



Hewlett Packard
Enterprise

HPE Cray EX Series System Administration with HPE Performance Cluster Manager

Appendix: troubleshooting reference from another lab environment

Contents

Console connection.....	2
Ethernet device does not accept SSH request	2
Ethernet device enumeration variation.....	2
Cannot see changes in vi when using a serial-over-lan SOL session	3
Apollo servers.....	3
Issues with iLO, BMC.....	3
Nodes drop into grub after PXE boot.....	3
BIOS boot settings.....	5
BIOS boot option Windows Boot Manager	7
PXE boot fail disk_bootloader variable is not defined	8

Console connection

Console connections for nodes under the management of SU leaders fails.

Issue observed:

```
[root@admin ~]# console compute1
console: connect(): 782@localhost: Connection refused
Resolved with: systemctl restart consver
Console command does not work
```

If the console command does not connect to the node, monitor by connecting with ipmiwrapper <node> sol activate; on the admin node, enter:

ipmiwrapper <node> sol activate

Disconnect the sol session with ~. (You need one ~ for each ssh session, so if you log into one node, then log into another node and issue the sol session, use ~. to disconnect.)

Inspect the cluster database configfile entry for the node to ensure that attributes appear correctly configured.

```
admin# discover --show-configfile --ips --bmc-info | grep <node>
```

Ethernet device does not accept SSH request

Occasionally a node's Ethernet device does not accept an SSH or other protocol transfer yet the device appears configured correctly. Issue a device ifup/ifdown sequence (replace <device> with the name of the Ethernet device such as eno5 or eno1; do not include the < and > characters:

ifdown <device>

ifup <device>

Ethernet device enumeration variation

The DL360 nodes in the cluster have different network cards; Ethernet device names start at eno1 or eno5 based on which network card is installed. Other hardware models use different persistent naming conventions.

Start Eth device numbering at **eno1**: Broadcom Inc. NetXtreme BCM5719 Gigabit Ethernet PCIe (rev 01)

Start Eth device numbering at **eno5**: Intel Corporation I350 Gigabit Network Connection (rev 01)



Cannot see changes in vi when using a serial-over-lan SOL session

Set the TERM variable in the SOL session:

```
export TERM=linux
```

Apollo servers

The Apollo 2000 nodes (compute14 – compute18) can take up to 15 minutes to boot. UEFI BIOS boot order reverts to a setting that attempts boot through multiple unconfigured interfaces: set those nodes to PXE boot either by using ilorest or other features. For example, with ilorest (the command wraps to a second line; do not enter the \ character):

```
ilorest bootorder --continuousboot=pxe -u <iLO-account> -p <iLO-pw> \  
--url=<iLO-IP> --commit
```

Issues with iLO, BMC

Ensure that the iLO/BMC credentials are stored in the clusterdatabase:

```
cm node show -Bj -n <node>
```

Verify that the cardType, username, and password fields are populated correctly. To update the database for the iLO/BMC username and password, refer to cm node set online help and these options:

```
cm node set
```

```
--bmc-password PASSWORD
```

```
--bmc-username USERNAME
```

Nodes drop into grub after PXE boot

Observed this in release 1.3.1; retained here for reference: The SU leader or compute nodes may drop into grub after a PXE boot. Resolve by monitoring boot of node and issuing the Ctrl+@ (triggers F12) or power off the node, issue ilorest PXE command, and power on node. Repeat until the issue resolves. Replace <node> with the node name and omit the < and > characters; replace # with the number associated with the lab group. The second command wraps to a second line; do not enter the \ character.

```
cm power off -t node <node>
```

```
ilorest bootorder --onetimeboot=pxe -u ADMIN -p ADMIN --url 172.24.0.# \  
--commit
```

```
cm power off -t node <node>
```

The top snapshot shows the node in console mode stopped at a grub prompt. The second snapshot shows the node just prior to the fall to grub, pausing, instead of continuing boot.



```

root@admin2:~# update-config: -> flsmethrower
admin2: update-config: 0.00s
root@admin2:~#
Minimal BASH-like line editing is supported. For the first word,
TAB lists possible command completions. Anywhere else TAB lists
possible device or file completions.
grub>

