

Quanta

S4E

Model Name
Short Description
Technical Guide

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[0.2.1] Conventions

[0.2.2] Several different typographic conventions are used throughout this manual. Refer to the following examples for common usage.

[0.2.3] **Bold** type face denotes menu items, buttons and application names.

[0.2.4] *Italic* type face denotes references to other sections, and the names of the folders, menus, programs, and files.

[0.2.5] <Enter> type face denotes keyboard keys.



WARNING!

[0.2.6] Warning information appears before the text it references and should not be ignored as the content may prevent damage to the device.



CAUTION!

[0.2.7] CAUTIONS APPEAR BEFORE THE TEXT IT REFERENCES, SIMILAR TO NOTES AND WARNINGS. CAUTIONS, HOWEVER, APPEAR IN CAPITAL LETTERS AND CONTAIN VITAL HEALTH AND SAFETY INFORMATION.



Note:

[0.2.8] Highlights general or useful information and tips.

[0.2.9]

[0.3.10] Acronyms

[0.3.11] TERM	[0.3.12] DEFINITION
[0.3.13] A/D	[0.3.14] Analog to Digital
[0.3.15] ACPI	[0.3.16] Advanced Configuration and Power Interface
[0.3.17] ASF	[0.3.18] Alerting Standard Forum
[0.3.19] Asserted	[0.3.20] Active-high (positive true) signals are asserted when in the high electrical state (near power potential). Active-low (negative true) signals are asserted when in the low electrical state (near ground potential).
[0.3.21] BIOS	[0.3.22] Basic Input/Output System
[0.3.23] BIST	[0.3.24] Built-In Self Test
[0.3.25] BMC	[0.3.26] At the heart of the IPMI architecture is a microcontroller called the Baseboard management controller (BMC)
[0.3.27] Bridge	[0.3.28] Circuitry connecting one computer bus to another, allowing an agent on one to access the other
[0.3.29] BSP	[0.3.30] Bootstrap processor
[0.3.31] Byte	[0.3.32] 8-bit quantity
[0.3.33] CLI	[0.3.34] Command Line Interface
[0.3.35] CMOS	[0.3.36] In terms of this specification, this describes the PC-AT compatible region of battery-backed 128 bytes of memory, which normally resides on the baseboard

[0.3.37] CPU	[0.3.38] Central Processing Unit
[0.3.39] Deasserted	[0.3.40] A signal is deasserted when in the inactive state. Active-low signal names have “_L” appended to the end of the signal mnemonic. Active-high signal names have no “_L” suffix. To reduce confusion when referring to active-high and active-low signals, the terms one/zero, high/low, and true/false are not used when describing signal states.
[0.3.41] DTC	[0.3.42] Data Transfer Controller
[0.3.43] EEPROM	[0.3.44] Electrically Erasable Programmable Read-Only Memory
[0.3.45] EMP	[0.3.46] Emergency Management Port
[0.3.47] FRU	[0.3.48] Field Replaceable Unit
[0.3.49] GB	[0.3.50] 1024 MB.
[0.3.51] GPIO	[0.3.52] General Purpose Input/Out
[0.3.53] HSC	[0.3.54] Hot-Swap Controller
[0.3.55] Hz	[0.3.56] Hertz (1 cycle/second)
[0.3.57] I ² C	[0.3.58] Inter-Integrated Circuit bus
[0.3.59] IANA	[0.3.60] Internet Assigned Numbers Authority
[0.3.61] IBF	[0.3.62] Input buffer
[0.3.63] ICH	[0.3.64] I/O Controller Hub
[0.3.65] ICMB	[0.3.66] Intelligent Chassis Management Bus

[0.3.67] IERR	[0.3.68] Internal Error
[0.3.69] IP	[0.3.70] Internet Protocol
[0.3.71] IPMB	[0.3.72] Intelligent Platform Management Bus
[0.3.73] IPMI	[0.3.74] Intelligent Platform Management Interface
[0.3.75] ITP	[0.3.76] In-Target Probe
[0.3.77] KB	[0.3.78] 1024 bytes.
[0.3.79] KCS	[0.3.80] Keyboard Controller Style
[0.3.81] KVM	[0.3.82] Keyboard, Video, Mouse
[0.3.83] LAN	[0.3.84] Local Area Network
[0.3.85] LCD	[0.3.86] Liquid Crystal Display
[0.3.87] LCT	[0.3.88] Lower Critical Threshold
[0.3.89] LED	[0.3.90] Light Emitting Diode
[0.3.91] LNCT	[0.3.92] Lower Non-Critical Threshold
[0.3.93] LNRT	[0.3.94] Lower Non-Recoverable Threshold
[0.3.95] LPC	[0.3.96] Low Pin Count
[0.3.97] LSI	[0.3.98] Large Scale Integration
[0.3.99] LUN	[0.3.100] Logical Unit Number
[0.3.101] MAC	[0.3.102] Media Access Control
[0.3.103] MB	[0.3.104] 1024 KB
[0.3.105] MD2	[0.3.106] Message Digest 2 – Hashing Algorithm
[0.3.107] MD5	[0.3.108] Message Digest 5 – Hashing Algorithm – Higher Security
[0.3.109] Ms	[0.3.110] Milliseconds

[0.3.111] Mux	[0.3.112] Multiplexer
[0.3.113] NIC	[0.3.114] Network Interface Card
[0.3.115] NMI	[0.3.116] Non-maskable Interrupt
[0.3.117] NM	[0.3.118] Node Management
[0.3.119] OBF	[0.3.120] Output buffer
[0.3.121] OEM	[0.3.122] Original Equipment Manufacturer
[0.3.123] Ohm	[0.3.124] Unit of electrical resistance
[0.3.125] PDB	[0.3.126] Power Distribution Board
[0.3.127] PEF	[0.3.128] Platform Event Filtering
[0.3.129] PEP	[0.3.130] Platform Event Paging
[0.3.131] PERR	[0.3.132] Parity Error
[0.3.133] POH	[0.3.134] Power-On Hours
[0.3.135] POST	[0.3.136] Power-On Self Test
[0.3.137] PWM	[0.3.138] Pulse Width Modulation
[0.3.139] RAC	[0.3.140] Remote Access Card
[0.3.141] RAM	[0.3.142] Random Access Memory
[0.3.143] RMCP	[0.3.144] Remote Management Control Protocol
[0.3.145] ROM	[0.3.146] Read Only Memory
[0.3.147] RTC	[0.3.148] Real-Time Clock. Component of the chipset on the baseboard.
[0.3.149] RTOS	[0.3.150] Real Time Operation System
[0.3.151] SCI	[0.3.152] Serial Communication Interface
[0.3.153] SDC	[0.3.154] SCSI Daughter Card

[0.3.155] SDR	[0.3.156] Sensor Data Record
[0.3.157] SEEP ROM	[0.3.158] Serial Electrically Erasable Programmable Read-Only Memory
[0.3.159] SEL	[0.3.160] System Event Log
[0.3.161] SERR	[0.3.162] System Error
[0.3.163] SMBus	[0.3.164] A two-wire interface based on the I ² C protocol. The SMBus is a low-speed bus that provides positive addressing for devices, as well as bus arbitration
[0.3.165] SMI	[0.3.166] Server Management Interrupt. SMI is the highest priority non-maskable interrupt
[0.3.167] SMM	[0.3.168] Server Management Mode
[0.3.169] SMS	[0.3.170] Server Management Software
[0.3.171] SNMP	[0.3.172] Simple Network Management Protocol
[0.3.173] SOL	[0.3.174] Serial Over LAN
[0.3.175] UART	[0.3.176] Universal Asynchronous Receiver/Transmitter
[0.3.177] UCT	[0.3.178] Upper Critical Threshold
[0.3.179] UDP	[0.3.180] User Datagram Protocol
[0.3.181] UNCT	[0.3.182] Upper Non-Critical Threshold
[0.3.183] UNRT	[0.3.184] Upper Non-Recoverable Threshold
[0.3.185] WDT	[0.3.186] Watchdog Timer
[0.3.187] Word	[0.3.188] 16-bit quantity

[0.4.189] Safety Information

[0.4.190] Important Safety Instructions

[0.4.191] Read all caution and safety statements in this document before performing any of the instructions.

[0.4.192] Warnings

[0.4.193] Heed safety instructions: Before working with the server, whether using this manual or any other resource as a reference, pay close attention to the safety instructions. Adhere to the assembly instructions in this manual to ensure and maintain compliance with existing product certifications and approvals. Use only the described, regulated components specified in this manual. Use of other products / components will void the UL listing and other regulatory approvals of the product and will most likely result in non-compliance with product regulations in the region(s) in which the product is sold.

[0.4.194] System power on/off: The power button DOES NOT turn off the system AC power. To remove power from system, you must unplug the AC power cord from the wall outlet. Make sure the AC power cord is unplugged before opening the chassis, adding, or removing any components.

[0.4.195] Hazardous conditions, devices and cables: Hazardous electrical conditions may be present on power, telephone, and communication cables. Turn off the server and disconnect the power cord, telecommunications systems, networks, and modems attached to the server before opening it. Otherwise, personal injury or equipment damage can result.

[0.4.196] Electrostatic discharge (ESD) and ESD protection: ESD can damage drives, boards, and other parts. We recommend that you perform all procedures in this chapter only at an ESD workstation. If one is not available, provide some ESD protection by wearing an antistatic wrist strap attached to chassis ground any unpainted metal surface on the server when handling parts.

[0.4.197] ESD and handling boards: Always handle boards carefully. They can be extremely sensitive to electrostatic discharge (ESD). Hold boards only by their edges. After removing a board from its protective wrapper or from the server, place the board component side up on a grounded, static free surface. Use a conductive foam pad if available but not the board wrapper. Do not slide board over any surface.

[0.4.198] Installing or removing jumpers: A jumper is a small plastic encased conductor that slips over two jumper pins. Some jumpers have a small tab on top that can be gripped with fingertips or with a pair of fine needle nosed pliers. If the jumpers do not have such a tab, take care when using needle nosed

pliers to remove or install a jumper; grip the narrow sides of the jumper with the pliers, never the wide sides. Gripping the wide sides can damage the contacts inside the jumper, causing intermittent problems with the function controlled by that jumper. Take care to grip with, but not squeeze, the pliers or other tool used to remove a jumper, or the pins on the board may bend or break.

[0.5.199] Revision History

Refer to the table below for the updates made to this manual.

[0.5.200] DATE	[0.5.201] CHAPTER	[0.5.202] UPDATES
[0.5.203]	[0.5.204]	[0.5.205]
[0.5.206]	[0.5.207]	[0.5.208]

[0.5.209] Copyright

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[0.5.211] Version 1.0 / July, 2012

[0.5.212] Disclaimer

[0.5.213] The information in this document is subject to change without notice. The manufacturer makes no representations or warranties with respect to the contents hereof and specifically disclaims any implied warranties of merchantability or fitness for any particular purpose. Furthermore, the manufacturer reserves the right to revise this publication and to make changes from time to time in the content hereof without obligation of the manufacturer to notify any person of such revision or changes.

[0.5.214] For the latest information and updates please refer to www.quantaqct.com

[0.5.215] All the illustrations in this technical guide are for reference only and are subject to change without prior notice.

[1.0.1] About the Server

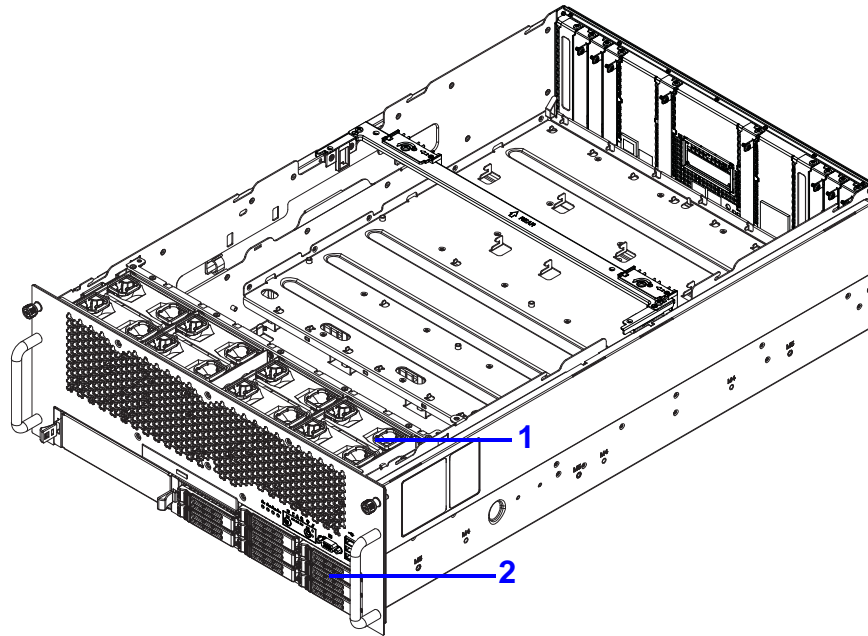
Chapter 1

[1.1.1] A Tour of the System

[1.1.2] System Overview

[1.1.3] The Short Model Name is available as a 2.5" HDD system.

[1.1.4] 2.5" HDD System



[1.1.5] 2.5" HDD System Component Overview

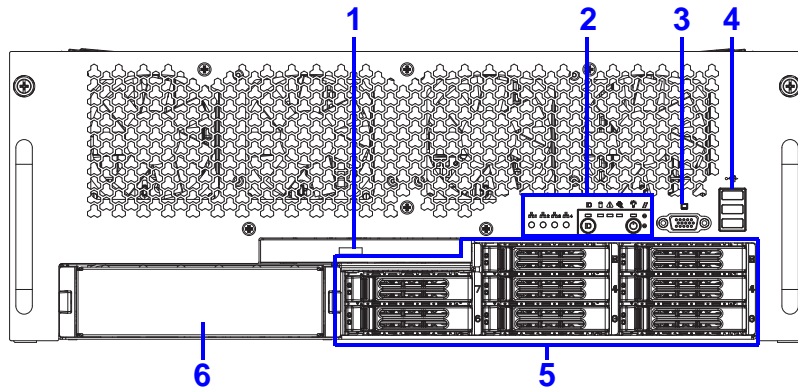
[1.1.6] 2.5" HDD System Component Description

[1.1.7] No.	[1.1.8] ITEM	[1.1.9] DESCRIPTION
1.1.10.1 1	[1.1.11] Fans	[1.1.12] Fan module cage
1.1.122 2	[1.1.13] 2.5 Hard Drives	[1.1.14] 8 2.5" hard disk drives (HDD) cage

[1.1.15] System Front Features

[1.1.16] Configuration

[1.1.17] 2.5" HDD Configuration



[1.1.18] 2.5" HDD Configuration

[1.1.19] 2.5" HDD Configuration

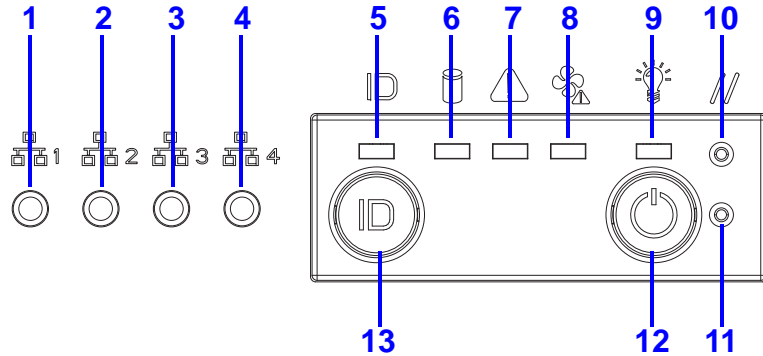
[1.1.20] No.	[1.1.21] ITEM	[1.1.22] DESCRIPTION
11231 1	[1.1.24] Optical Drive	[1.1.25] Insert an optical drive here
11232 2	[1.1.26] Control Panel	[1.1.27] Control system

[1.1.19] 2.5" HDD Configuration (Continued)

[1.1.20] No.	[1.1.21] ITEM	[1.1.22] DESCRIPTION
11273 3	[1.1.28] VGA port	[1.1.29] Connect a monitor to this port
11294 4	[1.1.30] USB port	[1.1.31] USB ports (2.0 compliant)
11315 5	[1.1.32] HDD Bays	[1.1.33] HDD array
11336 6	[1.1.34] Tape Drive Bay	[1.1.35] Insert a tape drive here

[1.1.36] Control Panel

[1.1.37] Control Panel Features



[1.1.38] Control Panel Features

[1.1.39] Control Panel Features

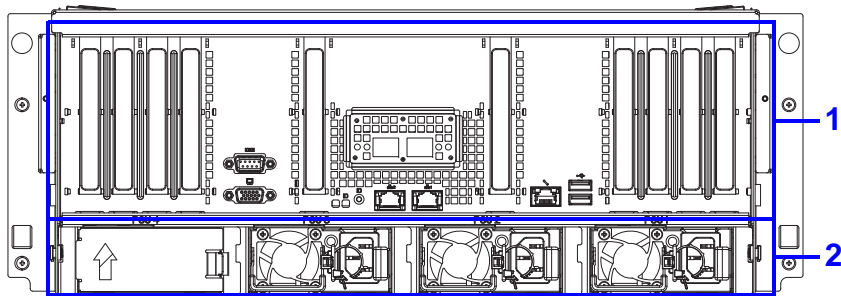
[1.1.40] ITEM	[1.1.41] ICON	[1.1.42] NAME	[1.1.43] DESCRIPTION
1.1.43.1 1		[1.1.44] LAN1 LED	[1.1.45] LAN access
1.1.45.2 2		[1.1.46] LAN2 LED	[1.1.47] LAN access
1.1.47.3 3		[1.1.48] LAN3 LED	[1.1.49] LAN access
1.1.49.4 4		[1.1.50] LAN4 LED	[1.1.51] LAN access

[1.1.39] Control Panel Features (Continued)

[1.1.40] ITEM	[1.1.41] ICON	[1.1.42] NAME	[1.1.43] DESCRIPTION
1.1.51.5 5		[1.1.52] ID LED	[1.1.53] Lights for system identification
1.1.53.6 6		[1.1.54] HDD Activity LED	[1.1.55] Hard disk drive access
1.1.55.7 7		[1.1.56] Fault LED	[1.1.57] Provides critical and non-critical failure notification
1.1.57.8 8		[1.1.58] Fan fault LED	[1.1.59] Amber: On, fan fault [1.1.60] OFF: No fan fault
1.1.60.9 9		[1.1.61] Power LED	[1.1.62] Green: ON, system power on [1.1.63] OFF: system off
1.1.63.10 10		[1.1.64] Reset Button	[1.1.65] Press to restart the system when the system is powered on
1.1.65.11 11		[1.1.66] NMI button	[1.1.67] Asserts NMI
1.1.67.12 12		[1.1.68] Power Button	[1.1.69] Based on System Off, Push Button to PSU and System on [1.1.70] Based on System on, Push Button to PSU and System off
1.1.70.13 13		[1.1.71] Identification Button	[1.1.72] Push to activate ID LED

[1.1.73] System Rear Features

[1.1.74] Configuration

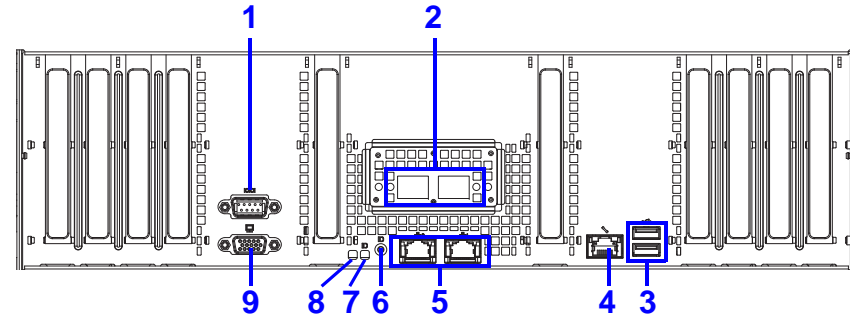


[1.1.75] System Rear Configuration

[1.1.76] System Rear Configuration



[1.1.77] NO.	[1.1.78] ITEM	[1.1.79] DESCRIPTION
11794 1	[1.1.80] I/O ports	[1.1.81] Connect I/O devices to these ports.
11821 2	[1.1.83] Power Supply Unit	[1.1.84] Power supply unit (PSU)

[1.1.85] I/O Features



[1.1.86] System Rear I/O Features

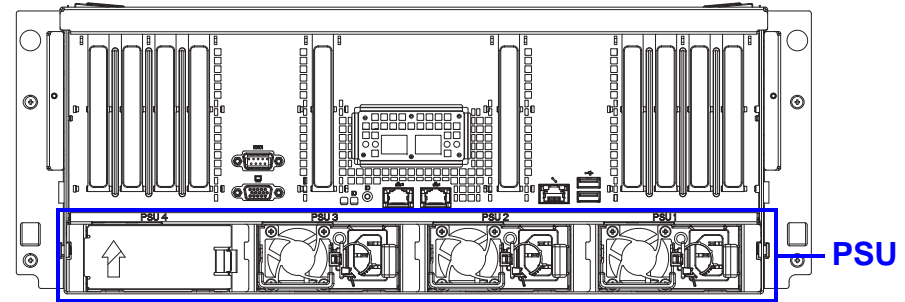
[1.1.87] System Rear I/O Features

[1.1.88] ITEM	[1.1.89] ICON	[1.1.90] NAME	[1.1.91] DESCRIPTION
[1.1.92] 1		[1.1.93] Serial port	[1.1.94] Connect serial devices to this port
[1.1.95] 2		[1.1.96] SFP+ ports	[1.1.97] Connect SFP+ cables
[1.1.98] 3		[1.1.99] USB port	[1.1.100] USB ports (2.0 compliant)
[1.1.101] 4		[1.1.102] Dedicated Management LAN Port	
[1.1.103] 5		[1.1.104] LAN	[1.1.105] LAN access

[1.1.87] System Rear I/O Features (Continued)

[1.1.88] ITEM	[1.1.89] ICON	[1.1.90] NAME	[1.1.91] DESCRIPTION
[1.1.106] 6		[1.1.107] Fault LED	[1.1.108] Provides critical and non-critical failure notification
[1.1.109] 7		[1.1.110] ID LED	[1.1.111] Lights for system identification
[1.1.112] 8		[1.1.113] Identification Button	[1.1.114] Push to activate ID LED
[1.1.115] 9		[1.1.116] VGA port	[1.1.117] Connect a monitor to this port

[1.1.118] Power Sub-System



[1.1.119] PSU Description

[1.1.120] A system can have more than one power supply units (PSU). The primary PSU and redundant backup(s). Redundant backup(s) are optional.

[1.1.121] Power Supply Units by Model

[1.1.122] MODEL	[1.1.123] PSU	[1.1.124] AC INPUT
[1.1.125]	[1.1.126] (1) 1100W high efficiency PSU, 100-240VAC (Default)	[1.1.127] 110/220V



Note:

[1.1.128] To use PSUs other than the models listed make sure to contact the system dealer first and obtain authorized approval.

[1.1.129] LED Status Definitions

[1.1.130] I/O LED Description

[1.1.131] I/O LED Description

[1.1.132] NAME		[1.1.133] COLOR		[1.1.134] Co NDITION	[1.1.135] DESCR PTION
[1.1.136] ID LED		[1.1.137] Blue		[1.1.138] O N	[1.1.139] Unit selected for iden- tification
		[1.1.140] -		[1.1.141] OF F	[1.1.142] No identification requested
[1.1.143] LAN1 LED (upper)	[1.1.144] Link/ Act	[1.1.145] Green		[1.1.146] O N	[1.1.147] LAN Link
		[1.1.148] Green	[1.1.149] Black	[1.1.150] Bli nking	[1.1.151] LAN Access (off when there is traffic)
		[1.1.152] -		[1.1.153] OF F	[1.1.154] Discon nect
	[1.1.155] Speed	[1.1.156] Green		[1.1.157] O N	[1.1.158] Green, link speed is 1000Mbps/sec
		[1.1.159] Amber		[1.1.160] O N	[1.1.161] Amber, link speed is 100Mbps/sec
		[1.1.162] -		[1.1.163] OF F	[1.1.164] OFF, link speed is 10Mbps/sec

[1.1.131] I/O LED Description (Continued)

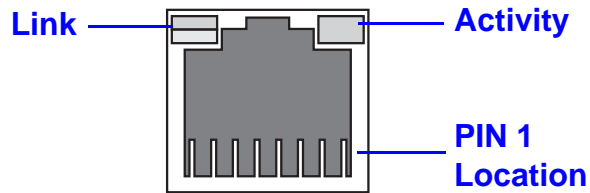
[1.1.132] NAME		[1.1.133] COLOR		[1.1.134] Co NDITION	[1.1.135] DESCRI PTION
[1.1.165] LAN2 LED (lower)	[1.1.166] Link/ Act	[1.1.167] Green		[1.1.168] O N	[1.1.169] LAN Link
		[1.1.170] Green	[1.1.171] Black	[1.1.172] Bli nking	[1.1.173] LAN Access (off when there is traffic)
		[1.1.174] -		[1.1.175] OF F	[1.1.176] Discon nect
	[1.1.177] Speed	[1.1.178] Green		[1.1.179] O N	[1.1.180] Green, link speed is 1000Mbps/sec
		[1.1.181] Amber		[1.1.182] O N	[1.1.183] Amber, link speed is 100Mbps/sec
		[1.1.184] -		[1.1.185] OF F	[1.1.186] OFF, link speed is 10Mbps/sec

[1.1.131] I/O LED Description (Continued)

[1.1.132] NAME		[1.1.133] COLOR		[1.1.134] Co NDITION	[1.1.135] DESCRI PTION
[1.1.187] Service Port (LAN3)L ED	[1.1.188] Link/ Act	[1.1.189] Green		[1.1.190] O N	[1.1.191] LAN Link
		[1.1.192] Green	[1.1.193] Black	[1.1.194] Bli nking	[1.1.195] LAN Access (off when there is traffic)
		[1.1.196] -		[1.1.197] OF F	[1.1.198] Discon nect
	[1.1.199] Speed	[1.1.200] Green		[1.1.201] O N	[1.1.202] Green, link speed is 1000Mbps/sec
		[1.1.203] Amber		[1.1.204] O N	[1.1.205] Amber, link speed is 100Mbps/sec
		[1.1.206] -		[1.1.207] OF F	[1.1.208] OFF, link speed is 10Mbps/sec

[1.1.209] LAN LED

[1.1.210] The system mainboard has one I350 or X540 (optional) Ethernet controller and two 1GbE or 10GbE (optional) ports. Each RJ45 connector has two built-in LEDs. See the following illustration and table for details.



