bullion

bullion S Release Notes TS 23.02

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Bull
atos technologies

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Hardware

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Table of Contents

Preface

This document gives some recommendations and information about known problems, restrictions and the associated workarounds.

It also describes the objects delivered in the Technical Status and the features of the resources provided on the Resource and Documentation DVDs.

Highlighting

The following highlighting conventions are used in this guide:

Bold	Identifies the keywords to which particular attention must be paid.
Italics	Identifies references such as manuals or URLs.
`monospace`	Identifies portions of program codes, command lines, or messages displayed in command windows.
< >	Identifies parameters to be supplied by the user.

Chapter 1. Overview

1.1. New Features and Changes

1.1.1. BIOSX08

- New Intel® Xeon® Processor E7 V3 Family E0 stepping microcode version M80306F4_0000000F

1.1.2. BIOSX10

- New Intel® Xeon® Processor E7 V4 Family B0 stepping microcode version MEF406F1_0B000021
- New QPI and Memory Initialization code (Intel Refernce Code 3.80)

1.1.3. BSMHW_NG

- Upgrade of CPLD_PM2_CIX_xx linked to the BIOS upgrade:

  BIOSX05/08 : CPLD_PM2_CIX

  BIOSX10 : CPLD_PM2_CIX_BDX

1.1.4. iCare

- New graphical interface to facilitate the hearbeat sending.
- The iCare IP address and the "site name" are now displayed in the console title bar.
- New graphical interface to configure the SEL clear action on the receipt of "SEL log Full" or "SEL log Almost Full" SNMP event trap.

1.2. Operating Systems Versions

1.2.1. VMware ESXi

Server Model	Processor	Version	Build
bullion S2, S4, S8	E7-V2, E7-V3	ESXi 5.5p10	4722766
bullion S2, S4, S8	E7-V2, E7-V3 or E7-V4	ESXi 6.0u2	4600944

For certification details check:
http://www.vmware.com/resources/compatibility/search.php?deviceCategory=server&details=1&keyword=bullion .

1.2.2. Linux Red Hat

Server Model	Processor	Version
bullion S2, S4, S8	E7-V2 family	6.5
bullion S2, S4, S8, S16	E7-V3 family	6.6/6.7/7.2 & 7.3
bullion S2, S4, S8, S16	E7-V4 family	6.8/7.2 & 7.3

For certification details check:
https://access.redhat.com/ecosystem/hardware/1403603 .

There may be some known issues. In case of a problem with the Red Hat operating system, please see the Red Hat customer portal using your Red Hat account.

1.2.3. Linux Suse

Server Model	Supported Version
bullion S8	SLES 12 SP1

For certification details check:
https://www.suse.com/nbswebapp/yesBulletin.jsp?bulletinNumber=143637 .

1.2.4. Microsoft Windows

Server Model	Label
bullion S2, S4, S8	Windows Server 2012 R2

For certification details check:
http://www.windowsservercatalog.com/results.aspx?text=bullion&bCatId=1282

1.3. Supported Adapters

bullion S supports the following adapters.

1.3.1. HGST PCIe Solid-State Accelerator

1 TB PCIe S1122 (S1122E1000M4/0T00003)
Adapter supported on ESXi 5.5 version only.

1.6 TB PCIe SN150 (HUSPR3216AHP301/0T00831)
Adapter supported from ESXi 6 version, on Redhat 6&7 versions and Windows Server 2012 R2 version.

For more information, see http://www.hgst.com

HGST Solid-State Drive - PCIe 1 TB S1122

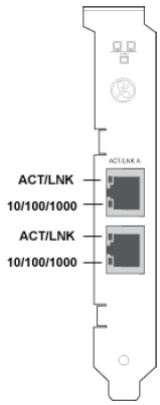
HGST PCIe Solid-State Accelerator - PCIe 1.6 TB SN150

1.3.2. Intel Ethernet Server Adapters

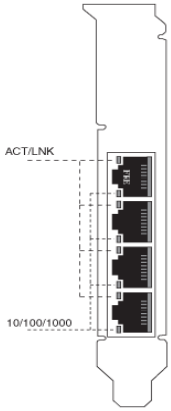
The port numbers depend on the OS and drivers. To identify the port numbers either unplug the cables and check the port status on the console, or set a port to disable and check the LED colors.

For more information, see http://ark.intel.com

Intel® Ethernet Server Adapter I350-T2 Dual ports - PCIe v2.1 (5.0GT/s) Interface



Intel® Ethernet Server Adapter I350-T4 Quad ports - PCIe v2.1 (5.0GT/s) Interface

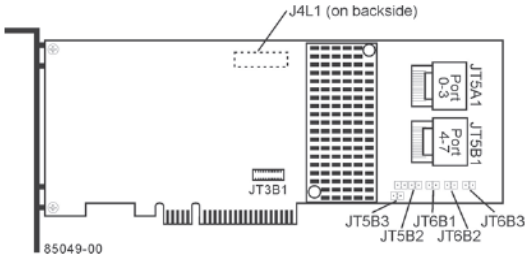


1.3.3. LSI MegaRAID® SAS 9261-8i, 9361-4i and 9380-4i4e

For more information, see http://www.lsi.com

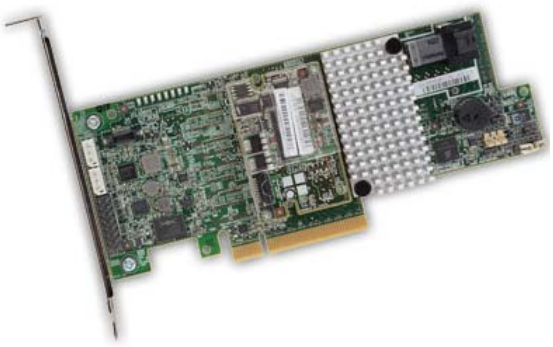
Eight Port MegaRAID SAS 9261-8i 6Gb/s PCI Express SATA+SAS RAID Controller

8 internal connectors.



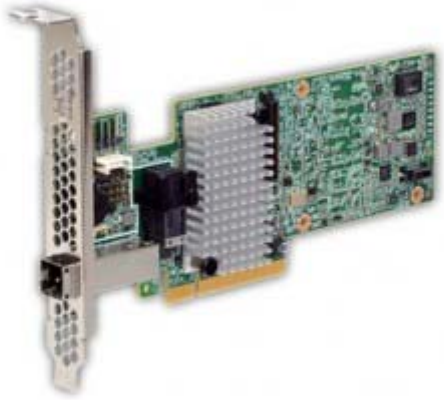
Four Port MegaRAID SAS 9361-4i 12Gb/s SAS and SATA RAID Controller

4 internal connectors.