```

```

root@admin2:~# update-config: -> flsmethrower
admin2: update-config: 0.00s
root@admin2:~#
>> Booting Embedded FlexibleLOM 1 Port 1 : HPE Ethernet 1Gb 4-port 364FLR Adapter - NIC (PXE IPv4)
>>Start PXE over IPv4.
Station IP address is 172.23.0.4
Server IP address is 172.23.0.1
NBP filename is grub2/x86_64-efi/grub-cm-x86_64.efi
NBP filesize is 1006464 Bytes
Downloading NBP file...
NBP file downloaded successfully.
grub>

```

Troubleshoot nodes that failed provisioning

- Review node console output

For compute3, the console output showed:

```

Minimal BASH-like line editing is supported. For the first word,
TAB lists possible command completions. Anywhere else TAB lists
possible device or file completions.
grub>

```

- On the admin node, issue a power reset to the node (replace <node> with the name of the node; do not include the < and > characters).

cm power reset -t node <node>

Monitor the node boot. If necessary, issue the cm power reset command a second or third time.

Example output from compute3 after 2 node resets:

```
[ OK ] Reached target Multi-User System.
        Starting Update UTMP about System Runlevel Changes...
[ OK ] Started Update UTMP about System Runlevel Changes.
```

```
Red Hat Enterprise Linux 8.1 (Ootpa)
Kernel 4.18.0-147.el8.x86_64 on an x86_64
```

```
compute3 login: root
Password: cmdefault
[root@compute3 ~]#
```

BIOS boot settings

For this classroom environment, the admin node boots from its local disk device except when the admin node installs operating system. Compute nodes PXE boot first. SU leader nodes boot from first local disk device.

HPE iLO 5 instructions recommend terminal size 100 characters by 31 rows.

- Go into [System Configuration → BIOS/Platform Configuration (RBSU) → Workload Profile]
- Set the profile to “High Performance Compute (HPC)”
- Go into [System Configuration → BIOS/Platform Configuration (RBSU) → Power and Performance Options → Power Regulator]
- Power Regulator set to “Static High Performance Mode”
- Go into [System Configuration → BIOS/Platform Configuration (RBSU) → Boot Options → UEFI Boot Settings → UEFI Boot Order]

- Change the UEFI boot order to set the first Ethernet interface on top (IPv4 PXE) for compute nodes

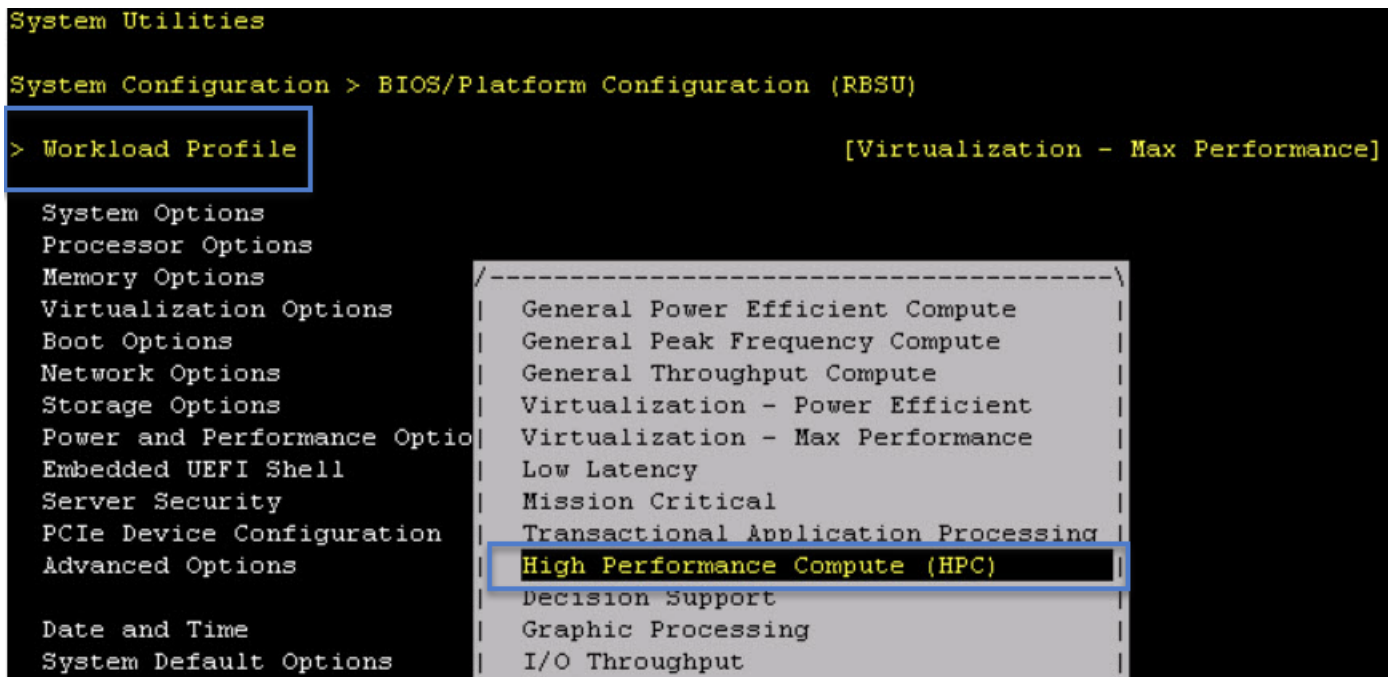
For SU leader nodes, SGI Slot Chooser or disk 1 is first option.

