**Technical white paper**

# Implementing Microsoft Windows Server 2012 R2 on HP ProLiant servers

## Table of contents

# Abstract

This integration note provides guidance for installing or upgrading to Microsoft® Windows® Server 2012 R2 on HP ProLiant servers. This paper also identifies the servers and options that we recommend when implementing Windows Server 2012 R2.

This integration note applies to the following Windows operating systems:

- Windows Server 2012 R2 Datacenter: provides unlimited virtual instances, making it ideal for highly virtualized private and hybrid cloud environments.
- Windows Server 2012 R2 Standard: provides two virtual instances, making it ideal for low density or non-virtualized environments.
- Windows Server 2012 R2 Essentials: ideal for up to 25 users and up to 50 devices, and includes single virtual instance, well suited for midsize businesses growing into their virtualized private and hybrid cloud environments. The Essentials edition can also be enabled as a role in Windows Server 2012 R2 Datacenter and Standard Editions.
- Windows Server 2012 R2 Foundation: ideal for up to 15 users in an environment not requiring virtualization.

The differences in virtualization capability and the number of users make each edition appropriate for a different environment. This paper addresses the following key topics:

- Recommended system configurations
- Recommended ProLiant servers
- Recommended ProLiant server platform options, including:

Software and drivers

Storage options

Network interface controllers (NICs)

Converged network adapters (CNAs)

- Procedures for a new installation or upgrading
- Known issues and workarounds
- Links to references and contact information

# Windows Server 2012 R2 overview

Windows Server 2012 R2 delivers a dynamic and cost-effective server platform for the private cloud. It offers a scalable, flexible, and multi-tenant-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 R2 is a 64-bit server operating system that delivers value in the following areas:

- Hyper-V: Windows Server 2012 R2 Hyper-V provides a virtualized environment that lets you scale and secure workloads, build clouds cost-effectively, and connect to cloud services securely. Hyper-V now supports Single Root I/O Virtualization (SR-IOV) for partitioning PCIe adapter bandwidth.
- Manageability and diagnostics: Windows Server 2012 R2 includes virtual IP address space management (IPAM) that shows both the physical and the virtual address space in a single view, including tenant IP subnets and address spaces as well as the provider IP address space. Quality of Service (QoS) management is included for service providers to run multi-application servers on a server running Hyper-V with predictable performance. Resource metering is included to measure and track a series of important data points.
- Virtual Desktop Infrastructure (VDI): Microsoft Remote Desktop Services (RDS) offers lower cost storage options such as SMB-based file shares and Direct Access Storage (DAS) in addition to storage area network (SAN). Storage de-duplication for VDI allows live virtual hard disks (VHDs) to enable faster read/write times of optimized files, increased VDI storage density, and hence reduced storage cost.

**Note**
Storage functions dependent on Storage Spaces technology are not currently available on HP ProLiant Smart Array controllers.

For detailed information or to download Windows Server 2012 R2, see the Microsoft Windows Server 2012 R2 home page at microsoft.com/en-us/server-cloud/windows-server/windows-server-2012-r2.aspx.

# Recommended system configurations

Microsoft has established the recommended system configurations listed in this section for Windows Server 2012 R2 installations. Carefully review this document for the recommended system configurations and possible issues. Additional server configuration information is available on the Microsoft website at microsoft.com/en-us/server-cloud/windows-server/windows-server-2012-r2.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 | • Minimum: 1.4 GHz<br>• Recommended: 2 GHz |
| RAM per processor (socket) | • Minimum: 512 MB<br>• Maximum: 4 TB<br>• Recommended: 4 GB |
| Monitor | • SVGA resolution (800x600) or higher |
| Optical storage | • DVD-ROM drive |
| Peripherals | • Keyboard<br>• Microsoft mouse or compatible pointing device |
| Available disk space* | • Minimum: 10 GB<br>• Recommended: 40 GB |

*Available storage 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 R2 DVD contents to the disk during installation. Computers with more than 16 GB of RAM require more disk space for paging and for creating memory dump files in case of system crash.

