



Implementing Microsoft Windows Server 2012 on HP ProLiant servers

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Created September 2012.

Abstract

This paper identifies the HP ProLiant servers and ProLiant server platform options that we support with Microsoft Windows Server 2012 and provides information that can assist you during your OS installation¹. The information applies to both Microsoft Windows Server 2012 Datacenter Edition and Microsoft Windows Server Standard Edition. Their differences in virtualization support make them appropriate for different environments:

- Windows Server 2012 Datacenter Edition provides unlimited virtual instances, making it ideal for highly virtualized private and hybrid cloud environments.
- Windows Server 2012 Standard Edition provides two virtual instances, making it ideal for low density or non-virtualized environments.

This paper addresses the following key topics:

- Recommended system configurations
- Supported HP ProLiant servers
- Supported ProLiant server platform options, including:
 - Software and drivers
 - Storage options
 - NICs
- Procedures for a new installation
- Known issues and workarounds

Windows Server 2012 overview

Windows Server 2012 delivers a dynamic, available, and cost-effective server platform for the private cloud. It offers a scalable, flexible, and multitenant-aware cloud infrastructure. This infrastructure lets you connect across locations securely so that you can respond to your business needs faster and more efficiently.

Windows Server 2012 is a 64-bit server operating system that delivers value in four key areas:

- **Virtualization:** A virtualized environment lets you scale and secure workloads, build clouds cost-effectively, and connect to cloud services securely.

Single Root Input/Output Virtualization (SR-IOV): SR-IOV lets you assign a network adapter that supports SR-IOV directly to a virtual machine. This improves the network throughput by minimizing the network latency and CPU overhead that occurs while processing network traffic. For more information, see the [Hyper-V Support for Scaling Up and Scaling Out Overview](#).

SR-IOV support: We will provide additional documentation after the Windows Server 2012 commercial release. When available, we will post the documentation on the HP Windows Server 2012 Home Page at www.hp.com/go/ws2012.

- **Manageability:** Manage multiple servers as easily as managing a single server.

Remote Desktop Services (RDS): Windows Server 2012 includes Remote Desktop Services (RDS). Through the Server Manager in Windows Server 2012, RDS lets you deploy roles and features to remote physical and virtual servers. It provides session virtualization and Virtual Desktop Infrastructure (VDI) technologies allowing you to access sessions and virtual desktop collections. New management features of Server Manager also simplify RDS deployment and management in multi-server configurations. For more information, see the [Remote Desktop Services Overview](#).

RDS support: We will support this feature at the time of the Windows Server 2012 commercial release.

¹ This integration note replaces the "Implementing Microsoft Windows Server 2012 Release Candidate on HP ProLiant servers" integration note.

- **Scalability:** Scalability enables you to use a consistent set of tools and frameworks to build and deploy applications and websites on premises, in the cloud, and in a hybrid environment.

Microsoft RemoteFX: Microsoft RemoteFX now adapts to your wide area network’s bandwidth. If you have low bandwidth or high-latency connections, this feature initiates the network auto-detect feature. This feature helps determine the bandwidth between the client and the server.

Microsoft RemoteFX support: We will support this feature and provide additional documentation after the Windows Server 2012 commercial release. When available, we will post the documentation on the HP Windows Server 2012 Home Page at www.hp.com/go/ws2012.

- **Accessibility:** Regardless of your location, you can access data and applications from the cloud on any device.

Storage Spaces: Storage Spaces uses industry standard storage technologies in both single-node and scalable multi-node deployments. It pools all the storage available and creates storage spaces out of the pool. This provides a cost effective, continuously available, reliable, and scalable solution. For more information, see the [Storage Spaces Overview](#).

Storage Spaces support: We will provide additional documentation after the Windows Server 2012 commercial release. When available, we will post the documentation on the HP Windows Server 2012 Home Page at www.hp.com/go/ws2012.

For detailed information or to download Windows Server 2012, see the Microsoft Windows Server 2012 home page at www.microsoft.com/en-us/server-cloud/windows-server/v8-default.aspx.

Recommended system configurations

Microsoft has established the recommended system configurations listed in this section for Windows Server 2012 installations. Carefully review this document for the recommended system configurations and possible issues. Do not use this document as the sole source of information. Additional server configuration information is available on the Microsoft website at <http://technet.microsoft.com/library/jj134246.aspx>.

