HP BladeSystem c-Class to HPI Mapping Developers Guide

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Introduction

HP BladeSystem c-Class has brought energy efficient design to a whole new level in server infrastructure. Onboard Administrator (OA) is the management module that resides within the HP BladeSystem c-Class enclosure and can be paired with other tools to simplify daily tasks, warn of potential issues, and assist with repairs. OA provides a SOAP/XML interface for managing the HP BladeSystem c-Class.

OpenHPI provides an open source implementation of Hardware Platform Interface (HPI) defined by Service Availability Forum (SAF). OpenHPI's architecture contains a modular mechanism intended to make adding new hardware support easier. Several plug-ins exist in the OpenHPI source tree, giving access to various types of hardware.

The OpenHPI OA SOAP plug-in enables HPI support for HP BladeSystem c-Class enclosures. The OpenHPI OA SOAP plug-in supports Out-of-Band Management that allows it to run on any blade inside or outside the Blade System. The HPI application may run one or more instances of the OpenHPI OA SOAP plug-in in parallel with other plug-ins and communicates with the OA of HP BladeSystem c-Class enclosure using the SOAP/XML interface. The plug-in discovers the HP BladeSystem c-Class hardware resources and then populates OpenHPI data structures. The OpenHPI OA SOAP plug-in then retrieves the hardware events asynchronously and converts them into OpenHPI events.

In the OpenHPI source tree, this plug-in is called `oa_soap` and is referenced by the name `liboa_soap` in the OpenHPI configuration file.

Intended Audience

This document is intended for application developers, programmers, and database administrators who are responsible for developing, testing, administering, and maintaining HP BladeSystem c-Class enclosures.

Additional Resources

For more information about the Onboard Administrator, including the *HP BladeSystem Onboard Administrator User Guide*, see the following website:

http://www.hp.com/servers/blades

Typographic Conventions

This document uses the following typographic conventions.

`Command`
: A command name or qualified command phrase.

`ComputerOut`
: Text displayed by the computer.

Ctrl-x
: A key sequence. A sequence such as **Ctrl-x** indicates that you must hold down the key labeled **Ctrl** while you press another key or button.

`ENVIRONVAR`
: The name of an environment variable, for example, `PATH`.

ERRORNAME
: The name of an error, usually returned in the `errno` variable.

Key
: The name of a keyboard key. **Return** and **Enter** both refer to the same key.

Term
: The defined use of an important word or phrase.

`UserInput`
: Commands and other text that you type.

`VARIABLE`
: The name of a placeholder in a command, function, or other syntax display that you replace with an actual value.

`\` *`(continuation character)`*
: A backslash (\) at the end of a line of code (such as a command) indicates that the following line of code is contiguous, and you must not insert a line break. This convention facilitates the typesetting of long lines of code examples on a printed page. If you cut and paste sample code from this publication, ensure that you remove backslash characters at line endings.

…
: The preceding element can be repeated an arbitrary number of times.

|
: Separates items in a list of choices.

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Obtaining the OA SOAP Plug-in

The OA SOAP plug-in is included in OpenHPI version 2.11.1 and later. The OpenHPI source can be downloaded from the OpenHPI website located at:

http://www.openhpi.org/Downloads

Building the OpenHPI Source

The oa_soap plug-in and the ilo2_ribcl plug-in are built by default during the OpenHPI build process. To disable the build for these plug-ins, add the appropriate configure flag during the configuration process:

Disable the oa_soap plug-in build:

```
--disable-oa_soap
```

Disable the ilo2_ribcl plug-in build:

```
--disable-ilo2_ribcl
```

Both the ilo2_ribcl and oa_soap plug-ins require that the `openssl-devel` and `libxml2-devel` packages are installed in order to build successfully. Most testing has been performed with openssl-devel version 0.9.8a and libxml2-devel version 2.6.23. HP recommends that you obtain the latest version that is available for your distribution.

The `README` file in the OpenHPI source directory provides more details on building.

To begin the build process, enter the following commands:

```
./configure
```

```
make
```

To install the updated OpenHPI daemon and libraries, verify you have root privileges and enter the following command:

```
make install
```

Configuring the Onboard Administrator

You must set up a user account in the Onboard Administrator (OA) for each HP BladeSystem c-Class enclosure that you want to manage. The OA is configured at the factory with a default user name and password, which can be found on the tag attached to the hardware. To setup or change the login and/or password, refer to the *HP BladeSystem Onboard Administrator User Guide*. The user account for the plug-in on the OA must have administrator-level or operator-level privileges. You must also use OA firmware version 2.30 or later.

OpenHPI OA SOAP Plug-in Configuration File

The Onboard Administrator (OA) is the management module for the entire HP BladeSystem c-Class system. The HP BladeSystem c-Class system can have one or two (in redundant mode) OAs. If the Blade System is equipped with a single OA, then it is an Active OA. If the Blade System is equipped with two OAs, then one of them is Active and the other is StandBy. You should use the Active OA to manage the Blade System. The Active OA can be switched over to become the Standby OA using the web interface or by manually pulling the Active OA. Whenever an OA switchover occurs, the StandBy OA automatically becomes the Active OA.

The OpenHPI OA SOAP plug-in detects the Active and StandBy OAs, based on plug-in configuration details and starts interacting with the Active OA. Whenever an OA switchover occurs, the plug-in detects the switchover and begins interacting with the new Active OA.

The OpenHPI OA SOAP plug-in is configured in the `openhpi.conf` file located in the `/etc/openhpi/` directory. You can configure one or more OA SOAP plug-in instances along with other plug-ins in the `openhpi.conf` file.

The OpenHPI OA SOAP plug-in instance configuration parameters are listed in Table 1.

Table 1 OpenHPI OA SOAP Plug-in Configuration Details

Parameter	Description
entity_root	Indicates the entity root of the entity path. The entity path for the discovered resources are generated by adding the prefix *entity_root* to the location of the resource in the chassis.
OA_User_Name	Holds the OA user name. It is used for authenticating with OA.
OA_Password	Holds the OA password. It is used for authenticating with OA.
ACTIVE_OA	Holds the Active OA IP address.
STANDBY_OA	Holds the StandBy OA IP address. This parameter is optional.

NOTE: If the system only has one OA, then the *ACTIVE_OA* parameter should be specified and the *STANDBY_OA* parameter line should be commented out.

HP BladeSystem c-Class Resources

The HP BladeSystem c-Class enclosure c7000 contains the following hardware resources:

- Server Blades – 16 Half Blades or 8 Full Blades or a combination of both
- Partner Blades – Half height partner blade like the IO Blade or the Disk Blade can be placed in conjunction with Server blade
- Interconnects – 8 Single-Wide Interconnects or 4 Double-Wide Interconnects or a combination of both
- Onboard Administrators (Management Modules) – 2 Redundant OAs
- Fans – 10 Fans
- Power Subsystem – One Power Subsystem with 6 Power Supplies

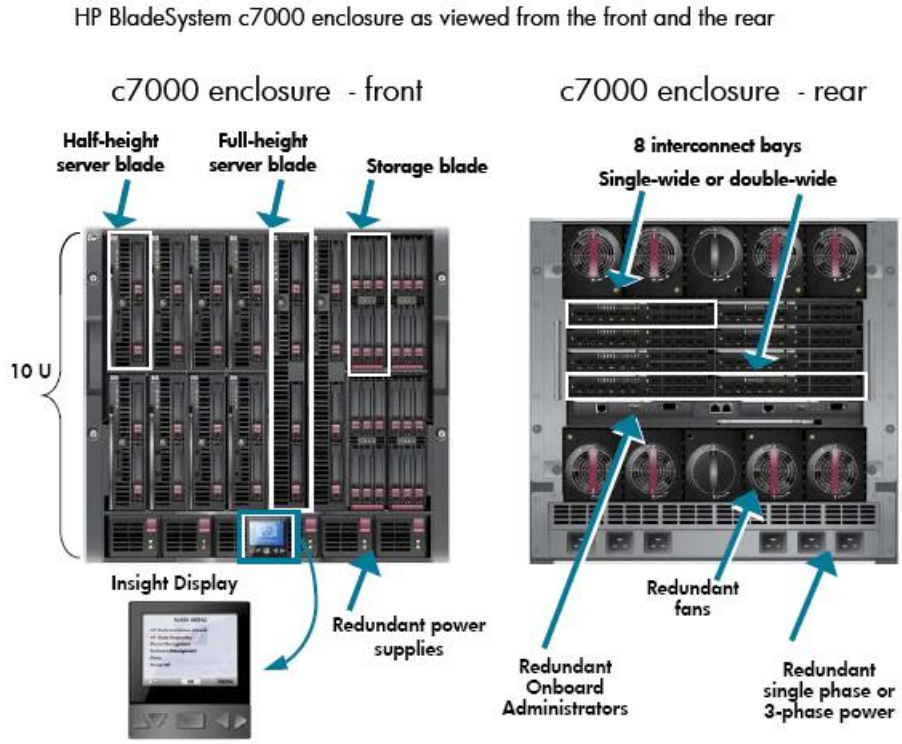
The HP BladeSystem c-Class enclosure c3000 contains the following hardware resources -

- Server Blades – 8 Half height Blades or 4 Full height Blades or a combination of both
- Partner Blades – Half height partner blade like the IO Blade or the Disk Blade can be placed in conjunction with Server blade
- Interconnects – 2 Single-wide interconnects or 1 Double-wide interconnect or combination of both
- Onboard Administrators (Management Modules) – 2 Redundant OAs
- Fans – 6 Fans
- Power Subsystem – One Power Subsystem with 6 Power Supplies

NOTE: The HP BladeSystem c-Class Enclosure is considered one hardware resource.

As an example, shows the details of the HP BladeSystem c7000 enclosure.

Figure 1 HP BladeSystem c7000 Enclosure Hardware Resources



RPT Mapping

Resource Presence Table (RPT) mapping of the HP BladeSystem c-Class enclosure resources to the HPI resources is specified in Table 2.

Table 2 Resource Mapping

HP c-Class BladeSystem Resource	HPI Resource
c-Class Enclosure	*SYSTEM_CHASSIS*
Onboard Administrator (OA)	*SYS_MGMNT_MODULE*
Server Blade	*SYSTEM_BLADE*
Storage Blade	*DISK_BLADE*
AMC Expansion Blade	*IO_BLADE*
PCIe Expansion Blade	*IO_BLADE*
Interconnect	*SWITCH_BLADE*
Virtual Connect	*SWITCH_BLADE*
Thermal Subsystem	*COOLING_UNIT*
Fan Zone[1]	*COOLING_DEVICE*
Fan	*FAN*
Power Subsystem	*POWER_ MGMNT*
Power Supply	*POWER_SUPPLY*
LCD	*DISPLAY_PANEL*

[1] Not applicable for c3000 enclosure

The HP c-Class enclosure contains the Server Blades, Interconnects, OAs, Fans, and Power Supplies. Therefore, the entity paths for the HP BladeSystem c-Class resources are as provided in Table 3.

Table 3 Resource Entity Path

HP c-Class BladeSystem Resource	Entity Path
c-Class Enclosure	{SYSTEM_CHASSIS, Enclosure Number}
Onboard Administrator (OA)	{SYSTEM_CHASSIS, Enclosure Number} {SYS_MGMNT_MODULE, OA Slot Number}
Server Blade	{SYSTEM_CHASSIS, Enclosure Number} {SYSTEM_BLADE, Blade Slot Number}
Storage Blade	{SYSTEM_CHASSIS, Enclosure Number} {DISK_BLADE, Blade Slot Number}
AMC Expansion Blade or PCIe Expansion Blade	{SYSTEM_CHASSIS, Enclosure Number} {IO_BLADE, Blade Slot Number}
Interconnect	{SYSTEM_CHASSIS, Enclosure Number} {SWITCH_BLADE, Interconnect Slot Number}
Virtual Connect	{SYSTEM_CHASSIS, Enclosure Number} {SWITCH_BLADE, Interconnect Slot Number}
Thermal Subsystem	{SYSTEM_CHASSIS, Enclosure Number} {COOLING_UNIT, Thermal Subsystem number=1}
Fan Zone[1]	{SYSTEM_CHASSIS, Enclosure Number} {COOLING_UNIT, Thermal Subsystem number=1} {COOLING_DEVICE , Fan Zone number}
Fan (c7000)	{SYSTEM_CHASSIS, Enclosure Number} {COOLING_UNIT, Thermal Subsystem number=1} {COOLING_DEVICE , Fan Zone number} {FAN, Fan Slot number }
Fan (c3000)	{SYSTEM_CHASSIS, Enclosure Number} {COOLING_UNIT, Thermal Subsystem number=1} {FAN, Fan Slot number }
Power Subsystem	{SYSTEM_CHASSIS, Enclosure Number} {POWER_MGMNT, Power Subsystem number=1}
Power Supply	{SYSTEM_CHASSIS, Enclosure Number} {POWER_MGMNT, Power Subsystem number=1} {POWER_SUPPLY, Power Supply Slot Number}
LCD	{SYSTEM_CHASSIS, Enclosure Number} {DISPLAY_PANEL, Display Panel number=1}

[1] Not applicable for c3000 enclosure

The supported resource capabilities for HP BladeSystem c-Class resources are specified in Table 4.