→ UEFI Boot Order Policy

- Deselect all options that do not apply, including Windows Boot Manager, IPv6, HTTPS, IB cards, marked with FDR

```
System Utilities
System Configuration
> BIOS/Platform Configuration (RBSU)

iLO 5 Configuration Utility
Embedded RAID 1 : HPE Smart Array P408i-a SR Gen10
Embedded FlexibleLOM 1 Port 1 : HPE Ethernet 1Gb 4-port 366FLR Adapter - NIC
Embedded FlexibleLOM 1 Port 2 : HPE Ethernet 1Gb 4-port 366FLR Adapter - NIC
Embedded FlexibleLOM 1 Port 3 : HPE Ethernet 1Gb 4-port 366FLR Adapter - NIC
Embedded FlexibleLOM 1 Port 4 : HPE Ethernet 1Gb 4-port 366FLR Adapter - NIC
```

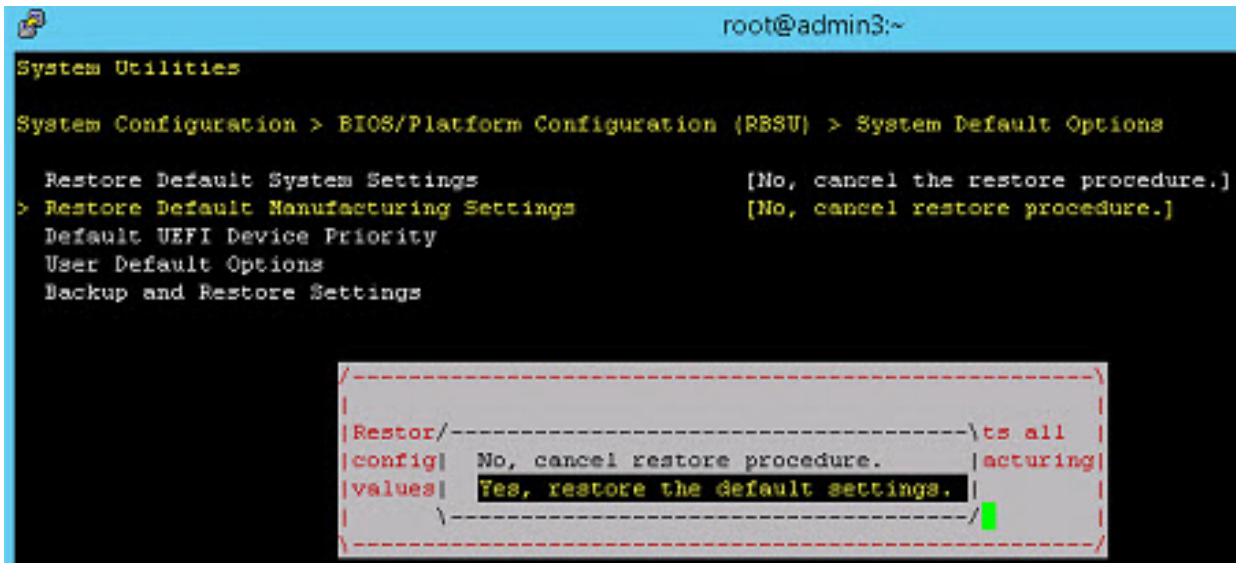


Ensure that you set the UEFI Boot Order and the UEFI Boot Order Control options.