We recommend configuring your server with either of the following processor families:

- Intel® Xeon® Processors with Intel 64 architecture
- Advanced Micro Devices, Inc. (AMD64) Opteron™ Series Processors

Table 1 Recommended system configuration as established by Microsoft

Component	Requirement
Processor	<ul style="list-style-type: none"> • Minimum: 1.4 GHz • Recommended: 2 GHz
RAM per processor (socket)	<ul style="list-style-type: none"> • Minimum: 512 MB • Maximum: 4 TB • Recommended: 4 GB
Monitor	SVGA resolution (800x600) or higher
Optical storage	DVD-ROM drive
Peripherals	<ul style="list-style-type: none"> • Keyboard • Microsoft mouse or compatible pointing device

Table 1 Recommended system configuration as established by Microsoft

Component	Requirement
Available disk space*	<ul style="list-style-type: none">• Minimum: 10 GB• Recommended: 40 GB

*Available disk space is the free disk space on the partition that will contain the system files. Additional space is required to copy the Windows Server 2012 DVD contents to the disk during installation. Computers with more than 16 GB of RAM require more disk space for paging and dump files.

Recommended ProLiant servers

Table 2 lists the ProLiant servers and minimum ROM version that we tested with Windows Server 2012. We recommend that you use the listed ProLiant servers as platforms for Windows Server 2012.

For a link to the ROM updates, see the HP Support Center at www.hp.com/go/support.

Table 2. Recommended ProLiant servers

Server platform	ROM family	ROM date (minimum)
ProLiant BL servers		
BL2x220c G7	I29	05/05/11
BL420c Gen8	I30	05/30/12
BL460c G7	I27	05/05/11
BL460c Gen8	I31	05/30/12
BL465c G7	A19	05/08/12
BL465c Gen8	A26	05/15/12
BL490c G7	I28	05/05/11
BL620c G7	I25	04/20/12
BL660c Gen8	I32	05/30/12
BL680c G7	I25	04/20/12
BL685c G7	A20	05/09/12
ProLiant DL servers		
DL120 G7	J01	02/01/12
DL160 Gen8	J03	05/30/12
DL165 G7	O37	05/25/10
DL360 G7	P68	05/05/11
DL360p Gen8	P71	05/30/12

Table 2. Recommended ProLiant servers

Server platform	ROM family	ROM date (minimum)
DL360e Gen8	P73	06/01/12
DL380 G7	P67	05/05/11
DL380p Gen8	P70	05/30/12
DL380e Gen8	P73	06/01/12
DL385 G7	A18	05/08/12
DL385p Gen8	A28	05/15/12
DL560 Gen8	P77	05/30/12
DL580 G7	P65	05/03/12
DL 585 G7	A16	05/08/12
DL980 G7	P66	05/18/12
ProLiant ML servers		
ML110 G7	J01	02/01/12
ML350p Gen8	P72	05/30/12
ML350e Gen8	J02	05/30/12
ProLiant Blade/SL line servers		
SL230s Gen8	P75	06/02/12
SL250s Gen8	P75	06/02/12
SL390s G7	P69	05/05/12
ProLiant MicroServer		
ProLiant MicroServer	O41	08/29/11

Supported ProLiant server platform options

Before you install Windows Server 2012 on a ProLiant server, review the following sections for information on the ProLiant server platform options for which drivers are available and known to work.

Software and drivers

To download the drivers that support Windows Server 2012, see our Windows Server 2012 Home Page at www.hp.com/go/ws2012.

Although our current publishing method for HP-provided drivers and related software is now the HP Service Pack for ProLiant (HP SPP), an HP SPP will not be available for use with Windows Server 2012 until after the commercial release of the OS. Until then, use the Windows Server 2012 Supplement Release for Service Pack for ProLiant.

Download the Windows Server 2012 Supplement Release for Service Pack for ProLiant from the Windows Server 2012 Home Page at www.hp.com/go/ws2012.

For details, see Installing the Windows Server 2012 Supplement for Service Pack for ProLiant section of this paper.

Storage options

We support the storage options listed in Table 3 for Windows Server 2012.