[1.1.211] RJ45 LAN Connector

[1.1.212] 1 GbE and 10 GbE LED Description

[1.1.213]	[1.1.214] 10 GbE CHIP ONBOARD		[1.1.215] 1 GbE CHIP ONBOARD	
[1.1.216]	[1.1.217] Link	[1.1.218] Activity	[1.1.219] Link	[1.1.220] Activity
[1.1.221] 10 GbE LED	[1.1.222] Green	[1.1.223] Green Blinking	[1.1.224] N/A	[1.1.225] N/A
[1.1.226] 1 GbE LED	[1.1.227] Amber	[1.1.228] Green Blinking	[1.1.229] Amber	[1.1.230] Green Blinking
[1.1.231] 100 M	[1.1.232] Off	[1.1.233] Green Blinking	[1.1.234] Green	[1.1.235] Green Blinking

[1.1.236] Control Panel LED

[1.1.237] Control Panel LED Description

[1.1.238] NAME	[1.1.239] COLOR	[1.1.240] CONDITION	[1.1.241] DESCRIPTION
[1.1.242] Power LED	[1.1.243] Green	[1.1.244] ON	[1.1.245] System power on
	[1.1.246]	[1.1.247] OFF	[1.1.248] System power off
[1.1.249] Identification	[1.1.250] Blue	[1.1.251] ON	[1.1.252] Unit selected for identification
	[1.1.253]	[1.1.254] OFF	[1.1.255] No identification requested
[1.1.256] Fault LED	[1.1.257] Amber	[1.1.258] Blinking	[1.1.259] Critical Failure: critical fan, voltage, temperature state.
			[1.1.260] Non-Critical Failure: non-critical fan, voltage, temperature state, CPU thermal trip.
	[1.1.261]	[1.1.262] OFF	[1.1.263] SEL Cleared
			[1.1.264] DC Off
			[1.1.265] Last pending warning or error has been de-asserted.

[1.1.237] Control Panel LED Description (Continued)

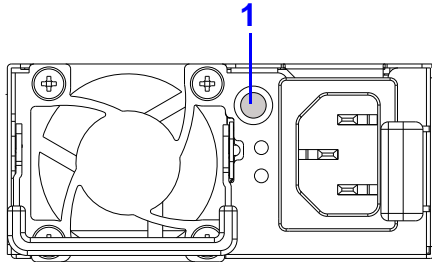
[1.1.238] NAME	[1.1.239] COLOR	[1.1.240] CONDITION	[1.1.241] DESCRIPTION
[1.1.266] HDD Activity	[1.1.267] Green	[1.1.268] Blinking	[1.1.269] Hard disk drive access (only on board SATA port)
	[1.1.270]	[1.1.271] OFF	[1.1.272] No access (non-SAS)
[1.1.273] LAN1 LED	[1.1.274] Green	[1.1.275] ON	[1.1.276] Link
	[1.1.277] Green	[1.1.278] Blinking	[1.1.279] LAN Access (off when there is traffic)
[1.1.280] LAN2 LED	[1.1.281] Green	[1.1.282] ON	[1.1.283] Link
	[1.1.284] Green	[1.1.285] Blinking	[1.1.286] LAN Access (off when there is traffic)

[1.1.287] HDD LED

[1.1.288] HDD LED Status Definitions

[1.1.289] SGPIO LED PATTERN				
[1.1.290]	[1.1.291]	[1.1.292]	[1.1.293]	[1.1.294]

[1.1.295] PSU LED



[1.1.296] PSU LED

[1.1.297] PSU LED Description

[1.1.298] No	[1.1.299] F EATURE	[1.1.300] STATUS	[1.1.301] DESCRIPTION
[1.1.302] 1	[1.1.303] P SU LED	[1.1.304] Green	[1.1.305] Normal operation
		[1.1.306] Yellow	[1.1.307] Fault

[2.0.1] Installing Hardware

Chapter 2

[2.1.1] Safety Measures



WARNING!

[2.1.2] Always ask for assistance to move or lift the system.



WARNING!

[2.1.3] Only perform troubleshooting as authorized by the product documentation, or as directed by a service and support team. Repairs not authorized by warranty may void the warranty and damage the system.



WARNING!

[2.1.4] Always make sure to disconnect the system from the AC electrical source. Powering down the system DOES NOT ensure there is no electrical activity in the system.



WARNING!

[2.1.5] Server components and circuit boards are easily damaged by discharges of static electricity. Working on servers that are connected to a power supply can be extremely dangerous. Follow the guidelines below to avoid personal injury or damage to the server.



WARNING!

[2.1.6] Always disconnect the server from the power outlet whenever you are working inside the server case.



WARNING!

[2.1.7] Wear a grounded wrist strap. If none are available, discharge any personal static electricity by touching the bare metal chassis of the server case, or the bare metal body of any other grounded device.



WARNING!

[2.1.8] Humid environments tend to have less static electricity than dry environments. A grounding strap is warranted whenever danger of static electricity exists.



WARNING!

[2.1.9] Do not touch the components on the unless it is necessary to do so. Do not flex or stress circuit boards.



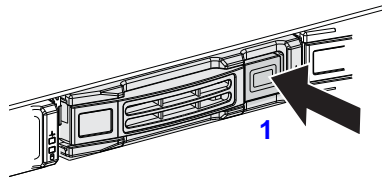
WARNING!

[2.1.10] Leave all replacement components inside their static-proof packaging until you are ready to use them.

[2.2.11] Hard Disk Drives

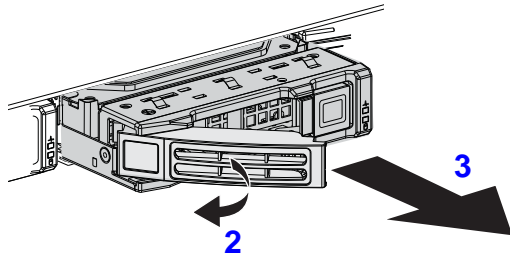
[2.2.12] Removing a 2.5" Swap-able HDD Assembly

2.2.13.1.Press the tray handle button.



[2.2.14] Releasing HDD Tray Handle

2.2.15.2.Pull the HDD tray handle open.

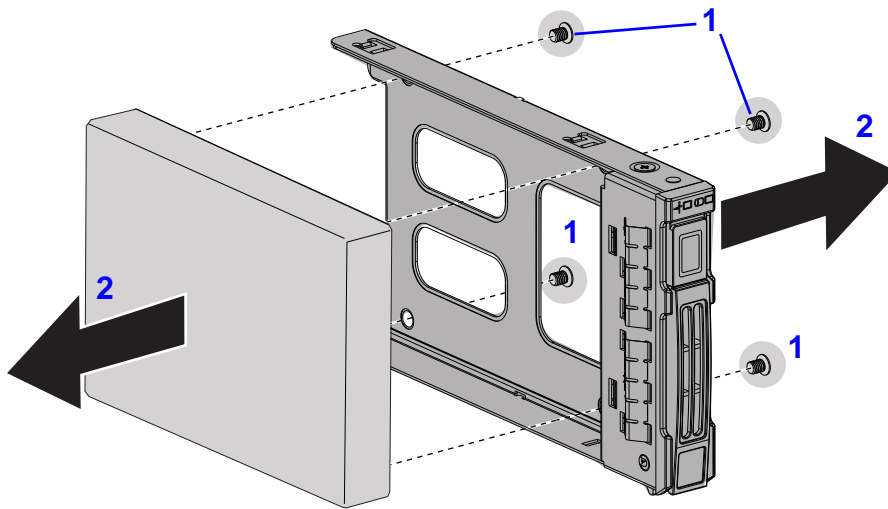


[2.2.16] Removing HDD Assembly

2.2.17.3.Grasp the tray handle and pull the tray out of the system.

2.2.18.1.

[2.2.19] Removing a 2.5" Swap- pable HDD from an HDD Tray

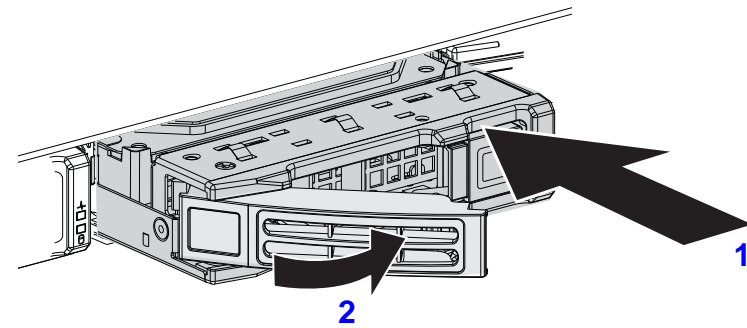


[2.2.20] Disassembling HDD Assembly

2.2.21.1. Remove the screws securing the HDD to the HDD tray.

2.2.22.2. Remove the HDD from the HDD tray.

[2.2.23] Installing a 2.5" Swap- pable HDD Assembly

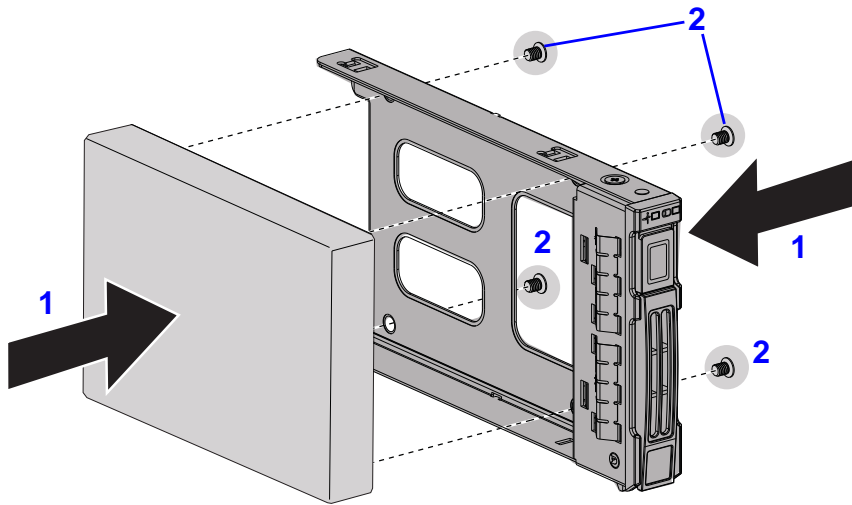


[2.2.24] Installing HDD Assembly

2.2.25.1. Insert the HDD assembly into the system. Make sure the hard drive is fully inserted.

2.2.26.2. Push the tray handle closed.

[2.2.27] Installing a 2.5" Swappable HDD into an HDD Tray



[2.2.28] Assembling HDD Assembly

2.2.29.1. Insert the HDD into the HDD tray.

2.2.30.2. Secure the HDD to the HDD tray with screws.

[2.3.31] Power Supply Unit



CAUTION!

[2.3.32] DISCONNECT THE POWER SUPPLY UNIT FROM THE POWER SOURCE BEFORE REMOVING PSU. FAILURE TO DO SO COULD RESULT IN DAMAGE TO THE EQUIPMENT OR PERSONAL INJURY.

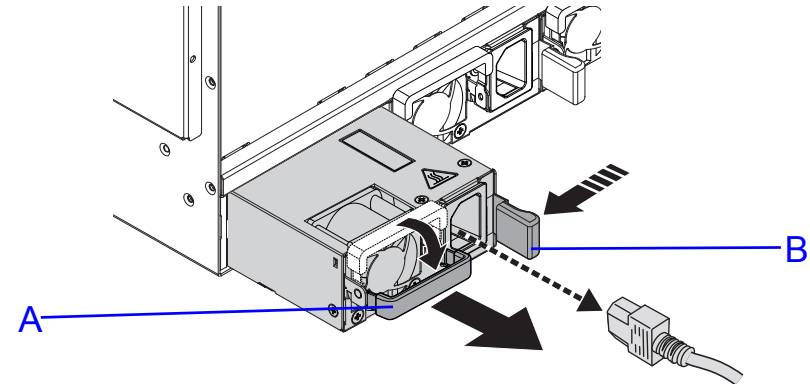


Note:

[2.3.33] The redundant power supply unit can be replaced without shutting down the system.

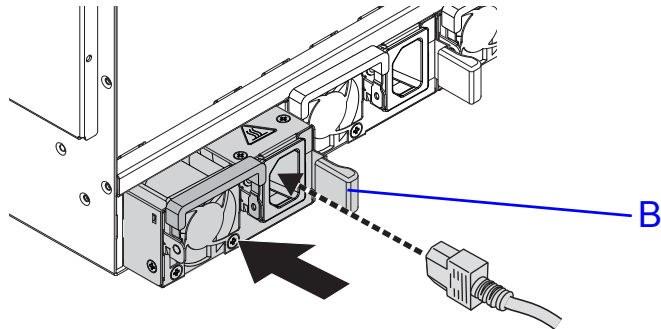
[2.3.34] Removing a Power Supply Unit

- 2.3.35.1. Pull the PSU handle (A) up to the open position.
- 2.3.36.2. Press and hold the locking latch (B) lever.
- 2.3.37.3. Pull the PSU from the system.



[2.3.38] Removing the PSU

[2.3.39] Installing a Power Supply Unit



[2.3.40] Installing a Power Supply Unit

[2.3.41] Insert the power supply unit (PSU) into the system. Make sure the PSU is flush with the system and the locking latch lever (B) is locked in place.

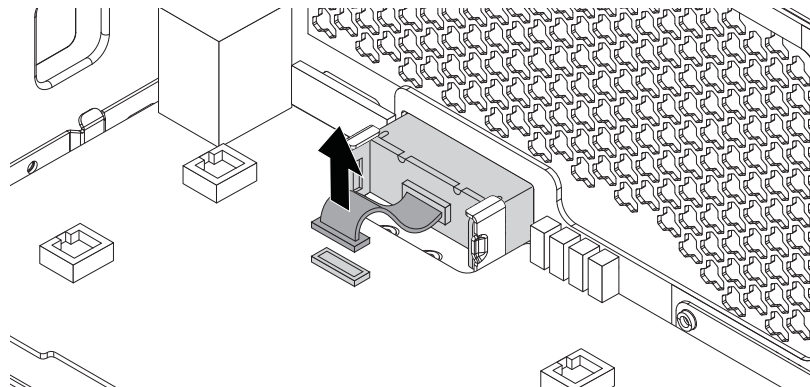
[2.4.42] Operator Panel

[2.4.43] Removing a Operator Panel Assembly

Prerequisite:

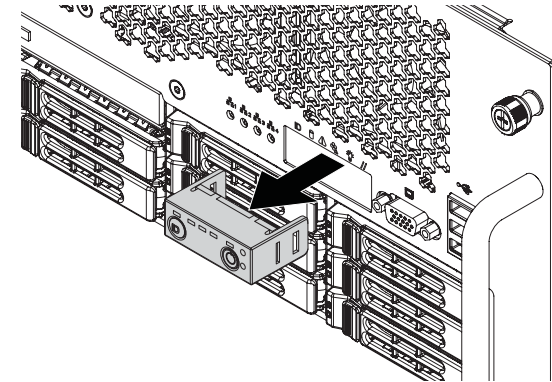
[2.4.44] Remove the top cover. See *Opening the Top Cover*.

2.4.45.1. Disconnect the operator panel cable from the connector on mainboard.



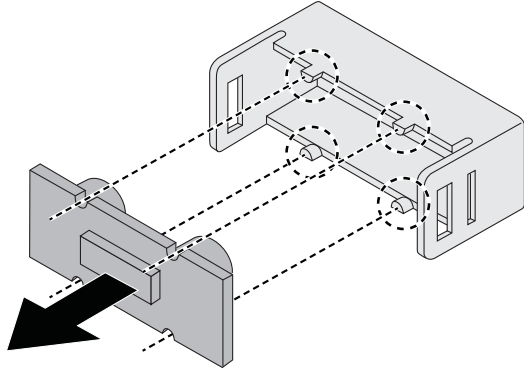
[2.4.46] Disconnecting the Operator Panel Cable

2.4.47.2. Remove the operator panel assembly from the chassis.



[2.4.48] Removing the Operator Panel Assembly

2.4.49.3. Remove the operator panel board from the panel housing.



[2.4.50] Disassembling the Operator Panel

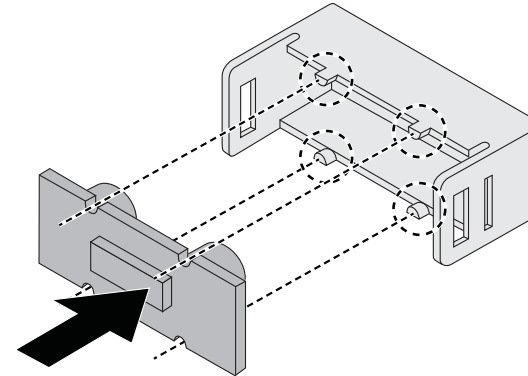
2.4.51.1.

[2.4.52] Installing a Operator Panel Assembly

Prerequisite:

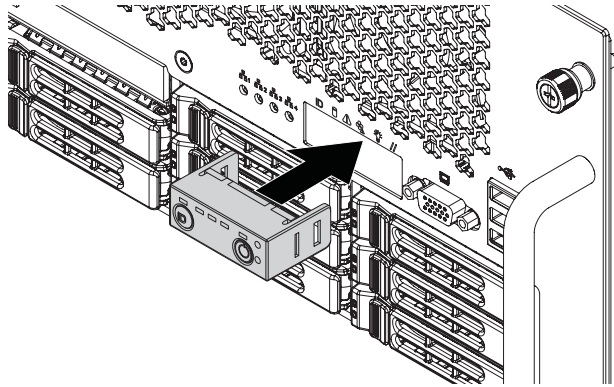
[2.4.53] Remove the top cover. See *Opening the Top Cover*.

2.4.54.1. Secure the operator panel board on the panel housing.



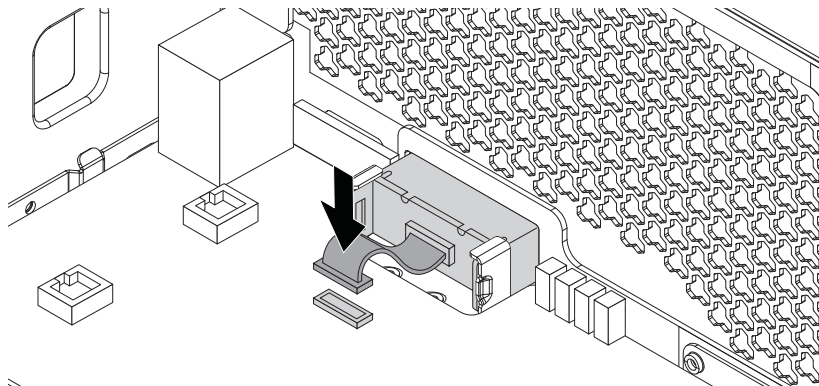
[2.4.55] Assembling the Operator Panel

2.4.56.2. Install the operator panel assembly into the chassis.



[2.4.57] Installing the Operator Panel Assembly

2.4.58.3. Connect the operator panel cable to the connector on mainboard.



[2.4.59] Connecting the Operator Panel Cable

2.4.60.1.

[2.5.61] Top Cover

[2.5.62] Removing a Top Cover

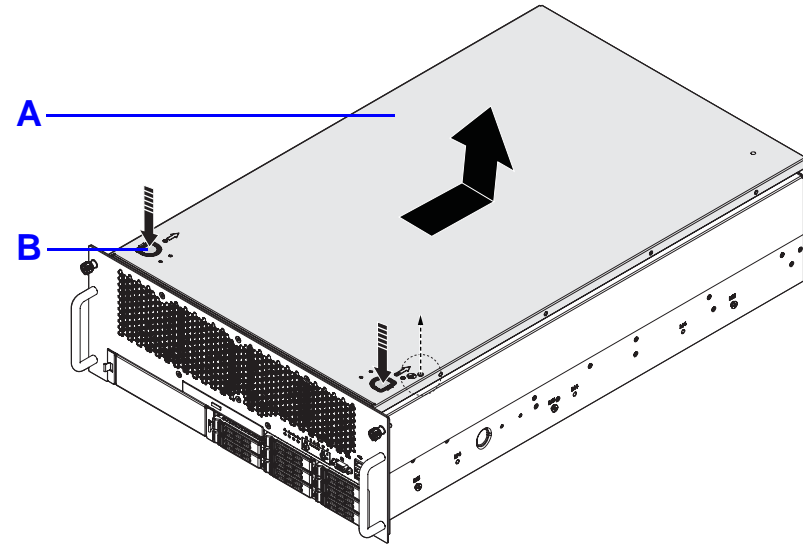
Prerequisite:

[2.5.63] Turn off the system and any attached peripherals.

[2.5.64] Unplug the AC power cables and disconnect all peripherals, LAN lines and any other cables.

2.5.65.1. Remove the screw(s) from the top cover (A).

2.5.66.2. Lift the top cover off the chassis.



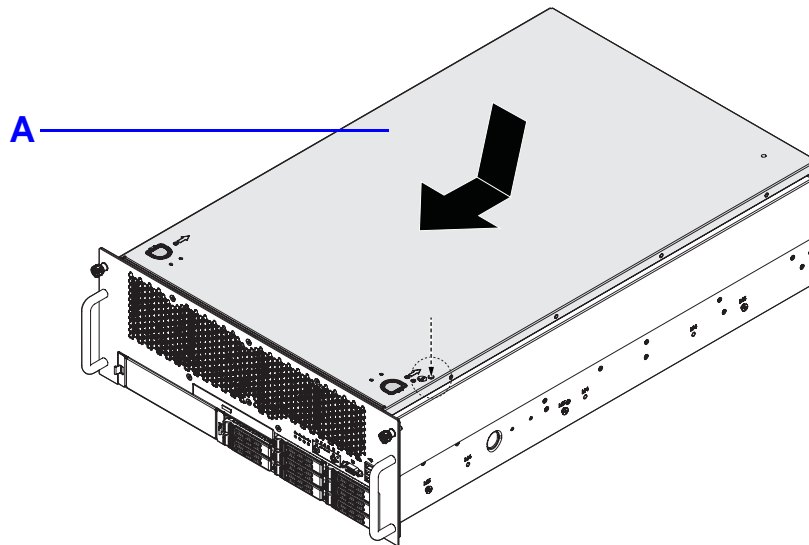
[2.5.67] Opening the Top Cover

[2.5.68] Installing a Top Cover

2.5.69.1. Place the top cover (A) on the chassis.

2.5.70.2. Slide the top cover into place.

2.5.71.3. Install and secure the screw(s) into the top cover.



[2.5.72] Closing the Top Cover

[2.6.73] Processor Heat Sinks

[2.6.74] Removing a Processor Heat Sink



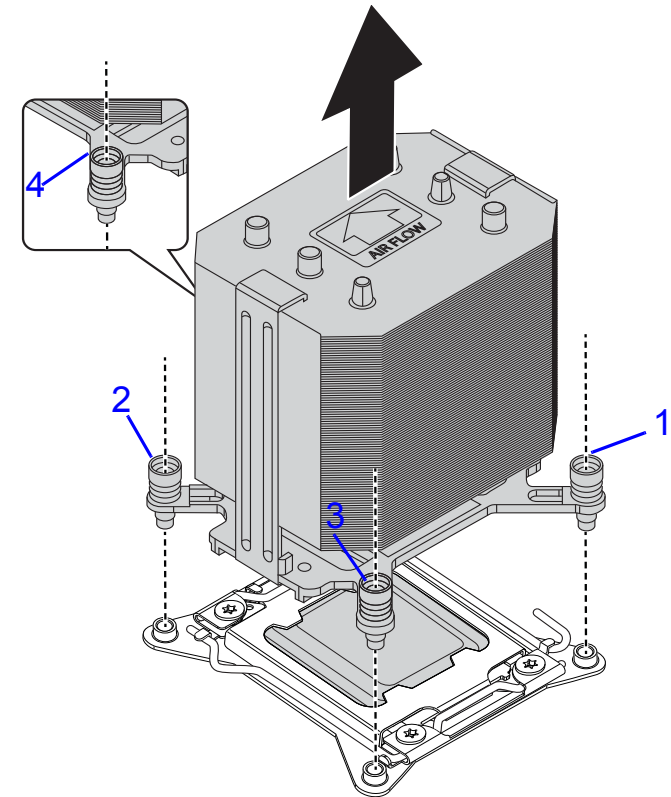
WARNING!

[2.6.75] The heatsink remains hot after the system has been powered down. Allow sufficient time to cool before handling system components.

Prerequisite:

[2.6.76] Remove the top cover. See *Opening the Top Cover*.

2.6.77.1. Loosen the captive screw(s) securing the heat sink to the mainboard.



[2.6.78] Removing the Heat Sink

2.6.79.2. Remove the heat sink.

[2.6.80] Installing a Processor Heat Sink



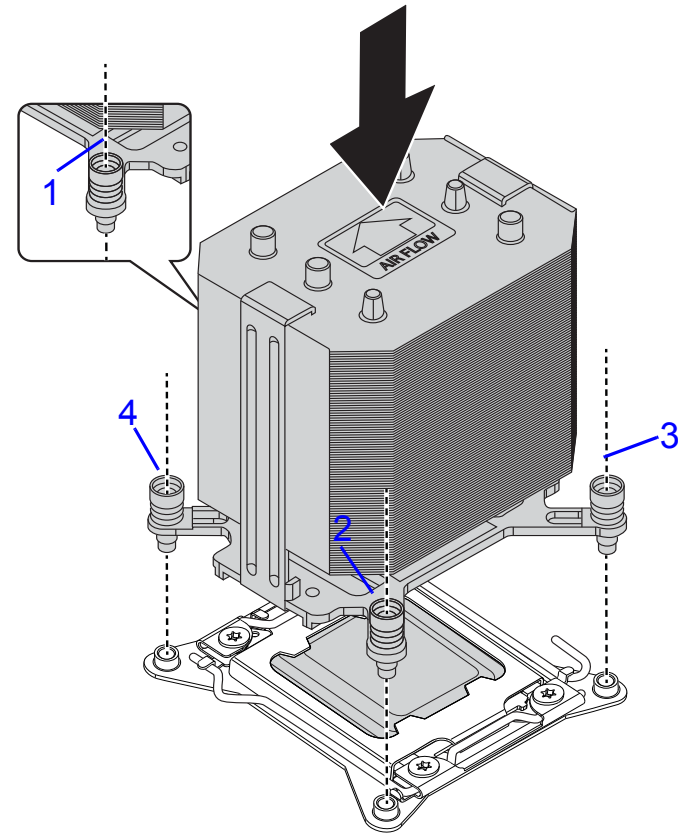
Note:

[2.6.81] To install a processor heat sink on processor number 2, see *Installing an Air Baffle*.