Eight Port MegaRAID SAS 9380-4i4e 12Gb/s SAS and SATA RAID Controller

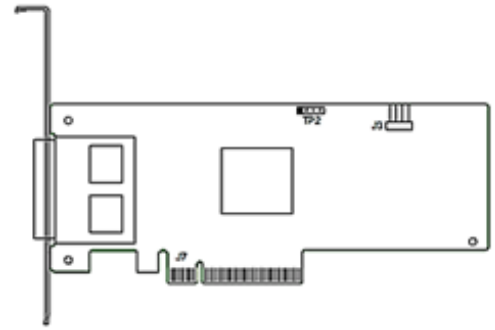
4 internal connectors + 4 external connectors.



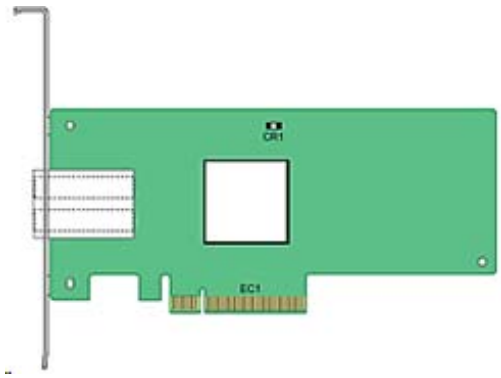
1.3.4. LSI SAS 9200-8e and 9300-8e

For more information, see http://www.lsi.com

LSI SAS 9200-8e 8-Port, 6Gb/s SAS+SATA to PCI Exp HBA



LSI SAS 9300-8e 8-Port 12Gb/s SAS+SATA to PCI Exp HBA



1.3.4.1. Emulex Adapters

For more information, see www.emulex.com

Emulex OneConnect® OCe11102-FM, OCe11102-NM, OCe11102-NT dual-port 10Gb Ethernet (10GbE) Adapter

Emulex OneConnect® OCe14102-UM, OCe14102-NM, OCe14102-NT dual-port 10Gb Ethernet (10GbE) Adapter

Emulex LightPulse LPe16002B Gen 5 Fibre Channel PCIe 3.0 Dual-Port HBA

Emulex LightPulse LPe12002 dual-channel Fibre Channel HBA

Emulex LightPulse LPe15004 Advanced-8 8Gb FC (8GFC), quad-port low-profile HBA

Chapter 2. Known Restrictions and Issues

2.1. Platform Restrictions and Issues

2.1.1. Changing BIOS setup settings

- **Do not change BIOS setup settings unless directed to do so by ATOS Engineering.**

2.1.2. PCIe Hot Plug

- Hot Plug of Emulex PCIe LPe16002, LPe 15004 and Oce 14102 is not supported under Windows 2012 R2.
- PCI Hot Plug is not supported under ESXi.
- Under Windows 2012 R2 or Red Hat 6.5, 6.6, 6.7, 7.2 and 7.3, if the LPe Fibre Channel PCIe board number plus the OCE network controller PCIe board number exceeds 8, then **IO Resource Denial** should be enabled for the slots containing these board types.
  Refer to the *bullion S Configuration Guide*, Ref. 86 A1 46FL for more information about this option.

Refer to *Upgrade Guidelines*, 86 A1 35FP, in the *bullion S Customer Documentation Portfolio* for more information about hot plugging PCI adapters.

2.1.3. Memory Hot Add

Notes
- Memory Hot Add is only supported under the Red Hat operating system and does not work on bullion S2 server.
- Memory Hot Add is not supported under ESXi.

- According to the BIOS team, only the following memory hot adding operations are possible:
  - Add blade 2
  - Add blade 6
  - Add blades 2 and 3
  - Add blades 6 and 7

Refer to the *Upgrade Guidelines*,86 A1 35FP, in the *bullion S Customer Documentation Portfolio* for more information about hot adding memory.

2.1.4. Memory restriction X8

The memory reference for CIX:

DDR4 SDRAM RDIMM 2133MHz 16GB DR 1.2V SAMSUNG M393A2K40BB0-CPB

is replaced by:

DDR4 SDRAM RDIMM 2400MHz 16GB SR 1.2V SAMSUNG M393A2K40BB1-CRC00

which is X8, with a DDDC restriction in RAS mode. (Refer to the bullion S Configuration Guide 86 A1 46FL in the *bullion S Customer Documentation Portfolio* for more information about RAS mode).

2.1.5. iSCSI Boot with Emulex OCe11102 and OCe14102 cards

Issue

iSCSI boot using the OCe11102 and OCe14102 cards are not supported.

Workaround

In iSCSI, boot on a bullion S hard disk. Emulex OCe11102 and OCe14102 cards are used for data only.

2.1.6. USB and on board 1Gb/s ports on slave modules

Issue

The USB port and on board 1Gb/s Ethernet controller (powerville) are disabled on all slave modules of a partition.

Workaround

Use USB port and on board 1GB/s Ethernet ports in master module only.

2.1.7. Windows Device Manager reports QPI errors

Issue

Windows Server 2012R2 Device manager reports QPI errors while the BMC and SOL log show the QPI is OK.

Workaround

Update Intel chipset driver firmware to the latest revision, see https://downloadcenter.intel.com/download/25731

2.1.8. On bullion S8 and S16 servers with E7-V3/E7-V4 family processors, Windows Server 2012 R2 needs an updated Intel driver

Issue

Windows does not boot, blue screen crash with DPC_WATCHDOG_VIOLATION message, when the integrated i350 device is enabled on board 1Gb/s Ethernet controller or an external I350 T2 or T4 running on an 8 socket bullion S with E7-V3 family processors.

Workaround

Update the Intel i350 driver to the latest 12.11.97.1 version. Since Windows will not boot on the quadri-module system, the system should be split before updating the driver, then merged back together.

2.1.9. kdump on network fails on systems with more than 8 sockets

Issue

kdump on network fails on systems with more than 8 sockets, equipped with IVB-EX (E7-V2 family).

Workaround

Use kdump on disk

2.1.10. Setting a network mounting point during a file transfer or an OS installation

Issue

Do not set a network mounting point while a file is being transferred or an operating system is being installed. Otherwise these operations may fail due to a Java bug.

Workaround

It is possible to set two network mounting points at the same time and then transfer two files simultaneously.

2.1.11. Operating System fails to boot (return to BIOS menu)

Issue

In some rare cases and configurations, the Operating System fails to boot (return to BIOS menu).

Workaround

Use the most recent BIOS version.

2.1.12. Only 7 instead of 8 SAS 9x000 cards are seen with Device Manager

Issue

Only 7 instead of 8 SAS 9x000 cards are seen with Device Manager.
If more than 7 SAS cards are configured in a system, only 7 are visible under the Device Manager of the BIOS.

However they are all seen and working under OS.

2.1.13. BCS Fatal Error message during a multi module system power off

Issue

During the power off process on a multi module server, a message like:

01/12/2016 14:02:09 BMC Message Time−stamp: 0001800676240181 SMC_1 BCS Fatal error

may be displayed only on the slave modules.

This message can be ignored, as it is displayed in the normal context of the platform reset.

