



Hewlett Packard
Enterprise

VMware vSphere and HPE ProLiant servers

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Introduction

We provide technology that lets you virtualize servers, storage, and networking. VMware® vSphere is a key part of our total virtualization solution. Our integration with vSphere gives you tools to develop cloud infrastructures and manage related applications and services.

VMware vSphere is based on VMware ESXi, a hypervisor that enables virtual machines to run on server hardware.

We are continually working with VMware to develop products that align server and virtualization technologies, so we can offer a portfolio of VMware products that simplify virtualization. HPE OneView for VMware vCenter is an example of this collaborative effort. HPE OneView for VMware vCenter is a plug-in to vCenter that integrates with vSphere and lets you deploy and manage the HPE hardware that runs it. We also provide a variety of custom VMware vSphere components to help you manage and update your HPE ProLiant servers running VMware vSphere. To simplify deployment, we provide a custom image that contains all of our management elements and the required drivers to support our servers.

HPE OneView for VMware vCenter runs on any Windows® platform supported by HPE Systems Insight Manager (HPE SIM) 5.3.1 or greater.

This technology brief provides an overview of our integration with VMware vSphere for HPE ProLiant servers and infrastructure. It explains what we are doing to make HPE ProLiant servers and infrastructure easier to deploy and manage and how we enhance and enable new VMware vSphere capabilities.

HPE custom components and VMware integration

New integrated management features in VMware vSphere increase flexibility and give you greater control over your systems:

- HPE CIM Providers (also called HPE Insight Management WBEM Providers) monitor, manage, and update HPE ProLiant servers running VMware vSphere.
- HPE OneView for VMware vCenter lets you monitor and manage your ProLiant-based virtualization environment.
- HPE Online Depot repository provides the HPE components to use when deploying and updating your HPE ProLiant servers infrastructure.
- HPE OneView for VMware vCenter or HPE System Update Manager (HPE SUM) lets you initiate ProLiant system firmware updates while VMware vSphere is running.
- VMware vSphere Auto Deploy lets you perform stateless deployments of VMware vSphere with all HPE specific components and recommended drivers.
- New Command Line Interface (ESXCLI) extensions let you:
 - Control boot devices
 - Manage HPE Integrated Lights-Out (iLO) configuration and users
 - Perform server hardware configuration capture, set and duplication
 - Manage array controllers and physical and logical drives
 - Generate test indications and SNMP traps from the HPE CIM Providers Manage server hardware configuration

WBEM provider integration and HPE CIM Providers

Through our work with VMware, we were able to integrate HPE CIM Providers with vSphere. The HPE CIM Providers let you monitor, manage, and update HPE ProLiant servers running vSphere. You can access the information from the providers using HPE OneView for vCenter, HPE System Insight Manager (HPE SIM), or any client that supports WBEM. Starting with HPE SIM 7.0, embedded agents along with HPE Agentless Management (HPE AMS) provide the default management software option installed on HPE ProLiant Gen8 and newer servers from HPE Service Pack for ProLiant. This component collects information from the operating system and provides host-specific data to the HPE iLO firmware.

The HPE CIM Providers give you inventory and status information for servers, infrastructure, storage, and networks. HPE CIM Providers monitor the hardware and generate WBEM indications for any discovered issues. The WBEM indications identify the specific component and server reporting the error, along with detailed information about the issue and recommended actions.

HPE CIM Providers include support for the HPE SIM “follow-the-red” capability. “Follow-the-red” lets you follow status values to locate issues. For example, you can observe the overall status of the server, and then drill down from servers to subsystems to individual components (such as fans, power supplies, NICs, or disks).

The HPE CIM Providers support conversion of WBEM indications to HPE SNMP traps, and send traps in addition to indications. The HPE SNMP Management Information Bases (MIBs) define the HPE SNMP traps that HPE CIM Providers generate. The SNMP Data Migration Guide (hpe.com/info/vmware/proliant-docs) documents the new WBEM class or indication and its equivalent OID or trap in SNMP. The HPE CIM Providers for vSphere include all the same health and management capabilities as HPE providers on other ProLiant platforms.