Table 4 Resource Capability

HP c-Class BladeSystem Resource	HPI Resource Capability
c-Class Enclosure	RESOURCE, RDR, INVENTORY_DATA, SENSOR, CONTROL
Onboard Administrator (OA)	RESOURCE, RDR, INVENTORY_DATA, SENSOR ,FRU
Server Blade	RESOURCE, RDR, INVENTORY_DATA, SENSOR ,FRU, MANAGED_HOTSWAP, POWER, RESET, CONTROL
Storage Blade	RESOURCE, RDR, INVENTORY_DATA, SENSOR ,FRU, CONTROL

Table 4 Resource Capability *(continued)*

HP c-Class BladeSystem Resource	HPI Resource Capability
IO Blade	
Interconnect Virtual Connect	RESOURCE, RDR, INVENTORY_DATA,, SENSOR ,FRU, MANAGED_HOTSWAP, POWER, RESET, CONTROL
Thermal Subsystem	RESOURCE, RDR, SENSOR
Power Subsystem	RESOURCE, RDR, SENSOR, CONTROL
Fan Zone	RESOURCE, RDR, INVENTORY_DATA, SENSOR
Fan Power Supply	RESOURCE, RDR, INVENTORY_DATA, SENSOR ,FRU
Display Panel	RESOURCE, RDR, INVENTORY_DATA, SENSOR, CONTROL

RDR Mapping

There are a few general points that are applicable for all HP BladeSystem c-Class Resource Data Records (RDRs). These points are detailed in the following list:

- Power controls are supported only on Server Blades and Interconnects (Switches).
- Control mode support for Power Controls and UID Controls is manual and read only. For example, `CtrlRec.DefaultMode.Mode = SAHPI_CTRL_MODE_MANUAL`.
- The Digital Control states `SAHPI_CTRL_STATE_PULSE_ON` and `SAHPI_CTRL_STATE_PULSE_OFF` for Power Controls and UID LED controls are not supported by the resource with control capability, due to a limitation in the hardware to support the transitory states for power and UID LED.
- All sensors in the Blade System are only of the data type `SAHPI_SENSOR_READING_TYPE_FLOAT64`.
- The Thermal Sensors that are supported for Server Blades, differ based on the blade type. A list of the supported thermal sensors and blade types is provided in "Appendix B" (page 42).
- Thermal sensor events are supported only on Interconnects (Switches).
- HPI applications can disable individual sensors. An example for all sensors is `SensorRec.EnableCtrl = SAHPI_TRUE`.
- HPI applications cannot set thresholds. An example for all threshold sensors is `SensorRec.ThresholdDefn.WriteThold`.
- Power management controls are supported on the Power Subsystem.
- Power management controls include: power mode, dynamic power, power limit mode, static power limit, dynamic power cap, derated circuit cap, and rated circuit cap.

HP Bladesystem c-Class Enclosure RDRs

Table 5, Table 6, and Table 7 detail the HP BladeSystem c-Class Enclosure RDRs.

Table 5 HP BladeSystem c-Class Enclosure Control RDRs

Control Name	Control Number	Control Type	Control Output Type	Default Mode	Supported Values
UID LED State	OA_SOAP_UID_CNTRL	DIGITAL	LED	MANUAL	SAHPI_CTRL_STATE_OFF SAHPI_CTRL_STATE_ON

Table 6 HP BladeSystem c-Class Enclosure Sensor RDRs

Sensor Name	Sensor Number	Sensor Type	Event Category	Events	Reading Support
Ambient Zone Thermal Status[1]	OA_SOAP_SEN_TEMP_STATUS	SAHPI_TEMPERATURE	SAHPI_EC_THRESHOLD	SAHPI_ES_UNSPECIFIED, SAHPI_ES_UPPER_MAJOR SAHPI_ES_UPPER_CRIT	TRUE
Operational Status	OA_SOAP_SEN_OPER_STATUS	SAHPI_OPERATIONAL	SAHPI_EC_ENABLE	SAHPI_ES_ENABLED SAHPI_ES_DISABLED	FALSE
Predictive Failure	OA_SOAP_SEN_PRED_FAIL	SAHPI_OPERATIONAL	SAHPI_EC_PRED_FAIL	SAHPI_ES_PRED_FAILURE_DEASSERT SAHPI_ES_PRED_FAILURE_ASSERT	FALSE
Internal Data Error	OA_SOAP_SEN_INT_DATA_ERR	SAHPI_OPERATIONAL	SAHPI_EC_ENABLE	SAHPI_ES_ENABLED SAHPI_ES_DISABLED	FALSE
Device Failure	OA_SOAP_SEN_DEV_FAIL	SAHPI_OPERATIONAL	SAHPI_EC_ENABLE	SAHPI_ES_ENABLED SAHPI_ES_DISABLED	FALSE
Device Degraded	OA_SOAP_SEN_DEV_DEGRAD	SAHPI_OPERATIONAL	SAHPI_EC_ENABLE	SAHPI_ES_ENABLED SAHPI_ES_DISABLED	FALSE
Redundancy Error	OA_SOAP_SEN_REDUND_ERR	SAHPI_OPERATIONAL	SAHPI_EC_ENABLE	SAHPI_ES_ENABLED SAHPI_ES_DISABLED	FALSE
Device Not Supported	OA_SOAP_SEN_DEV_NOT_SUPPORT	SAHPI_OPERATIONAL	SAHPI_EC_ENABLE	SAHPI_ES_ENABLED SAHPI_ES_DISABLED	FALSE

NOTE: [1] The data unit for Ambient Zone Thermal Status is *SAHPI_SU_DEGREES_C*.

Table 7 HP BladeSystem c-Class Enclosure Inventory RDRs

Area Type	Supported Field Types
PRODUCT_INFO	PRODUCT_NAME, MANUFACTURER, PRODUCT_VERSION, CUSTOM (Telco_Status), CUSTOM (Power_Type), CUSTOM (ENCLOSURE STATUS)
CHASSIS_INFO	PART_NUMBER, SERIAL_NUMBER
INTERNAL_USE	MANUFACTURER, PRODUCT_NAME, PART_NUMBER, SERIAL_NUMBER

OA RDRs

Table 8, Table 9 and Table 10 detail the OA RDRs.

Table 8 OA Control RDRs

Control Name	Control Number	Control Type	Control Output Type	Default Mode	Supported Values
UID LED State	OA_SOAP_UID_CNTRL	DIGITAL	LED	MANUAL	SAHPI_CTRL_STATE_OFF SAHPI_CTRL_STATE_ON

Table 9 OA Sensor RDRs

Sensor Name	Sensor Number	Sensor Type	Event Category	Events Sensor	Reading Support
Ambient Zone Thermal Status [1]	OA_SOAP_SEN_TEMP_STATUS	SAHPI_TEMPERATURE	SAHPI_EC_THRESHOLD	SAHPI_ES_UNSPECIFIED	TRUE
Operational Status	OA_SOAP_SEN_OPER_STATUS	SAHPI_OPERATIONAL	SAHPI_EC_ENABLE	SAHPI_ES_ENABLED SAHPI_ES_DISABLED	FALSE
Predictive Failure	OA_SOAP_SEN_PRED_FAIL	SAHPI_OPERATIONAL	SAHPI_EC_PRED_FAIL	SAHPI_ES_PRED_FAILURE_DEASSERT SAHPI_ES_PRED_FAILURE_ASSERT	FALSE
OA Redundancy	OA_SOAP_SEN_OA_REDUND	SAHPI_OPERATIONAL	SAHPI_EC_ENABLE	SAHPI_ES_ENABLED SAHPI_ES_DISABLED	FALSE
Internal Data Error	OA_SOAP_SEN_INT_DATA_ERR	SAHPI_OPERATIONAL	SAHPI_EC_ENABLE	SAHPI_ES_ENABLED SAHPI_ES_DISABLED	FALSE
Management Processor Error	OA_SOAP_SEN_MP_ERR	SAHPI_OPERATIONAL	SAHPI_EC_ENABLE	SAHPI_ES_ENABLED SAHPI_ES_DISABLED	FALSE
Device Failure	OA_SOAP_SEN_DEV_FAIL	SAHPI_OPERATIONAL	SAHPI_EC_ENABLE	SAHPI_ES_ENABLED SAHPI_ES_DISABLED	FALSE
Device Degraded	OA_SOAP_SEN_DEV_DEGRAD	SAHPI_OPERATIONAL	SAHPI_EC_ENABLE	SAHPI_ES_ENABLED SAHPI_ES_DISABLED	FALSE
Redundancy Error	OA_SOAP_SEN_REDUND_ERR	SAHPI_OPERATIONAL	SAHPI_EC_ENABLE	SAHPI_ES_ENABLED SAHPI_ES_DISABLED	FALSE
Firmware Mismatch	OA_SOAP_SEN_FW_MISMATCH	SAHPI_OPERATIONAL	SAHPI_EC_ENABLE	SAHPI_ES_ENABLED SAHPI_ES_DISABLED	FALSE
Device Not Supported	OA_SOAP_SEN_DEV_NOT_SUPPORT	SAHPI_OPERATIONAL	SAHPI_EC_ENABLE	SAHPI_ES_ENABLED SAHPI_ES_DISABLED	FALSE
OA Link Status	OA_SOAP_SEN_OA_LINK_STATUS	SAHPI_OPERATIONAL	SAHPI_EC_ENABLE	SAHPI_ES_ENABLED SAHPI_ES_DISABLED	FALSE

NOTE: [1] The data unit for Ambient Zone Thermal Status is *SAHPI_SU_DEGREES_C*.

Table 10 OA Inventory RDRs

Area Type	Supported Field Types
PRODUCT_INFO	PRODUCT_NAME, MANUFACTURER, PRODUCT_VERSION
BOARD_INFO	PART_NUMBER, SERIAL_NUMBER

Server Blade, Disk, and IO RDRs

Table 11, Table 12, Table 13, and Table 14 detail the Server Blade, Disk, and IO Blade RDRs.

Table 11 Server Blade Control RDRs

Control Name	Control Number	Control Type	Control Output Type	Default Mode	Supported Values
Power State	OA_SOAP_PWR_CNTRL	DIGITAL	POWER_STATE	MANUAL	SAHPI_CTRL_STATE_OFF
					SAHPI_CTRL_STATE_ON
UID LED State	OA_SOAP_UID_CNTRL	DIGITAL	LED	MANUAL	SAHPI_CTRL_STATE_OFF
					SAHPI_CTRL_STATE_ON

Table 12 Disk and IO Blade Control RDRs

Control Name	Control Number	Control Type	Control Output Type	Default Mode	Supported Values
UID LED State	OA_SOAP_UID_CNTRL	DIGITAL	LED	MANUAL	SAHPI_CTRL_STATE_OFF
					SAHPI_CTRL_STATE_ON

Table 13 Server Blade, Disk, and IO Blade Sensor RDRs

Sensor Name	Sensor Number	Sensor Type	Event Category	Events Sensor	Reading Support
Ambient Zone Thermal Status [1]	OA_SOAP_SEN_TEMP_STATUS	SAHPI_TEMPERATURE	SAHPI_EC_THRESHOLD	SAHPI_ES_UNSPECIFIED	TRUE
Operational Status	OA_SOAP_SEN_OPER_STATUS	SAHPI_OPERATIONAL	SAHPI_EC_ENABLE	SAHPI_ES_ENABLED SAHPI_ES_DISABLED	FALSE
Predictive Failure	OA_SOAP_SEN_PRED_FAIL	SAHPI_OPERATIONAL	SAHPI_EC_PRED_FAIL	SAHPI_ES_PRED_FAILURE_DEASSERT SAHPI_ES_PRED_FAILURE_ASSERT	FALSE
Internal Data Error	OA_SOAP_SEN_INT_DATA_ERR	SAHPI_OPERATIONAL	SAHPI_EC_ENABLE	SAHPI_ES_ENABLED SAHPI_ES_DISABLED	FALSE
Management Processor Error	OA_SOAP_SEN_MP_ERR	SAHPI_OPERATIONAL	SAHPI_EC_ENABLE	SAHPI_ES_ENABLED SAHPI_ES_DISABLED	FALSE
Thermal Warning	OA_SOAP_SEN_THERM_WARN	SAHPI_OPERATIONAL	SAHPI_EC_ENABLE	SAHPI_ES_ENABLED SAHPI_ES_DISABLED	FALSE
Thermal Danger	OA_SOAP_SEN_THERM_DANGER	SAHPI_OPERATIONAL	SAHPI_EC_ENABLE	SAHPI_ES_ENABLED SAHPI_ES_DISABLED	FALSE
IO Configuration Error	OA_SOAP_SEN_IO_CONFIG_ERR	SAHPI_OPERATIONAL	SAHPI_EC_ENABLE	SAHPI_ES_ENABLED SAHPI_ES_DISABLED	FALSE

Table 13 Server Blade, Disk, and IO Blade Sensor RDRs *(continued)*

Sensor Name	Sensor Number	Sensor Type	Event Category	Events Sensor	Reading Support
Device Power Request Error	OA_SOAP_SEN_ DEV_PWR_REQ	SAHPI_ OPERATIONAL	SAHPI_EC_ ENABLE	SAHPI_ES_ ENABLED SAHPI_ES_ DISABLED	FALSE
Insufficient Cooling	OA_SOAP_SEN_ INSUF_COOL	SAHPI_ OPERATIONAL	SAHPI_EC_ ENABLE	SAHPI_ES_ ENABLED SAHPI_ES_ DISABLED	FALSE
Device Location Error	OA_SOAP_SEN_ DEV_LOC_ERR	SAHPI_ OPERATIONAL	SAHPI_EC_ ENABLE	SAHPI_ES_ ENABLED SAHPI_ES_ DISABLED	FALSE
Device Failure	OA_SOAP_SEN_ DEV_FAIL	SAHPI_ OPERATIONAL	SAHPI_EC_ ENABLE	SAHPI_ES_ ENABLED SAHPI_ES_ DISABLED	FALSE
Device Degraded	OA_SOAP_SEN_ DEV_DEGRAD	SAHPI_ OPERATIONAL	SAHPI_EC_ ENABLE	SAHPI_ES_ ENABLED SAHPI_ES_ DISABLED	FALSE
Device Missing	OA_SOAP_SEN_ DEV_MISS	SAHPI_ OPERATIONAL	SAHPI_EC _ENABLE	SAHPI_ES_ ENABLED SAHPI_ES_ DISABLED	FALSE
Device Bonding	OA_SOAP_SEN_ DEV_BOND	SAHPI_ OPERATIONAL	SAHPI_EC_ ENABLE	SAHPI_ES_ ENABLED SAHPI_ES_ DISABLED	FALSE
Device Power Sequence	OA_SOAP_SEN_ DEV_PWR_SEQ	SAHPI_ OPERATIONAL	SAHPI_EC_ ENABLE	SAHPI_ES_ ENABLED SAHPI_ES_ DISABLED	FALSE
Network Configuration	OA_SOAP_SEN_ NET_CONFIG	SAHPI_ OPERATIONAL	SAHPI_EC_ ENABLE	SAHPI_ES_ ENABLED SAHPI_ES_ DISABLED	FALSE
Profile Unassigned Error	OA_SOAP_SEN_ PROF_UNASSIGN_ERR	SAHPI_ OPERATIONAL	SAHPI_EC_ ENABLE	SAHPI_ES_ ENABLED SAHPI_ES_ DISABLED	FALSE
Device Not Supported	OA_SOAP_SEN_ DEV_NOT_SUPPORT	SAHPI_ OPERATIONAL	SAHPI_EC_ ENABLE	SAHPI_ES_ ENABLED SAHPI_ES_ DISABLED	FALSE

Table 13 Server Blade, Disk, and IO Blade Sensor RDRs *(continued)*

Sensor Name	Sensor Number	Sensor Type	Event Category	Events Sensor	Reading Support
Too Low Power Request	OA_SOAP_SEN_ TOO_LOW_PWR_REQ	SAHPI_ OPERATIONAL	SAHPI_EC_ ENABLE	SAHPI_ES_ ENABLED SAHPI_ES_ DISABLED	FALSE
Call HP	OA_SOAP_SEN_ CALL_HP	SAHPI_ OPERATIONAL	SAHPI_EC_ ENABLE	SAHPI_ES_ ENABLED SAHPI_ES_ DISABLED	FALSE
Storage Device Missing	OA_SOAP_SEN_ STORAGE_DEV_MISS	SAHPI_ OPERATIONAL	SAHPI_EC_ ENABLE	SAHPI_ES_ ENABLED SAHPI_ES_ DISABLED	FALSE
Power Capping Error	OA_SOAP_SEN_ GRPCAP_ERR	SAHPI_ OPERATIONAL	SAHPI_EC_ ENABLE	SAHPI_ES_ ENABLED SAHPI_ES_ DISABLED	FALSE
IML Recorded Errors	OA_SOAP_SEN_ IML_ERR	SAHPI_ OPERATIONAL	SAHPI_EC_ ENABLE	SAHPI_ES_ ENABLED SAHPI_ES_ DISABLED	FALSE
Duplicate Management IP Address	OA_SOAP_SEN_ DUP_MGMT_IP_ADDR	SAHPI_ OPERATIONAL	SAHPI_EC_ ENABLE	SAHPI_ES_ ENABLED SAHPI_ES_ DISABLED	FALSE

NOTE: [1] The data unit for Ambient Zone Thermal Status is *SAHPI_SU_DEGREES_C*.

