hp AlphaServer GS1280/ES80/ES47 V7.3 Console Firmware Release

Notes

This document contains firmware enhancements and update procedures. Start with Read Me First.
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Scope

The document lists significant changes in this firmware release and describes methods to update console firmware. It does not describe console firmware internals or console architecture.

This document is intended for persons responsible for operating system installation upgrades and for console firmware and console-supported I/O option firmware updates.

Golden Rules

Update all console firmware before installing or updating an operating system to ensure compatibility. Ensure firmware is updated to the latest revision level.

AlphaServer systems recently shipped may have a higher console firmware revision than the firmware revision listed in this release. A higher firmware revision normally indicates support for the installed operating system.

It is not recommended to load firmware that is older than what is presently installed.

On-Line Technical Resources

Firmware Web site:
http://www.hp.com
Click on Server, click on HP Alphaservers then click on firmware

Technical Support:
http://h20000.www2.hp.com/bizsupport/TechSupport/Home.jsp
http://www1.itrc.hp.com/service/home/home.do

Technical Information:
http://h18003.www1.hp.com/alphaserver/gs1280/gs1280_tech.html

hp Alpha Retain Trust Program

The hp Alpha Retain Trust Program underscores HP’s commitment to providing long-term business continuity for Alpha Systems customers. The program eases the evolution of moving from the Alpha platform to Itanium® architecture-based HP systems by ensuring HP carries forward the trust you have placed in us. It is focused on showing you the business value of moving forward with HP as a company, and mitigating the risk associated with transitions to future HP technologies.
DO NOT USE V7.1 Firmware because of issues with mbm fw. For more information refer to “V7.1 MBM Firmware Bug” on page 21.

Firmware Changes This Release

SRM Firmware Changes

- Keyboard driver - a USB keyboard, attached to a USB-to-PS/2 adapter, can sometimes hang when attempting to login to OpenVMS for the first time. Solution: Read the keyboard data and status registers immediately after enabling keyboard interrupts, to drain any interrupts from the device.

- Kgpsa driver - the console will fail to login into the fibre-channel fabric switch, if the connection is moved from one switch port to another, on certain new Brocade fibre-channel switches. Solution: When attempting to login to a fibre-channel switch port, use an SDID of zero and the switch will provide the new SDID to the host adapter.

- Wwidmgr - the console supports a number of environmental variables to facilitate boot and crash dump to fibre-channel storage volumes. Presently there are four (4) WWIDx variables that define the world-wide-ID of a storage volume and eight (8) Nx variables that define the path to the storage volumes. The console uses these variables to define the volumes that may be used for boot or crash dump devices. Solution: Increase the number of Nx (16) and WWIDx (8) console environmental variables.

- I/O Option Firmware - no changes

Server Management Changes

MBM Firmware

- New power supply EEPROMs requires writing on 8-byte boundaries. Solution: Write on 8-byte boundaries.

- If an MBM CLI receives a zero ration when request CPU frequency, the task may crash and lock up the MBM. Solution: Check all ratios for a zero value for frequency changes.

- Firmware version checks and updates would sometime show an error on MBMs with failing flash parts. Solution: The flash driver now performs erase suspends when a sector erasure exceeds a specific time limit to allow reads to occur.

- Symptom logging - the MBM could not read cabinet OCP with the cable disconnected, which causes the mbm to default to cabinet 0. The Symptom is now logged and reported via alerts after two attempts are made to read cabinet OCP.

CMM Firmware - Add a log message when PAL logout frames are throttled.

