



**Hewlett Packard**  
Enterprise

# SPP

## Gen8 Post Production Release Notes

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<b>Released</b>	<b>Description</b>
October 2017	Initial Version
November 2017	Revised known issues

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## Overview

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When a server generation transitions to “Post-Production,” the firmware and drivers for that server generation are frozen, packaged together on a “Post-Production SPP,” and released. The “Post-Production SPP” is supported through the End of Support (EOS) for that server generation and all future firmware and driver updates are released as Hot Fixes. This eliminates the need for yearly updates. Simply monitor the Hot Fixes and update only when needed. Driver and firmware components that require updates for new minor OS versions are also released as Hot Fixes.

**Note:** Production SPPs will continue to be released 2-4 times per year.

### Download

[SPP Custom Download Web Service](http://www.hpe.com/servers/spp/custom) (www.hpe.com/servers/spp/custom)

The HPE recommended method for downloading a post-production or production SPP is through the SPP Custom Download web service.

In addition to providing an easy-to-use interface, SPP Custom Download facilitates reducing the size of the SPP before downloading, by filtering only the server models and OS/hypervisor versions needed, and by merging Hot Fixes and OS Supplements into one package (Full SPP ISO).

SPP Custom Download offers “Base” and “Full” SPP downloads:

- Base SPP ISO – always published and contains the drivers and firmware the day the SPP was released.
- Full SPP ISO – only published when one or more Hot Fixes or OS Supplements exist and contains the drivers and firmware plus updates. (Full SPP = Base SPP + Hot Fix + OS Supplements)

[SPP Download Page](http://www.hpe.com/servers/spp/download) (www.hpe.com/servers/spp/download)

An alternative method for downloading the SPP (Base SPP ISO) is through the SPP Download page.

- The “Hot Fixes and Advisory” section of the SPP Download page provides a list of all the Hot Fixes and advisories for the selected SPP.
- The “Documentation” section of the SPP Download page contains the SPP documentation.

## Summary of Changes

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### Important Notes

In order to reduce the frequency at which servers need to be updated, HPE has changed the packaging and delivery of the SPP. There are now two types of SPPs:

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- A single “**Production SPP**” that contains the firmware and drivers for the all of the production server generations, and
- Multiple server generation specific “**Post-Production SPPs**” that contain the firmware and drivers for a specific post-production server generation (e.g. Gen8 only Post-Production SPP that contains the firmware and drivers for all of Gen8 server models).

The SPP 2017.07.2 is a production SPP and contains components for the Gen9 and Gen10 server platforms. Components for the G7 and Gen8 server platforms are available in the Post-Production SPPs. For additional information, please refer to [Reducing Server Updates](#). Post-Production SPPs can be downloaded from [www.hpe.com/servers/SPP/download](http://www.hpe.com/servers/SPP/download).

## Release Summary

### Updated in Version Gen8.1

This release provides adds support for vSphere 6.0 U3.

Addressed VMware firmware installation issues with the following components:

- HPE Broadcom NX1 Online Firmware Upgrade Utility for VMware
- Online Firmware Upgrade Utility (ESXi 6.0) for HPE Mellanox VPI (Ethernet and Infiniband mode) devices on VMware ESXi
- Online Firmware Upgrade Utility (ESXi 6.0) for HPE Mellanox Ethernet only adapters  
No functional changes have been made to these firmware components; the updates are only needed for new installations.

Addressed VMware driver installation issues with the following component: HPE ProLiant Smart Array Controller Driver for VMware vSphere 6.0 (Driver Component) Version 2017.09.25 (B)

Included updated version of Fibre Channel (FC) and Fibre Channel over Ethernet (FCoE) driver to correct an occasional display of a purple diagnostic screen on VMware ESXi 5.5 and 6.0. This can happen when the driver receives a SCSI Check Condition response and perceives the SCSI Sense Data is either zero length or is invalid in the FCP\_RSP field.