NOTE: Extra thermal sensors are supported for server blades based on the blade type (for example, BL480c). The sensor details are provided in "Appendix B" (page 42).

Table 14 Server Blade, Disk, and IO Blade Inventory RDRs

Area Type	Supported Field Types
PRODUCT_INFO	PRODUCT_NAME, MANUFACTURER, PRODUCT_VERSION, CUSTOM (Fields for MAC ID of various NICs, iLO, iSCSIs)
BOARD_INFO	PART_NUMBER, SERIAL_NUMBER

Interconnect RDRs

Table 15 , Table 16, Table 17, and Table 18 detail the Interconnect RDRs.

Table 15 Interconnect Blade Control RDRs

Control Name	Control Number	Control Type	Control Output Type	Default Mode	Supported Values
Power State	OA_SOAP_PWR_CNTRL	DIGITAL	POWER_STATE	MANUAL	SAHPI_CTRL_ STATE_OFF
					SAHPI_CTRL_ STATE_ON

Table 15 Interconnect Blade Control RDRs *(continued)*

Control Name	Control Number	Control Type	Control Output Type	Default Mode	Supported Values
UID LED State	OA_SOAP_UID_CNTRL	DIGITAL	LED	MANUAL	SAHPI_CTRL_STATE_OFF SAHPI_CTRL_STATE_ON

Table 16 Interconnect Blade Sensor RDRs

Sensor Name	Sensor Number	Sensor Type	Event Category	Events Sensor	Reading Support
Ambient Zone Thermal Status[1]	OA_SOAP_SEN_TEMP_STATUS	SAHPI_TEMPERATURE	SAHPI_EC_THRESHOLD	SAHPI_ES_UNSPECIFIED	TRUE
Operational Status	OA_SOAP_SEN_OPER_STATUS	SAHPI_OPERATIONAL	SAHPI_EC_ENABLE	SAHPI_ES_ENABLED SAHPI_ES_DISABLED	FALSE
Predictive Failure	OA_SOAP_SEN_PRED_FAIL	SAHPI_OPERATIONAL	SAHPI_EC_PRED_FAIL	SAHPI_ES_PRED_FAILURE_DEASSERT SAHPI_ES_PRED_FAILURE_ASSERT	FALSE
Interconnect CPU Fault	OA_SOAP_SEN_CPU_FAULT	SAHPI_OPERATIONAL	SAHPI_EC_ENABLE	SAHPI_ES_ENABLED SAHPI_ES_DISABLED	FALSE
Interconnect Health LED	OA_SOAP_SEN_HEALTH_LED	SAHPI_OPERATIONAL	SAHPI_EC_ENABLE	SAHPI_ES_ENABLED SAHPI_ES_DISABLED	FALSE
Internal Data Error	OA_SOAP_SEN_INT_DATA_ERR	SAHPI_OPERATIONAL	SAHPI_EC_ENABLE	SAHPI_ES_ENABLED SAHPI_ES_DISABLED	FALSE
Management Processor Error	OA_SOAP_SEN_MP_ERR	SAHPI_OPERATIONAL	SAHPI_EC_ENABLE	SAHPI_ES_ENABLED SAHPI_ES_DISABLED	FALSE
Thermal Warning	OA_SOAP_SEN_THERM_WARN	SAHPI_OPERATIONAL	SAHPI_EC_ENABLE	SAHPI_ES_ENABLED SAHPI_ES_DISABLED	FALSE
Thermal Danger	OA_SOAP_SEN_THERM_DANGER	SAHPI_OPERATIONAL	SAHPI_EC_ENABLE	SAHPI_ES_ENABLED SAHPI_ES_DISABLED	FALSE
IO Configuration Error	OA_SOAP_SEN_IO_CONFIG_ERR	SAHPI_OPERATIONAL	SAHPI_EC_ENABLE	SAHPI_ES_ENABLED SAHPI_ES_DISABLED	FALSE
Device Power Request Error	OA_SOAP_SEN_DEV_PWR_REQ	SAHPI_OPERATIONAL	SAHPI_EC_ENABLE	SAHPI_ES_ENABLED SAHPI_ES_DISABLED	FALSE
Device Failure	OA_SOAP_SEN_DEV_FAIL	SAHPI_OPERATIONAL	SAHPI_EC_ENABLE	SAHPI_ES_ENABLED SAHPI_ES_DISABLED	FALSE
Device Degraded	OA_SOAP_SEN_DEV_DEGRAD	SAHPI_OPERATIONAL	SAHPI_EC_ENABLE	SAHPI_ES_ENABLED SAHPI_ES_DISABLED	FALSE
Device Not Supported	OA_SOAP_SEN_DEV_NOT_SUPPORT	SAHPI_OPERATIONAL	SAHPI_EC_ENABLE	SAHPI_ES_ENABLED SAHPI_ES_DISABLED	FALSE
Device Informational	OA_SOAP_SEN_DEV_INFO	SAHPI_OPERATIONAL	SAHPI_EC_ENABLE	SAHPI_ES_ENABLED SAHPI_ES_DISABLED	FALSE
Storage Device	OA_SOAP_SEN_STORAGE_DEV_MISS	SAHPI_OPERATIONAL	SAHPI_EC_ENABLE	SAHPI_ES_ENABLED SAHPI_ES_DISABLED	FALSE
Duplicate Management IP Address	OA_SOAP_SEN_DUP_MGMT_IP_ADDR	SAHPI_OPERATIONAL	SAHPI_EC_ENABLE	SAHPI_ES_ENABLED SAHPI_ES_DISABLED	FALSE

Table 16 Interconnect Blade Sensor RDRs *(continued)*

Sensor Name	Sensor Number	Sensor Type	Event Category	Events Sensor	Reading Support
Health Status Operational	OA_SOAP_SEN_ HEALTH_OPER	SAHPI_ OPERATIONAL	SAHPI_EC_ ENABLE	SAHPI_ES_ENABLED SAHPI_ES_DISABLED	FALSE
Health Status Predictive Failure	OA_SOAP_SEN_ HEALTH_PRED_FAIL	SAHPI_ OPERATIONAL	SAHPI_EC_ ENABLE	SAHPI_ES_ENABLED SAHPI_ES_DISABLED	FALSE

NOTE: [1] The data unit for Ambient Zone Thermal Status is *SAHPI_SU_DEGREES_C*.

Table 17 Interconnect Inventory RDRs

Area Type	Supported Field Types
PRODUCT_INFO	PRODUCT_NAME, MANUFACTURER, PRODUCT_VERSION
BOARD_INFO	PART_NUMBER, SERIAL_NUMBER

Table 18 details the Thermal Subsystem Sensor RDRs.

Table 18 Thermal Subsystem Sensor RDRs

Sensor Name	Sensor Number	Sensor Type	Event Category	Events Sensor	Reading Support
Operational Status	OA_SOAP_SEN_ OPER_STATUS	SAHPI_ OPERATIONAL	SAHPI_EC_ ENABLE	SAHPI_ES_ENABLED SAHPI_ES_DISABLED	FALSE
Predictive Failure	OA_SOAP_SEN_ PRED_FAIL	SAHPI_ OPERATIONAL	SAHPI_EC_ PRED_FAIL	SAHPI_ES_PRED_ FAILURE_DEASSERT SAHPI_ES_PRED_ FAILURE_ASSERT	FALSE
Redundancy Status	OA_SOAP_SEN_ REDUND	SAHPI_EC_ REDUNDANCY	SAHPI_EC_ PRED_FAIL	SAHPI_ES_ FULLY_REDUNDANT SAHPI_ES_ REDUNDANCY_LOST	FALSE

Fan Zone RDRs[1]

Table 19 and Table 20 detail the Fan Zone RDRs

[1] Not applicable for c3000 enclosure

Table 19 Fan Zone Sensor RDRs

Sensor Name	Sensor Number	Sensor Type	Event Category	Events Sensor	Reading Support
Operational Status	OA_SOAP_SEN_ OPER_STATUS	SAHPI_ OPERATIONAL	SAHPI_EC_ ENABLE	SAHPI_ES_ENABLED SAHPI_ES_DISABLED	FALSE
Predictive Failure	OA_SOAP_SEN_ PRED_FAIL	SAHPI_ OPERATIONAL	SAHPI_EC_ PRED_FAIL	SAHPI_ES_PRED_ FAILURE_DEASSERT SAHPI_ES_PRED_ FAILURE_ASSERT	FALSE
Redundancy Status	OA_SOAP_SEN_ REDUND	SAHPI_EC_ REDUNDANCY	SAHPI_EC_ PRED_FAIL	SAHPI_ES_FULLY_ REDUNDANT SAHPI_ES_ REDUNDANCY_LOST	FALSE

Table 20 Fan Zone Inventory RDRs

Area Type	Supported Field Types
OEM	OA_SOAP_INV_FZ_DEV_BAY OA_SOAP_INV_FZ_FAN_BAY

Table 21 and Table 22detail the Fan Sensor RDRs

Table 21 Fan Sensor RDRs

Sensor Name	Sensor Number	Sensor Type	Event Category	Events Sensor	Reading Support
Fan Speed [1]	OA_SOAP_SEN_FAN_SPEED	SAHPI_COOLING_DEVICE	SAHPI_EC_THRESHOLD	SAHPI_ES_UNSPECIFIED	TRUE
Power Status [2]	OA_SOAP_SEN_PWR_STATUS	SAHPI_POWER_SUPPLY	SAHPI_EC_UNSPECIFIED	SAHPI_ES_UNSPECIFIED	TRUE
Operational Status	OA_SOAP_SEN_OPER_STATUS	SAHPI_OPERATIONAL	SAHPI_EC_ENABLE	SAHPI_ES_ENABLED SAHPI_ES_DISABLED	FALSE
Predictive Failure	OA_SOAP_SEN_PRED_FAIL	SAHPI_OPERATIONAL	SAHPI_EC_PRED_FAIL	SAHPI_ES_PRED_FAILURE_DEASSERT SAHPI_ES_PRED_FAILURE_ASSERT	FALSE
Internal Data Error	OA_SOAP_SEN_INT_DATA_ERR	SAHPI_OPERATIONAL	SAHPI_EC_ENABLE	SAHPI_ES_ENABLED SAHPI_ES_DISABLED	FALSE
Device Location Error	OA_SOAP_SEN_DEV_LOC_ERR	SAHPI_OPERATIONAL	SAHPI_EC_ENABLE	SAHPI_ES_ENABLED SAHPI_ES_DISABLED	FALSE
Device Failure	OA_SOAP_SEN_DEV_FAIL	SAHPI_OPERATIONAL	SAHPI_EC_ENABLE	SAHPI_ES_ENABLED SAHPI_ES_DISABLED	FALSE
Device Degraded	OA_SOAP_SEN_DEV_DEGRAD	SAHPI_OPERATIONAL	SAHPI_EC_ENABLE	SAHPI_ES_ENABLED SAHPI_ES_DISABLED	FALSE
Device Missing	OA_SOAP_SEN_DEV_MISS	SAHPI_OPERATIONAL	SAHPI_EC_ENABLE	SAHPI_ES_ENABLED SAHPI_ES_DISABLED	FALSE

Table 21 Fan Sensor RDRs *(continued)*

Sensor Name	Sensor Number	Sensor Type	Event Category	Events Sensor	Reading Support
Device Not Supported	OA_SOAP_SEN_ DEV_NOT_SUPPORT	SAHPI_ OPERATIONAL	SAHPI_EC_ ENABLE	SAHPI_ES_ ENABLED SAHPI_ES_ DISABLED	FALSE
Device Mix Match	OA_SOAP_SEN_ DEV_MIX_MATCH	SAHPI_ OPERATIONAL	SAHPI_EC_ ENABLE	SAHPI_ES_ ENABLED SAHPI_ES_ DISABLED	FALSE

NOTE: [1] The data unit for Fan Speed is *SAHPI_SU_RPM*.

[2] The data unit for Power Status is *SAHPI_SU_WATTS*.

Table 22 Fan Inventory RDRs

Area Type	Supported Field Types
PRODUCT_INFO	PRODUCT_NAME
BOARD_INFO	PART_NUMBER, SERIAL_NUMBER
OEM	CUSTOM (Shared=FALSE/TRUE) CUSTOM (FAN Zone=x) OA_SOAP_INV_FAN_SHARED OA_SOAP_INV_FZ_NUM

Power Subsystem RDRs

Table 23 details the Power Subsystem RDRs.