- No other changes to any other firmware.
Read Me First

Console Firmware, I/O Adapters and Operating System Revisions

**TABLE 1.** Console Firmware Revision

<table>
<thead>
<tr>
<th>Firmware Component</th>
<th>Revision</th>
</tr>
</thead>
<tbody>
<tr>
<td>SRM Console</td>
<td>V7.3-1 *</td>
</tr>
<tr>
<td>VMS PALCode</td>
<td>V2.11-25</td>
</tr>
<tr>
<td>UNIX PALCode</td>
<td>V2.08-19</td>
</tr>
<tr>
<td>CMM FW</td>
<td>V2.7-5 *</td>
</tr>
<tr>
<td>CMM FSL FW</td>
<td>V2.7-2</td>
</tr>
<tr>
<td>CMM FPGA FW</td>
<td>V114</td>
</tr>
<tr>
<td>MBM/PBM FW</td>
<td>V2.7-6 *</td>
</tr>
<tr>
<td>MBM/PBM FSL FW</td>
<td>V2.1-1</td>
</tr>
<tr>
<td>SROM FW</td>
<td>V1.0-9</td>
</tr>
<tr>
<td>XSROM FW</td>
<td>V1.0-31</td>
</tr>
<tr>
<td>12-Slot Hot Plug FPGA</td>
<td>V4.1-01</td>
</tr>
<tr>
<td>XShelf Hot Plug FPGA FW</td>
<td>V3.1-10</td>
</tr>
<tr>
<td>2P Hot Plug FPGA</td>
<td>V3.1-02</td>
</tr>
<tr>
<td>CPLD Lattice Part</td>
<td>V0.5</td>
</tr>
</tbody>
</table>

An asterisk * indicates firmware changed in this release.

**TABLE 2.** I/O Adapters Firmware Revision

<table>
<thead>
<tr>
<th>PCI Adapter</th>
<th>Fw Revision</th>
<th>PCI Adapter</th>
<th>Fw Revision</th>
</tr>
</thead>
<tbody>
<tr>
<td>CIPCA</td>
<td>4.20</td>
<td>DEFPA</td>
<td>3.20</td>
</tr>
<tr>
<td>FCA-2354</td>
<td>CS3.93A0</td>
<td>KZPDC</td>
<td>3.56</td>
</tr>
<tr>
<td>FCA-2384</td>
<td>HS1.91X6</td>
<td>KZPEC</td>
<td><strong>2.76</strong></td>
</tr>
<tr>
<td>FCA-2684/DC</td>
<td>TS1.91X6</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**TABLE 3.** Firmware and Operating System Revisions

<table>
<thead>
<tr>
<th>Release Type</th>
<th>Interim Release</th>
<th>Release Date</th>
<th>SRM</th>
<th>MBM/PBM</th>
<th>CMM</th>
<th>Operating System</th>
</tr>
</thead>
<tbody>
<tr>
<td>CD Release</td>
<td>Interim Release</td>
<td>Release Date</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>V7.3</td>
<td>-----</td>
<td>4/2007</td>
<td>V7.3-1</td>
<td>V2.7-6</td>
<td>V2.7-5</td>
<td>V8.2</td>
</tr>
<tr>
<td>-----</td>
<td>V7.2A</td>
<td>10/2007</td>
<td>V7.2-11</td>
<td>V2.7-5</td>
<td>V2.7-4</td>
<td>V8.2</td>
</tr>
<tr>
<td>V7.2</td>
<td>-----</td>
<td>6/2006</td>
<td>V7.2-1</td>
<td>V2.7-3</td>
<td>V2.7-4</td>
<td>V8.2</td>
</tr>
<tr>
<td>V7.1</td>
<td>-----</td>
<td>6/2006</td>
<td>V7.1-1111</td>
<td>V2.7-1</td>
<td>V2.7-3</td>
<td>V8.2</td>
</tr>
<tr>
<td>V7.0</td>
<td>-----</td>
<td>6/2005</td>
<td>V7.0-5</td>
<td>V2.6-4</td>
<td>V2.7-1</td>
<td>V8.2</td>
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</tbody>
</table>
### Read Me First

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<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>V6.9</td>
<td>----</td>
<td>12/2004</td>
<td>V6.9-15</td>
<td>V2.5-4</td>
<td>V2.6-0</td>
</tr>
<tr>
<td>V6.8</td>
<td>----</td>
<td>10/2004</td>
<td>V6.8-3</td>
<td>V2.4-2</td>
<td>V2.5-4</td>
</tr>
</tbody>
</table>

^a. VMS73-1-EV7_V0100 Update Kit

^b. T64V51BB1A S0001 Update Kit
Procedures

Updating Firmware

This chapter explains the firmware update procedure by using the Loadable Firmware Update utility on the firmware update CD. It is recommended that firmware updates are done from the SRM console using the firmware CD, rather than from the MBM console. The latter requires setting up a tftp server mechanism.