2.1.14. Fault Signal messages in the System Event Log

Issue

Some Fault Signal messages may appear in the System Event Log.

These messages have no impact on the production process.

2.1.15. Boot not possible with proc E7-4809V4 if BCS enable

Issue

The bullion S server equipped with the E7-4809 V4 (2,1GHZ,20MB,6,4GT/s) processor does not start if BCS is set to ENABLE.

Workaround

Change the speed on the 3 links (instead of only one) cpu0_cpu1,bcs_cpu0 and bcs_cpu1 to 6.4

```
$ ./bsmSetConfParam.sh -H 10.212.4.186 -k 'mc.linkspeeds.cpu0_cpu1_link' -x 6_4
Successfully set key mc.linkspeeds.cpu0_cpu1_link to 6_4.

a450220@9K7FM12 /bin
$ ./bsmSetConfParam.sh -H 10.212.4.186 -k 'mc.linkspeeds.bcs_cpu0_link' -x 6_4
Successfully set key mc.linkspeeds.bcs_cpu0_link to 6_4.

a450220@9K7FM12 /bin
$ ./bsmSetConfParam.sh -H 10.212.4.186 -k 'mc.linkspeeds.bcs_cpu1_link' -x 6_4
Successfully set key mc.linkspeeds.bcs_cpu1_link to 6_4.
```

2.2. Software Restrictions and Issues

2.2.1. VMware Restrictions and Issues

2.2.1.1. Memory holes issue with VMware ESXi 5.5

Issue

VMware 5.5 may generate illegal memory access when memory gaps exist between modules in a multi module server, leading the server to crash.

Workaround

This issue is fixed from ESXi version 5.5 update 2 patch 4 (build 2403361) onwards.

2.2.1.2. vCenter system health (VMware)

Issue

The system health sensors are not available under vCenter (temperatures, fan sensors, server consumption, etc) on bullion S4 and S8 servers.

Workaround

On your vCenter server or VCSA you need to comment or remove the section "**VMware_DiscreteSensor**" in the **cim-sensors.xml** file.

File location for Windows based vCenter:
C:\ProgramData\VMware\vCenterServer\cfg\vws\cim-sensors.xml

File location for VCSA:
/usr/lib/vmware-vpx/tomcat/webapps/vws/WEB-INF/cim-sensors.xml

1. **Take a backup copy of this file before editing.**

2. **Stop VMware inventory service see KB:**
   https://kb.vmware.com/selfservice/microsites/search.do?language=en_US&cmd=displayKC&externalId=2054085
   https://kb.vmware.com/selfservice/microsites/search.do?language=en_US&cmd=displayKC&externalId=2109881

3. **Edit the file**

4. **Find the section "SystemBoard"**

5. **Comment the sensor "VMware_DiscreteSensor" with <!-- -->**

   For vCenter 5.5:

```
<group name="SystemBoard">
     <sensor name="CIM_Chassis">
       <property>HealthState</property>
       <property>Model</property>
       <property>SerialNumber</property>
       <property>Tag</property> <!-- Display as Asset Tag -->
       <property>OtherIdentifyingInfo</property> <!-- Display as Other
Identifying Info -->
     </sensor>
     <!--
     <sensor name="VMware_DiscreteSensor" disallowPropertyList="true">
       <filter>
         <name>IpmiSensorType</name>
         <value>24</value>
       </filter>
       <property>HealthState</property>
       <property>CurrentState</property>
     </sensor>
     -->
  </group>
```

For vCenter 6:

```
<group name="SystemBoard">
     <sensor name="CIM_Chassis">
       <property>HealthState</property>
       <property>Model</property>
       <property>SerialNumber</property>
       <property>Tag</property> <!-- Display as Asset Tag -->
       <property>OtherIdentifyingInfo</property> <!-- Display as Other
Identifying Info -->
     </sensor>
     <!--
     <ipmi name="VMware_DiscreteSensor">
       <filter>
         <name>IpmiSensorType</name>
         <value>24</value>
       </filter>
     </ipmi>
     -->
  </group>
```

6. **Save the file**

7. **Restart VMware inventory service**

8. **Wait for 5 to 10 minutes for the data update**

   This information is still available through SHC interface.

2.2.1.3. 1Gb Ethernet ports under ESXi

Restriction

VMware ESXi 5.5 supports:

- up to 16x 1Gb/s ports

or

- up to 4 x 1Gb/s and up to 8 x 10Gb/s ports

VMware ESXi 6 supports:

- up to 16x 1Gb/s ports

or

- up to 4 x 1Gb/s and up to 8 x 10 Gb/s ports with Emulex adaptors

According to the number of authorized 1Gb/s Ethernet cards (Intel I350-T2 or I350-T4) in the configuration, the on-board 1Gb/s ports may have to be disabled to comply with VMware limits.

Workaround

To disable on-board 1Gb/s ports:

1. **Open the BIOS interface as explained in this document**

2. **Disable PCIe ports**

   1. From the **Advanced** section, select **Chipset Configuration>PCI Express Configuration>PCI Express root port 1 > Disable**.
   2. Save by pressing F10

3. **Reboot the system**

   Both the1GbE controller ports are no longer listed in the BIOS (PXE boot ports) or OS.

2.2.1.4. SR IOV feature

SR IOV feature is not supported with Intel Ethernet Server I350-T2 and I350-T4 adapters.

2.2.1.5. Emulex LPe15004 does not enable the link to Scan Devices in Device Manager

Issue

When trying to configure LPe15004 to boot from SAN via the Device Manager, the LPe15004 ports may not enable the link to Scan Devices.

Workaround

In Device Manager, go to the LPe15004 port and select **Configure HBA and Boot Parameters**. Then toggle **Topology Selection** to **AUTO Loop First - default**.

Select **Commit Changes**.

The Scan Devices now enables the link and finds the device.

2.2.1.6. ESXi detects LPe15004 as an LPe16000

Issue

VMware ESXi5.5 and ESXI6 detects LPe15004 as LPe16000.

2.2.1.7. PCI bus addresses change when adding modules to a system

Issue

When switching between a 2 module system and a 4 module system, even though no PCI boards have been moved, the PCI location changes.

This means that a Virtual Machine that is configured with a SRIOV VF (virtual function), will have to be manually reconfigured by an administrator for the PCI Device to function.

2.2.1.8. ESXi6 configuration may sometimes disappear across boots

Issue

After an update of the ESXi configuration the changes are not saved properly and on the next boot, all the changes are lost and must be re-applied.

Workaround

1. Connect to ESXi with putty and ESXi shell and SSH enabled.
2. Run ./sbin/auto-backup.sh to create a saved state of the present config in the file 'state.tgz'.
3. Try changing directory to bootbank (cd bootbank).
4. See if bootbank is in the /vmfs/volumes/[volume name] directory or in the /tmp directory.