Table 23 Power Subsystem RDRs

Sensor Name	Sensor Number	Sensor Type	Event Category	Events Sensor	Reading Support
Power Input Sensor [1]	OA_SOAP_SEN_ IN_PWR	SAHPI_POWER_ SUPPLY	SAHPI_EC_ UNSPECIFIED	SAHPI_ES_ UNSPECIFIED	TRUE
Power Output Sensor [1]	OA_SOAP_SEN_ OUT_PWR	SAHPI_POWER_ SUPPLY	SAHPI_EC_ UNSPECIFIED	SAHPI_ES_ UNSPECIFIED	TRUE
Power Status [1]	OA_SOAP_SEN_ PWR_STATUS	SAHPI_POWER_ SUPPLY	SAHPI_EC_ UNSPECIFIED	SAHPI_ES_ UNSPECIFIED	TRUE
Power Capacity Sensor [1]	OA_SOAP_SEN_ PWR_CAPACITY	SAHPI_POWER_ SUPPLY	SAHPI_EC_ UNSPECIFIED	SAHPI_ES_ UNSPECIFIED	TRUE
Operational Status	OA_SOAP_SEN_ OPER_STATUS	SAHPI_ OPERATIONAL	SAHPI_EC_ ENABLE	SAHPI_ES_ ENABLED SAHPI_ES_ DISABLED	FALSE

Table 23 Power Subsystem RDRs *(continued)*

Sensor Name	Sensor Number	Sensor Type	Event Category	Events Sensor	Reading Support
Predictive Failure	OA_SOAP_SEN_ PRED_FAIL	SAHPI_ OPERATIONAL	SAHPI_EC_ PRED_FAIL	SAHPI_ES_PRED_ FAILURE_DEASSERT SAHPI_ES_PRED_ FAILURE_ASSERT	FALSE
Redundancy Status	OA_SOAP_SEN_ REDUND	SAHPI_EC_ REDUNDANCY	SAHPI_EC_ PRED_FAIL	SAHPI_ES_FULLY_ REDUNDANT SAHPI_ES_ REDUNDANCY_LOST	FALSE

NOTE: [1] The data unit for Power Input Sensor, Power Output Sensor, Power Status, and Power Capacity Sensor is *SAHPI_SU_WATTS*.

Power Subsystem Control RDRs

Table 24 Power Subsystem Control RDRs

Control Name	Control Number	Control Type	Control Output Type	Default Mode	Supported Values
Power Mode	OA_SOAP_PWR_ MODE_CNTRL	DISCRETE	POWER_ BUDGET	MANUAL	C7000_PWR_NON_ REDUNDANT C7000_PWR_AC_ REDUNDANT C7000_PWR_SUPPLY_ REDUNDANT
Dynamic Power	OA_SOAP_ DYNAMIC_PWR_ CNTRL	DIGITAL	POWER_ BUDGET	MANUAL	SAHPI_CONTROL_STATE_OFF SAHPI_CONTROL_STATE_ON
Power Limit Mode	OA_SOAP_PWR_ LIMIT_MODE_ CNTRL	DISCRETE	POWER_ BUDGET	MANUAL	C7000_PWR_LIMIT_NONE C7000_PWR_LIMIT_ STATIC C7000_PWR_LIMIT_ DYNAMIC_CAP
Static Power Limit	OA_SOAP_ STATIC_PWR_ LIMIT_CNTRL	ANALOG	POWER_ BUDGET	MANUAL	Value must be within range of the low and high values as provided by the control.
Dynamic Power Cap	OA_SOAP_ DYNAMIC_PWR_ CAP_CNTRL	ANALOG	POWER_ BUDGET	MANUAL	Value must be within range of the low and high values as provided by the control.
Derated Circuit Cap	OA_SOAP_ DERATED_C IRCUIT_CAP_ CNTRL	ANALOG	POWER_ BUDGET	MANUAL	Value must be within range of the low and high values as provided by the control. Available only with OA firmware 3.00 and higher.
Rated Circuit Cap	OA_SOAP_RATED _CIRCUIT_CAP_ CNTRL	ANALOG	POWER_ BUDGET	SAHPI_ES_ ENABLED SAHPI_ES_ DISABLED	Value must be within range of the low and high values as provided by the control. Available only with OA firmware 3.00 and higher.

NOTE: Prior to setting the Power Limit Mode control to either C7000_PWR_LIMIT_STATIC, or C7000_PWR_LIMIT_DYNAMIC_CAP, you must first set an analog value for the Static Power Limit (expressed in watts) or set analog values for the Dynamic Power Cap (and the Derated Circuit Cap, and Rated Circuit Cap if running OA firmware 3.00 or higher.) The analog values are held in HPI memory until they are applied to the C7000 Power Subsystem using the Power Limit Mode control. Once the desired Power Limit Mode control is applied, you can then retrieve the current Power Limit Mode, and their associated analog power values for either the Static Power Limit or the Dynamic Power Cap. Prior to applying the Power Limit Mode, any attempt to retrieve the static or dynamic analog power values will report the current values being used by the C7000 OnBoard Administrator - which may differ from the desired analog power values held in HPI memory.

Power Supply RDRs

Table 25 and Table 26 detail the Power Supply RDRs.

Table 25 Power Supply Sensor RDRs

Sensor Name	Sensor Number	Sensor Type	Event Category	Events Sensor	Reading Support
Power Status	OA_SOAP_SEN_ PWR_STATUS	SAHPI_ POWER_SUPPLY	SAHPI_EC_ UNSPECIFIED	SAHPI_ES_ UNSPECIFIED	TRUE
Operational Status	OA_SOAP_SEN_ OPER_STATUS	SAHPI_ OPERATIONAL	SAHPI_EC_ ENABLE	SAHPI_ES_ ENABLED SAHPI_ES_ DISABLED	FALSE
Predictive Failure	OA_SOAP_SEN_ PRED_FAIL	SAHPI_ OPERATIONAL	SAHPI_EC_ PRED_FAIL	SAHPI_ES_PRED_ FAILURE_DEASSERT SAHPI_ES_PRED _FAILURE_ASSERT	FALSE
Internal Data Error	OA_SOAP_SEN_ INT_DATA_ERR	SAHPI_ OPERATIONAL	SAHPI_EC_ ENABLE	SAHPI_ES_ ENABLED SAHPI_ ES_DISABLED	FALSE
Device Location Error	OA_SOAP_SEN_ DEV_LOC_ERR	SAHPI_ OPERATIONAL	SAHPI_EC_ ENABLE	SAHPI_ES_ ENABLED SAHPI_ ES_DISABLED	FALSE
Device Failure	OA_SOAP_SEN_ DEV_FAIL	SAHPI_ OPERATIONAL	SAHPI_EC_ ENABLE	SAHPI_ES_ ENABLED SAHPI_ES_ DISABLED	FALSE
Device Degraded	OA_SOAP_SEN_ DEV_DEGRAD	SAHPI_ OPERATIONAL	SAHPI_EC_ ENABLE	SAHPI_ES_ ENABLED SAHPI_ES_ DISABLED	FALSE
AC Failure	OA_SOAP_SEN_ AC_FAIL	SAHPI_ OPERATIONAL	SAHPI_EC_ ENABLE	SAHPI_ES_ ENABLED SAHPI_ES_ DISABLED	FALSE

Table 25 Power Supply Sensor RDRs *(continued)*

Sensor Name	Sensor Number	Sensor Type	Event Category	Events Sensor	Reading Support
Device Not Supported	OA_SOAP_SEN_ DEV_NOT_SUPPORT	SAHPI_ OPERATIONAL	SAHPI_EC_ ENABLE	SAHPI_ES_ ENABLED SAHPI_ES_ DISABLED	FALSE
Device Mix Match	OA_SOAP_SEN_ DEV_MIX_MATCH	SAHPI_ OPERATIONAL	SAHPI_EC_ ENABLE	SAHPI_ES_ ENABLED SAHPI_ES_ DISABLED	FALSE

NOTE: [1] The data unit for Power Status is *SAHPI_SU_WATTS*.

Table 26 Power Supply Inventory RDRs

Area Type	Supported Field Types
BOARD_INFO	PART_NUMBER, SERIAL_NUMBER

LCD RDRs

Table 27, Table 28, and Table 29 detail the LCD RDRs.

Table 27 LCD Control RDRs

Control Name	Control Number	Control Type	Control Output Type	Default Mode	Supported Values
LCD Button Lock	OA_SOAP_LCD_ BUTN_LCK_CNTRL	DIGITAL	FRONT_ PANEL_LOCKOUT	MANUAL	SAHPI_CTRL_STATE_OFF
					SAHPI_CTRL_STATE_ON

Table 28 LCD Sensor RDRs

Sensor Name	Sensor Number	Sensor Type	Event Category	Events Sensor	Reading Support
Operational Status	OA_SOAP_SEN_ OPER_STATUS	SAHPI_ OPERATIONAL	SAHPI_EC_ ENABLE	SAHPI_ES_ ENABLED SAHPI_ES_ DISABLED	FALSE
Predictive Failure	OA_SOAP_SEN_ PRED_FAIL	SAHPI_ OPERATIONAL	SAHPI_EC_ PRED_FAIL	SAHPI_ES_ PRED_FAILURE_ DEASSERT SAHPI_ES_ PRED_FAILURE_ ASSERT	FALSE
Internal Data Error	OA_SOAP_SEN_ INT_DATA_ERR	SAHPI_ OPERATIONAL	SAHPI_EC_ ENABLE	SAHPI_ES_ ENABLED SAHPI_ES_ DISABLED	FALSE
Device Failure	OA_SOAP_SEN_ DEV_FAIL	SAHPI_ OPERATIONAL	SAHPI_EC_ ENABLE	SAHPI_ES_ ENABLED SAHPI_ES_ DISABLED	FALSE

Table 28 LCD Sensor RDRs *(continued)*

Sensor Name	Sensor Number	Sensor Type	Event Category	Events Sensor	Reading Support
Device Degraded	OA_SOAP_SEN_DEV_DEGRAD	SAHPI_OPERATIONAL	SAHPI_EC_ENABLE	SAHPI_ES_ENABLED SAHPI_ES_DISABLED	FALSE
Enclosure Aggregate Operational Status	OA_SOAP_SEN_ENC_AGR_OPER	SAHPI_OPERATIONAL	SAHPI_EC_ENABLE	SAHPI_ES_ENABLED SAHPI_ES_DISABLED	FALSE
Enclosure Aggregate Predictive Failure	OA_SOAP_SEN_ENC_AGR_PRED_FAIL	SAHPI_OPERATIONAL	SAHPI_EC_ENABLE	SAHPI_ES_ENABLED SAHPI_ES_DISABLED	FALSE

Table 29 LCD Inventory RDRs

Area Type	Supported Field Types
PRODUCT_INFO	PRODUCT_NAME MANUFACTURER PRODUCT_VERSION
BOARD_INFO	PART_NUMBER

HPI APIs Support

By default, the OpenHPI framework supports Session Related APIs and Domain Related APIs. This section provides information for the APIs that are supported by HPI.

Resource Discovery

The `saHpiDiscover()` API is implemented in the OA SOAP plug-in. It discovers HP Bladesystem c-Class Enclosure hardware resources and populates the RPT in the OpenHPI framework. The RPT table-related APIs are supported by the OpenHPI framework.

Sensors

Table 30 provides a list of all sensor-related APIs and their functions and Table 31 provides detail on sensor states and sensor event severity levels.

Table 30 Sensor-Related APIs

Sensor API	Description
`saHpiSensorReadingGet()`	Returns the current reading for the given sensor of the specified resource.
`saHpiSensorThresholdsGet()`	Returns the current threshold reading for the given sensor of the specified resource.
`saHpiSensorThresholdsSet()`	Is not supported in OA SOAP plug-in. It always returns `SA_ERR_HPI_UNSUPPORTED_API`.
`saHpiSensorTypeGet()`	Is supported by OpenHPI framework.
`saHpiSensorEnableGet()`	Returns the current sensor enable status for the given sensor of the specified resource.
`saHpiSensorEnableSet()`	Sets the sensor enable status for the given sensor of the specified resource. If the server blade is powered off, then `SA_ERR_HPI_INVALID_STATE` is returned for the sensors listed in "Appendix B" (page 42).

Table 30 Sensor-Related APIs *(continued)*

Sensor API	Description
`saHpiSensorEventEnableGet()`	Returns the current sensor event enable status for the given sensor of the specified resource.
`saHpiSensorEventEnableSet()`	Sets the sensor event enable status for the given sensor of the specified resource.
`saHpiSensorEventMasksGet()`	Returns the assert and de-assert bit-mask values for the given sensor of the specified resource.
`saHpiSensorEventMasksSet()`	Sets the assert and de-assert bit-mask values for the given sensor of the specified resource.

Table 31 Sensor States and Severity in Sensor Events

Sl. No.	Sensor Number	Events Support	Previous state	Current state	Event Severity	Assert State
1	OA_SOAP_SEN_ OPER_STATUS	YES	ENABLED	DISABLED	CRITICAL	TRUE
			DISABLED	ENABLED	CRITICAL	FALSE
2	OA_SOAP_SEN_ PRED_FAIL	YES	PRED_FAILURE_ DEASSERT	PRED_FAILURE_ ASSERT	MAJOR	TRUE
			PRED_FAILURE_ ASSERT	PRED_FAILURE_ DEASSERT	MAJOR	FALSE
3	OA_SOAP_SEN_ TEMP_STATUS	YES - for interconnect only. NO – for enclosure, server blade and OA.	UNSPECIFIED	UPPER_MAJOR	MAJOR	TRUE
			UPPER_MAJOR	UNSPECIFIED	MAJOR	FALSE
			UPPER_MAJOR	UPPER_CRIT	CRITICAL	TRUE
			UPPER_CRIT	UPPER_MAJOR	CRITICAL	FALSE
4	OA_SOAP_SEN_ REDUND	YES	FULLY_ REDUNDANT	REDUNDANCY_ LOST	MAJOR	TRUE
			REDUNDANCY_ LOST	FULLY_ REDUNDANT	MAJOR	FALSE
5	OA_SOAP_SEN_ FAN_SPEED	NO	NA	NA	NA	NA
6	OA_SOAP_SEN_ PWR_STATUS	NO	NA	NA	NA	NA
7	OA_SOAP_SEN_ INT_DATA_ERR	YES	ENABLED	DISABLED	MAJOR	TRUE
			DISABLED	ENABLED	MAJOR	FALSE
8	OA_SOAP_SEN_ MP_ERR	YES	ENABLED	DISABLED	MAJOR	TRUE
			DISABLED	ENABLED	MAJOR	FALSE
9	OA_SOAP_SEN_ IN_PWR	NO	NA	NA	NA	NA
10	OA_SOAP_SEN_ OUT_PWR	NO	NA	NA	NA	NA
11	OA_SOAP_SEN_ PWR_CAPACITY	NO	NA	NA	NA	NA
12	OA_SOAP_SEN_ THERM_WARN	YES	ENABLED	DISABLED	MINOR	TRUE
			DISABLED	ENABLED	MINOR	FALSE