Table 3 Supported ProLiant storage controller options				
Option	Driver	Location		
		Web download	Windows media	Windows Server 2012 Supplement for Service Pack for ProLiant
Management drivers				
SAS/SATA Notification Service	CISSESRV.EXE	✓		✓
StorageWorks Fibre Channel Array Notification Driver for Windows 2000/Server 2003	CPQFCAC.SYS	✓		
Smart Array				
B110i	HPAHCISR.SYS	✓		✓
B120i B320i	HPSA2.SYS	✓		✓
P212 P220i P222	HPSAMD.SYS (basic)		✓	
P410 P410i P411 P420 P420i P421 P711m P712m P812 P822	HPCISS52.SYS (full featured)	✓		✓
Storage Works 1210m	HPCISS52.SYS (full featured)	✓		✓
Host Bus Adapters				
H220 H221 H222 H210i H220i	LSI_SAS2.SYS		✓	
SC08e SC11Xe	LSI_SAS2.SYS LSI_SCSI.SYS		✓	

Table 3 Supported ProLiant storage controller options

Option	Driver	Location		
		Web download	Windows media	Windows Server 2012 Supplement for Service Pack for ProLiant
Fibre Channel Host Bus Adapters				
QLogic				
81Q PCIe 82Q PCIe FC1142SR FC1242SR	QL2300.SYS	✓	✓	
Emulex				
81E PCIe 82E PCIe FC2142SR FC2242SR	ELXSTOR.SYS	✓	✓	
Brocade				
81B PCIe 82B PCIe 41B PCIe 42B PCI2	BFAD.SYS	✓	✓	
StorageWorks				
DAT Autoloader 72*6 DAT Autoloader 72*10	<ul style="list-style-type: none"> • HPDAT.SYS • HPDATCHG.SYS 			✓

NICs

We support the NICs listed in Table 4 for Windows Server 2012.

Table 4. Supported ProLiant NICs

NIC	Driver(s)	Location		
		Download	Windows Media	Windows Server 2012 Supplement for Service Pack for ProLiant
331i/T/FLR 332T 330i NC107i NC326i/m	B57ND60A.SYS		✓	
NC382i/T/m	<ul style="list-style-type: none"> • BXVBDA.SYS • BXND60a.SYS 		✓	

Table 4. Supported ProLiant NICs

NIC	Driver(s)	Location		
		Download	Windows Media	Windows Server 2012 Supplement for Service Pack for ProLiant
NC365T 361i/FLB/T	E1R63X64.SYS		✓	
NC360T/m NC364T/m	E1E6332E.SYS		✓	
NC112i/T NC362i	E1Q63X64.SYS		✓	
NC532i NC532m 530FLR-SFP+ 530FLB 530M	<ul style="list-style-type: none"> • EVBDA.SYS • BXND60A.SYS 		✓	
NC542m	<ul style="list-style-type: none"> • MLX4_BUS.SYS • MLX4ETH63.SYS 		✓	
NC550m/SFP NC551m/i NC553m/i CN1000E CN1100E	OCND63.SYS		✓	
NC522m/SFP NC524SFP NC375i/T NC523SFP CN1000Q	QLXGND64.SYS		✓	

Pre-installation tasks

To prepare for installation, ensure that you complete the following tasks:

- Make sure that your server and components are recommended for Windows Server 2012:
 - Select a server from the recommended system platforms listed in the “Supported ProLiant servers” section.
 - Make sure that the server has a DVD drive (either installed or attached to the server receiving the installation). Note that you need a license key to use iLO virtual media with HP ProLiant ML or DL servers.
 - Select additional storage options from the storage options listed in the “Storage options” section.
 - Select additional NICs from those listed in the “NICs” section.
- Make sure that your server is completely configured and up-to-date. If necessary, complete the following:
 - Update the ROM to the required version. Use the ROM update for your server. ROM updates are available from the HP Support Center at www.hp.com/go/support.
 - Use the HP ROM-Based Setup Utility (RBSU) to set the date and time and to configure the boot controller order.
 - Update iLO firmware to the latest version. To download the latest iLO firmware, see the HP Support Center at www.hp.com/go/support.

- Update your server using the Windows Server 2012 Supplement for Service Pack for ProLiant. For instructions, see the “Installing the Windows Server 2012 Supplement for Service Pack for ProLiant” section. Components for Windows Server 2012 will be available in the full Service Pack for ProLiant later this year.

Installing Windows Server 2012 on ProLiant servers

HP Intelligent Provisioning does not support Windows Server 2012 at this time. Intelligent Provisioning 1.30 and later will support Windows Server 2012. Until the availability of Intelligent Provisioning 1.30, manually install from the OS from the Microsoft Windows Server 2012 media. For information about the Intelligent Provisioning version, click the **System Information** button on the Intelligent Provisioning screen.

For additional information on Intelligent Provisioning, see the [Intelligent Provisioning Release Notes](#). To understand the OS support available for servers, see the [Intelligent Provisioning Server Support Guide](#). Both of these documents are available on the [Intelligent Provisioning Information Library](#).