- Emulex Fibre Channel driver component for VMware vSphere 5.5 Version 2016.10.03
- Emulex Fibre Channel driver component for VMware vSphere 6.0 Version 2016.10.03

### Updated in Version Gen8.0

This SPP is based on 2017.04.0 with the following updates:

- HPE ProLiant Smart Array Controller (32-bit) Driver for Red Hat Enterprise Linux 6 (32-bit) Version 3.4.20-100
- HPE ProLiant Smart Array Controller (64-bit) Driver for Red Hat Enterprise Linux 7 (64-bit) Version 3.4.20-113
- HPE Dynamic Smart Array B120i/B320i SATA RAID Controller Driver for Red Hat Enterprise Linux 7 (64-bit) Version 1.2.16-114
- HPE Dynamic Smart Array B120i/B320i SATA RAID Controller Driver for SUSE LINUX Enterprise Server 11 Version 1.2.16-100
- HPE ProLiant Agentless Management Service for SUSE LINUX Enterprise Server 11 (x86) Version 2.6.1

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- HPE ProLiant Agentless Management Service for SUSE LINUX Enterprise Server 11 (AMD64/EM64T) Version 2.6.
- HPE H2xx SAS/SATA Host Bus Adapter Driver for SUSE LINUX Enterprise Server 12 (64-bit) Version 15.10.06.00-6
- HPE System Health Application and Command Line Utilities Version 10.6.0 (a)
- HPE SNMP Agents Version 10.6.1
- HPE System Management Homepage Templates for Linux Version 10.6.1
- HP Lights-Out Online Configuration Utility for Linux (AMD64/EM64T) Version 5.1.0-0
- Integrated Smart Update Tools for Linux x64 Version 2.0.1.0
- HPE ProLiant Smart Array Controller Driver for VMware vSphere 5.5 Version 2017.09.25
- HPE ProLiant Smart Array Controller Driver for VMware vSphere 6.0 Version 2017.09.25
- Online ROM Flash Component for 32-bit Windows OS - Smart Array P230i, P430, P431, P731m, P830i, and P830 Version 4.10 (A)
- Online ROM Flash Component for Windows (x64) - Smart Array P230i, P430, P431, P731m, P830i, and P830 Version 4.10 (A)
- HPE BladeSystem c-Class Virtual Connect Firmware, Ethernet plus 8Gb 20-port and 8/16Gb 24-port FC Edition Component for Linux Version 4.60
- HP Smart Update Manager Version 7.6.2

## Driver Update Disks (DUD) for Linux

DUDs for the following controllers for all Red Hat and SUSE supported operating systems can be found in the 'DUD' directory at the root of the ISO.

- HP ProLiant Smart Array Controller
- HPE Dynamic Smart Array B120i/B320i SATA RAID Controller Driver
- HP H2xx SAS/SATA Host Bus Adapter

## Known Limitations

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The following is a select list of known issues and limitations relating to the smart components and SUM version delivered with this SPP. For a full list, please visit the [SPP Download page](#), select the "Hot Fixes & Advisories" tab, and the "Known Limitations" heading. This procedure can be followed for any currently listed SPP by selecting the preferred SPP version listed next to 'Current Production Versions' to open its version specific page.

### **Rewrite of FCoE/FC Driver Kit for HPE QLogic CNAs fails with "update returned an error" due to product name change.**

Initial install will work successfully.

**Offline update of HPE B140i in legacy BIOS mode is not supported.** Configure the Boot Mode to UEFI Mode if using HPE SW RAID.

**The iLO3 FW component has been added to this SPP to enable OneView.** It is not deployable to a Gen8 server.

The Gen8 post-production SPP contains 1 non-Gen8 smart component, the iLO3 Linux Smart Component. iLO3 is included in the Gen8 post-production as a workaround for OneView customers. OneView versions 3.0 and older will not allow an SPP to be uploaded into the OneView repository unless the SPP contains the Linux Smart Components for iLO3, iLO4, Onboard

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Administrator, and Virtual Connect. Therefore, the iLO3 Linux Smart Component is included on the Gen8 post-production SPP to allow OneView customers to upload the Gen8 post-production SPP into the OneView repository. Customers should refrain from using this iLO3 Smart Component as it is frozen and will not be updated if new iLO3 versions are released.