- If it is in the /vmfs/volumes/[volume names] directory:
  - Check the file boot.cfg with 'cat boot.cfg' to make sure '--- state.tgz' is at the end of the 'modules=' line.
  - The config will be saved and retained on a reboot. No further action is required.
- If it is in the /tmp directory any config changes WILL NOT BE SAVED.
  - Look for file 'boot.cfg' by 'find / -name boot.cfg -print'
  - There will be two copies in two different directories — /vmfs/volumes/[volume names].

    One copy will be in a largely populated directory and the other will be in sparse one.

    The large one is where bootbank will later point to and the sparse one altbootbank.

5. Copy 'state.tgz' file from /tmp directory to the two /vmfs/volumes/[volume names] directories.
6. Use vi editor to modify both boot.cfg files. Go to the end of the line labeled 'modules=' and add '--- state.tgz'.

   This will cause the saved state to be retained on a reboot.
7. After rebooting the system you will notice that bootbank and altbootbank now exists in /vmfs/volumes/[volume names].

2.2.1.9. Internal maintenance Ethernet link may sometimes get disconnected/reconnected

Issue

In the SEL log, the connection to each module may get asserted and deasserted periodically.

Workaround

None. Reconnection is automatic, ignore the messages.

2.2.1.10. Potential issue during platform reset

Issue

In some rare cases, it is possible that resetting the platform may lead to a Red Hat kernel panic.

Workaround

If this happens, use the force power off command then power on the SHC.

2.2.2. Red Hat Restrictions and Issues

2.2.2.1. Error Messages may occur when some PCie cards are present in any of the 4 last modules in an octo module server

Issue

Under Red Hat 6.6 and 6.7, the following error messages are displayed while inserting PCI cards in the modules 4 to 7 of an octo module server .
udevd[X]: worker [] failed while handling '/devices/pci0000:3f/0000:3f:13.3'
udevd[3891]: worker [5251] unexpectedly returned with status 0x0100

Workaround

Install Red Hat 7.2 or 7.3.

2.2.3. Suse Restrictions and Issues

2.2.3.1. Memory Hot Adding not supported

Issue

When a new memory blade is inserted, the control led stays flashing amber and the SEL message shows the memory controller as absent. The memory size table is not updated.

2.2.4. Windows Server 2012 Restrictions and Issues

2.2.4.1. On bullion S8 servers, cannot boot if a LSI 9361 or a LSI 9381 raid controller is present on slot 0

Issue

On bullion S8 servers, it is not possible to boot the system if a LSI 9361 or a LSI 9381 raid controller is present on slot 0.

Workaround

1. **Open the BIOS interface as explained in this document**
2. **Enable PCIe Slot I/O Resources Denial**
   1. From the **Advanced** section, select **IIO>PCI Express Global Option>PCIe Slot I/O Resources Denial > Enable**.
   2. Save by pressing F10

2.2.5. ICare Restrictions and Issues

Restriction

The IP port **80** is no longer supported on the Windows operating system.

Workaround

Use the IP port **12080** to start the iCare console.

Chapter 3. Recommendations

3.1. Setting BIOS boot time-out on bullion S16 servers

The time-out value must be set to **30 min** to prevent problems.

On LINUX systems

- To display the current value:

```
/opt/BSMHW_NG/sbin/ipmi-raw_bull –D lan –h [IP] –u super –p pass 0 0x3A 0x19
0x00 0x05
```

Output:

00 00 xx yy

Current value (24 min): xx=C0 yy=0x12

- To change the current value to 30 min:

```
/opt/BSMHW_NG/sbin/ipmi-raw_bull –D lan –h [IP] –u super –p pass 0 0x3A 0x18
0x00 0x05 0x00 0x00 0x70 0x17
```

New value (30 min): xx=0x70 yy=0x17

On Windows systems

- To display the current value:

```
C:\Windows\system32>cd %BSMHW_NG_HOME%/engine/bin
C:\BSM\BSMHW_NG\engine\bin>bash –login –i
a455979@B017814 ~
$ cd /bin
../sbin/ipmi-raw_bull –D lan –h [IP] –u super –p pass 0 0x3A 0x19 0x00 0x05
```

Output:

00 00 xx yy

Current value (24 min): xx=C0 yy=0x12

- To change the current value to 30 min:

```
C:\Windows\system32>cd %BSMHW_NG_HOME%/engine/bin
C:\BSM\BSMHW_NG\engine\bin>bash –login –i
a455979@B017814 ~
$ cd /bin
../sbin/ipmi-raw_bull –D lan –h [IP] –u super –p pass 0 0x3A 0x18 0x00 0x05 0x00
0x00 0x70 0x17
```

New value (30 min): xx=0x70 yy=0x17

3.2. Optimizing power consumption on bullion S2 servers (disabling BCS)

WARNING
If a module is added later to a partition, BCS access must be re-enabled

To optimize power consumption on bullion S2 servers, it is recommended to disable the node controller (**BCS)** access using the bsmGetConfParam CLI command.

On LINUX systems

- To get the current value:

```
cd /bin
./bsmGetConfParam.sh -H <host> -u <user> -p <password> -a getDisableBCS
```

BCS disabling value is '**no**'.

- To change the current value:

```
cd /bin
./bsmSetConfParam.sh -H <host> -u <user> -p <password> -a setDisableBCS
-x <yes|no>
```

On Windows systems

- To display the current value

```
C:\Windows\system32>cd %BSMHW_NG_HOME%/engine/bin
C:\BSM\BSMHW_NG\engine\bin>bash –login –i
a455979@B017814 ~
$ cd /bin
./bsmGetConfParam.sh -H <host> -u <user> -p <password> -a getDisableBCS
```

BCS disabling value is '**no**'.

- To change the current value

```
C:\Windows\system32>cd %BSMHW_NG_HOME%/engine/bin
C:\BSM\BSMHW_NG\engine\bin>bash –login –i
a455979@B017814 ~
$ cd /bin
./bsmSetConfParam.sh -H <host> -u <user> -p <password> -a setDisableBCS
-x <yes|no>
```

3.3. Checking kdump over NFS on bullion S8 running Red Hat

It is highly recommended to run the following operations to ensure that **kdump over NFS** works properly on a bullion S8 running RHEL 6.5 or 6.6:

