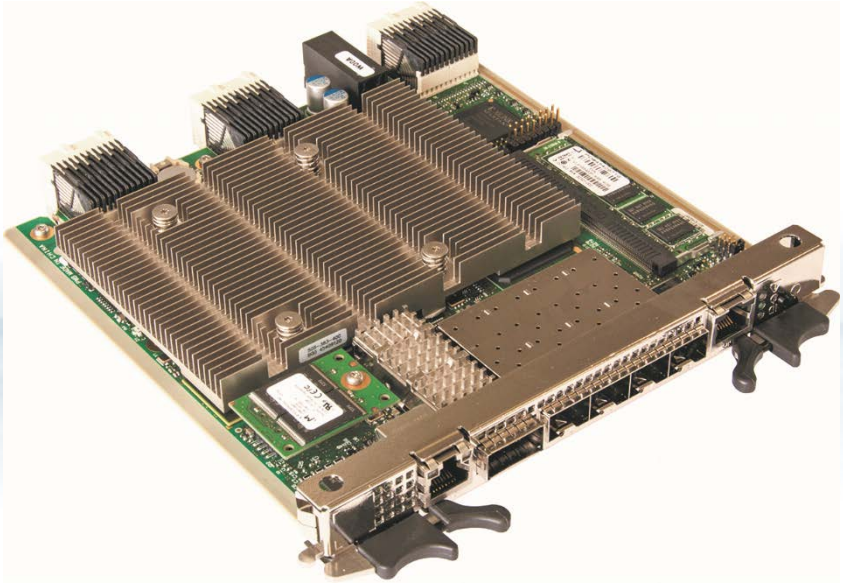
USER GUIDE



MSH8910 Series

Doc. Rev. 1.0

POSSIBILITIES START HERE kontron

MSH8910 SERIES - USER GUIDE

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Revision History

Revision	Brief Description of Changes	Date of Issue
1.0	Initial Issue	2016-Nov-18

Customer Service

As a trusted technology innovator and global solutions provider, Kontron extends its embedded market strengths into a services portfolio allowing companies to break the barriers of traditional product lifecycles. Proven product expertise coupled with collaborative and highly-experienced support enables Kontron to provide exceptional peace of mind to build and maintain successful products.

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Customer Comments

If you have any difficulties using this guide, discover an error, or just want to provide some feedback, please contact Kontron support. Detail any errors you find. We will correct the errors or problems as soon as possible and post the revised user guide on our website.

Thank you.

Symbols

The following symbols may be used in this manual.

⚠DANGER	DANGER indicates a hazardous situation which, if not avoided, will result in death or serious injury.
⚠WARNING	WARNING indicates a hazardous situation which, if not avoided, could result in death or serious injury.
⚠CAUTION	CAUTION indicates a hazardous situation which, if not avoided, may result in minor or moderate injury.
NOTICE	NOTICE indicates a property damage message.
	Electric Shock! This symbol and title warn of hazards due to electrical shocks (> 60 V) when touching products or parts of them. Failure to observe the precautions indicated and/or prescribed by the law may endanger your life/health and/or result in damage to your material. Please refer also to the "High-Voltage Safety Instructions" portion below in this section.
	ESD Sensitive Device! This symbol and title inform that the electronic boards and their components are sensitive to static electricity. Care must therefore be taken during all handling operations and inspections of this product in order to ensure product integrity at all times.
	HOT Surface! Do NOT touch! Allow to cool before servicing.
	This symbol indicates general information about the product and the user manual. This symbol also indicates detail information about the specific product configuration.
	This symbol precedes helpful hints and tips for daily use.

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List of Acronyms

BMC	Base Management Controller
API	Application Programming Interface
CLI	Command-Line Interface
DNS	Domain Name System
FPGA	Field-Programmable Gate Array
FRU	Field Replaceable Unit
I2C	Inter Integrated Circuit bus
IGMP	Internet Group Management Protocol
IOL	IPMI-Over-LAN
IPMI	Intelligent Platform Management Interface
MIB	Management Information Base
MLD	Multicast Listener Discovery
NTP	Network Time Protocol
PCIe	PCI-Express
QSFP+	Quad Small Form-factor Pluggable
RFC	Request For Comments
RTC	Real Time Clock

SEL	System Event Log
SFP+	Small Form-factor Pluggable that supports data rates up to 10.0 Gbps
ShMC	Shelf Management Controller
SM	System Monitor Web Interface
SMI	Structure of Management Information
SNMP	Simple Network Management Protocol
SNTP	Simple Network Time Protocol
SOL	Serial Over LAN
SSH	Secure Shell
STP	Spanning Tree Protocol
TICP	Transport Information Collection Protocol
USM	User-based Security Model
VACM	View-based Access Control Model
VLAN	Virtual Local Area Network

Electrostatic Discharge

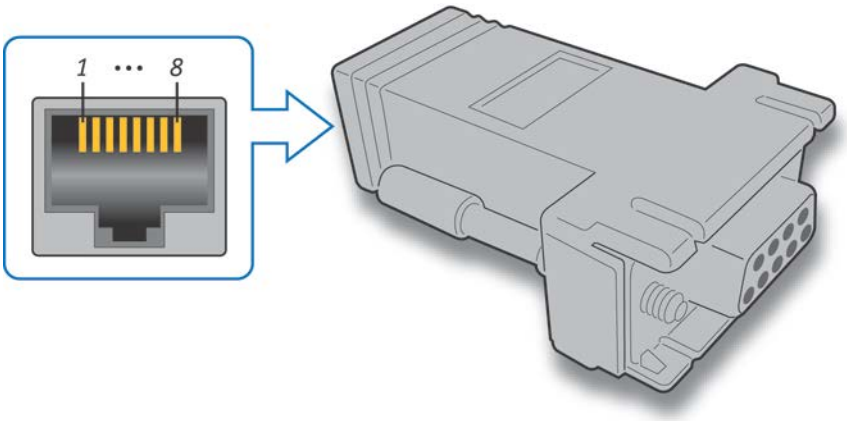
ESD Sensitive Device!

MSH8910 series switches are sensitive to electrostatic discharge (ESD). Users must take the appropriate precautions when handling ESD-sensitive devices.

Adapter Cables

To establish a serial connection through the RJ45 console port located on the front plate (Figure 3), use the RJ45 to DB9 adapter provided with the system to connect a straight-through Ethernet cable.

Figure 1: RJ45 to DB9 adapter



Pinout			
1	RTS	5	GND
2	DTR	6	RX#
3	TX#	7	DSR
4	GND	8	CTS

CP0050A

Limited Warranty

Kontron grants the original purchaser of Kontron's products a TWO YEAR LIMITED HARDWARE WARRANTY as described in the following. However, no other warranties that may be granted or implied by anyone on behalf of Kontron are valid unless the consumer has the express written consent of Kontron.

Kontron warrants their own products, excluding software, to be free from manufacturing and material defects for a period of 24 consecutive months from the date of purchase. This warranty is not transferable nor extendible to cover any other users or long-term storage of the product. It does not cover products which have been modified, altered or repaired by any other party than Kontron or their authorized agents. Furthermore, any product which has been, or is suspected of being damaged as a result of negligence, improper use, incorrect handling, servicing or maintenance, or which has been damaged as a result of excessive current/voltage or temperature, or which has had its serial number(s), any other markings or parts thereof altered, defaced or removed will also be excluded from this warranty.

If the customer's eligibility for warranty has not been voided, in the event of any claim, he may return the product at the earliest possible convenience to the original place of purchase, together with a copy of the original document of purchase, a full description of the application the product is used on and a description of the defect. Pack the product in such a way as to ensure safe transportation (see our safety instructions).

Kontron provides for repair or replacement of any part, assembly or sub-assembly at their own discretion, or to refund the original cost of purchase, if appropriate. In the event of repair, refunding or replacement of any part, the ownership of the removed or replaced parts reverts to Kontron, and the remaining part of the original guarantee, or any new guarantee to cover the repaired or replaced items, will be transferred to cover the new or repaired items. Any extensions to the original guarantee are considered gestures of goodwill, and will be defined in the "Repair Report" issued by Kontron with the repaired or replaced item.

Kontron will not accept liability for any further claims resulting directly or indirectly from any warranty claim, other than the above specified repair, replacement or refunding. In particular, all claims for damage to any system or process in which the product was employed, or any loss incurred as a result of the product not functioning at any given time, are excluded. The extent of Kontron liability to the customer shall not exceed the original purchase price of the item for which the claim exists.

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1/ Product Description

1.1. Product Overview

MSH8910 series hubs are modules for the SYMKLOUD MS2910 platform. Two hubs can be installed in each MS2910.

Figure 2: SYMKLOUD layers

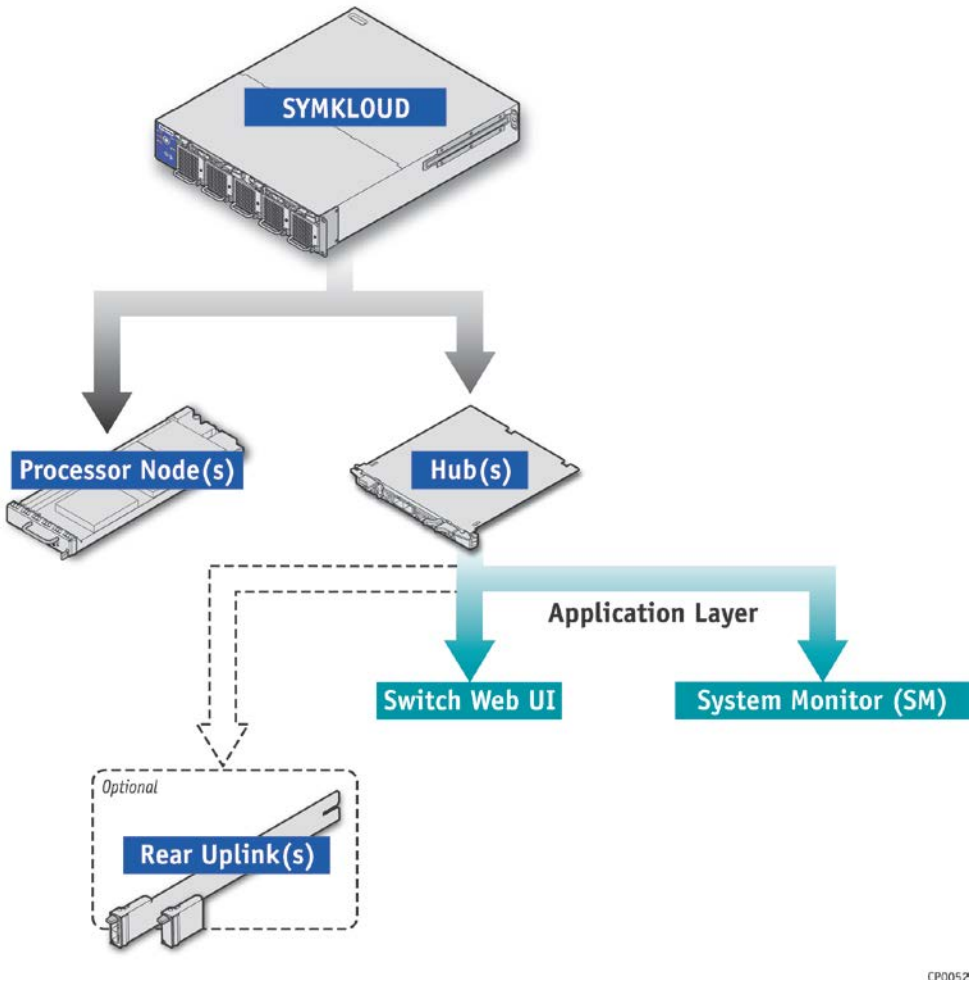
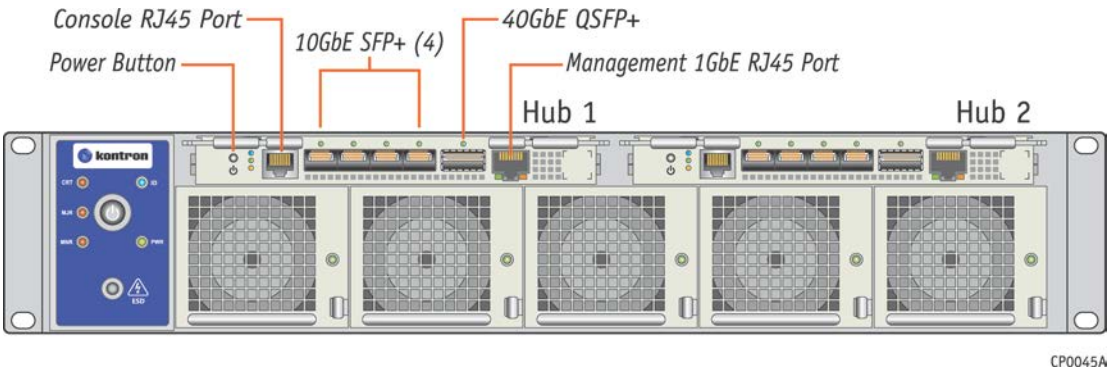


Figure 3: MSH8910 series hubs in front of chassis

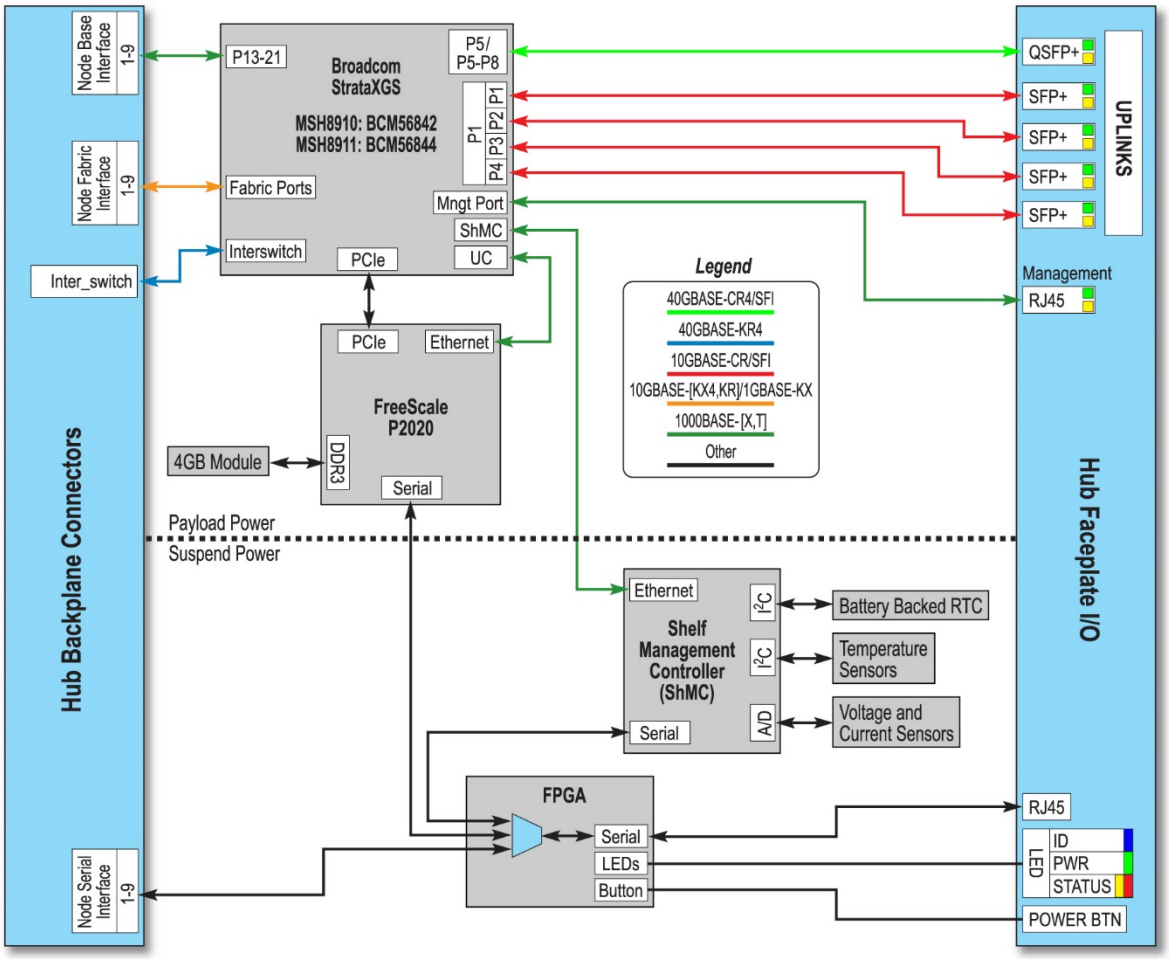


For information on other SYMKLOUD MS2910 components, refer to the specific component's user manual.

