Introduction to HP ProLiant Servers
HE643S

Course Overview
This 2-day course provides essential HP ProLiant training to system administrators who are responsible for ProLiant ML, DL, and BL servers. Students will be presented with an overview of HP products, tools, agents, and utilities that will help them to set up, deploy, monitor, and maintain their ProLiant servers. Practical hands-on lab exercises are presented on an HP ProLiant BL460c Gen8 and Gen 9 server. This course is part of the HP ProLiant Essentials Curriculum.

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Audience
- Administrators, engineers, and consultants who will configure and maintain HP ProLiant servers

Prerequisites
Students taking this course should have a basic understanding of the following operating systems:
- Microsoft Windows Server 2012 R2 Standard
- SUSE Linux Enterprise Server (SLES) 11
- VMWare ESXi 5.5

Course objectives
- Describe the HP ProLiant servers portfolio
- List key features of HP ProLiant Generation 8 (Gen8) and Generation 9 (Gen9) servers
- Describe HP integrated Lights-Out (iLO), including the Web Administration UI, iLO Integrated Remote Console (IRC), and iLO command line interface (CLI)
- Describe the Gen8 ProLiant boot process and how to configure a server by using Option ROM (ROM-Based Setup Utility [RBSU])
- Identify components that make up the HP iLO Management Engine
• Explain how to use HP Intelligent Provisioning to configure and deploy an operating system to a single HP ProLiant Gen8 server
• Explain how to use HP Smart Update Manager (SUM) and the HP Service Pack for ProLiant (SPP) to update firmware and software on a ProLiant server
• Identify HP tools and utilities that assist in the monitoring and maintenance of a ProLiant server
• Describe tools to assist in the configuration of iLO on a ProLiant server
• Describe iLO Federation
• Identify HP websites that are helpful for the setup, deployment, monitoring, maintenance, and support of a ProLiant server

Software

• HP Service Pack for ProLiant
• HP Intelligent Provisioning Recovery

Next Steps

• HP BladeSystem Administration (HE646S)
• HP OneView Administration (H4C04S)
• HP ConvergedSystem Administration (H7H03S)

Course outline

Module 0: Introduction to HP ProLiant Servers
• Welcome
• Meg Whitman
• Introduction to HP ProLiant servers
• Contacts
• Objectives
• Modules follow the basic steps for server configuration
• Module 1
• Module 2
• Module 3
• Module 4
• Module 5
• Module 6
• Module 7
• Introductions

Module 1: HP ProLiant Servers Overview
• Objectives
• HP ProLiant family
• Most complete x86 server portfolio in the industry
• HP ProLiant naming
• Conversion of Gen8 Names to Gen9
• The next-generation ProLiant DL portfolio Gen9
• Conveying the value of the p-Series and e-Series
• ProLiant ML line Gen8
• HP ProLiant ML family Gen9
• ProLiant DL line
• ProLiant BL server portfolio
• HP BladeSystem c-Class
• ProLiant BL line
• ProLiant BL servers
• HP Server Blades Gen9
• ProLiant Apollo and SL line
• HP ProLiant Apollo and SL family
• HP Moonshot System
• Servers tailored and tuned for specific workloads
• HP Moonshot 1500 Chassis
• The essential foundation for the New Style of IT
• HP ProLiant server features
• HP ProLiant G7 key technologies
• HP ProLiant Gen8 key technologies
• HP ProLiant Gen8 features
• HP ProLiant Gen9
• HP Insight end-to-end infrastructure management
• HP iLO Management Engine
• HP Insight Remote Support
• HP Flexible Network Adapters
• HP ProLiant Smart Storage
• HP Insight Control
• HP OneView
• Operating systems for HP ProLiant servers
• Determining operating system support
• Server matrices
• Product information
• HP Services Media Library
• HP QuickSpecs
• Learning checks
• Lab

Module 2: HP Integrated Lights-Out
• Objectives
• HP integrated Lights-Out management
• Six generations of HP integrated Lights-Out
• iLO generational comparison
• HP iLO 4 Management Engine
• HP iLO Management Engine
• iLO Management Engine NAND partitioning
Management Engine architecture
HP iLO 4 functionality
Additional iLO 4 functionality
HP iLO licensing
iLO licensing
iLO Advanced licensing
Accessing and using iLO through the Web Administration Interface
iLO 4 web interface browser support
iLO user interface
Power Management
iLO Federation
iLO Virtual Media
Scripting iLO Virtual Media (iLO 4 Web UI)
iLO Directory Services Integration
iLO Advanced: Directory Services Integration
iLO Integrated Remote Console
iLO Remote Administration
Control servers from any location through a remote shared console
IRC and Java (Linux) IRC
Accessing the IRC
IRC options (1 of 3)
IRC options (2 of 3)
IRC options (3 of 3)
Accessing the Java (Linux) IRC
iLO command line interface
Accessing the iLO CLI
Text-based Remote Console
Examples of managing iLO with the SMASH CLP scripting language
Product documentation
Learning checks
Lab