Prerequisite:

[2.6.82] Remove the top cover. See *Opening the Top Cover*.

2.6.83.1. Place the heat sink on the processor.



[2.6.84] Installing Heat Sink

2.6.85.2. Secure the heat sink with the captive screw(s) in the order shown on the image *Installing Heat Sink*.

2.6.86.1.

[2.7.87] Air Baffle

[2.7.88] Removing an Air Baffle

[2.7.89] This procedure applies to the processor number 2 heat sink removal. See the numbering of the processors in *Main-board Connectors and Jumpers* section.



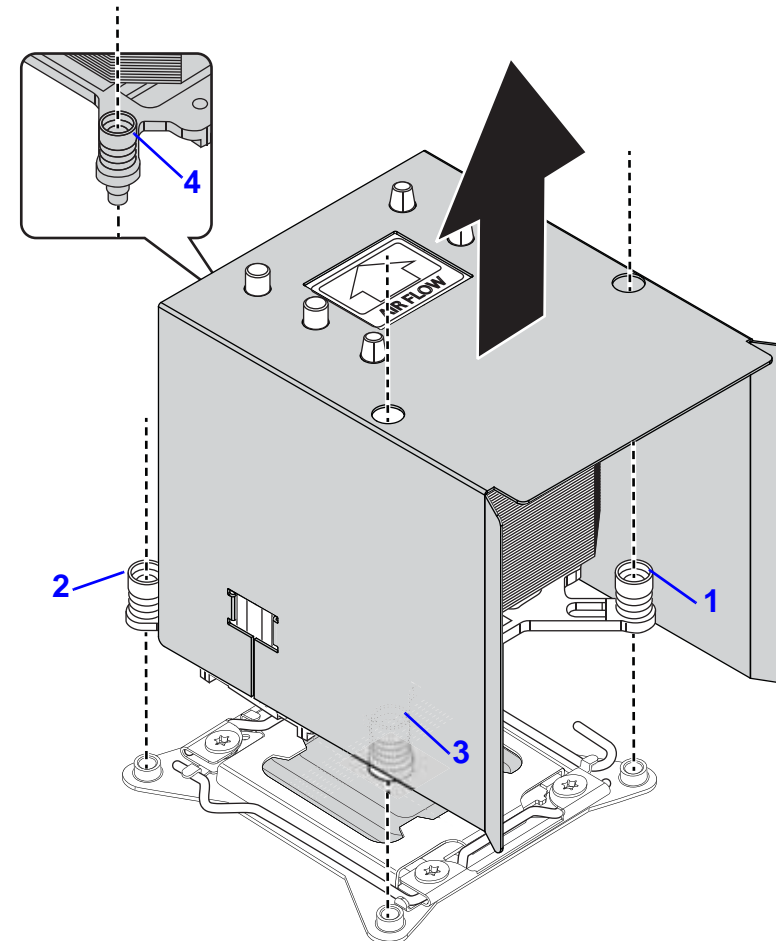
WARNING!

[2.7.90] The heatsink remains hot after the system has been powered down. Allow sufficient time to cool before handling system components.

Prerequisite:

[2.7.91] Remove the top cover. See *Opening the Top Cover*.

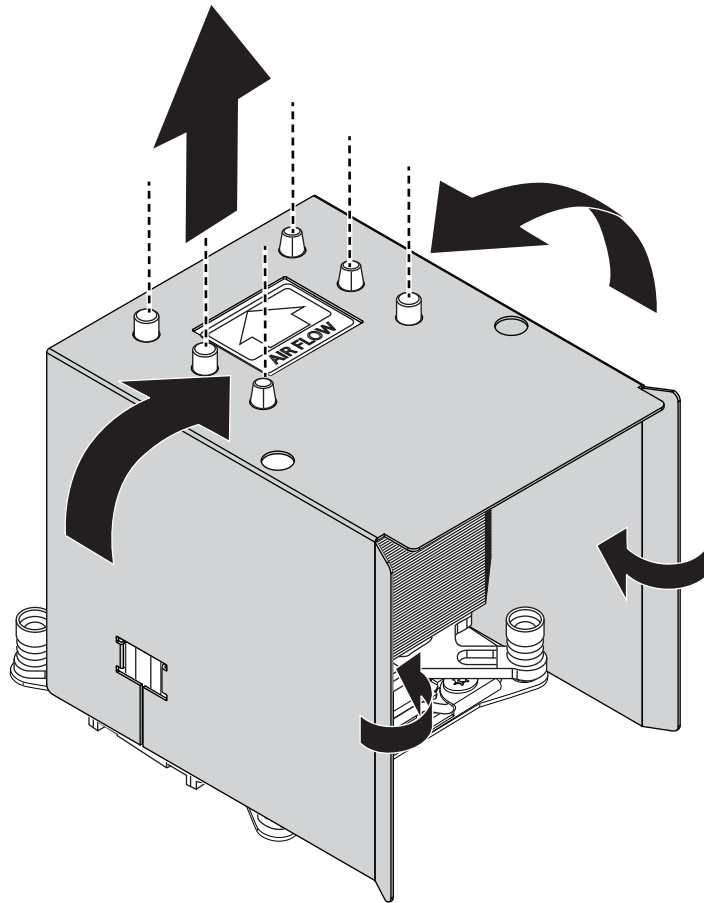
2.7.92.1. Loosen the captive screw(s) securing the heat sink assembly to the mainboard in an order shown on the following image:



[2.7.93] Removing Heat Sink Assembly

2.7.94.2. Remove the heat sink assembly.

2.7.95.3. Release the air baffle from adhesive on top of the heat sink.



[2.7.96] Removing Air Baffle

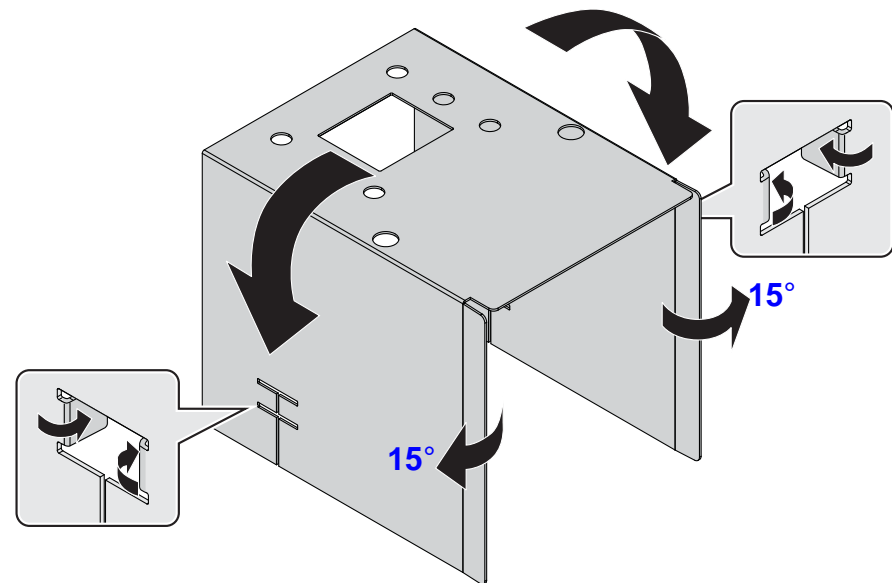
[2.7.97] Installing an Air Baffle

[2.7.98] This procedure applies to the processor number 2 heat sink air baffle. See the numbering of the processors in *Main-board Connectors and Jumpers* section.

Prerequisite:

[2.7.99] Remove the top cover. See *Opening the Top Cover*.

2.7.100.1. Leaving the adhesive area inside, fold the air baffle as shown on the following image:



[2.7.101] Folding Air Baffle

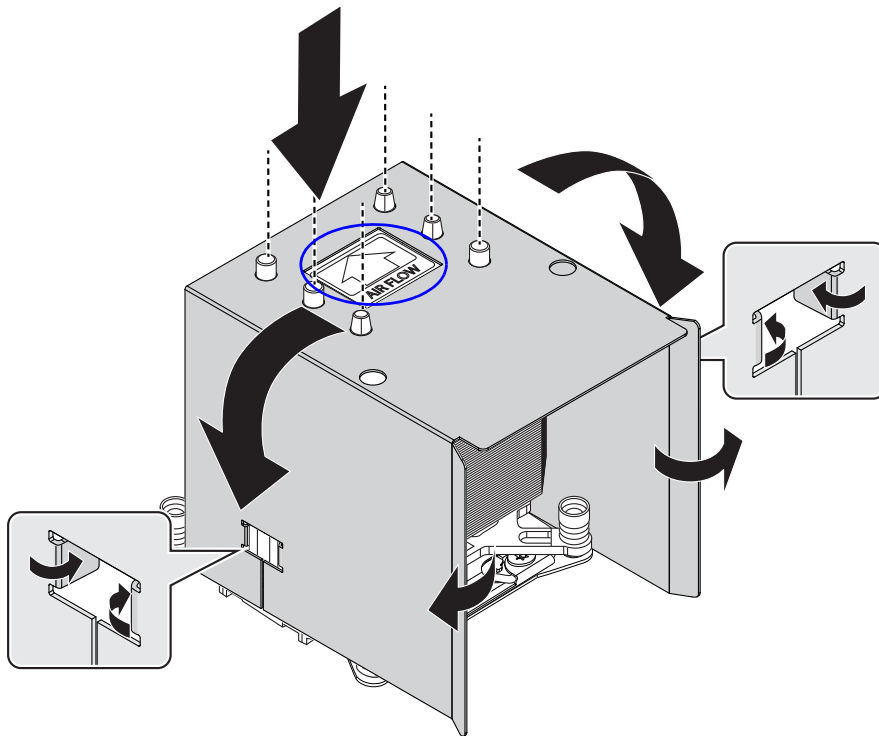


WARNING!

[2.7.102] Before installing an air baffle on heat sink, take a note of the AIR FLOW arrow on top of the heat sink to avoid blocking proper system cooling. See *Sealing Air Baffle*.

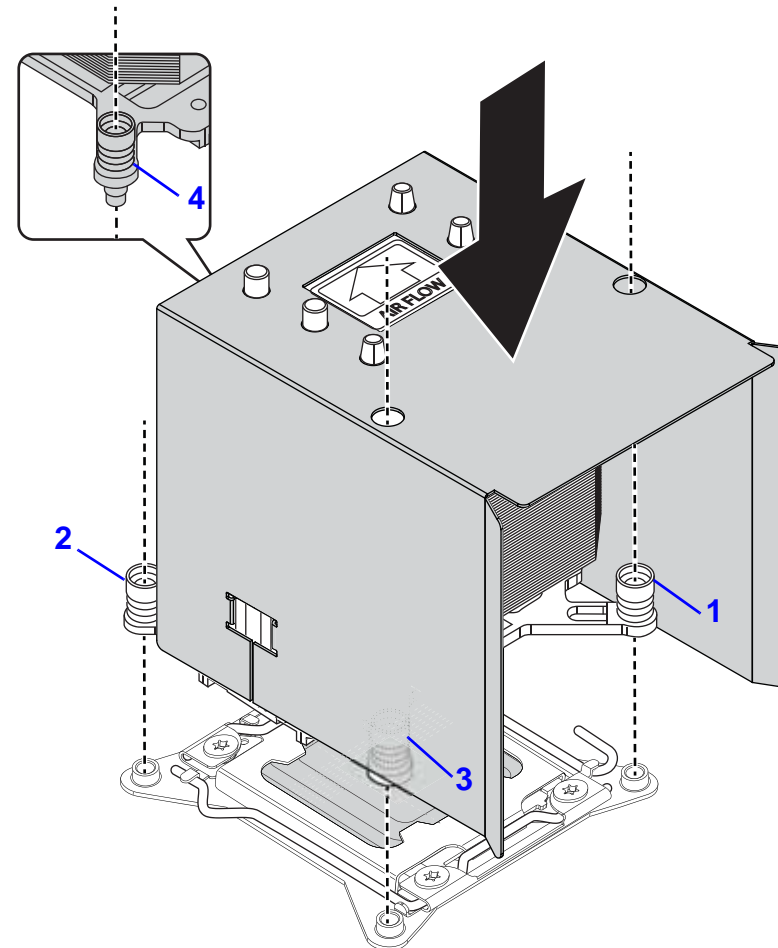
2.7.103.1. Align holes on air baffle with the pins on top of the heat sink.

2.7.104.2. Seal air baffle on heat sink. Make sure the sides of the air baffle are secured.



[2.7.105] Sealing Air Baffle

2.7.106.1. Secure heat sink assembly with captive screw(s) in the order shown on the image *Installing Heat Sink Assembly*.



[2.7.107] Installing Heat Sink Assembly

[2.8.108] Processors

[2.8.109] Removing a Processor



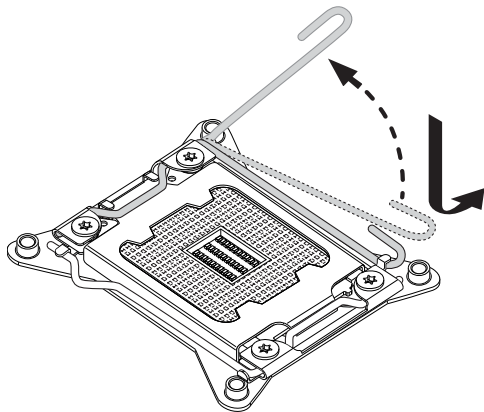
WARNING!

[2.8.110] The processor remains hot after the system has been powered down. Allow sufficient time to cool before handling system components.

Prerequisite:

[2.8.111] Remove the CPU heatsink. See *Removing a Heatsink*.

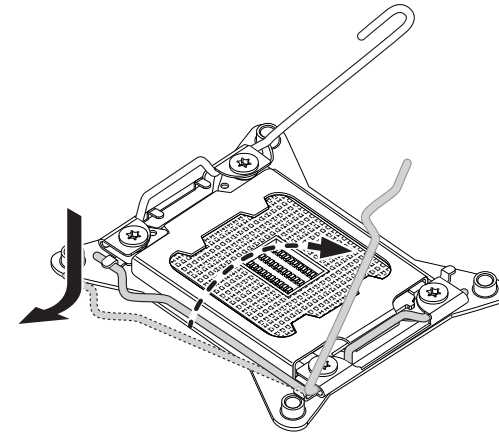
2.8.112.1. Press the unlocking lever of the processor socket down and upwards as shown.



[2.8.113] Release Unlocking Lever

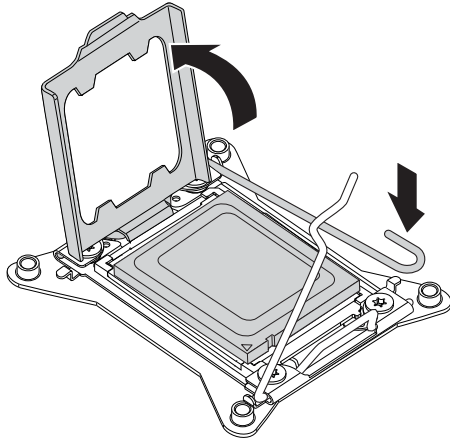
2.8.114.2. Press the locking lever of the processor socket down and upwards.

2.8.115.3. Pull the locking lever fully open as shown.



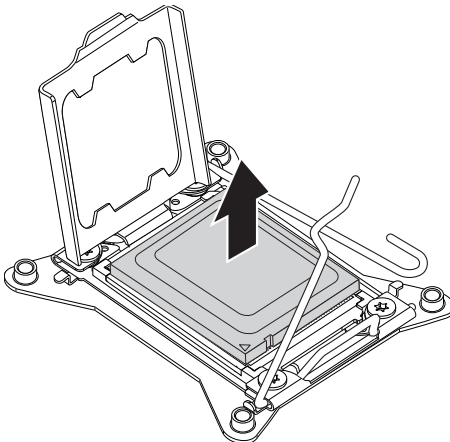
[2.8.116] Release Locking Lever

2.8.117.4. Press down on unlocking lever and lift load plate fully open.



[2.8.118] Load Plate Opening

2.8.119.5. Remove processor.



[2.8.120] Processor Removal

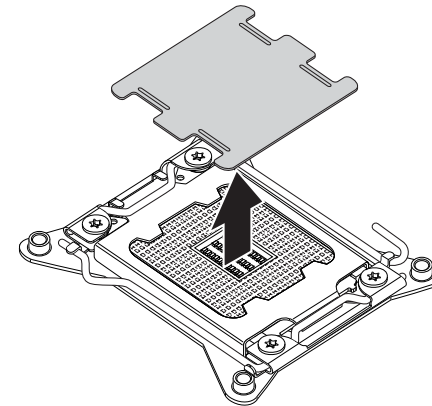
[2.8.121] Installing a Processor



Note:

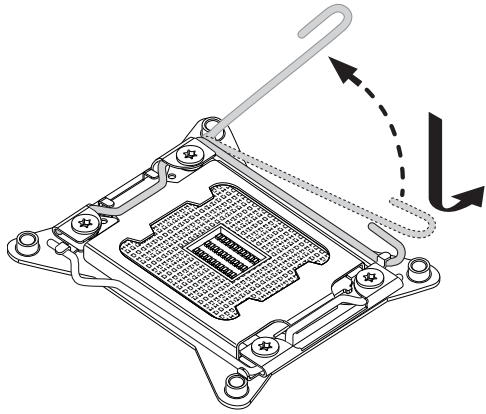
[2.8.122] Use the socket cover to protect the socket when the socket is empty.

2.8.123.1. Remove the dust cover.



[2.8.124] Dust Cover Removal

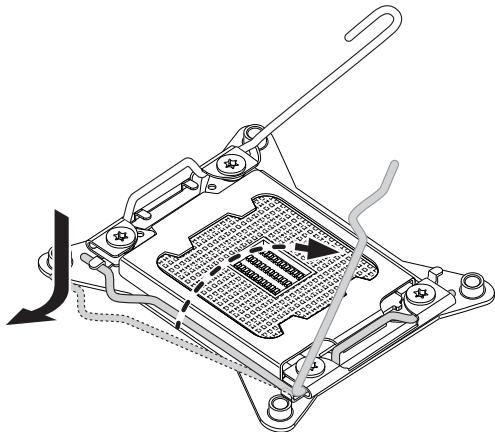
2.8.125.1. Press the unlocking lever of the processor socket down and upwards as shown.



[2.8.126] Release Unlocking Lever

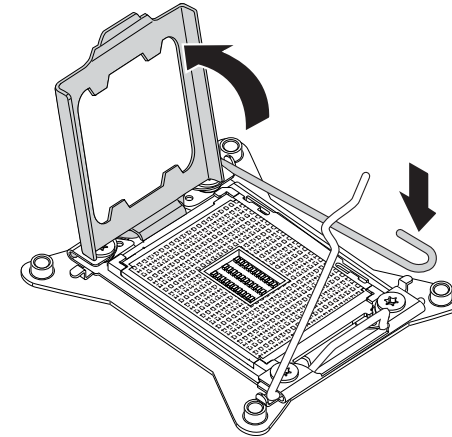
2.8.127.2. Press the locking lever of the processor socket down and upwards.

2.8.128.3. Pull the locking lever fully open as shown.



[2.8.129] Release Locking Lever

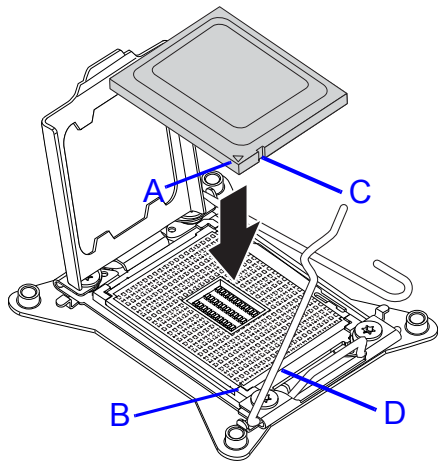
2.8.130.4. Press down on unlocking lever and lift load plate fully open.



[2.8.131] Load Plate Opening

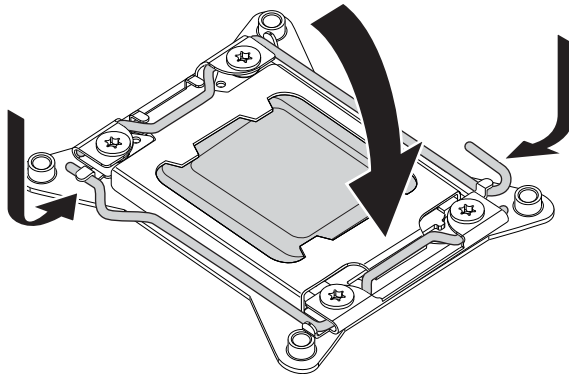
2.8.132.5. Locate the pin-1 (A) on processor and the pin-1 (B) corner of the socket.

2.8.133.6. Locate the indent (C) on processor and corresponding tab (D) on socket.



[2.8.134] Installing Processor

2.8.135.7. Replace the processor bracket, unlocking and locking levers to lock the processor in place.



[2.8.136] Replacing Processor Bracket



Note:

[2.8.137] Use the socket cover to protect the socket when the socket is empty.

2.8.138.8. Repeat steps 1 through 7 for the remaining processors.

[2.9.139] Memory Modules

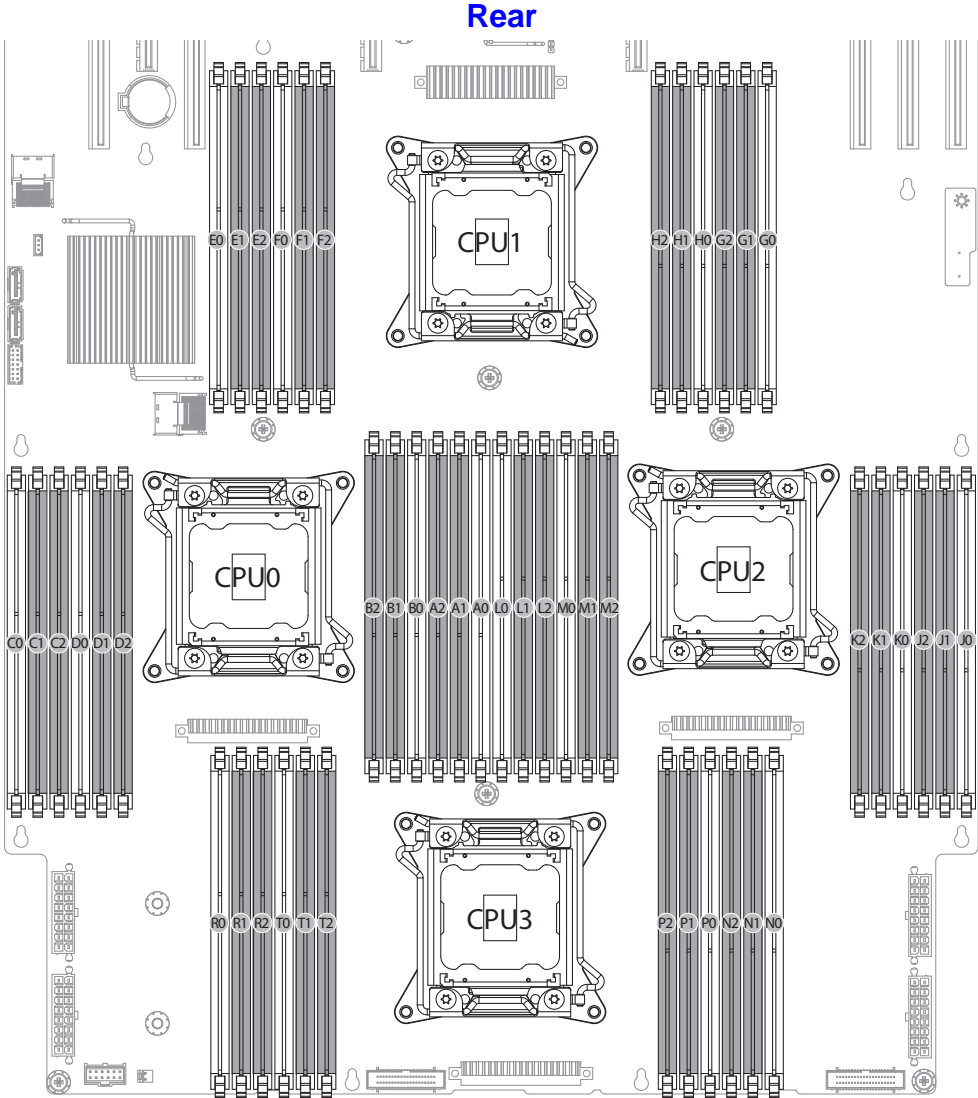


WARNING!

[2.9.140] Mainboard is supplied with all DIMM slots populated with dummy DIMMs for proper air flow. When installing and replacing memory modules, only remove those dummy DIMMs that are to be directly replaced. All DIMM slots must be occupied at all times by either a memory module or dummy DIMM.