**HP H2xx SAS/SATA Host Bus Adapter Driver for SUSE LINUX Enterprise Server 12 SP2 is not included in this SPP.**

Due to a conflict with an in-distro driver and Smart Update Manager, the HP H2xx SAS/SATA Host Bus Adapter Driver for SUSE LINUX Enterprise Server 12 SP2 is not included in this SPP. It is available on HPE Support Center at

<https://www.hpe.com/global/swpublishing/MTXc502d2922c2c47f584880ba61e>. When using SUSE LINUX Enterprise Server 12 SP2, firmware must be flashed in offline mode.

**When verbose logging is enabled, SUM fails to deploy several components and will display the error message Return code – 1073741819**

SUM fails to deploy several components and will display the error message Return code – 1073741819. This is caused when verbose logging is enabled and these components do not support verbose logging. Verbose logging is not enabled by default. Affected components include but are not limited to:

- Online ROM Flash Component for Windows - HP Host Bus Adapters H220, H221, H222, H210i and H220i
- Online ROM Flash Component for Windows - HPE Smart Array B320i RAID controller
- Online ROM Flash Component for Windows (x64) - HP Gen8 Server Backplane Expander Firmware for HP Smart Array Controllers and HP HBA Controllers
- Online HP 6Gb SAS BL Switch Firmware Smart Component for Windows (x86/x64)

**Drivers and/or enablement kits must be installed prior to detecting and updating some hardware and firmware - SUM may need to be run twice for all firmware components to be presented for installation**

Drivers and/or enablement kits must be installed prior to detecting and updating some hardware and firmware. There are several scenarios when SUM may need to be run twice for all firmware components to be presented for installation. This is due to a requirement that drivers are needed in order for SUM to discover some hardware and thus the needed firmware. After the drivers are installed for the first time and the system rebooted, SUM needs to be run again for all of the firmware components to be presented for installation. The scenarios are:

- Network Adapters (NIC's), Host Bus Adapters (HBA's), and iLO require a driver or enablement kit to be installed in order to be recognized by SUM.
- When running SUM on Windows, if the iLO Channel Interface Driver is not installed, the iLO firmware will show a version of 'None' as the installed version and 'Ready for Installation' as the status on the Select Bundle or Select Component page. This applies to firmware for iLO4. When attempting to update the firmware, it may fail to update if it is already up to date.
- When using SUM on Linux, the iLO Channel Interface Driver needs to be loaded from the operating system for the iLO firmware to display for installation.
- Broadcom NICs are not discovered by SUM unless the appropriate driver is installed and all Ethernet ports are up. The Ethernet port can be brought up by using the following command:

```
# ifup ethx  
or  
# ifconfig ethx up
```

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To update the firmware for Broadcom NIC, use the following steps:

- Install the appropriate Windows or Linux driver found in the SPP. If updating a Linux server, the driver can also be retrieved from the SDR or the Linux distro.
- Enable all the Ethernet ports
- Run the Broadcom FW upgrade component

**Emulex, QLogic, and Qlogic BR-Series (Brocade) HBA Firmware is flashed in online mode Service Pack for using ProLiant using the following steps.** This section includes optional installation of the Smart SAN Enablement Kit.

1) Prep the operating system:

- If flashing Emulex CNAs or Fibre Channel HBAs on Linux, install the following RPMs from the operating system installation media, if not present on the system:
  - libsysfs or sysfsutils (depending on Linux OS) if Emulex CNAs are flashed, see CA c04366000 for additional information
  - libhbaapi or libhbaapi2 (depending on Linux OS, required for the Emulex Enablement Kit)
- For VMware use the HP Custom Image released at or shortly after the release of the SPP. To obtain the VMware Custom Image from HPE, visit the HPE web site to download drivers and other software to enable features such as SPP discovery and HBA firmware flashing. [Custom HPE ESXi images.](#)

2) Use the SPP to install necessary drivers for the HBAs, including any NIC drivers where applicable. At this time do not install the Enablement Kit or flash the HBA firmware, even if the selections are enabled by default in the SPP; deselect them. Until the system is rebooted with the drivers you have installed, do not attempt to enable Smart SAN, do not install the Fibre Channel Enablement Kit, and do not flash the HBA firmware. If on-site processes do not permit the installation of out of box drivers, review HPE SPOCK for inbox driver support information for the configuration.