1. Check that the following updates have been applied to the RHEL 6.5 or 6.6 operating systems:

   kexec-tools-2.0.0-273.el6_5.1.x86_64.rpm

   kexec-tools-debuginfo-2.0.0-273.el6_5.1.x86_64.rpm

   kernel-2.6.32-431.37.1.el6.x86_64.rpm

   kernel-abi-whitelists-2.6.32-431.37.1.el6.noarch.rpm

   kernel-debug-2.6.32-431.37.1.el6.x86_64.rpm

   kernel-debug-debuginfo-2.6.32-431.37.1.el6.x86_64.rpm

   kernel-debug-devel-2.6.32-431.37.1.el6.x86_64.rpm

   kernel-debuginfo-2.6.32-431.37.1.el6.x86_64.rpm

   kernel-debuginfo-common-x86_64-2.6.32-431.37.1.el6.x86_64.rpm

   kernel-devel-2.6.32-431.37.1.el6.x86_64.rpm

   kernel-doc-2.6.32-431.37.1.el6.noarch.rpm

   kernel-firmware-2.6.32-431.37.1.el6.noarch.rpm

   kernel-headers-2.6.32-431.37.1.el6.x86_64.rpm

   perf-2.6.32-431.37.1.el6.x86_64.rpm

   perf-debuginfo-2.6.32-431.37.1.el6.x86_64.rpm

   python-perf-2.6.32-431.37.1.el6.x86_64.rpm

   python-perf-debuginfo-2.6.32-431.37.1.el6.x86_64.rpm

2. Edit the **/etc/sysconfig/kdump** file, and change the **KDUMP_COMMANDLINE_APPEND=** line, as follows:

   a. Change **nr_cpus=1** to **nr_cpus=4**

   b. Add: **disable_cpu_apicid=0**

3. Restart the kdump service:

```
service kdump restart
```

3.4. Booting bullion S servers under UEFI

The bullion S servers boot procedure is under UEFI mode.

Refer to the bullion S Remote Hardware Management CLI Reference Guide 86 A1 43FL for more information.

If bullion servers operate under Legacy mode, please reverse to UEFI mode.

3.5. Updating Firmware

All firmware versions included in a Technical State are compatible with each other. You should not install a firmware image independently of the rest of the technical set without consulting your Customer Service Representative.

3.6. PCIe Cards Slotting Rules

Some LSI cards:

- LSI RAID 9261-4i , LSI RAID 9361-4i, LSI RAID 9381-4i4e
- LSI SAS 9200-8e, LSI SAS 9300-8e

require a specific BIOS resource (IOport) which is limited.

This is the case on slots 4 to 7 on module 3 and on all slots on modules 4 to 7.

In that case, a BMC warning message is issued, such as the following:

02/06/2016 15:48:54 BMC Message Module 3: Lacking IO port resource (CPU socket nb: 1, PCIe riser nb: 4)

The consequence is that it is not possible to boot on those cards if they are put in slots which do not have IOport resource.

3.7. On a bullion S16 server, do not use « debug » option in GRUB to run RHEL 7

The "debug" option must not be used in GRUB to run RHEL7 properly on a bullion S16 server.

3.8. Upgrading PSUs Firmware ("Non-redundant" Configuration)

To upgrade PSUs firmware in the case of a "non-redundant" configuration (one PSU is not connected) its is highly recommended:

1. To upgrade first the PSU firmware using the bsmFWupg command
2. Then to upgrade globally all components firmware using the bsmFwGlobalUpg command

3.9. Adding Memory or PCI-e Blades

To achieve correctly these operations, it is highly recommended to refer to the detailed documentation *bullion S Upgrade Guidelines* , 86 A1 35FP delivered in the Maintenance folder of the *bullion S Customer Documentation Portfolio* , 86 XP 31PA.

3.10. MegaRAID configuration for RAID1

To prevent the board from beeping once the RAID1 group rebuilt is achieved, a parameter must be modified in the board configuration.
This modification can be done in two ways.

3.10.1. Method 1 : Using the board Configuration Utility in the Device Manager under EFI

1. Open the BIOS interface as explained in this document.
2. From the Device Manager screen, select **<AVAGO Megaraid SAS 9361-4i>** Configuration Utility.
3. Select **Main Menu** > **Controller Management>Advanced Controller Properties>Spare**
4. Select the **Replace Drive** parameter and set its value to **Disabled.**
5. Select **Apply Changes**
6. Reboot the system

3.10.2. Method 2 : using the StorCLI tool (from LSI) under RedHat Enterprise Linux

1. Get the controller number
   /usr/local/MegaRAID/Storage/Manager/StorCLI/storcli64 show
2. Set the copyback parameter value (example with controller #0)
   /usr/local/MegaRAID/ Storage/ Manager/StorCLI/storcli64 /c0 /set copyback=off
3. Reboot the system.

Chapter 4. Information

4.1. Getting access to the BIOS interface

There are two ways to access the BIOS interface: from the Server Hardware Console or using the bsmBootDeviceCLI command.

Using the server hardware console

1. Launch the SHC:
   a. Launch your web browser and enter the standard or secure IP address or host name of the master module, according to settings. The authentication page opens.
   b. Complete the Username and Password fields and click Log On. Once you are authenticated, the System Control page opens.
2. Launch the Remote System Console

From the System Control tab, click Remote Console > Launch. The Remote System Console opens in a new window.

Important	**Select NO when the Java security warning asks whether you want to block the execution of potentially dangerous components.**

3. Launch the BIOS interface
   a. Click **Power > Power Management** to open the **Power Management** page and click **Power On** to launch the boot sequence.
   b. Switch to the Remote Console screen.
   c. After a few minutes, the following screen is displayed.

Figure 4-1. Accessing the boot options

   d. Press **[Esc]** to access the boot options.

Using the bsmBootDevice CLI command

- From a LINUX console

```
/opt/BSMHW_NG/bin/bsmBootDevice.sh-H <host> -u <user> -p <password> -d bios
```

- From a Windows console:
  - Launch cygwin:

```
bash -login -i
```

  - Enter:

```
cd /bin
bsmBootDevice.sh -H <host> -u <user> -p <password> -d bios
```

4.2. Installing native Windows Server 2012 R2 on bullion S2

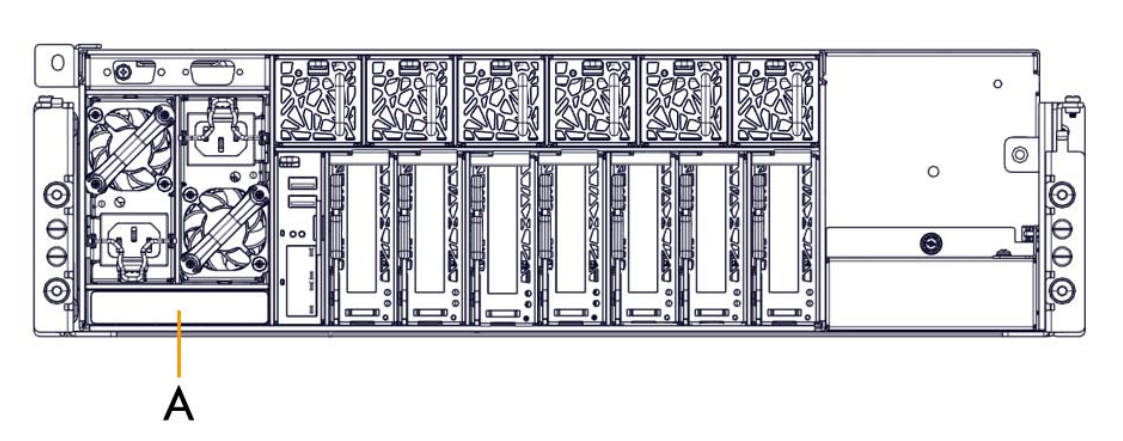
To install native Windows on a bullion S2 server, set the **enable_full_power_cycle** key to **yes:**

Using the **bsmSetConfParam** CLI command

```
cd /bin
./bsmSetConfParam.sh -H<host> -u <user> -p <password> -k
'bmc.power.enable_full_power_cycle' -x yes
```

4.3. Locating COA Windows labels

The identification labels are located at the rear of the server drawers in a small drawer (A).