[2.9.141] General Guidelines

[2.9.142] All multi-node servers have specific rules for the population of memory on the individual mainboards that must be obeyed. Refer to the following individual server rules for information on how to populate the particular server required



[2.9.143] Memory Population Configuration

[2.9.144] Memory Support List

[2.9.145] DIMM Configuration Parameters

[2.9.146] PARAMETER	[2.9.147] POSSIBLE VALUE
[2.9.148] DIMM Type	[2.9.149] RDIMM (w/ECC) or UDIMM (w or w/o ECC) or LRDIMM
[2.9.150] DIMM Construction	<p>[2.9.151] RDIMM raw cards:</p> <ul style="list-style-type: none"> A (1Rx8), B (2Rx8), C (1Rx4), D (2Rx4), E/J (2Rx4), F/AB (4Rx4), or H (4Rx8) <p>[2.9.152] UDIMM raw cards:</p> <ul style="list-style-type: none"> A (1Rx8), B (2Rx8), C (1Rx16), D (1Rx8 w/ECC), E (2Rx8 w/ECC) <p>[2.9.153] LRDIMM raw cards:</p> <ul style="list-style-type: none"> C/K (4Rx4 DDP), B (4Rx8 P)
[2.9.154] DIMM Frequencies	[2.9.155] DDR3-800, DDR3-1066, DDR3-1333, DDR3-1600

[2.9.156] Memory Population Configurations

[2.9.157] RDIMM Population Configurations within a Channel (Three Slots per Channel)

[2.9.158] CONFIGURATION NUMBER	[2.9.159] POR SPEED	[2.9.160] 1N OR 2N	[2.9.161] DIMM2	[2.9.162] DIMM1	[2.9.163] DIMM0
[2.9.164] 1	<ul style="list-style-type: none"> A: DDR3 - 1333, 1066 B: DDR3 -1600, 1333, 1066 	[2.9.165] 1N	[2.9.166] Empty	[2.9.167] Empty	[2.9.168] Single-Rank
[2.9.169] 2	<ul style="list-style-type: none"> A: DDR3 - 1333, 1066 [2.9.170] B: DDR3-1600, 1333, 1066 	[2.9.171] 1N	[2.9.172] Empty	[2.9.173] Empty	[2.9.174] Dual-rank

**[2.9.157] RDIMM Population Configurations within a Channel
(Three Slots per Channel) (Continued)**

[2.9.158] CONFIGURATION NUMBER	[2.9.159] POR SPEED	[2.9.160] 1N OR 2N	[2.9.161] DIMM2	[2.9.162] DIMM1	[2.9.163] DIMM0
[2.9.175] 3	<ul style="list-style-type: none"> A: DDR3 - 1066 B: DDR3 -1066 	[2.9.176] 1N	[2.9.177] Empty	[2.9.178] Empty	[2.9.179] Quad-rank
[2.9.180] 4	<ul style="list-style-type: none"> A: DDR3 -1333, 1066 B: DDR3 - 1333, 1066 	[2.9.181] 1N	[2.9.182] Empty	[2.9.183] Single-rank	[2.9.184] Single-rank
[2.9.185] 5	<ul style="list-style-type: none"> A: DDR3 -1333, 1066 <p>[2.9.186] B: DDR3 - 1333, 1066</p>	[2.9.187] 1N	[2.9.188] Empty	[2.9.189] Single-rank	[2.9.190] Dual-rank

**[2.9.157] RDIMM Population Configurations within a Channel
(Three Slots per Channel) (Continued)**

[2.9.158] CONFIGURATION NUMBER	[2.9.159] POR SPEED	[2.9.160] 1N OR 2N	[2.9.161] DIMM2	[2.9.162] DIMM1	[2.9.163] DIMM0
[2.9.191] 6	<ul style="list-style-type: none"> A: DDR3 -1333, 1066 <p>[2.9.192] B: DDR3 - 1333, 1066</p>	[2.9.193] 1N	[2.9.194] Empty	[2.9.195] Dual-rank	[2.9.196] Dual-rank
[2.9.197] 7	<ul style="list-style-type: none"> A: DDR3 -800 B: DDR3 -800 	[2.9.198] 1N	[2.9.199] Empty	[2.9.200] Single-rank	[2.9.201] Quad-rank
[2.9.202] 8	<ul style="list-style-type: none"> A: DDR3 -800 <p>[2.9.203] B: DDR3-800</p>	[2.9.204] 1N	[2.9.205] Empty	[2.9.206] Dual-rank	[2.9.207] Quad-rank

**[2.9.157] RDIMM Population Configurations within a Channel
(Three Slots per Channel) (Continued)**

[2.9.158] CONFIGURATION NUMBER	[2.9.159] POR SPEED	[2.9.160] 1N OR 2N	[2.9.161] DIMM2	[2.9.162] DIMM1	[2.9.163] DIMM0
[2.9.208] 9	<ul style="list-style-type: none"> A: DDR3-800 [2.9.209] B: DDR3-800	[2.9.210] 1N	[2.9.211] Empty	[2.9.212] Quad-rank	[2.9.213] Quad-rank
[2.9.214] 10	<ul style="list-style-type: none"> A: DDR3-800 [2.9.215] B: DDR3-800	[2.9.216] 1N	[2.9.217] Single-rank	[2.9.218] Single-rank	[2.9.219] Single-rank
[2.9.220] 11	<ul style="list-style-type: none"> A: DDR3-800 [2.9.221] B: DDR3-800	[2.9.222] 1N	[2.9.223] Single-rank	[2.9.224] Single-rank	[2.9.225] Dual-rank
[2.9.226] 12	<ul style="list-style-type: none"> A: DDR3-800 [2.9.227] B: DDR3-800	[2.9.228] 1N	[2.9.229] Single-rank	[2.9.230] SDual-rank	[2.9.231] Dual-rank

**[2.9.157] RDIMM Population Configurations within a Channel
(Three Slots per Channel) (Continued)**

[2.9.158] CONFIGURATION NUMBER	[2.9.159] POR SPEED	[2.9.160] 1N OR 2N	[2.9.161] DIMM2	[2.9.162] DIMM1	[2.9.163] DIMM0
[2.9.232] 13	<ul style="list-style-type: none"> A: DDR3-800 [2.9.233] B: DDR3-800	[2.9.234] 1N	[2.9.235] Dual-rank	[2.9.236] Dual-rank	[2.9.237] Dual-rank

**[2.9.238] UDIMM Population Configurations within a Channel
(Three Slots per Channel)**

[2.9.239] CONFIGURATION NUMBER	[2.9.240] POR SPEED	[2.9.241] 1N OR 2N	[2.9.242] DIMM2	[2.9.243] DIMM1	[2.9.244] DIMM0
[2.9.245] 1	<ul style="list-style-type: none"> A: DDR3-1333, 1066 B: DDR3-1600, 1333, 1066 	[2.9.246] 1N	[2.9.247] Empty	[2.9.248] Empty	[2.9.249] Single-Rank

**[2.9.238] UDIMM Population Configurations within a Channel
(Three Slots per Channel) (Continued)**

[2.9.239] CONFIGURATION NUMBER	[2.9.240] POR SPEED	[2.9.241] 1N OR 2N	[2.9.242] DIMM2	[2.9.243] DIMM1	[2.9.244] DIMM0
[2.9.250] 2	<ul style="list-style-type: none"> • A: DDR3 - 1333, 1066 [2.9.251] B: DDR3- 1600, 1333, 1066 	[2.9.252] 1N	[2.9.253] Empty	[2.9.254] Empty	[2.9.255] Dual-rank
[2.9.256] 3	<ul style="list-style-type: none"> • A: DDR3 - 1333, 1066 • B: DDR3 -1066, 1333, 1066 	[2.9.257] 2N	[2.9.258] Empty	[2.9.259] Single- rank	[2.9.260] Single- rank

**[2.9.238] UDIMM Population Configurations within a Channel
(Three Slots per Channel) (Continued)**

[2.9.239] CONFIGURATION NUMBER	[2.9.240] POR SPEED	[2.9.241] 1N OR 2N	[2.9.242] DIMM2	[2.9.243] DIMM1	[2.9.244] DIMM0
[2.9.261] 4	<ul style="list-style-type: none"> • A: DDR3 - 1333, 1066 • B: DDR3 -1066, 1333, 1066 	[2.9.262] 2N	[2.9.263] Empty	[2.9.264] Single- rank	[2.9.265] Dual-rank
[2.9.266] 5	<ul style="list-style-type: none"> • A: DDR3 - 1333, 1066 • B: DDR3 -1066, 1333, 1066 	[2.9.267] 2N	[2.9.268] Empty	[2.9.269] Dual-rank	[2.9.270] Dual-rank

[2.9.271] Removing Memory Modules



CAUTION!

[2.9.272] HANDLE THE MEMORY MODULE BY THE EDGES AT ALL TIMES.



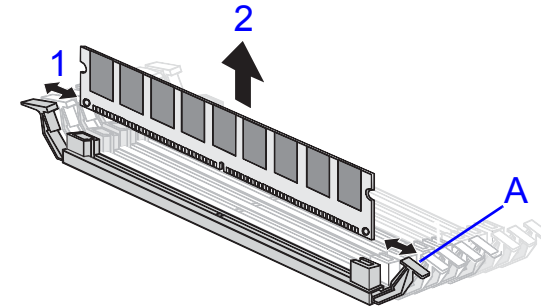
WARNING!

[2.9.273] Memory modules remain hot after the system is powered down. Allow sufficient time for the memory modules to cool before handling system components.

Prerequisite:

[2.9.274] Remove the top cover. See *Opening the Top Cover*.

2.9.275.1. Press down on the two memory module slot levers (A). The memory module partially ejects.

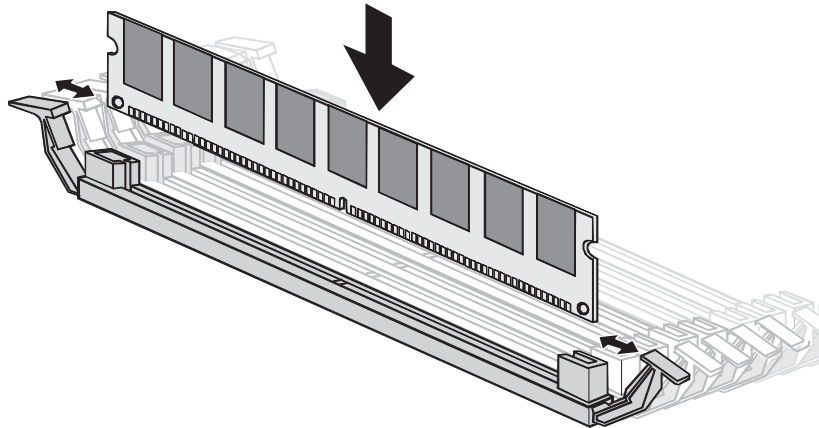


[2.9.276] Removing Memory Modules

2.9.277.2. Lift out the memory module.

[2.9.278] Installing Memory Modules

2.9.279.1. Push the memory module firmly into the memory module slot. The locking latches should automatically close over the edges of the memory board when fully inserted into the slot.



[2.9.280] Installing Memory Modules



CAUTION!

[2.9.281] HANDLE THE MEMORY MODULE BY THE EDGES AT ALL TIMES.



Note:

[2.9.282] Make sure the notch in the memory board aligns with the obstruction in the memory slot.

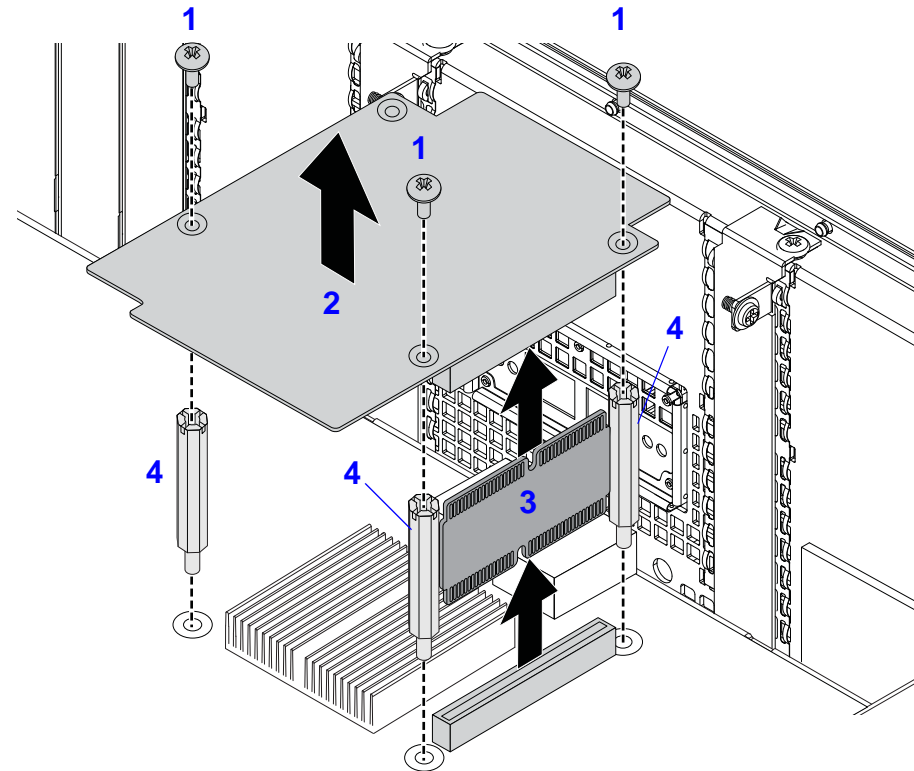
[2.10.283] Expansion Cards

[2.10.284] Removing a 10G/40G SFP & Mezzanine Assembly

Prerequisite:

[2.10.285] Remove the top cover.

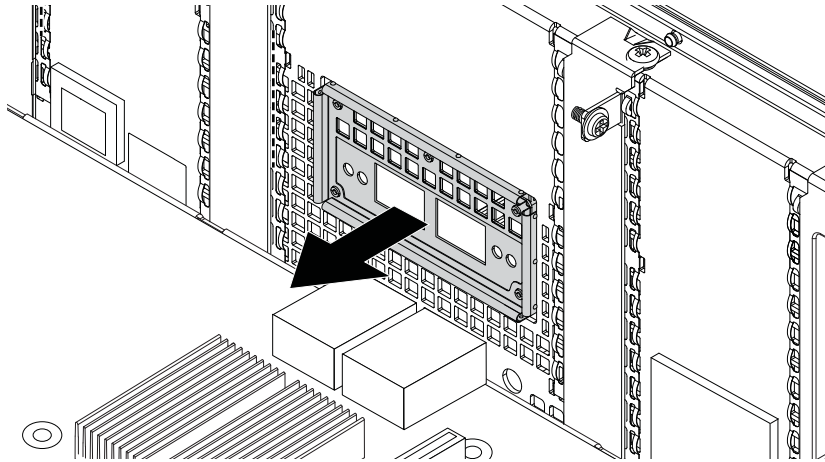
2.10.286.1.Remove screw(s) from mainboard standoffs.



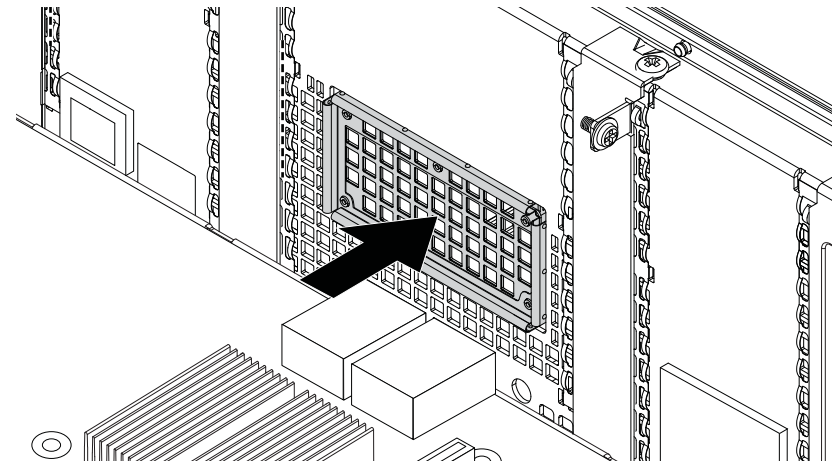
[2.10.287] Removing a Mezzanine Assembly

2.10.288.2.Disconnect SAS cables from mezzanine board connectors.

- 2.10.289.3.Remove mezzanine board from mainboard standoff(s).
- 2.10.290.4.Remove linking board from mainboard connector.
- 2.10.291.1.Remove standoff(s) from mainboard.
- 2.10.292.2.Replace the I/O shield on the rear panel.



[2.10.293] Rear Panel I/O Shield (1 of 2)



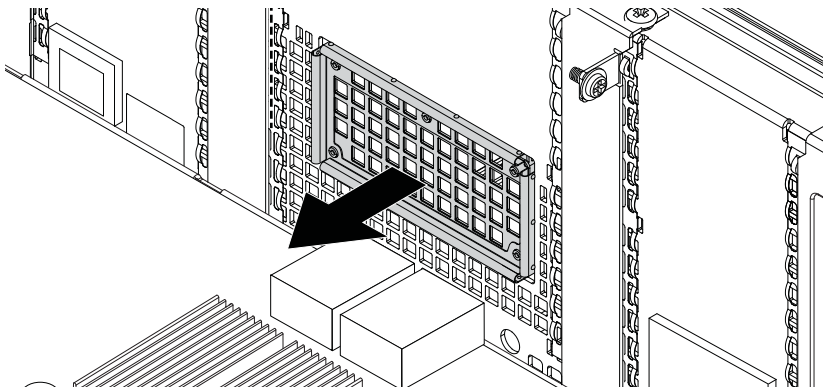
[2.10.294] Rear Panel I/O Shield (2 of 2)

[2.10.295] Installing a 10G/40G SFP & Mezzanine Assembly

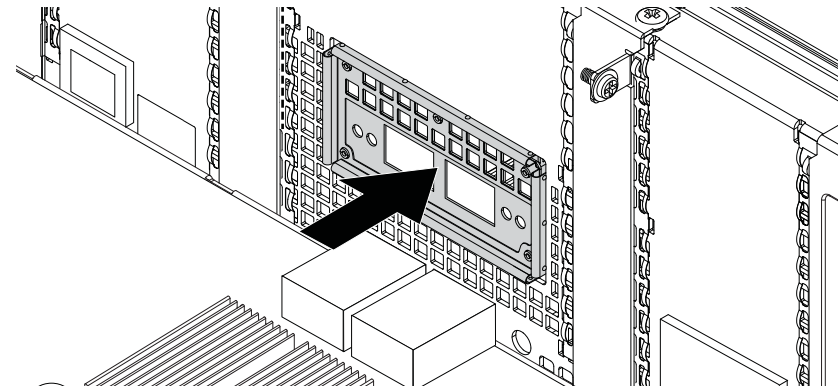
Prerequisite:

[2.10.296] Remove the top cover.

2.10.297.1. Replace the I/O shield to provide openings for the mezzanine card.

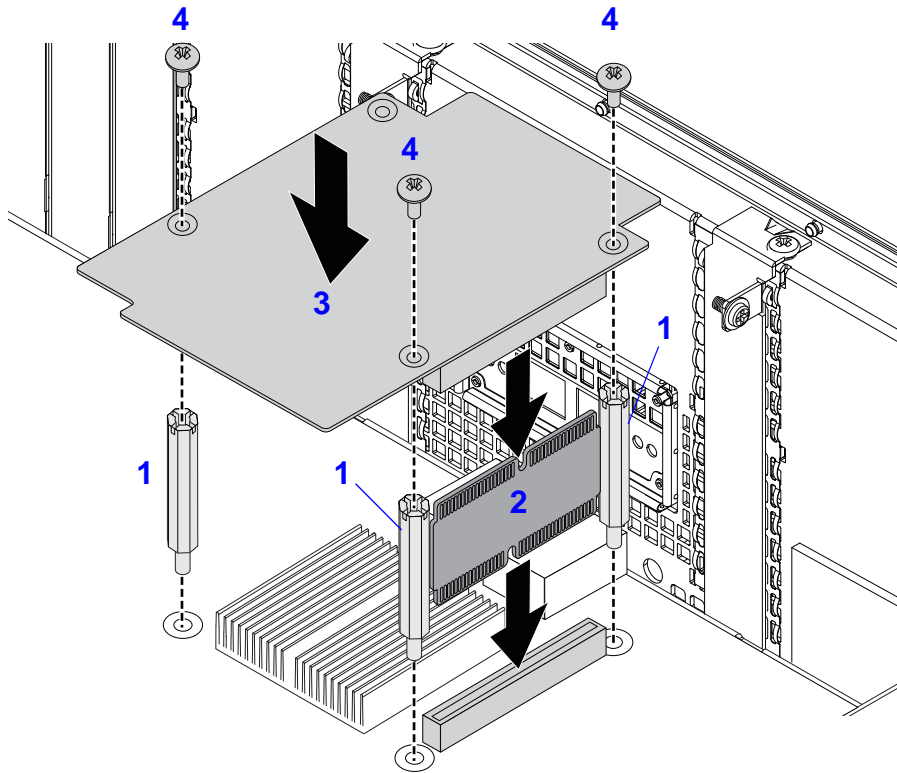


[2.10.298] Rear Panel I/O Shield (1 of 2)



[2.10.299] Rear Panel I/O Shield (2 of 2)

2.10.300.1. Secure standoff(s) to the mainboard.



[2.10.301] Installing a Mezzanine Assembly

2.10.302.2. Connect linking board to the mainboard connector.

2.10.303.3. Place mezzanine card on mainboard standoff(s).

2.10.304.4. Secure mainboard standoffs with screw(s).

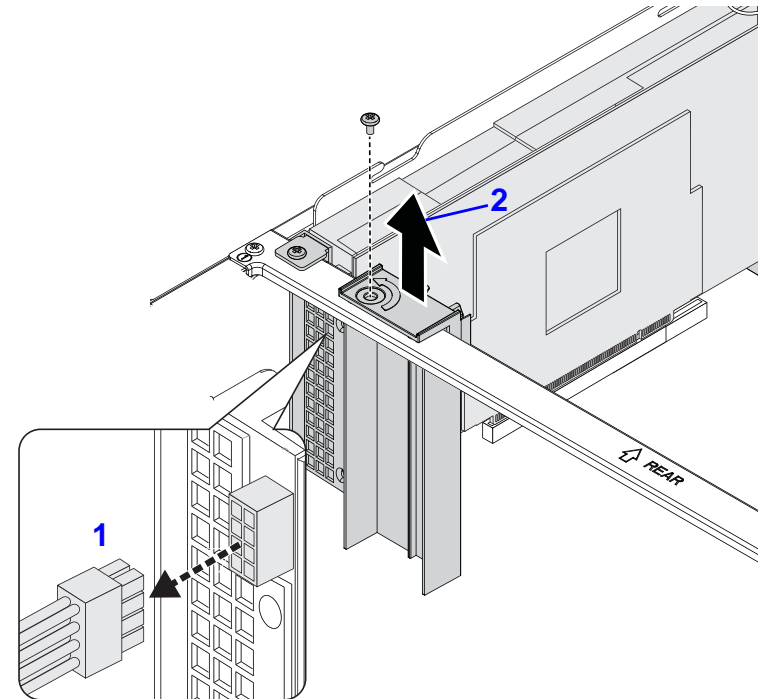
2.10.305.5. Connect SAS cable(s) to mezzanine board.

[2.10.306] Removing a GPGPU Assembly

Prerequisite:

[2.10.307] Remove the top cover.

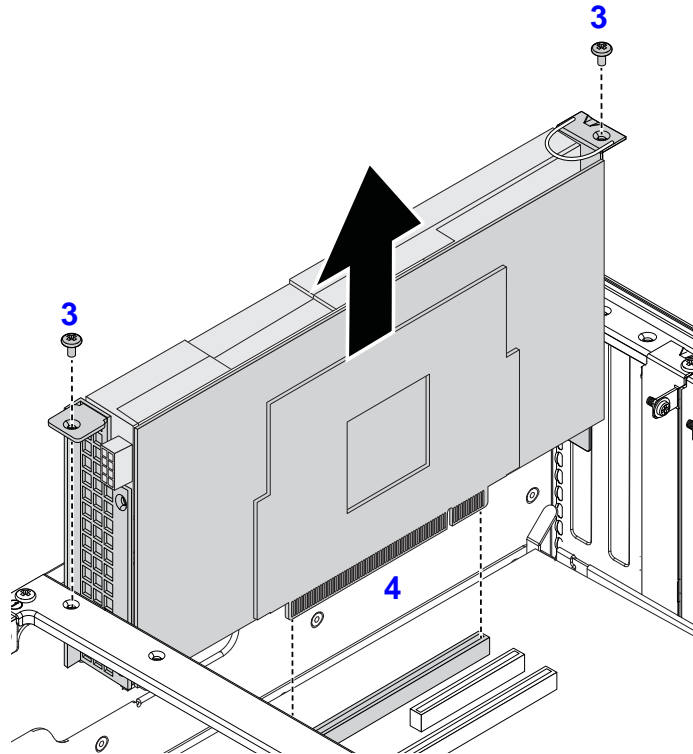
2.10.308.1. Disconnect cable from GPGPU assembly.



[2.10.309] Disconnecting a GPGPU Cable from Assembly

2.10.310.2.If only one GPGPU card is installed, remove a dummy GPU bracket in adjacent slot.

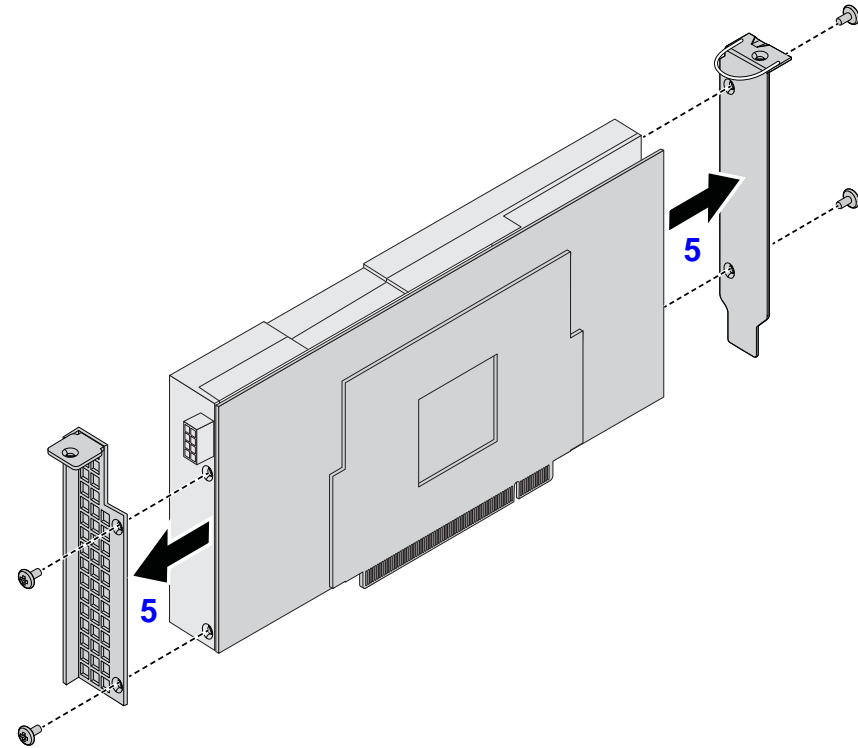
2.10.311.3.Remove screw(s) from GPGPU assembly.



