How to install Microsoft Hyper-V on HP ProLiant c-Class server blades

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Executive summary

Microsoft® Hyper-V is a hypervisor-based virtualization technology that is a key feature of Windows® Server 2008. Hyper-V serves to help customers consolidate server hardware, improve server utilization, increase server automation, and enhance system portability. Additionally, Hyper-V reduces hardware costs and power consumption. This document describes, step-by-step, how to manually install Hyper-V on HP ProLiant c-Class server blades. Detailed instructions on how to install Windows Server 2008 are not included in this document.

Target audience: Customers with Windows Server 2008 who need a quick and easy guide to install Hyper-V on ProLiant c-Class server blades.

System requirements

Hardware requirements

The test environment is based on HP ProLiant c-Class server blades, and includes:

- Test blades: BL460c, BL460c G5, BL465c G5, BL480c, BL680c G5, BL685c G5
- Recommended server configuration for best performance should be quad-core processors, 8 GB memory or greater and 70 GB free disk space
- HP BladeSystem c-Class c3000 or c7000 enclosures

Note

Microsoft Hyper-V installation is not limited to c-Class server blades. HP ProLiant servers with x64 Intel® Virtualization Technology (Intel VT) or AMD Virtualization™ (AMD-V™) hardware assisted virtualization also support Hyper-V.

Software requirements

Blades in the test environment have the following software installed:

- Microsoft Windows Server 2008 Enterprise or Datacenter Edition (x64)
- HP Firmware Maintenance CD version 8.30 or later
- HP SmartStart CD x64 version 8.15 or later
- HP ProLiant Support Pack (PSP) for Microsoft Windows Server 2008 x64 Edition version 8.15 or later
- Microsoft Hyper-V update for Windows Server 2008 x64 Edition (KB950050)

Download Windows Server 2008 Enterprise or Datacenter Edition (x64) for evaluation from:

HP Firmware Maintenance CD version 8.30 is available from:
http://h20000.www2.hp.com/bizsupport/TechSupport/SoftwareDescription.jsp?lang=en&cc=us&prodTypeId=3709945&prodSeriesId=1842750&prodNameId=3288156&swEnvOID=4024&swLang=8&mode=2&taskld=135&swItem=MTX-73c82be98b5f4eb3ac4b72c2e3
HP SmartStart CD x64 version 8.15 is available from:
http://h20000.www2.hp.com/bizsupport/TechSupport/SoftwareDescription.jsp?lang=en&cc=us&prodTypeId=18964&prodSeriesId=345557&prodNameId=344318&swEnvOID=4024&swLang=8&mode=2&taskId=135&swItem=MTX-3c1e1df643e7ae4a7a905039b5e0

HP ProLiant Support Pack (PSP) for Windows Server 2008 x64 Edition version 8.15 is available for downloading from:
http://h20000.www2.hp.com/bizsupport/TechSupport/SoftwareDescription.jsp?lang=en&cc=us&prodTypeId=3709945&prodSeriesId=1842750&prodNameId=3288156&swEnvOID=4024&swLang=8&mode=2&taskId=135&swItem=MTX-a60c44a46d344272bf17ff919c

Microsoft Hyper-V Update for Windows Server 2008 x64 Edition (KB950050) is available from:

Hyper-V installation process overview

• Step 1: Update server blade firmware
• Step 2: Configure ProLiant RAID controller
• Step 3: Install and configure Windows Server 2008 and update Windows device drivers
• Step 4: Run Windows Update to install Hyper-V Update
• Step 5: Configure server blade system ROM BIOS to support Hyper-V
• Step 6: Install Hyper-V server role
• Step 7: Troubleshooting tips

Note
This document shows details for Steps 5, 6 and 7.

Step 1: Update server blade firmware

Before configuring ProLiant RAID controller and ROM BIOS settings, the best practice is always to update your server hardware firmware to the latest version. To update hardware firmware using the HP Firmware Maintenance CD:

• Insert blade server in the c-Class enclosure server bay.
• Connect the dongle with server blade and USB 2.0 DVD drive.
• Turn on server power.
• Insert HP Firmware Maintenance CD version 8.30 and boot server from this CD.
• Follow the CD installation prompts and update firmware.
• When the firmware update is complete, restart the server.
Step 2: Configure ProLiant RAID controller

During the system restart phase, press F8 and use HP Option ROM Configuration for Arrays to configure the RAID setting for the server. Refer to the HP c-Class BladeSystem server blade user manuals and other documents for more details.

Step 3: Install and configure Windows Server 2008 and update Windows device drivers

To install Windows Server 2008:
• Insert SmartStart CD into USB 2.0 DVD drive.
• Follow SmartStart instructions to configure the server blade.
• When SmartStart prompt to insert Windows Server 2008 DVD, insert Windows Server 2008 (x64) DVD into USB 2.0 DVD drive.
• Follow Windows installation instructions, finish the installation and restart the server.
• Configure Windows setting, network adapters and other Windows components.
• Update Windows with HP ProLiant Support Pack (PSP) and restart the server.