Press on the small drawer to open it and check the labels.

4.4. Upgrading PCIe configuration on a bullion S16 server

If you need to upgrade a bullion S16 server with PCI-e cards, please contact your Bull representative.

4.5. Using the Heartbeat Tool

Note This tool is only available under Red Hat

The Heartbeat tool is used to check regularly that the system is still alive.

It also gives the possibility to reset a blocked system after a time-out.

Refer to Red Hat documentation for help about installing and using the tool.

4.6. SN150 card not reported as SN150

Under ESXI6, the SN150 card is reported as a non-volatile memory controller and not as a SN150.

4.7. Identifying Failed Memory Modules

To identify which memory module is in error, look at the Messages Log on the BMC.

Note An entry is only put in the Messages log when a SEL event is issued, which occurs only when the number of corrected errors exceeds the threshold.

4.8. Processor Temperature

The data reported in DTS reflects the delta between the current temperature and the maximum junction temperature of the die (Tj).

Digital Thermal Sensors (DTS) have been introduced to Intel® architecture CPU families since Intel® Pentium® M processors.

Chapter 5. Delivery Content

5.1. Delivered items

- Documentation, firmware and customer tools are delivered on the Resources and Documentation DVDs.
- BPM, BSMHW_NG, DiagTools and iCare are delivered on the Bull Administration Tools DVD.
- VMware ESXi is delivered, if ordered, on a bootable USB key.

5.1.1. Documentation

Note (*) indicates a new version, (**) indicates a new item.

Name	Description	Version
bullion S Customer Documentation Portfolio	Complete documentation dedicated to the customer.	14 (*)
bullion S Field Documentation Portfolio	Complete documentation dedicated to the field.	14 (*)

5.1.2. Platform Firmware

Note (*) indicates a new version, (**) indicates a new item.

Name	Description	Version
BCM53101_WEO	The WEO flash image file for Broadcom Switch BCM53101E	0.0
BIOSX05 E7-V2 family	The CIX (system motherboard) BIOS X05 image	5.31.2 build 005
BIOSX08 E7-V3 family	The CIX (system motherboard) BIOS X08 image	8.38.3 build 009 (*)
BIOSX10 E7-V4 family	The CIX (system motherboard) BIOS X10 image	10.45.0 build 001 (*)
CPLD_MUCM	The flash image file for the CPLD component on the Ultra-Capacitors management board.	1.4
CPLD_M_CIX	The flash image file for the CPLD memory component on the CIX board (system motherboard).	0.1.1
CPLD_PM1_CIX	The flash image file for the PM1CPLD component on the CIX board (system motherboard).	0.0.6 build HS10

Name	Description	Version
CPLD_PM2_CIX	The flash image file for the PM2CPLD component on the CIX board (system motherboard).	0.0.8
CPLD_PM2_CIX_BDX	The flash image file for the PM2CPLD component on the CIX board (system motherboard) equipped with Intel® Xeon® Processor E7-v4 Family.	0.8.A
CPLD_P_CIX	The flash image file for the CPLD component on the CIX board (system motherboard).	0.3.0
DS1600PED_PSU	The flash image file for the DPS1600PED component rated 1600W on the PSU board.	01.10
DS750PED_PSU	The flash image file for the DPS750PED component rated 750W on the PSU board.	01.15.00
EMM30_BMC	The software embedded in the server module to implement management functions accessible from the System Hardware Console (SHC) graphical interface.	30.32.00 build 1362
ESXi_5	The VMware hypervisor.	5.5 patch10 Build 4722766
ESXI_6		6.0 update 3 Build 5572656 (*)
FPGA_CIX	The firmware to be loaded on the CIX board (system motherboard) FPGA processors.	0.4.8
FPGA_WEO	The flash image file for 1Gb Ethernet switch component included in the connecting box.	0.2.3 Build HS11
LCP	The firmware for the Local Control Panel display.	20
PM_MUCM	The flash image file for Power Module (PM) component on the Ultra-Capacitor management board.	0.4
PM_RMxD3	The flash image file for PM component on the RMxD3 boards.	0.3 Build HS11
PM_RM3D4	The flash image file for PM component on the RM3D4 boards.	0.1
POWERVILLE_CIX	The flash image file for the integrated Ethernet controller on the CIX board (system motherboard).	1.63

Name	Description	Version
UCD9224_CIX	The flash image file for UCD9224 component on the CIX board (system motherboard).	1.0

5.1.3. Adapter Firmware

Note (*) indicates a new version, (**) indicates a new item.

Name	Version
Emulex PCIe LPe12002-M8	fw202a3 Universal boot code version 1120a1 (*)
Emulex PCIe LPe15004-M8	11.2.156.27 (*)
Emulex PCIe LPe16002	11.2.156.27 (*)
Emulex PCIe OCe11102	11.2.1153.20 (*)
Emulex PCIe OCe14102	11.2.1153.23 (*)
Intel Ethernet Server I350-X520	21.1
HGST PCIe Solid-State Accelerator	FW V0BV - Boot 2.6.28
HGST Ultrastar SN150 16 Gb PCIe Solid-State Accelerator	KMGNP120
LSI MegaRAID SAS 9261-8i	12.15.0-0239
LSI MegaRAID SAS 9361-4i	24.18.0-0021 (*)
LSI MegaRAID SAS 9380-4i4e	24.18.0-0021 (*)
LSI SAS 9200-8e	P20
LSI SAS 9300-8e	P14 (*)

5.1.4. VMware ESXi Additional and updated components

Note (*) indicates a new version, (**) indicates a new item.

Emulex CIM Provider is required by the Emulex One Command Manager vCenter plugin, and allows most Emulex firmware to be updated on the fly.

LSI CIM provider is needed to remotely manage LSI boards via MegaRAID Storage Manager software.

