



Hewlett Packard
Enterprise

Service Pack for ProLiant 2017.04.0 Release Notes

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Overview

The Service Pack for ProLiant (SPP) is a systems software and firmware solution delivered as a bootable ISO. This solution uses HP Smart Update Manager (HP SUM) as the deployment tool and is tested on supported HPE servers, including ProLiant, Apollo, and Synergy.

Compatibility

HP SUM and the components delivered in this SPP are all tested together. Hewlett Packard Enterprise (HPE) supports each SPP version for 12 months from the release date. Customers may choose to update to the current SPP from a previous SPP version. This is acceptable as long as the earlier version is within current version's 12 month support period. This means that customers may directly update their SPP by skipping intermediate releases within the 12 month support period. See the table in the Compatibility section for details on the components contained in earlier SPPs that can migrate to this SPP.

Product	Version
Service Pack for ProLiant	2016.10.0

⚠ When migrating directly from an older version of the SPP to the latest, please review the [release notes](#) for the versions being skipped to be aware of changes that have occurred during those releases.

Support

The end of a 12 month support period can be determined by the version number of the release. For example, if SPP 2016.10.0 is currently installed, support for it would end the last day of October, 2017. This is based on version 2016=year, 10= month, 0=full release id number. Applying a Maintenance Supplement Bundle (MSB) will extend the support period of the SPP:

SPP Version	End of Support Period
2017.04.0	April 30, 2018
2016.10.0	October 31, 2017
2016.04.0	April 30, 2017

For more details on the support period, please refer to [Support Policy](#).

Download

There are several ways to download the SPP:

SPP Custom Download <https://www.hpe.com/servers/spp/custom>:

The SPP Custom Download is a free service for creating custom SPPs in 2 simple steps. Use the SPP Custom Download to:

- Reduce the size of the SPP by including only what's needed for your environment (e.g. SPP for ProLiant DL servers running Windows)
- Add the latest hot fixes and OS supplements to the SPP

Each SPP release in the SPP Custom Download also includes 1 or 2 HPE published SPPs that can be downloaded as is or customized.

- Base SPP – SPP bootable ISO containing the version of the Smart Components the day the SPP was released. The “Base SPP” is always published for each SPP release.
- Full SPP – SPP bootable ISO containing the Base SPP plus all Hot Fixes, OS Supplement Bundles, and Maintenance Supplement Bundles (MSBs) released to date. The “Full SPP” is published when the first hot fix, OS supplement, or MSB (for the SPP release in question) is released and is regenerated every time a new hot fix, OS supplement, or MSB is released. HPE recommends you download the “Full SPP” (if one is published) to ensure the SPP you're downloading or customizing has the latest updates.

SPP Download Page <https://www.hpe.com/server/spp/download>:

- Offers version information, release notes, Hot Fixes, Advisories, key documents, and an FAQ for SPP versions within the one year support window.
- Enables individual selection of the SPP, OS Supplements, and Maintenance Supplement Bundle for download.
- Displays a link to the SPP Custom Download service

HPESC Download Page <https://www.hpe.com/global/swpublishing/MTX-3c2bfc8c3b446a7a9451c4ab9>:

- Enables download of all published versions of the SPP.
- Provides description, list of supported operating systems, release notes, installation instructions and revision history.

⚠ Access to the SPP requires validation via the HPE Support Center. An active warranty or HPE support agreement is required to download the SPP.

Summary of Changes

Important Notes

In order to reduce the frequency at which servers need to be updated, HPE is changing the packaging and delivery of the SPP.

Going forward, two types of SPPs will be released:

- A single “**Production SPP**” that contains the firmware and drivers for the all of the production server generations
- 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).

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 EOS (end of support) for that server generation, and all future firmware and driver updates are released as hot fixes. This eliminates the need for yearly updates.

The 2017.04.0 SPP is the last production SPP to contain components for the G7 and Gen8 server platforms. For additional information please https://downloads.hpe.com/pub/softlib2/software1/doc/p35024129/v128214/SPP_Reducing_Server_Updates.pdf

Release Summary

This Service Pack for ProLiant (SPP) release supersedes the 2016.10.0 SPP.