You can use the HPE Custom Image (available in the HPE Online Depot) or the HPE ESXi Offline Bundle for VMware vSphere to obtain pre-integrated or installable HPE CIM Providers.

The HPE Online Depot is available at vibsdepot.hpe.com.

HPE ESXi Offline Bundle for VMware vSphere available at hpe.com/info/esxidownload.

HPE OneView for VMware vCenter

We are the first partner to integrate both physical and virtual management into VMware vCenter Server. As a vCenter Server plug-in, HPE OneView for VMware vCenter helps you manage multiple generations of HPE ProLiant servers. HPE OneView for VMware vCenter seamlessly integrates the manageability features of HPE ProLiant, BladeSystem, Virtual Connect and Storage with VMware solutions. Gain deep insight and control of the virtualized HPE Converged Infrastructure environment-reducing the time it takes to make important changes, increase capacity or manage planned and unplanned downtime.

Information on HPE OneView for VMware vCenter is available at: hpe.com/info/ovvcenter.

HPE Online Depot

The HPE Online Depot is our Web-based repository for bundles of HPE-specific components for VMware vSphere. The bundles provide important solutions for the management and configuration of HPE ProLiant servers. You can use these bundles with VMware vSphere Image Builder, VMware Update Manager (VUM), and VMware vSphere CLI (ESXCLI) to create custom images, Auto Deploy image profiles, or update existing systems. The HPE Online Depot is available at vibsdepot.hpe.com.

The HPE Online Depot also contains links to technical and support documentation, the HPE Custom Image, and the HPE Custom image profile depot.zip.

Firmware updates

For firmware updates, you can initiate firmware updates from HPE OneView for VMware vCenter or HPE SUM.

HPE SUM supports multiple hosts and helps you perform either scripted or interactive server firmware deployments. HPE SUM does not install an agent on the server and does not require special installation on the client workstation that performs the updates.

The firmware update process uses HPE SUM or HPE OneView with VMware vSphere 5 and newer and applies an SPP; this process is coordinated by putting the host in maintenance mode and is schedulable. You can also determine the status of component firmware using HPE OneView for VMware vCenter. The same tool you use to update ProLiant system firmware also lets you update VMware vSphere. Information about the SPP and HPE SUM is available at hpe.com/info/spp.

VMware vSphere Auto Deploy

VMware vSphere includes VMware vSphere Auto Deploy, which lets you provision and configure one or more physical hosts.

Using Auto Deploy to provision your HPE ProLiant servers requires the use of image profiles and host profiles. The image profile defines the VMware vSphere image that loads into system RAM each time the server boots and optionally configures a host with a host profile. We provide Auto Deploy-ready VMware Installation Bundles (VIBs) that you can use to add HPE-specific components to your image profile. These VIBs are available in the HPE Online Depot at vibsdepot.hpe.com.

Image profile. Image profiles define the set of VIBs to load at boot time, such as the base image, additional drivers, HPE components, and other third-party components. The HPE Custom image profile that includes everything included in the HPE Custom Image is available from hpe.com/info/esxidownload.

Using Auto Deploy, you can identify hosts to provision with a particular image profile. When you include the HPE-specific components and recommended drivers in the image profile, you end up with a fully-managed HPE server operating in stateless mode.

Host profile. Host profiles contain a host configuration for networking, storage, and security, plus other settings information. Host profiles help you manage your ProLiant host configurations by eliminating per-host, manual, or UI-based host configuration. Host profile policies help you maintain configuration consistency across the data center. You can create host profiles using a known, validated reference host configuration. You can also check a host or cluster against a host profile for any deviations.

You can install the tools required to use Auto Deploy on the same server as vCenter. The Linux®-based vCenter appliance also includes these tools.

For more information about using Auto Deploy, see the vSphere Installation and Setup guide at vmware.com/support/pubs.