[2.10.312] Removing GPGPU Assembly Screw(s)

2.10.313.4.Disconnect GPGPU assembly from mainboard connector.

2.10.314.5.Remove front and rear GPGPU brackets.



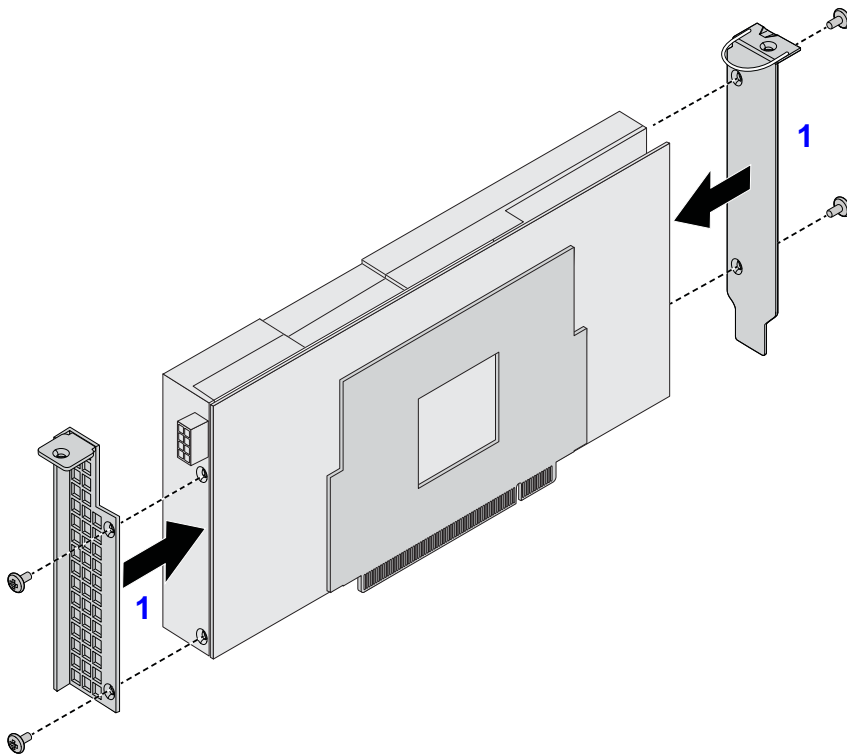
[2.10.315] Removing GPGPU Assembly Brackets

[2.10.316] Installing a GPGPU Assembly

Prerequisite:

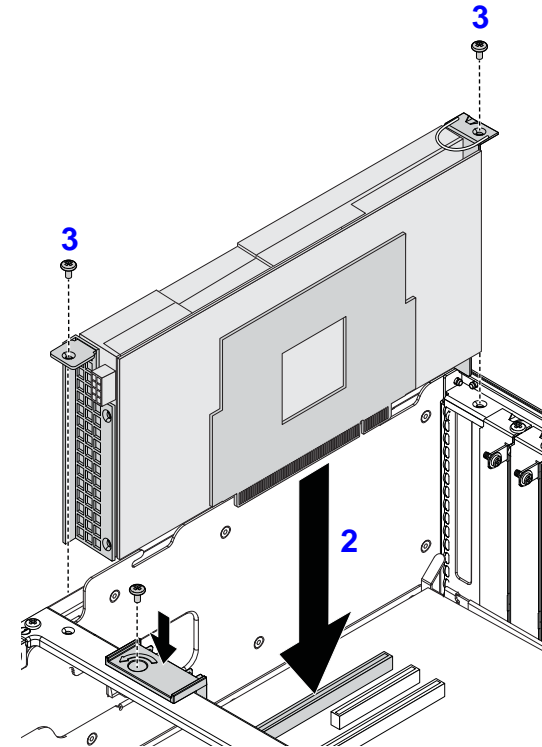
[2.10.317] Remove the top cover.

2.10.318.1. Secure front and rear GPGPU brackets to the assembly.



[2.10.319] Securing GPGPU Assembly Brackets

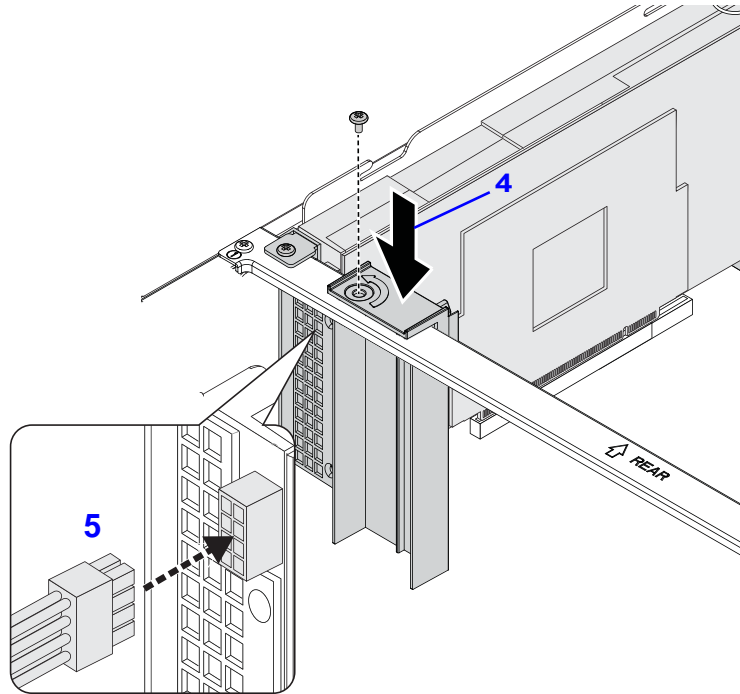
2.10.320.2. Connect GPGPU assembly to mainboard connector.



[2.10.321] Securing GPGPU Assembly Screw(s)

2.10.322.3. Secure screw(s) to the GPGPU assembly.

2.10.323.4.If only one GPGPU card is installed, secure a dummy GPU bracket in adjacent slot.



[2.10.324] Connecting a GPGPU Cable to an Assembly

2.10.325.5.Connect cable to the GPGPU assembly.

[2.11.326] Mainboard Module

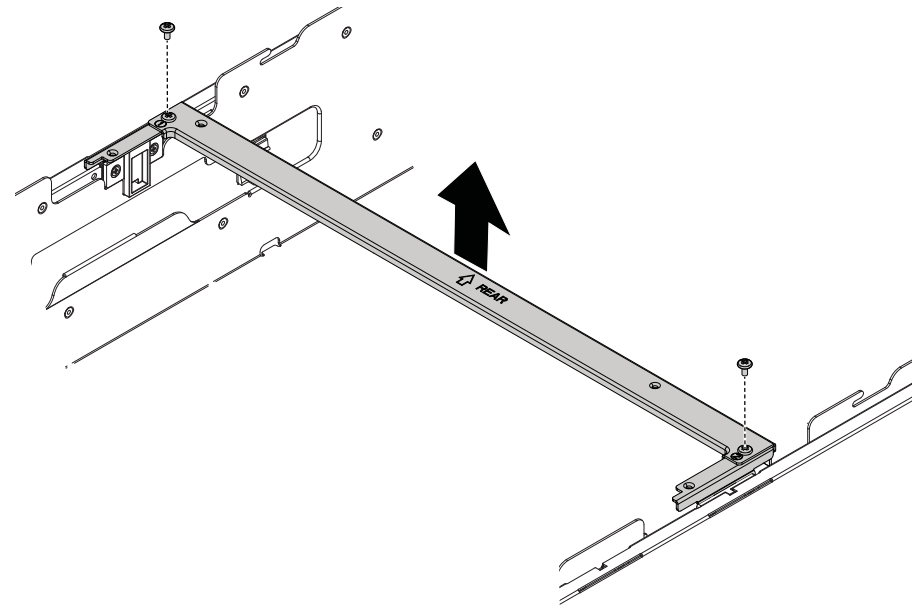
[2.11.327] Removing a Mainboard Module

Prerequisite:

- [2.11.328] Remove the top cover. See *Opening the Top Cover*.
- [2.11.329] Disconnect all cables from mainboard.
- [2.11.330] Remove air duct. See *Removing an Air Duct*.
- [2.11.331] Remove memory modules. See *Removing Memory Modules*.
- [2.11.332] Remove heatsink. See *Removing a Processor Heat Sink*.
- [2.11.333] Remove processor. See *Removing a Processor*.
- [2.11.334] Remove mezzanine card. See *Removing a 10G/40G SFP & Mezzanine Assembly*.
- [2.11.335] Remove GPGPU card. See *Removing a GPGPU Assembly*.

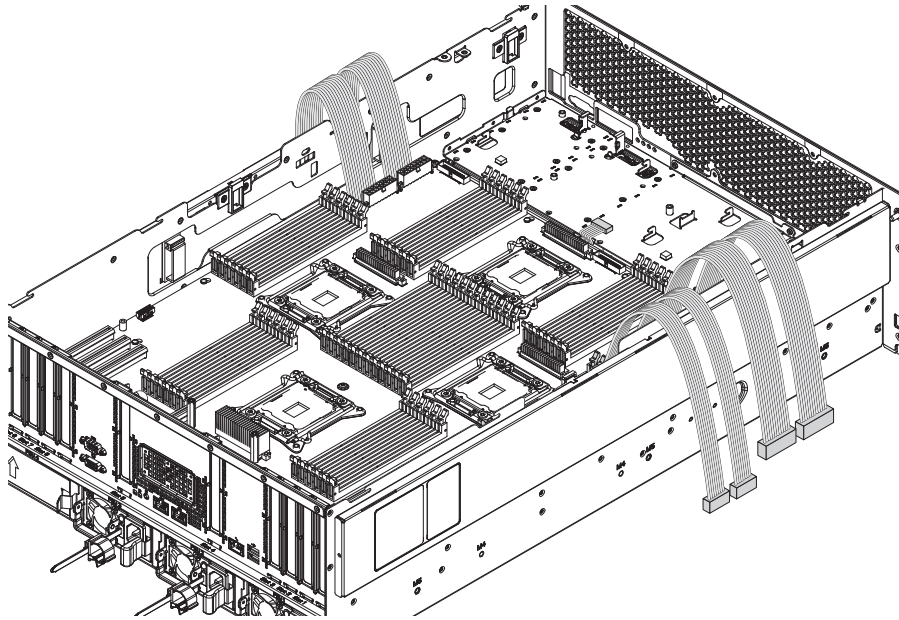
2.11.336.1.Remove screw(s) from bridge board (A).

2.11.337.2.Remove bridge bracket.



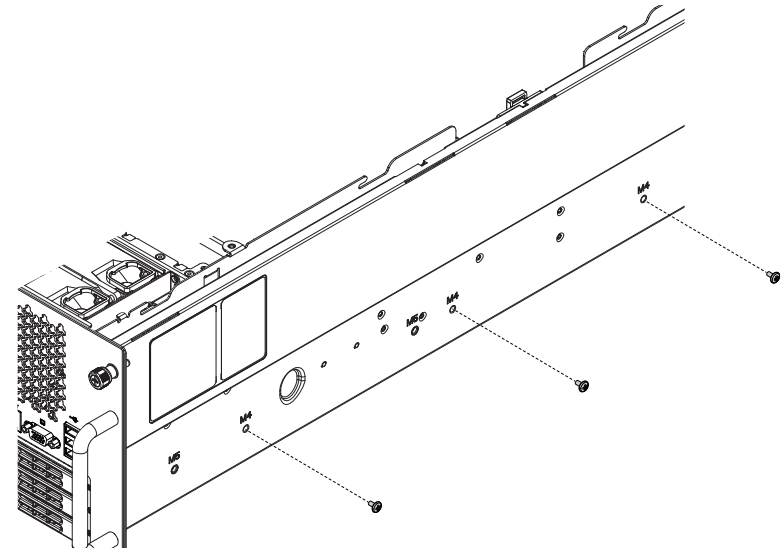
[2.11.338] Removing Bridge Bracket

2.11.339.3. Guide cables away from mainboard assembly.



[2.11.340] Guiding Cables

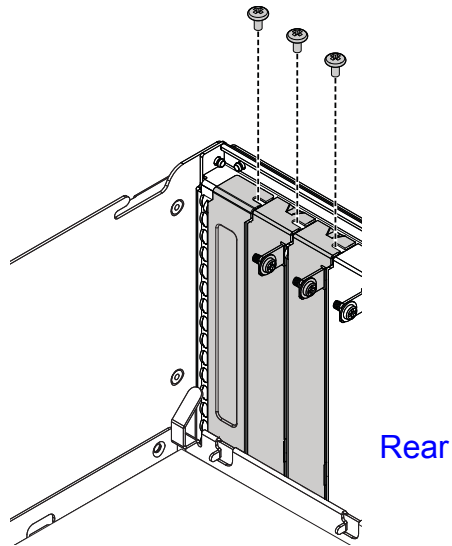
2.11.341.4. Remove screw(s) from both sides of the chassis.



[2.11.342] Removing Screws

2.11.343.5. Remove screw(s) from all PCIe slot dust cover(s).

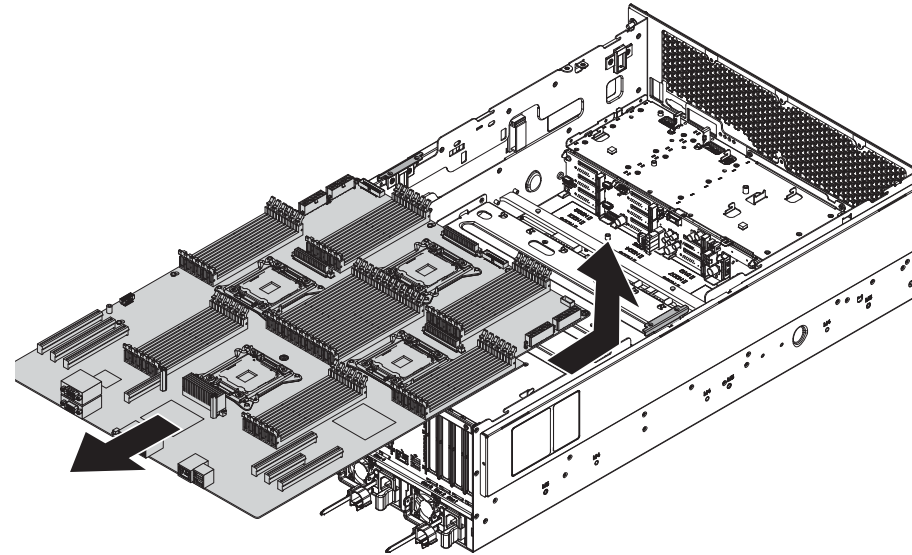
2.11.344.6.Remove PCIe slot dust cover(s).



[2.11.345] Removing Dust Covers

2.11.346.7.Hold the hooks and pull the mainboard module assembly towards front panel to release from securing tabs on chassis.

2.11.347.8.Remove mainboard module assembly.

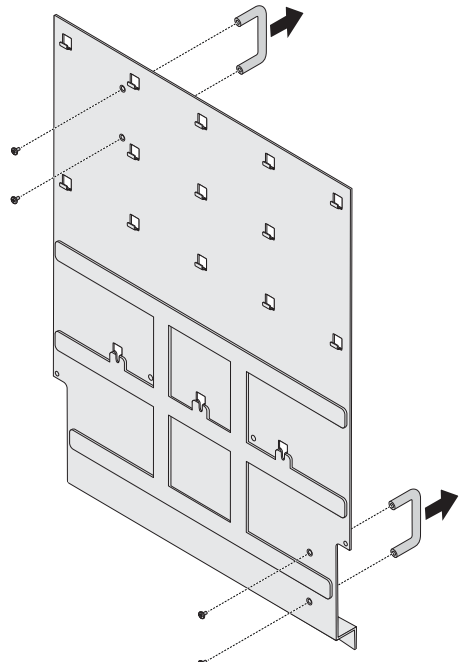


[2.11.348] Mainboard Module Assembly Removal

2.11.349.9.Angle mainboard assembly 90° degrees on a surface with connectors on rear facing up.

2.11.350.10.Remove screw(s) from hooks on middle frame (A).

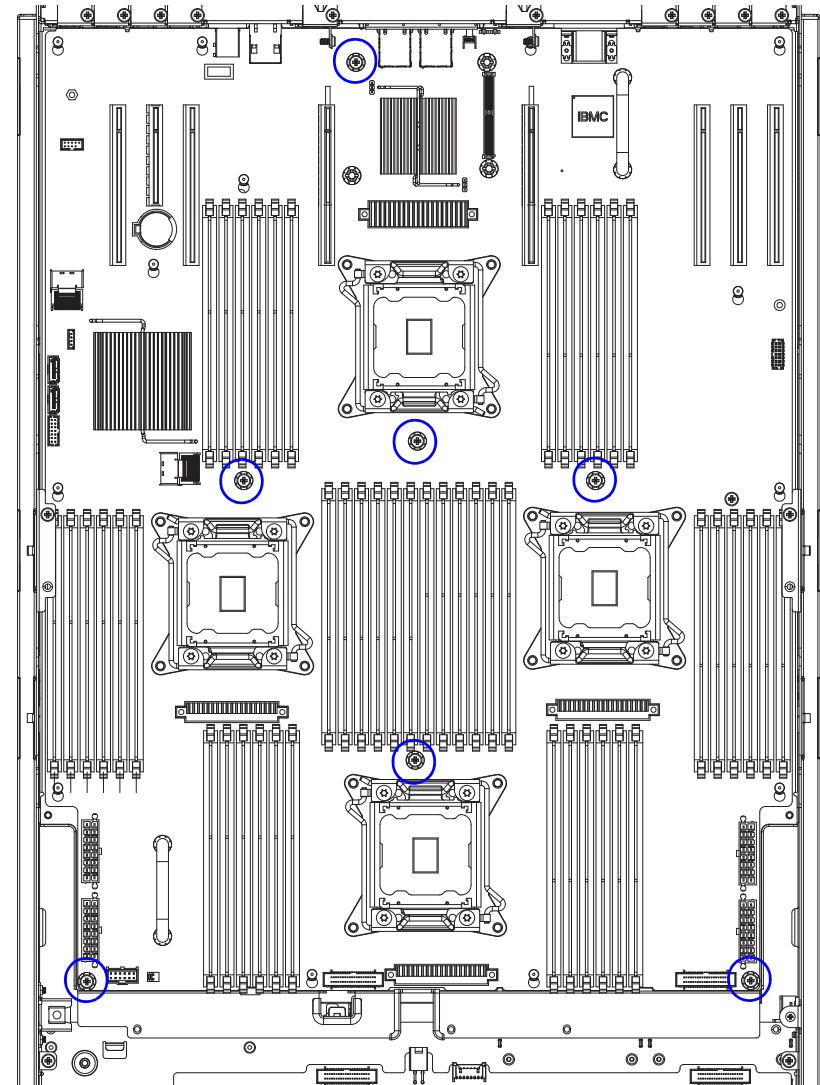
2.11.351.11.Remove hooks.



[2.11.352] Removing Hooks from Middle Frame

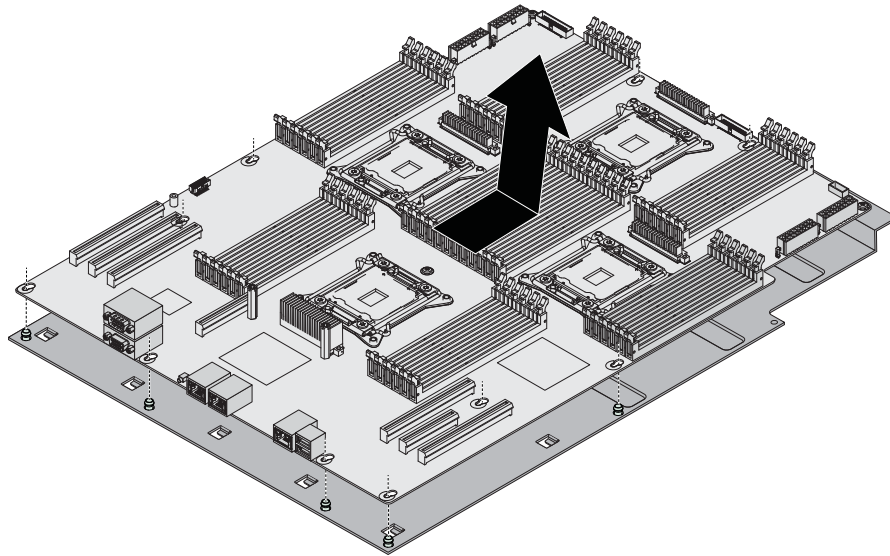
2.11.353.12.Place mainboard on surface middle frame down.

2.11.354.13.Remove screw(s) from mainboard module.



[2.11.355] Removing Screws

2.11.356.14. Slide mainboard to release from pins.



[2.11.357] Removing Mainboard

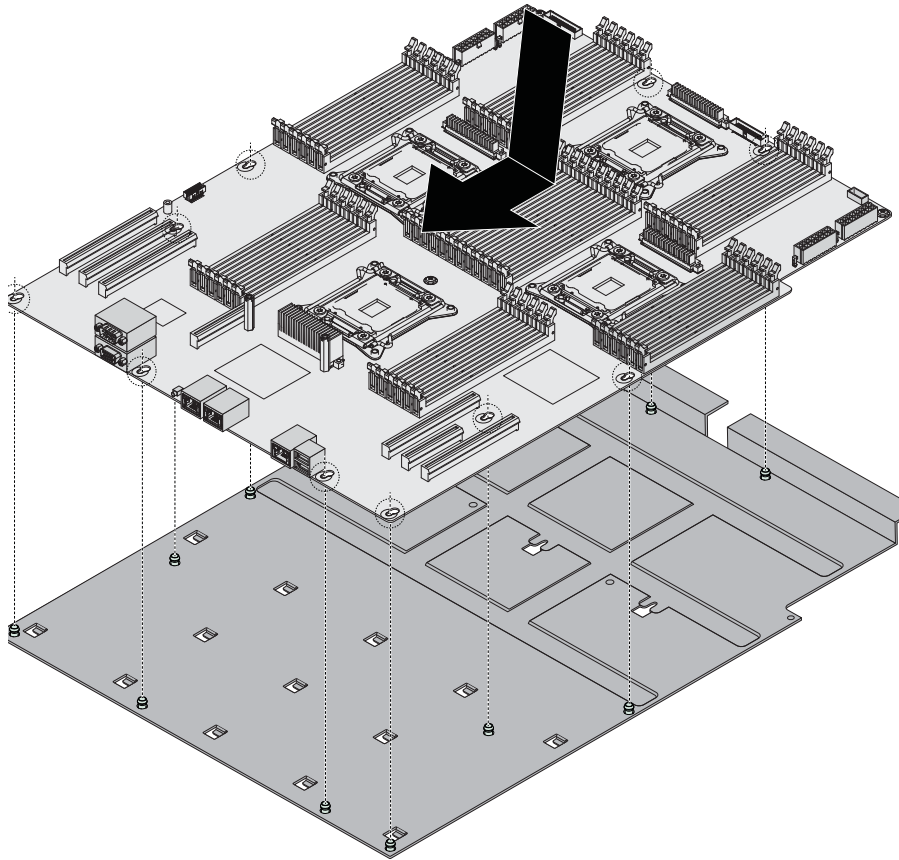
2.11.358.1.

[2.11.359] Installing a Mainboard Module

2.11.360.1. Align pin holes on mainboard with pins on middle frame.

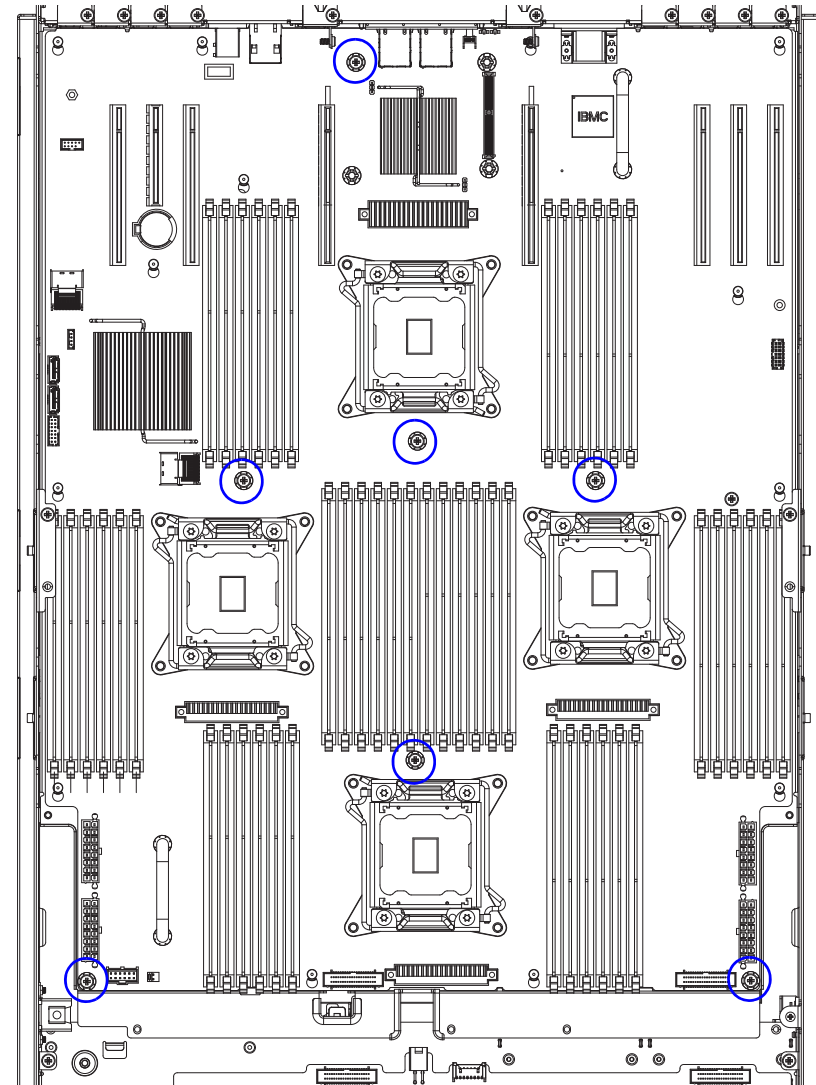
2.11.361.2. Install mainboard on middle frame.

