Chassis Management for NVIDIA®-Mellanox® Switch Systems with Sysfs User Manual

Rev. 2.8

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1 Release Notes Update History

Revision	Date	Description
2.8	April 1st 2024	Added temperature, BMC and power related attributes
2.6	July 1st 2024	Added DPU related attributes
2.4	Aug 31, 2023	Adding 'asics_init_done' and 'asic_chipup_completed'
2.3	July 11, 2023	Update LEDs colors to be either red or amber for FAN LED, PSU LED and status LED
2.2	Feb 15, 2022	Add many SN4800 related attributes Add PSU FW version related attributes
2.1	Sept 15, 2021	Add PSU MIN/MAX fan speed. Added the following sections: • Get psu sensors value. • Get psu sensors thresholds. • Get psu sensors capability.
2.0	May 25, 2021	Edit reset causes - page 31-32 Add spectrum 3 Remove comex_wd reason which is disabled.
1.9	Dec 30, 2020	Added updates for Fan Direction JTAG
1.8	July 01, 2020	Added the following sections: • Read PSU VPD Info • Get Hot-plug Fan Number • Get Hot-plug PSU Number • Get Hot-plug PWR Number • Get FAN hot-plug event status • Get PSU hot-plug event status • PWR hot-plug event status • Read PSU min/max Fan Speed • Read/write Time Window for Thermal Control Periodic Log Report

1.7	Apr 13, 2020	Added the following sections: • 2.2.3 Read SFP Counter • 2.2.4 Read Module Counter • 2.2.5 Read Max System Fans (rotors) • 2.2.6 Read Fan Drawer Number • 2.6.3 Get CPLD Part Number • 2.6.4 Get CPLD Minor Version • 2.6.5 Get CPLD Full Version Modified the following sections: • 2.3.2 Read Fan Module EEPROM Data

Revision	Date	Description
		• 2.6.2 Get CPLD Major Version • 2.7.19 Read PSU Temperature • 2.7.26 Read Temperature Critical Module • 2.7.27 Read Temperature Emergency Module • 2.7.28 Read Temperature Fault Module • 2.7.29 Read Temperature Input Module
1.6	Apr 12, 2020	Modified “2.6.8 Get Reset Cause"
1.5	Nov 27, 2019	Modified “2.6.8 Get Reset Cause"
1.4	Sept 23, 2019	Added “2.6.3 Fan_Dir" Modified “2.6.8 Get Reset Cause"
1.3	June 13, 2019	Added: • Thermal” • Watchdog”
1.2	April 12, 2019	Updated Sysfs
1.1	December 18, 2018	Added support for new systems
1.0	September 8, 2015	First release

2 Introduction

Mellanox hw-management package uses a virtual file system provided by the Linux kernel called sysfs.

The sysfs file system enumerates the devices and buses attached to the system in a file system hierarchy that can be accessed from the user space.

The major advantage of working with sysfs is that it makes HW hierarchy easy to understand and control without having to learn about HW component location and the buses through which they are connected.

2.1 Software Components

Figure 1 presents the software architecture layout and Figure 2 presents layer separation for sysfs support.

Figure 1 - System Architecture Layout

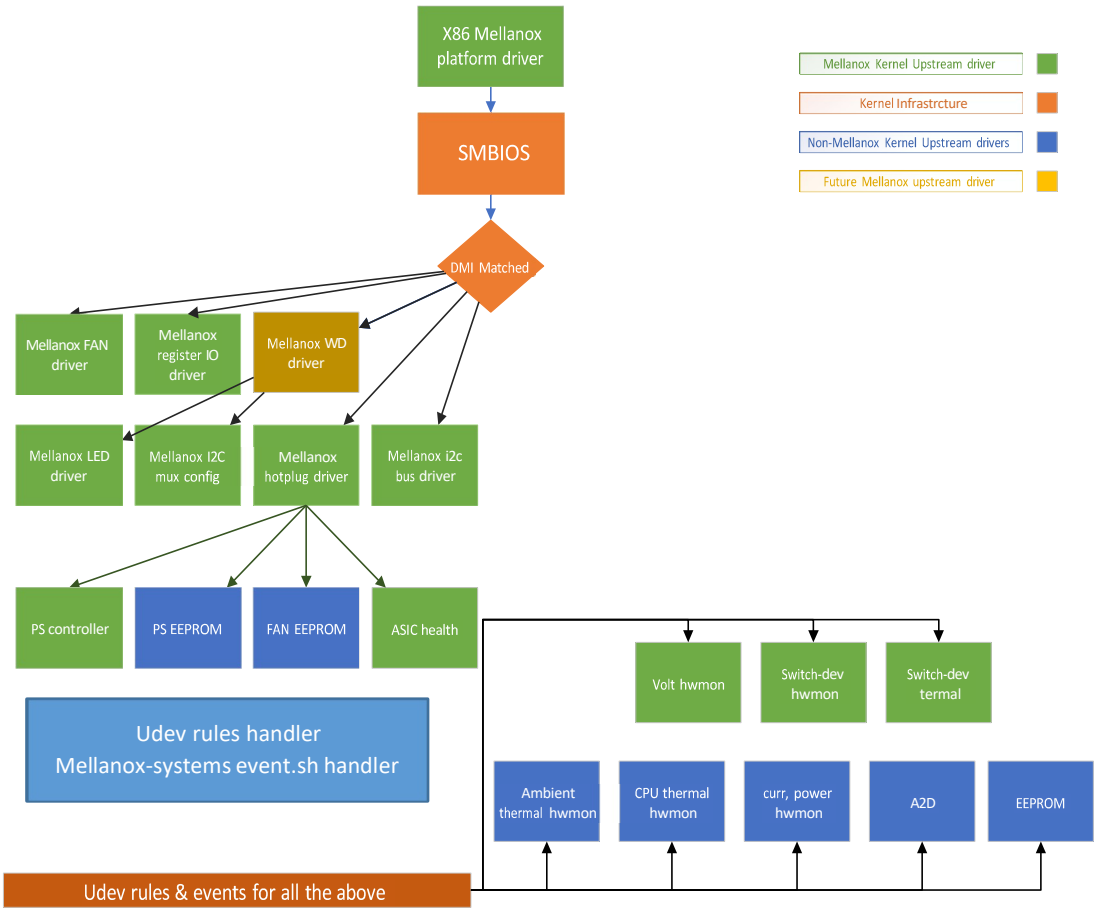
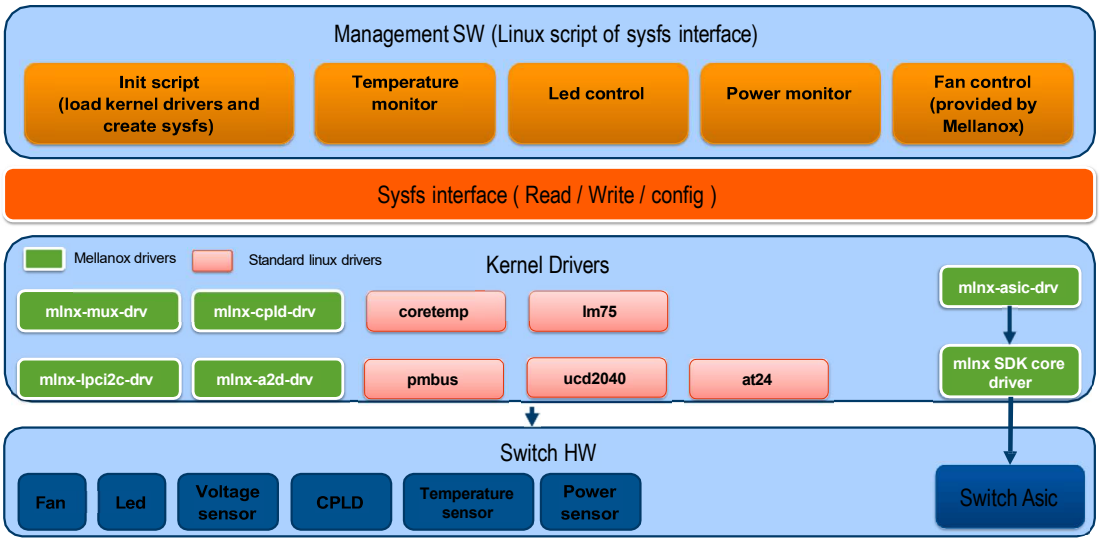


Figure 2 - Sysfs Layout



2.2 Hierarchy and Structure

The package uses the Linux default hierarchy structure of sysfs under the directory /var/run/hw-management.

This path is used by existing applications that use auto-discovery to find existing HW components. Two examples for such applications are:

- libsysfs – the libraries provide a consistent and stable interface for querying system device information exposed through sysfs.
- systool – a utility built upon libsysfs that lists devices by bus, class, and topology.

The disadvantage of using this path is that the hierarchy model includes the BUS type and location model which is subject to change between different system types.

To resolve this limitation, the virtual hierarchy structure that is not HW dependent is supported. This hierarchy is a collection of soft links to the default sysfs structure. This document describes the way to work with this hierarchy in order to control the HW.

Chassis attributes information exported through sysfs can be utilized by a number of standard Linux tools. So, for example, the following are tools from the Linux packages lm-sensors and fancontrol, which are capable of operating on top of sysfs infrastructure:

- pwmconfig – tests the pulse width modulation (PWM) outputs of sensors and configures fancontrol
- fancontrol – automated software-based fan speed regulation
- sensors – print sensors information

2.3 Sysfs Initialization and Driver Registration

As described in the previous sections, sysfs structure provides access to HW drivers. These drivers need to be initialized before using sysfs. In addition, Mellanox virtual hierarchy also needs to be created in order to use it.

The package provides a simple way to initialize the drivers using the set of shell scripts. These scripts support initialization and de-initialization of driver, virtual hierarchy structure, udev events handling, based on a set of Mellanox system specific udev rules.

Package contains the following files, used within the workload:

- /lib/systemd/system/hw-management.service: system entries for thermal control activation and de-activation.
- /lib/udev/rules.d/50-hw-management-events.rules: udev rules defining the triggers on which events should be handled. When trigger is matched, rule data is to be passed to the event handler (see below file /usr/bin/hw-management-events.sh).
- /usr/bin/hw-management-control.sh: contains thermal algorithm implementation.
- /usr/bin/hw-management-chassis-events.sh and /usr/bin/hw-management-thermal-events.sh: handle udev triggers, according to the received data, it creates or destroys symbolic links to sysfs entries. It allows to create system independent entries, and it allows thermal controls to work over this system independent model. Raises signal to hw-management-control in case of fast temperature decreasing. It could happen in case one or few very hot port cables have been removed. Sets PS units internal FAN speed to default value when unit is connected to power source.
- /usr/bin/hw-management.sh: performs initialization and de-initialization, detects the system type, connects thermal drivers according to the system topology, activates and deactivates thermal algorithm.
- /usr/bin/hw-management-led-state-conversion.sh and /usr/bin/hw-management-power-helper.sh: helper scripts.
- /etc/modprobe.d/hw-management.conf and /etc/modules-load.d/hw-management-modules.conf: configuration for kernel modules loading.

For more details follow package README file.

3 Virtual SysFS Hierarchy

Mellanox virtual hierarchy supports the following HW control ($bsp_path below is a location of virtual SysFS hierarchy, in standard Linux distributions, like Debian, RedHat, Fedora, etcetera this is /var/run/hw-management folder).

Table 1 - Mellanox Hierarchy Node Support

Node Path	Purpose
$bsp_path/config	Internal system specific configuration data
$bsp_path/eeprom	Gets raw data from EEPROM in system modules
$bsp_path/environment	Gets information on environmental sensors (A2D, Volt, Curr)
$bsp_path/led	Gets/sets LED color
$bsp_path/bin	
$bsp_path/events	
$bsp_path/firmware	
$bsp_path/ui	Textual labels for sensors
$bsp_path/power	Gets information from power sensors
$bsp_path/system	Gets/sets system variables and settings (CPLD version, fan dir, reset, pwr cycle)
$bsp_path/thermal	Gets variant thermal sensors in systems and gets/sets fan attributes
$bsp_path/watchdog	Standard whatcdog sysfs attributes
$bsp_path/alarm	Get System chassis
$bsp_path/jtag	Provides interface for JTAG CPLD burn
$bsp_path/ sysfs_labels_rdy	
$bsp_path/ fast_sysfs_labels_rdy	

Detailed information on each of these nodes can be found in the following sections.

Note: some of the attributes described below are not relevant to all platforms and will exist only on the platforms which support this attribute.

3.1 Config Control

3.1.1 Get ASIC Bus

Node name	$bsp_path/config/asic_bus		
Description	Get system ASIC bus number		
Access	Read only		
Release version	1.0		
Arguments	Name	Data type	Values
	Status	Integer	1-99
Example	Get asic bus number: cat $bsp_path/config/asic_bus		

3.1.2 Get ASIC I2C Bus

Node name	$bsp_path/config/asic<index>_i2c_bus_id		
Description	Get ASIC <idex> I2C bus		
Access	Read only		
Release version	V.7.0030.2930		
Arguments	Name	Data type	Values
Example	Get ASIC I2C bus address: cat $bsp_path/config/asic1_i2c_bus_id		

3.1.3 Get ASIC PCI Bus

Node name	$bsp_path/config/asic<index>_pci_bus_id		
Description	Get ASIC PCI bus ID		
Access	Read only		
Release version	V.7.0020.1338		
Arguments	Name	Data type	Values
Example	Get asic PCI bus number: cat $bsp_path/config/asic1_pci_bus_id		

3.1.4 Get ASIC Chip-up completed

Node name	$bsp_path/config/asic_chipup_completed		
Description	Get ASIC count which has already initialized. When asic_chipup_completed == asic_num, asics_init_done should be set to “1’		
Access	Read		
Release version	1.0		
Arguments	Name	Data type	Values
	Status	Integer	0..asic_count
Example	Get already inintialized asic coiunt: cat $bsp_path/config/asic_chipup_completed		

3.1.5 Get ASIC init done

Node name	$bsp_path/config/asics_init_done		
Description	Get ASIC init done status. 1 – All asic initialized and ready. 0 – One or more ASICs not ready When asic_chipup_completed == asic_num, asics_init_done should be set to “1’		
Access	Read		
Release version	1.0		
Arguments	Name	Data type	Values
	Status	Integer	1 – ALL ASICs ready 0 – One or more ASICs not ready
Example	Get asics init ready: cat $bsp_path/config/asics_init_done		

3.1.6 Set Chip-down/Chip-up Delay

Node name	$bsp_path/config/chipdown_delay $bsp_path/config/chipup_delay
Description	Set delay duration in seconds for hw mgmt service from the chip down/up event.
Access	Write/Read
Release version	1.0

Arguments	Name	Data type	Values
	Status	Integer (seconds)	0 – no delay other – delay
Example	Get chipdown value: cat $bsp_path/config/chipdown_delay Set 5 seconds delay in chipup value: echo 5 > $bsp_path/config/chipup_delay		

3.1.7 Read CPLD Number

Node name	$bsp_path/config/cpld_num		
Description	Get the number of CPLD modules in the system		
Access	Read only		
Release version	1.0		
Arguments	Name	Data type	Values
	Status	Integer	1-X
Example	Get CPLD number: cat $bsp_path/config/cpld_num		

3.1.8 Read PSU VPD Info

Node name	$bsp_path/eeprom/psu{n}_vpd		
Description	Get PSU VPD info in human readable format		
Access	Read only		
Release version	V.7.0010.1300		
Arguments	Name	Data type	Values
	Status	ASCII	EEPROM info
Example	Get PSU VPD info: cat $bsp_path/eeprom/psu{n}_vpd		

3.1.9 Get Hot-plug Fan Number

Node name	$bsp_path/config/hotplug_fans		
Description	Get hot-plug FAN number in the system		
Access	Read only It can be zero on fixed system.		
Release version	V.7.0010.1300		
Arguments	Name	Data type	Values
	Status	Integer	0-X
Example	Get hot-plug fan number: cat $bsp_path/config/hotplug_fans		

3.1.10 Get Hot-plug PSU Number

Node name	$bsp_path/config/hotplug_psus		
Description	Get hot-plug PSU number in the system. It can be zero on fixed system.		
Access	Read only		
Release version	V.7.0010.1300		
Arguments	Name	Data type	Values
	Status	Integer	0-X
Example	Get hot-plug psu number: cat $bsp_path/config/hotplug_psus		

3.1.11 Get Hot-plug PDB Number

Node name	$bsp_path/config/hotplug_pdbs		
Description	Get the number of Power Distribution Boards		
Access	Read only		
Release version	V.7.0040.3930		
Arguments	Name	Data type	Values

Example	Get hot-plug PDB number: cat $bsp_path/config/hotplug_pdbs

3.1.12 Get Hot-plug PWR Number

Node name	$bsp_path/config/hotplug_pwrs		
Description	Get hot-plug Power cable number in the system. It can be zero on fixed system.		
Access	Read only		
Release version	V.7.0010.1300		
Arguments	Name	Data type	Values
	Status	Integer	0-X