To obtain the latest document version or to consult other SYMKLOUD documents, visit the Kontron portal at kontron.com.

1.2. Block Diagram

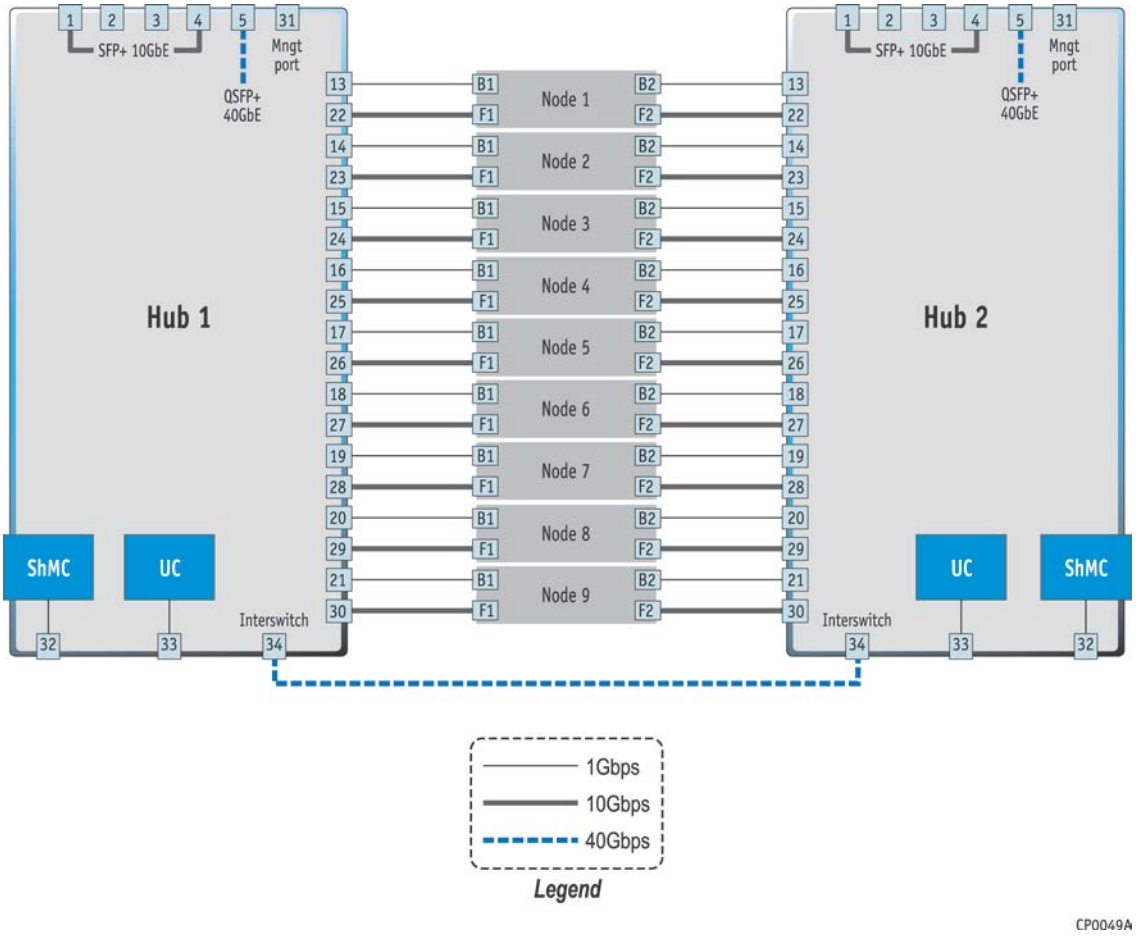
Figure 4: MSH8910 series block diagram



1.3. Port Mapping

Each hub model has its own port mapping. Refer to the following figures.

Figure 5: MSH8910 port mapping



To configure ports, the numbering convention is unit/slot/port. The unit number is the switch ID. Physical slots are identified by a 0 and logical slots by a 1.

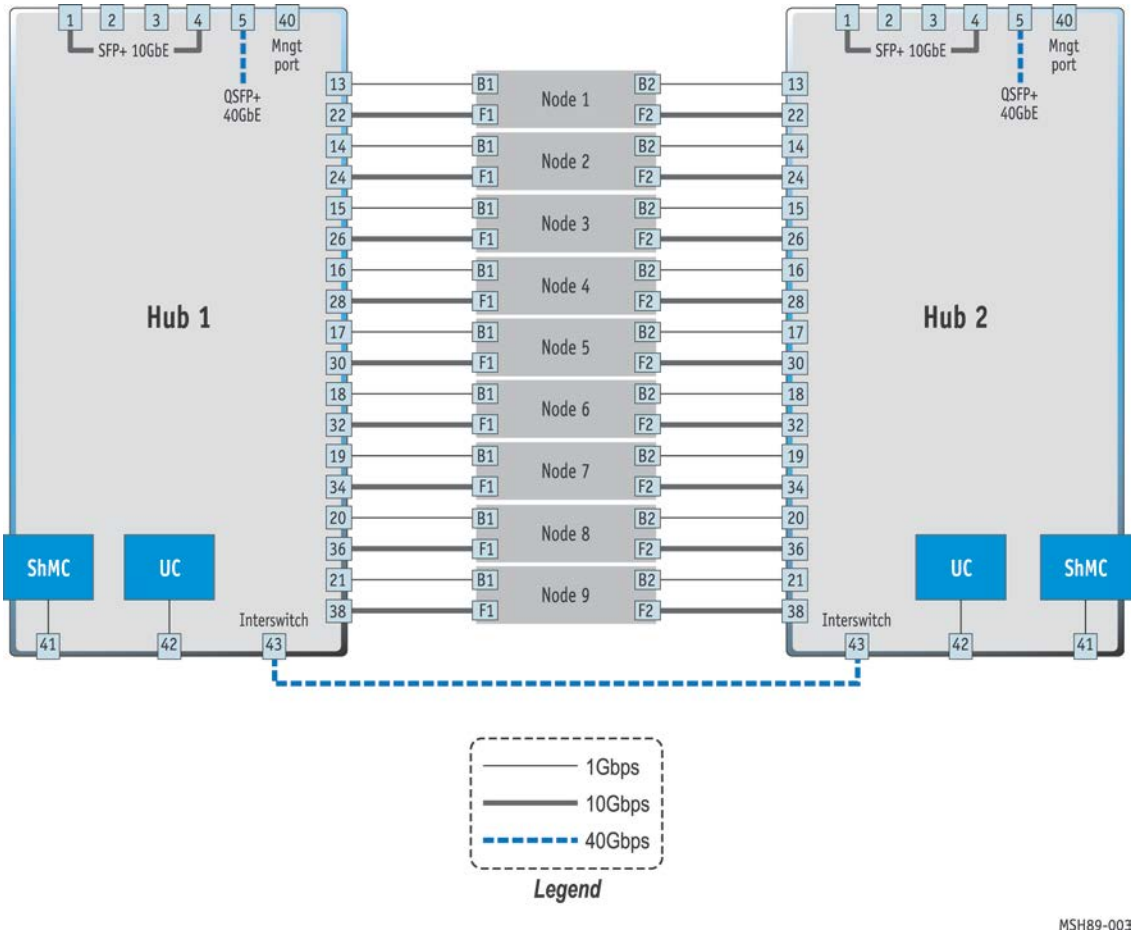
Table 1: MSH8910 port mapping

Port	Description
[unit]/0/1*	Front_SFP+_1
[unit]/0/2	Front_SFP+_2
[unit]/0/3	Front_SFP+_3
[unit]/0/4	Front_SFP+_4
[unit]/0/5*	Front_QSFP+
[unit]/0/6	Front_QSFP+_p2
[unit]/0/7	Front_QSFP+_p3
[unit]/0/8	Front_QSFP+_p4
[unit]/0/9	Not available
[unit]/0/10	Not available

Port	Description
[unit]/0/11	Not available
[unit]/0/12	Not available
[unit]/0/13	Base_Node_1
[unit]/0/14	Base_Node_2
[unit]/0/15	Base_Node_3
[unit]/0/16	Base_Node_4
[unit]/0/17	Base_Node_5
[unit]/0/18	Base_Node_6
[unit]/0/19	Base_Node_7
[unit]/0/20	Base_Node_8
[unit]/0/21	Base_Node_9
[unit]/0/22	Fabric_Node_1
[unit]/0/23	Fabric_Node_2
[unit]/0/24	Fabric_Node_3
[unit]/0/25	Fabric_Node_4
[unit]/0/26	Fabric_Node_5
[unit]/0/27	Fabric_Node_6
[unit]/0/28	Fabric_Node_7
[unit]/0/29	Fabric_Node_8
[unit]/0/30	Fabric_Node_9
[unit]/0/31	Front_Management
[unit]/0/32	ShMC
[unit]/0/33	Switch_Controller
[unit]/0/34	Inter_Switch

* The asterisk indicates a port that can be configured as one 40Gbps port or as four independent 10Gbps ports. When configuration 4x 10Gbps is used, it will be possible to configure the ports written in purple. Please refer to section 4.10 for more details.

Figure 6: MSH8911 port mapping



To configure ports, the numbering convention is unit/slot/port. The unit number is the switch ID. Physical slots are identified by a 0 and logical slots by a 1.

Table 2: MSH8911 port mapping

Port	Description
[unit]/0/1*	Front_SFP+_1
[unit]/0/2	Front_SFP+_2
[unit]/0/3	Front_SFP+_3
[unit]/0/4	Front_SFP+_4
[unit]/0/5*	Front_QSFP+
[unit]/0/6	Front_QSFP+_p2
[unit]/0/7	Front_QSFP+_p3
[unit]/0/8	Front_QSFP+_p4
[unit]/0/9	Not Available
[unit]/0/10	Not Available
[unit]/0/11	Not Available
[unit]/0/12	Not Available
[unit]/0/13	Base_Node_1

Port	Description
[unit]/0/14	Base_Node_2
[unit]/0/15	Base_Node_3
[unit]/0/16	Base_Node_4
[unit]/0/17	Base_Node_5
[unit]/0/18	Base_Node_6
[unit]/0/19	Base_Node_7
[unit]/0/20	Base_Node_8
[unit]/0/21	Base_Node_9
[unit]/0/22**	Fabric_Node_1
[unit]/0/23	Fabric_Node_1_p2
[unit]/0/24**	Fabric_Node_2
[unit]/0/25	Fabric_Node_2_p2
[unit]/0/26**	Fabric_Node_3
[unit]/0/27	Fabric_Node_3_p2
[unit]/0/28**	Fabric_Node_4
[unit]/0/29	Fabric_Node_4_p2
[unit]/0/30**	Fabric_Node_5
[unit]/0/31	Fabric_Node_5_p2
[unit]/0/32**	Fabric_Node_6
[unit]/0/33	Fabric_Node_6_p2
[unit]/0/34**	Fabric_Node_7
[unit]/0/35	Fabric_Node_7_p2
[unit]/0/36**	Fabric_Node_8
[unit]/0/37	Fabric_Node_8_p2
[unit]/0/38**	Fabric_Node_9
[unit]/0/39	Fabric_Node_9_p2
[unit]/0/40	Front_Management
[unit]/0/41	ShMC
[unit]/0/42	Switch_Controller
[unit]/0/43	Inter_Switch

* The asterisk indicates a port that can be configured as one 40Gbps port or as four independent 10Gbps ports. When configuration 4x 10Gbps is used, it will be possible to configure the ports written in purple. Please refer to section 4.10 for more details.

** The double asterisks indicate a port that can be configured as one 10Gbps port or two independent 10Gbps ports. When configuration 2x 10Gbps is used, it will be possible to configure the ports written in purple. Please refer to section 1.4 for more details.

1.4. Automatic Fabric Port Mode

Three port modes are available for fabric ports of MSH8910 series hubs. Depending on the hub-node combination purchased, one or more modes might be available.

Table 3: Available port modes base on the hub-node combination

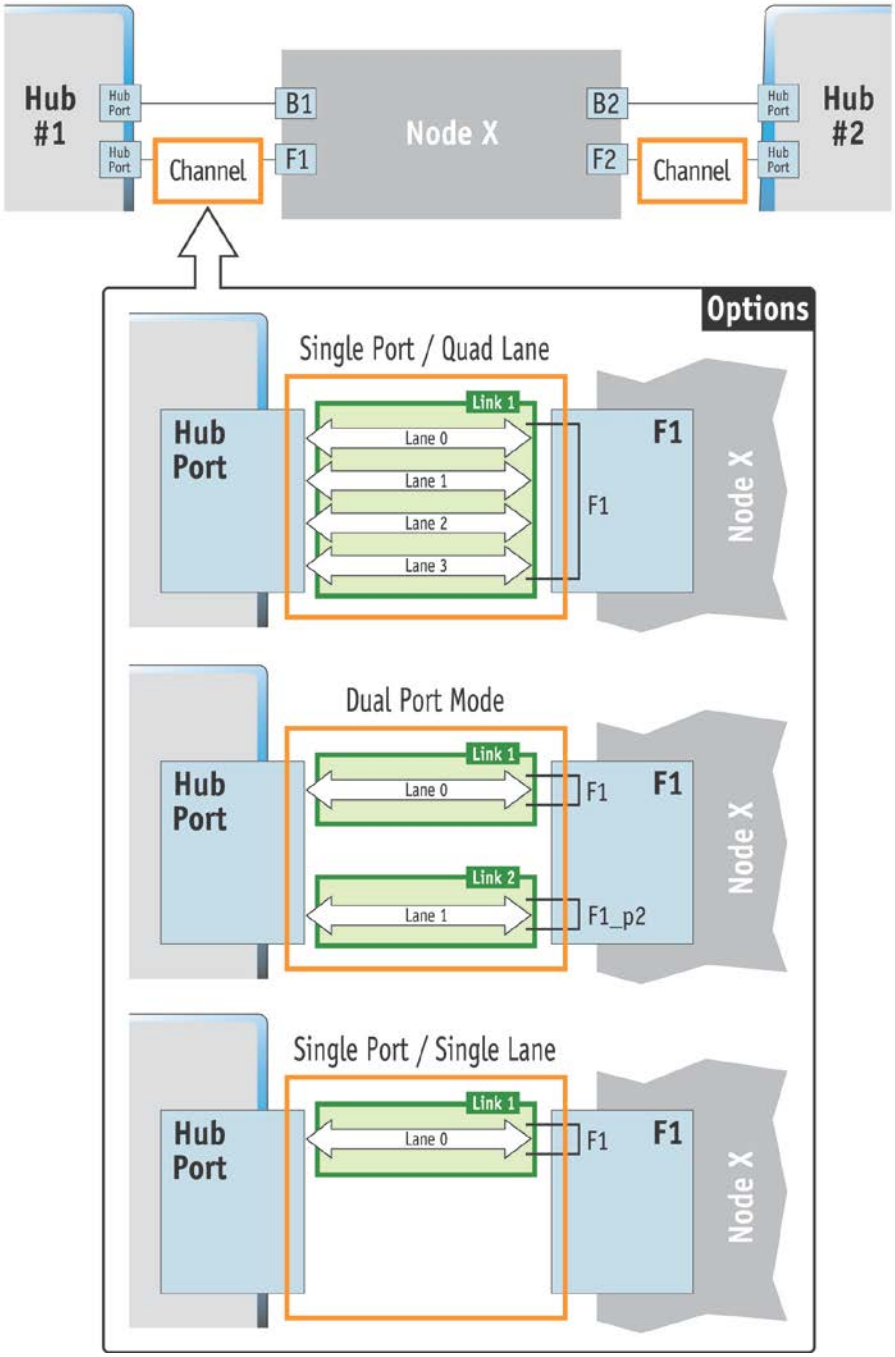
	MSP8001	MSP802x	MSP803x	MSP804x	MSP805x
MSH8910	Single Port / Quad Lane	Single Port / Quad Lane	Single Port / Quad Lane	Single Port / Single Lane	N/A
		Single Port / Single Lane*			
MSH8911	Single Port / Quad Lane	Dual Port Mode	Single Port / Quad Lane	Dual Port Mode	Dual Port Mode

*This mode is especially suited for MSP804x series nodes.