Module 3: Configuration using Option ROM and UEFI
Objectives
HP ProLiant Gen8 and Gen9 System ROM
HP ProLiant Gen8 and Gen9 ROM features
Standardized ProLiant Gen8 ROM
HP Advanced Error Detection Technology
Early Video Progress Indicators
ProLiant Early Video Progress Indicators
Fault detection messaging
Example of an early failure message
Mismatched processors installed
Failed DIMM
Active Health System log support
Error fault logging without a health driver
- ROM support for HP SmartMemory
- Digital signature
- HP ProLiant System ROM summary
- HP ProLiant Gen8 and Gen9 boot process
- Early video boot screen
- Main boot screen
- Overview of UEFI
- UEFI overview
- Benefits of UEFI compared to legacy BIOS
- Enhancements to the server platform
- HP ProLiant DL580 Gen8 Server UEFI boot process
- Selecting the UEFI Mode
- UEFI System Utilities
- Using the RBSU
- ROM-Based Setup Utility
- Using RBSU
- RBSU main menu
- RBSU configuration example
- Restoring default system settings
- RBSU configuration example
- Standard Boot Order (IPL)
- RBSU configuration example
- Setting the boot controller order
- Redundant System ROM configuration example
- HP ROM Configuration Utility
- Configuring iLO by means of the iLO RBSU
- iLO configuration overview
- Using ORCA
- ORCA overview
- Accessing ORCA
- Example: Creating a logical drive
- HP Scripting Tools and Examples
- UEFI Scripting
- HP PowerShell Scripting tools
- Learning checks
- Lab time

**Module 4: HP Intelligent Provisioning**
- Objectives
- Intelligent Provisioning overview
- What does Intelligent Provisioning do?
- Accessing Intelligent Provisioning
- Accessing Intelligent Provisioning for the first time
- System Software Update setting
- Intelligent Provisioning
- HP Intelligent Provisioning
- Perform Maintenance
- HP Smart Storage Administrator
- Firmware Update
- Deployment Settings
- Using deployment profiles
- Insight Diagnostics
- HP Intelligent Provisioning
- Configure and Install
- Step 1 — Hardware Settings
- Step 2 — OS Selection
- Step 3 — OS Information
- Step 4 — Review
- Intelligent Provisioning and partition size
- Installing drivers automatically
- Multi-server provisioning
- HP Insight Control server provisioning
- Current server provisioning offerings from HP
- HP Insight Control server provisioning features
- ICsp resources
- Updating Intelligent Provisioning and component firmware
- Firmware updates with Intelligent Provisioning
- Updating Intelligent Provisioning
- Boot to the recovery media and flash an Intelligent Provisioning image
- Resources for updating Intelligent Provisioning
- Learning checks
- Lab time

Module 5: HP system firmware and software maintenance
- Objectives
- HP Smart Update solution overview
- HP Smart Update Solution
- HP Smart Update technology
- HP Smart Update deployment mode definitions
- HP SPP overview
- HP Service Pack for ProLiant
- HP Service Pack for ProLiant access update
- HP SPP features
- Downloads
- SPP documentation
- HP Smart Update and Linux
- HP Software Delivery Repository—Linux
- HP Smart Update for VMware ESXi and vSphere 5.x
- HP Online Depot in the SDR—VMware
- HP SPP Supplement Release
- SPP Hot Fixes
- HP SPP support policy
Module 6: Continuous system monitoring

- Objectives
- Agentless management with the AMS
- What is Agentless Management?
- Agentless Management data collection components
- Agentless Management is operating system independent
- Agentless Management Service
- HP Agentless Management
- Managing the AMS in Windows environments
- Managing the AMS in Linux environments
- Managing the AMS in VMware environments
- Enabling Agentless Management
- iLO System Information
- Where to find the AMS
- HP SNMP agents and WBEM providers
- HP SNMP agents and WBEM providers overview
- HP SNMP agent architecture
- Key HP SNMP agents
- HP WBEM providers architecture
- Key WBEM providers
- HP Agentless Management
- Agents and agentless comparison
- HP AHS
- HP Active Health System
- AHS architecture
- Types of data storage
- AHS log
- Active Health System log download
- HP data collection policy for AHS
- HP SIM support
- HP SMH
- SMH overview
- Home tab
- SMH layout
- HP Insight Diagnostics
- HP Insight Diagnostics overview
- HP Insight Diagnostics Online overview
- Survey tab
- HP Insight Diagnostics Offline overview
- Test, Log, and Status tabs
- Configuring iLO
- iLO configuration utilities
- iLO Online Configuration Utility GUI for Windows
- iLO Online Configuration Utility CLI
- RIBCL/XML scripting
- HPQLOCFG utility for Windows
- LOCFG.PL Utility
- HP Scripting Tools for Windows PowerShell
- iLO Federation
- HP iLO Federation overview
- Configuring iLO Federation Management
- iLO Federation Management GUI
- Multi-System View health status
- Group Virtual Media
- Virtual Group Power control
- Automatic Group Power Capping
- iLO firmware and System ROM group update
- Group Configuration
- Configuring multicast options
- HP SIM
- HP SIM overview
- HP SIM components
- Using HP SIM
- Learning checks
- Lab time
Module 7: HP ProLiant ongoing system support