3.1.13 Get Hot-plug Linecards

Node name	$bsp_path/config/hotplug_linecards		
Description	Get the number of Linecards		
Access			
Release version			
Arguments	Name	Data type	Values
Example	Get the number of hot-plug linecards: cat $bsp_path/config/hotplug_linecards		

3.1.14 Read Gearbox Counter

Node name	$bsp_path/config/gearbox_counter		
Description	Get the number of gearboxes in the system.		
Access			
Release version	V.7.0010.3000		
Arguments	Name	Data type	Values
		Integer	0-X
Example	cat $bsp_path/config/gearbox_counter		

3.1.15 Read Module Counter

Node name	$bsp_path/config/module_counter		
Description	Get the number of sfp modules in the system Note: this is attribue is valid only for I2C ASIC driver		
Access	Read only		
Release version	1.0		
Arguments	Name	Data type	Values
	Status	Integer	1-X
Example	Get sfp module: cat $bsp_path/config/module_counter		

3.1.16 Read ASIC Chipup Counter

Node name	$bsp_path/config/chipup_counter		
Description			
Access	Read only		
Release version			
Arguments	Name	Data type	Values
Example	Get asic chipup completed: cat $bsp_path/ config/chipup_counter		

3.1.17 Read ASIC Chipup Completed

Node name	$bsp_path/config/asic_chipup_completed		
Description	counter of successful ASIC driver initialization completions: 0 - no successful initialization compilation. 1 - one ASIC device has been successful initialized. n – ‘n’ ASIC devices has been successful initialized.		
Access	Read only		
Release version	1.0		
Arguments	Name	Data type	Values
	Status	Integer	1-X
Example	Get asic chipup completed: cat $bsp_path/config/asic_chipup_completed		

3.1.18 Read Init Done

Node name	$bsp_path/config/asics_init_done

Description	is to be set to one, when 'asic_chipup_completed' attribute matches 'asic_num' attribute (old static attribute /var/run/hw-management/config/asic_num)		
Access	Read only		
Release version	1.0		
Arguments	Name	Data type	Values
	Status	Integer	1-X
Example	Get asics init done: cat $bsp_path/config/asics_init_done		

3.1.19 Read Max System Fans (rotors)

Node name	$bsp_path/config/max_tachos		
Description	Get max number of system fans.		
Access	Read only		
Release version	1.0		
Arguments	Name	Data type	Values
	Status	Integer	1-X
Example	Get fans max value: cat $bsp_path/config/max_tachos		

3.1.20 Read Fan Drawer Number

Node name	$bsp_path/config/fan_drwr_num		
Description	Get number of system FAN drawers		
Access	Read only		
Release version	1.0		
Arguments	Name	Data type	Values
	Status	Integer	1-X
Example	Get number of system FAN drawers: cat $bsp_path/config/fan_drwr_num		

3.1.21 Read Fan Command

Node name	$bsp_path/config/fan_command		
Description	Get PMBUS command for PSU config		
Access	Read only		
Release version	1.0		
Arguments	Name	Data type	Values
	Status	Hex	0xhh
Example	Get fan command: cat $bsp_path/config/fan_command		

3.1.22 Read Fan Max/Min Speed

Node name	$bsp_path/config/fan_max_speed $bsp_path/config/fan_min_speed		
Description	Get the absolute system fan max/min speed		
Access	Read only		
Release version	1.0		
Arguments	Name	Data type	Values
	Status	Integer	X
Example	Get fan max speed: cat $bsp_path/config/fan_max_speed Get fan min speed: cat $bsp_path/config/fan_min_speed		

3.1.23 Read Fan Max/Min Speed for front/rear FAN

Node name	$bsp_path/config/fan_front_max_speed $bsp_path/config/fan_front_min_speed $bsp_path/config/fan_rear_max_speed $bsp_path/config/fan_rear_min_speed		
Description	Get the absolute system fan max/min speed for front/rear FAN. These attributes can be present on some switch types. If not present - fan_max_speed/fan_min_speed should be used instead.		
Access	Read only		
Release version	1.0		
Arguments	Name	Data type	Values
	Status	Integer	X
Example	Get front fan max speed: cat $bsp_path/config/ fan_front_max_speed Get front fan min speed: cat $bsp_path/config/ fan_front_min_speed		

3.1.24 Fan Speed Tolerance

Node name	$bsp_path/config/fan_speed_tolerance		
Description	Max tolerance for mesured FAN min/max speed compared to reference defined in fan_max_speed/fan_min_speed		
Access	Read only		
Release version	V.7.0040.1032		
Arguments	Name	Data type	Values
		int (percent)	0..90 (default 15)
Example	cat $bsp_path/config/fan_speed_tolerance		

3.1.25 Fan Speed Units

Node name	$bsp_path/config/fan_speed_units		
Description	Value to write PSU PMBUS register **FAN_CONFIG_1_2** Set FAN Commanded in Duty Cycle. Used for PSU fan SET configuration		
Access	Read only		
Release version	V.7.10.3000		
Arguments	Name	Data type	Values

	Status	Integer	X (default 0x90)
Example	cat $bsp_path/config/fan_speed_units i2cset -f -y "$bus" "$addr" "$fan_config_command" "$fan_speed_units" bp		

3.1.26 Number of Leakage Sensors

Node name	$bsp_path/config/leakage_counter		
Description	Get the number of leakage sensors installed in the switch.		
Access	RO		
Release version	3.0		
Arguments	Name	Data type	Values
	Status	Integer	1-8
Example	cat $bsp_path/config/leakage_counter		

3.1.27 Read/write Time Window for Thermal Control Periodic Log Report

Node name	$bsp_path/config/periodic_report		
Description	Get/Set time for thermal control periodic log report (sec, default 7200)		
Access	Read/Write		
Release version	V.7.0010.1300		
Arguments	Name	Data type	Values
	Status	Integer	X
Example	Set periodic log report time: echo 3000 > $bsp_path/config/periodic_report		

3.1.28 Read PSU I2C Address

Node name	$bsp_path/config/psu<power supply module number>_i2c_addr		
Description	Get the I2C address of PSU for direct connection		
Access	Read only		
Release version	1.0		
Arguments	Name	Data type	Values
	Status	Hex	0xhh
Example	Get PSU1 I2C address: cat $bsp_path/config/psu1_i2c_addr		

3.1.29 Read PSU I2C Bus

Node name	$bsp_path/config/psu<power supply module number>_i2c_bus		
Description	Get the I2C bus of PSU for direct connection		
Access	Read only		
Release version	1.0		
Arguments	Name	Data type	Values
	Status	Integer	X
Example	Get PSU1 I2C bus: cat $bsp_path/config/psu1_i2c_bus		

3.1.30 Read Thermal Delay

Node name	$bsp_path/config/termal_delay		
Description	Get the delay duration (seconds) since the HW mgmt service starts until thermal control init		
Access	Read only		
Release version	1.0		
Arguments	Name	Data type	Values
	Status	Integer (seconds)	X
Example	Get thermal delay: cat $bsp_path/config/thermal_delay		

3.1.31 Dummy PSUs Supported

Node name	$bsp_path/config/dummy_psus_supported		
Description			
Access			
Release version			
Arguments	Name	Data type	Values
		Milli watt	X
Example			

3.1.32 Read PSU power capacity

Node name	$bsp_path/config/psu[x]_power_capacity
Description	Get the maximum power capacity for the psu.
Access	Read only

	This attribute is present only in SN5600 and SN5400 platforms.		
Release version	1.0		
Arguments	Name	Data type	Values
	Constant	Milli watt	X
Example	Get power capacity of the psu cat $bsp_path/config/psu[x]_power_capacity		

3.1.33 Read PSU power slope

Node name	$bsp_path/config/psu[x]_power_slope		
Description	Get the power slope value for the psu. This is a hardware defined constant and will be used in power calculation		
Access	Read only This attribute is present only in SN5600 and SN5400 platforms.		
Release version	1.0		
Arguments	Name	Data type	Values
	Constant	Integer	X
Example	Get power slope for the psu cat $bsp_path/config/psu[x]_power_slope		

3.1.34 Read DPU Number

Node name	$bsp_path/config/dpu_num		
Description	Number of DPUs (1-4)		
Access	Read only		
Release version	1.0		
Arguments	Name	Data type	Values
	Status	Integer (number)	X
Example	Get dpu number: cat $bsp_path/config/dpu_num		

3.1.35 Read DPU Board type

Node name	$bsp_path/config/dpu_board_type

Description	Whether DPU sensors are loaded static or dynamic		
Access	Read only		
Release version	1.0		
Arguments	Name	Data type	Values
	Status	String	Static / dynamic
Example	Get dpu board tyoe cat $bsp_path/config/dpu_board_type		

3.1.36 Read DPU board bus offset

Node name	$bsp_path/config/dpu_brd_bus_offset		
Description	DPU i2c bus offset		
Access	Read only		
Release version	1.0		
Arguments	Name	Data type	Values
	Status	Integer (number)	X
Example	Get dpu i2c bus offset cat $bsp_path/config/dpu_brd_bus_offset		

3.1.37 Read DPU bus offset

Node name	$bsp_path/config/dpu_bus_off		
Description	I2c bus offset for the dpu		
Access	Read only		
Release version	1.0		
Arguments	Name	Data type	Values
	Status	Integer (number)	X
Example	Get dpu bus offset number: cat $bsp_path/config/dpu_bus_off		

3.1.38 Read DPU events

Node name	$bsp_path/config/dpu_events		
Description	Events supported by DPUs		
Access	Read only		
Release version	1.0		
Arguments	Name	Data type	Values

	Status	String	Ev1, ev2, etc.
Example	Get the events supported by DPU cat $bsp_path/config/dpu_events		

3.1.39 Read DPU events to host

Node name	$bsp_path/config/dpu_to_host_events		
Description	DPU events to host		
Access	Read only		
Release version	1.0		
Arguments	Name	Data type	Values
	Status	String	X
Example	Get dpu events to host cat $bsp_path/config/dpu_to_host_events		

3.1.40 Labels Ready

Node name	$bsp_path/config/labels_ready		
Description	Label folder $bsp_path/ui_tree ready to use		
Access	Read only		
Release version	V.7.0030.0958		
Arguments	Name	Data type	Values
			0 – labels init in progress 1 – labels init ready
Example			

3.1.41 CPU Type

Node name	$bsp_path/config/cpu_type
Description	CPU type ID. Extracted from /proc/cpuinfo. Format: 0xXXYY XX – model num YY - cpu family
Access	
Release version	Read Only

Arguments	Name	Data type	Values
		Hex	
Example	cat $bsp_path/config/cpu_type 0x656 cpu family : 6 model : 86 model name : Intel(R) Xeon(R) CPU D-1527 @ 2.20GHz		

3.1.42 Named Busses

Node name	$bsp_path/config/named_busses		
Description	List of I2C bus idx/bus names separated by 'space'. Contains meaningful names for I2C busses on main board Present on some systems.		
Access	Read Only		
Release version	V.7.0020.3100		
Arguments	Name	Data type	Values
Example	asic1 2 pwr 4 vr1 5 amb1 7 vpd 8		

3.1.43 I2C Bus Offset

Node name	$bsp_path/config/i2c_bus_offset		
Description	Base i2c bus idx. used for internal purposes		
Access			
Release version			
Arguments	Name	Data type	Values
Example	cat $bsp_path/config/i2c_bus_offset 2		

3.1.44 I2C Bus Connect Devices

Node name	$bsp_path/config/i2c_bus_connect_devices		
Description	List of i2c devices/names/bus/add used for internal purposes		
Access	Read only		
Release version			
Arguments	Name	Data type	Values

Example	xdpe12284 0x62 5 voltmon1 xdpe12284 0x64 5 voltmon2 …		

3.1.45 I2C Bus Default Off EEPROM CPU

Node name	$bsp_path/config/i2c_bus_def_off_eeprom_cpu		
Description	Offset of i2c bus for CPU VPD eeprom		
Access	Read only		
Release version			
Arguments	Name	Data type	Values
Example			

3.1.46 I2C Comex Mon Bus Default

Node name	$bsp_path/config/i2c_comex_mon_bus_default		
Description			
Access			
Release version			
Arguments	Name	Data type	Values
Example			

3.1.47 LM Sensors Configuration

Node name	$bsp_path/config/lm_sensors_config		
Description	Configuration file for sersor tool from lm_sensors package. Contain sensors definition for the system		
Access			
Release version			
Arguments	Name	Data type	Values
		Text file	
Example	sensors -c $bsp_path/config/lm_sensors_config		

3.1.48 LM Sensor Labels

Node name	$bsp_path/config/lm_sensors_labels		
Description			
Access			
Release version			
Arguments	Name	Data type	Values
		Text file	
Example			

3.1.49 Events Ready

Node name	$bsp_path/config/events_ready		
Description	Provides indication that VPD parsing was completed.		
Access	Read only		
Release version	3.0		
Arguments	Name	Data type	Values
	Status	Integer	0/1
Example	Check whether VPD parsing has been completed cat $bsp_path/config/events_ready		

3.1.50 Minimal Driver Unsupported

Node name	$bsp_path/config/minimal_unsupported		
Description	Provides indication for whether ASIC I2C (‘minimal’) driver is supported.		
Access	Read Only		
Release version	3.0		
Arguments	Name	Data type	Values
	Status	Integer	0/1
Example	Get indication on whether minial driver is supported: $bsp_path/config/minimal_unsupported		

3.1.51 SGMII PHY

Node name	$bsp_path/system/sgmii_phy
Description	
Access	
Release version	3.0

Arguments	Name	Data type	Values
Example			

3.1.52 SGMII PHY Reset

Node name	$bsp_path/system/sgmii_phy_reset		
Description			
Access			
Release version	3.0		
Arguments	Name	Data type	Values
Example			

3.2 BIOS Control

3.2.1 BIOS Status

Node name	$bsp_path/system/bios_status		
Description			
Access			
Release version			
Arguments	Name	Data type	Values
Example			

3.2.2 BIOS Start Retry

Node name	$bsp_path/system/bios_start_retry		
Description			
Access			
Release version			
Arguments	Name	Data type	Values

Example	

3.2.3 BIOS Active Image

Node name	$bsp_path/system/bios_active_image		
Description			
Access			
Release version			
Arguments	Name	Data type	Values
Example			

3.3 EEPROM Control

3.3.1 Read CPU EEPROM Data

Node name	$bsp_path/eeprom/cpu_info		
Description	Read CPU raw data in hexadecimal format		
Access	Read only		
Release version	1.0		
Arguments	Name	Data type	Values
	EEPROM information	Hex	Hex dump format of memory
Example	Get CPU EEPROM information: cat $bsp_path/eeprom/cpu_info		

3.3.2 Read Fan Module EEPROM Data

Node name	$bsp_path/eeprom/fan<fan module number>_info		
Description	Read fan module raw data in hexadecimal format Note: This attribute is not supported on Comex CPU systems.		
Access	Read only		
Release version	1.0		
Arguments	Name	Data type	Values
	EEPROM information	Hex	Hex dump format of memory
Example	Get fan module 1 EEPROM information: hexdump -C $bsp_path/eeprom/fan1_info		

3.3.3 Read Power Supply Module EEPROM Data

Node name	$bsp_path/eeprom/psu<power supply module number>_info		
Description	Read power supply module raw data in hexadecimal format		
Access	Read only		
Release version	1.0		
Arguments	Name	Data type	Values
	EEPROM information	Hex	Hex dump format of memory
Example	Get power supply module 1 EEPROM information: cat $bsp_path/eeprom/psu1_info		

3.3.4 Read System Chassis EEPROM Data

Node name	$bsp_path/eeprom/vpd_info		
Description	Read system chassis raw data in hexadecimal format		
Access	Read only		
Release version	1.0		
Arguments	Name	Data type	Values
	EEPROM information	Hex	Hex dump format of memory
Example	Get system chassis EEPROM information: cat $bsp_path/eeprom/vpd_info		

3.3.5 Read System Chassis EEPROM Parsed Data

Node name	$bsp_path/eeprom/vpd_data		
Description	Read system chassis parsed data in text format		
Access	Read only		
Release version	1.0		
Arguments	Name	Data type	Values
	EEPROM information	string	string format of memory
Example	Get system chassis EEPROM information: cat $bsp_path/eeprom/vpd_data		

3.4 Environment Control

3.4.1 Get A2D Voltage

Node name	$bsp_path/environment/a2d_iio:device< number>_raw<index>
Description	Get raw voltage input from A2D sensor

Access	Read only		
Release version	1.0		
Arguments	Name	Data type	Values
	Voltage	Integer	X
Example	Get voltage input from A2D1: cat $bsp_path/environment/a2d_iio:device0_raw_1		

3.4.2 Get Comex Voltage Current

Node name	$bsp_path/environment/comex_voltmon<index>_curr<index>_input
Description	Get raw voltage input from Comex