Mode **Switch Factory Default** can also be selected for any hub-node combination. This configuration can be used to "clear" the mode, and the switch will be set in its default mode: Single Port / Quad Lane for an MSH8910 and Dual Port Mode for an MSH8911.

Communication will be established as described in Figure 7.

Figure 7: Port mode communication options



The port mode is node-dependant. Upon power up, the ShMC of the master hub will communicate with the nodes to get the preferred port mode of each node. If, for a node, more than one port mode is available for the hub-node combination, the hub's default mode will be used for that node (see above for hub default modes). The ShMC of the master hub will then communicate the information to the ShMC of the second hub, and both will set these modes in their respective switches within an MS2910 platform.

Port modes can only be modified manually from the SM. This feature is used mainly to set a Default Fabric Port Mode for a slot in which there is no node. Any changes made will be applied after a power cycle.

Depending on the node and port mode selected, port numbering and communication speeds will not be the same. The following tables show port numbers and speeds for the various hub-node combinations.

Table 4: MSP8001 nodes in an MS2910 chassis with MSH8910 hubs

	CPU 1			
Node Port	Fabric 1	Base 1	Fabric 2	Base 2
PCI Device	0000:09:00.0	0000:02:00.0	0000:09:00.1	0000:03:00.0
Speed	10Gbps	1Gbps	10Gbps	1Gbps
Node #	Switch Port Number	Switch Port Number	Switch Port Number	Switch Port Number
1	1/0/22	1/0/13	2/0/22	2/0/13
2	1/0/23	1/0/14	2/0/23	2/0/14
3	1/0/24	1/0/15	2/0/24	2/0/15
4	1/0/25	1/0/16	2/0/25	2/0/16
5	1/0/26	1/0/17	2/0/26	2/0/17
6	1/0/27	1/0/18	2/0/27	2/0/18
7	1/0/28	1/0/19	2/0/28	2/0/19
8	1/0/29	1/0/20	2/0/29	2/0/20
9	1/0/30	1/0/21	2/0/30	2/0/21

Table 5: MSP8001 nodes in an MS2910 chassis with MSH8911 hubs

	CPU 1			
Node Port	Fabric 1	Base 1	Fabric 2	Base 2
PCI Device	0000:09:00.0	0000:02:00.0	0000:09:00.1	0000:03:00.0
Speed	10Gbps: Single Port/Quad Lane 1Gbps: Single Port/Single Lane	1Gbps	10Gbps: Single Port/Quad Lane 1Gbps: Single Port/Single Lane	1Gbps
Node #	Switch Port Number	Switch Port Number	Switch Port Number	Switch Port Number
1	1/0/22	1/0/13	2/0/22	2/0/13
2	1/0/24	1/0/14	2/0/24	2/0/14
3	1/0/26	1/0/15	2/0/26	2/0/15
4	1/0/28	1/0/16	2/0/28	2/0/16
5	1/0/30	1/0/17	2/0/30	2/0/17
6	1/0/32	1/0/18	2/0/32	2/0/18
7	1/0/34	1/0/19	2/0/34	2/0/19
8	1/0/36	1/0/20	2/0/36	2/0/20
9	1/0/38	1/0/21	2/0/38	2/0/21

Table 6: MSP802x series nodes in an MS2910 chassis with MSH8910 hubs

	CPU 1		CPU 2	
Node Port	Fabric 1	Base 2	Fabric 2	Base 1
PCI Device	0000:00:19.0	0000:01:00.0	0000:00:19.0	0000:01:00.0
Speed	1Gbps	1Gbps	1Gbps	1Gbps
Node #	Switch Port Number	Switch Port Number	Switch Port Number	Switch Port Number
1	1/0/22	2/0/13	2/0/22	1/0/13
2	1/0/23	2/0/14	2/0/23	1/0/14
3	1/0/24	2/0/15	2/0/24	1/0/15
4	1/0/25	2/0/16	2/0/25	1/0/16
5	1/0/26	2/0/17	2/0/26	1/0/17
6	1/0/27	2/0/18	2/0/27	1/0/18
7	1/0/28	2/0/19	2/0/28	1/0/19
8	1/0/29	2/0/20	2/0/29	1/0/20
9	1/0/30	2/0/21	2/0/30	1/0/21

Table 7: MSP802x series nodes in an MS2910 chassis with MSH8911 hubs

	CPU 1		CPU 2	
Node Port	Fabric 1	Base 2	Fabric 2	Base 1
PCI Device	0000:00:19.0	0000:01:00.0	0000:00:19.0	0000:01:00.0
Speed	1Gbps	1Gbps	1Gbps	1Gbps
Node #	Switch Port Number	Switch Port Number	Switch Port Number	Switch Port Number
1	1/0/22	2/0/13	2/0/22	1/0/13
2	1/0/24	2/0/14	2/0/24	1/0/14
3	1/0/26	2/0/15	2/0/26	1/0/15
4	1/0/28	2/0/16	2/0/28	1/0/16
5	1/0/30	2/0/17	2/0/30	1/0/17
6	1/0/32	2/0/18	2/0/32	1/0/18
7	1/0/34	2/0/19	2/0/34	1/0/19
8	1/0/36	2/0/20	2/0/36	1/0/20
9	1/0/38	2/0/21	2/0/38	1/0/21

Table 8: MSP803x series nodes in an MS2910 chassis with MSH8910 hubs

	CPU 1			
Node Port	Fabric 1	Base 1	Fabric 2	Base 2
PCI Device	0000:02:00.0	0000:04:00.0	0000:02:00.1	0000:05:00.0
Speed	10Gbps: Single Port/Quad Lane 1Gbps: Single Port/Single Lane	1Gbps	10Gbps: Single Port/Quad Lane 1Gbps: Single Port/Single Lane	1Gbps
Node #	Switch Port Number	Switch Port Number	Switch Port Number	Switch Port Number
1	1/0/22	1/0/13	2/0/22	2/0/13
2	1/0/23	1/0/14	2/0/23	2/0/14
3	1/0/24	1/0/15	2/0/24	2/0/15
4	1/0/25	1/0/16	2/0/25	2/0/16
5	1/0/26	1/0/17	2/0/26	2/0/17
6	1/0/27	1/0/18	2/0/27	2/0/18
7	1/0/28	1/0/19	2/0/28	2/0/19
8	1/0/29	1/0/20	2/0/29	2/0/20
9	1/0/30	1/0/21	2/0/30	2/0/21

Table 9: MSP803x series nodes in an MS2910 chassis with MSH8911 hubs

	CPU 1			
Node Port	Fabric 1	Base 1	Fabric 2	Base 2
PCI Device	0000:02:00.0	0000:04:00.0	0000:02:00.1	0000:05:00.0
Speed	10Gbps: Single Port/Single Lane 1Gbps: Single Port/Quad Lane	1Gbps	10Gbps: Single Port/Single Lane 1Gbps: Single Port/Quad Lane	1Gbps
Node #	Switch Port Number	Switch Port Number	Switch Port Number	Switch Port Number
1	1/0/22	1/0/13	2/0/22	2/0/22
2	1/0/24	1/0/14	2/0/23	2/0/24
3	1/0/26	1/0/15	2/0/24	2/0/26
4	1/0/28	1/0/16	2/0/25	2/0/28
5	1/0/30	1/0/17	2/0/26	2/0/30
6	1/0/32	1/0/18	2/0/27	2/0/32
7	1/0/34	1/0/19	2/0/28	2/0/34
8	1/0/36	1/0/20	2/0/29	2/0/36
9	1/0/38	1/0/21	2/0/30	2/0/38

Table 10: MSP804x series nodes in an MS2910 chassis with MSH8910 hubs

	CPU 1			
Node Port	Fabric 1	Base 1	Fabric 2	Base 2
PCI Device	0000:03:00.0	0000:0b:00.0	0000:03:00.1	0000:0c:00.0
Speed	10Gbps: Single Port/Single Lane 1Gbps: Single Port/Quad Lane	1Gbps	10Gbps: Single Port/Single Lane 1Gbps: Single Port/Quad Lane	1Gbps
Node #	Switch Port Number	Switch Port Number	Switch Port Number	Switch Port Number
1	1/0/22	1/0/13	2/0/22	2/0/13
2	1/0/23	1/0/14	2/0/23	2/0/14
3	1/0/24	1/0/15	2/0/24	2/0/15
4	1/0/25	1/0/16	2/0/25	2/0/16
5	1/0/26	1/0/17	2/0/26	2/0/17
6	1/0/27	1/0/18	2/0/27	2/0/18
7	1/0/28	1/0/19	2/0/28	2/0/19
8	1/0/29	1/0/20	2/0/29	2/0/20
9	1/0/30	1/0/21	2/0/30	2/0/21

Table 11: MSP804x series nodes in an MS2910 chassis with MSH8911 hubs

	CPU 1			
Node Port	Fabric 1	Base 1	Fabric 2	Base 2
PCI Device	0000:03:00.0	0000:0b:00.0	0000:03:00.1	0000:0c:00.0
Speed	10Gbps: Single Port/Single Lane **or** Dual Port Mode 1Gbps: Single Port/Quad Lane	1Gbps	10Gbps: Single Port/Single Lane **or** Dual Port Mode 1Gbps: Single Port/Quad Lane	1Gbps
Node #	Switch Port Number	Switch Port Number	Switch Port Number	Switch Port Number
1	1/0/22	1/0/13	2/0/22	2/0/22
2	1/0/24	1/0/14	2/0/23	2/0/24
3	1/0/26	1/0/15	2/0/24	2/0/26
4	1/0/28	1/0/16	2/0/25	2/0/28
5	1/0/30	1/0/17	2/0/26	2/0/30
6	1/0/32	1/0/18	2/0/27	2/0/32
7	1/0/34	1/0/19	2/0/28	2/0/34
8	1/0/36	1/0/20	2/0/29	2/0/36
9	1/0/38	1/0/21	2/0/30	2/0/38

Table 12: MSP805x series nodes in an MS2910 chassis with MSH8910 hubs

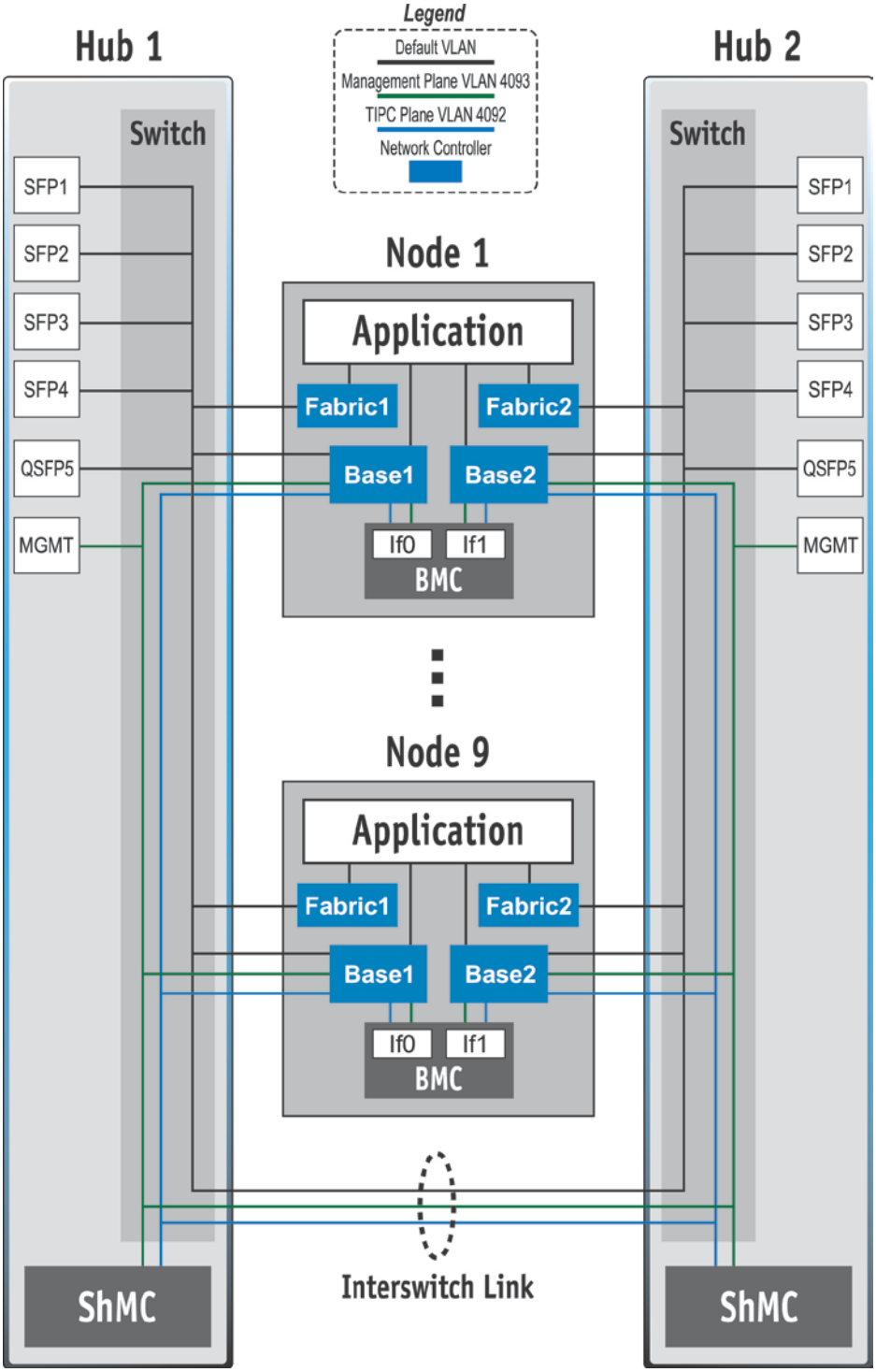
	CPU 1			CPU 2		
Node Port	Fabric 1	Fabric 2_p2	Base 2	Fabric 1_p2	Fabric 2	Base 1
PCI Device	0000:01:00.0	0000:01:00.1	0000:04:00.0	0000:01:00.0	0000:01:00.1	0000:04:00.0
Speed	10Gbps	No connection	1Gbps	No Connection	10Gbps	1Gbps
Node #	Switch Port Number	Switch Port Number	Switch Port Number	Switch Port Number	Switch Port Number	Switch Port Number
1	1/0/22	No connection	2/0/13	No connection	2/0/22	1/0/13
2	1/0/24	No connection	2/0/14	No connection	2/0/24	1/0/14
3	1/0/26	No connection	2/0/15	No connection	2/0/26	1/0/15
4	1/0/28	No connection	2/0/16	No connection	2/0/28	1/0/16
5	1/0/30	No connection	2/0/17	No connection	2/0/30	1/0/17
6	1/0/32	No connection	2/0/18	No connection	2/0/32	1/0/18
7	1/0/34	No connection	2/0/19	No connection	2/0/34	1/0/19
8	1/0/36	No connection	2/0/20	No connection	2/0/36	1/0/20
9	1/0/38	No connection	2/0/21	No connection	2/0/38	1/0/21

Table 13: MSP805x series nodes in an MS2910 chassis with MSH8911 hubs

	CPU 1			CPU 2		
Node Port	Fabric 1	Fabric 2_p2	Base 2	Fabric 1_p2	Fabric 2	Base 1
PCI Device	0000:01:00.0	0000:01:00.1	0000:04:00.0	0000:01:00.0	0000:01:00.1	0000:04:00.0
Speed	10Gbps	10Gbps	1Gbps	10Gbps	10Gbps	1Gbps
Node #	Switch Port Number	Switch Port Number	Switch Port Number	Switch Port Number	Switch Port Number	Switch Port Number
1	1/0/22	2/0/23	2/0/13	1/0/23	2/0/22	1/0/13
2	1/0/24	2/0/25	2/0/14	1/0/25	2/0/24	1/0/14
3	1/0/26	2/0/27	2/0/15	1/0/27	2/0/26	1/0/15
4	1/0/28	2/0/29	2/0/16	1/0/29	2/0/28	1/0/16
5	1/0/30	2/0/31	2/0/17	1/0/31	2/0/30	1/0/17
6	1/0/32	2/0/33	2/0/18	1/0/33	2/0/32	1/0/18
7	1/0/34	2/0/35	2/0/19	1/0/35	2/0/34	1/0/19
8	1/0/36	2/0/37	2/0/20	1/0/37	2/0/36	1/0/20
9	1/0/38	2/0/39	2/0/21	1/0/39	2/0/38	1/0/21

1.5. Network Topology

Figure 8: Network topology



Changes made to VLANs 4093 and 4092 could prevent proper system operation.