3) If the drivers were updated, reboot the target system.

4) Use SPP to install the Fibre Channel Enablement Kits on Linux targets if using Fiber Channel (FC) cards (also recommended if using CNA cards in FCoE mode). No reboot is required after installing the Fibre Channel Enablement Kits.

- ⚠ **Important!** Do not install the QLogic BR-series (Brocade) Enablement Kit on the same system with another vendor's Enablement Kit. QLogic BR-series FC HBAs are not supported with other vendor HBAs unless the other vendor HBAs are used only as NICs.

5) If you have installed a Smart SAN enabled driver and wish to enable the Smart SAN feature, configure the Smart SAN Enablement Kit component in HP SPP. See the SPP documentation regarding configurable components. In the configuration of the component choose to enable Smart SAN. For Linux systems also elect to rebuild the ramdisk (initrd).

- **Note:** HPE recommends that you back up your Linux system's ramdisk before rebuilding it for any purpose (driver installation, Smart SAN Enablement, and so forth). The QLogic Smart SAN Enablement Kit does not create a copy of the ramdisk for you, so HPE recommends making a backup copy manually. The Emulex Smart SAN Enablement Kit creates a copy, the name of which can be seen if you click "View Log" in the SPP after deployment. 6) Perform an SPP inventory of the target system and optionally deploy the configured Smart SAN Enablement Kit and the firmware flash components.



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- Note: For legacy QLogic 8Gbps FC HBAs, see the release note “Legacy QLogic 8Gb Fibre Channel Adapters show an Active/Available Multi-boot Version of '00.00.00’”.

7) After the flash operation and the optional Smart SAN update complete, click “View Log” in the SPP to review the results of the operations and check for errors. Reboot the target system to enable the new HBA Firmware and Smart SAN.

#### **Required libraries for Linux Virtual Connect firmware:**

The following libraries are required for HPE BladeSystem c-Class Virtual Connect Firmware, Ethernet plus FC Edition Component to install on Linux 64-bit systems:

```
/lib/tls/libpthread.so.0  
/lib/libdl.so.2  
/usr/lib/libstdc++.so.6  
/lib/tls/libm.so.6  
/lib/libgcc_s.so.1  
/lib/tls/libc.so.6  
/lib/ld-linux.so.2
```

#### **Updated Firmware, Drivers, and Enablement Kits for QLogic BR-series (Brocade) adapters are not available on certain OS's**

Updated firmware, drivers, and Enablement Kits for QLogic BR-series (Brocade) adapters are not available for Windows 2008 32-bit, Windows 2008 64-bit, and 32-bit Linux systems. Components for BR-series adapters are available on the SPP for Windows 2008 R2 (and later) and 64-bit Linux systems. The BR-series Fibre Channel HBA Enablement Kit is not available for RHEL6.8. If you need to use the firmware flash component to flash your Brocade Fibre Channel HBAs on RHEL6.8, use Service Pack for ProLiant in offline mode.

## Supported Operating Systems

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The following operating systems are supported for system software and firmware support:

- Microsoft Windows Server 2012 R2 - All Editions
- Microsoft Windows Server 2012 - All Editions
- Microsoft Windows Server 2012 Essentials
- Microsoft Windows Server 2008 R2
- Microsoft Windows Server 2008 R2 Foundation Edition
- Microsoft Windows HPC Server 2008 R2
- Microsoft Windows Server 2008 x64 - All Editions
- Microsoft Windows Server 2008 x64 - Server Edition
- Microsoft Windows Server 2008 x64 - Server Core Edition
- Microsoft Windows Server 2008 W32 - All Editions
- Microsoft Windows Server 2008 W32 - Server Edition
- Microsoft Windows Server 2008 W32 - Server Core Edition
- Microsoft Windows Server 2008 Foundation Edition
- VMware vSphere 6.0 Update 3, Update 2, 6.0 Update 1, and 6.0
- VMware vSphere 5.5 Update 3, 5.5 Update 2, and 5.5 Update 1
- VMware vSphere 5.1 Update 3, 5.1 Update 2, and 5.1 Update 1
- Red Hat Enterprise Linux 7.4,7.3, 7.2, and 7.1
- Red Hat Enterprise Linux 6.9, 6.8, and 6.7 (x86-64)