ESXi 5.5

Name	Version	Vendor	Acceptance Level
elxnet	11.1.145.0-1OEM.550.0.0.1331820	Emulex	VMwareCertified
emulex-cim-provider	11.1.145.1-01OEM.550.0.0.1331820	Avago	VMwareAccepted
lpfc	11.1.183.43-1OEM.550.0.0.1331820	Emulex	VMwareCertified
lsiprovider	500.04.V0.62-0005	LSI	VMwareAccepted
scsi-megaraid-sas	6.612.07.00-1OEM.550.0.0.1331820	Avago	VMwareCertified
lsi-mr3	6.912.11.00-1OEM.550.0.0.1391871	Avago	VMwareCertified
lsi-msgpt3	14.00.00.00-1OEM.550.0.0.1391871	Avago	VMwareCertified
net-igb	5.3.2-1OEM.550.0.0.1331820	Intel	VMwareCertified
vmware-esx-storcli	1.21.06-01	LSI	PartnerSupported

ESXi 6

Name	Version	Vendor	Acceptance Level
brcmfcoe	11.2.1153.13-1OEM.600.0.0.2768847		
elxnet	11.2.1149.0-1OEM.600.0.0.2768847	Emulex	VMwareCertified
emulex-cim-provider	11.2.156.19-01OEM.600.0.0.2768847	Emulex	VMwareAccepted
lpfc	11.2.266.0-1OEM.600.0.0.2768847	Emulex	VMwareCertified
lsi-mr3	6.913.06.00-1OEM.600.0.0.2768847	Avago	VMwareCertified
lsiprovider	500.04.V0.62-0005	LSI	VMwareAccepted
net-igb	5.3.3-1OEM.600.0.0.2494585	Intel	VMwareCertified
lsi-msgpt3	14.00.00.00-1OEM.600.0.0.2768847	Avago	VMwareCertified
vmware-esx-storcli	1.21.06-01	LSI	PartnerSupported

5.1.5. Customer Tools

Note (*) indicates a new version, (**) indicates a new item.

Name	Description	Version
DiagTools	Offers facilities to diagnose machine. It contains a main program that can launch the following tools: Read Register Error Decoding Display Configuration Save Configuration QPI State XQPI State	2.0.2
mc-setup	A Linux Utility used to discover the embedded management board's MAC address and to change the embedded management board's IP address.	1.2.1 Build 2
psetup	A Windows Utility used to discover the embedded management board's MAC address and to change the embedded management board's IP-address.	1.2.4

5.1.6. Other Software and Firmware

Note (*) indicates a new version, (**) indicates a new item.

Name	Description	Version
Bull_Admin_Tools_ VM_Appliance	An appliance that delivers Bull Administration tools on a Virtual Machine running CentOS system.	1.0.10 (*)
bmclanpet	The Platform Event Trap definition file. This MIB (Management Information Base) file is used by SNMP (Simple Network Management Protocol) managers to receive server hardware events.	2.3-4
BPM	A WEB application used to display server hardware status and information. It can also be used to get and set hardware configuration parameters. Both Linux and Windows versions are provided.	2.5.12 (*)
BSMHW_NG	A set of prompt commands, based on free IPMI open source, used to manage server or device hardware. These commands can be used to return information and status and/ or to remotely control and configure server hardware.	1.4.5 (*)
iCare	A WEB application used for hardware maintenance. Both Linux and Windows versions are provided.	1.8.1 (*)
MIB_bull_Platform Management	Platform Management SNMP interfaces.	201411141200Z
MIB_PlatformEvent Traps	Platform Event Trap definition file. This file is used by SNMP managers to receive server hardware events.	2.3.5

5.2. Firmware Detailed Information

5.2.1. BIOS X05 Firmware

Supported OS and servers

All operating systems and all server configurations (from bullion S2 to bullion S8) on E7 V2 (Ivybridge) processors are supported.

Component versions

UEFI revision specification 2.3

Intel® Brickland-EX reference code 1.40

Microcode: MED306E7_0000070D (Intel® Xeon® Processor E7 v2 Family D1 stepping)

5.2.2. BIOS X08 Firmware

Supported OS and servers

All operating systems and all server configurations (from bullion S2 to bullion S16) on E7 V3 (Haswell) processors are supported.

Component versions

UEFI revision specification 2.3

Management Engine SPS_02.03.00.398.0

Brickland® HSX reference code 1.70 for Intel® Xeon® Processor E7 v3

Microcodes:

- M80306F4_0000000E (Intel® Xeon® Processor E7 v3 Family E0 stepping)
- M80306F3_0000000D (Intel® Xeon® Processor E7 v3 Family D0 stepping)

5.2.3. BIOS X10 Firmware

Supported OS and servers

All operating systems and all server configurations (from bullion S2 to bullion S16) on E7 V4 (Broadwell) processors are supported.

Component versions

UEFI revision specification 2.3

Brickland® reference code 3.60 for Intel® Xeon® Processor E7 v4

Management Engine SPS_02.04.00.043.0

Microcodes:

- MEF406F1_0B000021 (Intel® Xeon® Processor E7 v4 Family B0 stepping)
- MEF406F0_00000014 (Intel® Xeon® Processor E7 v4 Family A0 stepping)

5.2.4. EMM firmware

Supported servers

bullion S2, S4, S8, S16

Dependencies

BIOS

BIOSX05.29.03 or higher : E7-V2 (Ivybridge) processors

BIOSX08.29.03 or higher : E7-V3 (Haswell) processors

BIOSX10.31.00 or higher : E7-V4 (Broadwell) processors

FPGA

WEO FPGA 0.2.3 or higher

CIX FPGA 0.4.0 or higher

CPLD

CPLD_PM2_CIX : E7-V2 (Ivybridge) and E7-V3 (Haswell) processors

CPLD_PM2_CIX_BDX : E7-V4 (Broadwell) processors

5.2.5. CPLD_PM2_CIX_BDX

Dependencies

This firmware should be used only for system with Intel® Xeon® Processor E7 v4 Family.
It must not be used for system with Intel® Xeon® Processor E7 v2 and v3 Families (use CPLD_PM2_CIX in this case).

5.2.6. FPGA_CIX

Dependencies

EMM Firmware 1351

CPLD_P_CIX 0.3.0

Chapter 6. History of previous versions

6.1. TS 22.02 (Mars 2017)

New Features

BIOSX08

- Changed default value of spareErrTh from 15 to 500
- New microcode version for Brickland® HSX reference code 1.70 for Intel® Xeon® Processor E7 v3 Family:
  - M80306F4_0000000E (Intel® Xeon® Processor E7 v3 Family E0 stepping)
  - M80306F3_0000000D (Intel® Xeon® Processor E7 v3 Family D0 stepping)

BIOSX10

- Changed default value of spareErrTh from 15 to 500
- New microcode version for Intel® Xeon® Processor E7 v4 Family A0 stepping: MEF406F0_00000014
- New microcode version for Intel® Xeon® Processor E7 v4 Family B0 stepping: MEF406F1_0B00001F
  - Fixed sighting s4988836: Intermittent Low VMSE margins running at 1866
  - Fixed sighting s4988888: Overwrite SPD value for backside vref to correct asymmetrical Backside Margins for 3DS DIMMs
  - Fixed several sightings correcting issues for DDR3
- New QPI and Memory initialization code (Intel Reference Code 3.60):
  - Adding iMS feature support
    Security enhancement: corrected Non-Locked BARs in SMI
  - Bug fix: Read only items in LSI Hii options could be modified
  - Bug fix: H2OSDE couldn't update OEM strings in SMBIOS type 11
  - Bug Fix: corrected update "Interrupt Line" offset in PCI configuration space

Processor

- Intel® Xeon® Processor E7-8894 v4 Family (Broadwell®) B0 stepping microcode version MEF406F1_0B00001F

Resolved Issues

VMware: Unable to update LSi9361-4i using storCLI

The storCLI utility now detects LSi9361-4i card and all LSI 12Gb SAS adapters.