Table 31 Sensor States and Severity in Sensor Events *(continued)*

Sl. No.	Sensor Number	Events Support	Previous state	Current state	Event Severity	Assert State
13	OA_SOAP_SEN_ THERM_DANGER	YES	ENABLED	DISABLED	MAJOR	TRUE
			DISABLED	ENABLED	MAJOR	FALSE
14	OA_SOAP_SEN_ IO_CONFIG_ERR	YES	ENABLED	DISABLED	MAJOR	TRUE
			DISABLED	ENABLED	MAJOR	FALSE
15	OA_SOAP_SEN_ DEV_PWR_REQ	YES	ENABLED	DISABLED	MAJOR	TRUE
			DISABLED	ENABLED	MAJOR	FALSE
16	OA_SOAP_SEN_ INSUF_COOL	YES	ENABLED	DISABLED	MAJOR	TRUE
			DISABLED	ENABLED	MAJOR	FALSE
17	OA_SOAP_SEN_ DEV_LOC_ERR	YES	ENABLED	DISABLED	MAJOR	TRUE
			DISABLED	ENABLED	MAJOR	FALSE
18	OA_SOAP_SEN_ DEV_FAIL	YES	ENABLED	DISABLED	MAJOR	TRUE
			DISABLED	ENABLED	MAJOR	FALSE
19	OA_SOAP_SEN_ DEV_DEGRAD	YES	ENABLED	DISABLED	MINOR	TRUE
			DISABLED	ENABLED	MINOR	FALSE
20	OA_SOAP_SEN_ AC_FAIL	YES	ENABLED	DISABLED	MAJOR	TRUE
			DISABLED	ENABLED	MAJOR	FALSE
21	OA_SOAP_SEN_ I2C_BUS	YES	ENABLED	DISABLED	MAJOR	TRUE
			DISABLED	ENABLED	MAJOR	FALSE
22	OA_SOAP_SEN_ REDUND_ERR	YES	ENABLED	DISABLED	MINOR	TRUE
			DISABLED	ENABLED	MINOR	FALSE
23	OA_SOAP_SEN_ ENC_AGR_OPER	YES	ENABLED	DISABLED	CRITICAL	TRUE
			DISABLED	ENABLED	CRITICAL	FALSE
24	OA_SOAP_SEN_ ENC_AGR_PRED_ FAIL	YES	ENABLED	DISABLED	MAJOR	TRUE
			DISABLED	ENABLED	MAJOR	FALSE
25	OA_SOAP_SEN_ OA_REDUND	YES	ENABLED	DISABLED	MAJOR	TRUE
			DISABLED	ENABLED	MAJOR	FALSE
26	OA_SOAP_SEN_ OA_LINK_STATUS	YES	ENABLED	DISABLED	CRITICAL	TRUE
			DISABLED	ENABLED	CRITICAL	FALSE
27	OA_SOAP_SEN_ CPU_FAULT	YES	ENABLED	DISABLED	CRITICAL	TRUE
			DISABLED	ENABLED	CRITICAL	FALSE
28	OA_SOAP_SEN_ HEALTH_LED	YES	ENABLED	DISABLED	MINOR	TRUE
			DISABLED	ENABLED	MINOR	FALSE
29	OA_SOAP_SEN_ HEALTH_OPER	YES	ENABLED	DISABLED	CRITICAL	TRUE
			DISABLED	ENABLED	CRITICAL	FALSE

Table 31 Sensor States and Severity in Sensor Events *(continued)*

Sl. No.	Sensor Number	Events Support	Previous state	Current state	Event Severity	Assert State
30	OA_SOAP_SEN_HEALTH_PRED_FAIL	YES	ENABLED	DISABLED	MAJOR	TRUE
			DISABLED	ENABLED	MAJOR	FALSE
31	OA_SOAP_SEN_DEV_MISS	YES	ENABLED	DISABLED	MAJOR	TRUE
			DISABLED	ENABLED	MAJOR	FALSE
32	OA_SOAP_SEN_DEV_PWR_SEQ	YES	ENABLED	DISABLED	MAJOR	TRUE
			DISABLED	ENABLED	MAJOR	FALSE
33	OA_SOAP_SEN_DEV_BOND	YES	ENABLED	DISABLED	MAJOR	TRUE
			DISABLED	ENABLED	MAJOR	FALSE
34	OA_SOAP_SEN_NET_CONFIG	YES	ENABLED	DISABLED	MAJOR	TRUE
			DISABLED	ENABLED	MAJOR	FALSE
35	OA_SOAP_SEN_FW_MISMATCH	YES	ENABLED	DISABLED	MAJOR	TRUE
			DISABLED	ENABLED	MAJOR	FALSE
36	OA_SOAP_SEN_PROF_UNASSIGN_ERR	YES	ENABLED	DISABLED	MAJOR	TRUE
			DISABLED	ENABLED	MAJOR	FALSE
37	OA_SOAP_SEN_DEV_NOT_SUPPORT	YES	ENABLED	DISABLED	MAJOR	TRUE
			DISABLED	ENABLED	MAJOR	FALSE
38	OA_SOAP_SEN_TOO_LOW_PWR_REQ	YES	ENABLED	DISABLED	MAJOR	TRUE
			DISABLED	ENABLED	MAJOR	FALSE
39	OA_SOAP_SEN_CALL_HP	YES	ENABLED	DISABLED	INFORMATIONAL	TRUE
			DISABLED	ENABLED	INFORMATIONAL	FALSE
40	OA_SOAP_SEN_DEV_INFO	YES	ENABLED	DISABLED	INFORMATIONAL	TRUE
			DISABLED	ENABLED	INFORMATIONAL	FALSE
41	OA_SOAP_SEN_STORAGE_DEV_MISS	YES	ENABLED	DISABLED	MAJOR	TRUE
			DISABLED	ENABLED	MAJOR	FALSE
42	OA_SOAP_SEN_ENC_ID_MISMATCH	YES	ENABLED	DISABLED	MINOR	TRUE
			DISABLED	ENABLED	MINOR	FALSE
43	OA_SOAP_SEN_DEV_MIX_MATCH	YES	ENABLED	DISABLED	MINOR	TRUE
			DISABLED	ENABLED	MINOR	FALSE
44	OA_SOAP_SEN_GRPCAP_ERR	YES	ENABLED	DISABLED	MAJOR	TRUE
			DISABLED	ENABLED	MAJOR	FALSE
45	OA_SOAP_SEN_IML_ERR	YES	ENABLED	DISABLED	INFORMATIONAL	TRUE

Table 31 Sensor States and Severity in Sensor Events *(continued)*

Sl. No.	Sensor Number	Events Support	Previous state	Current state	Event Severity	Assert State
			DISABLED	ENABLED	INFORMATIONAL	FALSE
46	OA_SOAP_SEN_DUP_MGMT_IP_ADDR	YES	ENABLED	DISABLED	MAJOR	TRUE
			DISABLED	ENABLED	MAJOR	FALSE
47	OA_SOAP_SEN_BLADE_SYSTEM_ZONE1	NO	NA	NA	NA	NA
48	OA_SOAP_SEN_BLADE_SYSTEM_ZONE2	NO	NA	NA	NA	NA
49	OA_SOAP_SEN_BLADE_SYSTEM_ZONE3	NO	NA	NA	NA	NA
50	OA_SOAP_SEN_BLADE_SYSTEM_ZONE4	NO	NA	NA	NA	NA
51	OA_SOAP_SEN_BLADE_SYSTEM_ZONE5	NO	NA	NA	NA	NA
52	OA_SOAP_SEN_BLADE_SYSTEM_ZONE6	NO	NA	NA	NA	NA
53	OA_SOAP_SEN_BLADE_SYSTEM_ZONE7	NO	NA	NA	NA	NA
54	OA_SOAP_SEN_BLADE_SYSTEM_ZONE8	NO	NA	NA	NA	NA
55	OA_SOAP_SEN_BLADE_CPU_ZONE1	NO	NA	NA	NA	NA
56	OA_SOAP_SEN_BLADE_CPU_ZONE2	NO	NA	NA	NA	NA
57	OA_SOAP_SEN_BLADE_CPU_ZONE3	NO	NA	NA	NA	NA
58	OA_SOAP_SEN_BLADE_CPU_ZONE4	NO	NA	NA	NA	NA
59	OA_SOAP_SEN_BLADE_MEM_ZONE1	NO	NA	NA	NA	NA

Table 31 Sensor States and Severity in Sensor Events *(continued)*

Sl. No.	Sensor Number	Events Support	Previous state	Current state	Event Severity	Assert State
60	OA_SOAP_SEN_ BLADE_MEM_ ZONE2	NO	NA	NA	NA	NA
61	OA_SOAP_SEN_ BLADE_MEM_ ZONE3	NO	NA	NA	NA	NA
62	OA_SOAP_SEN_ BLADE_MEM_ ZONE4	NO	NA	NA	NA	NA
63	OA_SOAP_SEN_ BLADE_MEM_ ZONE5	NO	NA	NA	NA	NA
64	OA_SOAP_SEN_ BLADE_MEM_ ZONE6	NO	NA	NA	NA	NA
65	OA_SOAP_SEN_ BLADE_MEM_ ZONE7	NO	NA	NA	NA	NA
66	OA_SOAP_SEN_ BLADE_MEM_ ZONE8	NO	NA	NA	NA	NA
67	OA_SOAP_SEN_ BLADE_DISK_ ZONE1	NO	NA	NA	NA	NA
68	OA_SOAP_SEN_ BLADE_DISK_ ZONE2	NO	NA	NA	NA	NA
69	OA_SOAP_SEN_ BLADE_DISK_ ZONE3	NO	NA	NA	NA	NA
70	OA_SOAP_SEN_ BLADE_DISK_ ZONE4	NO	NA	NA	NA	NA
71	OA_SOAP_SEN_ BLADE_CPU1_1	NO	NA	NA	NA	NA
72	OA_SOAP_SEN_ BLADE_CPU1_2	NO	NA	NA	NA	NA
73	OA_SOAP_SEN_ BLADE_CPU1_3	NO	NA	NA	NA	NA
74	OA_SOAP_SEN_ BLADE_CPU1_4	NO	NA	NA	NA	NA
75	OA_SOAP_SEN_ BLADE_CPU2_1	NO	NA	NA	NA	NA
76	OA_SOAP_SEN_ BLADE_CPU2_2	NO	NA	NA	NA	NA

Table 31 Sensor States and Severity in Sensor Events *(continued)*

Sl. No.	Sensor Number	Events Support	Previous state	Current state	Event Severity	Assert State
77	OA_SOAP_SEN_ BLADE_CPU2_3	NO	NA	NA	NA	NA
78	OA_SOAP_SEN_ BLADE_CPU2_4	NO	NA	NA	NA	NA
79	OA_SOAP_SEN_ BLADE_CPU3_1	NO	NA	NA	NA	NA
80	OA_SOAP_SEN_ BLADE_CPU3_2	NO	NA	NA	NA	NA
81	OA_SOAP_SEN_ BLADE_CPU3_3	NO	NA	NA	NA	NA
82	OA_SOAP_SEN_ BLADE_CPU3_4	NO	NA	NA	NA	NA
83	OA_SOAP_SEN_ BLADE_CPU4_1	NO	NA	NA	NA	NA
84	OA_SOAP_SEN_ BLADE_CPU4_2	NO	NA	NA	NA	NA
85	OA_SOAP_SEN_ BLADE_CPU4_3	NO	NA	NA	NA	NA
86	OA_SOAP_SEN_ BLADE_CPU4_4	NO	NA	NA	NA	NA
87	OA_SOAP_SEN_ BLADE_STORAGE_ ZONE1	NO	NA	NA	NA	NA
88	OA_SOAP_SEN_ BLADE_STORAGE_ ZONE2	NO	NA	NA	NA	NA
89	OA_SOAP_SEN_ BLADE_STORAGE_ ZONE3	NO	NA	NA	NA	NA
90	OA_SOAP_SEN_ BLADE_STORAGE_ ZONE4	NO	NA	NA	NA	NA
91	OA_SOAP_SEN_ BLADE_IO_BOARD_ ZONE1	NO	NA	NA	NA	NA
92	OA_SOAP_SEN_ BLADE_IO_BOARD_ ZONE2	NO	NA	NA	NA	NA
93	OA_SOAP_SEN_ BLADE_IO_BOARD_ ZONE3	NO	NA	NA	NA	NA
94	OA_SOAP_SEN_ BLADE_IO_BOARD_ ZONE4	NO	NA	NA	NA	NA

Table 31 Sensor States and Severity in Sensor Events *(continued)*

Sl. No.	Sensor Number	Events Support	Previous state	Current state	Event Severity	Assert State
95	OA_SOAP_SEN_ BLADE_IO_BOARD_ ZONE5	NO	NA	NA	NA	NA
96	OA_SOAP_SEN_ BLADE_IO_BOARD_ ZONE6	NO	NA	NA	NA	NA
97	OA_SOAP_SEN_ BLADE_IO_BOARD_ ZONE7	NO	NA	NA	NA	NA
98	OA_SOAP_SEN_ BLADE_IO_BOARD_ ZONE8	NO	NA	NA	NA	NA
99	OA_SOAP_SEN_ BLADE_POWER_ SUPPLY_ZONE1	NO	NA	NA	NA	NA
100	OA_SOAP_SEN_ BLADE_POWER_ SUPPLY_ZONE2	NO	NA	NA	NA	NA
101	OA_SOAP_SEN_ BLADE_POWER_ SUPPLY_ZONE3	NO	NA	NA	NA	NA
102	OA_SOAP_SEN_ BLADE_POWER_ SUPPLY_ZONE4	NO	NA	NA	NA	NA
103	OA_SOAP_SEN_ BLADE_POWER_ SUPPLY_ZONE5	NO	NA	NA	NA	NA
104	OA_SOAP_SEN_ BLADE_POWER_ SUPPLY_ZONE6	NO	NA	NA	NA	NA
105	OA_SOAP_SEN_ BLADE_POWER_ SUPPLY_ZONE7	NO	NA	NA	NA	NA
106	OA_SOAP_SEN_ BLADE_POWER_ SUPPLY_ZONE8	NO	NA	NA	NA	NA

Controls

Table 32 provides a list of all control-related APIs and their functions.

Table 32 Control-Related APIs

Control API	Description
`saHpiControlTypeGet()`	Is supported by OpenHPI framework.
`saHpiControlGet()`	Returns the current control state and mode for the given control object.
`saHpiControlSet()`	Sets the control state for the given control object.