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- Red Hat Enterprise Linux 6.9, 6.8, and 6.7 (x86)
- SUSE Linux Enterprise Server 12 SP3, SP2, SP1, and 12
- SUSE Linux Enterprise Server 11 SP4 and SP3 (AMD64/EM64T)
- SUSE Linux Enterprise Server 11 SP4 and SP3 (x86)

For more information on HPE Operating Systems and Virtualization Software Support for ProLiant Servers, please visit our OS Support Site at: <https://www.hpe.com/info/ossupport>

## SPP Support for Client Operating System on HPE ProLiant WS460c Graphics Server

SPP software is an HPE ProLiant technology designed for server platforms but is supported on certain client operating systems supported only on HPE WS460c Graphics Server Blade. Support for the SPP when used with Windows 7/8.1/10 on HPE ProLiant WS460c Graphics Server Blade is listed below.

- SPP Offline Mode (Firmware Update) is fully supported by HPE ProLiant WS460c Graphics Server Blade Gen8.
- SPP Online Mode (Drivers, Software and Firmware) is supported on HPE ProLiant WS460c Graphics Server Blade Gen8.

### Note:

The following components will be detected for install/update by SPP online mode. These utilities, which will function on Windows 7/8.1/10, are administration tools intended for Server operating systems and may not be appropriate for Client OS base images.

- HPE ProLiant Integrated Management Log Viewer check names
- HPE Lights-Out Online Configuration Utility
- HPE Smart Storage Administrator (HPE SSA) for Windows 64-bit
- HPE ProLiant Smart Array SAS/SATA Event Notification Service

The following components may be detected by SPP online mode for installation/update. These utilities have not been tested on Windows 7/8.1/10 on HPE ProLiant WS460c Graphics Server Blade and are not recommended. The stability of the system will not be affected if these utilities are inadvertently installed, however, de-selecting these components during the SPP component install process is recommended.

- HPE Insight Diagnostics Online Edition for Windows
- HPE Insight Management WBEM Providers

## Prerequisites

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### Component Prerequisites

Some components have prerequisites. Check the individual components for their prerequisites.

### SUM Prerequisites

The most current prerequisites for SUM can be found at the SUM documentation page <https://www.hpe.com/servers/hpsum/documentation>.

# Deployment Instructions

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## Installation

There are two methods for using the Service Pack for ProLiant to update your ProLiant servers:

- Online mode - Runs on a Windows or Linux hosted operating system
- Offline mode - Server is booted to the ISO
  - Automatic mode - Firmware components will be updated without interaction
  - Interactive mode - Follow the onscreen steps to update firmware components

To initiate deployment in Interactive mode:

Run the `launch_hpsum.bat` (windows) or `launch_hpsum.sh` (linux) script which is found in the root of the ISO

Automatic mode will by default run firmware update without any user interaction after sitting 30 seconds at the menu screen when an SPP ISO image is used to boot the server.

Booting the SPP from iLO virtual media is only supported in Automatic Firmware Update mode. Users attempting this in any other mode may experience hangs from connection timeouts, difficulties updating iLO firmware, and mouse syncing issues.

**Note:** If you install a software from the SPP and then install a Microsoft Windows operating system Service Pack or other operating system updates, HPE recommends reinstalling the software from the SPP.

## Installation Instructions

Follow these steps to install the components found on this SPP:

1. Download the SPP ISO file from the SPP download page  
<https://www.hpe.com/servers/spp/download>
2. Determine how to access the data on the ISO – bootable USB key, mounted ISO, etc. Use the appropriate tool to obtain the ISO in the desired format.
3. Determine how to initiate deployment to the targets using the SPP – Offline mode or Online mode:
  - a Online mode - Runs on a Windows® or Linux hosted operating system
  - b Offline mode - Server boots to the SPP ISO (Bootable ISO only)
    - i Automatic mode - Firmware components update without interaction
    - ii Interactive mode - Onscreen instructions guide the user to update firmware components
4. Initiate deployment.