2.11.362.3. Slide mainboard to secure to the pins on middle frame.



[2.11.363] Installing Mainboard on Middle Frame

2.11.364.4. Install screw(s) to mainboard module.



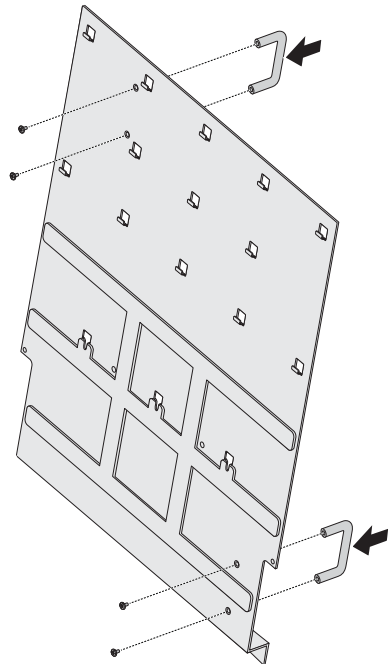
[2.11.365] Installing Screws

2.11.366.5. Angle mainboard assembly 90° degrees on a surface with connectors on rear facing up.

2.11.367.6. Align hooks with screw holes on middle frame.

2.11.368.7. Install hooks.

2.11.369.8. Install screw(s) to hooks on middle frame.



[2.11.370] Installing Hooks

2.11.371.9. Place mainboard on surface middle frame down.

2.11.372.10. Guide cables on the sides of the chassis.

2.11.373.11. Angle mainboard assembly to the chassis.

2.11.374.12. Align mainboard assembly with the tabs on chassis and slots on rear panel.



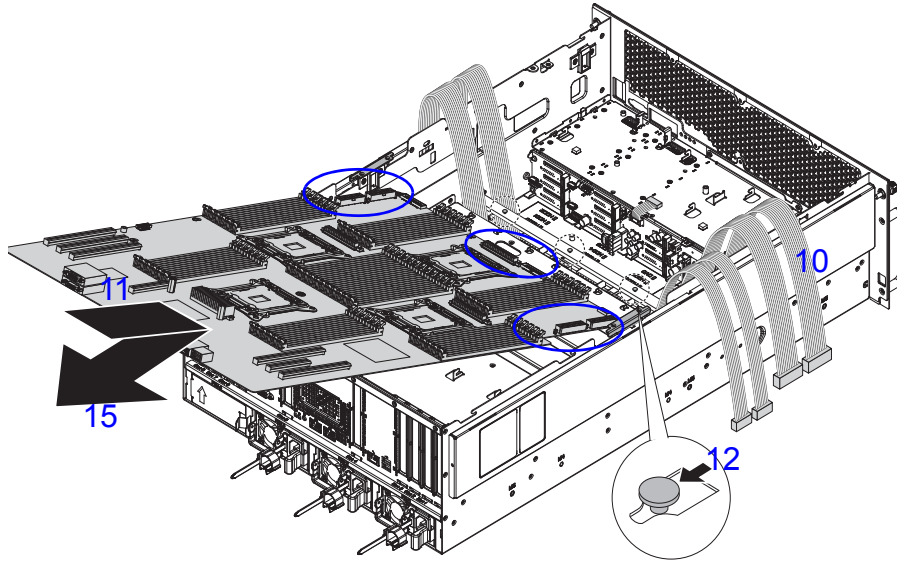
CAUTION!

[2.11.375] TO AVOID DAMAGING THE CABLES, MAKE SURE THE CABLES WOULD NOT GET CAUGHT AT MAINBOARD ASSEMBLY INSTALLATION.

2.11.376.13. Guide cables through the openings on the mainboard assembly.

2.11.377.14. Install mainboard assembly.

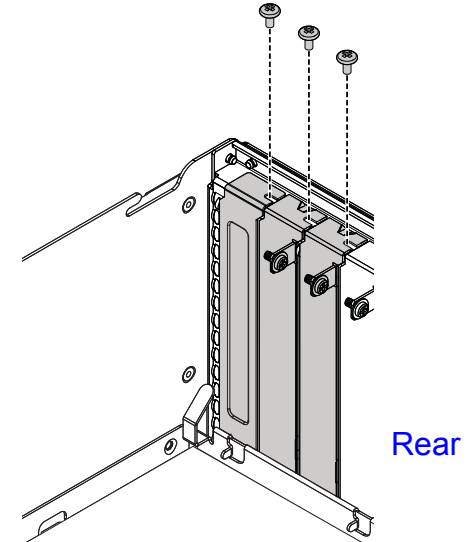
2.11.378.15. Slide mainboard assembly to secure to the tabs on chassis.



[2.11.379] Installing Memory Assembly

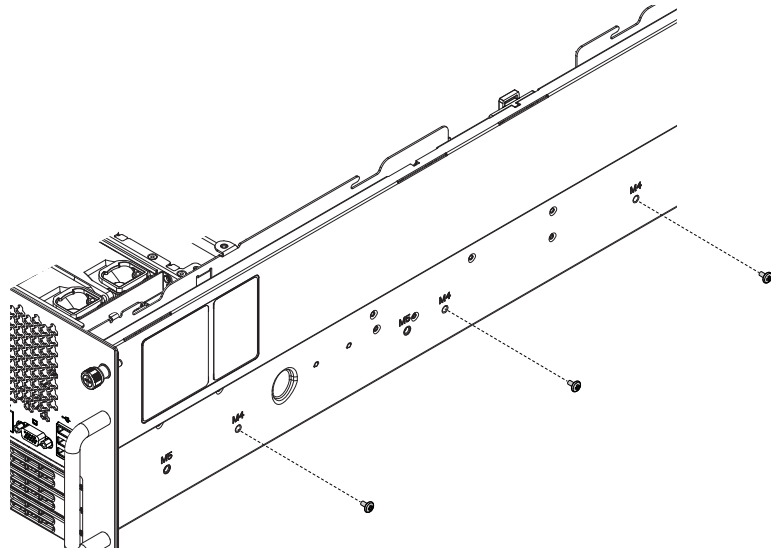
2.11.380.16. Align PCIe slot dust covers with the slots on chassis.

2.11.381.17. Install and secure PCIe slot dust covers to the chassis with the screw(s).



[2.11.382] Mainboard Installation

2.11.383.18. Install screw(s) to the sides of the chassis.

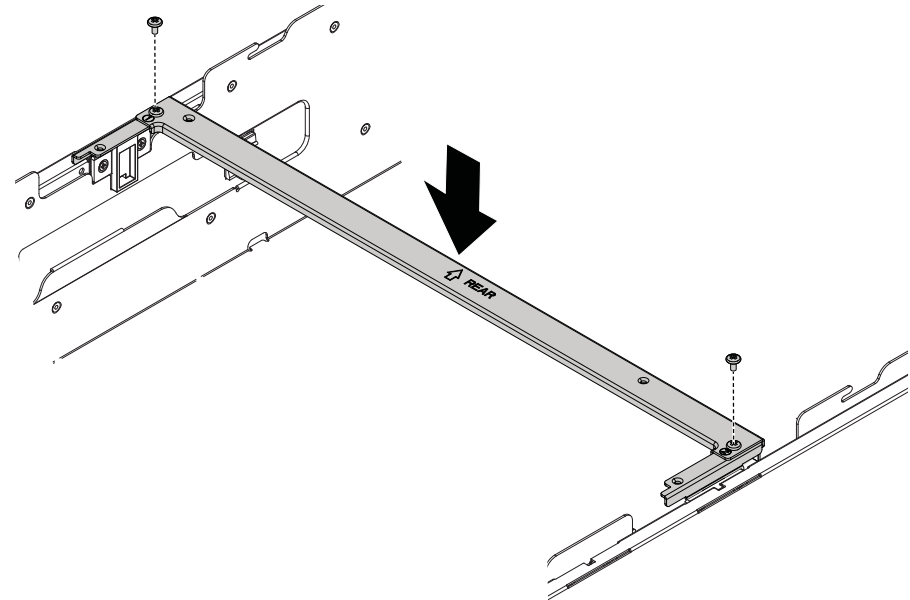


[2.11.384] Installing Screws

2.11.385.19. Align screw holes on bridge bracket with the screw holes on chassis.

2.11.386.20. Install bridge bracket.

2.11.387.21. Install and secure screw(s) to the bridge bracket.



[2.11.388] Installing Bridge Bracket

2.11.389.22. Install cables to the connectors. See *Cable Routing*.

2.11.390.1.

[2.1.391] Power Distribution Board

[2.1.392] Removing a PDB

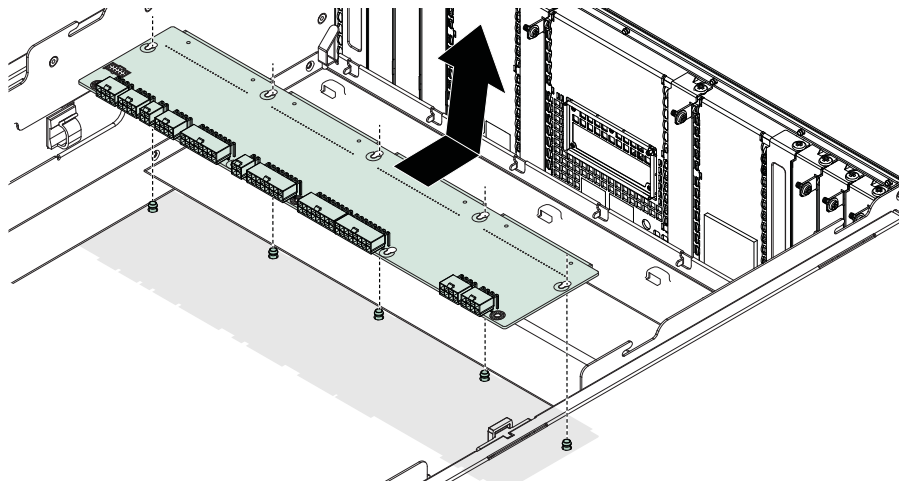
Prerequisite:

[2.1.393] Remove the PSU(s) from the chassis.

2.1.394.1. Disconnect the cable(s) from the PDB.

2.1.395.2. Remove the screw(s) from the PDB.

2.1.396.3. Slide the PDB to release it from the chassis pins.



[2.1.397] Removing a PDB

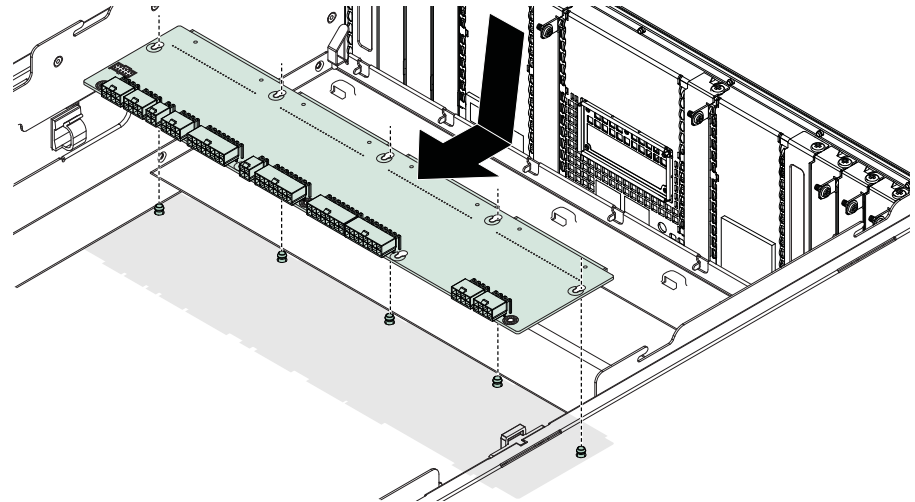
2.1.398.4. Remove the PDB from the chassis.

[2.1.399] Installing a PDB

2.1.400.1. Align the holes in the PDB with the chassis pins.

2.1.401.2. Insert the chassis pins in the PDB holes.

2.1.402.3. Slide the PDB to secure it to the chassis pins.



[2.1.403] Inserting a PDB

2.1.404.4. Install and secure the screw(s) into the PDB.

[2.2.405] HDD Backplane

[2.2.406] Removing a HDD Backplane

Prerequisite:

[2.2.407] Remove the mainboard. See *Removing a Mainboard Module*.

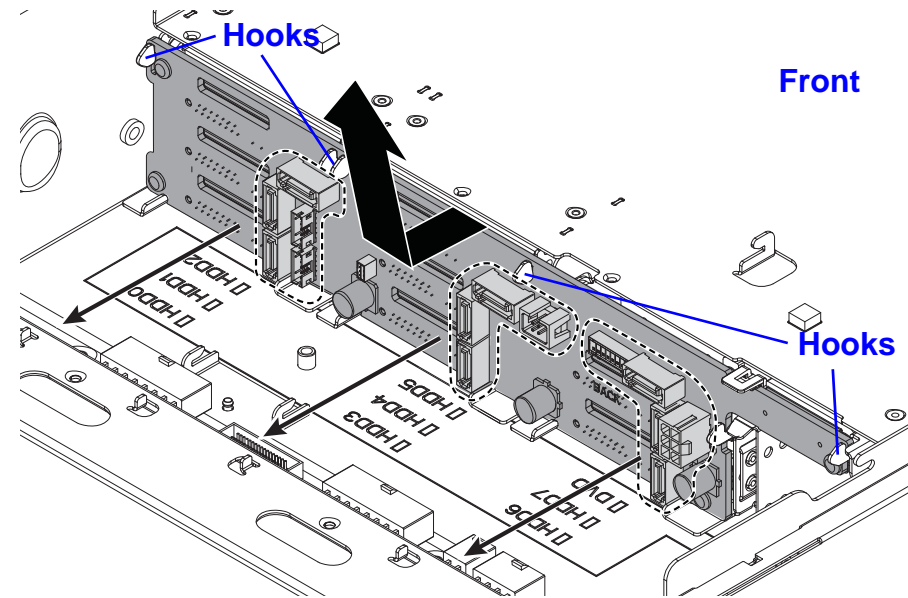
[2.2.408] Remove all swappable HDD assemblies.

[2.2.409] Remove the optical drive assembly.

2.2.410.1. Remove all cables from the HDD backplane.

2.2.411.2. Lift the HDD backplane over the hooks.

2.2.412.3., Tilt and remove the HDD backplane from the chassis.



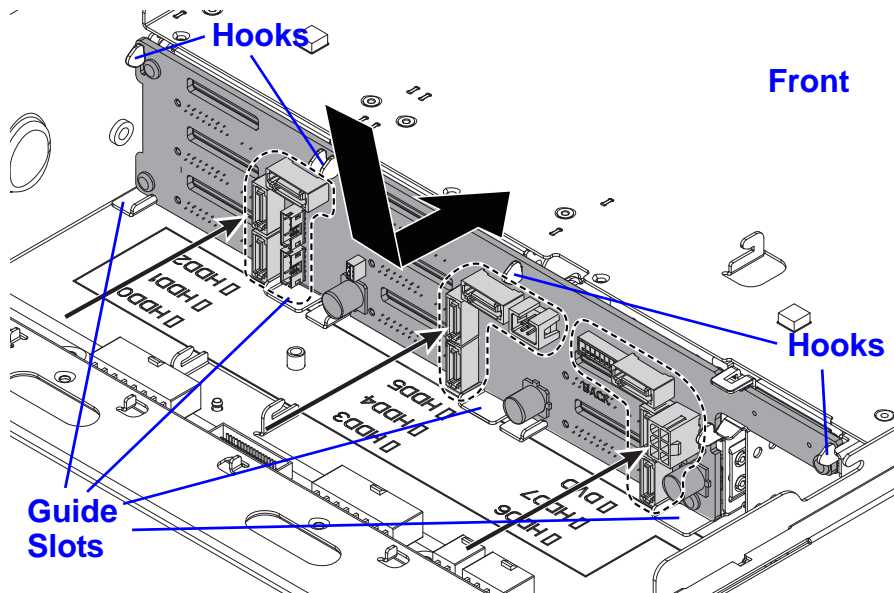
[2.2.413] Removing a HDD Backplane

[2.2.414] Installing a HDD Backplane

2.2.415.1. Align the HDD backplane at an angle to the chassis.

2.2.416.2. Insert the HDD backplane so it sits in the chassis guide slots.

2.2.417.3. Tilt and lift the HDD backplane over the hooks.



[2.2.418] Installing a HDD Backplane

[2.3.419] Air Duct

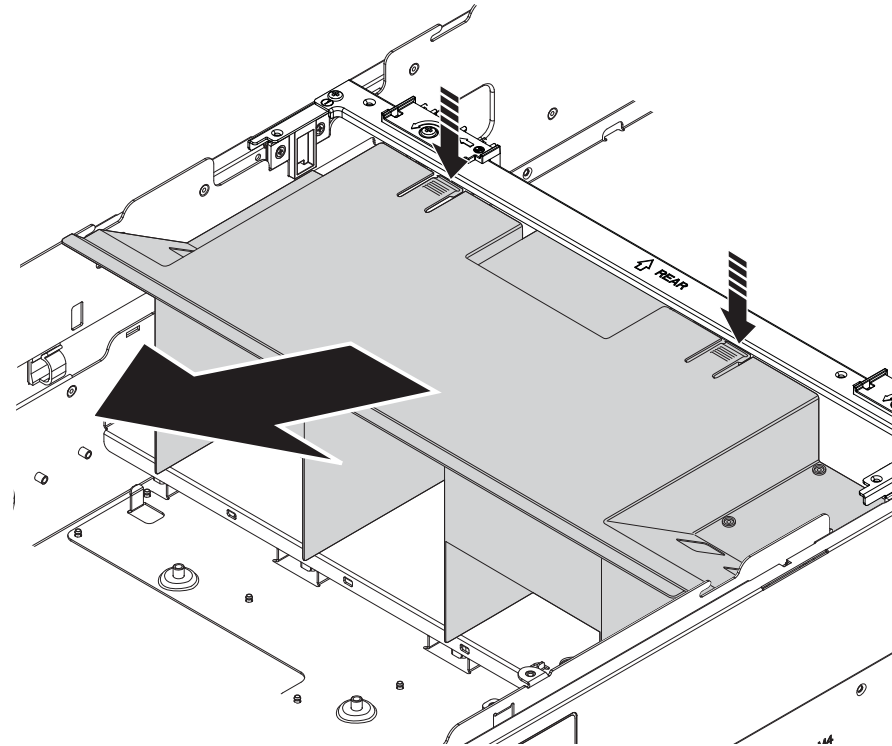
[2.3.420] Removing an Air Duct

Prerequisite:

[2.3.421] Remove the top cover. See *Removing a Top Cover*.

2.3.422.1.Press the air duct tabs.

2.3.423.2.Remove the air duct from the chassis.



[2.3.424] Removing an Air Duct

[2.3.425] Installing an Air Duct

Prerequisite:

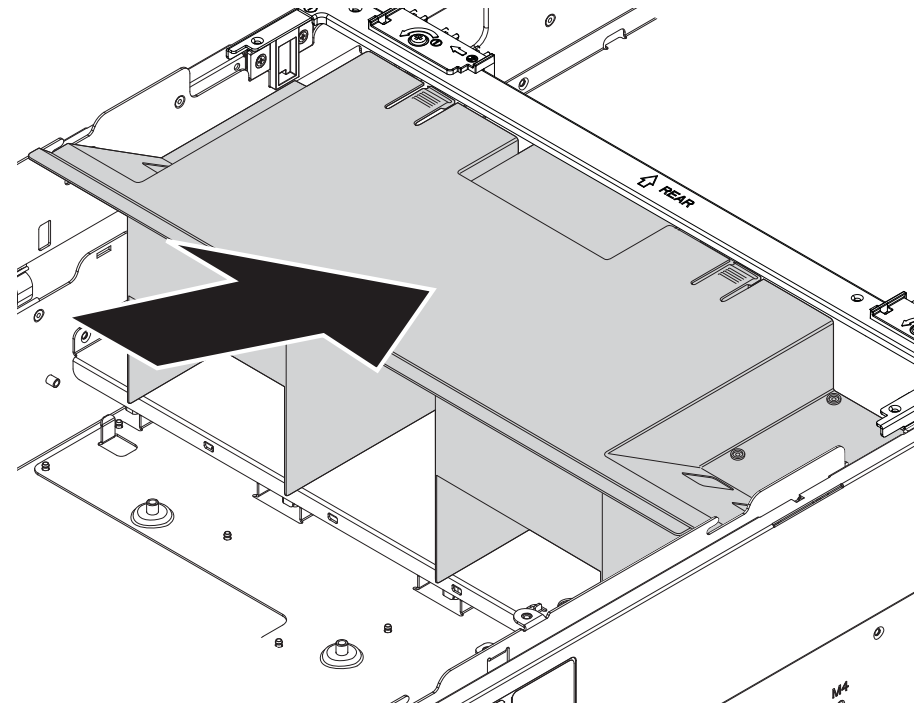
[2.3.426] Remove the top cover. See *Removing a Top Cover*.



WARNING!

[2.3.427] Air ducts are needed for the proper cooling of the system. To prevent damage to the system, when installing the air duct, make sure the arrow on top of the air duct points towards the rear panel of the mainboard module.

2.3.428.1. Align the air duct with the middle bracket and insert the plastic tabs into the wells in the middle bracket.



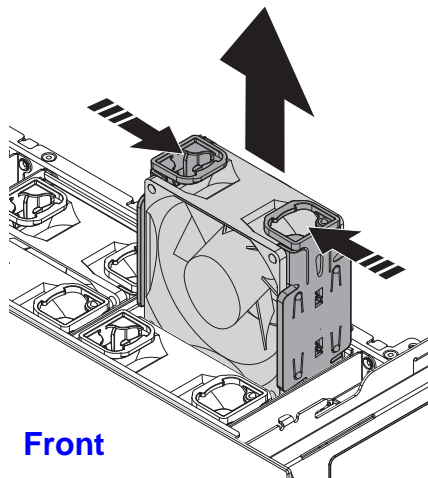
[2.3.429] Installing the Air Duct

2.3.430.2. Insert the air duct.

[2.4.431] Hot Swap Fan Module

[2.4.432] Removing a Hot Swap Fan Module

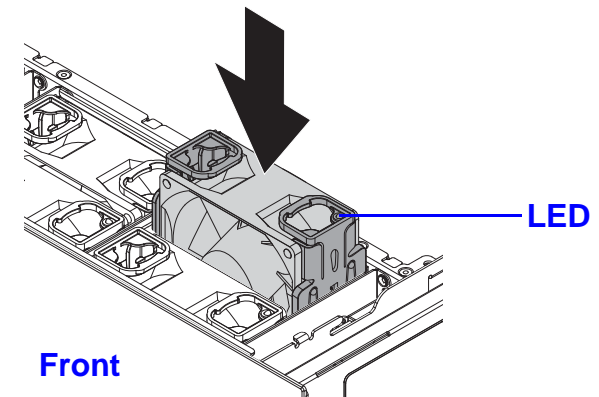
- 2.4.433.1. Push the release latches inwards.
- 2.4.434.2. Remove the fan module from the chassis.



[2.4.435] Removing a Hot Swap Fan Module

[2.4.436] Installing a Hot Swap Fan Module

- 2.4.437.1. Align the fan module with the fan cage.
- 2.4.438.2. Insert the fan module into the chassis.



[2.4.439] Installing a Hot Swap Fan Module

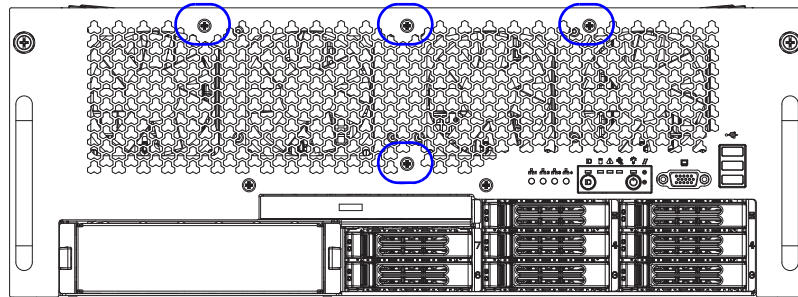
[2.5.440] Fan Module Assembly

[2.5.441] Removing a Fan Cage

Prerequisite:

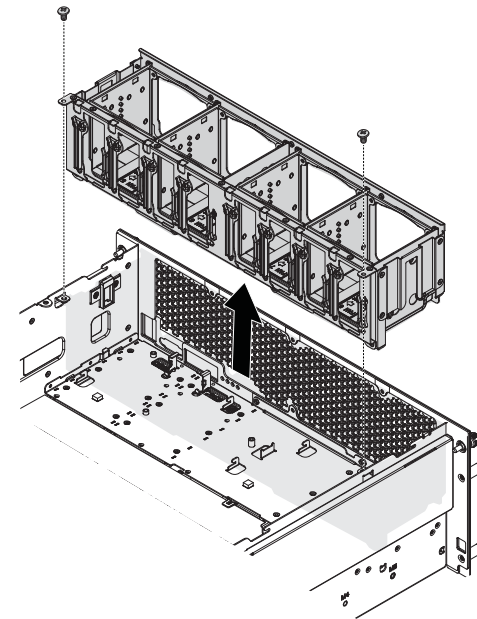
[2.5.442] Remove all the fan modules.