	Note: This attribute is for Comex based system only		
Access	Read only		
Release version	1.0		
Arguments	Name	Data type	Values
	Voltage	Integer	X
Example	Get comex voltage monitor 1 current2 reading: cat $bsp_path/environment/comex_voltmon1_curr2_input		

3.4.3 Get Comex Voltage Input

Node name	$bsp_path/environment/comex_voltmon<index>_in<index>_input		
Description	Get raw voltage input from Comex Note: This attribute is for Comex based system only		
Access	Read only		
Release version	1.0		
Arguments	Name	Data type	Values
	Voltage	Integer	X
Example	Get Comex voltage monitor 1 input reading: cat $bsp_path/environment/comex_voltmon1_in1_input		

3.4.4 Get Comex Voltage Power

Node name	$bsp_path/environment/comex_voltmon<index>_power<index>_input
Description	Get raw voltage input from Comex Note: This attribute is for Comex based system only
Access	Read only
Release version	1.0

Arguments	Name	Data type	Values
	Voltage	Integer	X
Example	Get Comex voltage monitor 1 power reading: cat $bsp_path/environment/comex_power2_input		

3.4.5 Get System Voltage Current

Node name	$bsp_path/environment/voltmon<index>_curr<index>_input		
Description	Get raw voltage input from system		
Access	Read only		
Release version	1.0		
Arguments	Name	Data type	Values
	Voltage	Integer	X
Example	Get voltage monitor 1 current2 reading: cat $bsp_path/environment/voltmon1_curr2_input		

3.4.6 Get System Voltage Input

Node name	$bsp_path/environment/voltmon<index>_in<index>_input		
Description	Get raw voltage input from system		
Access	Read only		
Release version	1.0		
Arguments	Name	Data type	Values
	Voltage	Integer	X
Example	Get voltage monitor 1 input reading: cat $bsp_path/environment/voltmon1_in1_input		

3.4.7 Get System Voltage Power

Node name	$bsp_path/environment/voltmon<index>_power<index>_input		
Description	Get raw voltage input from system		
Access	Read only		
Release version	1.0		
Arguments	Name	Data type	Values
	Voltage	Integer	X
Example	Get voltage monitor 1 power reading: cat $bsp_path/environment/voltmon1_power2_ input		

3.5 Events

3.5.1 Get FAN hot-plug event status

Node name	$bsp_path/events/fan<index>
Description	Get hot-plug event status of FAN<index> Index max value corresponds to $bsp_path/config/hotplug_fans 0 – FAN<index> was removed, 1 – FAN<index> was inserted.
Access	Read
Release version	V.7.0010.1300

Arguments	Name	Data type	Values
	Thermal	Integer	0 / 1
Example	Get FAN3 hot-plug status: cat $bsp_path/events/fan3		

3.5.2 Get PSU hot-plug event status

Node name	$bsp_path/events/psu<index>		
Description	Get hot-plug event status of PSU<index> Index max value corresponds to $bsp_path/config/hotplug_psus 0 – PSU<index> was removed, 1 – PSU<index> was inserted.		
Access	Read		
Release version	V.7.0010.1300		
Arguments	Name	Data type	Values
	Thermal	Integer	0 / 1
Example	Get PSU2 hot-plug status: cat $bsp_path/events/psu2		

3.5.3 PWR hot-plug event status

Node name	$bsp_path/events/pwr<index>		
Description	Get latest hot-plug event status of PWR<index> Index max value corresponds to $bsp_path/config/hotplug_pwrs 0 – PWR<index> cable was plugged-out, 1 – PWR<index> cable was plugged-in.		
Access	Read		
Release version	V.7.0010.1300		
Arguments	Name	Data type	Values
	Thermal	Integer	0 / 1
Example	Get Power1 cable hot-plug status: cat $bsp_path/events/pwr1		

3.5.4 DPU Ready event

Node name	$bsp_path/events/dpu[1..4]_ready		
Description	Get dpu ready event		
Access	Read		
Release version	V.7.0030.4000		
Arguments	Name	Data type	Values
	dpu	Integer	0 / 1
Example	Get dpu[1..4] ready status cat $bsp_path/events/dpu[1..4]_ready		

3.5.5 DPU Shutdown event

Node name	$bsp_path/events/dpu[1..4]_shtdn_ready
Description	Get dpu shutdown ready event
Access	Read
Release version	V.7.0030.4000

Arguments	Name	Data type	Values
	dpu	Integer	0 / 1
Example	Get dpu[1..4] shut down ready status cat $bsp_path/events/dpu[1..4]_shtdn_ready		

3.5.6 Leakage event

Node name	$bsp_path/events/leakage<index>		
Description			
Access			
Release version			
Arguments	Name	Data type	Values
Example			

3.5.7 EROT (External Root of Trust) AP event

Node name	$bsp_path/events/erot<index>_ap		
Description			
Access			
Release version			
Arguments	Name	Data type	Values
Example			

3.5.8 EROT (External Root of Trust) Error Event

Node name	$bsp_path/events/erot<index>_error		
Description			
Access			
Release version			
Arguments	Name	Data type	Values
Example			

3.5.9 Graceful Power Off Event

Node name	$bsp_path/events/graceful_pwr_off		
Description			
Access			
Release version			
Arguments	Name	Data type	Values
Example			

3.5.10 Power Button Event

Node name	$bsp_path/events/power_button		
Description			
Access			
Release version			
Arguments	Name	Data type	Values
Example			

3.5.11 Power Events

Node name	$bsp_path/config/power_events		
Description			
Access			
Release version			
Arguments	Name	Data type	Values
Example			

3.5.12 Power Button Event

Node name	$bsp_path/system/power_button_evt		
Description			
Access			
Release version			
Arguments	Name	Data type	Values
Example			

3.5.13 Power Button Mask

Node name	$bsp_path/system/power_button_mask		
Description			
Access			
Release version			
Arguments	Name	Data type	Values

Example	

3.6 Alarms

3.6.1 Get PMBUS voltmon alarm status.

Node name	$bsp_path/alarm/voltmon<index>_<sensor_name>_alarm		
Description	Get voltmonitor alarm status of voltmon<index> sensor_name one of: in, curr, power, temp. sensor count can be different for different voltmonitor types/configuration. Alarm set by voltmon sensor itself (hw controlled attribte) 1 – alarm set 0 – alarm clear		
Access	Read		
Release version	V.7.0010.1000		
Arguments	Name	Data type	Values
	Thermal	Integer	0 / 1
Example	Get voltmon1_in1_alarm $bsp_path/alarm/voltmon 1_in1_alarm		

3.6.2 Get COMEX PMBUS voltmon alarm status.

Node name	$bsp_path/alarm/comex_voltmon<index>_<sensor_name>_alarm
Description	Get voltmonitor alarm status of comex_voltmon<index> sensor_name one of: in, curr, power, temp. sensor count can be different for different voltmonitor types/configuration. Alarm set by voltmon sensor itself (hw controlled attribte) 1 – alarm set 0 – alarm clear
Access	Read

Release version	V.7.0010.1000		
Arguments	Name	Data type	Values
	Thermal	Integer	0 / 1
Example	Get voltmon1_in1_alarm $bsp_path/alarm/comex_v oltmon1_in1_alarm		

3.6.3 Get PSU PMBUS alarm status.

Node name	$bsp_path/alarm/psu<index>_<sensor_name>_alarm		
Description	Get PSU PMBUS alarm status of PSU<index> sensor_name: in, curr, power, temp. sensor count can be different for different PSU types/configuration. Alarm set by PSU sensor itself (hw controlled attribte) 1 – alarm set 0 – alarm clear		
Access	Read		
Release version	V.7.0010.1000		
Arguments	Name	Data type	Values
	Thermal	Integer	0 / 1
Example	Get psu1_poer1_alarm $bsp_path/alarm/psu1_po wer1_alarm		

3.6.4 Get CPU temp alarm status.

Node name	$bsp_path/alarm/cpu_core<idx>_crit_alarm
Description	Get CPU core overtemperature alarm status. idx – 0…cpu_core_num cpu_core_num can be different for different CPU type Alarm set by CPU sensor itself (hw controlled attribte)

	1 – alarm set 0 – alarm clear		
Access	Read		
Release version	V.7.0010.1000		
Arguments	Name	Data type	Values
	Thermal	Integer	0 / 1
Example	Get psu1_poer1_alarm $bsp_path/alarm/psu1_po wer1_alarm		

3.7 PSU FW

3.7.1 Get Secondary FW version of PSU

Node name	$bsp_path/firmware/psu<index>_fw_ver		
Description	Get secondary FW version of PSU<index> For Murata 1500/2000 and Delta 550 the contents of the file is the relevant FW version For all other PSUs - the contents is string "N/A"		
Access	Read		
Release version	V.7.0020.2000		
Arguments	Name	Data type	Values
	version	string	
Example	Get secondary FW version of PSU1 $bsp_path/ firmware/psu1_fw_ver		

3.7.2 Get Primary FW version of PSU

Node name	$bsp_path/firmware/psu<index>_fw_primary_ver		Node name
Description	Get primary FW version of PSU<index> Primary files exist only for Murata. For all other PSUs - the contents is string "N/A"		
Access	Read		Access
Release version	V.7.0020.2000		Release version
Arguments	Name	Arguments	Values
	version	string	
Example	Get primary FW version of PSU1 $bsp_path/ firmware/psu1_fw_primary_ve r		

3.8 DPU system attributes

3.8.1 Get DPU id

Node name	$bsp_path/dpu{n}/system/dpu_id		
Description	Read dpu{n} id		
Access	Read		
Release version	1.0		
Arguments	Name	Data type	Values
	dpu	Integer	X
Example	Read dpu{n} id cat $bsp_path/dpu{n}/system/dpu_id		

3.8.2 Get DPU boot progress

Node name	$bsp_path/dpu{n}/system/boot_progress		
Description	Read dpu{n} boot progress		
Access	Read		
Release version	1.0		
Arguments	Name	Data type	Values
	dpu	Integer	0 / 1
Example	Read dpu{n} boot progress cat $bsp_path/dpu{n}/system/boot_preogress		

3.8.3 Get DPU cpld version

Node name	$bsp_path/dpu{n}/system/cpld		
Description	Read dpu{n} cpd version		
Access	Read		
Release version	1.0		
Arguments	Name	Data type	Values
	dpu	Integer	XXXXX XXXX XXXX
Example	Read dpu{n} cpld version cat $bsp_path/dpu{n}/system/cpld		

3.8.4 Get DPU cpld base version

Node name	$bsp_path/dpu{n}/system/cpld_base		
Description	Read dpu{n} cpld base version		
Access	Read		
Release version	1.0		
Arguments	Name	Data type	Values
	dpu	Integer	XXXX XXXX XXXX
Example	Read dpu{n} cpld base version cat $bsp_path/dpu{n}/system/cpld_base		

3.8.5 Get DPU auxiliary power reset reason

Node name	$bsp_path/dpu{n}/system/reset_aux_pwr_or_reload		
Description	Read dpu{n} reset reason auxiliary power		
Access	Read		
Release version	1.0		
Arguments	Name	Data type	Values
	dpu	Integer	0 / 1
Example	Read dpu{n} reset reason auxiliary power cat $bsp_path/dpu{n}/system/reset_aux_pwr_or_reload		

3.8.6 Get DPU main board reset reason

Node name	$bsp_path/dpu{n}/system/ reset_from_main_board		
Description	Read dpu{n} main board reset reason		
Access	Read		
Release version	1.0		
Arguments	Name	Data type	Values
	dpu	Integer	0 / 1
Example	Read dpu{n} main board reset reason cat $bsp_path/dpu{n}/system/reset_from_main_board		

3.8.7 Get DPU comex power failure

Node name	$bsp_path/dpu{n}/system/reset_comex_pwr_fail		
Description	Read dpu{n} reset reason for comex power failure		
Access	Read		
Release version	1.0		
Arguments	Name	Data type	Values
	dpu	Integer	0 / 1

Example	Read dpu{n} id cat $bsp_path/dpu{n}/system/reset_comex_pwr_fail

3.8.8 Get DPU power reset reason

Node name	$bsp_path/dpu{n}/system/reset_pwr_off		
Description	Read dpu{n} reset reason for power off		
Access	Read		
Release version	1.0		
Arguments	Name	Data type	Values
	dpu	Integer	0 / 1
Example	Read dpu{n} id cat $bsp_path/dpu{n}/system/reset_pwr_off		

3.8.9 Get DPU thermal shutdown reason

Node name	$bsp_path/dpu{n}/system/reset_dpu_thermal		
Description	Read dpu{n} thermal shutdown reset reason		
Access	Read		
Release version	1.0		
Arguments	Name	Data type	Values
	dpu	Integer	0 / 1
Example	Read dpu{n} thermal shutdown reset reason cat $bsp_path/dpu{n}/system/reset_dpu_thermal		

3.8.10 Get DPU tpm reset reason

Node name	$bsp_path/dpu{n}/system/tpm_rst		
Description	Read dpu{n} tpm reset reason		
Access	Read		
Release version	1.0		
Arguments	Name	Data type	Values
	dpu	Integer	0 / 1
Example	Read dpu{n} tpm reset reason cat $bsp_path/dpu{n}/system/tpm_rst		

3.8.11 Get DPU perst reset reason

Node name	$bsp_path/dpu{n}/system/perst_rst		
Description	Read dpu{n} PERST signal to asic		
Access	Read		
Release version	1.0		
Arguments	Name	Data type	Values

	dpu	Integer	X
Example	Read dpu{n} PERST signal to asic cat $bsp_path/dpu{n}/system/perst_rst		

3.8.12 Get DPU phy reset reason

Node name	$bsp_path/dpu{n}/system/phy_rst		
Description	Read dpu{n} phy reset reason		
Access	Read		
Release version	1.0		
Arguments	Name	Data type	Values
	dpu	Integer	0 / 1
Example	Read dpu{n} phy reset reason cat $bsp_path/dpu{n}/system/phy_rst		

3.8.13 Get DPU usb phy reset reason

Node name	$bsp_path/dpu{n}/system/usbphy_rst		
Description	Read dpu{n} usb phy reset reason		
Access	Read		
Release version	1.0		
Arguments	Name	Data type	Values
	dpu	Integer	X
Example	Read dpu{n} usb phy reset reason cat $bsp_path/dpu{n}/system/usbphy_rst		

3.8.14 Get DPU fpga part number

Node name	$bsp_path/dpu{n}/system/fpga1_pn		
Description	Read dpu{n} fpga part number		
Access	Read		
Release version	1.0		
Arguments	Name	Data type	Values
	dpu	Integer	X
Example	Read dpu{n} fpga part number cat $bsp_path/dpu{n}/system/fpga1_pm		

3.8.15 Get DPU fpga minor version

Node name	$bsp_path/dpu{n}/system/fpga1_version_min
Description	Read dpu{n} minor version
Access	Read
Release version	1.0

Arguments	Name	Data type	Values
	dpu	Integer	X
Example	Read dpu{n} fpga minor version cat $bsp_path/dpu{n}/system/fpga1_version_min		

3.8.16 Get DPU ufm upgrade status

Node name	$bsp_path/dpu{n}/system/ufm_upgrade		
Description	Read dpu{n} ufm upgrade status		
Access	Read		
Release version	1.0		
Arguments	Name	Data type	Values
	dpu	Integer	0 / 1
Example	Read dpu{n} ufm upgrade status cat $bsp_path/dpu{n}/system/ufm_upgrade		

3.8.17 Get DPU VR update status

Node name	$bsp_path/dpu{n}/system/voltreg_update_status		
Description	Read dpu{n} VR update status		
Access	Read		
Release version	1.0		
Arguments	Name	Data type	Values
	dpu	Integer	0 / 1
Example	Read dpu{n} VR update status cat $bsp_path/dpu{n}/system/voltreg_update_status		

3.9 DPU events

3.9.1 Get DPU PLL power good indication

Node name	$bsp_path/dpu{n}/system/pg_1v8		
Description	Read dpu{n} PLL power good indication		
Access	Read		
Release version	1.0		
Arguments	Name	Data type	Values
	dpu	Integer	0 / 1
Example	Read dpu{n} PLL power good indication: cat $bsp_path/dpu{n}/events/pg_1v8		

3.9.2 Get DPU input power indication

Node name	$bsp_path/dpu{n}/system/pg_comparator		
Description	Read dpu{n} 12V input power good indication		
Access	Read		
Release version	1.0		
Arguments	Name	Data type	Values
	dpu	Integer	0 / 1
Example	Read dpu{n} DPU 12V input power good indication cat $bsp_path/dpu{n}/events/pg_comparator		

3.9.3 Get DPU serdes power indication

Node name	$bsp_path/dpu{n}/system/pg_dvdd		
Description	Read dpu{n} serdes core power good indication		
Access	Read		
Release version	1.0		
Arguments	Name	Data type	Values
	dpu	Integer	0 / 1
Example	Read dpu{n} serdes core power good indication: cat $bsp_path/dpu{n}/events/pg_dvdd		