Fixes

- Online ROM Flash Component for Linux (x64) - Smart Array H240ar, H240nr, H240, H241, H244br, P240nr, P244br, P246br, P440ar, P440, P441, P542D, P741m, P840, P840ar, and P841 version 5.04 (Smart Array Firmware)

Enhancements

This release adds support for:

- Red Hat Enterprise Linux 6.9
- Red Hat Enterprise Linux 7.3
- SUSE LINUX Enterprise Server 12 SP2

Added Firmware/Software

- Added Firmware
 - Online ROM Flash Component - HPE ProLiant EC200a (U26) Server/HPE ProLiant Thin Micro TM200 (U26) Server
- Added Linux Software
 - Red Hat Enterprise Linux 6.9 support for the following:
 - HP ProLiant Smart Array Controller Driver
 - HP Smart Array B110i SATA RAID Controller Driver
 - HPE Dynamic Smart Array B140i SATA RAID Controller Driver
 - HPE Dynamic Smart Array B120i/B320i SATA RAID Controller Driver
 - FCoE/FC Driver Kit for HPE QLogic CNAs, HBAs and mezzanine HBAs
 - Red Hat Enterprise Linux 7.3 support for the following:
 - HP ProLiant Smart Array Controller Driver
 - HPE Dynamic Smart Array B140i SATA RAID Controller Driver

- HPE Dynamic Smart Array B120i/B320i SATA RAID Controller Driver
- HPE H2xx SAS/SATA Host Bus Adapter Driver
- SUSE LINUX Enterprise Server 12 SP2 support for the following:
 - HP ProLiant Smart Array Controller Driver
 - HP Smart Array B110i SATA RAID Controller Driver
 - HPE Dynamic Smart Array B140i SATA RAID Controller Driver
 - HPE Dynamic Smart Array B120i/B320i SATA RAID Controller Driver
 - FCoE/FC Driver Kit for HPE QLogic CNAs, HBAs and mezzanine HBAs and CNAs

Note: For the new Linux Operating system versions, NIC support is provided with drivers in the Operating System distribution. HPE value-added drivers for these operating systems will be in the next SPP.

For a complete list of components on the ISO, see the [SPP Contents Report on the ISO](#) or the [SPP documentation page](#).

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 Dynamic Smart Array SATA RAID Controller
- HP Smart Array B110i SATA RAID Controller
- HP ProLiant Smart Array Controller
- HP Dynamic Smart Array B140i SATA RAID Controller Driver

Known Limitations

The following is a select list of known issues and limitations relating to the smart components and HP 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 'Currently Supported Versions' to open its version specific page.

General

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.

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/MTX-c502d2922c2c47f584880ba61e>. When using SUSE LINUX Enterprise Server 12 SP2, firmware must be flashed in offline mode.

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

HP 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)
- Online HP 3Gb SAS BL Switch Firmware Smart Component for Windows
- Online ROM Flash Component for Windows - Smart Array P700m

Drivers and/or enablement kits must be installed prior to detecting and updating some hardware and firmware - HP 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 HP 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 HP SUM to discover some hardware and thus the needed firmware. After the drivers are installed for the first time and the system rebooted, HP 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 HP SUM.
- When running HP 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 iLO 2, 3, and 4. When attempting to update the firmware, it may fail to update if it is already up to date.
- When using HP SUM on Linux, the iLO Channel Interface Driver needs to be loaded from the operating system for the iLO firmware to display for installation.
- The Power Management Controller, the Advanced Power Capping Microcontroller Firmware for HP ProLiant BL/DL/MLGen9 Servers, and the Smart Array H240ar, H240, H241, H244br,

P244br, P246br, P440ar, P440, P441, P741m, P840, and P841 firmware also require the iLO Channel Interface Driver for firmware installation.

