## Pre-Checks and Preparations in GMP

* GMP checks the necessary prerequisites, e.g. free IP addresses in the relevant access and storage networks
* IP addresses and hostnames are being reserved by GMP
* New ldap user install\_\_rest\_\_\*\*\*\* would be created in ldapmaster-dev, with UUID as the password.
* If IP not in correct network, will be deleted new one will be create.
* Generate $MAC.cfg, needed by the installer
* Download and parse current dhcpd config from install server
* Retrieve BladeServer network configuration/parameters
* Adapt, write and upload new dhcpd config
* Backup old dhcpd config and syntax check new config and restart dhcpd
* Build and upload individual BladeServer config to install server
* Generate pxe config under /tftpboot/pxelinux.cfg for sles12 by *[-f /opt/imal/bin/tftp-config.sh ] && /opt/imal/bin/tftp-config.sh $cmd\_params $used\_mac || echo 'tftp install script not found.'*
* Set BladeServer bootoption to PXE, based on server type to reboot and set boot option.
* Restart BladeServer
* Watch and log the Installation process
* (The actual installation is done by the Blade-Installer)

## DHCP and PXE Boot

* The machine boots up and tries to boot via PXE
  + Get an IP address via DHCP
  + Load the kernel from the next-server, given by the DHCP server
  + Load the initrd from the next-server, given by the DHCP server
* Mostly sles11 only support legacy BIOS boot. But for UCSC-C460-M4 boot option should be EFI. Sles12 support both legacy BIOS boot and EFI.

## Initrd(Blade installer):

* Run “depmod -a” to analyze available modules. It is needed for modinfo / modprobe below to work correctly.
* Run /usr/bin/fixdev.sh
* Load the module: tg3, mlx4\_core, mlx4\_en, ipmi\_si, ipmi\_devintf.
* Run /usr/bin/find-interface.pl.
* Do some tests and preparations:
  + Ping -c1 $instserver for test and setup
  + mount -t devpts none /dev/pts
  + export HOME=/tmp; cd $HOME
  + export INPUTRC=/etc/inputrc
* Config and start sshd
* Load the module: dm-mod, ext3, e1000.
* Use scp to download the $MAC.cfg from install server.
* Run /usr/bin/install.pl /tmp/$CFG $DHCP\_ETH

## /usr/bin/install.pl:

* Read the $MAC.cfg.
* Check the config with the results of find-interface.pl with GMP.
* Remove old LV, old VG, old Raid volume.
* Load the modules (contains all storage hardware modules): scsi\_mod raid1 sd\_mod jbd ext3 ehci\_hcd uhci\_hcd ohci\_hcd usbhid…
* Find the bootdisk and get the partitions, then dump image.
* Run rm /tmp/install/var/log/\*; touch wtmp btmp lastlog messages
* Write firstboot, lastboot service, only enable firstboot.
* Config the IP address, hostname and gateway, all of them are given by $MAC.cfg.
* Delete server’s info in the DHCP server’s configuration file by ssh.
* Clean up ssh keys.
* Config network card, include ethX and bond
* Log the installer version and reboot.

## Firstboot - The machine reboots for the first time

* Disable service, follow the $Landscape.pm to remove the service.
* Prepare commands, execute at the first.
* After prepare commands, start normal configuration.
* Post commands, instead of prepare commands, execute after the normal configuration.
* Additional Commands and Services:
  + remove packages
  + enableservices
  + restartservices
  + additionalcmds
* Log and Clean up firstboot script and its folder, then execute the {finalize} in the $Landscape.pm.

## Lastboot and notification to GMP

* Reset the boot\_option to HDD and sets the final state of the Blade to 'System available in Pool' in GMP
* Remove logger user install\_\_rest\_\_\*\*\*\* from ldap.
* GMP cleans up trace/cfg/pid file and removes the installation files (PXE-boot configuration, $MAC.cfg, $MAC...) from the install server.

*case "$1" in*

*"start")*

*perl /root/sayhello.pl "System available in pool"*

*mv /root/sayhello.pl /opt/imal/log*

*chkconfig -d lastboot*

*mv /etc/init.d/lastboot /opt/imal/log*

*;;*

*\*)*

*echo "Usage: $0 { start }"*

*;;*

*esac*

UUID: EE76E664551E11E9A82A8DB930AC2A69

## install server: /home/dump/cfg/5c:b9:01:ce:ae:30.cfg

*[Basics]*

*controllernumber = 1*

*mirror = NO*

*installdisk = 1*

*mirrordisk =*

*hostname = bsa7489*

*defaultgateway = 10.118.150.1*

*autoreboot = YES*

*usevlan = 1*

*[Location]*

*hwpool = PROD-ROT-DC12-HANA-DB02-2-SP3*

*landscape = ProdRot6*

*[Filesystems]*

*root = 10*

*var = 2*

*tmp = 2*

*[Image]*

*imageserver = 172.19.69.21*

*imageuser = dump*

*dumpfile = sles11\_sp3\_x86\_64\_prod\_rot6\_hana\_snop\_db\_2.dmp.gz*

*[FilerInterface]*

*ip =*

*[NICs]*

*eth0 = 5C:B9:01:CE:AE:30*

*eth1 = 5C:B9:01:CE:AE:38*

*eth2 = 5C:B9:01:CE:AE:31*

*eth3 = 5C:B9:01:CE:AE:39*

*[Interfaces]*

*bond0.150 = 10.118.150.121/23 access*

*bond0.160 = 10.118.165.73/21 storage*

*[Logging]*

*user = install\_\_rest\_\_bsa7489*

*uuid = 068DAC080EE311E7B7A89FD57F11723C*

## install server: /tftpboot/pxelinux.cfg/01-5c-b9-01-9a-cc-4c

*### config for rsa0740*

*default sles12*

*label sles12*

*kernel linux-inst.12*

*append initrd=initrd-inst.12 vga=0 instserver= brokenmodules=e1000,tg3,usb-storage nomodeset net.ifnames=0 biosdevname=0*

*implicit 0*

*display message-inst.12*

*prompt 1*

*timeout 30*

## install server: /tftpboot/pxelinux.cfg/default

*default manual*

*### append "ip=<bootip>:<serverip>:<gw>:<netmask> BOOTIF=01-<mac-address>" for debugging purposes*

*ipappend 3*

*# manual*

*#label manual*

*# kernel linux-inst.11*

*# append initrd=initrd-inst.11 vga=0 brokenmodules=e1000,tg3,usb-storage*

*# changed to sp4 based sap-bladeinstaller-efi*

*label manual*

*kernel linux-inst.11sp4*

*append initrd=initrd-inst.11sp4 vga=0 nomodeset brokenmodules=e1000,tg3,usb-storage*

*implicit 0*

*display message-inst.11*

*prompt 1*

*timeout 30*

## install server: /etc/dhcpd.conf

*subnet 172.19.13.128 netmask 255.255.255.192 { {*

*allow bootp;*

*allow booting;*

*default-lease-time 28000;*

*max-lease-time 56000;*

*ignore unknown-clients;*

*not authoritative;*

*log-facility local6;*

*next-server 172.19.76.48;*

*option routers 172.19.13.129;*

*option subnet-mask 255.255.255.192;*

*option broadcast-address 172.19.13.191;*

*option domain-name "wdf.sap.corp";*

*option domain-name-servers 172.19.8.160, 172.19.8.161;*

*host bsa1686 {*

*filename "pxelinux.0";*

*fixed-address 172.19.13.135;*

*hardware ethernet d8:d3:85:b1:7e:48;*

*}*

*}*