6.2. TS 21.02 (October 2016)

New Features

BIOSX08

- New Intel® Xeon® Processor E7 v3 Family E0 stepping microcode version M80306F4_0000000C
- New Intel® Xeon® Processor E7 v3 Family D0 stepping microcode version M80306F3_0000000D (Mandatory for ESXi6.0)
- New QPI and Memory initialization code (Intel Reference Code 1.70)Added OSB (Opportunistic Snoop Broadcast) setup option (default=enabled

BIOSX10

- Add memory mirroring support on Intel® Xeon® Processor E7 v4 Family
- New Intel® Xeon® Processor E7 v4 Family B0 stepping microcode version MEF406F1_0B00001B (Mandatory for ESXi6.0)
- New QPI and Memory initialization code (Intel Reference Code 3.20)
- Boot next device automatically in boot list if PXE boot device is unavailable
- The UEFI Boot Type is the only boot type shown in setup menu
- Updated QPI tap settings per Intel specification
- Memory hot add is supported in Performance Mode

VMware ESXI 6

- This TS is mandatory for VMware to have the right level of Intel microcode

6.3. TS 20.04 (July 2016)

New Features

- Support of Intel® Xeon® Processor E7 v4 Family (Broadwell).

6.4. TS 10.03 (April 2016)

New Features

- Support of the LSI MegaRAID SAS 9380-4i4e adapter
- Support of the 1.8 TB 2.5" 10Krpm SAS disk under Red Hat 7.2
- Support of Suse Linux Enterprise Server (SLES)
- Heartbeat (System Supervision Tool) under Red Hat
- Improvement of the security of the Management Controller (BMC) connection

Resolved issues

- Add Boot Option BIOS function fails
  The Boot From File > Add Boot Option BIOS function has been replaced by "Add Drive Alias".
- BIOS logs not saved on micro-SD card
  BIOS logs saved on micro-SD card now.
- Bad security access management
  Corrections brought by EMM30 BMC 30.24.00 build 1350.
- CEM Certification
  This is a Class A product based on the standard of the VCCI Council. If this equipment is used in a domestic environment, radio interference may occur, in which case, the user may be required to take corrective actions.

6.5. TS 09.02 (October 2015)

New Features

- Hardware dump feature:
  gets a dump of hardware registers using the bsmRegDump.sh –a dump command
- Diagnostic dump feature:
  using the corresponding SHC button
- Leaky bucket for corrected errors (QPI/XQPI)
- UCM charge/discharge:
  using the corresponding SHC button or the bsmUCMcmd command
- Confirmation for the power off/power on cycle:
  using the corresponding SHC button

Resolved issues

- Memory Hot Add
  Memory Hot Add is now supported on servers equipped with the E7-V3 family processor.
- PCIe Hot Plug
  Hot Add of PCIe OCe11102 now works on WS2012 R2.
- LSI MegaRAID 9261 card first configuration
  The LSI MegaRAID 9261card is configured in UEFI mode (default).
- Upgrading Emulex Lpe 12002 card
  Solved by the Emulex LPe12002-M8 firmware: fw202a0 Universal boot version 513a11.

6.6. TS 008.05 (June 2015)

New Features

- Support for XEON E7-V3 family in addition to E7-V2 family
- Support for DDR4

Resolved issues

- After an OS shutdown, the green light on memory blade switches off.
- The memory description in smbios table (using dmidecode tool) is now correct for empty slots.
- Update of the EMM firmware is now currently supported on power on state.
- LSI MegaRAID SAS 9261-8i adapters are now detected at reboot on bullion S2.
- It is now possible to configure a boot LUN from a SAN using the LPe16002 adapter.
- Hot Plug of Intel Ethernet Server I350-T2 and I350-T4 adapters is now supported under Red Hat 6.6.
- Windows Servers 2012 R2 booting now with Intel Xeon E7 v3 when an Intel i350 Gbe is connected to the system.

6.7. TS 007.03 (April 2015)

New Features

- Emulex OCe 14102 adapter support
- LSI SAS 9300-8e adapter support
- Use of fine grain time synchronization between modules (TSC)
- Management of error LEDs in memory blades to help locate a faulty DIMM
- Support of active/passive PSU using the UCM module
- Red Hat 6.6 support
- Windows Server 2012 R2 support on bullion S2 and S4
- Improved error reporting in the SEL (e.g. lack of PCI resources, XQPI errors leading to reduced speed)

Resolved issues

- The following misleading message is no longer displayed in the BIOS trace at boot time:
  BMC Message BIOS Setup parameters are successfully deleted.
- FPGA programming file is optimized to complete the firmware faster. So, the Server Hardware Console no longer displays time-out message.

6.8. TS 006.04 (January 2015)

New Features

- PCIe hot plug (Red Hat 6.5 only as of today)
- Memory hot add (Red Hat 6.5 only as of today)
- Emulex PCIe LPe15004-M8 adapter support
- LSI MegaRAID SAS 9361-4i adapter support
- New disks support:
  - 300 GB 2.5" 15Krpm SAS HDD Blade
  - 1.2 TB 2.5" 10Krpm SAS HDD Blade
  - 1 TB 2." 7.2Krpm SATA HDD Blade
  - 256 GB 2.5" SATA SSD Blade
  - 512 GB 2.5" SATA SSD Blade
  - 600 GB 2.5" 15Krpm SAS HDD Blade
- UCM (Ultra Capacitor Module) support and associated BSM CLI commands.
- Memory sparing, scrubbing, device tagging, DDDC (Double Device Data Correction)
- BPM / BSM CLI for enabling/disabling the BCS2 (Bull Coherent Switch)
  - BIOS setting update from EMM (Embedded Management Module)
- Inventory: PCIe board information (VID, DID, SSVID) included
- bullion S8 can be partitioned as 6 socket system + 2 socket system
- bullion S8 with 6 sockets (3 modules) can be upgraded with a 2 socket module, so becoming a full 8 socket system.
- Improved stress diag suite
- UCM firmware upgrade
- PSU firmware upgrade

Resolved issues

- SR IOV feature (VMware) is supported with Emulex OneConnect OCe adapters.
- BIOS settings change is operational on all bullion S server range.
- DHCP configuration (platform)

  After breaker off, the BMC DHCP connection remains available.
- BIOS settings after BIOS upgrade (platform)

  The BIOS settings are no longer revert to their default value after a BIOS upgrade. Changed values are preserved.
- FCoE boot through the OCe11102 card is now supported.

End of document

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