3.9.4 Get DPU serdes analog power indication

Node name	$bsp_path/dpu{n}/system/pg_hvdd		
Description	Read dpu{n} *serdes analog power good indication*		
Access	Read		
Release version	1.0		
Arguments	Name	Data type	Values
	dpu	Integer	0 / 1
Example	Read dpu{n} *serdes analog power good indication*: cat $bsp_path/dpu{n}/events/pg_hvdd		

3.9.5 Get DPU core power indication

Node name	$bsp_path/dpu{n}/system/pg_vdd		
Description	Read dpu{n} *core power good indication*		
Access	Read		
Release version	1.0		
Arguments	Name	Data type	Values
	dpu	Integer	0 / 1
Example	Read dpu{n} *core power good indication*: cat $bsp_path/dpu{n}/events/pg_vdd		

3.9.6 Get DPU cpu power indication

Node name	$bsp_path/dpu{n}/system/pg_vdd_cpu		
Description	Read dpu{n} *CPU power good indication*		
Access	Read		
Release version	1.0		
Arguments	Name	Data type	Values
	dpu	Integer	0 / 1
Example	Read dpu{n} *CPU power good indication*: cat $bsp_path/dpu{n}/events/pg_vdd_cpu		

3.9.7 Get DPU digital interfaces power

Node name	$bsp_path/dpu{n}/system/pg_vddio
Description	Read dpu{n} *digital interfaces power good indication*
Access	Read
Release version	1.0

Arguments	dpu	Data type	Values
	dpu	Integer	0 / 1
Example	Read dpu{n} *digital interfaces power good indication*: cat $bsp_path/dpu{n}/events/pg_vddio		

3.9.8 Get DPU ddr5 power indication

Node name	$bsp_path/dpu{n}/system/pg_vddq		
Description	Read dpu{n} *DDR5 power good indication*		
Access	Read		
Release version	1.0		
Arguments	Name	Data type	Values
	dpu	Integer	0 / 1
Example	Read dpu{n} *DDR5 power good indication*: cat $bsp_path/dpu{n}/events/pg_vddq		

3.9.9 Get DPU thermal trip indication

Node name	$bsp_path/dpu{n}/system/thermal_trip		
Description	Read dpu{n} thermal trip signal		
Access	Read		
Release version	1.0		
Arguments	Name	Data type	Values
	dpu	Integer	0 / 1
Example	Read dpu{n} thermal trip indication: cat $bsp_path/dpu{n}/events/thermal_trip		

3.9.10 Get DPU tps upgrade status

Node name	$bsp_path/dpu{n}/system/ufm_upgrade_done		
Description	Read dpu{n} TPS upgrade process finished successfully or not		
Access	Read		
Release version	1.0		
Arguments	Name	Data type	Values
	dpu	Integer	0 / 1
Example	Read dpu{n} TPS upgrade process finished successfully or not: cat $bsp_path/dpu{n}/events/ufm_upgrade_done		

3.9.11 Get DPU cpu power fault indication

Node name	$bsp_path/dpu{n}/system/vdd_cpu_alert
Description	Read dpu{n} cpu power fault indication
Access	Read

Release version	1.0		
Arguments	Name	Data type	Values
	dpu	Integer	0 / 1
Example	Read dpu{n} cpu power fault indication cat $bsp_path/dpu{n}/events/vdd_cpu_alert		

3.9.12 Get DPU cpu VR hot alert

Node name	$bsp_path/dpu{n}/system/vdd_cpu_hot_alert		
Description	Read dpu{n} cpu VR hot alert		
Access	Read		
Release version	1.0		
Arguments	Name	Data type	Values
	dpu	Integer	0 / 1
Example	Read dpu{n} cpu VR hot alert: cat $bsp_path/dpu{n}/events/vdd_cpu_hot_alert		

3.9.13 Get DPU ddr5 fault indication

Node name	$bsp_path/dpu{n}/system/vddq_alert		
Description	Read dpu{n} DDR5 fault indication		
Access	Read		
Release version	1.0		
Arguments	Name	Data type	Values
	dpu	Integer	0 / 1
Example	Read dpu{n} DDR5 fault indication cat $bsp_path/dpu{n}/events/vddq_alert		

3.9.14 Get DPU ddr5 hot alert

Node name	$bsp_path/dpu{n}/system/vddq_hot_alert		
Description	Read dpu{n} DDR5 VR hot alert		
Access	Read		
Release version	1.0		
Arguments	Name	Data type	Values
	dpu	Integer	0 / 1
Example	Read dpu{n} DDR5 VR hot alert: cat $bsp_path/dpu{n}/events/vddq_hot_alert		

3.10 LC Alarms

3.10.1 Get LC Hot Swap Power Alarm

Node name	$bsp_path/lc{n}/alarm/hotswap_power<index>_alarm		
Description	Read lc<index> hotswap power <index> alarm, alarm set on (1, 0)		
Access	Read		
Release version	1.0		
Arguments	Name	Data type	Values
	Thermal	Integer	0 / 1
Example	Read lc1 hotswap power 1 alarm: cat $bsp_path/lc1/alarm/hotswap_power1_alarm		

3.10.2 Get LC Voltage Input Alarm

Node name	$bsp_path/lc{n}/alarm/voltmon<index>_in<index>_alarm		
Description	Read lc<index> Voltage<index> Input <index> alarm, set on (1, 0)		
Access	Read		
Release version	1.0		
Arguments	Name	Data type	Values
	Thermal	Integer	0 / 1
Example	Read lc1 Voltage 1 Input 3 alarm cat $bsp_path/lc1/alarm/voltmon1_in3_alarm		

3.10.3 Get LC Voltage Current Alarm

Node name	$bsp_path/lc{n}/alarm/voltmon<index>_curr<index>_alarm		
Description	Read lc<index> Voltage<index> Current <index> alarm, set on (1, 0)		
Access	Read		
Release version	1.0		
Arguments	Name	Data type	Values
	Thermal	Integer	0 / 1
Example	Read lc1 Voltage 1 current 3 alarm cat $bsp_path/lc1/alarm/voltmon1_curr3_alarm		

3.10.4 Get LC Voltage Power Alarm

Node name	$bsp_path/lc{n}/alarm/voltmon<index>_power<index>_alarm		
Description	Read lc<index> Voltage<index> Power<index> alarm, set on (1, 0)		
Access	Read		
Release version	1.0		
Arguments	Name	Name	Name
	Thermal	Thermal	Thermal
Example	Read lc1 Voltage 1 power 1 alarm: cat $bsp_path/lc1/alarm/voltmon1_power1_alarm		

3.11 LC EEPROM

3.11.1 Read LC EEPROM FRU

Node name	$bsp_path/lc{n}/eeprom/fru		
Description	Read lc<index> eeprom hexdump of fru		
Access	Read		
Release version	1.0		
Arguments	Name	Data type	Values
	EEPROM information	Hex	Hex dump format of memory
Example	Read lc1 eeprom hexdump of fru : cat $bsp_path/lc1/eeprom/fru		

3.11.2 Read LC EEPROM INI

Node name	$bsp_path/lc{n}/eeprom/ini		
Description	Read lc<index> eeprom hexdump of ini		
Access	Read		
Release version	1.0		
Arguments	Name	Data type	Values
	EEPROM information	Hex	Hex dump format of memory
Example	Read lc1 eeprom hexdump of ini : cat $bsp_path/lc1/eeprom/ini		

3.11.3 Read LC EEPROM VPD Parsed

Node name	$bsp_path/lc{n}/eeprom/vpd_parsed		
Description	Read lc<index> eeprom vpd parsed		
Access	Read		
Release version	1.0		
Arguments	Name	Data type	Values
	EEPROM information	text	text format of memory
Example	Read lc1 eeprom ini parsed : cat $bsp_path/lc1/eeprom/vpd_parsed		

3.11.4 Read LC EEPROM INI Parsed

Node name	$bsp_path/lc{n}/eeprom/ini_parsed		
Description	Read lc<index> eeprom ini parsed		
Access	Read		
Release version	1.0		
Arguments	Name	Data type	Values
	EEPROM information	text	text format of memory
Example	Read lc1 eeprom ini parsed : cat $bsp_path/lc1/eeprom/ini_parsed		

3.12 LC Environment

3.12.1 Get LC Voltage Current

Node name	$bsp_path/lc{n}/environment/voltmon<index>_curr<index>_input		
Description	Get lc<index> raw voltage current <index> input		
Access	Read only		
Release version	1.0		
Arguments	Name	Data type	Values
	Voltage	Integer	X
Example	Get lc1 voltage monitor 1 current 2 reading: cat $bsp_path/lc1/environment/voltmon1_curr2_input		

3.12.2 Get LC Voltage Input

Node name	$bsp_path/lc{n}/environment/voltmon<index>_in<index>_input		
Description	Get lc<index> raw voltage input<index>		
Access	Read only		
Release version	1.0		
Arguments	Name	Data type	Values
	Voltage	Integer	X
Example	Get lc1 voltage monitor 1 input 1 reading: cat $bsp_path/lc1/environment/voltmon1_in1_input		

3.12.3 Get LC Voltage Power

Node name	$bsp_path/lc{n}/environment/voltmon<index>_power<index>_input		
Description	Get lc<index> raw voltage power<index> input		
Access	Read only		
Release version	1.0		
Arguments	Name	Data type	Values
	Voltage	Integer	X
Example	Get lc1 voltage monitor 1 power 2 reading: cat $bsp_path/lc1/environment/voltmon1_power2_ input		

3.12.4 Get LC Hot Swap Current

Node name	$bsp_path/lc{n}/environment/hotswap_curr<index>_input		
Description	Get lc<index> raw hotswap current <index> input		
Access	Read only		
Release version	1.0		
Arguments	Name	Data type	Values
	Voltage	Integer	X
Example	Get lc1 hotswap current 1 reading: cat $bsp_path/lc1/environment/hotswap_curr1_input		

3.12.5 Get LC Hot Swap Input

Node name	$bsp_path/lc{n}/environment/hotswap_in<index>_input		
Description	Get lc<index> raw hotswap input<index>		
Access	Read only		
Release version	1.0		
Arguments	Name	Data type	Values
	Voltage	Integer	X
Example	Get lc1 hotswap input 1 reading: cat $bsp_path/lc1/environment/hotswap_in1_input		

3.12.6 Get LC Hot Swap Power

Node name	$bsp_path/lc{n}/environment/hotswap_power<index>_input		
Description	Get lc<index> raw hotswap power<index> input		
Access	Read only		
Release version	1.0		
Arguments	Name	Data type	Values
	Voltage	Integer	X
Example	Get lc1 hotswap power 1 reading: cat $bsp_path/lc1/environment/hotswap_power1_input		

3.12.7 Get LC A2D Voltage

Node name	$bsp_path/lc{n}/environment/a2d_iio:device<number>_raw<index>		
Description	Get lc<index> raw voltage input <index> from A2D sensor<number>		
Access	Read only		
Release version	1.0		
Arguments	Name	Data type	Values
	Voltage	Integer	X
Example	Get lc1 voltage input 0 from A2D1: cat $bsp_path/lc1/environment/a2d_iio:device0_raw_1		

3.12.8 Get LC A2D Voltage Scale

Node name	$bsp_path/lc{n}/environment/device<number>_voltage_scale		
Description	Get lc<index> voltage scale from A2D sensor <number >		
Access	Read only		
Release version	1.0		
Arguments	Name	Data type	Values
	Voltage	Integer	X

Example	Get lc1 voltage scale 0 from A2D: cat $bsp_path/lc1/environment/device0_voltage_scale

3.13 LC LED

3.13.1 Get LC Status LED

Node name	$bsp_path/lc{n}/led/led_status		
Description	Read lc<index> status module status LED		
Access	Read		
Release version	1.0		
Arguments	Name	Data type	Values
	LED color	Integer	none; green; green_blink; orange; orange_blink;
Example	Get lc1 status LED color: cat $bsp_path/lc1/led/led_status		

3.13.2 Get LC Status LED Capabilities

Node name	$bsp_path/lc{n}/led/led_status_capability		
Description	Read lc<index> status module status LED capabilities		
Access	Read only		
Release version	1.0		
Arguments	Name	Data type	Values
	LED capabilities	Integer	green_blink orange_blink green orange none
Example	Get lc1 status LED capabilities: cat $bsp_path/lc1/led/led_status_capability		

3.13.3 Set LC Status Green/Orange

Node name	$bsp_path/lc{n}/led/led_status_<color>		
Description	Set lc<index> status LED active		
Access	Read/Write		

Release version	1.0		
Arguments	Name	Data type	Values

	LED capabilities	Integer	
Example	Set lc1 status led active: echo 255 > $bsp_path/lc1/led/led_status_green		

3.13.4 Set LC Status LED Green/Orange Delay Off

Node name	$bsp_path/lc{n}/led_status_<color>_delay_off		
Description	Set lc<index> status LED blinking off frequency		
Access	Read/Write		
Release version	1.0		
Arguments	Name	Data type	Values
	LED capabilities	Integer	
Example	Set lc1 status led green delay off: echo 10 > $bsp_path/lc1/led/led_status_green_delay_off		

3.13.5 Set LC Status LED Green/Orange Delay On

Node name	$bsp_path/lc{n}/led/led_status_<color>_delay_on		
Description	Set lc<index> status LED blinking on frequency		
Access	Read/Write		
Release version	1.0		
Arguments	Name	Data type	Values
	LED capabilities	Integer	
Example	Set lc1 status led green delay on: echo 255 > $bsp_path/lc1/led/led_status_green_delay_on		

3.14 LC Config

3.14.1 Read LC CPLD Number

Node name	$bsp_path/lc{n}/config/cpld_num		
Description	Get the number of CPLD modules in lc<index>		
Access	Read only		
Release version	1.0		
Arguments	Name	Data type	Values
	Status	Integer	1-X
Example	Get lc1 CPLD number: cat $bsp_path/lc1/config/cpld_num		

3.14.2 Read LC FPGA Number

Node name	$bsp_path/lc{n}/config/fpga_num		
Description	Get the number of FPGA modules in lc<index>		
Access	Read only		
Release version	1.0		
Arguments	Name	Data type	Values
	Status	Integer	1-X
Example	Get lc1 FPGA number: cat $bsp_path/lc1/config/fpga_num		

3.14.3 Read LC Gearbox Number

Node name	$bsp_path/lc{n}/config/gearbox_num		
Description	Get the number of gearbox modules in lc<index>		
Access	Read only		
Release version	1.0		
Arguments	Name	Data type	Values
	Status	Integer	1-X

Example	Get lc1 gearbox number: cat $bsp_path/lc1/config/gearbox_num

3.14.4 Read LC Gearbox Manager Number

Node name	$bsp_path/lc{n}/config/gearbox_mgr_num		
Description	Get the number of gearbox manager modules in lc<index>		
Access	Read only		
Release version	1.0		
Arguments	Name	Data type	Values
	Status	Integer	1-X
Example	Get lc1 gearbox manager number: cat $bsp_path/lc1/config/gearbox_mgr_num		

3.14.5 Read LC Port Number

Node name	$bsp_path/lc{n}/config/port_num		
Description	Get the number of ports in lc<index>		
Access	Read only		
Release version	1.0		
Arguments	Name	Data type	Values
	Status	Integer	1-X
Example	Get lc1 port number: cat $bsp_path/lc1/config/port_num		

3.14.6 Read LC Module Counter

Node name	$bsp_path/lc{n}/module_counter		
Description	Get the number of sfp modules in lc<index> Note: this is attribute is valid only for I2C ASIC driver		
Access	Read only		
Release version	1.0		
Arguments	Name	Data type	Values

	Status	Integer	1-X
Example	Get the number of sfp modules in lc1: cat $bsp_path/lc1/config/module_counter		

3.14.7 UART

Node name	$bsp_path/system/uart_sel		
Description			
Access			
Release version			
Arguments	Name	Data type	Values
Example			

3.14.8 ASIC control

Node name	$bsp_path/config/asic_control		
Description			
Access			
Release version			
Arguments	Name	Data type	Values
Example			

3.15 LC thermal

3.15.1 Read LC Gearbox Temperature Input

Node name	$bsp_path/lc{n}/thermal/gearbox<index>_temp_input		
Description	Get lc<index> gearbox<index> temperature		
Access	Read		
Release version	1.0		
Arguments	Name	Data type	Values

	Thermal	Integer	
Example	Read lc1 gearbox1 temp input: cat $bsp_path/lc1/thermal/gearbox1_temp_input		

3.15.2 Get LC QSFP/SFP Module Thermal

Node name	$bsp_path/lc{n}/thermal/mlxsw-module<index>		
Description	Get lc<index> port thermal zones		
Access	Folder		
Release version	1.0		
Arguments	Name	Data type	Values
	Thermal		
Example	Get lc1 mlxsw module 1: cat $bsp_path/lc1/thermal/mxlsw-module1		