To initiate deployment in **online mode**:

- From the SPP folder:
  - Windows: `launch_hpsum.bat`
  - Linux: `./launch_hpsum`
- For VMware hosts, select the host to update as a remote target. Online firmware update on a VMware host requires the HP Insight Management WBEM providers to be installed on the VMware host.
- To review the EULA, locate `README.html` which is found in the root of the ISO.

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For more information, see the SUM User Guide and HP ProLiant Best Practices Implementation Guide. <https://www.hpe.com/servers/spp/documentation>

To initiate deployment in **Offline mode**:

- Boot the server to the SPP using one of the supported methods including mounting the ISO or using a bootable USB key.
- Select either Automatic mode or Interactive mode.
  - If Automatic mode is selected, the firmware will be automatically updated on the server without any further interaction.
  - If Interactive mode is selected, follow the instructions on the screen.
    - Select the Firmware Update option on the screen to start SUM

## Additional Information for using the SPP on Linux Operating Systems

Please refer to the following links for Technical Exception matrices for minimum OS support:

- Red Hat Enterprise Linux - [Red Hat Enterprise Linux](#)
- SUSE Linux Enterprise Server - [SUSE Linux Enterprise Server](#)

The SPP contains Linux drivers, agent software and firmware in a single ISO image. Alternatively, [downloads.linux.hpe.com](http://downloads.linux.hpe.com) contains software repositories that may be used with software configuration managers (Yum, Zypper or Apt).

For drivers and agent software, subscribe your system to the "spp" repository:

<http://downloads.linux.hpe.com/SDR/project/spp-gen8>

For firmware, subscribe your system to the "fwpp" repository:

<http://downloads.linux.hpe.com/SDR/project/fwpp/>

**IMPORTANT NOTE:** As of July, 2017, HPE will end driver development for post-production systems (ie. G7, Gen8). If you installed an HPE-compiled driver on these systems, please remove it after upgrading to a newer in-distro kernel errata. The newer, HPE-certified driver will provide the most compatibility and reliability for your HPE ProLiant Server.

## Additional Information for using the SPP on VMware Operating Systems

The SPP can deploy drivers and firmware to a system running a supported VMware operating system in an online mode. Drivers are also available at [Software Delivery Repository - vibsdepot](#). For a consolidated recipe of firmware and driver support.

To determine support for these operating systems, see the HPE ProLiant Server VMware Support Matrix at: [HPE Servers Support and Certification Matrices](#)

## Additional Resources

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## Hot Fixes

The Hot Fixes and the Customer Advisories for this SPP can be found by selecting the “Hot Fixes & Advisories” tab on the SPP Download page, <https://www.hpe.com/servers/spp/download>. The Customer Advisory can be reviewed to determine if the Hot Fix applies and determine which component(s) need to be downloaded. Individual Hot Fixes can be downloaded by selecting:

1. The grey + expander to the left of the Hot Fix Advisory to expand the list of associated downloadable component(s).
2. The title of the desired component to reveal its detail and download page.

All applicable Hot Fixes for this SPP are available for download on the [SPP Custom Download](#) page through the “Full SPP” tile. Either all Hot Fixes or a customized subset thereof can be downloaded by:

1. Hovering over the “Full SPP” tile and selecting “View Details”:
2. For the “Full SPP”, which consists of the Base SPP and all Hot Fixes, select “Download”
3. For a customized download, select “clone” to create the desired download
  - a. In “Step 1”, ensure only the Hot Fix Supplement Bundle is selected
  - b. Fill in the requested information and select “Next: Select Filters”
  - c. Further customize by selecting filters and/or select “Build”
  - d. Follow the remaining prompts to create and download a customized set of Hot Fixes

## Using a PXE Server to Deploy Components from the full SPP ISO over a network

Follow these steps to use a PXE server to deploy components from the full SPP ISO over a network.