- Broadcom NICs are not discovered by HP 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
```

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.

- **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.

Components

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. (CINDY S)

RHEL 7 user has to wait 5-7 minutes to view the system management details due to the required init services not being in a running state

Root Cause: In RHEL7 boot process, only the OS required init services are started before the user login screen/console is displayed. Then the remaining init services will be started. User will wait 5-7

minutes to view the system management details if logged into the system immediately before the init services are up and in a running state. With older RHEL (RHEL5, 6) boot processes, all the init services are started first before the login screen/console is displayed, so user would not face this issue.

Supported Operating Systems

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

- Microsoft Windows Server 2016
- 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
- Red Hat Enterprise Linux 7.3, 7.2, and 7.1
- Red Hat Enterprise Linux 6.9, 6.8, and 6.7 (x86-64)
- Red Hat Enterprise Linux 6.9, 6.8, and 6.7 (x86)
- SUSE Linux Enterprise Server 12 SP2, 12 SP1, and 12
- SUSE Linux Enterprise Server 11 SP4 and SP3 (AMD64/EM64T)
- SUSE Linux Enterprise Server 11 SP4 and SP3 (x86)
- VMware vSphere 6.0 Update 2, 6.0 Update 1, and 6.0
- VMware vSphere 5.5 Update 3, 5.5 Update 2, and 5.5 Update 1

Firmware-only Support:

- VMware ESXi 5.1, 5.0 & 4.1 (offline only)
- Novell Open Enterprise Server (Linux) (offline only)
- Novell SUSE Open Linux (offline only)
- Oracle Enterprise Linux (offline only)
- Debian Linux (all releases) (offline only)

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 and Synergy SY480 Compute Module

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 and Synergy SY480 compute module. Support for the SPP when used with Microsoft Windows 7/8.1/10 on HPE ProLiant WS460c Graphics Server Blade and Synergy SY480 compute module is listed below.

- SPP Offline Mode (Firmware Update) is fully supported by HPE ProLiant WS460c Graphics Server Blade Gen6/8/9, and Synergy SY480 compute blade Gen9.
- SPP Online Mode (Drivers, Software and Firmware) is supported on HPE ProLiant WS460c Graphics Server Blade Gen8/9 and Synergy SY480 compute module Gen9.

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
- HPE Lights-Out Online Configuration Utility
- HPE ProLiant Array Configuration Utility
- HPE Network Configuration Utility
- 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 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

Component Prerequisites

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

HP SUM Prerequisites

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

Deployment Instructions

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 2016.10.0.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.

For more information, see the HP 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 DVD 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 HP 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 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/>

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

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

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, please review the [VMware FW and Software Recipe](#) document.

To determine support for these operating systems, see the HPE ProLiant Server VMware Support Matrix at:

[HPE Servers Support and Certification Matrices](#)

Additional Resources

Hot Fixes

Hot Fixes and their associated Customer Advisories are released between SPP releases. Hot Fix components are tested against applicable SPPs.

The Hot Fixes and the Customer Advisories for the latest 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.

To update the current configuration with a Hot Fix:

1. Click the grey + expander to the left of the Hot Fix Advisory to expand the list of associated downloadable component(s).
2. Click the title of the desired component to download to a designated repository.
3. Deploy it using HP SUM.

SPP Supplements


A supplement is an add-on bundle that may contain firmware, drivers, and/or applications which is released between SPPs. If the Supplement’s contents include Linux components, the components will also be available on the [SDR](#). The components in the supplement are rolled into the next release of the SPP.

- SPP Supplements can be downloaded from the SPP Download page (<https://www.hpe.com/servers/spp/download>).
- The Release Notes can be found on the [SPP Download page](#) Documentation Tab.

OS Supplements: An OS Supplement is a bundle containing software and/or firmware components. It includes support for a new operating system update, but works with the components in the SPP. Supplements allow HPE to deliver support when it is needed so customers do not have to wait on a full SPP’s availability. Support for OS Supplements are included as part of the associated SPP’s support period.

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:

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  
AUTOREBOOTONSUCCESS=yes
```

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`
- `noexec`

The mount options can be explicitly set with the `iso#opts` parameter

```
iso1opts="rsize=32768,ro,noexec"
```

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).iso
```

```
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

Abbreviations	Name
AMS	Agentless Management Service
CNU	Converged Network Utility
HBA	Host Bus Adapter
iLO	Integrated Lights-Out

MSB	Maintenance Supplement Bundle
OA	Onboard Administrator
RHEL	Red Hat Enterprise Linux
SIM	Systems Insight Manager
SLES	SUSE Linux Enterprise Server
SPP	Service Pack for ProLiant
SUM	Smart Update Manager