# Supported ProLiant servers

Table 2 lists ProLiant platforms and ROM versions we recommend for installing and running each edition of Windows Server 2012 R2.

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

**Table 2.** Supported ProLiant servers.

| Platform | ROM family | ROM date (earliest) | Windows Server 2012 R2 edition | | | | |
|---|---|---|---|---|---|---|---|
| | | | Foundation | Essentials | Standard | Datacenter | Hyper-V |
| ProLiant BL servers | | | | | | | |
| BL420c Gen8* | I30 | 06/30/13 | | | ✓ | ✓ | ✓ |
| BL460c G6 | I24 | 07/02/13 | | | ✓ | ✓ | ✓ |
| BL460c G7 | I27 | 07/02/13 | | | ✓ | ✓ | ✓ |
| BL460c Gen8* | I31 | 09/18/13 | | | ✓ | ✓ | ✓ |
| BL465c G7 | A19 | 12/11/12 | | | ✓ | ✓ | ✓ |
| BL465c Gen8* | A26 | 06/09/13 | | | ✓ | ✓ | ✓ |

**Table 2.** Supported ProLiant servers.

| Platform | ROM family | ROM date (earliest) | Windows Server 2012 R2 edition | | | | |
|---|---|---|---|---|---|---|---|
| | | | Foundation | Essentials | Standard | Datacenter | Hyper-V |
| BL490c G7 | I28 | 07/29/13 | | | ✓ | ✓ | ✓ |
| BL620c G7 | I25 | 07/17/13 | | | ✓ | ✓ | ✓ |
| BL660c Gen8* | I32 | 06/30/13 | | | ✓ | ✓ | ✓ |
| BL680c G7 | I25 | 07/17/13 | | | ✓ | ✓ | ✓ |
| BL685c G7 | A20 | 05/07/13 | | | ✓ | ✓ | ✓ |
| ProLiant DL servers | | | | | | | |
| DL160 Gen8 | J03 | 09/01/13 | ✓ | ✓ | ✓ | ✓ | ✓ |
| DL320e Gen8 | J05 | 08/24/13 | ✓ | ✓ | ✓ | ✓ | ✓ |
| DL320e Gen8 V2 | P80 | 08/28/13 | ✓ | ✓ | ✓ | ✓ | ✓ |
| DL360 G6 | P64 | 07/02/13 | | ✓ | ✓ | ✓ | ✓ |
| DL360 G7 | P68 | 07/02/13 | | ✓ | ✓ | ✓ | ✓ |
| DL360p Gen8* | P71 | 09/18/13 | | ✓ | ✓ | ✓ | ✓ |
| DL360e Gen8* | P73 | 07/01/13 | | ✓ | ✓ | ✓ | ✓ |
| DL360p Gen8 SE* | P71 | 07/01/13 | | ✓ | ✓ | ✓ | ✓ |
| DL380 G6 | P62 | 07/02/13 | | ✓ | ✓ | ✓ | ✓ |
| DL380 G7 | P67 | 07/02/13 | | ✓ | ✓ | ✓ | ✓ |
| DL380p Gen8* | P70 | 09/18/13 | | ✓ | ✓ | ✓ | ✓ |
| DL380e Gen8* | P73 | 07/01/13 | | ✓ | ✓ | ✓ | ✓ |
| DL385 G7 | A18 | 12/10/12 | | ✓ | ✓ | ✓ | ✓ |
| DL385p Gen8* | A28 | 06/09/13 | | ✓ | ✓ | ✓ | ✓ |
| DL560 Gen8* | P77 | 06/30/13 | | | ✓ | ✓ | ✓ |
| DL580 G7 | P65 | 10/01/13 | | | ✓ | ✓ | ✓ |
| DL585 G7 | A16 | 05/07/13 | | | ✓ | ✓ | ✓ |
| DL980 G7 | P66 | 07/29/13 | | | ✓ | ✓ | ✓ |
| ProLiant ML servers | | | | | | | |
| ML110e | P88 | 07/02/13 | ✓ | ✓ | ✓ | ✓ | ✓ |
| ML110 G7 | J01 | 07/01/13 | ✓ | ✓ | ✓ | ✓ | ✓ |
| ML310e Gen8 | J04 | 08/24/13 | ✓ | ✓ | ✓ | ✓ | ✓ |