3.15.3 Read Temperature Critical Module

Node name	$bsp_path/lc{n}/thermal/module<index>_temp_crit		
Description	Get lc<index> port module <index> critical temperature level		
Access	Read		
Release version	1.0		
Arguments	Name	Data type	Values
	Thermal	Integer	
Example	Get lc1 temp critical module 18: cat $bsp_path/lc1/thermal/module18_temp_crit_		

3.15.4 Read Temperature Emergency Module

Node name	$bsp_path/lc{n}/thermal/module<index>_temp_emergency		
Description	Get lc<index> port module <index> critical emergency level		
Access	Read		
Release version	1.0		
Arguments	Name	Data type	Values
	Thermal	Integer	
Example	Get lc1 temp emergency module 18: cat $bsp_path/lc1/thermal/module18_temp_emergency		

3.15.5 Read Temperature Fault Module

Node name	$bsp_path/lc{n}/thermal/module<index>_temp_fault		
Description	Get lc<index> indication of port module<index> is in fault state (1-FAULT, 0-VALID)		
Access	Read		
Release version	1.0		
Arguments	Name	Data type	Values
	Thermal	Integer	
Example	Get lc1 temp fault module 18: cat $bsp_path/lc1/thermal/module18_temp_fault		

3.15.6 Read Temperature Input Module

Node name	$bsp_path/lc{n}/thermal/module<index>_temp_input		
Description	Get lc<index> port module <index> temperature		
Access	Read		
Release version	1.0		
Arguments	Name	Data type	Values
	Thermal	Integer	
Example	Get lc1 temp input module 18: cat $bsp_path/thermal/module18_temp_input		

3.15.7 Voltage Monitor temperature value

Node name	$bsp_path/thermal/voltmon<index>_temp<index>_input		
Description			
Access			
Release version			
Arguments	Name	Data type	Values
Example			

3.15.8 Voltage Monitor temperature critical value

Node name	$bsp_path/thermal/voltmon<index>_temp<index>_crit
Description	

Access			
Release version			
Arguments	Name	Data type	Values
Example			

3.15.9 Voltage Monitor temperature max value

Node name	$bsp_path/thermal/voltmon<index>_temp<index>_max		
Description			
Access			
Release version			
Arguments	Name	Data type	Values
Example			

3.15.10 System flow capability

Node name	$bsp_path/config/system_flow_capability		
Description			
Access			
Release version			
Arguments	Name	Data type	Values
Example			

3.16 LED Control

3.16.1 Get Fan Status LED

Node name	$bsp_path/led/led_fan<fan module number>

Description	Read/write fan module status LED		
Access	Read only		
Release version	1.0		
Arguments	Name	Data type	Values
	LED color	Integer	none; green; green_blink; amber/red; amber_blink/red _blink;
Example	Get fan module 1 status LED color: cat $bsp_path/led/led_fan1		

3.16.2 Get Fan LED Capabilities

Node name	$bsp_path/led/led_fan<fan module number>_capability		
Description	Read fan module status LED		
Access	Read only		
Release version	1.0		
Arguments	Name	Data type	Values
	LED capabilities	Integer	green_blink amber_blink/ red_blink green amber/red; none
Example	Get fan module 1 capabilities: cat $bsp_path/led/ led_fan1_capability		

3.16.3 Set Fan LED Green/[Amber/Red]

Node name	$bsp_path/led/led_fan<fan module number>_<color>		
Description	Set fan module status LED active		
Access	Read/Write		
Release version	1.0		
Arguments	Name	Data type	Values
	LED capabilities	Integer	
Example	Set fan module 1 active: echo 255 > $bsp_path/led/led_fan1_green		

3.16.4 Set Fan LED Green/[Amber/Red] Delay Off

Node name	$bsp_path/led/led_fan<fan module number>_<color>_delay_off		
Description	Set fan led blinking off frequency		
Access	Read/Write		
Release version	1.0		
Arguments	Name	Data type	Values
	LED capabilities	Integer	
Example	Set fan led module 1green delay off: echo 10 > $bsp_path/led/led_fan1_green_delay_off		

3.16.5 Set Fan LED Green/[Amber/Red] Delay On

Node name	$bsp_path/led/led_fan<fan module number>_<color>_delay_on		
Description	Set fan led blinking on frequency		
Access	Read/Write		
Release version	1.0		
Arguments	Name	Data type	Values
	LED capabilities	Integer	
Example	Set fan module 1 active: echo 255 > $bsp_path/led/led_fan1_green_delay_on		

3.16.6 Trigger Fan LED Green/[Amber/Green]

Node name	$bsp_path/led/led_fan<fan module number>_<color>_trigger		
Description			
Access			
Release version	3.0		
Arguments	Name	Data type	Values
		Integer	
Example			

3.16.7 Get PSU LED

Node name	$bsp_path/led/led_power		
Description	Read/write PSU module status LED		
Access	Read		
Release version	1.0		
Arguments	Name	Data type	Values

	LED color	Integer	green_blink amber_blink / red_blink green amber/red; none
Example	Get PSU module status LED color: cat $bsp_path/led/led_power		

3.16.8 Get PSU LED status

Node name	$bsp_path/led/led_power_state		
Description			
Access			
Release version	3.0		
Arguments	Name	Data type	Values
Example			

3.16.9 Get PSU LED Capabilities

Node name	$bsp_path/led/led_power_capability		
Description	Read PSU module status LED		
Access	Read only		
Release version	1.0		
Arguments	Name	Data type	Values
	LED capabilities	Integer	green_blink amber_blink / red_blink green amber/red; none
Example	Get PSU module capabilities: cat $bsp_path/led/ led_power_capability		

3.16.10 Set PSU LED Green/[Amber/Red]

Node name	$bsp_path/led/led_power_<color>

Description	Set PSU module status LED active		
Access	Read/Write		
Release version	1.0		
Arguments	Name	Data type	Values
	LED capabilities	Integer	
Example	Set fan module active: echo 255 > $bsp_path/led/led_power_green		

3.16.11 Set PSU LED Green/[Amber/Red] Delay Off

Node name	$bsp_path/led/led_power_<color>_delay_off		
Description	Set PSU LED blinking off frequency		
Access	Read/Write		
Release version	1.0		
Arguments	Name	Data type	Values
	LED capabilities	Integer	
Example	Set PSU led module 1green delay off: echo 10 > $bsp_path/led/led_power_green_delay_off		

3.16.12 Set PSU LED Green/[Amber/Red] Delay On

Node name	$bsp_path/led/led_power_<color>_delay_on		
Description	Set PSU LED blinking on frequency		
Access	Read/Write		
Release version	1.0		
Arguments	Name	Data type	Values
	LED capabilities	Integer	
Example	Set PSU module 1 active: echo 255 > $bsp_path/led/led_power_green_delay_on		

3.16.13 Trigger PSU LED Green/[Amber/Green]

Node name	$bsp_path/led/led_power_<color>_trigger		
Description			
Access	Read/Write		
Release version	3.0		
Arguments	Name	Data type	Values
	Callback	String	Callback name

Example	Get supported callbacks: cat $bsp_path/led/led_power_amber_trigger Set callback: echo disk-activity > $bsp_path/led/led_power_<color>_trigger

3.16.14 Get Status LED

Node name	$bsp_path/led/led_status		
Description	Read status module status LED		
Access	Read		
Release version	1.0		
Arguments	Name	Data type	Values
	LED color	Integer	green_blink amber_blink / red_blink green amber/red; none
Example	Get status LED color: cat $bsp_path/led/led_status		

3.16.15 Get Status LED Capabilities

Node name	$bsp_path/led/led_status_capability		
Description	Read status module status LED		
Access	Read only		
Release version	1.0		
Arguments	Name	Data type	Values
	LED capabilities	Integer	green_blink amber_blink / red_blink green amber/red; none
Example	Get status led capabilities: cat $bsp_path/led/led_status_capability		

3.16.16 Set Status Green/[Amber/Red]

Node name	$bsp_path/led/led_status_<color>		
Description	Set status LED active		
Access	Read/Write		
Release version	1.0		
Arguments	Name	Data type	Values
	LED capabilities	Integer	
Example	Set status led active: echo 255 > $bsp_path/led/led_status_green		

3.16.17 Set Status LED Green/[Amber/Red] Delay Off

Node name	$bsp_path/led/led_status_<color>_delay_off		
Description	Set status LED blinking off frequency		
Access	Read/Write		
Release version	1.0		
Arguments	Name	Data type	Values
	LED capabilities	Integer	
Example	Set status led module 1green delay off: echo 10 > $bsp_path/led/led_status_green_delay_off		

3.16.18 Set Status LED Green/[Amber/Red] Delay On

Node name	$bsp_path/led/led_status_<color>_delay_on		
Description	Set status LED blinking on frequency		
Access	Read/Write		
Release version	1.0		
Arguments	Name	Data type	Values
	LED capabilities	Integer	
Example	Set status module 1 active: echo 255 > $bsp_path/led/led_status_green_delay_on		

3.16.19 Status LED Green/Amber Trigger

Node name	$bsp_path/led/led_status_<color>_trigger
Description	Timer for triggering LED configuration.
Access	Write Only

Release version	3.0		
Arguments	Name	Data type	Values
Example			

3.16.20 Status LED state

Node name	$bsp_path/led/led_status_state		
Description			
Access			
Release version	3.0		
Arguments	Name	Data type	Values
Example			

3.16.21 Get Fan LED Capabilities

Node name	$bsp_path/led/led_system_capability		
Description	Set/get system status LED		
Access	Read only		
Release version	1.0		
Arguments	Name	Data type	Values
	LED capabilities	Integer	green_blink green_blink amber_blink / red_blink green amber/red; none
Example	Get system status LED capabilities: cat $bsp_path/led/led_system_capability		

3.16.22 UID LED

Node name	$bsp_path/led/led_uid
Description	

Access			
Release version	3.0		
Arguments	Name	Data type	Values
Example			

3.16.23 UID LED Color

Node name	$bsp_path/led/led_uid_blue		
Description			
Access			
Release version	3.0		
Arguments	Name	Data type	Values
Example			

3.16.24 UID LED Blue Delay on/off

Node name	$bsp_path/led/led_uid_blue_delay_on $bsp_path/led/led_uid_blue_delay_off		
Description			
Access			
Release version	3.0		
Arguments	Name	Data type	Values
Example			

3.16.25 UID LED Blue Trigger

Node name	$bsp_path/led/led_uid_blue_trigger		
Description			
Access			
Release version	3.0		
Arguments	Name	Data type	Values
Example			

3.16.26 UID LED Capability

Node name	$bsp_path/led/led_uid_scapability		
Description			
Access			
Release version	3.0		
Arguments	Name	Data type	Values
Example			

3.16.27 UID LED State

Node name	$bsp_path/led/led_uid_state		
Description			
Access			
Release version	3.0		
Arguments	Name	Data type	Values

Example			

3.17 Power Control

3.17.1 Get PSU sensor Current + thresholds

Node name	$bsp_path/power/psu<index>_curr<sensor_name><treshold>		
Description	Get raw current value from psu sensor. Index: PSU index (1,2.. etc.) sensor_name: "_in" – input current sensor "" – output current sensor treshold (if exists): "_max" - maximum "_crit" – critical maximum *Note: available threshold types and their values depends on PSU type*		
Access	Read only		
Release version	1.0		
Arguments	Name	Data type	Values
	Current	Integer	X
Example	Get psu input current : cat $bsp_path/power/psu<index>_curr_in Get psu output current : cat $bsp_path/power/psu<index>_curr		

3.17.2 Get PSU sensor Voltage + thresholds

Node name	$bsp_path/power/psu<index>_volt<sensor_name><treshold>

Description	Get raw volt value from psu sensor. Index: PSU index (1,2.. etc.) sensor_name: "_in" – input volt sensor "_out2" – output volt sensor treshold (if exists): "_lcrit" – critical minimum "_min" –minimum "_max" - maximum "_crit" – critical maximum *Note: available threshold types and their values depends on PSU type*		
Access	Read only		
Release version	1.0		
Arguments	Name	Data type	Values
	Voltage	Integer	X
Example	Get psu input volt: cat $bsp_path/power/psu<index>_volt_in Get psu output volt: cat $bsp_path/power/psu<index>_volt_out2		

3.17.3 Get PSU sensor Power + thresholds

Node name	$bsp_path/power/psu<index>_power<sensor_name><threshold>
Description	Get raw power value from psu sensor.
	Index: PSU index (1,2.. etc.) sensor_name: "_in" – input power sensor "" – output power sensor treshold (if exists): "_max" - maximum "_crit" – critical maximum *Note: available threshold types and their values depends on PSU type*
Access	Read only

Release version	1.0		
Arguments	Name	Data type	Values
	Power	Integer	X
Example	Get psu input power: cat $bsp_path/power/psu<index>_power_in Get psu output power: cat $bsp_path/power/psu<index>_power		

3.17.4 Get PSU sensor capability

Node name	$bsp_path/power/psu<index>_<sensor_type>_capability		
Description	Get available thresholds capability list for psu sensor. Show available sensor thresholds separated by space. Index: PSU index (1,2.. etc.) sensor_type: any available psu sensor. Example: “volt_in” – input volt sensor “curr” – output current sensor “power_in” – input power sensor		
Access	Read only		
Release version	1.0		
Arguments	Name	Data type	Values
	capability	String	X
Example	Get psu input voltage capability: cat $bsp_path/power/psu<index>_volt_in_capability min max crit lcrit Get psu output power capability: cat $bsp_path/power/psu<index> power_capability max crit		

3.18 System / Power Control

3.18.1 Get ASIC Health

Node name	$bsp_path/system/asic_health		
Description	Read ASIC health indicator		
Access	Read only		
Release version	1.0		
Arguments	Name	Data type	Values
	System attribute	Integer	2 - Good Other – error
Example	Get ASIC health: cat $bsp_path/system/asic_health		

3.18.2 Fan OC

Node name	$bsp_path/system/fan_oc		
Description			
Access			
Release version			
Arguments	Name	Data type	Values
Example			

3.18.3 Get CPLD Major Version

Node name	$bsp_path/system/cpld<index>_version		
Description	Get CPLD major version of each CPLD index		
Access	Read only		
Release version	1.0		
Arguments	Name	Data type	Values
	System attribute	Integer	
Example	Get CPLD1 version: cat $bsp_path/system/cpld1_version		

3.18.4 Get CPLD Part Number

Node name	$bsp_path/system/cpld<index>_pn		
Description	Get CPLD part number of each CPLD index		
Access	Read only		
Release version	1.0		
Arguments	Name	Data type	Values

	System attribute	Integer	
Example	Get CPLD1 part number: cat $bsp_path/system/cpld1_pn		

3.18.5 Get CPLD Minor Version

Node name	$bsp_path/system/cpld<index>_version_min		
Description	Get CPLD minor version of each CPLD index		
Access	Read only		
Release version	1.0		
Arguments	Name	Data type	Values
	System attribute	Integer	
Example	Get CPLD1 minor version: cat $bsp_path/system/cpld1_version_min		

3.18.6 Get CPLD Full Version

Node name	$bsp_path/system/cpld		
Description	Get CPLD full version Note: for systems equipped with Spectrum1 only CPLD major version is available for port CPLD)		
Access	Read only		
Release version	1.0		
Arguments	Name	Data type	Values
	System attribute	string	
Example	Get CPLD full version: cat $bsp_path/system/cpld CPLD000120_REV0601_CPLD000165_REV0303_CPLD000166_REV0300_CPLD000167_REV0100		

3.18.7 Fan Direction

Node name	$bsp_path/system/fan_dir
Description	Get FAN direction (forward or reverse)

	Bitwise attribute which indicates each fan direction: 0 - reversed. 1 - forward. For example, value 15 indicate system with 4 forward fans. Fan direction in case of fan absence return zero value, therefore it is recommended to check fan presence before reading fan direction. Note: This attribute supported from SPC2 forward. SPC1 systems require fan eeprom read. Model name contain 'F'/'R' character for direction.		
Access	Read		
Release version	1.0		
Arguments	Name	Data type	Values
	System attribute	Integer	0-255
Example	Read fan direction. cat > $bsp_path/system/fan_dir		

3.18.8 Set JTAG Mode

Node name	$bsp_path/system/jtag_enable		
Description	Set JTAG mode enable/disable		
Access	Write / Read		
Release version	1.0		
Arguments	Name	Data type	Values
	System attribute	Integer	0/1
Example	Enable jtag interface: echo 1 > $bsp_path/system/jtag_enable		

3.18.9 Set PSU On/Off

Node name	$bsp_path/system/psu<index>_on		
Description	Set system PSU to be ON/OFF		
Access	Write / Read		
Release version	1.0		
Arguments	Name	Data type	Values
	System attribute	Integer	
Example	Turn PSU1 off: echo 0 > $bsp_path/system/psu1_on		

3.18.10 Set System Power Cycle

Node name	$bsp_path/system/pwr_cycle

Description	Set system power cycle		
Access	Write / Read		
Release version	1.0		
Arguments	Name	Data type	Values
	System attribute	Integer	
Example	Power cycle the system: echo 1 > $bsp_path/system/pwr_cycle		