1.6. MSH8910 Series Features

Table 14: MSH8910 series features

Component	Description
Switching capabilities	Managed switch with: ▶ MSH8910 - 2x 40 Gbps, 13x 10 Gbps and 12x 1 Gbps ▶ MSH8911 - 2x 40 Gbps, 22x 10 Gbps and 12x 1 Gbps Redundant switching in dual hub configuration Full featured Layer 2 switching Multicast technologies supported (IPv4, IPv6, IGMP and MLD) Layer 3 IPv4/IPv6 routing Stacking up to 6 MS2910
Shelf Manager (ShMC) capabilities	Central time source for MS2910 platform management controllers Fan management Power management Platform LED control Platform monitoring
Remote management	IPMI 2.0 Power and cooling management for hubs and nodes Sensor and event monitoring for hubs and nodes Hot swap monitoring for hubs and nodes Comprehensive sensor network and event monitoring Refer to Appendix A for a list of sensors
Monitoring	SNMP support covering the MIB of the platform and switches Set, Get and Walk commands are supported Supported RFCs for the ShMC: ▶ RFC 3418 Management Information Base (MIB) for the Simple Network Management Protocol (SNMP) ▶ RFC 1213 Management Information Base for Network Management of TCP/IP-based internets: MIB-II Supported RFCs for the switches: ▶ RFC 1155 Structure and identification of management information for TCP/IP-based internets ▶ RFC 1157 Simple Network Management Protocol (SNMP) ▶ RFC 1212 Concise MIB definitions ▶ RFC 1901 Introduction to Community-based SNMPv2 ▶ RFC 1908 Coexistence between Version 1 and Version 2 of the Internet-standard Network Management Framework ▶ RFC 2271 An Architecture for Describing SNMP Management Frameworks ▶ RFC 2576 Coexistence between Version 1, Version 2, and Version 3 of the Internet-standard Network Management Framework ▶ RFC 2578 Structure of Management Information Version 2 (SMIv2) ▶ RFC 2579 Textual Conventions for SMIv2

Component	Description
	▶ RFC 2580 Conformance Statements for SMIv2 ▶ RFC 3410 Introduction and Applicability Statements for Internet-Standard Management Framework ▶ RFC 3411 An Architecture for Describing Simple Network Management Protocol (SNMP) Management Frameworks ▶ RFC 3412 Message Processing and Dispatching for the Simple Network Management Protocol (SNMP) ▶ RFC 3413 Simple Network Management Protocol (SNMP) Applications ▶ RFC 3414 User-based Security Model (USM) for version 3 of the Simple Network Management Protocol (SNMPv3) ▶ RFC 3415 View-based Access Control Model (VACM) for the Simple Network Management Protocol (SNMP) ▶ RFC 3416 Version 2 of the Protocol Operations for the Simple Network Management Protocol (SNMP) ▶ RFC 3417 Transport Mappings for the Simple Network Management Protocol (SNMP) ▶ RFC 3418 Management Information Base (MIB) for the Simple Network Management Protocol (SNMP) Note: The MIB package (.zip file) must be installed to enable SNMP monitoring.
Hot swap	Supported Refer to section 2.1 for a description of hub behavior during a hot swap procedure
Battery	User changeable battery, model BR1225
Power consumption	MSH8910 (with 1 QSFP+ optical module and 4 optical SFP+ modules): 50 W typical MSH8911 (with 1 QSFP+ optical module and 4 optical SFP+ modules): 55 W typical
Power management Green features	Ability to control fan speed

For a list of approved SFP+ and QSFP+ modules, refer to the product's Compatibility Guide.

For optimal monitoring via SNMP, ensure the latest firmware versions are installed for the following components: FRU, ShMC/BMC, FPGA, BIOS and switch.

1.7. LEDs and Buttons

Figure 9: MSH8910 series LEDs and buttons

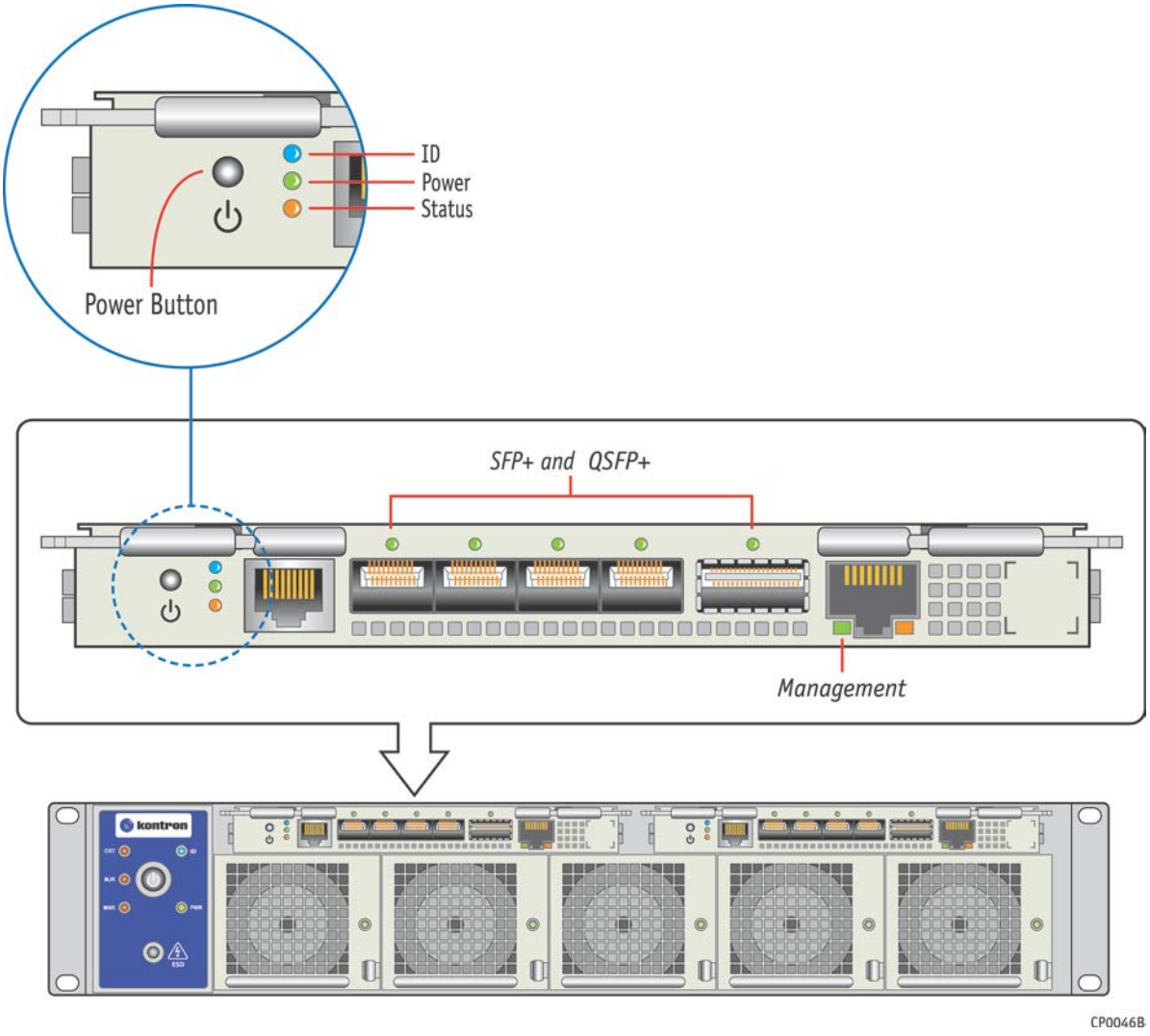


Table 15: LED status description and button behavior

State	ID (blue)	Power (green)	Status (amber)
Identify command in progress	Blinking[1]	Not affected	Not affected
Active ShMC with hub payload (switch) power ON	OFF	ON	ON: not healthy OFF: healthy
Standby ShMC with hub payload (switch) power ON	OFF	Blinking[2]	ON: not healthy OFF: healthy
Hub payload (switch) power OFF	ON	OFF	ON: not healthy OFF: healthy

State	SFP+ and QSFP+ (green)
Link established, no activity	ON: Speed 40/10/1 Gbps
Activity	Blinking[3]: Speed 40/10/1 Gbps
No link	OFF

State	Management (green)
Link established, no activity	ON: Speed 1 Gbps or 100 Mbps OFF: Speed 10 Mbps
Activity	Blinking[3]: Speed 1 Gbps or 100 Mbps OFF: Speed 10 Mbps
No link	OFF

[1]Fast blink, 1 Hz, 50%
[2]Slow blink, 0.5 Hz, 20%
[3]6 Hz, 50%

Power button of hub with a standby ShMC		
State	**Short press**	**Long press (4 seconds)**
Power OFF	Powers the hub	Nothing happens
Power ON	Performs a clean shutdown of the hub	Turns hub off immediately
Power button of hub with an active ShMC		
State	**Short press**	**Long press (4 seconds)**
Power ON	Switches over to the standby ShMC Unsuccessful switchover: nothing happens	Nothing happens

1.8. Interfacing

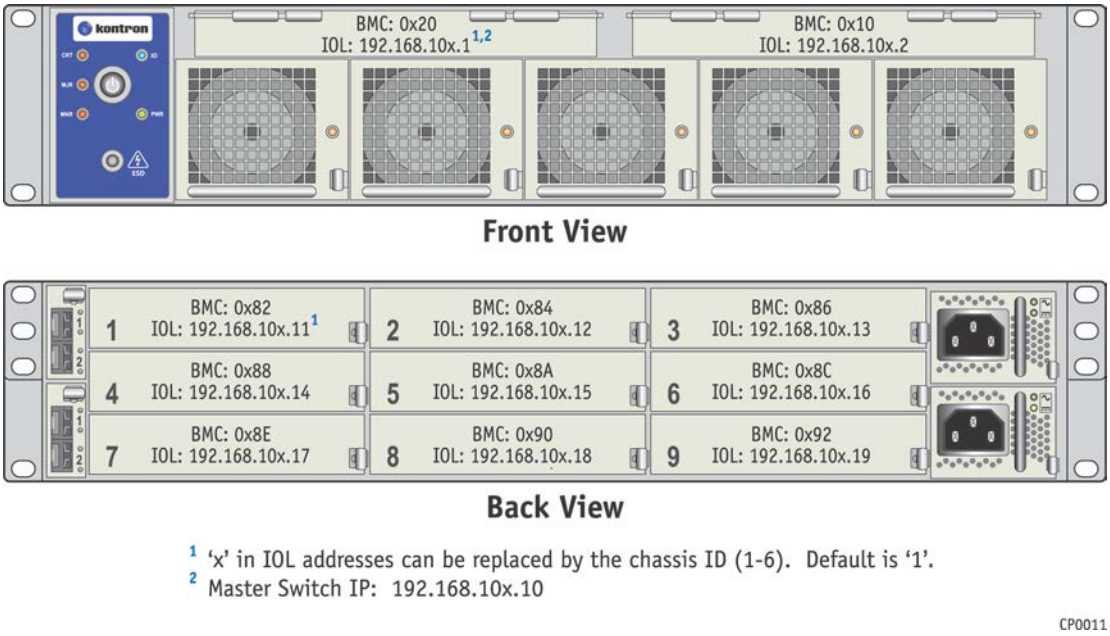
MSH8910 series hubs offer two types of management connections: a networking connection and a serial console connection.

1.8.1. Management Networking Connection

The SYMKLOUD platform comes with a System Monitor (SM). The SM includes a Web user interface and a programmatic API to access system components, including its ShMC and nodes.

The IOL IP address of the component you want to connect to might be required when using certain paths. The IP address of external entities must be in the same subnet as that of the SYMKLOUD components as no default gateway is configured. The default IOL IP addresses are shown in Figure 10.

Figure 10: Default IP addresses



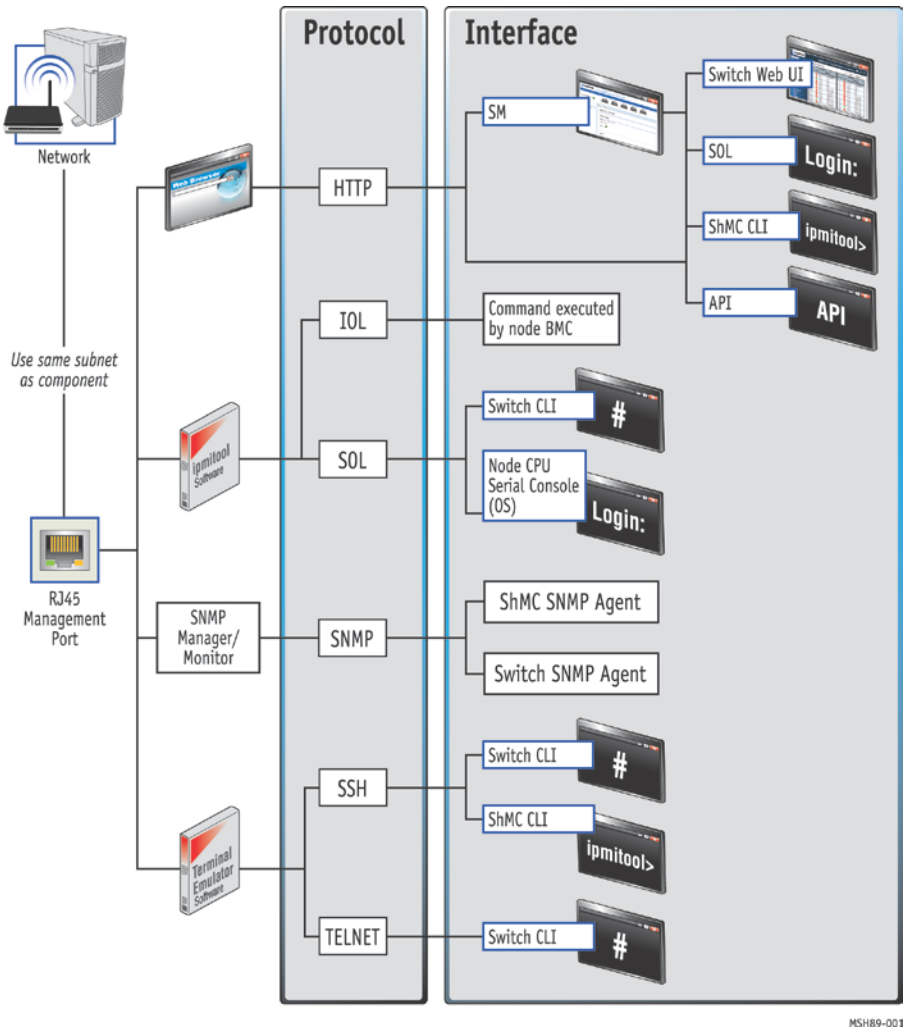
[1] 'x' in IOL addresses can be replaced by the chassis ID (1-6). Default is '1'.
[2] Master Switch IP: 192.168.10x.10

CP0011

Note that, as explained in section 1.5, these network interfaces will be part of the dedicated management network (VLAN 4093) within the MS2910 infrastructure. The management port (Figure 3) is preconfigured to allow access to VLAN 4093. The switch sets this port's PVID to VLAN 4093. No external tagging is necessary when connecting via this interface. The IP address of external entities must be in the same subnet as that of the SYMKLOUD components as no default gateway is configured.