From the SRM Console

The SRM console is initialized and then the firmware CD is booted from the SRM console prompt. This prompts the Loadable Firmware Utility [LFU] to run. The procedure to update all firmware is as follows:

- Initialize the SRM console to ensure the system is in a quiescent state.
  P00>>> init
- Boot the firmware CD and press the ENTER key when prompted with the LFU filename.
  P00>>> boot dqa0
- Update all firmware from the LFU and answer Yes when prompted.
  UPD> update *
- Exit the LFU which will reset the micros
  UPD> exit

From the MBM Console

The primary mechanism for firmware updates is to boot the firmware CD and run the LFU program as previously shown. However, in the highly unlikely event that the system cannot be brought to the point of being able to run the SRM Console and LFU, an alternative firmware update method is available.

Updating firmware from the MBM allows the operator to update individual firmware components via the “update” command provided by the MBM CLI. The update command uses TFTP communication between the MBM (which requests the image), and a connected PC (which serves the image). The individual update images are included on the AlphaServer ES47/ES80/GS1280 Firmware CD. The following sections describe how this method can be used.

Setting Up a PC-Based TFTP Server

To setup a PC-based TFTP Server, the PC Ethernet network card must be connected to the Server Management hub. The network connection can be static (using the address “10.253.0.254”) or dynamic (using the dhcp protocol). To set up the PC network connection do the following from your PC:

- Select Start, Settings, Control Panel, Network and Dial Up Connections, Local Area Connection, Properties, Internet Protocol(TCP/IP), Properties.

The remainder of this document has examples using the static address “10.253.0.254”.

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If using DHCP, check *Obtain an IP Address automatically*.

Start the TFTP Server on the PC by invoking tftpd32.exe. A copy is found on the AlphaServer ES47/ES80/GS1280 Firmware CD, to be copied to a convenient directory on your local PC. Then change the settings to point the directory containing the files to be upgraded.
Procedures

Click OK.

MBM Update Command Examples

MBM> update cmmfpga 10.253.0.254 -file fpga_v114.bin
MBM> update cmmfw 10.253.0.254 -file cmm3_v2_7_5.bin
MBM> update mbmfpga 10.253.0.254 -file mbm_v2_7_7.bin

For systems with 12 slot PCI boxes (standard PCI box on 8P-SBB):
MBM> update pbmfpga 10.253.0.254 -file pf_v4_1_01.bin

For systems with Xshelf PCI boxes:
MBM> update xshfpga 10.253.0.254 -file xpf_v3_10.bin

For 2P Systems:
MBM> update mbmfpga 10.253.0.254 -file 2p_V3_1_02.bin

After updating the firmware you should cycle VAUX or issue the "reset –micro –all" command to force the MBMs and PBMs to run the new firmware. Also, use the show version commend to verify the new firmware revisions.
## Workarounds and Restrictions

### Booting Firmware

**Booting Firmware CD Restriction - CPU0 Required**

Booting the firmware CD can only be done from CPU0 (for example, \texttt{P00}>>> \texttt{boot dqa0}). Booting the firmware CD from other than CPU0 is not supported and may result in a *kernel stack not valid* response (for example, \texttt{P002}>>> \texttt{boot dqa0}).

**Booting Firmware from DVD is Not Supported**

Booting firmware is only supported from a bootable CD-ROM. Booting firmware from a bootable DVD is not supported.

### KVM Console Switch Limitations

**Cannot Use the Run Bios Command in Graphics Mode - Use the Workaround**

The SRM “run bios” command from the graphics console, connected through a KVM console switch, is not supported and will result in unexpected keyboard behaviour. As a workaround, use the SRM “run bios” command from the serial console via serial port connection.

### Cluster CI Connections

During system initialization, cluster CI connections may be temporarily closed resulting in an "SCS Disconnect Request received - break VC" message at console. The driver properly recovers and re-establishes the connection so there is no negative impact from this closure.