3.18.11 Set System Power Down

Node name	$bsp_path/system/pwr_down		
Description	Set system power down		
Access	Write / Read		
Release version	1.0		
Arguments	Name	Data type	Values
	System attribute	Integer	
Example	Turn system off: echo 1 > $bsp_path/system/pwr_down		

3.18.12 CPU Shut Down Request

Node name	$bsp_path/system/cpu_shutdown_req		
Description			
Access			
Release version			
Arguments	Name	Data type	Values
Example			

3.18.13 Graceful Power Off

Node name	$bsp_path/system/graseful_pwr_off		
Description			
Access			
Release version			
Arguments	Name	Data type	Values
Example			

3.18.14 CPU Power off Ready

Node name	$bsp_path/system/ cpu_power_off_ready		
Description			
Access			
Release version			
Arguments	Name	Data type	Values
Example			

3.18.15 Shutdown Unlock

Node name	$bsp_path/system/shutdown_unlock		
Description			
Access			
Release version			
Arguments	Name	Data type	Values
Example			

3.18.16 Boot Completed

Node name	$bsp_path/system/boot_completed		
Description			
Access			
Release version			
Arguments	Name	Data type	Values
Example			

3.18.17 Set Line Card Power

Node name	$bsp_path/system/lc{n}_pwr		
Description	switching line cards power on and off. 1 - related line card is powered on, 0 - powered off.		
Access	Write / Read		
Release version	1.0		
Arguments	Name	Data type	Values

	System attribute	Integer	
Example	Turn power off echo 0> $bsp_path/system/lc1_pwr		

3.18.18 Set Line Card Enable

Node name	$bsp_path/system/lc{n}_enable		
Description	line cards enable state control. 1 - related line card is in enable state, 0 – card in disabled state.		
Access	Write / Read		
Release version	1.0		
Arguments	Name	Data type	Values
	System attribute	Integer	
Example	Turn lc enabled: echo 1 > $bsp_path/system/lc1_enable		

3.18.19 Read Line Card Active

Node name	$bsp_path/system/lc{n}_active		
Description	Read lc<index> active status		
Access	Read		
Release version	1.0		
Arguments	Name	Data type	Values
	System attribute	Integer	
Example	read lc1 activity status: cat $bsp_path/system/lc1_active		

3.18.20 Read Line Card Powered

Node name	$bsp_path/system/lc{n}_powered		
Description	Read lc<index> powered status		
Access	Read		
Release version	1.0		
Arguments	Name	Data type	Values
	System attribute	Integer	
Example	read lc1 powered status: cat $bsp_path/system/lc1_powered		

3.18.21 Read Line Card Present

Node name	$bsp_path/system/lc{n}_present

Description	Read lc<index> present status		
Access	Read		
Release version	1.0		
Arguments	Name	Data type	Values
	System attribute	Integer	
Example	read lc1 present status: cat $bsp_path/system/lc1_present		

3.18.22 Read Line Card Ready

Node name	$bsp_path/system/lc{n}_ready		
Description	Read lc<index> ready status		
Access	Read		
Release version	1.0		
Arguments	Name	Data type	Values
	System attribute	Integer	
Example	read lc1 ready status: cat $bsp_path/system/lc1_ready		

3.18.23 Read Line Card Synced

Node name	$bsp_path/system/lc{n}_synced		
Description	Read lc<index> synced status		
Access	Read		
Release version	1.0		
Arguments	Name	Data type	Values
	System attribute	Integer	
Example	read lc1 synced status: cat $bsp_path/system/lc1_synced		

3.18.24 Read Line Card Verified

Node name	$bsp_path/system/lc{n}_verified		
Description	Read lc<index> verified status		
Access	Read		
Release version	1.0		
Arguments	Name	Data type	Values
	System attribute	Integer	
Example	read lc1 verified status: cat $bsp_path/system/lc1_verified		

3.18.25 Read Line Card Reset Mask

Node name	$bsp_path/system/lc{n}_rst_mask		
Description	Read lc<index> reset mask		
Access	Read		
Release version	1.0		
Arguments	Name	Data type	Values
	System attribute	Integer	
Example	read lc1 reset mask: cat $bsp_path/system/lc1_rst_mask		

3.18.26 Set Line Card Shutdown

Node name	$bsp_path/system/lc{n}_shutdown		
Description	Set lc<index> shutdown		
Access	Write		
Release version	1.0		
Arguments	Name	Data type	Values
	System attribute	Integer	
Example	Set lc1 shutdown: echo 1 > $bsp_path/system/lc1_shutdown		

3.18.27 Set VPD Write Protect

Node name	$bsp_path/system/vpd_wp		
Description	allow to overwrite system VPD. 1 - write protection is disabled, when 0 - enabled. By default write is protected.		
Access	Write / Read		
Release version	1.0		
Arguments	Name	Data type	Values
	System attribute	Integer	
Example	Turn write protect off: echo 1 > $bsp_path/system/vpd_wp		

3.18.28 Power Converter Prog EN

Node name	$bsp_path/system/pwr_converter_prog_en

Description	Enable prog interface for PWR converter		
Access	R/W		
Release version			
Arguments	Name	Data type	Values
		Int [01]	0 – Prog disabled 1 – Prog enabled
Example	Enable: echo 1 > $bsp_path/system/pwr_converter_prog_en		

3.18.29 Port 80

Node name	$bsp_path/system/port80		
Description			
Access			
Release version			
Arguments	Name	Data type	Values
Example			

3.18.30 Set ASIC Up during PCIe root complex reset

Node name	$bsp_path/system/pcie_asic_reset_dis		
Description	allows to retain ASIC up during PCIe root complex reset, when attribute is set 1		
Access	Write / Read		
Release version	1.0		
Arguments	Name	Data type	Values
	System attribute	Integer	
Example	Retain ASIC up: echo 1 > $bsp_path/system/pcie_asic_reset_dis		

3.18.31 Get Voltreg Update status

Node name	$bsp_path/system/voltreg_update_status		
Description	exposes the configuration update status of burnable voltage regulator devices. The status values are as following: 0 - OK; 1 - CRC failure; 2 = I2C failure; 3 - in progress.		
Access	Read		
Release version	1.0		
Arguments	Name	Data type	Values
	System attribute	Integer	
Example	Get voltreg update status: cat $bsp_path/system/voltreg_update_status		

3.18.32 Get Config1, Config2

Node name	$bsp_path/system/config1 | $bsp_path/system/config2		
Description	show system static topology identification like system's static I2C topology, number and type of FPGA devices within the system and so on.		
Access	Read		
Release version	1.0		
Arguments	Name	Data type	Values
	System attribute	Integer	
Example	Get config1 status: cat $bsp_path/system/config1		

3.18.33 Get Ufm Version

Node name	$bsp_path/system/ufm_version		
Description	exposes the firmware version of burnable voltage regulator devices.		
Access	Read		
Release version	1.0		
Arguments	Name	Data type	Values
	System attribute	Integer	
Example	Get ufm version: cat $bsp_path/system/ufm_version		

3.18.34 Aux Power Cycle

Node name	$bsp_path/system/aux_pwr_cycle		
Description			
Access			
Release version	3.0		
Arguments	Name	Data type	Values
Example			

3.18.35 DPU Power Off

Node name	$bsp_path/system/dpu{n}_pwr		
Description	dpu<index> power off /on gracefully		
Access	Write		
Release version	1.0		
Arguments	Name	Data type	Values
	System attribute	Integer	
Example	Set dpu[1-4] poweroff: echo 0 > $bsp_path/system/dpu[1-4]_pwr (To power off) echo 1 > $bsp_path/system/dpu[1-4]_pwr (To power on)		

3.18.36 DPU Force Power Off

Node name	$bsp_path/system/dpu{n}_pwr_force		
Description	dpu<index> power off immediately		
Access	Write		
Release version	1.0		
Arguments	Name	Data type	Values
	System attribute	Integer	
Example	Dpu[1-4] force power off echo 0 > $bsp_path/system/dpu[1-4]_pwr_force		

3.18.37 DPU Reset

Node name	$bsp_path/system/dpu{n}_rst
Description	Force dpu to reset or come out of reset
Access	Write

Release version	1.0		
Arguments	Name	Data type	Values
	System attribute	Integer	
Example	Dpu[1-] reset echo 0 > $bsp_path/system/dpu[1-4]_rst (Enforce reset) echo 1 > $bsp_path/system/dpu[1-4]_rst (Come out of reset)		

3.18.38 DPU Reset Enable

Node name	$bsp_path/system/dpu{n}_rst_en		
Description	Enable dpu reset along with host reboot		
Access	Write		
Release version	1.0		
Arguments	Name	Data type	Values
	System attribute	Integer	
Example	Dpu[1-4] reset enable echo 1 > $bsp_path/system/dpu[1-4]_rst_en		

3.18.39 Get Reset Cause

Node name	$bsp_path/system/reset_<cause>

Description	Reset cause vary between SPC and SPC2. Get last reset cause – <cause>: Spectrum: • long_pb – Reset button was pushed for more than 15 seconds. • short_pb – Reset button was pushed for less than 15 seconds. • aux_pwr_or_ref – Main 12V DC drop due to power failure or AC removal in both PS units -or- CPLD code refresh by the CPLD field upgrade tool. • main_pwr_fail - CPU power failure. • sw_reset - Reset or power off initiated by the OS. • fw_reset - Reset or power off initiated by the Switch ASIC FW. • hotswap_or_wd - Reset or power off initiated by the watch dog mechanism. • asic thermal – Switch ASIC power drop due to failure or due to thermal shutdown activation. **Note**: MSN2010, MSN2100 and MSN2740 systems supports two additional causes: • hotswap_or_halt - Reset or power off intitaed by PSU swap. • sff_wd - Reset or power off initiated by CPU watch dog mechanism. **Note**: MSN2210 supports additional causes: • reset_system • reset_sw_pwr_off • reset_cpu_pwr_fail • reset_reload_bios

	• reset_ac_pwr_fail Spectrum-2/3: • long_pb – Reset button was pushed for more than 15 seconds. • short_pb – Reset button was pushed for less than 15 seconds. • aux_pwr_or_ref – Main 12V DC drop due to power failure or AC removal in both PS units -or- CPLD code refresh by the CPLD field upgrade tool. • from_comex - Reset or power off initiated by the OS. • from_asic - Reset or power off initiated by the Switch ASIC FW. • swb_wd - reset or power off initiated by swb watchdog. • asic thermal – ASIC power drop due to failure or due to thermal shutdown activation • reset_pwr_converter_fail • comex_pwr_fail – power failure to comex. • voltmon_upgrade_fail - Reset due to voltage monitor upgrade failure. • system – system initiate reset • comex_thermal - Comex power drop due to thermal shutdown activation. • reload_bios - Reset caused by BIOS reload. sw_pwr_off - reset triggered by power off initiated by software through CPLD Note: For must causes only one attribute is on, except Comex wd and Comex power fail causes which are set in addition to reset_from_comex. For MSN4800 **From management board** • reset_long_pb - Reset push button was pressed for more than 15 seconds **(Button)** • reset_short_pb - Reset push button was pressed for less than 15 seconds **(Button)** • reset_aux_pwr_or_fu - Reset was asserted due to CPLD power down or CPLD code refresh **(CPLD)** • reset_pwr_button_or_leak_con • reset_mgmt_dc_dc_pwr_fail - Failure one of management board DC2DC voltage regulator 5 Volt rail **(Power issue)** • reset_mgmt_pwr • reset_main_5v - Failure in the system main power

	(Main_51V). • reset_sys_comex_bios - Reset, or power cycle was requested by SW or BIOS reload **(SW)** Juliet platform family: • reset_main_pwr_fail - Power Loss • reset_aux_pwr_or_ref - Main 12V DC drop due to power failure or AC removal in both PS units -or- CPLD code refresh by the CPLD field upgrade tool. • reset_ac_pwr_fail - AC Power Loss • reset_asic_thermal - ASIC power drop due to failure or due to thermal shutdown activation • reset_hotswap_or_wd - Watchdog • reset_swb_wd - reset or power off initiated by swb watchdog. • reset_fw_reset - Hardware - Other (Reset by ASIC firmware) • reset_sw_reset - Hardware - Other (Reset by Software) • reset_long_pb - Reset button was pushed for more than 15 seconds. • reset_short_pb - Reset button was pushed for less than 15 seconds. • reset_from_asic - ASIC power drop due to failure or due to thermal shutdown activation • reset_reload_bios- Reset caused by BIOS reload. • reset_hotswap_or_halt - Hardware - Other (Reset caused by hotswap or halt) • reset_from_comex - Reset or power off initiated by the OS. • reset_system- system initiate reset • reset_soc - Hardware - Other (SOC asserted reset through ACPI register) • reset_sw_pwr_off- reset triggered by power off initiated by software through CPLD • reset_platform - Hardware - Other (SW asserted reset through CPLD) • reset_ac_ok_fail - Hardware – Other(Reset caused MGMT board VRs) • reset_pwr_converter_fail - Power converter failure • reset_swb_dc_dc_pwr_fail - Switch board power loss • reset_soc - Reset from SoC

	From COME module • reset_sw_reset - Power cycle command (1sec pulsed) **(SW)** • reset_aux_pwr_or_reload - Auxiliary power failure or CPLD field upgrade. **(Power issue or CPLD update)** • reset_comex_power • reset_comex_pwr_fail - Power failure of COME **(Power issue)** • reset_platform Reboot command **(SW)** • reset_soc - Power off was initiated by SOC (linux "poweroff" command) **(SW)** • reset_pwr_off_from_carrier - Failure of 12 Volt power domain **(Power issue)** • reset_comex_thermal • reset_erot **From switch board** • reset_swb_wd - Power off or reset was triggered by switch board watchdog **(Watchdog)** • reset_swb_aux_pwr_or_fu - Reset due to CPLD power down or CPLD code refresh **(CPLD)** • reset_swb_dc_dc_pwr_fail - Switch board reset or DC2DC power failure on switch board **(Power issue)** • reset_swb_12v_fail - Failure of switch board 12 Volt power domain **(Power issue)** • reset_system - Reset by system reset cycle, system power on, power cycle,ASIC reset, ASIC power on. (**SW /FW)** • reset_thermal_spc_or_pciesw Power cycle was initiate by the thermal shutdown mechanism due to ConnectX or Spectrum3 critical temperature (**ASIC or PCIe thermal shutdown)** • reset_asic_thermal		
Access	Read only		
Release version	1.0		
Arguments	Name	Data type	Values
	System attribute	Integer	1 – reset caused 0 – not related.
Example	Check if long button press caused reset: cat $bsp_path/system/reset_long_pb		

3.18.40 Reset Attribute Number

Node name	$bsp_path/config/ reset_attr_num
Description	

Access			
Release version	3.0		
Arguments	Name	Data type	Values
Example			

3.18.41 Reset Attribute Ready

Node name	$bsp_path/config/reset_attr_ready		
Description			
Access			
Release version	3.0		
Arguments	Name	Data type	Values
Example			

3.18.42 Hotswap Alert

Node name	$bsp_path/system/hotswap_alert		
Description			
Access			
Release version	3.0		
Arguments	Name	Data type	Values
Example			

3.18.43 SPI Channel Select

Node name	$bsp_path/system/spi_chnl_select		
Description			
Access			
Release version	3.0		
Arguments	Name	Data type	Values
Example			

3.18.44 NVME Present

Node name	$bsp_path/system/nvme_present		
Description	Read NVME present status		
Access	Read		
Release version	3.0		
Arguments	Name	Data type	Values
Example			

3.18.45 CPU EROT Present

Node name	$bsp_path/system/cpu_erot_present		
Description	Read CPU EROT (External Root of Trust) present status		
Access	Read		
Release version	3.0		
Arguments	Name	Data type	Values
Example			

3.18.46 CPU Board Bus Offset

Node name	$bsp_path/config/cpu_brd_bus_offset		
Description			
Access			
Release version	3.0		
Arguments	Name	Data type	Values
Example			

3.18.47 Global Write Protect Timeout

Node name	$bsp_path/config/global_wp_timeout		
Description	Global Write Protect Timeout		
Access	Read		
Release version	3.0		
Arguments	Name	Data type	Values

Example	

3.18.48 Global Write Protect Wait Step

Node name	$bsp_path/config/global_wp_wait_step		
Description	Global Write Protect Wait Step		
Access	Read		
Release version	3.0		
Arguments	Name	Data type	Values
Example			

3.18.49 Clock Board Num

Node name	$bsp_path/system/clk_brd_num		
Description			
Access			
Release version	3.0		
Arguments	Name	Data type	Values
Example			

3.18.50 Clock Board Fail

Node name	$bsp_path/system/clk_brd_fail		
Description			
Access			
Release version	3.0		
Arguments	Name	Data type	Values
Example			