- Objectives
- HP warranty and support
- HP ProLiant servers
- HP ProLiant hardware support
- HP Service Pack for ProLiant
- Support options
- HP Care Pack Services
- Always-on support from HP
- Foundation Care
- Proactive Care
- HP Datacenter Care
- HP Lifecycle Event Services
- HP Collaborative Support for ProLiant Gen8 servers
- HP Proactive Care for ProLiant Gen8 servers
- HP Insight Remote Support
- HP Insight Remote Support overview
- HP Insight Remote Support options
- HP Insight Remote Support 7.0.8
- HP Insight Remote Support Advanced
- Insight Remote Support registration
- Remote support built into iLO
- Remote support with a direct connection
- HP Insight Online with Insight RS 7.x
- HP Support Center
- HP Support Center overview
- Downloading an SPP from the HP Support Center
- Finding advisories, bulletins, and notices
- Submitting and managing support cases
- HP Insight Online
- HP Insight Online overview
- HP Insight Online Dashboard
- Useful links
- Learning checks

Module 8: Course Close

- Course review
- HE643S: Introduction to HP ProLiant Servers
- Course objectives review
- Next steps
- Training from HP Education Services

Lab 0: Navigating the HPVL training environment

- Overview
- Navigating the HPVL environment
- Introduction
Exercise 1 — Accessing the HP Virtual Lab environment
Exercise 2 — Identifying your components in the HPVL environment
Exercise 3 — Sharing in the HPVL environment
Exercise 4 — Exiting the HPVL environment
Resources

Lab 1: Using HP ProLiant website resources
Objectives
Requirements
Introduction
Using the HP Services Media Library and online documents

Lab 2: Using HP Integrated Lights-Out 4
Objectives
Requirements
Introduction
Exercise 1 — Identifying key features of the HP iLO 4 Web Administration Interface
Exercise 2 — Using the Integrated Remote Console
Exercise 3 — Using iLO virtual media
Exercise 4 — Using the iLO command line interface
Resources

Lab 3a: Configuring ProLiant Gen8 servers using Option ROM
Objective
Requirements
Introduction
Exercise 1 — Using the ROM-Based Setup Utility
Resources

Lab 3b: Configuring ProLiant Gen9 UEFI
Objectives
Requirements
Introduction
Exercises:
- UEFI Shell
- SD and USB boot
- PXE boot
- HTTP/FTP URL boot
- Embedded UEFI Shell boot
- Boot from SAN (FC and FCoE)
- Boot from local HDD
- SW RAID Smart Array
- Linux Secure Boot
Resources
Lab 4: Setting up systems with HP Intelligent Provisioning
- Objectives
- Requirements
- Introduction
- Exercise 1 — Accessing and configuring HP Intelligent Provisioning
- Exercise 2 — Using the HP Smart Storage Administrator utility
- Exercise 3 — Reviewing the Intelligent Provisioning maintenance
- Menu options
- Resources

Lab 5a: Provisioning systems — Windows Server 2012 R2
- Objectives
- Requirements
- Introduction
- Exercise 1 — Installing the Windows Server 2012 R2 operating system using HP Intelligent Provisioning
- Exercise 2 — Managing the HP Intelligent Provisioning deployment settings
- Resources

Lab 5b: Provisioning systems — SUSE Linux Enterprise Server
- Objective
- Requirements
- Introduction
- Exercise 1 — Installing the SLES operating system using HP Intelligent Provisioning
- Resources

Lab 5c: Provisioning systems — VMware ESXi 5.5
- Objective
- Requirements
- Introduction
- Exercise 1 — Installing the VMware ESXi 5.5 hypervisor using HP Intelligent Provisioning
- Resources

Lab 6: Updating systems
- Objectives
- Requirements
- Introduction
- Exercise 1 — Exploring the HP SPP website
- Exercise 2 — Launching HP SUM
- Exercise 3 — Using HP SUM 6 for an Online Localhost Guided Update
- Exercise 4 — Exploring HP SUM 6 on your localhost
- Resources

Lab 7: Configuring continuous system monitoring
- Objectives
- Requirements
- Introduction
• Exercise 1 — Using the Agentless Management Service
• Exercise 2 — Exploring the SMH and Online HP Insight Diagnostics
• Resources

Lab 8: Configuring iLO
• Objectives
• Requirements
• Introduction
• Exercise 1 — Using the HPONCFG utility for Windows (GUI)
• Exercise 2 — Using the HPONCFG utility for Windows (CLI)
• Exercise 3 — Using the HPONCFG utility for Linux
• Exercise 4 — Using the HPQLOCFG utility from a remote computer
• Exercise 5 — Using the HP Scripting Tools for Windows Power Shell
• Exercise 6 — Using iLO Federation
• Resources

Learn more at
hp.com/us/training/americas