Step 4: Run Windows update to install Hyper-V update

Login to Windows Server 2008, apply Hyper-V Update for Windows Server 2008 x64 Edition (KB950050) by running Microsoft Windows update (see Figure 1). This Hyper-V update can also be downloaded and manually installed from http://www.microsoft.com/downloads/details.aspx?familyid=F3AB3D4B-63C8-4424-A738-BADED34D24ED&displaylang=en
Step 5: Configure server blade system ROM BIOS to support Hyper-V

Hyper-V requires server hardware assisted virtualization. It takes advantage of Intel VT or AMD-V hardware virtualization technology and improves software virtualization’s performance. You can find ProLiant servers that support Hyper-V from this link [http://h71028.www7.hp.com/enterprise/cache/458915-0-0-0-121.html](http://h71028.www7.hp.com/enterprise/cache/458915-0-0-0-121.html).

The figures below illustrate how to enable hardware assisted virtualization on ProLiant server blades. This example uses Intel Xeon® based server blades for the illustration. AMD Opteron™ based HP ProLiant server blades may be similarly configured.

During the server restart, if the server prompts `<F9 = Setup>`, press the F9 key and the server launches ROM-Based Setup Utility.
Figure 2. Restart system and press F9
Select **Advanced Options** from the utility menu and press the enter key.

**Figure 3.** Select advanced options
Select **Processor Options** from the menu and press the enter key.

**Figure 4.** Select processor options
Select **Intel(R) Virtualization Technology** and press the enter key.

**Figure 5.** Select Intel Virtualization Technology
Select **Enabled** and press the enter key to enable hardware assisted virtualization.

**Figure 6.** Select enabled

![Image of setup utility interface showing processor settings with AMD-V and Intel Virtualization Technology enabled.]

**Note**
When configuring AMD Opteron-based HP ProLiant servers select and enable **AMD-V (AMD Virtualization)**.
Select **No-Execute Memory Protection** and press the enter key.

**Figure 7.** Select no-execute memory protection
Select **Enabled** for the **No-Execute Memory Protection** and press the enter key. This selection enables hardware level memory protection, preventing malicious execution code such as computer viruses to insert and execute in the system no-execution memory blocks. This hardware-level Data Execution Protection (DEP) is required by the Hyper-V.

**Figure 8.** Select enabled

![Configuration screen showing enabled option for No-Execute Memory Protection]

**Note**
When configuring AMD Opteron-based HP ProLiant servers, select and enable **No-Execute Page-Protection**.

After enabling the virtualization technology and no-execute memory protection, press the Esc key to exit, then press the F10 key to save the configurations; the server will automatically restart.
Step 6: Install Hyper-V server role

Restart the server, then login to Windows Server 2008.

Launch the **Server Manager** from the **Start** menu

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**Figure 9.** Launch Server Manager
Click **Add Roles** to launch the Add Roles Wizard.

**Figure 10.** Server roles in Server Manager
Click **Next** button to continue.

**Figure 11.** Click next button
In the **Roles** list box, check **Hyper-V** then click the **Next >** button to install Hyper-V.

**Figure 12.** Install Hyper-V server role
Click the **Next** button to continue.

**Figure 13.** Hyper-V introduction
In the **Ethernet Cards** list box, check the appropriate network adapters to create Hyper-V external virtual networks. Or you can leave the checkbox unchecked. Click the **Next** button to continue.

**Figure 14. Create virtual networks**

![Create Virtual Networks](image)

**Note**

Network adapters can be configured later in the Hyper-V Manager.
Click the **Install** button to continue.

**Figure 15. Install Hyper-V**
Click the **Close** button and restart the server.

**Figure 16.** Restart server
After restarting the server, click the **Close** button to finish installing Hyper-V.

**Figure 17. Complete installation**

Once installed, Hyper-V can be launched from the Server Manager.
Step 7: Troubleshooting tip

The installation process may not complete successfully if there are server configuration errors in any of the previous steps. This section describes a common problem that may occur during the installation process and details the solution for this issue.

**Problem:** If Hyper-V cannot start the newly created virtual machine, it will not be able to start the virtual machine, named vm-test1 in Figure 18.

![Figure 18. Example of the error message](image)

**Solution:** Launch **Server Manager**, click **Diagnostics, Event Viewer, Applications and Services Logs, Microsoft, Windows, Hyper-V-Worker** and **Admin**. Examine the error events; if the hardware assisted virtualization or no-execute memory protection are disabled, go back and repeat Step 5 to ensure both hardware features are enabled.
Hyper-V is a hypervisor-based technology that is a key feature of Windows Server 2008. This document described how to install Hyper-V on HP ProLiant server blades and how to troubleshoot errors during the installation process.

Summary

Hyper-V is a hypervisor-based technology that is a key feature of Windows Server 2008. This document described how to install Hyper-V on HP ProLiant server blades and how to troubleshoot errors during the installation process.
For more information


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