Inventory Data Repositories

Table 33 provides a list of all inventory data repository related APIs and their functions.

Table 33 Inventory Date Repository APIs

Inventory Data API	Description
saHpiIdrInfoGet()	Returns the IDR details associated with the given resource.
saHpiIdrAreaHeaderGet()	Returns the IDR Area Header details for a specific area associated with a particular IDR.
saHpiIdrAreaAdd()	Adds an area to the specified IDR.
saHpiIdrAreaAddById()	Adds an area with a specified area id to the specified IDR.
saHpiIdrAreaDelete()	Deletes the specified area from the specified IDR.
saHpiIdrFieldGet()	Returns the Inventory Data Field information from a particular IDA and IDR.
saHpiIdrFieldAdd()	Adds a field to the specified IDA with a specified IDR.
saHpiIdrFieldAddById()	Adds a field with a specified field id to the specified IDA with a specified IDR.
saHpiIdrFieldSet()	Updates the Inventory Data Field for a particular IDA and IDR.
saHpiIdrFieldDelete()	Deletes the specified Inventory Data Field from a particular IDA and IDR.

Watchdog Timers

The Watchdog timer related APIs are not supported in the OA SOAP plug-in. Therefore, all Watchdog timer related APIs return the following:

`SA_ERR_HPI_UNSUPPORTED_API`

Annunciators

The Annunciator-related APIs are not supported in the OA SOAP plug-in. Therefore, all Annunciator-related APIs return the following:

`SA_ERR_HPI_UNSUPPORTED_API`

Diagnostics Initiator Management Instrument (DIMI)

DIMI related APIs are not supported in the OA SOAP plug-in. So, all DIMI related APIs always return `SA_ERR_HPI_UNSUPPORTED_API.`

Firmware Initiator Management Instrument (FUMI)

FUMI related APIs are not supported in the OA SOAP plug-in. So, all FUMI related API's always return `SA_ERR_HPI_UNSUPPORTED_API.`

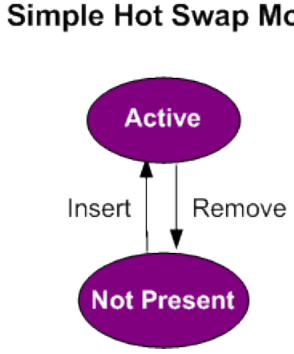
Hot Swap Operations

HP BladeSystem c-Class FRUs currently implement the HPI Unmanaged and Managed Hot Swap Models.

Unmanaged Hot Swap Model

The HP BladeSystem c-Class supports the HPI Unmanaged Hot Swap model for the OA, Storage Blade, AMC Expansion Blade, Tape Blade, fan, and power supply FRUs Therefore, the Hot Swap APIs are not supported for these resources. These FRUs do generate Hot Swap Events.

Figure 2 Unmanaged Hot Swap Model



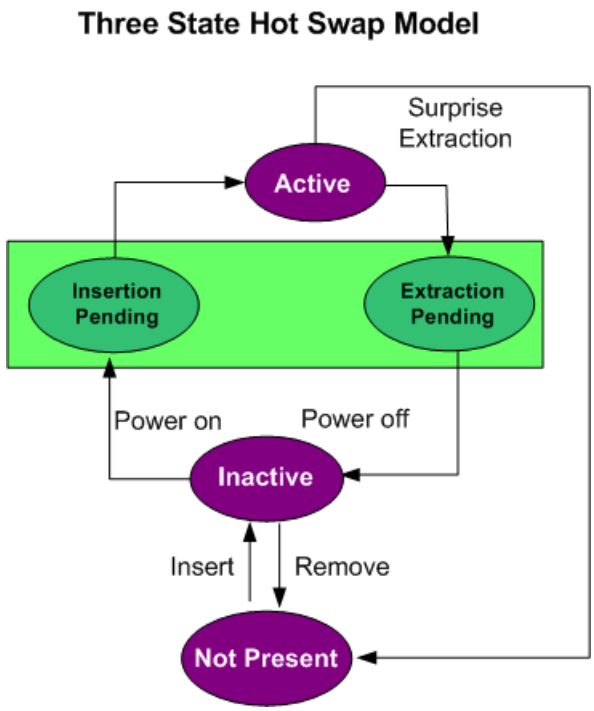
Managed Hot Swap Model

The HP BladeSystem c-Class supports the HPI Five State Managed Hot Swap Model for server blade, interconnect and virtual connect FRUs.

The OA plug-in does not currently support the setting of an `AutoInsert` or `AutoExtract` timeout. Instead, these setting are fixed (read-only) and set to *`SAHPI_TIMEOUT_IMMEDIATE`*. This means that the managed FRUs do not stay in either the *Insertion Pending* or *Extraction Pending* states, but pass immediately into the Active or Inactive states respectively.

Figure 3 displays a simplified view of the hot swap states and transitions that are involved in the Five State Hot Swap Model.

Figure 3 Five State Hot Swap Model



The behavior of the Hot Swap APIs is as follows:

- *`saHpiHotSwapStateGet()`* API returns the current state of the FRU
- *`saHpiHotSwapActionRequest()`* API
  - Power on the FRU if it is in the *Inactive* state and the requested action is `SAHPI_HS_ACTION_INSERTION`
  - Power off the FRU if it is in the *Active* state and the requested action is `SAHPI_HS_ACTION_EXTRACTION`

The HP BladeSystem FRUs do not have a specific Hot Swap LED indicator. Therefore, the *saHpiHotSwapIndicatorStateGet()* and *saHpiHotSwapIndicatorStateSet()* APIs always return SA_ERR_HPI_UNSUPPORTED_API.

Because the *AutoInsert* and *AutoExtract* timeouts are READ_ONLY, the status of any remaining Hot Swap APIs are as follows:

- *saHpiHotSwapPolicyCancel()* API always returns SA_ERR_HPI_INVALID_REQUEST
- *saHpiResourceActiveSet()* API always returns SA_ERR_HPI_INVALID_REQUEST
- *saHpiResourceInactiveSet()* API always returns SA_ERR_HPI_INVALID_REQUEST
- *saHpiAutoInsertTimeoutGet()* API always returns SAHPI_TIMEOUT_IMMEDIATE
- *saHpiAutoInsertTimeoutSet()* API always returns SA_ERR_HPI_READ_ONLY
- *saHpiAutoExtractTimeoutGet()* API always returns SAHPI_TIMEOUT_IMMEDIATE
- *saHpiAutoExtractTimeoutSet()* API always returns SA_ERR_HPI_READ_ONLY

Table 34 provides a list of resources and hot swap events triggered by particular actions.

Table 34 Hot Swap Events

Resource Name	Action	Hot Swap Events		Event Severity
		Previous State	**Current State**	
Server Blade, Interconnect Blade (Switch)	Insertion	NOT_PRESENT	INSERTION_PENDING	INFORMATIONAL
	Power on after insertion	INSERTION_PENDING	ACTIVE	Resource Severity in RPT Entry
	Extraction on Power On state	ACTIVE	NOT_PRESENT	INFORMATIONAL
	Extraction on Power Off state	INACTIVE	NOT_PRESENT	INFORMATIONAL
	Power off	1st– ACTIVE	EXTRACTION_PENDING	INFORMATIONAL
		2nd– EXTRACTION_PENDING	INACTIVE	INFORMATIONAL
	Power on	1st– INACTIVE	INSERTION_PENDING	INFORMATIONAL
		2nd– INSERTION_PENDING	ACTIVE	INFORMATIONAL
IO Blade, Storage Blade, OA, Fan, Power Supply	Insertion	NOT_PRESENT	ACTIVE	INFORMATIONAL
	Extraction	ACTIVE	NOT_PRESENT	Resource Severity in RPT Entry

Configuration

The *saHpiParmControl()* API is not supported in the OA SOAP plug-in. Therefore, the *saHpiParmControl()* API returns the following:

SA_ERR_HPI_UNSUPPORTED_API.

Load Management

Load Management related APIs are not supported in the OA SOAP plug-in. Therefore, all Load Management related APIs always return `SA_ERR_HPI_UNSUPPORTED_API`.

Reset Management

The following list provides the status of all power management related APIs.

- *`saHpiResourceResetStateGet()`* API returns the current reset state of the given resource.
- *`saHpiResourceResetStateSet ()`* API functions return the following:
  - `SAHPI_RESET_ASSERT` request on the given resource will Power-Off the resource
  - `SAHPI_RESET_DEASSERT` request on the given resource will Power-On the resource.
  - Reset Management returns `INVALID_REQUEST` if the cold/warm reset is requested on a resource that is powered off.

Power Management

The status of all power management related APIs is as follows:

- *`saHpiResourcePowerStateGet()`* API returns the current power state of the given resource.
- *`saHpiResourcePowerStateSet()`* API functions are as follows:
  - `SAHPI_POWER_ON` request on the given resource will Power-On the resource if it is in Power-Off state.
  - `SAHPI_POWER_OFF` request on the given resource will Power-Off the resource if it is in Power-On state.
  - `SAHPI_POWER_CYCLE` request on the given resource will Power-Off and power-on the resource if it is in Power-On state.
  - `SAHPI_POWER_CYCLE` request on the given resource will Power-On the resource if it is in Power-Off state.

Alarms, Events, and Event Log Management

The OpenHPI OA SOAP plug-in retrieves the hardware events from OA by using a continuous polling mechanism. When the OA SOAP plug-in starts, the plug-in makes a request to OA for hardware events and OA immediately starts discovering the hardware resources and buffering events in to memory. When the OA SOAP plug-in completes the hardware resources discover, the plug-in begins continuous polling of hardware events. OA SOAP plug-in processes the newly retrieved events and converts some of them into HPI events and pushes them into the event-processing queue of the OpenHPI framework.

Event-related APIs and Alarm-related APIs work on the Domain Alarm Table and the Domain Event Log. Both of these are supported by the OpenHPI framework.

The HP BladeSystem c-Class does not allow alteration of the events log, subsequently, the Event Log Management APIs are not supported in the OA SOAP plug-in. However, they are supported by the OpenHPI framework and their operations are limited only to the Domain Event Log level.

OpenHPI OA SOAP Plug-in Limitations and Known Issues

The following is a list of limitations and known issues associated with the OpenHPI OA SOAP plug-in:

- The OpenHPI OA SOAP plug-in does not support cascaded HP BladeSystem c-Class enclosures.
- The OpenHPI OA SOAP plug-in does not support setting the `AutoInsert` or `AutoExtract` timeouts.
- The OpenHPI OA SOAP plug-in does not support FUMI, DIMI and Load Management APIs.
- The OA Switchover requires a maximum of 180 seconds. During the time, the OpenHPI OA SOAP plug-in is not able to communicate with Active OA. During this OA Switchover, any HPI API call which requires communication with OA will fail.
- When the OA is inserted into the slot, it usually takes 40 seconds to stabilize. If Active OA is removed prior to stabilization of the newly inserted Standby OA, the OA SOAP plug-in will hang.
- If the OA SOAP plug-in is started with only one OA or if the Standby OA is removed before the OA SOAP plug-in is initialized, the OA SOAP plug-in does not recognize the Standby OA. Thereafter, if Active OA is removed and Standby OA is inserted, the OA SOAP plug-in does not recognize the Standby OA. The OA SOAP plug-in hangs until the previous Active OA is re-inserted and becomes Active again.

Appendix A

The RDR numbers used in the OA SOAP plug-in for Sensors, Controls and Inventory RDR types are listed in the `SaHpiOaSoap.h` field that is provided in the standard include directory of OpenHPI. This file can be referenced for RDR numbers by the application that intends to use the OA SOAP plug-in.