**Table 2.** Supported ProLiant servers.

| Platform | ROM family | ROM date (earliest) | Windows Server 2012 R2 edition | | | | |
|---|---|---|---|---|---|---|---|
| | | | Foundation | Essentials | Standard | Datacenter | Hyper-V |
| ML310e Gen8 V2 | P78 | 09/01/13 | ✓ | ✓ | ✓ | ✓ | ✓ |
| ML350 G6 | D22 | 07/02/13 | | ✓ | ✓ | ✓ | ✓ |
| ML350p Gen8* | P72 | 09/18/13 | | ✓ | ✓ | ✓ | ✓ |
| ML350e Gen8* | J02 | 07/02/13 | | ✓ | ✓ | ✓ | ✓ |
| ML350e Gen8 V2* | J02 | 07/02/13 | | ✓ | ✓ | ✓ | ✓ |
| ProLiant SL line servers | | | | | | | |
| SL230s Gen8* | P75 | 09/18/13 | | | ✓ | ✓ | ✓ |
| SL250s Gen8* | P75 | 09/18/13 | | | ✓ | ✓ | ✓ |
| SL270s Gen8* | P75 | 09/18/13 | | | ✓ | ✓ | ✓ |
| SL335s G7 | A24 | 12/03/12 | | | ✓ | ✓ | ✓ |
| SL4540 Gen8 | P69 | 06/30/13 | | | ✓ | ✓ | ✓ |
| SL2500 Gen8 | P83 | 09/18/13 | | | ✓ | ✓ | ✓ |
| ProLiant MicroServers | | | | | | | |
| ProLiant MicroServer Gen7 | O41 | 11/15/13 | ✓ | ✓ | ✓ | ✓ | ✓ |
| ProLiant MicroServer Gen8 | J08 | 08/24/13 | ✓ | ✓ | ✓ | ✓ | ✓ |

*SR-IOV compliant

# Supported ProLiant server platform options

Before you install Windows Server 2012 R2 on a ProLiant server, review the following sections for information on the ProLiant server platform options for which HP provides Windows Server 2012 R2 support.

## Software and drivers

The HP storage option and NIC drivers are available on the HP Service Pack for ProLiant (SPP) at hp.com/go/spp.

## Storage options

We recommend the storage options listed in Table 3 for Windows Server 2012 R2.

**Table 3.** Recommended HP ProLiant storage controller options.

| Option | Driver | Location | | |
|---|---|---|---|---|
| | | **Web download** | **Windows media** | **HP Intelligent Provisioning HP Service Pack for ProLiant** |
| Management drivers | | | | |
| SAS/SATA Notification Service | CISSESRV.EXE | ✓ | | ✓ |
| Smart Array | | | | |
| B110i | HPAHCISR.SYS | ✓ | | ✓ |
| B120i<br>B320i | HPSA2.SYS* | ✓ | | ✓ |
| P410<br>P410i<br>P411<br>P420<br>P420i<br>P421<br>P700m<br>P711m<br>P712m<br>P721m<br>P812<br>P822 | HPCISSS2.SYS<br>(full featured) | ✓ | | ✓ |
| P430<br>P431<br>P731m | HPCISSs3.SYS | ✓ | | ✓ |
| StorageWorks 1210m | HPCISSS2.SYS<br>(full featured) | ✓ | | ✓ |
| Host bus adapters | | | | |
| H220<br>H221<br>H222<br>H210i<br>H220i | LSI_SAS2.SYS | ✓ | ✓ | ✓ |
| SC08e | LSI_SAS2.sys<br>LSI_SCSI.SYS | ✓ | ✓ | |
| Fibre Channel Host Bus Adapters | | | | |
| QLogic:<br>81Q PCIe<br>82Q PCIe<br>FC1142SR<br>FC1242SR<br>SN1000Q<br>QMH2462<br>QMH2562<br>QMH2572<br>QMH2672 | QL2300.SYS | ✓ | | ✓ |