Figure 11 shows the possible network paths to access the various interfaces of the system components.

Figure 11: Diagram of interface paths with a management networking connection



- Terminal emulator software such as PuTTY can be used.
- The Kontron ipmitool package can be downloaded from kontron.com, in the "Tools" section of the SYMKLOUD platform page.
- Ensure the protocol is enabled for the interface you want to access (SSH, TELNET, etc).
- API calls can be made using a tool such as cURL. The configuration sections of this document detail the availability of such calls for specific configurations. Refer to the API documentation (available from the SM).
- To access SOL from the SM dashboard Console Access:
    - Log in to the SM;
    - From the Console Access dropdown list under the Power Consumption Graph of the Dashboard screen, select a platform/hub;
    - Log in with username "console" and password "admin";
    - Follow the on-screen instructions to connect to the target CPU or switch.
- An IOL connection allows users to send ipmitool commands over the LAN for immediate execution by the addressed node BMC.

Example of TELNET connection to the switch CLI:

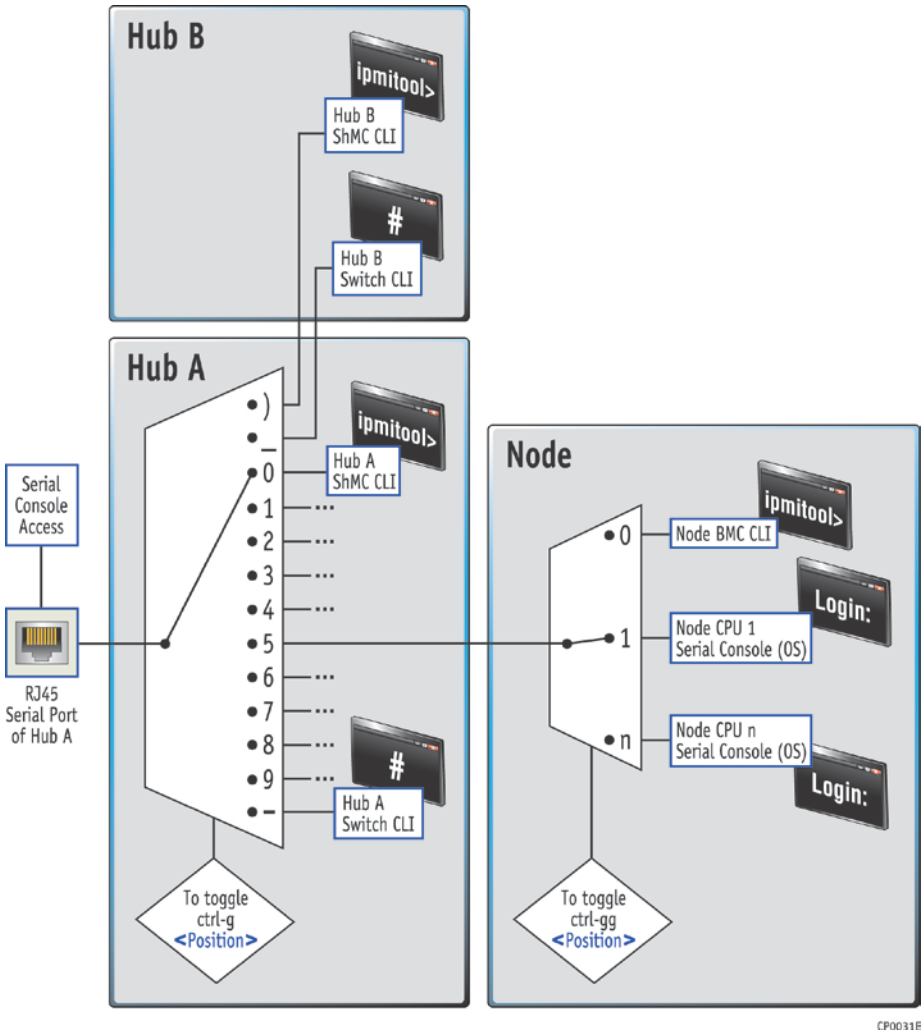
1. Connect to the management port (Figure 3) with a cable or via a network.
2. Establish a TELNET connection through a terminal emulator using the switch IP address.
3. Login using the appropriate username and password (refer to section 1.8.4).
4. Prompt > is displayed.

1.8.2. Serial Console Connection

The serial interface of the hubs includes a multiplexing functionality that can establish a link with each component through a series of hotkeys (Figure 12).

The console port of the hubs has a redundancy feature with its partner hub. This means that the console port of either hub installed in a SYMKLOUD chassis can be used to communicate with any hub/node in the chassis. The ports are mirror images of each other: any output or user input is reflected in both.

Figure 12: Diagram of interface paths with a serial console connection



The redundancy feature of the serial ports ensures access to all nodes and both ShMC and switches, regardless of which hub's physical serial port is used. In the figure above, if hub A is in slot 1, hub B is in slot 2, and vice versa. The serial port communication parameters are 115200 baud, no parity, 8 data bits and backspace key set to "Ctrl-h". Recommended terminal emulation mode is VT100+.

NOTE: Only the stack master switch offers a serial CLI interface. If the switch prompt begins with "Unit", e.g. Unit 2 MSH8910 Ethernet P1:H1, it is only a member switch. To connect to the stack master, type "Ctrl-x" and then "m" to select option "telnet to stacking manager".

The ASCII control code for "Ctrl-g" is 7. To type "Ctrl-gg", use the "Ctrl-g" ASCII control code twice in a row.

Example of a serial connection to the switch CLI of hub A:

1. Connect to the console port (Figure 3) using the RJ45 to DB9 adapter (Figure 1) or via a device such as a terminal server.
2. Establish a connection through a terminal emulator using the serial port communication parameters.
3. Access a component by toggling the MUX, e.g. to access the switch CLI, type Ctrl-g and then -.

1.8.3. Accessing Interfaces

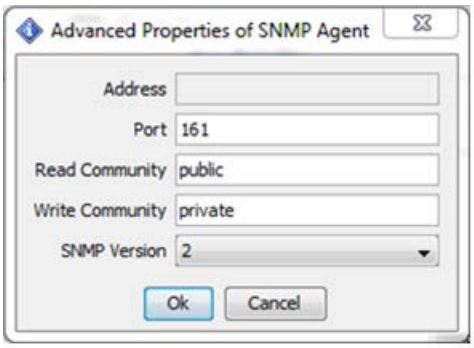
1.8.3.1. SNMP Agents

To access the ShMC or switch SNMP agent, the IP address of the active ShMC or switch must be configured. Refer to section 5.1 to configure the IP address of a ShMC and to section 4.1.1 to configure the IP address of a switch. For convenience, a 3rd shared IP can be configured from the SM. This shared IP address will automatically redirect HTTP, API and SNMP requests to the active ShMC.

Once the required IP address is configured:

1. Install the appropriate MIB files. The MIB package includes a folder containing two files for the platform (ShMC) and one file for the MSH8910 series switches (Switch).
2. Open the SNMP manager.
3. Set the parameters as shown in Figure 13. In the **Address** field, enter the IP address of the component you want to connect to.

Figure 13: SNMP agent access configuration



1.8.4. Default User Names and Passwords

Table 16: Default usernames and passwords

Configuration interface	Username and password
SM (UI)	admin admin
ShMC CLI	admin admin
Switch UI/CLI	admin admin

2/ Extracting and Inserting a Module

2.1. System Behavior upon Hot Swap

The system is electrically designed to support a surprise extraction. However, this type of extraction is not recommended and could affect system performance and functionalities.

When a hot swap procedure is performed on MSH8910 series hubs, the following systems and functionalities could be affected:

- The nodes lose half of their fabric and base connections.
- If a ring topology (recommended) is used for the system stack, the system topology changes to a chain topology until the ring is rebuilt.
- If a chain topology is used for the system stack, removing a hub could break the chain and affect system performance.

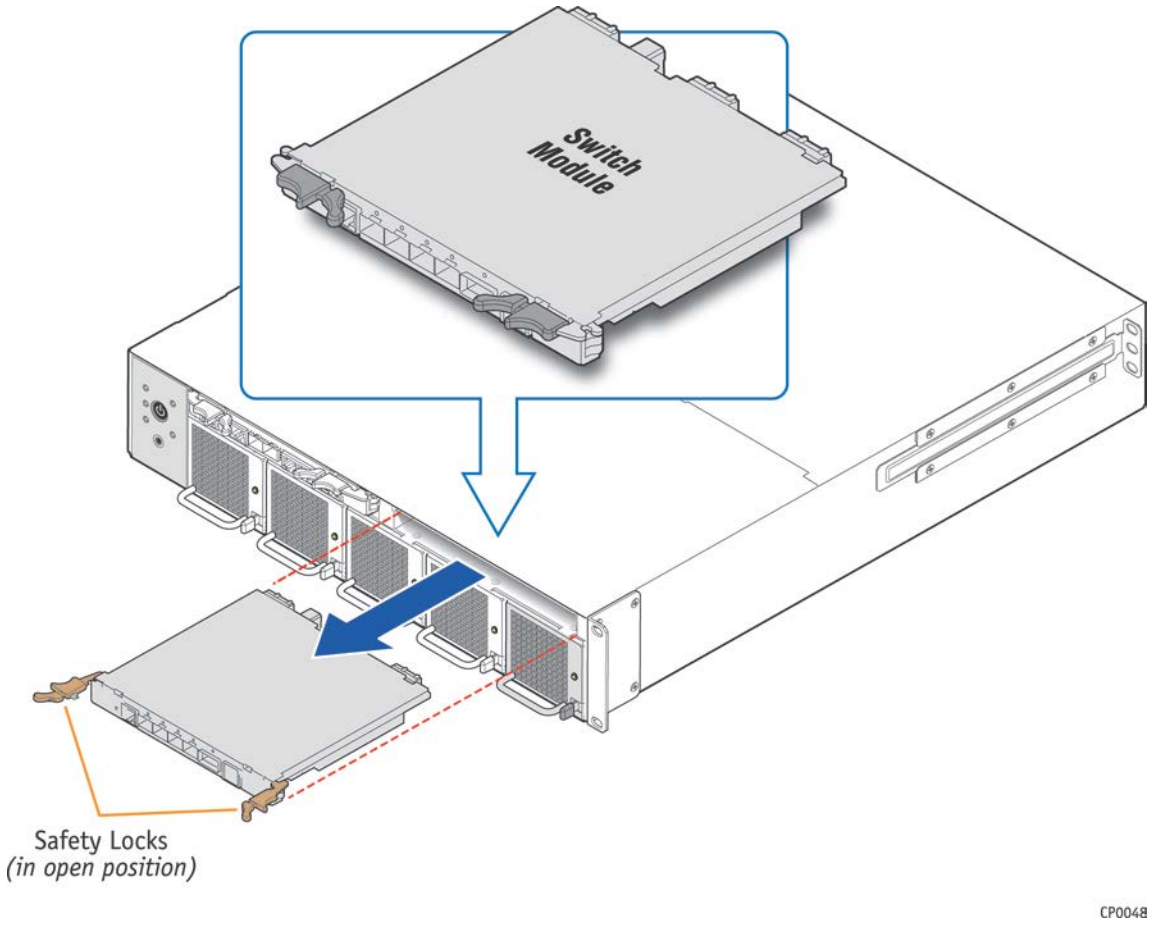
2.2. Extracting a Module

ESD-Sensitive Device!
Take all necessary ESD protection measures.

Steps in blue apply only to hot swap procedures.

1. Press the power button of the hub to be extracted to turn it off (see Table 15 for button behavior).
2. The ID LED of the hub becomes steady blue: the hub is ready to be extracted.
3. To release the safety locks, simultaneously squeeze the black moving parts against the black fixed parts and move the safety locks to a 90° position to unhook the hub from the frame of the MS2910 (Figure 14).
4. Hold the safety locks and extract the module by pulling it from the slot.

Figure 14: Module safety lock location



2.3. Inserting a Module

ESD-Sensitive Device!
Take all necessary ESD protection measures.

1. Holding the safety locks (90° position), insert a hub module in the appropriate slot until the safety locks rest against the faceplate.
2. Gently push the safety locks against the frame of the hub until you hear a click.
3. The power LED of the hub then becomes steady or blinking green: the hub is powered on and ready to use.

3/ Software Configurations and Conventions

To use the system, you must perform the configurations described in section 4.1.

Conventions:

- Elements between < > in blue are parameters. The value shown is an example or an instruction of what to enter. Items between () show a value range for the parameter spelled out, e.g. <Switch No. (1-3)> means valid entries for the switch number are between 1 and 3.
- Elements between [ ] in blue are optional parameters.
- The | symbol indicates a choice between two or more alternatives, e.g. x|y|z reads "x or y or z".
- Elements in **black bold** are selectable items or button names.
- Elements in *blue italics* are configuration options or types.
- The > symbol separates a series of operations required to access a specific element.

Configuration command tables:

Sections 4/, 5/, 6/ and 7/ contain tables with two columns. The first column describes steps that can be performed in the Web-type interface(s) specified in the header. The second column describes steps that can be performed in the CLI-type interface(s) specified in the header. See Figure 11 and Figure 12 for available options for accessing the various Web interfaces or CLIs.

Switch Web User Interface:

- Clicking on **Submit** in the UI will only maintain the changes until the next reboot. For the changes to be persistent, save the new configuration by clicking on **Save Configuration** in the upper-right corner of the UI. Confirm by clicking on **Save** and **OK**.
- The Help menu of the Switch Web User Interface is comprehensive and should be used as a reference when configuring the system.