The `SaHpiOaSoap.h` file contains the following:

```
#ifndef __SAHPIOASOAP_H
#define __SAHPIOASOAP_H

/* Sensor Numbers used in OA SOAP plugin
 *
 * On adding new sensor, the following data structures may require updation.
 * Please update accordingly.
 * 1. New sensor class in plugin/oa_soap/oa_soap_sensor.h
 * 2. Max sensor class in plugin/oa_soap/oa_soap_resources.h
 * 3. New sensor event assert state in plugin/oa_soap/oa_soap_sensor.h
 * 4. Max sensor event assert state mapping array in
 *    plugin/oa_soap/oa_soap_resources.c
 * 5. Max sensor enum value mapping array in plugin/oa_soap/oa_soap_resources.c
 * 6. Global sensor array in plugin/oa_soap/oa_soap_resources.c
 * 7. Sensor event array in global sensor array in
 *    plugin/oa_soap/oa_soap_resources.c
 * 8. Global sensor enum value mapping array in
 *    plugin/oa_soap/oa_soap_resources.c
 * 9. Global sensor event assert state mapping array in
 *    plugin/oa_soap/oa_soap_resources.c
 */

/* Operational status sensor */
#define OA_SOAP_SEN_OPER_STATUS   (SaHpiSensorNumT) 0x000
/* Predictive faliure sensor */
#define OA_SOAP_SEN_PRED_FAIL    (SaHpiSensorNumT) 0x001
/* Thermal reading sensor */
#define OA_SOAP_SEN_TEMP_STATUS   (SaHpiSensorNumT) 0x002
/* Redundancy sensor */
#define OA_SOAP_SEN_REDUND   (SaHpiSensorNumT) 0x003
/* Fan speed sensor */
#define OA_SOAP_SEN_FAN_SPEED   (SaHpiSensorNumT) 0x004
/* Power reading sensor */
#define OA_SOAP_SEN_PWR_STATUS   (SaHpiSensorNumT) 0x005
```

```
/* Internal data error sensor */
#define OA_SOAP_SEN_INT_DATA_ERR  (SaHpiSensorNumT) 0x006
/* Management processor error sensor */
#define OA_SOAP_SEN_MP_ERR   (SaHpiSensorNumT) 0x007
/* Power supply subsystem power input sensor */
#define OA_SOAP_SEN_IN_PWR   (SaHpiSensorNumT) 0x008
/* Power supply subsystem power output sensor */
#define OA_SOAP_SEN_OUT_PWR   (SaHpiSensorNumT) 0x009
/* Power supply subsystem power capacity sensor */
#define OA_SOAP_SEN_PWR_CAPACITY  (SaHpiSensorNumT) 0x00a
/* Thermal warning sensor */
#define OA_SOAP_SEN_THERM_WARN   (SaHpiSensorNumT) 0x00b
/* Thermal danger sensor */
#define OA_SOAP_SEN_THERM_DANGER  (SaHpiSensorNumT) 0x00c
/* IO configuration error sensor */
#define OA_SOAP_SEN_IO_CONFIG_ERR  (SaHpiSensorNumT) 0x00d
/* Device power request error sensor */
#define OA_SOAP_SEN_DEV_PWR_REQ   (SaHpiSensorNumT) 0x00e
/* Insufficient cooling error sensor */
#define OA_SOAP_SEN_INSUF_COOL   (SaHpiSensorNumT) 0x00f
/* Device location error sensor */
#define OA_SOAP_SEN_DEV_LOC_ERR   (SaHpiSensorNumT) 0x010
/* Device failure sensor */
#define OA_SOAP_SEN_DEV_FAIL   (SaHpiSensorNumT) 0x011
/* Device degraded sensor */
#define OA_SOAP_SEN_DEV_DEGRAD   (SaHpiSensorNumT) 0x012
/* AC failure sensor */
#define OA_SOAP_SEN_AC_FAIL   (SaHpiSensorNumT) 0x013
/* i2c buses sensor */
#define OA_SOAP_SEN_I2C_BUS   (SaHpiSensorNumT) 0x014
/* Redundancy error sensor */
#define OA_SOAP_SEN_REDUND_ERR   (SaHpiSensorNumT) 0x015
/* Enclosure aggregate operational status sensor */
#define OA_SOAP_SEN_ENC_AGR_OPER  (SaHpiSensorNumT) 0x016
/* Enclosure aggregate predictive failure sensor */
#define OA_SOAP_SEN_ENC_AGR_PRED_FAIL  (SaHpiSensorNumT) 0x017
/* Enclosure OA redundancy sensor */
#define OA_SOAP_SEN_OA_REDUND   (SaHpiSensorNumT) 0x018
/* Enclosure OA link status sensor */
#define OA_SOAP_SEN_OA_LINK_STATUS  (SaHpiSensorNumT) 0x019
/* Interconnect CPU fault sensor */
#define OA_SOAP_SEN_CPU_FAULT   (SaHpiSensorNumT) 0x01a
/* Interconnect health LED sensor */
#define OA_SOAP_SEN_HEALTH_LED   (SaHpiSensorNumT) 0x01b
/* Health status operational sensor */
#define OA_SOAP_SEN_HEALTH_OPER   (SaHpiSensorNumT) 0x01c
/* Health status predictive failure sensor */
#define OA_SOAP_SEN_HEALTH_PRED_FAIL  (SaHpiSensorNumT) 0x01d
/* Device missing sensor */
#define OA_SOAP_SEN_DEV_MISS   (SaHpiSensorNumT) 0x01e
/* Device power sequence sensor */
#define OA_SOAP_SEN_DEV_PWR_SEQ   (SaHpiSensorNumT) 0x01f
/* Device bonding sensor */
#define OA_SOAP_SEN_DEV_BOND   (SaHpiSensorNumT) 0x020
/* Network configuration sensor */
#define OA_SOAP_SEN_NET_CONFIG   (SaHpiSensorNumT) 0x021
/* Firmware mismatch */
#define OA_SOAP_SEN_FW_MISMATCH   (SaHpiSensorNumT) 0x022
/* Profile unassigned error sensor */
#define OA_SOAP_SEN_PROF_UNASSIGN_ERR  (SaHpiSensorNumT) 0x023
/* Device not supported sensor */
#define OA_SOAP_SEN_DEV_NOT_SUPPORT  (SaHpiSensorNumT) 0x024
/* Too low power request sensor */
#define OA_SOAP_SEN_TOO_LOW_PWR_REQ  (SaHpiSensorNumT) 0x025
/* Call HP sensor */
#define OA_SOAP_SEN_CALL_HP   (SaHpiSensorNumT) 0x026
/* Device informational sensor */
#define OA_SOAP_SEN_DEV_INFO   (SaHpiSensorNumT) 0x027
/* Storage device missing sensor */
#define OA_SOAP_SEN_STORAGE_DEV_MISS  (SaHpiSensorNumT) 0x028
/* Enclosure ID mismatch sensor */
#define OA_SOAP_SEN_ENC_ID_MISMATCH  (SaHpiSensorNumT) 0x029
```

```
/* Device mix match sensor */
#define OA_SOAP_SEN_DEV_MIX_MATCH  (SaHpiSensorNumT) 0x02a
/* Power capping error sensor */
#define OA_SOAP_SEN_GRPCAP_ERR   (SaHpiSensorNumT) 0x02b
/* IML recorded errors sensor */
#define OA_SOAP_SEN_IML_ERR   (SaHpiSensorNumT) 0x02c
/* Duplicate management IP address sensor */
#define OA_SOAP_SEN_DUP_MGMT_IP_ADDR  (SaHpiSensorNumT) 0x02d
/* Server Blade System zone1 */
#define OA_SOAP_SEN_BLADE_SYSTEM_ZONE1  (SaHpiSensorNumT) 0x02e
/* Server Blade System zone2 */
#define OA_SOAP_SEN_BLADE_SYSTEM_ZONE2  (SaHpiSensorNumT) 0x02f
/* Server Blade System zone3 */
#define OA_SOAP_SEN_BLADE_SYSTEM_ZONE3  (SaHpiSensorNumT) 0x030
/* Server Blade System zone4 */
#define OA_SOAP_SEN_BLADE_SYSTEM_ZONE4  (SaHpiSensorNumT) 0x031
/* Server Blade System zone5 */
#define OA_SOAP_SEN_BLADE_SYSTEM_ZONE5  (SaHpiSensorNumT) 0x032
/* Server Blade System zone6 */
#define OA_SOAP_SEN_BLADE_SYSTEM_ZONE6  (SaHpiSensorNumT) 0x033
/* Server Blade System zone7 */
#define OA_SOAP_SEN_BLADE_SYSTEM_ZONE7  (SaHpiSensorNumT) 0x034
/* Server Blade System zone8 */
#define OA_SOAP_SEN_BLADE_SYSTEM_ZONE8  (SaHpiSensorNumT) 0x035
/* Server Blade CPU zone1 */
#define OA_SOAP_SEN_BLADE_CPU_ZONE1  (SaHpiSensorNumT) 0x036
/* Server Blade CPU zone2 */
#define OA_SOAP_SEN_BLADE_CPU_ZONE2  (SaHpiSensorNumT) 0x037
/* Server Blade CPU zone3 */
#define OA_SOAP_SEN_BLADE_CPU_ZONE3  (SaHpiSensorNumT) 0x038
/* Server Blade CPU zone4 */
#define OA_SOAP_SEN_BLADE_CPU_ZONE4  (SaHpiSensorNumT) 0x039
/* Server Blade Memory zone1 */
#define OA_SOAP_SEN_BLADE_MEM_ZONE1  (SaHpiSensorNumT) 0x03a
/* Server Blade Memory zone2 */
#define OA_SOAP_SEN_BLADE_MEM_ZONE2  (SaHpiSensorNumT) 0x03b
/* Server Blade Memory zone3 */
#define OA_SOAP_SEN_BLADE_MEM_ZONE3  (SaHpiSensorNumT) 0x03c
/* Server Blade Memory zone4 */
#define OA_SOAP_SEN_BLADE_MEM_ZONE4  (SaHpiSensorNumT) 0x03d
/* Server Blade Memory zone5 */
#define OA_SOAP_SEN_BLADE_MEM_ZONE5  (SaHpiSensorNumT) 0x03e
/* Server Blade Memory zone6 */
#define OA_SOAP_SEN_BLADE_MEM_ZONE6  (SaHpiSensorNumT) 0x03f
/* Server Blade Memory zone7 */
#define OA_SOAP_SEN_BLADE_MEM_ZONE7  (SaHpiSensorNumT) 0x040
/* Server Blade Memory zone8 */
#define OA_SOAP_SEN_BLADE_MEM_ZONE8  (SaHpiSensorNumT) 0x041
/* Storage Blade Disk zone1 */
#define OA_SOAP_SEN_BLADE_DISK_ZONE1  (SaHpiSensorNumT) 0x042
/* Storage Blade Disk zone2 */
#define OA_SOAP_SEN_BLADE_DISK_ZONE2  (SaHpiSensorNumT) 0x043
/* Storage Blade Disk zone3 */
#define OA_SOAP_SEN_BLADE_DISK_ZONE3  (SaHpiSensorNumT) 0x044
/* Storage Blade Disk zone4 */
#define OA_SOAP_SEN_BLADE_DISK_ZONE4  (SaHpiSensorNumT) 0x045
/* Server Blade CPU1 */
#define OA_SOAP_SEN_BLADE_CPU1_1  (SaHpiSensorNumT) 0x046
/* Server Blade CPU1 */
#define OA_SOAP_SEN_BLADE_CPU1_2  (SaHpiSensorNumT) 0x047
/* Server Blade CPU1 */
#define OA_SOAP_SEN_BLADE_CPU1_3  (SaHpiSensorNumT) 0x048
/* Server Blade CPU1 */
#define OA_SOAP_SEN_BLADE_CPU1_4  (SaHpiSensorNumT) 0x049
/* Server Blade CPU2 */
#define OA_SOAP_SEN_BLADE_CPU2_1  (SaHpiSensorNumT) 0x04a
/* Server Blade CPU2 */
#define OA_SOAP_SEN_BLADE_CPU2_2  (SaHpiSensorNumT) 0x04b
/* Server Blade CPU2 */
#define OA_SOAP_SEN_BLADE_CPU2_3  (SaHpiSensorNumT) 0x04c
/* Server Blade CPU2 */
#define OA_SOAP_SEN_BLADE_CPU2_4  (SaHpiSensorNumT) 0x04d
```

```
/* Server Blade CPU3 */
#define OA_SOAP_SEN_BLADE_CPU3_1  (SaHpiSensorNumT) 0x04e
/* Server Blade CPU3 */
#define OA_SOAP_SEN_BLADE_CPU3_2  (SaHpiSensorNumT) 0x04f
/* Server Blade CPU3 */
#define OA_SOAP_SEN_BLADE_CPU3_3  (SaHpiSensorNumT) 0x050
/* Server Blade CPU3 */
#define OA_SOAP_SEN_BLADE_CPU3_4  (SaHpiSensorNumT) 0x051
/* Server Blade CPU4 */
#define OA_SOAP_SEN_BLADE_CPU4_1  (SaHpiSensorNumT) 0x052
/* Server Blade CPU4 */
#define OA_SOAP_SEN_BLADE_CPU4_2  (SaHpiSensorNumT) 0x053
/* Server Blade CPU4 */
#define OA_SOAP_SEN_BLADE_CPU4_3  (SaHpiSensorNumT) 0x054
/* Server Blade CPU4 */
#define OA_SOAP_SEN_BLADE_CPU4_4  (SaHpiSensorNumT) 0x055
/* Server Blade Storage zone1 */
#define OA_SOAP_SEN_BLADE_STORAGE_ZONE1  (SaHpiSensorNumT) 0x056
/* Server Blade Storage zone2 */
#define OA_SOAP_SEN_BLADE_STORAGE_ZONE2  (SaHpiSensorNumT) 0x057
/* Server Blade Storage zone3 */
#define OA_SOAP_SEN_BLADE_STORAGE_ZONE3  (SaHpiSensorNumT) 0x058
/* Server Blade Storage zone4 */
#define OA_SOAP_SEN_BLADE_STORAGE_ZONE4  (SaHpiSensorNumT) 0x059
/* Server Blade I/O Board zone1 */
#define OA_SOAP_SEN_BLADE_IO_BOARD_ZONE1  (SaHpiSensorNumT) 0x05a
/* Server Blade I/O Board zone2 */
#define OA_SOAP_SEN_BLADE_IO_BOARD_ZONE2  (SaHpiSensorNumT) 0x05b
/* Server Blade I/O Board zone3 */
#define OA_SOAP_SEN_BLADE_IO_BOARD_ZONE3  (SaHpiSensorNumT) 0x05c
/* Server Blade I/O Board zone4 */
#define OA_SOAP_SEN_BLADE_IO_BOARD_ZONE4  (SaHpiSensorNumT) 0x05d
/* Server Blade I/O Board zone5 */
#define OA_SOAP_SEN_BLADE_IO_BOARD_ZONE5  (SaHpiSensorNumT) 0x05e
/* Server Blade I/O Board zone6 */
#define OA_SOAP_SEN_BLADE_IO_BOARD_ZONE6  (SaHpiSensorNumT) 0x05f
/* Server Blade I/O Board zone7 */
#define OA_SOAP_SEN_BLADE_IO_BOARD_ZONE7  (SaHpiSensorNumT) 0x060
/* Server Blade I/O Board zone8 */
#define OA_SOAP_SEN_BLADE_IO_BOARD_ZONE8  (SaHpiSensorNumT) 0x061
/* Server Blade Power Supply zone1 */
#define OA_SOAP_SEN_BLADE_POWER_SUPPLY_ZONE1  (SaHpiSensorNumT) 0x062
/* Server Blade Power Supply zone2 */
#define OA_SOAP_SEN_BLADE_POWER_SUPPLY_ZONE2  (SaHpiSensorNumT) 0x063
/* Server Blade Power Supply zone3 */
#define OA_SOAP_SEN_BLADE_POWER_SUPPLY_ZONE3  (SaHpiSensorNumT) 0x064
/* Server Blade Power Supply zone4 */
#define OA_SOAP_SEN_BLADE_POWER_SUPPLY_ZONE4  (SaHpiSensorNumT) 0x065
/* Server Blade Power Supply zone5 */
#define OA_SOAP_SEN_BLADE_POWER_SUPPLY_ZONE5  (SaHpiSensorNumT) 0x066
/* Server Blade Power Supply zone6 */
#define OA_SOAP_SEN_BLADE_POWER_SUPPLY_ZONE6  (SaHpiSensorNumT) 0x067
/* Server Blade Power Supply zone7 */
#define OA_SOAP_SEN_BLADE_POWER_SUPPLY_ZONE7  (SaHpiSensorNumT) 0x068
/* Server Blade Power Supply zone8 */
#define OA_SOAP_SEN_BLADE_POWER_SUPPLY_ZONE8  (SaHpiSensorNumT) 0x069

/* Control numbers used in OA SOAP plugin
 * On adding new control, control array in in plugin/oa_soap/oa_soap_resources.c
 * may require updation.
 */
/* UID control */
#define OA_SOAP_UID_CNTRL   (SaHpiCtrlNumT)   0x000
/* Power control */
#define OA_SOAP_PWR_CNTRL   (SaHpiCtrlNumT)   0x001
/* LCD Button Lock control */
#define OA_SOAP_LCD_BUTN_LCK_CNTRL  (SaHpiCtrlNumT)   0x002
/* Power Mode Control */
#define OA_SOAP_PWR_MODE_CNTRL   (SaHpiCtrlNumT)   0x003
/* Dynamic Power Control */
#define OA_SOAP_DYNAMIC_PWR_CNTRL  (SaHpiCtrlNumT)   0x004
/* Power Limit Mode Control */
```

```
#define OA_SOAP_PWR_LIMIT_MODE_CNTRL  (SaHpiCtrlNumT)   0x005
/* Static Power Limit Control */
#define OA_SOAP_STATIC_PWR_LIMIT_CNTRL  (SaHpiCtrlNumT)   0x006
/* Dynamic Power Cap Control */
#define OA_SOAP_DYNAMIC_PWR_CAP_CNTRL  (SaHpiCtrlNumT)   0x007

/* The following 2 controls are only available in OA Firmware */
/* version 3.00 and higher.                                   */

/* Derated Circuit Cap Control */
#define OA_SOAP_DERATED_CIRCUIT_CAP_CNTRL (SaHpiCtrlNumT)   0x008
/* Rated Circuit Cap Control */
#define OA_SOAP_RATED_CIRCUIT_CAP_CNTRL  (SaHpiCtrlNumT)   0x009

/* HP c7000 Power Modes */
#define C7000_PWR_NON_REDUNDANT   1
#define C7000_PWR_AC_REDUNDANT   2
#define C7000_PWR_SUPPLY_REDUNDANT  3

/* HP c7000 Power Limit Modes */
#define C7000_PWR_LIMIT_NONE   0
#define C7000_PWR_LIMIT_STATIC   1
#define C7000_PWR_LIMIT_DYNAMIC_CAP         2

/* Custom inventory Area and fields used in OA SOAP plugin
 * On adding new inventory area or field, fan zone mapping rray in in
 * plugin/oa_soap/oa_soap_resources.c may require updation.
 */
/* Fan Zone field type for storing the device bays */
#define OA_SOAP_INV_FZ_DEV_BAY   (SaHpiIdrIdT)   0x100
/* Fan Zone field type for storing the fan bays */
#define OA_SOAP_INV_FZ_FAN_BAY   (SaHpiIdrIdT)   0x101
/* Fan field type for storing the shared status */
#define OA_SOAP_INV_FAN_SHARED   (SaHpiIdrIdT)   0x102
/* Fan field type for storing the Fan zone number */
#define OA_SOAP_INV_FZ_NUM   (SaHpiIdrIdT)   0x103
```