**Table 3.** Recommended HP ProLiant storage controller options.

| Option | Driver | Location | | |
|---|---|---|---|---|
| | | Web download | Windows media | HP Intelligent Provisioning HP Service Pack for ProLiant |
| Emulex:<br>81E PCIe<br>82E PCIe<br>FC2142SR<br>FC2242SR<br>SN1000E<br>SN1100E<br>LPe1105<br>LPe1205<br>LPe1205a | ELXSTOR.SYS | ✓ | | ✓ |
| Brocade:<br>81B<br>82B<br>41B<br>42B<br>804 | BFAD.SYS** | ✓ | | |
| StorageWorks:<br>DAT Autoloader 72*6<br>DAT Autoloader 72*10 | HPDAT.SYS<br>HPDATCHG.SYS | | | ✓ |

*SR-IOV compliant

## NICs

We recommend the NICs listed in Table 4 for Windows Server 2012 R2.

**Table 4.** Recommended NICs.

| NIC | Driver(s) | Location | | |
|---|---|---|---|---|
| | | Web download | Windows media | HP Intelligent Provisioning HP Service Pack for ProLiant |
| 331i/T/FLR<br>332T<br>330i<br>NC107i<br>NC326i/m | B57ND60A.SYS | ✓ | ✓ | ✓ |
| NC382i/T/m | BXVBDA.SYS<br>BXND60A.SYS | ✓ | ✓ | ✓ |
| NC365T<br>361i/FLB/T<br>366i/FLR/M | E1R64X64.SYS | | ✓ | |
| NC360T/m<br>NC364T/m | E1E6332E.SYS | | ✓ | |
| NC112i/T<br>NC362i | E1Q63X64.SYS | | ✓ | |
| 560SFP+/FLR-SFP+/FLB/M* | IXN64X64.SYS | ✓ | ✓ | ✓ |

**Table 4.** Recommended NICs.

| NIC | Driver(s) | Location | | |
|---|---|---|---|---|
| | | Web download | Windows media | HP Intelligent Provisioning HP Service Pack for ProLiant |
| 561FLR-T/T | IXT64X64.SYS | ✓ | ✓ | ✓ |
| NC532i<br>NC532m<br>533FLR-T | EVBDA.SYS<br>BXND60A.SYS | ✓ | ✓ | ✓ |
| NC542m | MLX4_BUS.SYS<br>MLX4ETH63.SYS | | ✓ | |
| NC550m/SFP<br>NC551m/i<br>NC553m/i<br>CN1000E<br>CN1100E<br>554FLR-SFP+/FLB/M<br>552M | OCND64.SYS | ✓ | ✓ | ✓ |
| NC522m/SFP<br>NC524SFP<br>NC375i/T<br>NC523SFP<br>CN1000Q<br>526FLR-SFP+ | QLXGND64.SYS | ✓ | ✓ | ✓ |

*SR-IOV compliant

## CNAs

We recommend the CNAs listed in Table 5 for Windows Server 2012 R2.

To find management software for HP storage components, see the FC/FCoE HBA/CNA support pages at hp.com/us/en/drivers.html.

**Table 5.** Recommended CNAs.

| CNA | Driver(s) | Location | | |
|---|---|---|---|---|
| | | Web download | Windows media | HP Intelligent Provisioning HP Service Pack for ProLiant |
| Emulex:<br>NC551m/i<br>NC553m/i<br>CN1000E<br>CN1100E<br>554FLR-SFP+/FLB/M | ELXFCOE.SYS | ✓ | ✓ | ✓ |
| QLogic:<br>CN1000Q<br>526FLR-SFP+ | QLXFCOE.SYS | ✓ | ✓ | ✓ |

# Installing and upgrading to Windows Server 2012 R2

## Pre-installation or pre-upgrade tasks

To prepare for OS installation from Microsoft media, ensure that you complete the following tasks:

1. Make sure that your server and components are recommended for Windows Server 2012 R2:
   A. Select a server from the recommended system platforms listed in the "Supported ProLiant servers" section of this paper.
   B. Confirm the following:
   - That the server has a DVD drive (either installed or attached to the server receiving the installation).
   Or
   - That you have a license key if using iLO virtual media with HP ProLiant ML or DL servers.
   C. Select additional storage options and instructions for storage options listed in the "The HP storage option and NIC drivers are available on the HP SPP at hp.com/go/spp.
   D. Storage options" section of this paper. For storage component management software, see the FC/FCoE HBA/CNA support pages at hp.com/go/support.
   E. Select additional NICs from those listed in the "
   F. NICs" section.
2. Make sure that your server is completely configured and up-to-date. If necessary, complete the following:
   A. Update the ROM to the required version. Use the ROM update for your server. ROM updates are available from the HP Support Center at hp.com/go/support.
   B. Use the HP ROM Based Setup Utility (RBSU) to set the date and time and to configure the boot controller order. To access the RBSU, press **F9** from the main boot screen. For instructions on using the RBSU, see HP ROM-Based Setup Utility User Guide at hp.com/support/rbsu.
   C. Update iLO firmware to the latest version. To download the latest iLO firmware, see the HP Support Center at hp.com/go/support.
   D. Update the Intelligent Provisioning firmware to the latest version. Update the Intelligent Provisioning firmware by following the steps provided in the HP Intelligent Provisioning User Guide, located at hp.com/go/intelligentprovisioning.
   E. Update your server using the latest version of the SPP.

## Installing Windows Server 2012 R2

The following sections provide instructions for installing Windows Server 2012 R2 on ProLiant servers.

## ProLiant Gen8 servers

Use HP Intelligent Provisioning 1.60 (or later) to install Windows Server 2012 R2 onto a ProLiant Gen8 server. Although you can use the Windows Server 2012 R2 media to install the OS onto any supported ProLiant server, we recommend using Intelligent Provisioning to install Windows Server 2012 R2 onto ProLiant Gen8 servers. Using Intelligent Provisioning ensures that your server will have the latest HP firmware, drivers, and software.

Before beginning the OS installation, make sure that your server has the latest version of Intelligent Provisioning firmware. To update the Intelligent Provisioning firmware, follow the steps in the HP Intelligent Provisioning User Guide at hp.com/go/intelligentprovisioning.

For additional information about Intelligent Provisioning, see the Intelligent Provisioning Release Notes. To understand the OS support available for ProLiant servers, see the Intelligent Provisioning Server Support Guide. Both of these documents are also available in the Intelligent Provisioning Information Library.

To install the OS and the required software and firmware, use the following steps in conjunction with the Intelligent Provisioning User Guide. The Intelligent Provisioning User Guide provides screen shots and specific steps and guidelines for the installation.

1. Boot the server, and press **F10** during POST. If you want to check the HP IP version, click **System Information** on the Intelligent Provisioning screen.
2. Select **Configure and Install**.
3. Configure hardware settings as necessary for your server.
4. Select the OS you want to install to be Windows Server 2012 R2.
5. Choose the type of installation to be Custom, Manual, or Default installation.
6. Follow the on screen instructions to complete the installation.

## ProLiant G7 servers

The assisted installation method for ProLiant G7 servers was HP SmartStart, which does not provide Windows Server 2012 R2 as an option. To install Windows Server 2012 R2 on a server using the Windows 2012 media, complete the following steps:

1. Insert the Windows Server 2012 R2 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.

## Upgrading from Windows Server 2008 R2 or Windows Server 2012 to Windows Server 2012 R2

To upgrade from Windows Server 2008 R2 to Windows Server 2012 R2, complete the following steps:

1. Upgrade to SPP 2014.02.0 before upgrading the OS to Windows 2012 R2.
2. Insert the Windows Server 2012 R2 DVD into the optical drive, start the online upgrade by running Setup.exe, and then follow the steps on the installation screens to complete the OS upgrade.