IMPORTANT: Intelligent Provisioning is not supported with ProLiant G7 servers. ProLiant G7 servers require HP SmartStart, which does not support Windows Server 2012. To install Windows Server 2012, complete the following steps:

1. Insert the Windows Server 2012 media into the DVD drive and boot the server to the DVD.
2. Follow the steps on the installation screens to complete the OS installation.
3. If the installation does not find the drivers for the storage controller or NIC, download the driver as indicated in the “Where to get drivers” section.

Where to get drivers

To determine what media contains the drivers for your storage options or NICs, refer to the following sections of this paper.

- For storage option driver information, see the “Storage options” table under the “Supported ProLiant server platform options” section see the “Storage options” section.
- For NIC driver information, see the “NICs” table under the “Supported ProLiant server platform options” section.

If the installation does not find the driver for your storage option or NIC, you must install the driver from one of the following sources:

- **Windows Server 2012 Supplement for Service Pack for ProLiant:** The Windows Server 2012 Supplement for Service Pack for ProLiant includes drivers and software for all ProLiant servers, with the following exceptions:
 - ProLiant MicroServer
 - Certain ProLiant 100 series servers that were released prior to ProLiant 100 Gen8 series servers

You can download the Windows Server 2012 Supplement for Service Pack for ProLiant from <ftp://ftp.hp.com/pub/softlib2/software1/supportpack-windows/p1072349968/v77662>. For instructions on installing the Windows Server 2012 Supplement for Service Pack for ProLiant, see the “Installing the Windows Server 2012 Supplement for Service Pack for ProLiant” section of this paper.

- **HP ProLiant 100 Series Easy Set-up CD:** The HP ProLiant 100 Series Easy Set-up CD contains drivers for all ProLiant 100 series servers except for ProLiant Gen8 100 series servers and the ProLiant ML110 G7 and DL120 G7 servers, which are included in the Service Pack for ProLiant.

You can download the HP ProLiant 100 Series Easy Set-up CD from h18004.www1.hp.com/products/servers/management/remotemgmt/easy_setup_cd/index.html.

- **HP Business Support Center:** You must obtain drivers for the ProLiant MicroServer from the HP Business Support Center website. Neither the HP SPP nor the Windows Server 2012 Supplement for Service Pack for ProLiant contains drivers for the ProLiant MicroServer.

You can download the ProLiant MicroServer drivers from the HP Support Center at www.hp.com/go/support.

Installing the Windows Server 2012 Supplement for Service Pack for ProLiant

Download the Windows Server 2012 Supplement for Service Pack for ProLiant. To download the Windows Server 2012 Supplement, complete the following steps:

1. Go to the SPP download page at www.hp.com/go/spp, and then click the **Download** button.
2. Click the **Current Version** button.
3. Download the ISO image for the Windows Server 2012 Supplement for Service Pack for ProLiant.

After downloading the self-extracting executable file `ms.w2k12.supplement@1.00__supportpack.exe`, complete the following steps:

1. Go to the directory where you saved the executable file.
2. Double-click the executable (`MSsupplement.exe`) and extract the Supplement to a temporary location. All files must reside in the same directory as the `hpsum.exe` file.
3. Go to the directory where the extracted Supplement is located.
4. Double-click `hpsum.exe` to start the Supplement deployment.
5. The **Source Selection** screen appears. Verify that the directory path in the Directory field has the location of the smart components from the extracted Supplement, and then select **Start Inventory**. HP Smart Update Manager (HP SUM) performs an inventory of the installed hardware and software, and then checks for available updates.
6. After the inventory and discovery finish, the **Select Installation Hosts** screen appears. Select either the local host or one (or more) remote hosts for Supplement deployment.
7. After selecting the host(s), the **Select bundle filter** screen shows the Supplement bundle information. Select the bundle and the appropriate filter options. For remote deployments, additional screens allow you to update information on a per-host basis.
8. After selecting the bundle for all hosts being updated, open the **Select Items to be Installed** screen to complete the following tasks:
 - a. Select the components for installation.
 - b. If necessary, configure the components. The **Configure Now** link is not available when running Windows Server 2012 with the Server Core option. To configure components:
 - i. Access the system as a remote host using HP SUM, where HP SUM is running on a system with a supported Windows OS.
 - ii. Configure the components and resolve any failed dependencies before deploying the OS.
 - c. Review the revision history of the components.
9. After selecting the components, click **Install**. When the installation finishes, the **Installation Results** screen displays. If the Supplement installs successfully, the process is complete. If one or more components did not install successfully, complete the following steps:
 - a. Exit HP SUM.
 - b. Make the required update to the environment.
 - c. Restart the Supplement installation.