3.18.51 Clock Board Boot Failure

Node name	$bsp_path/system/clk_brd<index>_boot_fail
Description	
Access	

Release version	3.0		
Arguments	Name	Data type	Values
Example			

3.18.52 Clock Board Prog EN

Node name	$bsp_path/system/clk_brd_prog_en		
Description			
Access			
Release version	3.0		
Arguments	Name	Data type	Values
Example			

3.18.53 Cartridge

Node name	$bsp_path/system/cartridge<index>		
Description			
Access			
Release version	3.0		
Arguments	Name	Data type	Values
Example			

3.18.54 Clear Cartridge Status

Node name	$bsp_path/system/cartridge_status_clear		
Description			
Access			
Release version	3.0		
Arguments	Name	Data type	Values
Example			

3.18.55 ASIC PG Failure

Node name	$bsp_path/system/asic_pg_fail		
Description			
Access			
Release version	3.0		
Arguments	Name	Data type	Values
Example			

3.19 Leakage Sensors

3.19.1 Clear Leakage Status

Node name	$bsp_path/system/leakage_status_clear		
Description			
Access			
Release version	3.0		
Arguments	Name	Data type	Values
Example			

3.19.2 Leakage Sensor

Node name	$bsp_path/system/leakage<index>		
Description			
Access			
Release version	3.0		
Arguments	Name	Data type	Values
Example			

3.20 Thermal

3.20.1 Ambient sensors

Node name	$bsp_path/system/amb_sens		
Description			
Access			
Release version	3.0		
Arguments	Name	Data type	Values

Example	cat $bsp_path/system/amb_sens		

3.20.2 Read Switch ASIC Temperature

Node name	$bsp_path/thermal/asic		
Description	Read value of switch module ASIC temperature		
Access	Read only		
Release version	1.0		
Arguments	Name	Data type	Values
	Thermal	Integer	Degrees in mili Celsius
Example	Get switch module ASIC temperature: cat $bsp_path/thermal/asic		

3.20.3 Read Switch ASIC Temperature Normal

Node name	$bsp_path/thermal/asic_temp_norm		
Description	Read value of switch module ASIC temperature Normal		
Access	Read only		
Release version	1.0		
Arguments	Name	Data type	Values
	Thermal	Integer	Degrees in mili Celsius
Example	Get switch module ASIC temperature normal: cat $bsp_path/thermal/asic_temp_norm		

3.20.4 Read Switch ASIC Temperature Critical

Node name	$bsp_path/thermal/asic_temp_crit		
Description	Read value of switch module ASIC temperature critical		
Access	Read only		
Release version	1.0		
Arguments	Name	Data type	Values
	Thermal	Integer	Degrees in mili Celsius
Example	Get switch module ASIC temperature critical: cat $bsp_path/thermal/asic_temp_crit		

3.20.5 Read Switch ASIC Temperature Emergency

Node name	$bsp_path/thermal/asic_temp_emergency		
Description	Read value of switch module ASIC temperature emergency		
Access	Read only		
Release version	1.0		
Arguments	Name	Data type	Values
	Thermal	Integer	Degrees in mili Celsius
Example	Get switch module ASIC temperature emergency: cat $bsp_path/thermal/asic_temp_emergency		

3.20.6 Read Switch ASIC Temperature Trip Critical

Node name	$bsp_path/thermal/asic_temp_trip_crit		
Description	Read value of switch module ASIC temperature trip critical		
Access	Read only		
Release version	1.0		
Arguments	Name	Data type	Values
	Thermal	Integer	Degrees in mili Celsius
Example	Get switch module ASIC temperature trip critical: cat $bsp_path/thermal/asic_temp_trip_crit		

3.20.7 Read Switch Comex Temperature

Node name	$bsp_path/thermal/comex_amb		
Description	Read value of Comex ambient temperature Note: supported by comex based systems only		
Access	Read only		
Release version	1.0		
Arguments	Name	Data type	Values
	Thermal	Integer	Degrees in mili Celsius
Example	Get comex ambient temperature. cat $bsp_path/thermal/comex_amb		

3.20.8 MNG Temperature

Node name	$bsp_path/thermal/mng_amb

Description			
Access	Read only		
Release version	3.0		
Arguments	Name	Data type	Values
	Thermal	Integer	Degrees in mili Celsius
Example	Get mng ambient temperature. cat $bsp_path/thermal/mng_amb		

3.20.9 Read BMC Temperature

Node name	$bsp_path/thermal/bmc		
Description	Read value of BMC temperature Note: only supported in systems with BMC		
Access	Read only		
Release version	3.0		
Arguments	Name	Data type	Values
Example	Get comex ambient temperature. cat $bsp_path/thermal/bmc		

3.20.10 Read BMC Critical Temperature

Node name	$bsp_path/thermal/bmc_crit		
Description	Note: only supported in systems with BMC		
Access	Read only		
Release version	3.0		
Arguments	Name	Data type	Values
Example	Get comex ambient temperature. cat $bsp_path/thermal/bmc_crit		

3.20.11 Read BMC Max Temperature

Node name	$bsp_path/thermal/bmc_max
Description	Note: only supported in systems with BMC
Access	Read only

Release version	3.0		
Arguments	Name	Data type	Values
Example	Get comex ambient temperature. cat $bsp_path/thermal/bmc_max		

3.20.12 Read BMC Minimal Temperature

Node name	$bsp_path/thermal/bmc_min		
Description	Note: only supported in systems with BMC		
Access	Read only		
Release version	3.0		
Arguments	Name	Data type	Values
Example	Get comex ambient temperature. cat $bsp_path/thermal/bmc_min		

3.20.13 Read PDB Hotswap Temperature

Node name	$bsp_path/thermal/pdb_hotswap<index>_temp<index>_input		
Description			
Access	Read only		
Release version	3.0		
Arguments	Name	Data type	Values
Example	Get PDB temperature. cat $bsp_path/thermal/pdb_hotswap1_ temp1_input		

3.20.14 PDB Hotswap Critical Temperature Threshold

Node name	$bsp_path/thermal/pdb_hotswap<index>_temp<index>_crit		
Description			
Access			
Release version	3.0		
Arguments	Name	Data type	Values

Example	Get PDB temperature. cat $bsp_path/thermal/pdb_hotswap1_ temp1_crit		

3.20.15 PDB Hotswap Max Temperature Threshold

Node name	$bsp_path/thermal/pdb_hotswap<index>_temp<index>_max		
Description			
Access			
Release version	3.0		
Arguments	Name	Data type	Values
Example	Get PDB max temperature. cat $bsp_path/thermal/pdb_hotswap1_ temp1_max		

3.20.16 Read Power Converter Temperature

Node name	$bsp_path/thermal/ pwr_conv<index>_temp<index>_input		
Description			
Access			
Release version	3.0		
Arguments	Name	Data type	Values
Example	Get Power Converter temperature. cat $bsp_path/thermal/ pwr_conv2_temp1_input		

3.20.17 Power Converter Critical Temperature Threshold

Node name	$bsp_path/thermal/ pwr_conv<index>_temp<index>_crit		
Description			
Access			
Release version	3.0		
Arguments	Name	Data type	Values

Example	Get Power Converter temperature. cat $bsp_path/thermal/ pwr_conv2_temp1_crit		

3.20.18 Read Cooling State

Node name	$bsp_path/thermal/cooling_cur_state		
Description	Set PWM steps		
Access	Write/Read		
Release version	1.0		
Arguments	Name	Data type	Values
	Thermal	Integer	
Example	Set PWM state: cat $bsp_path/thermal/cooling_cur_state		

3.20.19 Cooling Name

Node name	$bsp_path/config/cooling_name		
Description			
Access			
Release version	3.0		
Arguments	Name	Data type	Values
Example			

3.20.20 Read CPU Core Temperature

Node name	$bsp_path/thermal/cpu_core<index>		
Description	Get CPU core temperature (in millidegrees Celsius)		
Access	Read		
Release version	1.0		
Arguments	Name	Data type	Values
	Thermal	Integer	
Example	Get CPU core 2 temperature: cat $bsp_path/thermal/cpu_core2		

3.20.21 CPU Core Critical Temperature

Node name	$bsp_path/thermal/cpu_core<index>_crit		
Description	Get CPU core maximum junction temperature (in millidegrees Celsius)		
Access	Read		
Release version	1.0		
Arguments	Name	Data type	Values
	Thermal	Integer	
Example	Get CPU core 2 temperature critical level: cat $bsp_path/thermal/cpu_core2_crit		

3.20.22 CPU Core Critical Temperature Alarm

Node name	$bsp_path/thermal/cpu_core<index>_crit_alarm		
Description	When critical temperature reached, alarm set on (1, 0)		
Access	Read		
Release version	1.0		
Arguments	Name	Data type	Values
	Thermal	Integer	1,0
Example	Get CPU core 2 temperature: cat $bsp_path/thermal/cpu_core2_crit_alarm		

3.20.23 CPU Core Temperature Max

Node name	$bsp_path/thermal/cpu_core<index>_max		
Description	Get CPU core max temperature that require cooling device full speed		
Access	Read		
Release version	1.0		
Arguments	Name	Data type	Values
	Thermal	Integer	
Example	Get CPU core 2 temperature: cat $bsp_path/thermal/cpu_core2_max		

3.20.24 Read CPU Pack Temperature

Node name	$bsp_path/thermal/cpu_pack		
Description	Get CPU core temperature		
Access	Read		
Release version	1.0		
Arguments	Name	Data type	Values
	Thermal	Integer	
Example	Get CPU pack temperature: cat $bsp_path/thermal/cpu_pack		

3.20.25 CPU Pack Critical Temperature

Node name	$bsp_path/thermal/cpu_pack_crit		
Description	Get CPU pack maximum junction temperature (in millidegrees Celsius)		
Access	Read		
Release version	1.0		
Arguments	Name	Data type	Values
	Thermal	Integer	
Example	Get CPU pack: cat $bsp_path/thermal/cpu_core2_crit		

3.20.26 CPU Pack Critical Temperature Alarm

Node name	$bsp_path/thermal/cpu_pack_crit		
Description	When CPU pack critical temperature reached, alarm set on (1, 0)		
Access	Read		
Release version	1.0		
Arguments	Name	Data type	Values
	Thermal	Integer	1,0
Example	Get CPU pack: cat $bsp_path/thermal/cpu_pack_crit_alarm		

3.20.27 CPU Pack Temperature Max

Node name	$bsp_path/thermal/cpu_pack_max		
Description	Get CPU pack max temperature that requires cooling device full speed		
Access	Read		
Release version	1.0		
Arguments	Name	Data type	Values
	Thermal	Integer	
Example	Get CPU pack: cat $bsp_path/thermal/cpu_pack_max		

3.20.28 Read Fan Max Speed

Node name	$bsp_path/thermal/fan<index>_max
Description	Get fan max speed
Access	Read
Release version	1.0

Arguments	Name	Data type	Values
	Thermal	Integer	
Example	Get fan4 max speed: cat $bsp_path/thermal/fan4_max		

3.20.29 Read Fan Min Speed

Node name	$bsp_path/thermal/fan<index>_min		
Description	Get fan min speed		
Access	Read		
Release version	1.0		
Arguments	Name	Data type	Values
	Thermal	Integer	
Example	Get fan4 min speed: cat $bsp_path/thermal/fan4_min		

3.20.30 Set Fan Speed

Node name	$bsp_path/thermal/fan<index>_speed_set		
Description	Set fan speed		
Access			
Release version	3.0		
Arguments	Name	Data type	Values
Example			

3.20.31 Fan Speed Tolerance

Node name	$bsp_path/thermal/fan<index>_speed_tolerance		
Description			
Access			
Release version	3.0		
Arguments	Name	Data type	Values
Example			

3.20.32 Read Fan Direction

Node name	$bsp_path/thermal/fan<index>_dir

Description	Get fan Direction		
Access	Read		
Release version	7.0010.2100		
Arguments	Name	Data type	Values
	Thermal	Integer	0,1 (0=intake,1=exhaust)
Example	Get fan4 direction: cat $bsp_path/thermal/fan4_dir		

3.20.33 Read Fan Status

Node name	$bsp_path/thermal/fan<index>_status		
Description	Get fan status		
Access	Read		
Release version	1.0		
Arguments	Name	Data type	Values
	Thermal	Integer	
Example	Get fan4 status: cat $bsp_path/thermal/fan4_status		

3.20.34 Read Fan Fault

Node name	$bsp_path/thermal/fan<index>_fault		
Description	Is fan in fault state (0-OK, 1-FAULT)		
Access	Read		
Release version	1.0		
Arguments	Name	Data type	Values
	Thermal	Integer	0,1
Example	Get fan4 fault: cat $bsp_path/thermal/fan4_fault		

3.20.35 Comex Voltmon Temperature

Node name	$bsp_path/thermal/comex_voltmon<index>_temp<index>_input		
Description			
Access			
Release version	3.0		
Arguments	Name	Data type	Values
	Thermal	Integer	

Example	

3.20.36 Comex Voltmon Critical Temperature

Node name	$bsp_path/thermal/comex_voltmon<index>_temp<index>_crit		
Description			
Access			
Release version	3.0		
Arguments	Name	Data type	Values
	Thermal	Integer	
Example			

3.20.37 Comex Voltmon Max Temperature

Node name	$bsp_path/thermal/comex_voltmon<index>_temp<index>_max		
Description			
Access			
Release version	3.0		
Arguments	Name	Data type	Values
	Thermal	Integer	
Example			

3.20.38 Read Port Ambient

Node name	$bsp_path/thermal/port_amb		
Description	Get ports ambient temperature		
Access	Read		
Release version	1.0		
Arguments	Name	Data type	Values
	Thermal	Integer	
Example	Get ports ambient temperature: cat $bsp_path/thermal/port_amb		

3.20.39 Read PSU Temperature

Node name	$bsp_path/thermal/psu<index>_temp
Description	Get power supply unit temperature

Access	Read		
Release version	1.0		
Arguments	Name	Data type	Values
	Thermal	Integer	
Example	Get PSU2 temperature: cat $bsp_path/thermal/psu2_temp		

3.20.40 Read PSU Alarm

Node name	$bsp_path/thermal/psu<index>_alarm		
Description	Get power status (0-OK, 1-FAULT)		
Access	Read		
Release version	1.0		
Arguments	Name	Data type	Values
	Thermal	Integer	0,1
Example	Get PSU2 alarm: cat $bsp_path/thermal/psu2_alarm		

3.20.41 Read PSU Max

Node name	$bsp_path/thermal/psu<index>_max		
Description	Get power supply max temperature		
Access	Read		
Release version	1.0		
Arguments	Name	Data type	Values
	Thermal	Integer	
Example	Get PSU2 max: cat $bsp_path/thermal/psu2_max		

3.20.42 Read PSU Fan Speed

Node name	$bsp_path/thermal/psu<index_A>_fan<index_B>_speed_get		
Description	Get power supply fans speed. <index_A> Number power supplies plugged into the system. <index_B> Number of fans in power supply		
Access	Read		
Release version	1.0		
Arguments	Name	Data type	Values
	Thermal	Integer	
Example	Get PSU2 fan1 speed: cat $bsp_path/thermal/psu2_fan1_speed_get		

3.20.43 Read PSU min/max Fan Speed

Node name	$bsp_path/thermal/psu<index>_fan_min $bsp_path/thermal/psu<index>_fan_max		
Description	Get the default min/max values of PSU fans speed RPM		
Access	Read		
Release version	V.7.0010.3300		
Arguments	Name	Data type	Values
	Status	Integer	X
Example	Get PSU FAN min default speed in RPM: cat $bsp_path/thermal/psu<index>_fan_min		

3.20.44 Read PSU Power Status

Node name	$bsp_path/thermal/psu<index>_pwr_status		
Description	Get power supply power status (1-PWR_GOOD, 0-UNPLUGGED/ UNFUNCTIONAL)		
Access	Read		
Release version	1.0		
Arguments	Name	Data type	Values
	Thermal	Integer	1,0
Example	Get PSU2 power status: cat $bsp_path/thermal/psu2_pwr_status		

3.20.45 Read PSU Status

Node name	$bsp_path/thermal/psu<index>_status		
Description	Get power supply status (1 – IN; 0 – OUT)		
Access	Read		
Release version	1.0		
Arguments	Name	Data type	Values
	Thermal	Integer	1,0
Example	Get PSU2 status: cat $bsp_path/thermal/psu2_status		

3.20.46 Read System PWM1

Node name	$bsp_path/thermal/pwm1
Description	Get/Set system fans duty cycle

Access	Read/Write		
Release version	1.0		
Arguments	Name	Data type	Values
	Thermal	Integer	0-255 0-low;255-max
Example	Get PWM1: cat $bsp_path/thermal/pwm1		

3.20.47 Read Temperature Critical Module

Node name	$bsp_path/thermal/module<index>_temp_crit		
Description	Get port module critical temperature level		
Access	Read		
Release version	1.0		
Arguments	Name	Data type	Values
	Thermal	Integer	
Example	Get temp critical module 18: cat $bsp_path/thermal/module18_temp_crit_		