- ⚠ The files needed to configure the menu system for use with a PXE server can be found in the PXE directory on the full SPP ISO.

## Prerequisites

The following is required before proceeding with the configuration:

- The user must have a good working knowledge of PXE and TFTP.
- A network with a DHCP server on it.
- A TFTP server configured on the same network as the DHCP server.
- A network file server hosting the ISO images and can be accessed by a PXE booted system.
- Either PXELINUX (<https://syslinux.zytor.com/wiki/index.php/PXELINUX>) [For legacy boot mode] or GRUB2 (<https://www.gnu.org/software/grub/>) [For UEFI and legacy boot mode]

The use of a Linux TFTP server and the TFTP package <https://www.kernel.org/pub/software/network/tftp/> is assumed. Other TFTP servers should work similarly.

## Setup

Before proceeding with the configuration, ensure that the TFTP server as well as the PXELINUX or GRUB2 configuration are setup and configured properly. ELILO (<https://sourceforge.net/projects/elilo/files/>) may be used also. GRUB2 is recommended for UEFI boot mode, legacy boot mode, or mixed environments where both legacy and UEFI boot mode support are required.

To set up PXE boot for the SPP:

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1. Copy the SPP ISO image to the network file system, and note its location. NFS and Windows® file shares as well as HTTP connections are supported.
2. For this example, the NFS and path to the ISO image used is 192.168.0.99/path/to/spp/image/(SPPfilename).ISO. Test the network file system to ensure that it is accessible before proceeding.
3. The /pxe directory of the ISO image will need to be accessed, either by burning the ISO image, mounting the ISO image, or extracting it using a third-party tool.
4. Copy all the files from the /pxe directory of the ISO image to the TFTP server so that they are accessible by the TFTP software. See important instructions and information in the /pxe/README.txt file (for legacy boot mode PXELINUX configuration).

## Configuring GRUB2

Follow these steps to configure GRUB2:

1. Run the command `grub2-mknetdir --net-directory=DIR` where DIR is the root of the TFTP server.
2. Configure DHCP using the helpful output of the `grub2-mknetdir` command above (`arch = 00:07` for UEFI boot mode and `arch = 00:00` for legacy boot mode).
5. Edit the `grub.cfg` files on the TFTP server to set the appropriate paths to the kernel `vmlinuz` image file and the initial ramdisk `initrd.img` image file which were copied to the TFTP server from the SPP ISO /pxe directory.

## Configuring ELILO

Follow these steps to configure ELILO:

1. Add an EFI folder on the TFTP server which contains `bootx64.efi`, `elilomenu.msg`, and `elilo.conf`.
2. Add details in `elilo.conf` as it is given for configuring `pxelinux.cfg` (see below).
3. Change the DHCP configuration as given below:

```
if option arch = 00:07 {  
  filename "pxelinux/bootx64.efi";  
  } else {  
    filename  
    "pxelinux.0";  
  }  
}
```

## Configuring PXELINUX

Follow these steps to configure PXELINUX:

1. Using the `ISOlinux.cfg` file from the `/system/` directory of the ISO as a guide, copy the labeled targets to the PXELINUX configuration file. The entire file does not need to be included:

### **label sos**

```
MENU LABEL Automatic Firmware Update Version 2017.04.0 kernel vmlinuz  
append initrd=initrd.img media=cdrom root=/dev/ram0 splash quiet hp_fibre  
cdcache  
showopts TYPE=AUTOMATIC AUTOPOWEROFFONSUCCESS=no
```

### label vsos

```
MENU LABEL Interactive Firmware Update Version 2017.04.0 kernel vmlinuz  
append initrd=initrd.img media=cdrom root=/dev/ram0 splash quiet hp_fibre cdcache  
showopts TYPE=MANUAL AUTOPOWEROFFONSUCCESS=no label sos_poweroff
```

```
MENU HIDE Automatic & POWEROFF Firmware Update Version 2017.04.0 kernel  
vmlinuz append initrd=initrd.img media=cdrom root=/dev/ram0 splash quiet hp_fibre  
cdcache showopts TYPE=AUTOMATIC hp_poweroff
```



The paths to files on the TFTP server are vmlinuz and initrd.img. They must be modified to include any directories or naming conventions that are on the TFTP server.