Switch CLI help:

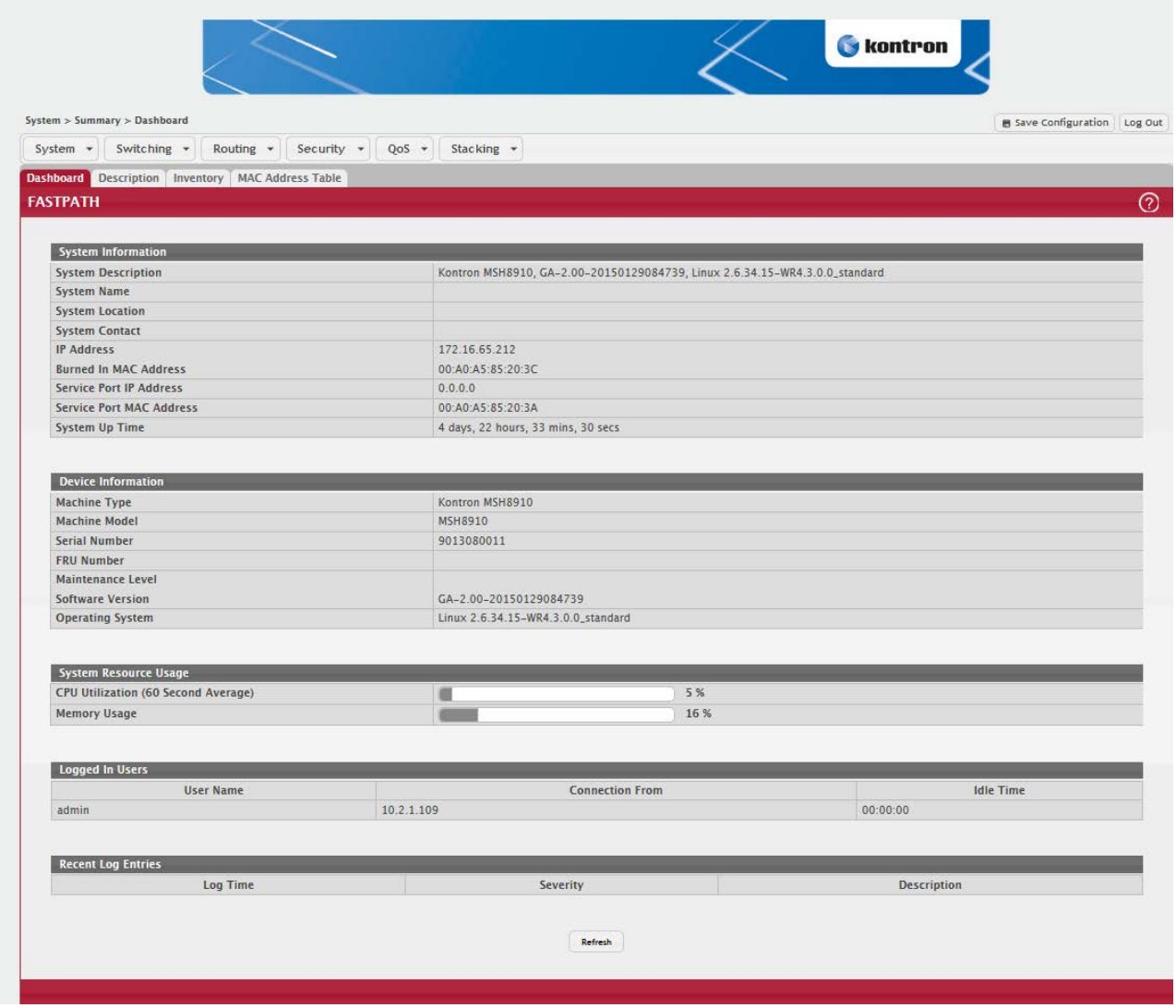
- The switch CLI contains a context-sensitive help feature.
- Use the ? symbol anytime to display the next possible commands/arguments and short descriptions.
- The switch CLI prompt contains information about the physical location of the switch. The information is presented in the following format: (MSH8910 Ethernet P<Platform Number>:H<Hub slot number>).
- To perform the configurations described in this guide, access to the CLI in Privileged Exec mode is required. Use the enable command (from the > prompt) to enter this mode. The command prompt will change to # when you are in Privileged Exec mode.
- Almost all configuration commands have a corresponding "no" form. The "no" form is syntactically similar (but not necessarily identical) to the configuration command; it either resets the parameters to default values or reverses the action of a command.

System Monitor User Interface

The help menu in the upper-right corner of the screen provides access to the documentation of the API (click on the **?** icon and then on **API Doc**). Refer to the API documentation for the calls available for performing various tasks. If a task can be accomplished using an API call, it will be specified in the tables of the configuration sections. A user manual is also available for the system monitor.

4/ Configuring Switches

Figure 15: Switch Web User Interface



All switches within a stack can be managed through the stack master switch, via the Web interfaces or CLIs. By default, the Web UI and CLIs can be accessed via the networking configuration described in section 1.8.1. The CLIs can also be accessed via the serial connection shown in section 1.8.2. Procedures to access interfaces are also available in section 1.8.3.

The commands described in the tables are sometimes simple examples. It is strongly recommended that you refer to the CLI manual or the SM manual for a more comprehensive explanation of individual commands.

4.1. Switch Management Interface Configuration

4.1.1. IP Address Configuration

To assign an IP address to the switch management interface:

Switch Web User Interface	CLI (serial, SSH, Telnet, SOL)
System > Connectivity > IPv4 Proceed with configuration Click **Submit**	*To display current configuration:* #show network *For an automatically generated IP address based on the geographical slot and platform number (default), use:* #network protocol auto-ip #network mgmt_vlan <VLAN ID> *For a static IP address, use:* #network protocol none #network parms <ip address> <netmask> [<gateway>] #network mgmt_vlan <VLAN ID> *For a DHCP address, use:* #network protocol dhcp #network mgmt_vlan <VLAN ID>

4.1.2. SSH Configuration

To enable SSH access:

Switch Web User Interface	CLI (serial, SSH, Telnet, SOL)
To generate the keys: System > Management Access > SSH Click the **Download** or **Generate** icon *To enable SSH access:* System > Management Access > SSH Select **Enable** Click **Submit**	*To generate the keys:* #configure (Config)#crypto key generate rsa (Config)#crypto key generate dsa *To ensure both keys have been generated:* #show ip ssh Result under Keys present must be: DSA RSA *To enable SSH access:* #ip ssh

4.2. Configuration Management

To revert to the factory default of a switch:

Switch Web User Interface	CLI (serial, SSH, Telnet, SOL)
System > Configuration Storage > Reset Select **Reset** Click **OK**	#clear config

4.3. Port Configuration and Information

To enable or disable ports and to configure them:

Switch Web User Interface	CLI (serial, SSH, Telnet, SOL)
System > Port > Summary This tab lists information on the connection statuses Select the port(s) to configure Click **Edit** Proceed with configuration Click **Submit** System > Port > Description This tab lists the interface description to help determine the logical connections within the platform	#configure (Config)#interface <intf-range> (Interface<intf-range>)# ? A list of possible configuration commands appears Proceed with configuration #show interfaces status This command lists the connection status and description of the interfaces to help determine the logical connections within the platform
Note	
	With an <intf-range> parameter, a single command line can involve one or multiple switches and one or multiple ports. Enter interface(s) using format: unit/slot/port. Use commas for lists and hyphens for ranges. Examples: (Config)#interface 1/0/1-1/0/4,2/0/1-2/0/4 (Interface 1/0/1-1/0/4,2/0/1-2/0/4)# This command involves the front SFP+ ports of both switches in a SYMKLOUD (ports 1 to 4 of units 1 and 2). (Config)#interface 1/0/5,2/0/5,3/0/5,4/0/5 (Interface 1/0/5,2/0/5,3/0/5,4/0/5)# This command involves the front QSFP+ ports of the switches within two stacked SYMKLOUD units (port 5 of units 1 to 4).

4.4. Basic VLAN Configuration

Three VLANs are preconfigured on the switch, i.e. VLANs 1 (default), 4093 (management) and 4092 (TIPC) (see Figure 8). To configure a VLAN:

Changes made to VLANs 4093 and 4092 could prevent proper system operation.

Switch Web User Interface	CLI (serial, SSH, Telnet, SOL)
To create a VLAN: Switching > VLAN Click **Add** Enter VLAN ID or Range Click **Submit** *To configure VLAN membership:* Switching > VLAN > Port Configuration Select **VLAN ID** Select the port(s) to configure Click **Edit** Proceed with configuration Click **Submit**	*To create a VLAN:* #vlan database (Vlan)#vlan <vlan list> (Vlan)# ? A list of possible configuration commands appears Proceed with configuration *To configure VLAN membership:* #configure (Config)#interface <intf-range> (Interface <intf-range>)#vlan ? A list of possible configuration commands appears Proceed with configuration

4.5. Switch General Information

To view general switch information:

Switch Web User Interface	CLI (serial, SSH, Telnet, SOL)
System > Summary View information	#show tech-support A list of general information about the switch is displayed

4.6. Switch Log

To view switch log information:

Switch Web User Interface	CLI (serial, SSH, Telnet, SOL)
System > Logs View logs	#show logging buffered A list of possible logs to view is displayed

4.7. Date and Time Configuration

The switch gets the date and time from the ShMC when it boots. It is, however, possible to use the NTP to adjust the switch date and time. To adjust the switch date and time:

Switch Web User Interface	CLI (serial, SSH, Telnet, SOL)
System > Advanced Configuration > SNTP > Server Configuration Click **Add** Proceed with configuration Click **Submit** System > Advanced Configuration > SNTP > Global Configuration Select the appropriate client mode (unicast or broadcast)	*To configure time with the NTP:* #configure (Config)#sntp server <ip address|hostname> (Config)#sntp client mode <unicast|multicast|broadcast>
Note	
To enter a server host name, DNS service must be configured.	

4.8. User Account Configuration

To create a user account and password and define a privilege level (possible values are 0, 1 or 15, where 15 has all privileges):

Switch Web User Interface	CLI (serial, SSH, Telnet, SOL)
System > Users Click **Accounts** Click **Add** Proceed with configuration Click **Submit**	#configure (Config)#username <username> level <0|1|15> password Enter new password: <password> Confirm new password: <password> (Config)#
Note	
Users created and managed in the switch are distinct from other types of users required to manage the system, e.g. those of the ShMC and the SM.	

4.9. Spanning Tree Protocol Configuration

To enable and configure the STP for all switches in the stack:

Switch Web User Interface	CLI (serial, SSH, Telnet, SOL)
To enable STP on ports: System > Port > Summary Select the port(s) for which STP must be enabled Proceed with configuration Click **Submit** *To configure STP:* Switching > Spanning Tree Proceed with configuration Click **Submit**	*To enable STP on ports:* #configure (Config)#spanning-tree (Config)#interface <intf-range> (Interface <intf-range>)#spanning-tree port mode *To configure STP:* #configure (Config)#spanning-tree ? A list of possible configuration commands appears Proceed with configuration
Note	
STP is enabled by default on the front RJ45 management port of the switch (interface identifier: */0/<Mngt Port Number>). *: Unit (also called switch ID) from 1 to 12.	With an <intf-range> parameter, a single command line can involve one or multiple switches and one or multiple ports. Enter interface(s) using format: unit/slot/port. Use commas for lists and hyphens for ranges. Examples: (Config)#interface 1/0/1-1/0/4,2/0/1-2/0/4 (Interface 1/0/1-1/0/4,2/0/1-2/0/4)# This command involves the front SFP+ ports of both switches in a SYMKLOUD (ports 1 to 4 of units 1 and 2). (Config)#interface 1/0/5,2/0/5,3/0/5,4/0/5 (Interface 1/0/5,2/0/5,3/0/5,4/0/5)# This command involves the front QSFP+ ports of the switches within two stacked SYMKLOUD units (port 5 of units 1 to 4).

4.10. SFP+ and QSFP+ Uplink Configuration

Uplink ports, i.e. [unit]/0/1-4 and [unit]/0/5-8, can be configured as one 40Gbps port or four independent 10Gbps ports:

Switch Web User Interface	CLI (serial, SSH, Telnet, SOL)
To show current configuration: System > Port > Summary *To configure expansion:* Not possible from a Web-type interface	*To show current configuration:* #show interfaces hardware profile <unit/slot/port> *To configure expansion to four 10Gbps:* #configure (Config)#interface <unit/slot/port> (Interface <unit/slot/port>)#hardware profile portmode expand *To merge into one 40Gbps port:* #configure (Config)#interface <unit/slot/port> (Interface <unit/slot/port>)#no hardware profile portmode expand
Note	
The "Link Status" of 3 of the ports (ports 2 to 4 or ports 6 to 8) merged as one 40Gbps interface will be "Detached".	Possible values for <unit/slot/port> parameter: ▶ [unit]/0/1 for group [unit]/0/1-4 ▶ [unit]/0/5 for group [unit]/0/5-8

4.11. Fabric Port Mode Configuration

To configure the fabric port mode of nodes:

System Monitor	Not possible from a CLI-type interface
Dashboard > Click on the **Platform** <No.> item under the **Multi-Platform** section Menu is under the fan speed meters	

4.12. Stacking Configuration

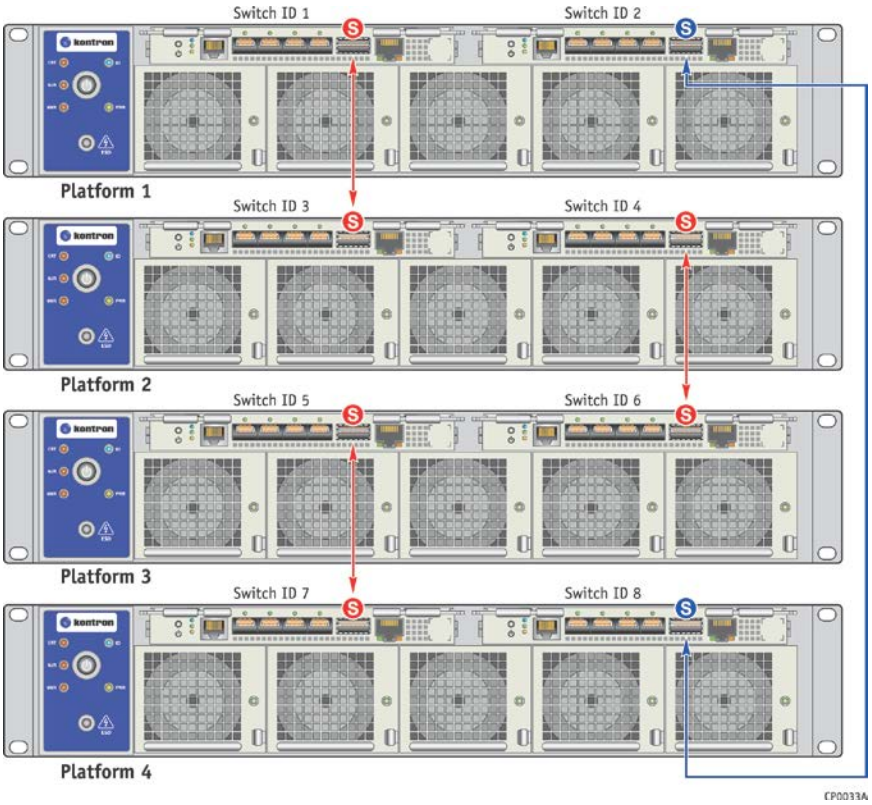
Stacking is a method used to create a switch cluster for the configuration and interconnection of all switches. Up to 12 switches (maximum of 6 MS2910) can be stacked using the recommended 40GbE ports on the front plate and the dedicated interswitch 40GbE stacking ports. The master switch selected by the system manages all the switches in the cluster. Even though stacking can be enabled using the 10GbE SFP+ ports of MSH8910 series hubs, it is not possible to stack MSH8910 series hubs with the previous generation of SYMKLOUD hubs, i.e., the MSH8900.

4.12.1. Topology

Two types of topology are supported: ring topology (closed loop) and chain topology (open loop). A ring topology is recommended for redundancy and performance purposes.

A port configured for stacking can only be used to interconnect MSH8910 series switches.

Figure 16: Stacking example using 4 MS2910



The blue cable in Figure 16 closes the loop. If this cable (or any cable involved in the stacking) is removed, the ring topology degrades to a chain topology. By default, an isolated MS2910 will still have its two switches in a stack via the backplane interswitch link.

Switches within a stack each have a unique switch ID and priority. Switch IDs and priorities are preconfigured to ensure they are automatically adjusted when a platform is renumbered. For example, if a platform is added to a stack and its number is changed from 1 to 2, the switch IDs will automatically go from 1 to 3 and from 2 to 4. The goal of the numbering logic is to have the stack manager in platform 1 in hub slot 1. Manual switch ID assignment is not recommended.