### Multiple Initializing Keyboard Messages

Multiple instances of the "initializing keyboard" message can occur if there is more than one keyboard attached to the system (this is expected), or if the console's USB device driver is forced to reconfigure the bus. Each time the bus is reconfigured, an "initializing keyboard" message can be displayed. The multiple messages can be ignored.

### Configuring I/O Adapters using BIOS

When configuring I/O Adapters using BIOS, it is recommended that a serial mode console connection be used. If the console environmental variable is set to graphics there may be up to a 3 minute delay after entering <ESC> to exit the BIOS and the return of a graphics mode prompt.

### Bootbios EV

When setting the bootbios EV at the console on systems with more than 8 KZPDC adapters, please use the full device path name. (e.g. “set bootbios pya0.0.0.2.1” rather then “set bootbios pya0”)

### Init_type EV

If the “init_type” environment variable is set to “hard”, there will be a hard reset of the partition on the “init” command. (For example, any memory dumps living in RAM at
the time will be overwritten by diagnostics) If it is set to “soft”, the console will merely be restarted at the beginning of the console code. The default setting for “init_type” is “soft”, to optimize boot time.

**Boot_Reset EV**

If the “boot_reset” environment variable is set to “on”, the system will be re-initialized (hard or soft, depending on init_type) prior to booting. If it is set to “off”, the system will NOT be re-initialized prior to booting. The default setting for “boot_reset” is “off”, to optimize boot time.

**XSROM Mismatch**

If any CPU module has version V1.0-11 or later of XSROM, you must upgrade all the other CPU modules as well or downgrade the modules with V1.0-11. You will not be able to boot to the console with mismatched XSROM versions (except as explained below).

You can use either the update command from the MBM prompt or LFU to upgrade the XSROM from a previous version. If you have mismatched XSROM versions you must use the MBM update command or follow the procedure below to update using LFU:

1. `mbm> set cpu_enabled 3`  
   (The value 3 is a mask field to enable cpu0 and cpu1.)
2. `mbm> power on`  
   (The system powers on with 2 cpus enabled.)
3. Run the current version of the LFU from the SRM prompt P00>>>  
4. `LFU> update xsrom*`  
5. `LFU> exit`  
   (The system powers up again, still with 2 cpus enabled.)
6. `mbm> power off`  
7. `mbm> clear cpu_enabled`  
8. `mbm> power on`  
   (The system powers up with all cpus in normal manner.)

To load the XSROM from the backup copy on the MBM use the following command, where x and y are the cabinet and drawer of the DUO to be updated, and z is the number of the DUO (0-3).

`MBM> update xsromfw 10.253.0.1 --cabinet x --drawer y CMMz`
Server Management

The following is a list of workaround and restrictions for server management firmware.

- After a firmware update, *partitions must be power cycled* in order for an FPGA (with new firmware) can be used.
- While a firmware upgrade is in progress, *it is not recommended* to issue commands at the MBM prompt.
- Splitting a DUO into 2 hard partitions is not supported.
- The following messages can be ignored:
  "~PGP-W-(partgroup) Can't assign local memory for IO7 on pid x"
  "~SMG-W-(smprot) No outstanding command for response nnn "
  "putchar_totelnet_task: printed -1 out of n chars." This can be displayed during some error situations.
- MBM console command *“set membership -auto”* is used to define the expected system configuration. The following messages appear when an SBB or a PCI drawer is added to the system without using the 'set membership -auto' command.

  ~GRP-W-(grp_Probe) MBM/PBM cab:00 drw:2 is not in the member list.
  ~GRP-W-(grp_Probe) Use Set Membership -add -ca 0 -dr 2 MBM

- When changing cabinet and drawer numbers, you must make sure the (cabinet + drawer) combination you set is unique across the system.
- Before booting the OS and setting the time, first set the time from the MBM> prompt to your desired reference date and time (e.g. local, UTC). This ensures that logs stored in the MBM have meaningful timestamps. This only needs to be done when you initially install the system and at DST transition.

- When using the MBM *connect* command, be aware that the buffered data that is printed out upon initial connection could be from a previous power-on or reset. Data is saved into a circular buffer until the user connects to the session, so it is possible to receive output from the system even though it was powered down some time ago.