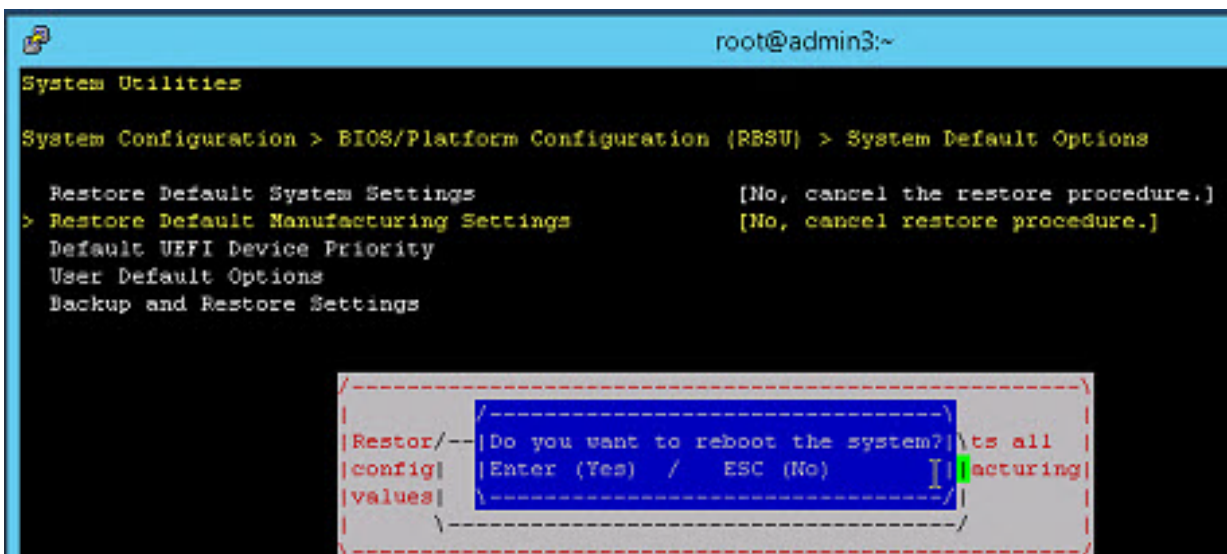


BIOS boot option Windows Boot Manager

None of the servers should show the Windows Boot Manager as an eligible option; if you see this entry, reset BIOS with the Restore Default Manufacturing Settings (see snapshot below), reboot, then set the High Performance Compute (HPC) workload profile, and the boot options and boot order policy shown in the previous section.



Reboot after you restore the default settings. If you do not reboot here, any changes you make to BIOS settings will be overwritten.



PXE boot fail disk_bootloader variable is not defined ...

If you see the error shown below during PXE boot, ensure that the SU leader nodes are booted. If you powered down the SU leaders, and the mounts on the admin node have not been refreshed, on the admin node, run the “mount” command.

```
>> Booting Embedded FlexibleLOM 1 Port 1 : HPE Ethernet 1Gb 4-port 366FLR Adapter - NIC (PXE IPv4)

>>Start PXE over IPv4.
  Station IP address is 172.23.0.3

  Server IP address is 172.23.0.1
  NBP filename is grub2/x86_64-efi/grub-cm-x86_64.efi
  NBP filesize is 1086464 Bytes
  Downloading NBP file...

  NBP file downloaded successfully.
Cluster Manager GRUB2 Network Boot Environment
GRUB CPU: x86_64 GRUB Platform: efi
PXE Client IP address: 172.23.0.3
PXE Client MAC address: 48:df:37:c4:84:18
Error: disk_bootloader variable is not defined to any value.
This likely indicates that the node-specific grub config file
is either missing or corrupt.
error: can't find command `read'.
```

This completes the appendix.