HPE VMware ESXCLI utilities

We have ESXCLI and command line utilities to aid in configuration and management of HPE ProLiant servers. These utilities are available in the HPE ESXi Utilities Offline Bundle for VMware vSphere available at hpe.com/info/esxidownload.

Setting the boot order

The `hpbootcfg` boot configuration utility lets you set the boot order for the next system reboot while VMware vSphere is running.

iLO configuration

The `hponconfig` iLO configuration utility lets you gather and set iLO configuration information while VMware vSphere is running.

Array configuration

The `hpssacli` Smart Array configuration utility lets you display Smart Array controller, logical volume, and physical drive inventory, configuration information, and array diagnostic information. This utility also lets you configure logical volumes while VMware vSphere is running.

System hardware configuration

The `conrep` utility lets you gather and set system hardware configuration while VMware vSphere is running for activation at the next boot.

Test event generation

The `hptestevent` utility lets you generate test WBEM indications and SNMP traps from the HPE CIM Providers.

Additional configurations

We also integrated the following components into the vSphere 5 release:

- Non-Maskable Interrupt (NMI) event reporting is available in the Integrated Management Log (IML) to keep you aware of physical hardware events.
 - HPE Smart Array integration provides information about Smart Array to vCenter Server.

Why use HPE platforms to run VMware vSphere?

We strive to make HPE ProLiant servers the best options for running VMware vSphere. HPE ProLiant servers offer extensive integrated management capabilities for your VMware environment. We offer over 100 different certified and tested server platforms for use with VMware vSphere, more than any other vendor does. Below are just two examples of ProLiant Gen8 technology featuring HPE Proactive technology that, along with vSphere, allow you to virtualize large, complex workloads:

- The HPE ProLiant BL660c Gen8 Server is an x86 blade offering 4P performance in a single-wide, full-height form factor. The BL660c Gen8 server offer double the computing density compared to previous 4P blades, allow you to repurpose valuable enclosure space and further reduce data center sprawl.
- The HPE ProLiant DL560 Gen8 server is a density-optimized 4-socket rack-mount server designed to deliver performance and scalability. Featuring HPE ProActive Insight Architecture, the DL560 Gen8 server is ideal for environments that involve virtualization, database management, and business processing.

For additional certification and server support information, see the VMware from HPE ProLiant Server VMware Support Matrix at hpe.com/servers/vmwarecert.

What we've done to integrate components

We design servers to address customer performance requirements and application needs. Our Balanced System Architecture aligns memory, I/O, storage, and processing power to maximize performance and optimize subsystems. This is important because if your architecture is not balanced, bottlenecks can develop. To rebalance the subsystems, you have to monitor and adjust your memory bandwidth, I/O bandwidth, and CPU processing.

VMware vSphere support of balanced architecture lets us increase support of virtual and physical hosts. This maximizes the number of virtual machines a server can run, resulting in increased virtual machine capacity.

The integration of Virtual Connect within BladeSystem platforms also helps improve performance. If you use Virtual Connect, you can keep I/O traffic (virtual machine to virtual machine) inside the enclosure. This improves performance and reliability by using mostly cable-free internal chassis connections between hosts and management services.

Integrating HPE OneView with vCenter enables comprehensive deployment, provisioning, monitoring, remote control, and power optimization for both virtual and physical environments.

Conclusion

VMware products from HPE provide comprehensive hardware, software, and services solutions for your virtualized environment. We offer full support for VMware vSphere within the ProLiant infrastructure; while our custom components help you manage and update your HPE ProLiant servers running the ESXi hypervisor. Tight integration of VMware virtualization within our hardware and software platforms helps maintain a consistent and reliable ProLiant management environment.

Resources

HPE Online Depot
vibsdepot.hpe.com

HPE Enterprise Information Library HPE ProLiant with VMware vSphere
hpe.com/info/vmware/proliant-docs

Learn more at
hpe.com/info/vmware



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