Integration of UEFI PXE support into the BIOS PXE ATLAS environment

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ATLAS TDAQ SysAdmins
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• UEFI (Unified Extensible Firmware Interface) is the replacement for the legacy BIOS (Basic Input/Output System).
• BIOS is not anymore available on the newest hardware and OS.
• UEFI also starts to become the standard for aarch64
  • Especially, for the usage of vanilla and RedHat Linux kernel with Xilinx SoC.
• PXE is managed by 2 components:
  • Puppet manages the general configuration
    • Networks
    • DHCP options
  • ConfDB takes care of creating the final DHCPd configuration by combining
    • Static files from Puppet
    • Dynamically generated configuration for all the nodes managed by a DHCP server (LFS) in our ConfDB database
  • Pxelinux binary

<table>
<thead>
<tr>
<th></th>
<th>Client node</th>
<th>DHCP Server</th>
<th>TFTP Server</th>
<th>NFS Server</th>
</tr>
</thead>
<tbody>
<tr>
<td>Send DHCP/PXE request</td>
<td></td>
<td>Send DHCP info, PXE Info</td>
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<tr>
<td>Request to the TFTP server for pxelinux</td>
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<td>Send the pxelinux binary and config</td>
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<tr>
<td>Start pxelinux Request for Linux kernel and Initrd</td>
<td>Send the kernel and Initrd</td>
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<td>Start the kernel and Initrd Request for rootfs</td>
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<td>Sent the rootfs</td>
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</table>
New System

- DHCP has options available which are provided by the client during the first request, in that case we will use the option 93 (Client System).
- Option 93 can be handled via an if statement by ISC DHCP server to give the good binary depending of the architecture of the client.
- Moving to GRUB as Pxelinux does not support UEFI (and SysLinux is dying, no update since 2014). GRUB is the default boot loader for UEFI.
- GRUB does not support the DHCP option 208-211, this was used to have different configuration depending of the hostname.
- GRUB documentation is not correct, for the usage of mac address you need to add “01-” before the mac address.
- GRUB do not set the BOOTIF kernel cmdline like pxelinux, this is used by dracut and systemd to know from which interface is the boot started.
• Localbooted:
  • Done

• Netbooted:
  • Configuration ongoing
  • Test ongoing in TestBed