4.12.2. Adding an MS2910 to a Stack

To add an MS2910 to a stack:

1. Configure the platform number to the next available number, typically the number of MS2910 currently in the stack +1. Refer to section 5.4 for the procedure.
2. Configure the platform for stacking. Refer to section 4.12.3 for the commands.

4.12.3. Stacking Configuration

To configure stacking:

Switch Web User Interface	CLI (serial, SSH, Telnet, SOL)
Stacking > Base > Summary Proceed with configuration Click **Save**	#show switch Lists the switches in the stack and their statuses #show stack-port Lists the configuration of the stacking ports
To enable stacking on a port: Stacking > Base > Port Configuration Select the interface(s) to be used for stacking Click **Edit** Select **Stack** from the dropdown list Click **Submit** Click **Save Configuration** Go to System > Utilities > System Reset Select **All** from the dropdown list Click **Reset** *To select an operational standby switch:* Stacking > Base > Unit Configuration Select the **Switch ID** Check **Standby Switch** Click **Submit** Click **Save Configuration**	*To enable stacking on a port:* #configure (Config)#stack (Config-stack)#stack-port <unit/slot/port> stack Repeat for the other unit in the MS2910 #end #copy system:running-config nvram:startup-config #reload *To select an operational standby switch:* #configure (Config)#stack (Config-stack)#standby <unit No. (1-12)>
Note	
For better redundancy, select an operational standby switch in an MS2910 platform other than the one hosting the management switch. Typically, the management switch will be in platform 1 in hub slot 1 (i.e., its switch ID will be 1). It is therefore recommended to select another odd switch ID to act as the operational standby switch. The backplane interswitch interface <unit No. (1-12)>/0/<Interswitch Port Number> is configured for stacking by default. The "Link Status" of ports configured for stacking will be "Detached" (see System > Port > Summary).	The unit is the switch ID. Stack port changes become active only upon switch reboot.

5/ Configuring and Monitoring Shelf Managers

5.1. ShMC Management Interface Configuration

For proper operation, the ShMC and node BMC must have an IP interface in the same subnet.

To view and configure the ShMC IP interface:

System Monitor	ShMC CLI (serial, IOL, SSH)
To view the ShMC IP: Dashboard > Monitor > Platform <No.> > Hub <No.> See IP under **Management IP** *To set the ShMC IP:* Dashboard > Network Configuration	*To view the ShMC IP:* ipmitool> lan print Existing configuration is displayed *To set the ShMC IP:* ipmitool> lan set 1 Command syntax and possible configurations are displayed Proceed with configuration
API calls available to view and set the ShMC IP	

5.2. Date and Time Configuration

At power up, the active ShMC gets the date and time from the onboard RTC. The active ShMC then uses it to set the date and time of the SEL and the nodes.

Not possible through a Web interface	ShMC CLI (serial, IOL, SSH)
	ipmitool> ipmitool> sel time set "<mm/dd/yyyy hh:mm:ss>"
Notes	
	Quotation marks (") must surround your configured date and time. A platform power cycle is the simplest way to propagate the time to the SYMKLOUD platform. Otherwise, the management controller and payload (BIOS/OS) must be updated manually.

5.3. User Account Configuration

Separate user accounts must be created for access to the ShMC (for IOL) and SM (UI).

5.3.1. SM User Account Configuration

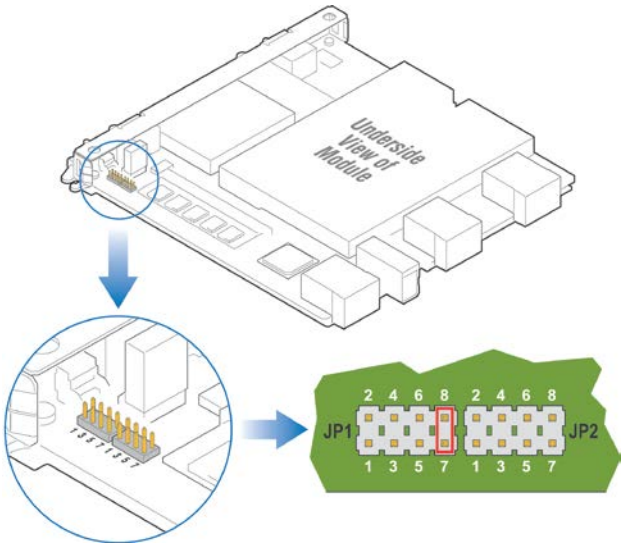
To configure user accounts for the SM (user, password and role):

System Monitor	Not possible from a CLI-type interface
Dashboard > Click on the **Profile** icon Select **Settings** Click **User Management** Click **Create New User** Enter the required information Click **Create User**	
	API calls available to configure user accounts
Notes	
Roles are: Administrator (full access) or Technician (read only).	

5.3.2. SM User Account Password Reset

If you forget the password of the SM, you need to add a jumper, as show in Figure 17. Once the jumper is in place, refer to the system monitor user manual for the reset procedure.

Figure 17: Jumper position for password reset



5.3.3. ShMC User Account Configuration

A valid user/password is required to send IOL commands and access the ipmitool shell. To configure user accounts for the ShMC (user ID and associated username, password and privilege level):

Not possible through a Web interface	ShMC CLI (serial, IOL, SSH)
	ipmitool> ipmitool> user list 1 A list of all users is displayed *To add a user:* ipmitool> user enable <user ID> *To configure user parameters:* ipmitool> user set name <user ID> <username> ipmitool> user set password <user ID> <password> ipmitool> user priv <user ID> <privilege level (1-4)> <channel No.>
Notes	
	Privilege levels are from 1 to 4 (1: CALLBACK; 2: USER; 3: OPERATOR; 4: ADMINISTRATOR). Channel No. is always 1.

5.4. Platform Number Configuration

A stack can contain up to 6 MS2910 systems. To configure the platform number of an MS2910 before including it in a stack:

System Monitor (Console Access)	ShMC CLI (serial, IOL, SSH)
To configure the platform number: ipmitool> raw 0x3e 0x20 0xc2 <platform No. (1-6)> *To display the platform number:* ipmitool> raw 0x3e 0x21 0xc2	*To configure the platform number:* ipmitool> raw 0x3e 0x20 0xc2 <platform No. (1-6)> *To display the platform number:* ipmitool> raw 0x3e 0x21 0xc2
	API calls available to configure and display the platform number
Notes	
	When you are done, disconnect all the power cords of the unit for which you just changed the platform number. Then reconnect the power cords.

5.5. System Event Log Access

To access the SEL:

System Monitor	ShMC CLI (serial, IOL, SSH)
To view the SEL: Dashboard > System Event Log	*To view SEL status:* ipmitool> sel *To view the SEL:* ipmitool> sel list A list of event logs sent to the ShMC is displayed *To delete the SEL:* ipmitool> sel clear

5.6. Sensor Information Access

Refer to the sensor list in Appendix A.

To view system sensor information:

Not possible through a Web interface	ShMC CLI (serial, IOL, SSH)
	ipmitool> sensor list
	API calls available to view information on some system sensors
Notes	
	System information is displayed in the following order: ▶ Sensor name ▶ Analog reading—reading for analog sensor and 0x0 for discrete sensor ▶ Type—unit for analog sensor and discrete for discrete sensor ▶ Sensor status—ok or not ok for analog sensor and bites for discrete sensor ▶ Threshold values (last 6 columns): lower non-recoverable, lower critical, lower non-critical, upper non-critical, upper critical, upper non-recoverable

5.7. Active ShMC and Standby ShMC

To view the status of a ShMC:

System Monitor	ShMC CLI (serial, IOL, SSH)
Dashboard > Monitor > Platform <No.> > Hub <No.> See status under **HA Status**	ipmitool> sensor See value under ShMC Redun State Value 0x0280 is assigned to an active ShMC and value 0x0880 is assigned to a standby ShMC
Notes	
	Refer to Table 15 to determine the state of a ShMC using the LEDs.

5.8. ShMC FRU Information

To access ShMC FRU data information:

System Monitor	ShMC CLI (serial, IOL, SSH)
Dashboard > Monitor > Platform <No.> > Hub <No.> See data under **Board Information**	ipmitool> fru print

6/ Using Ipmitool to View and Configure Node BMCs

6.1. IPMI Mapping

From the ShMC CLI ipmitool interface, you can access node BMCs using their local IPMI addresses.

Component	IPMI address
Active ShMC	0x20
Standby ShMC	0x10
Node 1	0x82
Node 2	0x84
Node 3	0x86
Node 4	0x88
Node 5	0x8a
Node 6	0x8c
Node 7	0x8e
Node 8	0x90
Node 9	0x92

To establish a connection with another MS2910 component and direct the commands to this component:

System Monitor	ShMC CLI (serial, SSH)
Dashboard > Monitor > Platform No. > Hub <n> or Node <n>	ipmitool> set targetaddr <ipmi address> Proceed with configuration as described in the appropriate node manual. Commands in section 5/ (5.1, 5.3.3, 5.6 and 5.8) can also be used as a reference.
Notes	
IPMI mapping is not required in the SM. You can connect to a component by clicking on it.	To break the connection and go back to the initial component, exit the CLI and reestablish a connection with the initial component.

7/ Performing Updates

7.1. Switch Update

To update the firmware of all switches in a stack:

Switch Web User Interface	CLI (serial, SSH, Telnet, SOL)
System > Firmware > Configuration and Upgrade At the end of the **Backup** line, click on the **Upgrade Firmware** icon Select the proper *.pkg file Click **Begin Transfer** Wait for the transfer to finish Click **Close** Under **Next Active**, select the update package to be used Click **Submit** Go to System > Utilities > System Reset Select **All** from the dropdown list Click **Reset**	#copy <tftp|ftp|scp|sftp>://[username@]<server IP>/<path>/<*.pkg filename> backup *Once the operation has completed successfully, flag the new image as active for the next boot:* #boot system backup *To reboot the stack:* #reload *To obtain version information, including currently active image:* #show bootvar
Notes	
	If a username is entered, the @ symbol is mandatory at the end of the username.

7.2. ShMC Update

To update all the management controllers within a platform:

SM	Not possible from a CLI-type interface
Dashboard > OnClick Upgrade Click on **bundle settings** Click on **CHANGE BUNDLE FILE** Select the proper .zip file Click on **Open** Wait for the transfer to finish Click on **START UPGRADE**	
	API calls available to update the ShMC

Appendix A: Sensor Lists

The following tables contain information on the sensors of MSH8910 series hubs. Table 18 provides detailed information on the sensors described in blue in Table 17.

Table 17: Sensor list

ID	Sensor Name	Sensor Type Code	Reading Type Code	Description	Event Offset
0	FRU0 Hot Swap	F0h (HotSwap Sensor)	6Fh (Sensor Specific)	FRU0 HotSwap Sensor	See PICMG 3.0 R3.0 table 3-22, "FRU Hot Swap event message"
1	Remote Hub HotSw			Remote Hub HotSwap Sensor	
2	Node1 Hot Swap			Node 1 HotSwap Sensor	
3	Node2 Hot Swap			Node 2 HotSwap Sensor	
4	Node3 Hot Swap			Node 3 HotSwap Sensor	
5	Node4 Hot Swap			Node 4 HotSwap Sensor	
6	Node5 Hot Swap			Node 5 HotSwap Sensor	
7	Node6 Hot Swap			Node 7 HotSwap Sensor	
8	Node7 Hot Swap			Node 7 HotSwap Sensor	
9	Node8 Hot Swap			Node 8 HotSwap Sensor	
10	Node9 Hot Swap			Node 9 HotSwap Sensor	
11	Temp Board	01h (Temperature)	01h (Threshold Based)	On Board Temperature (°C)	See IPMI v2.0 table 42-2 for threshold based event
12	Temp Switch			Ethernet Switch Temperature (°C)	
13	Temp UC			P2020 (UC) Temperature (°C)	
14	Temp ShMC			ShMC Temperature (°C)	
15	Temp SODIMM			P2020 SODIMM Temperature (°C)	
16	SODIMM SPD Pres	25h (Entity Presence)	01h (Threshold Based)	P2020 SODIMM SPD presence	See IPMI v2.0 table 42-2 for threshold based event
17	Vcc +12V In	02h (Voltage)	01h (Threshold Based)	Voltage on board 12V input from backplane	See IPMI v2.0 table 42-2 for threshold based event
18	Vcc +5V SUS			Voltage on board 5.0V suspend power supply	
19	Vcc +3.3V SUS			Voltage on board 3.3V suspend power supply	
20	Vcc +2.5V SUS			Voltage on board 2.5V suspend power supply	
21	Vcc +1.5V SUS			Voltage on board 1.5V suspend power supply	
22	Vcc +1.25V SUS			Voltage on board 1.25V suspend power supply	
23	Vcc +3.3V			Voltage on board 3.3V payload power supply	
24	Vcc +1.5V			Voltage on board 1.5V payload power supply	

ID	Sensor Name	Sensor Type Code	Reading Type Code	Description	Event Offset
25	Vcc +1.2V			Voltage on board 1.2V payload power supply	
26	Vcc +1.05V			Voltage on board 1.05V payload power supply	
27	Vcc +1.0V Core			Voltage on board 1.0V (Core) payload power supply	
28	Vcc +1.0V Analog			Voltage on board 1.0V (Analog) payload power supply	
29	VBAT +3V			Voltage on board 3V Battery	
30	Icc +1.0V Core	03h (Current)	01h (Threshold Based)	Current on 1.0V (Core) power rail	See IPMI v2.0 table 42-2 for threshold based event
31	Icc +1.0V Analog			Current on 1.0V (Analog) power rail	
32	Icc +12V IN			Board Input Current	
33	Power Hub	0Bh (Watt)	01h (Threshold Based)	Board Input Power	See IPMI v2.0 table 42-2 for threshold based event
34	Power Chassis			System Input Power	
35	PSU1:Status	08h (Power Supply)	6Fh (Sensor Specific)	Power Supply 1 Status	See IPMI v2.0 table 42-3, Sensor type 08h (Power Supply) for sensor definition
36	PSU1:Status Ext			Power Supply 1 Status Extended (PMBUS Status Extended registers)	
37	PSU1:Power In	0Bh (Watt)	01h (Threshold Based)	Power consumption of Power Supply 1 Input in watts	See IPMI v2.0 table 42-2 for threshold based event
38	PSU1:Power Out			Power consumption of Power Supply 1 Output in watts	
39	PSU1:Volt In	02h (Voltage)	01h (Threshold Based)	Power Supply 1 Input Voltage	See IPMI v2.0 table 42-2 for threshold based event
40	PSU1:Current In	03h (Current)	01h (Threshold Based)	Power Supply 1 Input Current	See IPMI v2.0 table 42-2 for threshold based event
41	PSU1:Volt Out	02h (Voltage)	01h (Threshold Based)	Power Supply 1 Output Voltage	See IPMI v2.0 table 42-2 for threshold based event
42	PSU1:Current Out	03h (Current)	01h (Threshold Based)	Power Supply 1 Output Current	See IPMI v2.0 table 42-2 for threshold based event
43	PSU1:Temp Inlet	01h (Temperature)	01h (Threshold Based)	Power Supply 1 Inlet Temperature	See IPMI v2.0 table 42-2 for threshold based event
44	PSU1:Temp Outlet			Power Supply 1 Outlet Temperature	