- If cabinet and/or drawer thumb wheels are changed, you must turn the main power on and off at the system breaker or issue a *“reset -micro -all”* command in order to reset all of the micros. Make sure that the VAUX lights all go out if turning off from the system breaker.

MBM Set Time Command

MBM *“set time” command* is ideally used before the system is partitioned, and only the OS “set time” command is used afterwards. If the mbm “set time” command is used on systems with multiple partitions, then do the following. After using the MBM “set time” command and booting the Operating System, check and reset the time(if necessary) from the OS. This will help MBM delta-time consistency across multiple partitions.
Recommended procedure to align MBM time to OS time and to clear MBM Delta time (before the system is partitioned):

- **Align MBM to OS time**
  - Display OS time for OS console - `$ show time`
  - Set MBM Base Time to OS time - `MBM> set time yyyy/mm/dd hh:mm:ss`

- **Reset MBM Delta time**
  - Show time from OS console
  - Set time at OS console - `$ set time=mm-dd-yyyy:hh:mm:ss`
  - `MBM> show time` - verify MBM Delta time is cleared

End of Procedure
Workarounds and Restrictions

**WWIDMGR**

WWIDMGR will not see any ports if the SCSI_POLL console environment variable [EV] is set to the OFF. In the OFF position, the "**wwidmgr - show wwid**" command will not display any ports. The "**wwidmgr -quickset uuid**" command will respond with the "uuid cannot be found". The SCSI_POLL EV is set to ON by default. Do not change this EV.

**Replacing Cabinet Fans**

Symptom: Fan run at higher than normal speed after replacing a cabinet fan.

Solution: After replacing a cabinet fan, in a cabinet with only Vaux power supplied to the cabinet, use the MBM command "**reset -micro -all**" to restore fans to their normal speed. Fans will run at high speed until this MBM command is applied or until Vaux power is cycled.
Firmware Change History

V7.2A  Interim Firmware Release - MBM Firmware Change Only

Fix routing algorithm bug introduced in the V7.2 firmware release. As part of the V7.2 Firmware Release, a fix was made to prevent non routable partition configurations from powering on. However, it has been determined that the modification also prevents some valid configurations from powering on as well.

V7.2  SRM Firmware Changes

1  New module naming has been added for the two I/O devices listed under the SRM show config command:
   • I/O device DE602-FA is displayed as DE602-F*.
   • I/O device DEGXA-SB/TB is displayed as DEGXA-S*/T*

2  WWIDMGR code change - do not attempt to get a UDID on a Fibre Channel SAN for SCSI sequential access or SCSI media changer type devices (i.e. tape drives, robot arms)

Server Management Changes

1  CMM
   • Fix for whoami register value in 680 events; value was off by a nibble
      Fix wrong platform in CMM shared memory on ES47/ES80 displaying GS1280 in “show config” command.

2  MBM/PBM
   • Code change to only allow modifying partition attributes when powered off. This is to prevent invalid Test 17 failures seen during power on of the system.
   • MBM “show duo” command now includes the J- number for slot identification, as marked on the DUO, for the RIMM being displayed.
   • Temperature and Voltage limits is included in the “show power –detail” command display output.
   • Fixed a problem where an MBM watchdog reset on a 2P drawer or PBM PCI drawer caused the drawer to lose power.
   • Fixed a problem where a non-routable partition message appeared but the partition powers on anyway.
V7.1 Do Not Use V7.1 MBM Firmware Bug

If you have a V7.1 Firmware CD, please do not use the V7.1 CD to upgrade GS1280 firmware. If you have already upgraded to V7.1, please upgrade firmware to the most current firmware release as soon as possible. The most current release is available from http://ftp.digital.com/pub/DEC/Alpha/firmware/readmes/gs1280.html

Background - V7.1 contained a GS1280 firmware bug that may cause a machine check crash. No other AlphaServer models are susceptible except GS1280. The MBM firmware bug affects partitions that are not rectangular (e.g. L-Shaped) and/or have CPU filler modules installed. V7.1A GS1280 firmware was an interim firmware release on March 2006. V7.2 firmware supersedes the V7.1A interim release.