3.20.48 Read Temperature Emergency Module

Node name	$bsp_path/thermal/module<index>_temp_emergency		
Description	Get port module emergency level		
Access	Read		
Release version	1.0		
Arguments	Name	Data type	Values
	Thermal	Integer	
Example	Get temp emergency module 18: cat $bsp_path/thermal/module18_temp_emergency		

3.20.49 Read Temperature Trip Critical Module

Node name	$bsp_path/thermal/module<index> _temp_trip_crit		
Description	Get port module temperature trip critical level		
Access	Read		
Release version	1.0		
Arguments	Name	Data type	Values
	Thermal	Integer	
Example	Get temp trip critical module 18: cat $bsp_path/thermal/module18_temp_trip_crit		

3.20.50 Read Temperature Fault Module

Node name	$bsp_path/thermal/module<index>_temp_fault		
Description	Get indication of port module is in fault state (1-FAULT, 0-VALID)		
Access	Read		
Release version	1.0		
Arguments	Name	Data type	Values
	Thermal	Integer	
Example	Get temp fault module 18: cat $bsp_path/thermal/module18_temp_fault		

3.20.51 Read Temperature Input Module

Node name	$bsp_path/thermal/module<index>_temp_input		
Description	Get port module temperature		
Access	Read		
Release version	1.0		
Arguments	Name	Data type	Values
	Thermal	Integer	
Example	Get temp input module 18: cat $bsp_path/thermal/module18_temp_input		

3.20.52 Read Temperature Critical Gearbox

Node name	$bsp_path/thermal/gearbox<index>_temp_crit		
Description	Get gearbox critical temperature level		
Access	Read		
Release version	1.0		
Arguments	Name	Data type	Values
	Thermal	Integer	
Example	Get temp critical gearbox 18: cat $bsp_path/thermal/ gearbox 18_temp_crit		

3.20.53 Read Temperature Emergency Gearbox

Node name	$bsp_path/thermal/gearbox <index>_temp_emergency		
Description	Get gearbox emergency level		
Access	Read		
Release version	1.0		
Arguments	Name	Data type	Values
	Thermal	Integer	

Example	Get temp emergency gearbox 18: cat $bsp_path/thermal/gearbox18_temp_emergency

3.20.54 Read Temperature Trip Critical Gearbox

Node name	$bsp_path/thermal/gearbox<index> _temp_trip_crit		
Description	Get gearbox temperature trip critical level		
Access	Read		
Release version	1.0		
Arguments	Name	Data type	Values
	Thermal	Integer	
Example	Get temp trip critical gearbox 18: cat $bsp_path/thermal/gearbox 18_temp_trip_crit		

3.20.55 Read Temperature Input Gearbox

Node name	$bsp_path/thermal/gearbox<index>_temp_input		
Description	Get gearbox temperature		
Access	Read		
Release version	1.0		
Arguments	Name	Data type	Values
	Thermal	Integer	
Example	Get temp input gearbox 18: cat $bsp_path/thermal/gearbox 18_temp_input		

3.20.56 Read Switch CPU Temperature

Node name	$bsp_path/thermal/cpu_<core0 | core1 | pack>		
Description	Read value of CPU module temperature		
Access	Read only		
Release version	1.0		
Arguments	Name	Data type	Values
	Thermal	Integer	Degrees in mili Celsius
Example	Get CPU Core 0 temperature: cat $bsp_path/thermal/cpu_core0		

3.20.57 Read Switch Fan Temperature

Node name	$bsp_path/thermal/fan_amb

Description	Read value of switch fan ambient temperature		
Access	Read only		
Release version	1.0		
Arguments	Name	Data type	Values
	Thermal	Integer	Degrees in mili Celsius
Example	Get switch board ambient fan temperature: cat $bsp_path/thermal/fan_amb		

3.20.58 Read Switch Port Temperature

Node name	$bsp_path/thermal/port_amb		
Description	Read value of switch port ambient temperature		
Access	Read only		
Release version	1.0		
Arguments	Name	Data type	Values
	Thermal	Integer	Degrees in mili Celsius
Example	Get switch board ambient temperature: cat $bsp_path/thermal/port_amb		

3.20.59 Read Switch Power Supply Temperature

Node name	$bsp_path/thermal/psu<psu module number>		
Description	Read value of power supply temperature		
Access	Read only		
Release version	1.0		
Arguments	Name	Data type	Values
	Thermal	Integer	Degrees in mili Celsius
Example	Get switch power supply 1 temperature: cat $bsp_path/thermal/psu1		

3.20.60 SODIMM Max temperature

Node name	$bsp_path/thermal/sodimm<index>_temp_max		
Description	Get SODIMM max temperature		
Access			
Release version	3.0		
Arguments	Name	Data type	Values

Example	cat $bsp_path/thermal/sodimm1_temp_max		

3.20.61 SODIMM Max temperature alarm

Node name	$bsp_path/thermal/sodimm<index>_temp_max_alarm		
Description			
Access			
Release version	3.0		
Arguments	Name	Data type	Values
Example	cat $bsp_path/thermal/sodimm1_temp_max_alarm		

3.20.62 SODIMM Min temperature

Node name	$bsp_path/thermal/sodimm<index>_temp_min		
Description			
Access			
Release version	3.0		
Arguments	Name	Data type	Values
Example	cat $bsp_path/thermal/sodimm1_temp_mn		

3.20.63 SODIMM critical alarm

Node name	$bsp_path/thermal/sodimm<index>_temp_crit_alarm		
Description	Get SODIMM critical temperature level		
Access			
Release version	3.0		
Arguments	Name	Data type	Values
Example	cat $bsp_path/thermal/sodimm1_temp_crit_alarm		

3.20.64 SODIMM Max hyst

Node name	$bsp_path/thermal/sodimm<index>_temp_ max_hyst		
Description			
Access			
Release version	3.0		
Arguments	Name	Data type	Values
Example	cat $bsp_path/thermal/sodimm1_temp_ max_hyst		

3.20.65 SODIMM Temperature input

Node name	$bsp_path/thermal/sodimm<index>_temp_input		
Description			
Access			
Release version	3.0		
Arguments	Name	Data type	Values
Example	cat $bsp_path/thermal/sodimm1_temp_inp ut		

3.20.66 SODIMM Min temperature alarm

Node name	$bsp_path/thermal/sodimm<index>_temp_min_alarm		
Description	Low threshold for SODIMM temperature		
Access			
Release version	3.0		
Arguments	Name	Data type	Values
Example	cat $bsp_path/thermal/sodimm1_temp_min _alarm		

3.20.67 SODIMM Critical hyst

Node name	$bsp_path/thermal/sodimm<index>_temp_crit_hyst

Description			
Access			
Release version	3.0		
Arguments	Name	Data type	Values
Example	cat $bsp_path/thermal/sodimm1_temp_crit _hyst		

3.20.68 SODIMM Critical temperature

Node name	$bsp_path/thermal/sodimm<index>_temp_crit		
Description	Get SODIMM critical temperature level		
Access			
Release version	3.0		
Arguments	Name	Data type	Values
Example	cat $bsp_path/thermal/sodimm1_temp_crit		

3.20.69 SWB ASIC Temperature

Node name	$bsp_path/thermal/swb_asic<index>		
Description	Get Switch board ASIC current temperature		
Access			
Release version	3.0		
Arguments	Name	Data type	Values
Example	cat $bsp_path/thermal/ swb_asic1		

3.20.70 Drive Temperature

Node name	$bsp_path/thermal/drivetemp		
Description			
Access			
Release version	3.0		
Arguments	Name	Data type	Values

Example			

3.20.71 Drive Critical Temperature

Node name	$bsp_path/thermal/drivetemp_crit		
Description			
Access			
Release version	3.0		
Arguments	Name	Data type	Values
Example			

3.20.72 Drive Maximum Temperature Threshold

Node name	$bsp_path/thermal/drivetemp_max		
Description			
Access			
Release version	3.0		
Arguments	Name	Data type	Values
Example			

3.20.73 Drive Minimum Temperature Threshold

Node name	$bsp_path/thermal/drivetemp_min		
Description			
Access			
Release version	3.0		
Arguments	Name	Data type	Values
Example			

3.21 Watchdog

3.21.1 Read Boot Status

Node name	$bsp_path/watchdog/main/bootstatus $bsp_path/watchdog/aux/bootstatus		
Description	Get indication if last boot result from WD (32-wd, 0-other)		
Access	Read only		
Release version	1.0		
Arguments	Name	Data type	Values
	watchdog	Integer	0,32
Example	Get watchdog: cat $bsp_path/watchdog/main/bootstatus cat $bsp_path/watchdog/aux/bootstatus		

3.21.2 Read Identity

Node name	$bsp_path/watchdog/main/identity $bsp_path/watchdog/aux/identity		
Description	Get wd instance (main or aux)		
Access	Read only		
Release version	1.0		
Arguments	Name	Data type	Values
	watchdog	string	“mlx-wdt-main” or “mlx-wdt-aux”
Example	Get watchdog: cat $bsp_path/watchdog/main/identity cat $bsp_path/watchdog/aux/identity		

3.21.3 Read No Way Out

Node name	$bsp_path/watchdog/main/nowayout $bsp_path/watchdog/aux/nowayout		
Description	Indication if watchdog can be stopped once started. (0-can be stopped, 1-no wayout).		
Access	Read only		
Release version	1.0		
Arguments	Name	Data type	Values

	watchdog	Integer	0,1
Example	Get watchdog: cat $bsp_path/watchdog/main/nowayout cat $bsp_path/watchdog/aux/nowayout		

3.21.4 Read State

Node name	$bsp_path/watchdog/main/state $bsp_path/watchdog/aux/state		
Description	Get watchdog state (enable/disable)		
Access	Read only		
Release version	1.0		
Arguments	Name	Data type	Values
	watchdog	string	“active” -or- “inactive”
Example	Get watchdog: cat $bsp_path/watchdog/main/state cat $bsp_path/watchdog/aux/state		

3.21.5 Read Status

Node name	$bsp_path/watchdog/main/status $bsp_path/watchdog/aux/status		
Description	Get bitmap of WD extra information, like: is the watchdog timer running/active, or is the nowayout bit set. same as #3 & #4.		
Access	Read only		
Release version	1.0		
Arguments	Name	Data type	Values
	watchdog	Hex	2bytes
Example	Get watchdog: cat $bsp_path/watchdog/main/status cat $bsp_path/watchdog/aux/status		

3.21.6 Read Timeout

Node name	$bsp_path/watchdog/main/timeout $bsp_path/watchdog/aux/timeout
Description	Read watchdog real value. Type1 – 1-32 (seconds)
	Type2 – 1-255(seconds)

Access	Read only		
Release version	1.0		
Arguments	Name	Data type	Values
	watchdog	Integer	See above
Example	Get watchdog: cat $bsp_path/watchdog/main/timeout cat $bsp_path/watchdog/aux/timeout		

3.21.7 Read Timeleft

Node name	$bsp_path/watchdog/main/timeleft $bsp_path/watchdog/aux/timeleft		
Description	Read watchdog remaining timer (timeout – seconds from last keep-alive) This value is in seconds. * This attribute is not supported on IVB & Rangeley CPU based systems.		
Access	Read only		
Release version	1.0		
Arguments	Name	Data type	Values
	watchdog	Integer	0-255 seconds
Example	Get watchdog: cat $bsp_path/watchdog/main/timeout cat $bsp_path/watchdog/aux/timeout		

3.22 JTAG interface

3.22.1 Enable / Disable JTAG mechanism

Node name	$bsp_path/jtag/jtag_enable		
Description	Enable / Disable JTAG mechanism for CPLD burn		
Access	Write / Read only		
Release version	7.0010.2100		
Arguments	Name	Data type	Values
	System attribute	Integer	0 or 1
Example	Enable JTAG: echo 1 > $bsp_path/jtag/jtag_enable Disable JTAG: echo 0 > $bsp_path/jtag/jtag_enable		

3.22.2 Set JTAG TCK pin

Node name	$bsp_path/jtag/jtag_tck
Description	JTAG TCK pin for bit-banging JTAG mechanism simulation
Access	Write / Read only
Release version	7.0010.2100

Arguments	Name	Data type	Values
	System attribute	Integer	0 or 1
Example	echo 1 > $bsp_path/jtag/jtag_tck		

3.22.3 Set JTAG TDI pin

Node name	$bsp_path/jtag/jtag_tdi		
Description	JTAG TDI pin for bit-banging JTAG mechanism simulation		
Access	Write / Read only		
Release version	7.0010.2100		
Arguments	Name	Data type	Values
	System attribute	Integer	0 or 1
Example	echo 0 > $bsp_path/jtag/jtag_tdi		

3.22.4 Set JTAG TMS pin

Node name	$bsp_path/jtag/jtag_tms		
Description	JTAG TMS pin for bit-banging JTAG mechanism simulation		
Access	Write / Read only		
Release version	7.0010.2100		
Arguments	Name	Data type	Values

	System attribute	Integer	0 or 1
Example	echo 1 > $bsp_path/jtag/jtag_tms		

3.22.5 Get JTAG TDO pin

Node name	$bsp_path/jtag/jtag_tdo		
Description	JTAG TDO pin for bit-banging JTAG mechanism simulation		
Access	Read only		
Release version	7.0010.2100		
Arguments	Name	Data type	Values
	System attribute	Integer	0 or 1
Example	cat $bsp_path/jtag/jtag_tdo		

3.22.6 JTAG Capabilities

Node name	$bsp_path/system/jtag_cap		
Description			
Access			
Release version			
Arguments	Name	Data type	Values

Example	

3.22.7 JTAG Read/Write Reg

Node name	$bsp_path/config/jtag_rw_reg		
Description			
Access			
Release version			
Arguments	Name	Data type	Values
Example			

3.22.8 JTAG Read Only Reg

Node name	$bsp_path/config/jtag_ro_reg		
Description			
Access			
Release version			
Arguments	Name	Data type	Values
Example			

3.23 BMC status

3.23.1 BMC present

Node name	$bsp_path/system/bmc_present		
Description	Reports whether a BMC exists		
Access	Read Only		
Release version			
Arguments	Name	Data type	Values
		Integer	0 or 1
Example	cat $bsp_path/system/bmc_present		

3.23.2 BMC to CPU control

Node name	$bsp_path/system/bmc_to_cpu_ctrl		
Description			
Access			
Release version			
Arguments	Name	Data type	Values
Example	cat $bsp_path/system/bmc_to_cpu_ctrl		

3.23.3 MCTP address

Node name	$bsp_path/config/mctp_addr		
Description	MCTP Address		
Access			
Release version			
Arguments	Name	Data type	Values
Example	cat $bsp_path/config/mctp_addr		

3.23.4 MCTP bus

Node name	$bsp_path/config/mctp_bus		
Description	MCTP Bus		
Access			
Release version			
Arguments	Name	Data type	Values
Example	cat $bsp_path/config/mctp_bus		

3.23.5 MCTP ready

Node name	$bsp_path/config/cpu_mctp_ready

Description			
Access			
Release version			
Arguments	Name	Data type	Values
Example			

4 Thermal Control

The thermal control algorithm is described in a separate document - Thermal Monitoring for Mellanox Systems with third party OS.pdf

5 Drivers

1.1 Watchdog

Mellanox watchdog device is implemented in a programmable logic device.

There are 2 types of HW watchdog implementations:

- Type 1 – actual HW timeout defined as a power of 2 msec. For example: Timeout 20 sec is rounded up to 32768 msec. The maximum timeout period is 32 sec (32768 msec). Get time-left is not supported.
- Type 2 – actual HW timeout defined in seconds and is the same as user-defined timeout. Maximum timeout is 255 sec. Get time-left is supported.

Type 1 HW watchdog implementation exists in old systems and all new systems have Type 2 HW watchdog. The two types of HW implementation also have a different register map.

Mellanox systems can have 2 watchdogs: Main and auxiliary. Main and auxiliary watchdog devices can be enabled together on the same system. There are several actions that can be defined in the watchdog: System reset, start fans on full speed, and increase register counter. The last 2 actions are performed without a system reset. Actions without reset are provided for the auxiliary watchdog device, which is optional.

Watchdog can be started during a probe. In this case it is pinged by the watchdog core before the watchdog device is opened by the user space application.

Watchdog can be initialized in using a nowayout method. That is, once started it cannot be stopped.

The mlx-wdt driver supports both HW watchdog implementations.

Watchdog driver is probed from the common mlx_platform driver. Mlx_platform driver provides an appropriate set of registers for Mellanox watchdog device, identity name (mlx-wdt-main or mlx-wdt-aux), initial timeout, performed action in expiration and configuration flags.

Watchdog configuration flags: nowayout and start_at_boot. HW watchdog version: type1 or type2. The driver checks during initialization if the previous system reset was done by the watchdog. If yes, it makes a notification about this event.

Access to HW registers is performed through a generic regmap interface.