Appendix B

A variety of thermal sensors are supported on different c-Class blades depending on the architecture of the blade.

The following table lists various thermal sensors supported by c-Class blades.

Table 35 Thermal Sensors Supported by c-Class Blades

Sensor Name	Sensor Number	Sensor Type	Event Category	Event Sensors	Data Units
Ambient Zone	OA_SOAP_SEN_TEMP_STATUS	SAHPI_TEMPERATURE	SAHPI_EC_THRESHOLD	SAHPI_ES_UNSPECIFIED	SAHPI_SU_DEGREES_C
System Zone	OA_SOAP_SEN_BLADE_SYSTEM_ZONE1	SAHPI_TEMPERATURE	SAHPI_EC_THRESHOLD	SAHPI_ES_UNSPECIFIED	SAHPI_SU_DEGREES_C
CPU Zone1	OA_SOAP_SEN_BLADE_CPU_ZONE1	SAHPI_TEMPERATURE	SAHPI_EC_THRESHOLD	SAHPI_ES_UNSPECIFIED	SAHPI_SU_DEGREES_C
CPU 1	OA_SOAP_SEN_BLADE_CPU1_1	SAHPI_TEMPERATURE	SAHPI_EC_THRESHOLD	SAHPI_ES_UNSPECIFIED	SAHPI_SU_DEGREES_C
CPU 2	OA_SOAP_SEN_BLADE_CPU2_1	SAHPI_TEMPERATURE	SAHPI_EC_THRESHOLD	SAHPI_ES_UNSPECIFIED	SAHPI_SU_DEGREES_C
CPU 3	OA_SOAP_SEN_BLADE_CPU3_1	SAHPI_TEMPERATURE	SAHPI_EC_THRESHOLD	SAHPI_ES_UNSPECIFIED	SAHPI_SU_DEGREES_C
CPU 4	OA_SOAP_SEN_BLADE_CPU4_1	SAHPI_TEMPERATURE	SAHPI_EC_THRESHOLD	SAHPI_ES_UNSPECIFIED	SAHPI_SU_DEGREES_C

Table 35 Thermal Sensors Supported by c-Class Blades *(continued)*

Sensor Name	Sensor Number	Sensor Type	Event Category	Event Sensors	Data Units
Disk Zone	OA_SOAP_SEN_ BLADE_DISK_ZONE1	SAHPI_ TEMPERATURE	SAHPI_EC_ THRESHOLD	SAHPI_ES_ UNSPECIFIED	SAHPI_SU_ DEGREES_C
Memory Zone	OA_SOAP_SEN_ BLADE_MEM_ZONE1	SAHPI_ TEMPERATURE	SAHPI_EC_ THRESHOLD	SAHPI_ES_ UNSPECIFIED	SAHPI_SU_ DEGREES_C
Power Supply Zone	OA_SOAP_SEN_BLADE_ POWER_SUPPLY_ZONE1	SAHPI_ TEMPERATURE	SAHPI_EC_ THRESHOLD	SAHPI_ES_ UNSPECIFIED	SAHPI_SU_ DEGREES_C
I/O Board Zone	OA_SOAP_SEN_BLADE_ IO_BOARD_ZONE1	SAHPI_ TEMPERATURE	SAHPI_EC_ THRESHOLD	SAHPI_ES_ UNSPECIFIED	SAHPI_SU_ DEGREES_C

The following set of tables provided information on thermal sensors supported on various blade systems.

Table 36 Thermal Sensors Supported by BL460c Blade[1]

Sensor Name	Sensor Number	Number of Instances
Ambient Zone	OA_SOAP_SEN_TEMP_STATUS	1
System Zone	OA_SOAP_SEN_BLADE_SYSTEM_ZONE1	1
CPU Zone1	OA_SOAP_SEN_BLADE_CPU_ZONE1 OA_SOAP_SEN_BLADE_CPU_ZONE2	2
CPU 1	OA_SOAP_SEN_BLADE_CPU1_1 OA_SOAP_SEN_BLADE_CPU1_2	2
CPU 2	OA_SOAP_SEN_BLADE_CPU2_1 OA_SOAP_SEN_BLADE_CPU2_2	2
Memory Zone	OA_SOAP_SEN_BLADE_MEM_ZONE1	1
System Zone	OA_SOAP_SEN_BLADE_SYSTEM_ZONE1	7
CPU 1	OA_SOAP_SEN_BLADE_CPU1_1	1
CPU 2	OA_SOAP_SEN_BLADE_CPU2_1	1
CPU 3	OA_SOAP_SEN_BLADE_CPU3_1	0
CPU 4	OA_SOAP_SEN_BLADE_CPU4_1	0
Disk Zone	OA_SOAP_SEN_BLADE_DISK_ZONE1	1
Memory Zone	OA_SOAP_SEN_BLADE_MEM_ZONE1	8
Ambient Zone	OA_SOAP_SEN_TEMP_STATUS	1
Power Supply Zone	OA_SOAP_SEN_BLADE_POWER_SUPPLY_ZONE1	6
I/O Board Zone	OA_SOAP_SEN_BLADE_IO_BOARD_ZONE1	8

[1] Not all blades will have all sensors

Table 37 Thermal Sensors Supported by BL465c Blade

Sensor Name	Sensor Number	Number of Instances
Ambient Zone	OA_SOAP_SEN_TEMP_STATUS	1
System Zone	OA_SOAP_SEN_BLADE_SYSTEM_ZONE1	1
CPU Zone1	OA_SOAP_SEN_BLADE_CPU_ZONE1	1
CPU 1	OA_SOAP_SEN_BLADE_CPU1_1	1

Table 37 Thermal Sensors Supported by BL465c Blade *(continued)*

Sensor Name	Sensor Number	Number of Instances
CPU 2	OA_SOAP_SEN_BLADE_CPU2_1	1
Memory Zone	OA_SOAP_SEN_BLADE_MEM_ZONE1 OA_SOAP_SEN_BLADE_MEM_ZONE2	2

Table 38 Thermal Sensors Supported by BL480c Blade

Sensor Name	Sensor Number	Number of Instances
Ambient Zone	OA_SOAP_SEN_TEMP_STATUS	1
System Zone	Ranges from OA_SOAP_SEN_BLADE_SYSTEM_ZONE1 To OA_SOAP_SEN_BLADE_SYSTEM_ZONE4	4
CPU Zone1	OA_SOAP_SEN_BLADE_CPU_ZONE1	1
CPU 1	OA_SOAP_SEN_BLADE_CPU1_1	1
CPU 2	OA_SOAP_SEN_BLADE_CPU2_1	1
Memory Zone	OA_SOAP_SEN_BLADE_MEM_ZONE1	1

Table 39 Thermal Sensors Supported by BL495c Blade

Sensor Name	Sensor Number	Number of Instances
Ambient Zone	OA_SOAP_SEN_TEMP_STATUS	1
CPU Zone1	OA_SOAP_SEN_BLADE_CPU_ZONE1 OA_SOAP_SEN_BLADE_CPU_ZONE2	2
CPU 1	OA_SOAP_SEN_BLADE_CPU1_1 OA_SOAP_SEN_BLADE_CPU1_2	2
CPU 2	OA_SOAP_SEN_BLADE_CPU2_1	1
Memory Zone	OA_SOAP_SEN_BLADE_MEM_ZONE1	1

Table 40 Thermal Sensors Supported by BL680c Blade

Sensor Name	Sensor Number	Number of Instances
Ambient Zone	OA_SOAP_SEN_TEMP_STATUS	1
CPU Zone1	OA_SOAP_SEN_BLADE_CPU_ZONE1	2
CPU 1	OA_SOAP_SEN_BLADE_CPU_ZONE1 OA_SOAP_SEN_BLADE_CPU_ZONE2	2
CPU 2	OA_SOAP_SEN_BLADE_CPU1_1 OA_SOAP_SEN_BLADE_CPU1_2	1
Memory Zone	OA_SOAP_SEN_BLADE_MEM_ZONE1	1

Table 41 Thermal sensors Supported by BL685c Blade

Sensor Name	Sensor Number	Number of Instances
Ambient Zone	OA_SOAP_SEN_TEMP_STATUS	1
System Zone	OA_SOAP_SEN_BLADE_SYSTEM_ZONE1 OA_SOAP_SEN_BLADE_SYSTEM_ZONE4	2
CPI Zone1	OA_SOAP_SEN_BLADE_CPU_ZONE1 OA_SOAP_SEN_BLADE_CPU_ZONE4	1

Table 41 Thermal sensors Supported by BL685c Blade *(continued)*

Sensor Name	Sensor Number	Number of Instances
CPU 1	OA_SOAP_SEN_BLADE_CPU1_1	1
CPU 2	OA_SOAP_SEN_BLADE_CPU2_1	1
CPU 3	OA_SOAP_SEN_BLADE_CPU3_1	1
CPU 4	OA_SOAP_SEN_BLADE_CPU4_1	1

Table 42 Thermal Sensors Supported by BL860c Blade

Sensor Name	Sensor Number	Number of Instances
Ambient Zone	OA_SOAP_SEN_TEMP_STATUS	1
System Zone	Ranges from OA_SOAP_SEN_BLADE_SYSTEM_ZONE1 To OA_SOAP_SEN_BLADE_SYSTEM_ZONE4	4
CPU 1	OA_SOAP_SEN_BLADE_CPU1_1	1
CPU 2	OA_SOAP_SEN_BLADE_CPU2_1	1
Memory Zone	OA_SOAP_SEN_BLADE_MEM_ZONE1	1

Table 43 Thermal Sensors Supported by BL870c Blade

Sensor Name	Sensor Number	Number of Instances
Ambient Zone	OA_SOAP_SEN_TEMP_STATUS	1
System Zone	Ranges from OA_SOAP_SEN_BLADE_SYSTEM_ZONE1 To OA_SOAP_SEN_BLADE_SYSTEM_ZONE4	4
CPU 1	OA_SOAP_SEN_BLADE_CPU1_1	1
CPU 2	OA_SOAP_SEN_BLADE_CPU2_1	1
CPU 3	OA_SOAP_SEN_BLADE_CPU3_1	1
CPU 4	OA_SOAP_SEN_BLADE_CPU4_1	1
Memory Zone	OA_SOAP_SEN_BLADE_MEM_ZONE1	1

The following table lists default thermal sensors that supported by other server blade types (those not listed in previous tables).

Table 44 Default Thermal Sensors Supported by Other Server Blade Types

Sensor Name	Sensor Number	Number of Instances
Ambient Zone	OA_SOAP_SEN_TEMP_STATUS	1
System Zone	OA_SOAP_SEN_BLADE_SYSTEM_ZONE1 OA_SOAP_SEN_BLADE_SYSTEM_ZONE1	1
CPU Zone1	OA_SOAP_SEN_BLADE_CPU_ZONE1	1
CPU 1	OA_SOAP_SEN_BLADE_CPU1_1	1
CPU 2	OA_SOAP_SEN_BLADE_CPU2_1	1
CPU 3	OA_SOAP_SEN_BLADE_CPU3_1	1

Table 44 Default Thermal Sensors Supported by Other Server Blade Types *(continued)*

Sensor Name	Sensor Number	Number of Instances
CPU 4	OA_SOAP_SEN_BLADE_CPU4_1	1
Memory Zone	OA_SOAP_SEN_BLADE_MEM_ZONE1	1

Table 45 Thermal Sensors Supported by AMC Expansion Blade

Sensor Name	Sensor Number	Number of Instances
Ambient Zone Thermal Status	OA_SOAP_SEN_TEMP_STATUS	1
System Zone Thermal Status	OA_SOAP_SEN_BLADE_SYSTEM_ZONE1	1

Table 46 Thermal sensors Supported by Storage/SAN/Tape Blades

Sensor Name	Sensor Number	Number of Instances
Ambient Zone Thermal Status	OA_SOAP_SEN_TEMP_STATUS	1
Disk Zone Thermal Status	OA_SOAP_SEN_BLADE_SYSTEM_ZONE1	1