Known issues and workarounds

We want you to be aware of potential issues that you may encounter with ProLiant servers and Windows Server 2012. We are working to resolve all issues. Future editions of this paper will include any new issues that we find and are working to resolve.

Table 5 lists known issues with ProLiant servers and Windows Server 2012.

Issues	
The POST and Windows Control Panel display a different version number for the HP SAS/SATA controller.	
Description	The Control Panel displays the incorrect version number of the HP SAS/SATA driver; however, POST displays the correct version. This issue does not affect functionality.
Workaround/ Solution	To work around this issue, refer to the HP SAS/SATA controller version in POST.
You cannot change the Windows Server 2012 screen resolution.	
Description	After the installation of Windows Server 2012, you will not be able to change the screen resolution.
Workaround/ Solution	We are working with Microsoft to resolve this issue.
The HP Insight Foundation Agent Service does not start automatically.	
Description	After installing the Windows Server 2012 Supplement for Service Pack for ProLiant, the HP Insight Foundation Agent Service does not start automatically.
Workaround/ Solution	To work around this issue, manually start the HP Insight Foundation Agents Service.
After installing Windows Server 2012, the Event Viewer displays errors in the Windows Event Log showing that the license activation failed after providing the Product Key.	
Description	After installing Windows Server 2012, the Event Viewer displays the following errors in the Windows Event Log: <ul style="list-style-type: none">• The System information displays a message "Boot-start or system start drivers fail to load."• Application information displays a message "License Activation Failed." This issue occurs because the services start in an order that differs from what the OS expects.
Workaround/ Solution	We are working with Microsoft to resolve this issue.
Some components are not available in this Windows Server 2012 Supplement for Service Pack for ProLiant.	
Description	The following components are not available in this Windows Server 2012 Supplement for Service Pack for ProLiant: <ul style="list-style-type: none">• PCI-express Power Management Update• HP Storage Tape Drivers for Windows• HP ProLiant Agentless Management Service• H200 Series HBA Component
Workaround/ Solution	These components will be available in the next release of the HP Service Pack for ProLiant.

Issues

The .Net Framework 3.5 does not automatically install.

Description .NET Framework 3.5, which SQL Server requires, will not install automatically by selecting the appropriate box under **Features** in **Server Manager**.

Workaround/Solution To work around this issue, install .Net Framework 3.5 as follows:

1. Insert the Windows Server 2012 RC installation DVD into an optical drive. In these steps, we are referring to the optical drive as D:\.
2. Create a temporary directory on the hard drive, C:\temp.
3. Copy all files from D:\sources\sxs to C:\temp.
4. From the powershell, type the command:
dism /online /enable-feature /featurename:NetFX3 /all /source:C:\temp /limitaccess
5. The installation starts but then hangs and appears to stop at 99.9%. Press the **Enter** key at this point.
6. Reboot the server.

When exiting Suspend or Hibernation, a blue screen may display.

Description A blue screen sometimes displays after you exit Suspend or Hibernation.

Workaround/Solution We are working with Microsoft to resolve this issue.

The ProLiant Insight Diagnostics log displays the message "Ready for installation" after installing Insight Diagnostics from the Windows Server 2012 Supplement for Service Pack for ProLiant.

Description After installing Insight Diagnostics 9.2.1.4581 from the Windows Server 2012 Supplement for Service Pack for ProLiant, Insight Diagnostics log displays as version 9.2.5.4581. Also, the message "Ready for installation" displays in the Insight Diagnostics log.

Workaround/Solution This error is due to inaccurate data in the component xml. You can ignore this message and keep the version 9.2.1.4581. Version 9.2.5.4581 will be available in a future release of the HP Service Pack for ProLiant.

HP System Update Manager (HP SUM) may display the message "Qt : Untested Windows version 6.2 detected!"

Description When starting HP SUM in Windows Server 2012, the following warning may pop-up "Qt : Untested Windows version 6.2 detected!".

Workaround/Solution This issue occurs because HP SUM detects the version of Windows incorrectly. You can disregard the warning and continue with the installation. We are working to resolve this issue.

For more information

For additional information, refer to the resources listed below.

Resource description	Web address
HP Windows Server 2012 Home Page	www.hp.com/learn/ws2012
Microsoft Windows Server 2012 Home Page	www.microsoft.com/en-us/server-cloud/windows-server/v8-default.aspx
Service Pack for ProLiant Home Page	www.hp.com/go/spp

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TC1209935, Created September 2012