2. Replace “media=cdrom” with “media=net” on the append line
3. Specify the ISO image path. For the PXE booted server to find the ISO Image, add the ISO Image path to the append line in the PXELINUX configuration file. Add the following arguments:

```
ISO1=nfs://192.168.0.99/path/to/spp/image/(SPPfilename).ISO  
ISO1mnt=/mnt/bootdevice
```

The ISO1 parameter helps the PXE booted SPP locate the ISO image. The ISO1mnt parameter tells the PXE booted SPP where the ISO1 image must be mounted.

The final configuration file must be similar to the following example:

### label sos

```
MENU LABEL Automatic Firmware Update Version 2017.04.0 kernel  
vmlinuz  
append initrd=initrd.img media=net root=/dev/ram0 splash quiet hp_fibre showopts  
TYPE=AUTOMATIC AUTOPOWEROFFONSUCCESS=no  
AUTOREBOOTONSUCCESS=yes  
ISO1=nfs://192.168.0.99:/path/to/spp/image/(SPPfilename).ISO  
ISO1mnt=/mnt/bootdevice
```

### label vsos

```
MENU LABEL Interactive Firmware Update Version 2017.04.0 kernel  
vmlinuz  
append initrd=initrd.img media=net root=/dev/ram0 splash quiet hp_fibre showopts  
TYPE=MANUAL AUTOPOWEROFFONSUCCESS=no ISO1=nfs://  
192.168.0.99:/path/to/spp/image/(SPPfilename).ISO  
ISO1mnt=/mnt/bootdevice
```

### label sos\_poweroff

```
MENU HIDE Automatic & POWEROFF Firmware Update Version 2017.04.0 kernel
vmlinuz

append initrd=initrd.img media=net root=/dev/ram0 splash quiet hp_fibre showopts
TYPE=AUTOMATIC hp_poweroff
ISO1=nfs://192.168.0.99:/path/to/spp/image/(SPPfilename).ISO
ISO1mnt=/mnt/bootdevice
```

Additional ISO images can be added by specifying the additional ISO# and ISO#mnt arguments, for example, ISO2=/path/to/ISO2.ISO ISO2mnt=/mnt/ISO2.

## Supported network file system protocols

The following network file system protocols are supported for use with PXE booting:

### **NFS:**

```
ISO1=nfs://192.168.0.99/path/to/spp/image/(SPPfilename).ISO
ISO1mnt=/mnt/bootdevice
```

### **NFS volumes are mounted with the following options:**

- `-o ro`
- `nolock`

### **The mount options can be explicitly set with the ISO#opts**

**parameter** `ISO1opts="rsize=32768,ro,nolock"` **Windows® operating**

### **systems:**

```
ISO1=cifs://192.168.0.99/share/path/to/spp/image/ (SPPfilename).ISO
ISO1mnt=/mnt/bootdevice
```

### **Windows® operating systems with login credentials:**

```
ISO1=cifs://user:password@192.168.0.99/share/path/to/spp/image/(SPPfilename).I
```

### **SO ISO1mnt=/mnt/bootdevice HTTP:**

```
ISO1=http://192.168.0.99/path/to/spp/image/(SPPfilename).ISO
ISO1mnt=/mnt/bootdevice
```

Once these steps have been completed, the SPP components are ready to be deployed using the PXE boot functionality.



**Common Abbreviations**

<b>Abbreviations</b>	<b>Name</b>
<b>AMS</b>	Agentless Management Service
<b>CNU</b>	Converged Network Utility
<b>HBA</b>	Host Bus Adapter
<b>iLO</b>	Integrated Lights-Out
<b>MSB</b>	Maintenance Supplement Bundle
<b>OA</b>	Onboard Administrator
<b>RHEL</b>	Red Hat Enterprise Linux
<b>SIM</b>	Systems Insight Manager
<b>SLES</b>	SUSE Linux Enterprise Server
<b>SPP</b>	Service Pack for ProLiant
<b>SUM</b>	Smart Update Manager