ID	Sensor Name	Sensor Type Code	Reading Type Code	Description	Event Offset
45	PSU1:Fan Speed	04h (Fan)	01h (Threshold Based)	Power Supply 1 Fan Speed	See IPMI v2.0 table 42-2 for threshold based event
46	PSU2:Status	08h (Power Supply)	6Fh (Sensor Specific)	Power Supply 2 Status	See IPMI v2.0 table 42-3, Sensor type 08h (Power Supply) for sensor definition
47	PSU2:Status Ext			Power Supply 2 Status Extended (PMBUS Status Extended registers)	
48	PSU2:Power In	0Bh (Watt)	01h (Threshold Based)	Power consumption of Power Supply 2 Input in watts	See IPMI v2.0 table 42-2 for threshold based event
49	PSU2:Power Out			Power consumption of Power Supply 2 Output in watts	
50	PSU2:Volt In	02h (Voltage)	01h (Threshold Based)	Power Supply 2 Input Voltage	See IPMI v2.0 table 42-2 for threshold based event
51	PSU2:Current In	03h (Current)	01h (Threshold Based)	Power Supply 2 Input Current	See IPMI v2.0 table 42-2 for threshold based event
52	PSU2:Volt Out	02h (Voltage)	01h (Threshold Based)	Power Supply 2 Output Voltage	See IPMI v2.0 table 42-2 for threshold based event
53	PSU2:Current Out	03h (Current)	01h (Threshold Based)	Power Supply 2 Output Current	See IPMI v2.0 table 42-2 for threshold based event
54	PSU2:Temp Inlet	01h (Temperature)	01h (Threshold Based)	Power Supply 2 Inlet Temperature	See IPMI v2.0 table 42-2 for threshold based event
55	PSU2:Temp Outlet			Power Supply 2 Outlet Temperature	
56	PSU2:Fan Speed	04h (Fan)	01h (Threshold Based)	Power Supply 2 Fan Speed	See IPMI v2.0 table 42-2 for threshold based event
57	Fan1:Speed			Fan 1 Speed	
58	Fan Fault	04h (Fan)	7Dh (OEM Kontron Instance-specifier)	Fan Fault sensor	See OEM table, Event/Reading type code 7Dh (OEM Health Severity Status Sensor) for sensor definition
59	Fan1:Speed	04h (Fan)	01h (Threshold Based)	Fan 1 Speed	See IPMI v2.0 table 42-2 for threshold based event
60	Fan2:Speed	04h (Fan)	01h (Threshold Based)	Fan 2 Speed	See IPMI v2.0 table 42-2 for threshold based event
61	Fan3:Speed	04h (Fan)	01h (Threshold Based)	Fan 3 Speed	See IPMI v2.0 table 42-2 for threshold based event

ID	Sensor Name	Sensor Type Code	Reading Type Code	Description	Event Offset
62	Fan4:Speed	04h (Fan)	01h (Threshold Based)	Fan 4 Speed	See IPMI v2.0 table 42-2 for threshold based event
63	Fan5:Speed	04h (Fan)	01h (Threshold Based)	Fan 5 Speed	See IPMI v2.0 table 42-2 for threshold based event
64	Power State	D0h (OEM Power State)	6Fh (Sensor Specific)	Board Power State	See OEM sensor table, Sensor type code D1h for sensor definition
65	Power Good	08h (Power Supply)	77h (OEM)	Actual power good status	See Registers 0x02 and 0x03 definition from FPGA datasheet
66	Power Good Latch		03h (Digital Discrete)	Power good latch status	See IPMI v2.0 table 42-3, Sensor type code 08h for sensor definition
67	Board Reset	CFh (OEM Board Reset)	03h (Digital Discrete)	Board reset type and sources	See OEM sensor table, Sensor type code CFh for sensor definition
68	POST Value	C6h (OEM Post Value)	6Fh Sensor Specific, offset 0 to 7 and 14 are used	Show current postcode value	See OEM sensor table, Sensor type code C6h for sensor definition
69	POST Error	0Fh (System Firmware Progress)	6Fh Sensor Specific, offset 0 is used	CPU Power On Self Test Error	See IPMI v1.5 table 36.3, Sensor type code 0Fh for sensor definition
70	Boot Error	1Eh (Boot Error)	6Fh Sensor Specific, offset 0 is used	Boot Error	See IPMI v1.5 table 36.3, Sensor type code 1Eh for sensor definition
71	Fwupg Status	CAh (OEM Firmware Upgrade)	6Fh Sensor Specific, offset 0 to 2 are used	System Firmware Update Status	See OEM table, Sensor type code CAh for sensor definition
72	FPGA RW Status	24h (Platfor	77h (OEM	FPGA RW Status	See OEM table, Sensor type code
73	FPGA Heartbeat			FPGA Heartbeat	

ID	Sensor Name	Sensor Type Code	Reading Type Code	Description	Event Offset
		m Alert)	Health Severity Status Sensor)		
74	Remote Sh Health			Remote ShMC Health	24h (Platform Alert) for sensor definition and Event/Reading type code 77h (OEM Health Severity Status Sensor)
75	Health Status	24h (Platform Alert)	7Fh (OEM Health Severity Status Sensor)	General Health Status (Aggregation of critical sensors)	See OEM table, Sensor type code 24h (Platform Alert) for sensor definition and Event/Reading type code 7Fh (OEM Health Severity Status Sensor)
76	Chassis Health	24h (Platform Alert)	7Fh (OEM Health Severity Status Sensor)	Chassis Health Status	See OEM table, Sensor type code 24h (Platform Alert) for sensor definition and Event/Reading type code 7Fh (OEM Health Severity Status Sensor)
77	Ver Change ShMC	2Bh (Version Change)	6Fh (Sensor Specific)	IPMC Firmware Change Detection	See IPMI v2.0 table 42-3, Sensor type code 2Bh for sensor definition
78	Ver Change FPGA	2Bh (Version Change)	6Fh (Sensor Specific)	FPGA Firmware Change Detection	
79	EventRcv ComLost	1Bh (Comm Lost)	03h (Digital Discrete)	Event Receiver Comm Lost	See IPMI v2.0 table 42-3, Sensor type code 1Bh for sensor definition
80	ShMC Redun State	D4h (OEM Redundancy State)	7Eh (Unknown)	ShMC Redundancy State	See OEM table, Sensor type code D4h (OEM Redundancy State) for definition
81	ShMC Redun Loss	28h (Management Subsystem Health)	6Fh (Sensor Specific)	ShMC Redundancy Loss	Only offset 3 is used See IPMI v2.0 table 42-3, Sensor type code 28h for sensor definition

ID	Sensor Name	Sensor Type Code	Reading Type Code	Description	Event Offset
82	ShMC Reboot	24h (Platform Alert)	03h (Digital Discrete)	IPMC Reboot Detection	Only offset 0,1 are used See IPMI v2.0 table 42-3, Sensor type code 24h for sensor definition
83	ShMC Storage Err	28h (Management Subsystem Health)	6Fh (Sensor Specific)	Management Subsystem Health (non volatile memory error)	Only offset 1 is used See IPMI v2.0 table 42-3, Sensor type code 28h for sensor definition
84	ShMC SEL State	10h (Event Logging Disable)		Specify the status of the SEL (Cleared/Almost full/Full)	Only offset 2,4,5 are used See IPMI v2.0 table 42-3, Sensor type code 10h (Event Log Disable) for sensor definition
85	SEL Time Set	12h (System)		Specify when SEL time change	Only offset 5 is used See IPMI v2.0 table 42-3, Sensor type code 12h for sensor definition
86	Jumper Status	D3h (OEM Jumper Status)	6Fh (Sensor Specific)	Reflects on-board jumper presence	Offsets 0 to 14 are used See OEM table, Sensor type code D3h (Kontron OEM Jumper Status) for sensor definition
87	Node1:Present	25h (Entity Presence)	6Fh (Sensor Specific)	Node 1 Presence Sensor	See IPMI v2.0 table 42-3, Sensor type 25h (Entity Presence) for sensor definition
88	Node2:Present			Node 2 Presence Sensor	
89	Node3:Present			Node 3 Presence Sensor	
90	Node4:Present			Node 4 Presence Sensor	
91	Node5:Present			Node 5 Presence Sensor	
92	Node6:Present			Node 6 Presence Sensor	
93	Node7:Present			Node 7 Presence Sensor	
94	Node8:Present			Node 8 Presence Sensor	
95	Node9:Present			Node 9 Presence Sensor	
96	Uplink:Present	25h (Entity Presence)	6Fh (Sensor Specific)	Uplink Presence Sensor	See IPMI v2.0 table 42-3, Sensor type 25h (Entity Presence) for sensor definition

ID	Sensor Name	Sensor Type Code	Reading Type Code	Description	Event Offset
97	Thermal Error	0Ah (Digital Discrete)	03h (Digital Discrete)	Thermal Error Sensor	See IPMI v2.0 table 42-3, Sensor type 0Ah (Cooling Device) for sensor definition
98	Port Mode Error	1Bh (Cable/Interconnect)	6Fh (Sensor Specific)	Fabric Port Mode Configuration Error Sensor	Only offset 1 is used See IPMI v2.0 table 42-3, Sensor type code 1Bh for sensor definition
99	IPMI Info-1	C0h (OEM Firmware Info)	70h (OEM Kontron Internal Diagnostic)	Internal Management Controller firmware diagnostic	See OEM table, Sensor type code C0h (Kontron OEM Firmware Info) for sensor definition and Event/Reading type code 70h (Kontron OEM Internal Diagnostic)
100	IPMI Info-2		71h (OEM Kontron Internal Diagnostic)		See OEM table, Sensor type code C0h (Kontron OEM Firmware Info) for sensor definition and Event/Reading type code 71h (Kontron OEM Internal Diagnostic)

Table 18: Detailed information for specific sensors

Sensor Name	Event/Reading type code	Sensor Type	Sensor Specific offset	Event Trigger
Power State	6Fh Standard IPMI sensor specific	D1h Kontron OEM Power state sensor	00h 01h 02h 03h 04h 05h 06h 07h 08h	Power ON Power OFF Power ON Request Power On In Progress Power OFF Request Graceful Power OFF Request Power OFF In Progress Synchronise Graceful Power OFF Power OFF Now Request
Power Good	77h OEM Kontron Power Good	08h Standard IPMI Power Supply	00h 01h 02h 03h 04h 05h 06h 07h 08h 09h 0Ah 0Bh 0Ch 0Dh 0Eh 0Fh	PSU Unused 0.75V SUS 1.2V SUS 1.25V SUS 1.5V SUS 3.3V SUS 2.5V SUS 1.0V 1.0V A 1.0V HOT 1.05V VTT VDDR Unused Unused Unused

Sensor Name	Event/Reading type code	Sensor Type	Sensor Specific offset	Event Trigger
Board Reset	03h Standard IPMI Discrete	CFh OEM Kontron Reset	00h 01h State Asserted / State Deasserted	Event Data 2: Reset Type 00h: Warm reset 01h: Cold reset 02h: Forced Cold [Warm reset reverted to Cold] 03h: Soft reset [Software jump] 04h: Hard Reset 05h: Forced Hard [Warm reset reverted to Hard] Event Data 3: Reset Source 00h: IPMI Watchdog [cold, warm or forced cold] (IPMI Watchdog2 sensors gives additional details) 01h: IPMI commands [cold, warm or forced cold] (chassis control, fru control) 02h: Processor internal checkstop 03h: Processor internal reset request 04h: Reset button [warm or forced cold] 05h: Power up [cold] 06h: Legacy Initial Watchdog / Warm Reset Loop Detection * [cold reset] 07h: Legacy Programmable Watchdog [cold, warm or forced cold] 08h: Software Initiated [soft, cold, warm of forced cold] 09h: Setup Reset [Software Initiated Cold] 0Ah: Power Cycle / Full Reset / Global Platform Reset FFh: Unknown
Fwupg Status	6Fh Standard IPMI sensor specific	CAh Kontron OEM Upgrade Status	01h 02h 04h	Upgrade Started Upgrade Passed Upgrade Failed
FPGA RW Status FPGA Heartbeat Remote Sh Health	7Fh OEM Health Severity Status Sensor	24h (Platform Alert)	00h Status not available in current state 01h Healthy 02h Informational fault 03h Minor fault 04h Major fault 05h Critical fault	Event Data2: If the sensor is an aggregation sensor, then event data 2 is used to return the ID of the first sensor from the aggregation that caused the fault. Event Data3: Not used

Sensor Name	Event/Reading type code	Sensor Type	Sensor Specific offset	Event Trigger
Health Status	7Fh OEM Health Severity Status Sensor	24h (Platform Alert)	00h Status not available in current state 01h Healthy 02h Informational fault 03h Minor fault 04h Major fault 05h Critical fault	Event Data2: The ID of the first sensor from the aggregation that caused the fault. Event Data3: Not used Sensor Aggregation List: ID - Sensor Name 11 - Temp Board 12 - Temp Switch 13 - Temp UC 14 - Temp ShMC 15 - Temp SODIMM 17 - Vcc +12V In 18 - Vcc +5V SUS 19 - Vcc +3.3V SUS 20 - Vcc +2.5V SUS 21 - Vcc +1.5V SUS 22 - Vcc +1.25V SUS 23 - Vcc +3.3V 24 - Vcc +1.5V 25 - Vcc +1.2V 26 - Vcc +1.05V 27 - Vcc +1.0V Core 28 - Vcc +1.0V Analog 29 - VBAT +3V 76 - FPGA RW Status 77 - FPGA Heartbeat
Chassis Health	7Fh OEM Health Severity Status Sensor	24h (Platform Alert)	00h Status not available in current state 01h Healthy 02h Informational fault 03h Minor fault 04h Major fault 05h Critical fault	Event Data2: The generator ID of the device in the system that generated the event. Event Data3: Will be the sensor ID of the sensor that generated the event. This is the sensor ID of the device that generated the event.
ShMC Redun State	7Eh OEM ShMC Redundancy State	D4h OEM ShMC Redundanc y State	00h Out Of Service 01h Acitve 02h Going Stand-By 03h Stand-By 04h Activating 05h Shutdown	Event Data2: bit[3:0]: previous state bit[7:4]: Geographical Address 00h = ShMC Slot 0 01h = ShMC Slot 1 Event Data3: bit[7:0]: Cause of transition

Sensor Name	Event/Reading type code	Sensor Type	Sensor Specific offset	Event Trigger
Jumper Status	6Fh Standard IPMI sensor specific	D3h Kontron OEM Jumper Status Sensor	00h 01h 02h 03h 04h 05h 06h 07h	Jumper 00 Present (JP1: 1-2) Jumper 01 Present (JP1: 3-4) Jumper 02 Present (JP1: 5-6) Jumper 03 Present (JP1: 7-8) Jumper 07 Present (JP2: 1-2) Jumper 08 Present (JP2: 3-4) Jumper 09 Present (JP2: 5-6) Jumper 10 Present (JP2: 7-8)
IPMI Info-1	70h OEM Kontron Firmware Info 1	C0h OEM Kontron Firmware Info	00h 01h 02h to 0Eh 0Fh	Event Code Assert Trigger Event Overflow Trigger Code Assert Line (Binary Encoded) Unused, Reserved
IPMI Info-2	71h OEM Kontron Firmware Info 2	C0h OEM Kontron Firmware Info	00h 01h 02h to 0Eh 0Fh	Event Code Assert Trigger Unused Trigger Code Assert File Id (Binary Encoded) Unused, Reserved
Fan Presence Fan Fault	7Dh OEM Kontron Instance-specifier	04h (Fan)	00h Fan1 01h Fan2 02h Fan3 03h Fan4 04h Fan5	0 = State Deasserted 1 = State Asserted State for the fan status described by sensor name, for the fan instance specified by the offset

About Kontron

Kontron, a global leader in embedded computing technology and trusted advisor in IoT, works closely with its customers, allowing them to focus on their core competencies by offering a complete and integrated portfolio of hardware, software and services designed to help them make the most of their applications.

With a significant percentage of employees in research and development, Kontron creates many of the standards that drive the world's embedded computing platforms; bringing to life numerous technologies and applications that touch millions of lives. The result is an accelerated time-to-market, reduced total-cost-of-ownership, product longevity and the best possible overall application with leading-edge, highest reliability embedded technology

Kontron is a listed company. Its shares are traded in the Prime Standard segment of the Frankfurt Stock Exchange and on other exchanges under the symbol "KBC". For more information, please visit: http://www.kontron.com/

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