2.5.443.1.Remove the screw(s) from the front of the chassis.



[2.5.444] Fan Cage Front Panel Screws

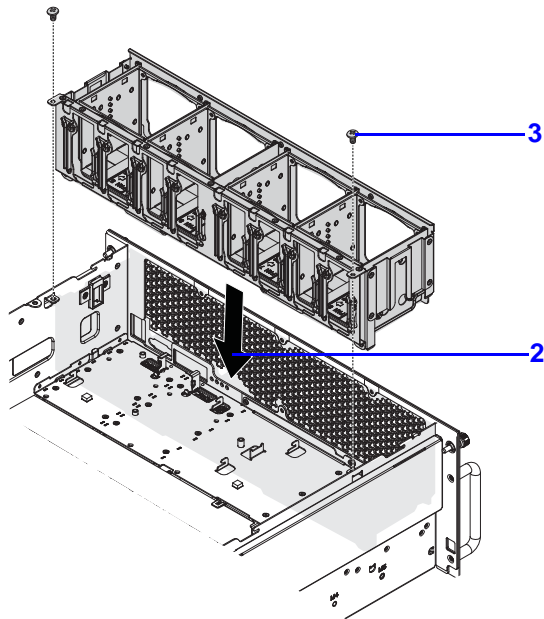
2.5.445.2.Remove the screw(s) from the top of the fan cage and remove the fan cage from the chassis.



[2.5.446] Removing the Fan Cage

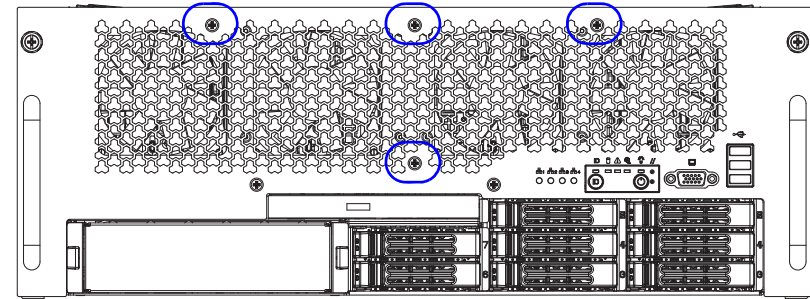
[2.5.447] Installing a Fan Cage

- 2.5.448.1. Align the fan cage with the chassis.
- 2.5.449.2. Insert the fan cage into the chassis.
- 2.5.450.3. Install and secure the screw(s) into the top of the fan cage.



[2.5.451] Inserting the Fan Cage

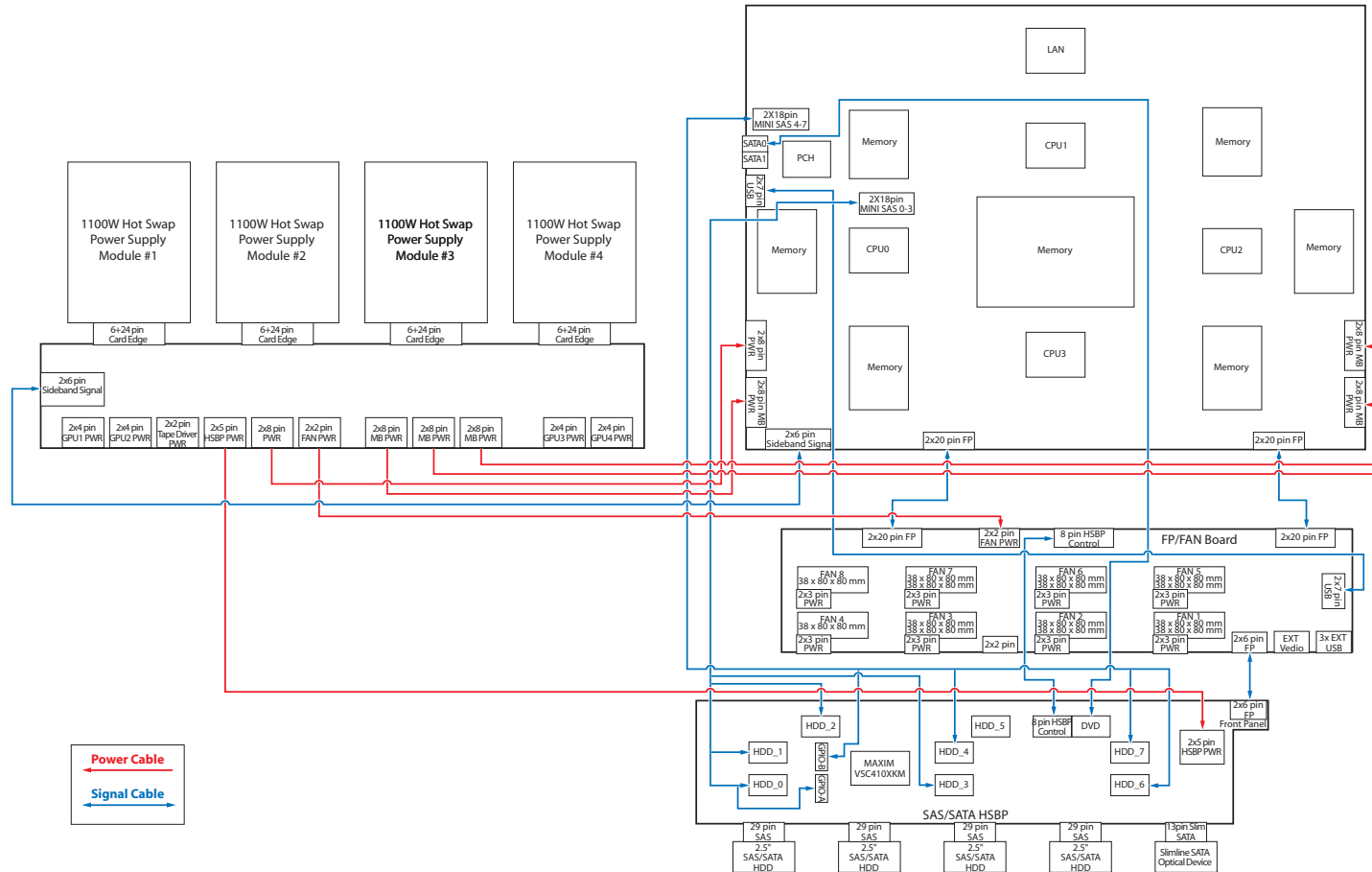
- 2.5.452.4. Insert the screw(s) into the front of the chassis.



[2.5.453] Fan Cage Front Panel Screws

[2.6.454] Cable Routing

[2.6.455] The following image illustrates cable routing in the system.



[2.6.456] System Cable Routing

[3.0.1] BIOS

Chapter 3

[3.1.1] BIOS Setup Utility

[3.1.2] The BIOS Setup utility is provided to perform system configuration changes and to display current settings and environment information.

[3.1.3] The BIOS Setup utility stores configuration settings in system non-volatile storage. Changes affected by BIOS Setup will not take effect until the system is rebooted. The BIOS Setup Utility can be accessed during POST by using the or <F2> key.

[3.1.4] The following sections describe the look and behavior for platform Setup.

[3.1.5]

[3.1.6] Operation

[3.1.7] BIOS Setup has the following features:

- The server board BIOS will only be available in English.
- BIOS Setup is functional via console redirection over various terminal emulation standards. This may limit some functionality for compatibility, e.g., usage of colors, some keys or key sequences, or support of pointing devices.

[3.1.8] Setup Page Layout

[3.1.9] The setup page layout is sectioned into functional areas. Each occupies a specific area of the screen and has dedicated functionality. The following table lists and describes each functional area.

[3.1.10] BIOS Setup Page Layout

[3.1.11] FUNCTIONAL AREA	[3.1.12] DESCRIPTION
[3.1.13] Title Bar	[3.1.14] The title bar is located at the top of the screen and displays the title of the form (page) the user is currently viewing. It may also display navigational information.
[3.1.15] Setup Item List	[3.1.16] The Setup Item List is a set of controllable and informational items. Each item in the list occupies the left column of the screen. [3.1.17] A Setup Item may also open a new window with more options for that functionality on the board.
[3.1.18] Item Specific Help Area	[3.1.19] The Item Specific Help area is located on the right side of the screen and contains help text for the highlighted Setup Item. Help information may include the meaning and usage of the item, allowable values, effects of the options, etc.

[3.1.10] BIOS Setup Page Layout (Continued)

[3.1.11] FUNCTIONAL AREA	[3.1.12] DESCRIPTION
[3.1.20] Keyboard Command Bar	[3.1.21] The Keyboard Command Bar is located at the bottom right of the screen and continuously displays help for keyboard special keys and navigation keys.

[3.1.22]

[3.1.23] Entering BIOS Setup

[3.1.24] BIOS Setup is started by pressing or <F2> during boot time when the OEM logo is displayed.

[3.1.25] When Quiet Boot is disabled, the message "press or <F2> to enter setup" will be displayed on the diagnostics screen.

[3.1.26]

[3.1.27] Keyboard Commands

[3.1.28] The bottom right portion of the Setup screen provides a list of commands that are used to navigate through the Setup utility. These commands are displayed at all times.

[3.1.29] Each Setup menu page contains a number of features. Except those used for informative purposes, each feature is associated with a value field. This field contains user-selectable parameters. Depending on the security option chosen and in effect by the password, a menu feature's value may or may not be changeable. If a value is non-changeable, the feature's value field is inaccessible and displays as "grayed out."

[3.1.30] Keyboard Commands

[3.1.31] Key	[3.1.32] OPTION	[3.1.33] DESCRIPTION
[3.1.34] <Enter>	[3.1.35] Execute Command	[3.1.36] The <Enter> key is used to activate sub-menus when the selected feature is a sub-menu, or to display a pick list if a selected option has a value field, or to select a sub-field for multi-valued features like time and date. If a pick list is displayed, the <Enter> key will select the currently highlighted item, undo the pick list, and return the focus to the parent menu.

[3.1.30] Keyboard Commands (Continued)

[3.1.31] Key	[3.1.32] O PTION	[3.1.33] DESCRIPTION
[3.1.37] <Esc>	[3.1.38] E xit	<p>[3.1.39] The <Esc> key provides a mechanism for backing out of any field. When the <Esc> key is pressed while editing any field or selecting features of a menu, the parent menu is re-entered.</p> <p>[3.1.40] When the <Esc> key is pressed in any sub-menu, the parent menu is re-entered. When the <Esc> key is pressed in any major menu, the exit confirmation window is displayed and the user is asked whether changes can be discarded. If <i>No</i> is selected and the <Enter> key is pressed, or if the <Esc> key is pressed, the user is returned to where he/she was before <Esc> was pressed, without affecting any existing any settings. If <i>Yes</i> is selected and the <Enter> key is pressed, setup is exited and the BIOS returns to the main System Options Menu screen.</p>
[3.1.41] ↑	[3.1.42] S elect Item	[3.1.43] The up arrow is used to select the previous value in a pick list, or the previous option in a menu item's option list. The selected item must then be activated by pressing the <Enter> key.
[3.1.44] ↓	[3.1.45] S elect Item	[3.1.46] The down arrow is used to select the next value in a menu item's option list, or a value field's pick list. The selected item must then be activated by pressing the <Enter> key.

[3.1.30] Keyboard Commands (Continued)

[3.1.31] Key	[3.1.32] O PTION	[3.1.33] DESCRIPTION
[3.1.47] ↔	[3.1.48] S elect Menu	[3.1.49] The left and right arrow keys are used to move between the major menu pages. The keys have no affect if a sub-menu or pick list is displayed.
[3.1.50] <Tab>	[3.1.51] S elect Field	[3.1.52] The <Tab> key is used to move between fields. For example, <Tab> can be used to move from hours to minutes in the time item in the main menu.
[3.1.53] -	[3.1.54] C hange Value	[3.1.55] The minus key on the keypad is used to change the value of the current item to the previous value. This key scrolls through the values in the associated pick list without displaying the full list.
[3.1.56] +	[3.1.57] C hange Value	[3.1.58] The plus key on the keypad is used to change the value of the current menu item to the next value. This key scrolls through the values in the associated pick list without displaying the full list. On 106-key Japanese keyboards, the plus key has a different scan code than the plus key on the other keyboard, but will have the same effect.

[3.1.30] Keyboard Commands (Continued)

[3.1.31] Key	[3.1.32] O PTION	[3.1.33] DESCRIPTION
[3.1.59] <F8>	[3.1.60] Pr evious Values	<p>[3.1.61] Pressing <F8> causes the following to appear:</p> <div style="border: 1px solid black; padding: 5px; margin: 10px auto; width: fit-content;"> <p style="text-align: center;">[3.1.62] [3.1.63] Load Previous Values? [3.1.64] [3.1.65] Yes No</p> </div> <p>[3.1.66] If Yes is highlighted and <Enter> is pressed, all Setup fields are set to their previous values. If No is highlighted and <Enter> is pressed, or if the <Esc> key is pressed, the user is returned to where they were before <F8> was pressed without affecting any existing field values</p>
[3.1.67] <F9>	[3.1.68] S etup Defaults	<p>[3.1.69] Pressing <F9> causes the following to appear:</p> <div style="border: 1px solid black; padding: 5px; margin: 10px auto; width: fit-content;"> <p style="text-align: center;">[3.1.70] [3.1.71] Load Optimized Defaults? [3.1.72] [3.1.73] Yes No</p> </div> <p>[3.1.75] If Yes is highlighted and <Enter> is pressed, all Setup fields are set to their default values. If No is highlighted and <Enter> is pressed, or if the <Esc> key is pressed, the user is returned to where they were before <F9> was pressed without affecting any existing field values.</p>

[3.1.30] Keyboard Commands (Continued)

[3.1.31] Key	[3.1.32] O PTION	[3.1.33] DESCRIPTION
[3.1.76] <F10>	[3.1.77] S ave and Exit	<p>[3.1.78] Pressing <F10> causes the following message to appear:</p> <div style="border: 1px solid black; padding: 5px; margin: 10px auto; width: fit-content;"> <p style="text-align: center;">[3.1.79] [3.1.80] Save configuration and exit? [3.1.81] [3.1.82] Yes No</p> </div> <p>[3.1.84] If Yes is highlighted and <Enter> is pressed, all changes are saved and Setup is exited. If No is highlighted and <Enter> is pressed, or the <Esc> key is pressed, the user is returned to where they were before <F10> was pressed without affecting any existing values.</p>

[3.1.85]

[3.1.86] Menu Selection Bar

[3.1.87] The Menu Selection Bar is located at the top of the BIOS Setup Utility screen. It displays the major menu selections available to the user. By using the left and right arrow keys, the user can select the menus listed here.

[3.1.88]

[3.1.89] Server Platform Setup Utility Screens

Pressing <ESC> will discard the changes and boot the system according to the boot order set from the last boot.

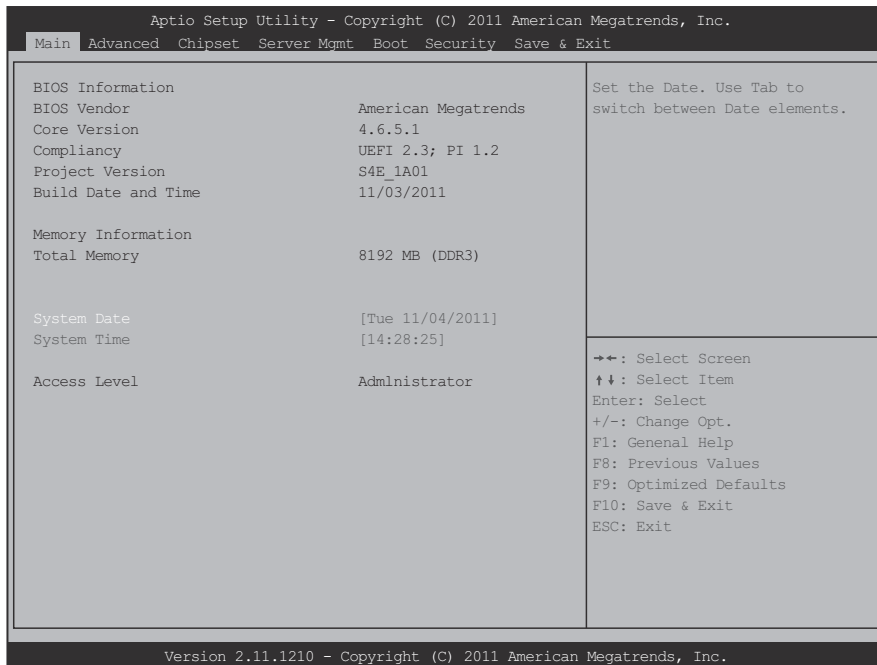
[3.1.91]

[3.1.90] The sections below describe the screens available for the configuration of a server platform. In these sections, tables are used to describe the contents of each screen. These tables follow the following guidelines:

- The text and values in the Setup Item, Options, and Help columns in the tables are displayed on the BIOS Setup screens.
- **Bold text** in the Options column of the tables indicates default values. These values are not displayed in bold on the setup screen. The bold text in this document is to serve as a reference point.
- The Comments column provides additional information where it may be helpful. This information does not appear in the BIOS Setup screens.
- Information in the screen shots that is enclosed in brackets (< >) indicates text that varies, depending on the option(s) installed. For example <Current Date> is replaced by the actual current date.
- Information that is enclosed in square brackets ([]) in the tables indicates areas where the user needs to type in text instead of selecting from a provided option.
- Whenever information is changed (except Date and Time) the systems requires a save and reboot to take place.

[3.1.92] Main Screen

[3.1.93] The Main screen is the screen that is first displayed when BIOS Setup is entered, unless an error has occurred. If an error has occurred, the Error Manager screen will be displayed instead.



[3.1.94] Main Screen

[3.1.95] Main Screen Fields

[3.1.96] SET UP ITEM	[3.1.97] OPTIONS	[3.1.98] HELP TEXT	[3.1.99] COMMENTS
[3.1.100] BIOS Vendor	[3.1.101]	[3.1.102]	[3.1.103] Information only. Displays the BIOS Vendor.
[3.1.104] Core Version	[3.1.105]	[3.1.106]	[3.1.107] Information only. Displays the AMI BIOS Core version.
[3.1.108] Compliance	[3.1.109]	[3.1.110]	[3.1.111] Information only. Displays the BIOS compliancy.
[3.1.112] Project Version	[3.1.113]	[3.1.114]	[3.1.115] Information only. Displays the Project version.
[3.1.116] Build Date	[3.1.117]	[3.1.118]	[3.1.119] Information only. Displays the BIOS build date.
[3.1.120] Total Memory	[3.1.121]	[3.1.122]	[3.1.123] Information only. Displays the Total System Memory Size.
[3.1.124] System Date	[3.1.125] [Day of week MM/DD/YYYY]	[3.1.126] Set the Date. Use Tab to switch between Date elements.	[3.1.127]

[3.1.95] Main Screen Fields (Continued)

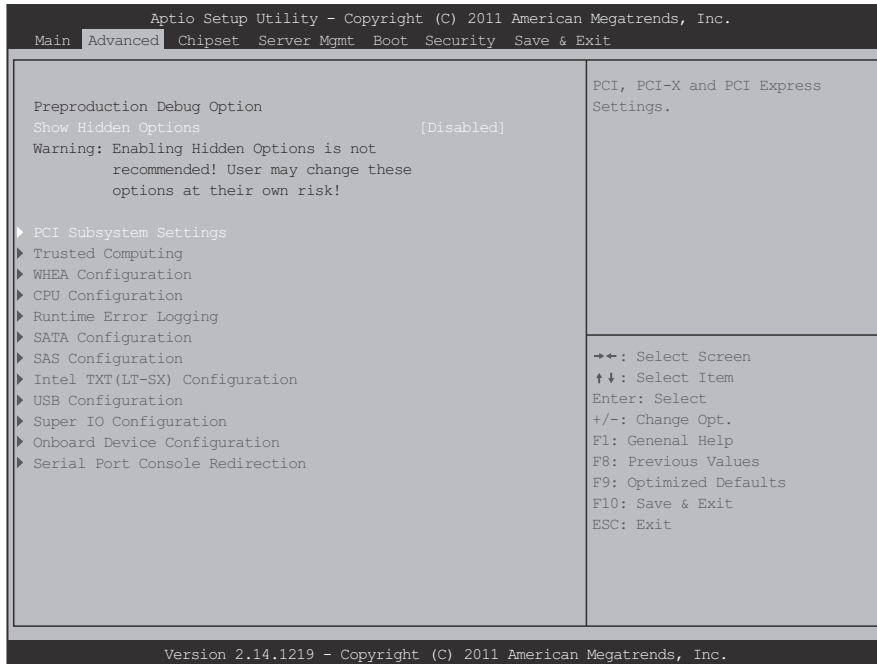
[3.1.96] SET UP ITEM	[3.1.97] OPTIONS	[3.1.98] HELP TEXT	[3.1.99] COMMENTS
[3.1.128] System Time	[3.1.129] [HH:MM: SS]	[3.1.130] Set the Time. Use Tab to switch between Time ele- ments.	[3.1.131]
[3.1.132] Access Level	[3.1.133]	[3.1.134]	[3.1.135] Information only. Displays the Access Level.

[3.1.136]

[3.1.137] Advanced Screen

[3.1.138] The Advanced screen provides an access point to configure several options. On this screen, the user selects the option that is to be configured. Configurations are performed on the selected screen, not directly on Advanced screen.

[3.1.139] To access this screen from Main screen, press the right arrow until Advanced screen is chosen.



[3.1.140] Advanced Screen

[3.1.141] Advanced Screen

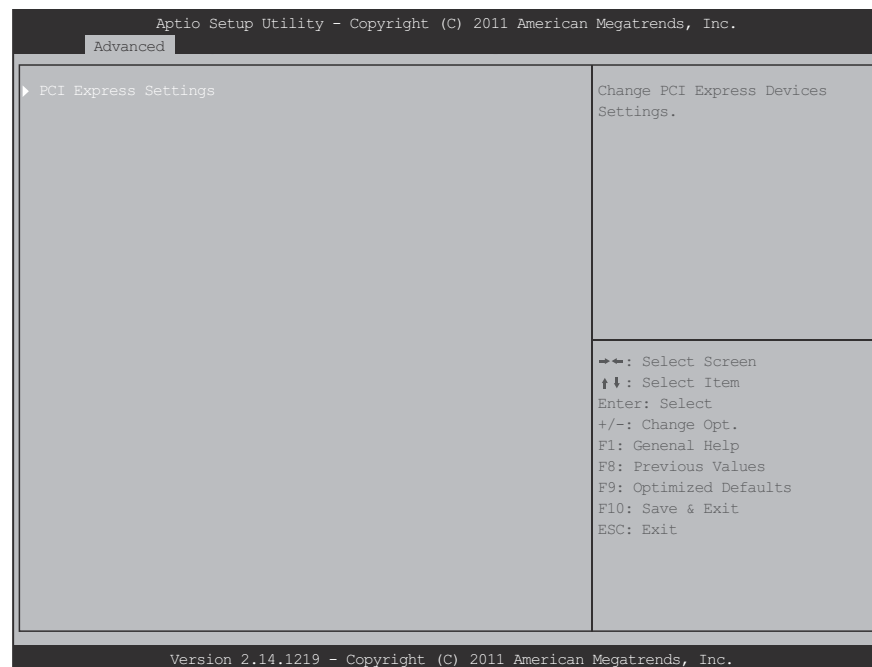
[3.1.142] SET UP ITEM	[3.1.143] OPTIONS	[3.1.144] HELP TEXT	[3.1.145] COMMENTS
[3.1.146] Show Hidden Options	[3.1.147] [Disabled] [3.1.148] [Enabled]	[3.1.149] Show Hidden Options for debug purpose only. It will be removed at PVT stage.	[3.1.150] This option would be removed after PVT Stage.
[3.1.151] PCI Subsystem Settings	[3.1.152]	[3.1.153] PCI, PCI-X and PCI Express Settings.	[3.1.154]
[3.1.155] Trusted Computing	[3.1.156]	[3.1.157] Trusted Computing Settings.	[3.1.158]
[3.1.159] WHEA Configuration	[3.1.160]	[3.1.161] General WHEA Configuration settings.	[3.1.162]
[3.1.163] CPU Configuration	[3.1.164]	[3.1.165] CPU Configuration Parameters.	[3.1.166]
[3.1.167] Runtime Error Logging	[3.1.168]	[3.1.169] Runtime Error Logging Support Setup Options	[3.1.170]
[3.1.171] SATA Configuration	[3.1.172]	[3.1.173] SATA Devices Configuration.	[3.1.174]
[3.1.175] SAS Configuration	[3.1.176]	[3.1.177] SAS Devices Configuration.	[3.1.178]

[3.1.141] Advanced Screen (Continued)

[3.1.142] SET UP ITEM	[3.1.143] O PTIONS	[3.1.144] HELP TEXT	[3.1.145] COMMENT S
[3.1.179] Intel TXT(LT-SX) Configuration	[3.1.180]	[3.1.181] Intel Trusted Execution Technology Config- uration	[3.1.182]
[3.1.183] US B Configura- tion	[3.1.184]	[3.1.185] USB Con- figuration Parame- ters.	[3.1.186]
[3.1.187] Sup er IO Config- uration	[3.1.188]	[3.1.189] System Super IO Chip Parameters.	[3.1.190]
[3.1.191] On board Device Configuration	[3.1.192]	[3.1.193] Onboard Device Parameters.	[3.1.194]
[3.1.195] Seri al Port Con- sole Redirec- tion	[3.1.196]	[3.1.197] Serial Port Console Redi- rection.	[3.1.198]

[3.1.199] PCI Screen

[3.1.200] The PCI Screen provides fields to configure PCI add-in cards, the onboard NIC controllers, and video options. To access this screen from the Main screen, select Advanced | PCI.

