachi Dynamic Link Manager on MBX1 and then install it on MBX2.

To install Hitachi Dynamic Link Manager, do the following:
1. After extracting the installation files, click Index.html to open the web installation menu.
2. Click Install.
   A security warning message opens.
3. To begin the install process, click Run and then click Run again.
4. Follow the wizard to complete the installation.
5. Reboot the server for the changes to take effect.

Install Microsoft Exchange 2010 Enterprise Edition
Follow these procedures to install Microsoft Exchange 2010 Enterprise Edition on all LPARs. Start with Blade 0 on LPAR 1. LPAR 1 is used for the mailbox role and LPAR 2 is used for client access and hub transport roles.

To install Exchange 2010, do the following:
1. Join the server to a domain.
2. Log on to the domain using an administrator account.
3. Install Microsoft Filter Pack 2.0 and the IIS components related to Exchange.
4. Mount the Exchange installation files and click Setup to launch the install menu.
5. Click the Choose Exchange language option.
   The Exchange setup begins
6. Click Next to continue.
7. Click Custom Exchange Server Installation and then click the role for the server on that LPAR.
   - LPAR 1—Mailbox
   - LPAR 2—Client access and hub transport
8. Follow the wizard to complete the install and reboot the server.
9. After the reboot, download Exchange SP2 and update the installation.

For more information, see the Microsoft TechNet article, "Deploying Exchange 2010."
Configure Microsoft Exchange 2010

This guide documents a Microsoft Exchange 2010 two-node DAG deployment for 8,000 mailboxes with two database copies.

Create a Database Availability Group (DAG)
A database availability group (DAG) is a high availability feature in Microsoft Exchange 2010. DAG supports mailbox database replication and database and server switchovers and failovers.

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

To create a DAG for a mailbox server configuration, do the following.
1. On Exchange Management Console, from the Action menu, click New DAG
   The wizard automatically creates a witness server and witness directory to store the DAG information.
2. After creating the DAG, right-click the DAG and then click Properties.
3. On the IP Addresses tab, assign a static IP to the DAG.
4. On the General tab, configure an alternate witness server and witness directory for redundancy to the default local C directory.
5. Right-click the DAG, and click Manage DAG Membership.
6. Click Add and then select MBX1 and MBX2.
7. Click OK to confirm.

Table 6 shows the configuration for the active and passive Exchange databases and logs. Use this as a guide for the database copies layout.

Table 6. Exchange Databases and Logs Configuration

<table>
<thead>
<tr>
<th>Host</th>
<th>Database Name</th>
<th>Database Drive Letter</th>
<th>Log Name</th>
<th>Log Drive Letter</th>
</tr>
</thead>
<tbody>
<tr>
<td>MBX1</td>
<td>DB1 (active)</td>
<td>E</td>
<td>LOG1 (active)</td>
<td>K</td>
</tr>
<tr>
<td></td>
<td>DB2 (active)</td>
<td>F</td>
<td>LOG2 (active)</td>
<td>L</td>
</tr>
<tr>
<td></td>
<td>DB3 (active)</td>
<td>G</td>
<td>LOG3 (active)</td>
<td>M</td>
</tr>
<tr>
<td></td>
<td>DB4 (passive)</td>
<td>H</td>
<td>LOG4 (passive)</td>
<td>N</td>
</tr>
<tr>
<td></td>
<td>DB5 (passive)</td>
<td>I</td>
<td>LOG5 (passive)</td>
<td>O</td>
</tr>
<tr>
<td></td>
<td>DB6 (passive)</td>
<td>J</td>
<td>LOG6 (passive)</td>
<td>P</td>
</tr>
</tbody>
</table>
Configure Replication

The active databases must be mounted and in a healthy state to configure replication.

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 **MBX1, DB1** and then click **Add Mailbox Database Copy**.
   - The **Add Mailbox Database Copy** wizard opens.

4. Click **Browse** and then click **MBX2**.

5. Click **OK** to confirm.

6. Click **Add**.

   The replication process starts. The active DB1 on MBX1 replicates to MBX2. Once completed successfully, the Exchange Management Console shows a mounted DB1 (active) and a healthy DB1 (passive).

   Repeat these procedures for configuring the rest of the database copies. Use Table 6 as a guide for the database copies layout.

   Depending on your network bandwidth and a database size, replication can take from minutes to hours.

### Table 6. Exchange Databases and Logs Configuration (Continued)

<table>
<thead>
<tr>
<th>Host</th>
<th>Database Name</th>
<th>Database Drive Letter</th>
<th>Log Name</th>
<th>Log Drive Letter</th>
</tr>
</thead>
<tbody>
<tr>
<td>MBX2</td>
<td>DB1 (passive)</td>
<td>E</td>
<td>LOG1 (passive)</td>
<td>K</td>
</tr>
<tr>
<td></td>
<td>DB2 (passive)</td>
<td>F</td>
<td>LOG2 (passive)</td>
<td>L</td>
</tr>
<tr>
<td></td>
<td>DB3 (passive)</td>
<td>G</td>
<td>LOG3 (passive)</td>
<td>M</td>
</tr>
<tr>
<td></td>
<td>DB4 (active)</td>
<td>H</td>
<td>LOG4 (active)</td>
<td>N</td>
</tr>
<tr>
<td></td>
<td>DB5 (active)</td>
<td>I</td>
<td>LOG5 (active)</td>
<td>O</td>
</tr>
<tr>
<td></td>
<td>DB6 (active)</td>
<td>J</td>
<td>LOG6 (active)</td>
<td>P</td>
</tr>
</tbody>
</table>

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

Live and recorded product demonstrations are available for many Hitachi products. To schedule a live demonstration, contact a sales representative. To view a recorded demonstration, see the Hitachi Data Systems Corporate Resources website. Click the Product Demos tab for a list of available recorded demonstrations.

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