Hewlett Packard Enterprise HPE Support Center

Unified Extensible Firmware Interface (UEFI) Deployment for ProLiant Gen10 Servers and Synergy - Configuring PXE Servers for UEFI-based Clients in a Linux Environment

Configuring PXE servers for UEFI-based clients in a linux environment

The most common UEFI PXE boot loaders are GRUB and GRUB2.

The following examples show how to modify the existing BIOS-based PXE configuration to include the option to boot booth BIOS and UEFI boot loaders. Additions in the examples are indicated in bold.

Modified ISC fdhcpd.con file

```
#/etc/dhcpd.conf
option domain-name "pxetest.org";
option domain-name-servers 192.168.100.10;
option routers 192.168.100.1;
ddns-update-style none;
subnet 192.168.100.0 netmask 255.255.255.0{
range 192.168.100.20 192.168.100.254;
default-lease-time 14400;
max-lease-time 172800;
next-server 192.168.100.10;

##filename "pxelinux.0"; #comment out for UEFI settings
##Added sections for UEFI
# In initial DHCP DISCOVER packet, PXE client sets option 93 to its arch.
# 0000 == IA x86 PC (BIOS boot)
# 0006 == x86 EFI boot
# 0007 == x64 EFI boot
option arch code 93 = unsigned integer 16; # RFC4578
class "pxe-clients" {
match if substring (option vendor-class-identifier, 0, 9) =
"PXEClient";
if option arch = 00:07 {
filename "EFI/bootx64.efi";
} else {
filename "pxelinux.0";
}
}
subnet 192.168.100.0 netmask 255.255.255.0{
range 192.168.100.20 192.168.100.254;
default-lease-time 14400;
max-lease-time 172800;
next-server 192.168.100.10;
}
```

Modified dnsmasq.conf file

```
#Configuration file for dnsmasq
#DHCP configuration
dhcp-option=option:domain-serch,foo.org
dhcp-boot=pxelinux.0,pxeserver,192.168.100.10

# UEFI IPv4 PXE
# currently using elilo boot file
dhcp-match=set:efi-x86_64,option:client-arch,7
dhcp-boot=tag:efi-x86_64,/EFI/bootx64.efi,pxeserver,192.168.100.10
dhcp-range=set:devnet,192.168.100.20,192.168.100.254,1h
dhcp-option=tag:devnet,121,0.0.0.0/0,192.168.100.1
```

Updated TFTP directory structure

```
/tftpboot
/tftpboot/pxelinux.0
/tftpboot/pxelinux.cfg/default
/tftpboot/EFI/
/tftpboot/EFI/bootx64.efi
/tftpboot/EFI/grub.cfg
/tftpboot/RHEL6.9
/tftpboot/RHEL7.4
/tftpboot/SLES11SP4
/tftpboot/SLES12SP3
/tftpboot/Ubuntu16.04.3
```

top

Configuring boot loaders

For UEFI-based systems, the common boot loaders are GRUB and GRUB2. Refer to the distributiondocumentation on how to obtain and configure the correct bootx64.efi file. GRUB2 has become the standardfor UEFI PXE configurations. GRUB2 is the only boot loader that supports Secure Boot.

GRUB2 is the only boot loader that currently supports Secure Boot.

NOTE: GRUB2 should not be confused with GRUB Legacy.

Sample grub2.conf file

```
insmod gettext
insmod iso9660
insmod ntfs
insmod normal
insmod chain
menuentry 'RHEL 7.4' --class gnu-linux --class gnu --class os {
echo 'Loading Kernel ...'
linuxefi /RHEL-7.4Server/vmlinuz repo=http://192.168.100.10/
RHEL-7.4Server/disc1
echo 'Loading initial Ramdisk ...'
initrdefi /RHEL-7.4Server/initrd.img
}
menuentry 'SLES 12 SP3 AHCI' --class gnu-linux --class gnu --class os {
echo 'Loading Kernel ...'
linuxefi /SLE12SP3Server/linux install=http://192.168.100.10/
SLE12SP3Server/disc1
echo 'Loading initial Ramdisk ...'
initrdefi /SLE12SP3Server/initrd
}
menuentry 'Xenial 16.04.3' --class gnu-linux --class gnu --class os {
echo 'Loading Kernel ...'
linuxefi /Ubuntu-16.04.3/Linux
echo 'Loading initial Ramdisk ...'
initrdefi /Ubuntu-16.04.3/initrd.gz
}
```

top