## Installing Windows Server updates

Download the common update for both clients and server from Microsoft Download Center.

- KB2919442
- KB2919355
- KB2932046
- KB2937592

To install the Windows Server 2012 R2 updates, copy the files that you downloaded to the desktop of the server running Windows Server 2012 R2. Install the updates in the following order.

**Note**
A reboot is mandatory after installing each update file.

1. KB2919442
2. KB2919355
3. KB2932046
4. KB2937592

## 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 Table 4 in the "Storage options" section.
- For NIC driver information, see Table 5 in the "For NIC driver information, see the table under the "Supported ProLiant server platform options" section.

Install HP drivers from one of the following sources:

- Intelligent Provisioning: Intelligent Provisioning includes HP firmware, drivers, and software needed for all ProLiant Gen8 servers. If you are installing Windows Server 2012 R2 onto a ProLiant Gen8 server, Intelligent Provisioning installs all of the latest drivers during the OS installation. For the latest version of Intelligent Provisioning firmware, see hp.com/go/intelligentprovisioning.
- HP Service Pack for ProLiant (SPP): The HP SPP includes HP drivers and software (components) for all ProLiant servers, with the following exceptions:
  - ProLiant MicroServers
  - Certain ProLiant 100 series servers that were released prior to ProLiant 100 series Gen8 servers

  You can download the HP SPP from hp.com/go/spp/download. For instructions on installing the HP SPP, see the "Installing components from the HP SPP" 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. The HP SPP includes the drivers for the ProLiant Gen8 100 series servers and the ProLiant ML110 G7 and DL120 G7 servers.

  You can download the HP ProLiant 100 Series Easy Set-up CD from the HP Business Support Center website Support and Drivers page at hp.com/us/en/support-drivers.html.
- HP Business Support Center: You must obtain drivers for the ProLiant MicroServer from the HP Business Support Center website. The Service Pack for ProLiant does not include drivers for the ProLiant MicroServer.

  You can download the ProLiant MicroServer drivers from the HP Support Center at hp.com/go/support. You can download the HP ProLiant 100 Series Easy Set-up CD from the HP Business Support Center website Support and Drivers page at hp.com/us/en/support-drivers.html.

## Installing components from the HP SPP

For instructions on how to download and install HP SPP 2014.02.0 (or later) follow the steps in the Release Notes, which are available at hp.com/go/spp/documentation.

When you get to the **Source Selection** screen, continue with the following steps to deploy the updates:

1. 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.
2. 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.
3. 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.
4. 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 R2 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.

# Known issues and workarounds

We want you to be aware of potential issues that you may encounter with ProLiant servers and Windows Server 2012 R2. 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 6 lists known issues with ProLiant servers and Windows Server 2012 R2.

| Description of issue | Workaround / solution |
|---|---|
| When using the HP Insight Control Virtual Machine Manager (VMM) on a Windows Server 2012 R2 host with QLogic HBAs or CNAs, Fibre Channel (FC) and Fibre Channel over Ethernet (FCoE) disks appear as local disks. | To resolve this issue, install the updated version of the FC or FCoE driver:<br>• The 9.1.11.24 FC driver is available at hp.com/pub/softlib2/software1/sc-windows/p575255682/v92504<br>• The 9.1.11.12 FCoE driver is available at hp.com/pub/softlib2/software1/sc-windows/p1950179542/v92672<br>To install the driver:<br>1. Download the Smart Component to a directory on your hard drive and navigate to that directory. The downloaded file is a self-extracting executable with a filename based on the Smart Component Number.<br>2. From that drive and directory, execute the downloaded file.<br>3. Click the **Install** button to complete the installation. |

## Resources, contacts, or additional links

HP Windows Server 2012 R2 Home Page
hp.com/go/ws2012 R2

Microsoft Windows Server 2012 R2 Home Page
microsoft.com/en-us/server-cloud/windows-server/windows-server-2012-r2.aspx

Implementing Windows Server 2012 SR-IOV white paper
hp.com/bc/docs/support/SupportManual/c03514877/c03514877.pdf

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