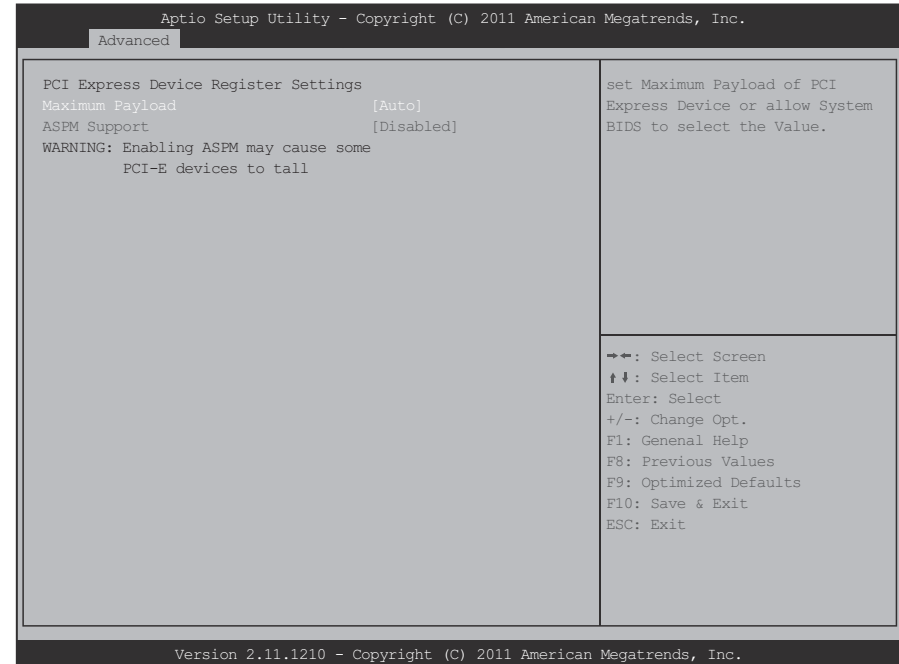


[3.1.201] PCI Subsystem Settings Screen

[3.1.202] PCI Subsystem Settings Screen

[3.1.203] SE TUP ITEM	[3.1.204] OPTI ONS	[3.1.205] HELP TEXT	[3.1.206] COMMEN TS
[3.1.207] PC I Express Settings	[3.1.208]	[3.1.209] Change PCI Express Devices Settings.	[3.1.210]

[3.1.211] PCI Express Settings Screen

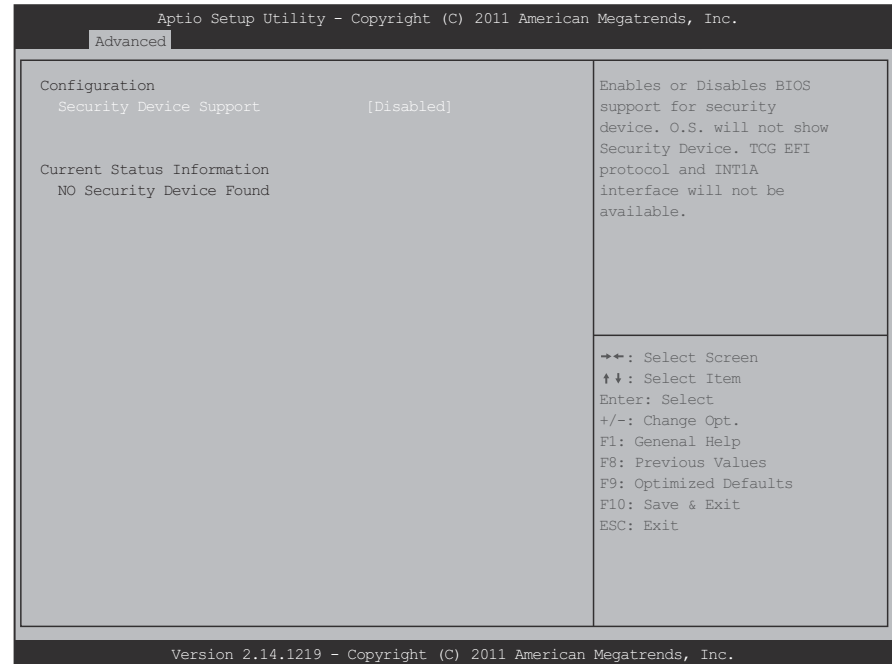


[3.1.212] PCI Express Settings Screen

[3.1.213] PCI Express Settings Fields

[3.1.214] SETUP ITEM	[3.1.215] OPTIONS	[3.1.216] HELP TEXT	[3.1.217] COMMENTS
[3.1.218] Maximum Payload	[3.1.219] [Auto] [3.1.220] [128 Bytes] [3.1.221] [256 Bytes] [3.1.222] [512 Bytes] [3.1.223] [1024 Bytes] [3.1.224] [2048 Bytes] [3.1.225] [4096 Bytes]	[3.1.226] Set Maximum Payload of PCI Express Device or allow System BIOS to select the value.	[3.1.227]
[3.1.228] ASPM Support	[3.1.229] [Disabled] [3.1.230] [Auto] [3.1.231] [Force L0s]	[3.1.232] Set the ASPM Level: Force L0s - Force all links to L0s State : AUTO - BIOS auto configure : DISABLE - [3.1.233] Disables ASPM	[3.1.234]

[3.1.235] TPM Screen

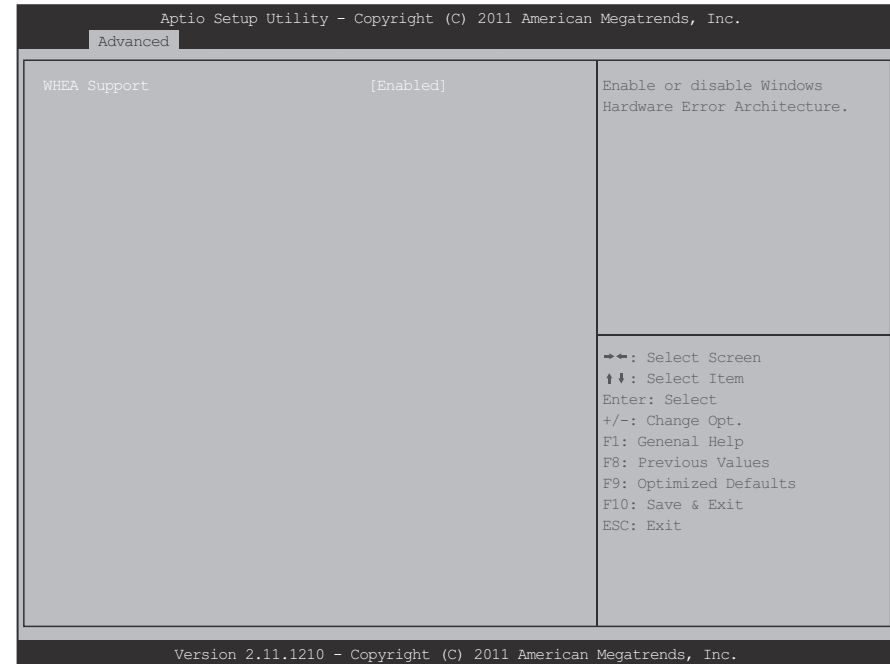


[3.1.236] Trusted Computing Screen

[3.1.237] Trusted Computing Fields

[3.1.238] SETUP ITEM	[3.1.239] OPTIONS	[3.1.240] HELP TEXT	[3.1.241] COMMENTS
[3.1.242] Security Device Support	[3.1.243] [Disabled] [3.1.244] [Enabled]	[3.1.245] Enables or Disables BIOS support for security device. O.S. will not show Security Device. TCG EFI protocol and INT1A interface will not be available.	[3.1.246]
[3.1.247] Current Status Information	[3.1.248]	[3.1.249]	[3.1.250] Information only. Displays the Current Status Information

[3.1.251] WHEA Support Screen



[3.1.252] WHEA Support Screen

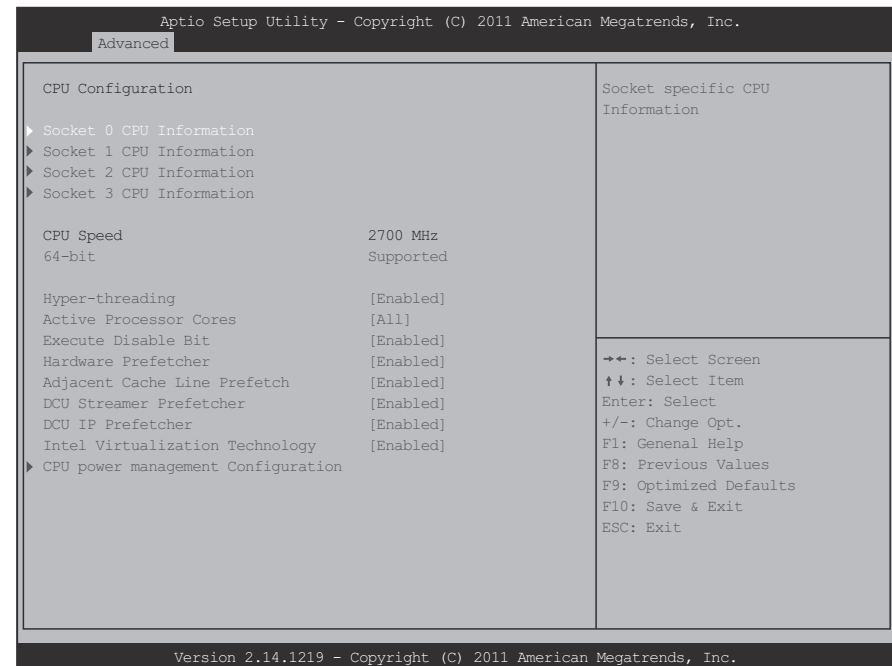
[3.1.253] WHEA Support Fields

[3.1.254] SETUP ITEM	[3.1.255] OPTIONS	[3.1.256] HELP TEXT	[3.1.257] COMMENTS
[3.1.258] WHEA Support	[3.1.259] [Disabled] [3.1.260] [Enabled]	[3.1.261] Enable or disable Windows Hardware Error Architecture. When Enabled the BIOS would publishes WHEA-specific ACPI tables that describe the platform error interfaces for the OS as Spec, and also implements the ASL code to support and enable WHEA capability in the platform.	[3.1.262]

[3.1.263] Processor Configuration Screen

[3.1.264] The Processor screen provides a place for the user to view the processor core frequency, system bus frequency, and enable or disable several processor options. The user can also select an option to view information about a specific processor.

[3.1.265] To access this screen from the Main screen, select Advanced | Processor.



[3.1.266] Processor Configuration Screen

[3.1.267] Processor Configuration Fields

[3.1.268] SETUP ITEM	[3.1.269] OPTIONS	[3.1.270] HELP TEXT	[3.1.271] COMMENTS
[3.1.272] Socket 0 CPU Information	[3.1.273]	[3.1.274] Socket specific CPU Information.	[3.1.275]
[3.1.276] Socket 1 CPU Information	[3.1.277]	[3.1.278] Socket specific CPU Information.	[3.1.279]
[3.1.280] Socket 2 CPU Information	[3.1.281]	[3.1.282] Socket specific CPU Information.	[3.1.283]
[3.1.284] Socket 3 CPU Information	[3.1.285]	[3.1.286] Socket specific CPU Information.	[3.1.287]
[3.1.288] CPU Speed	[3.1.289]	[3.1.290]	[3.1.291] Information only. Displays the speed of the processor.
[3.1.292] 64-bit	[3.1.293]	[3.1.294]	[3.1.295] Information only. Displays 64-bit supported or not.

[3.1.267] Processor Configuration Fields (Continued)

[3.1.268] SETUP ITEM	[3.1.269] OPTIONS	[3.1.270] HELP TEXT	[3.1.271] COMMENTS
[3.1.296] Hyper-threading	[3.1.297] [Disabled] [3.1.298] [Enabled]	[3.1.299] Enabled for Windows XP and Linux (OS optimized for Hyper-Threading Technology) and Disabled for other OS (OS not optimized for Hyper-Threading Technology). When Disabled only one thread per enabled core is enabled.	[3.1.300]
[3.1.301] Active Processor Core	[3.1.302] [All] [3.1.303] [1] [3.1.304] [2] [3.1.305] [4] [3.1.306] [6]	[3.1.307] Number of cores to enable in each processor package.	[3.1.308] Except 1 core, enabling odd numbers of processor cores is not supported. [3.1.309] The options listed also depend on current using processor core number.

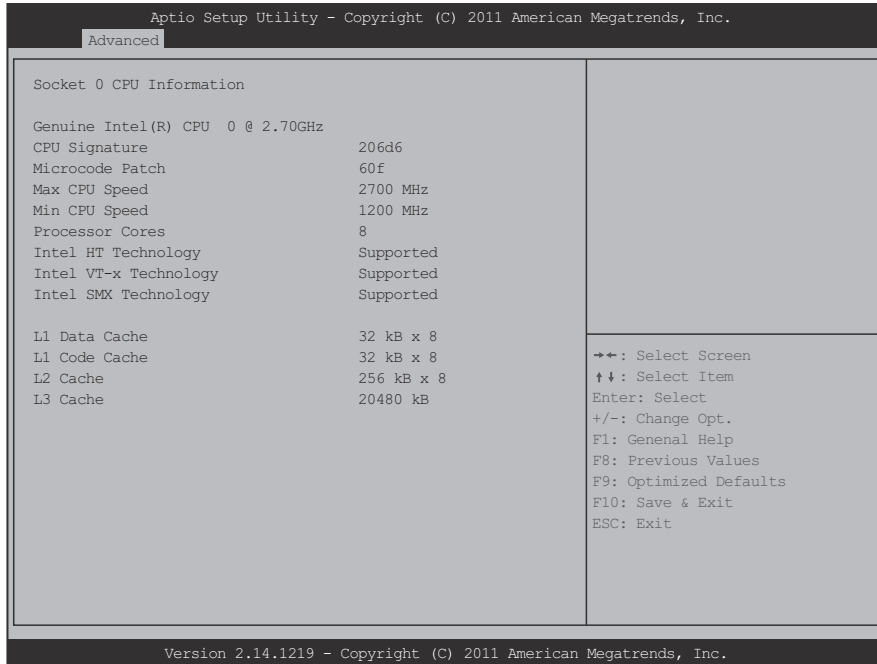
[3.1.267] Processor Configuration Fields (Continued)

[3.1.268] SE TUP ITEM	[3.1.269] OP TIONS	[3.1.270] HELP TEXT	[3.1.271] COMMENT S
[3.1.310] Execute Disable Bit	[3.1.311] [Disabled] [3.1.312] [Enabled]	[3.1.313] XD can prevent certain classes of malicious buffer overflow attacks when combined with a supporting OS (Windows Sever 2003 SP1, Windows XP SP2, SuSE Linux 9.2, RedHat Enterprise 3 Update 3).	[3.1.314]
[3.1.315] Hardware Prefetcher	[3.1.316] [Disabled] [3.1.317] [Enabled]	[3.1.318] To turn on/off prefetching of adjacent cache lines.	[3.1.319]
[3.1.320] Adjacent Cache Line Prefetch	[3.1.321] [Disabled] [3.1.322] [Enabled]	[3.1.323] To turn on/off the Mid Level Cache (L2) streamer prefetcher.	[3.1.324]
[3.1.325] DCU Streamer Prefetcher	[3.1.326] [Disabled] [3.1.327] [Enabled]	[3.1.328] Enable prefetcher of next L1 Data line based upon multiple loads in same cache line.	[3.1.329]

[3.1.267] Processor Configuration Fields (Continued)

[3.1.268] SE TUP ITEM	[3.1.269] OP TIONS	[3.1.270] HELP TEXT	[3.1.271] COMMENT S
[3.1.330] DCU IP Prefetcher	[3.1.331] [Disabled] [3.1.332] [Enabled]	[3.1.333] Enable prefetcher of next L1 line based upon sequential load history.	[3.1.334]
[3.1.335] Intel Virtualization Technology	[3.1.336] [Disabled] [3.1.337] [Enabled]	[3.1.338] When enabled, a VMM can utilize the additional hardware capabilities provided by Vanderpool Technology.	[3.1.339]
[3.1.340] CPU Power Management Configuration	[3.1.341]	[3.1.342] CPU Power Management Configuration Parameters	[3.1.343]

[3.1.344] Socket 0 CPU Information Screen



[3.1.345] Socket 0 CPU Information Screen

[3.1.346] Socket 0 CPU Information Fields

[3.1.347] SETUP ITEM	[3.1.348] OPTIONS	[3.1.349] HELP TEXT	[3.1.350] COMMENTS
[3.1.351] CPU Signature	[3.1.352]	[3.1.353]	[3.1.354] Information only. Displays the CPU Signature.

[3.1.346] Socket 0 CPU Information Fields (Continued)

[3.1.347] SETUP ITEM	[3.1.348] OPTIONS	[3.1.349] HELP TEXT	[3.1.350] COMMENTS
[3.1.355] Microcode Patch	[3.1.356]	[3.1.357]	[3.1.358] Information only. Displays the Microcode Patch.
[3.1.359] Max CPU Speed	[3.1.360]	[3.1.361]	[3.1.362] Information only. Displays the Max CPU Speed.
[3.1.363] Min CPU Speed	[3.1.364]	[3.1.365]	[3.1.366] Information only. Displays the Min CPU Speed.
[3.1.367] Processor Cores	[3.1.368]	[3.1.369]	[3.1.370] Information only. Displays the number of Processor Cores.
[3.1.371] Intel HT Technology	[3.1.372]	[3.1.373]	[3.1.374] Information only. Displays Intel HT Technology supported or not.
[3.1.375] Intel VT-x Technology	[3.1.376]	[3.1.377]	[3.1.378] Information only. Displays Intel VT-x Technology supported or not.

[3.1.346] Socket 0 CPU Information Fields (Continued)

[3.1.347] SETUP ITEM	[3.1.348] OPTIONS	[3.1.349] HELP TEXT	[3.1.350] COMMENTS
[3.1.379] Intel SMX Technology	[3.1.380]	[3.1.381]	[3.1.382] Information only. Displays Intel SMX Technology supported or not.
[3.1.383] L1 Data Cache	[3.1.384]	[3.1.385]	[3.1.386] Information only. Displays the size of L1 Data Cache.
[3.1.387] L1 Code Cache	[3.1.388]	[3.1.389]	[3.1.390] Information only. Displays the size of L1 Code Cache.
[3.1.391] L2 Cache	[3.1.392]	[3.1.393]	[3.1.394] Information only. Displays the size of L2 Cache.
[3.1.395] L3 Cache	[3.1.396]	[3.1.397]	[3.1.398] Information only. Displays the size of L3 Cache.

[3.1.399] CPU Power Management Configuration Screen



[3.1.400] CPU Power Management Configuration Screen

[3.1.401] CPU Power Management Configuration Fields

[3.1.402] SETUP ITEM	[3.1.403] OPTIONS	[3.1.404] HELP TEXT	[3.1.405] COMMENTS
[3.1.406] Power Technology	[3.1.407] [Disabled] [3.1.408] [Energy Efficient] [3.1.409] [Custom]	[3.1.410] Enable the power management features.	[3.1.411]
[3.1.412] EIST	[3.1.413] [Disabled] [3.1.414] [Enabled]	[3.1.415] Enable/Disable Intel SpeedStep.	[3.1.416] Option only show when "Processor Technology" = [Custom]
[3.1.417] Turbo Mode	[3.1.418] [Disabled] [3.1.419] [Enabled]	[3.1.420] Turbo Mode.	[3.1.421] Option only show when "Processor Technology" = [Custom]
[3.1.422] CPU C3 Report	[3.1.423] [Disabled] [3.1.424] [Enabled]	[3.1.425] Enable/Disable CPU Core C3 report to OS.	[3.1.426] Option only show when "Processor Technology" = [Custom]
[3.1.427] CPU C6 Report	[3.1.428] [Disabled] [3.1.429] [Enabled]	[3.1.430] Enable/Disable CPU Core C6 report to OS.	[3.1.431] Option only show when "Processor Technology" = [Custom]
[3.1.432] CPU C7 Report	[3.1.433] [Disabled] [3.1.434] [Enabled]	[3.1.435] Enable/Disable CPU Core C7 report to OS.	[3.1.436] Option only show when "Processor Technology" = [Custom]

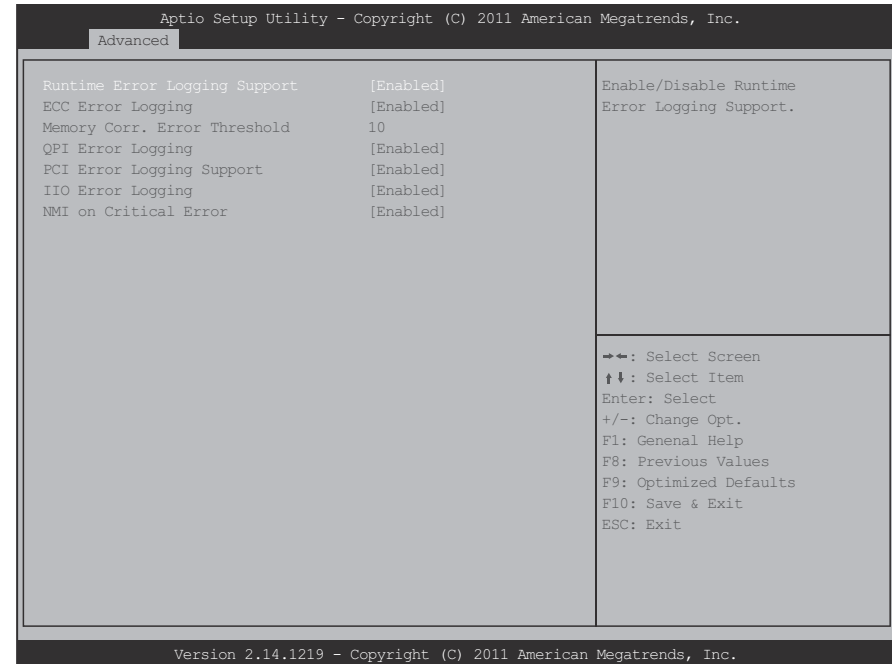
[3.1.401] CPU Power Management Configuration Fields

[3.1.402] SETUP ITEM	[3.1.403] OPTIONS	[3.1.404] HELP TEXT	[3.1.405] COMMENTS
Energy Performance	[Performance] [Balanced Performance] [Balanced Energy] [Energy Efficient]	Optimize between performance and power savings. Windows 2008 and later Oses overrides this value according to its power plan.	
Factory long duration power limit			Information only. Displays the Factory long duration power limit.
Long duration power limit		Long duration power limit in Watts.	
Factory long duration maintained			Information only. Displays the Factory long duration maintained.
Long duration maintained		Time window which the long duration power is maintained.	

[3.1.401] CPU Power Management Configuration Fields

[3.1.402] SETUP ITEM	[3.1.403] OPTIONS	[3.1.404] HELP TEXT	[3.1.405] COMMENTS
Recommended short duration power limit			Information only. Displays the Recommended short duration power.
Short duration power limit		Short duration power limit in Watts.	

[3.1.437] Runtime Error Logging Screen



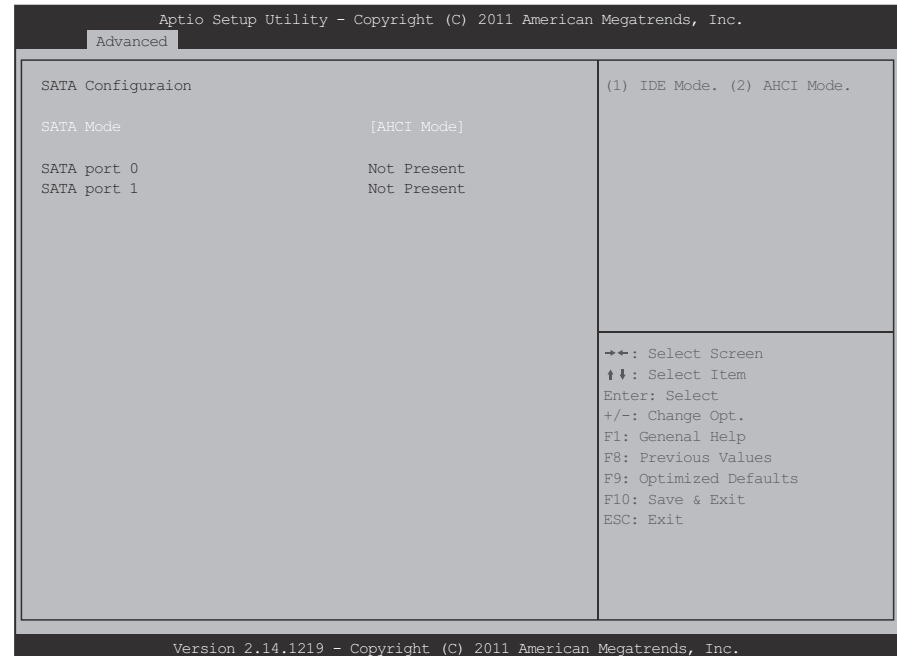
[3.1.438] Runtime Error Logging Screen

[3.1.439] Runtime Error Logging Fields

[3.1.440] SETUP ITEM	[3.1.441] OPTIONS	[3.1.442] HELP TEXT	[3.1.443] COMMENTS
[3.1.444] Runtime Error Logging Support	[3.1.445] [Disabled] [3.1.446] [Enabled]	[3.1.447] Enable/Disable Runtime Error Logging Support.	[3.1.448]
[3.1.449] ECC Error Logging	[3.1.450] [Disabled] [3.1.451] [Enabled]	[3.1.452] Enable/Disable ECC Error Logging.	[3.1.453]
[3.1.454] Memory Corr. Error Threshold	[3.1.455]	[3.1.456] Enter the Memory Correctable Error Threshold value	[3.1.457] This can be set to a value between 1 to 15. Default is 10.
[3.1.458] QPI Error Logging	[3.1.459] [Disabled] [3.1.460] [Enabled]	[3.1.461] Enable/Disable QPI Error Logging	[3.1.462]
[3.1.463] PCI Error Logging Support	[3.1.464] [Disabled] [3.1.465] [Enabled]	[3.1.466] Enable/Disable PCI Error Logging Support	[3.1.467]
[3.1.468] IIO Error Logging	[3.1.469] [Disabled] [3.1.470] [Enabled]	[3.1.471] Enable/Disable IIO Error Logging	[3.1.472]
[3.1.473] NMI on Critical Error	[3.1.474] [Disabled] [3.1.475] [Enabled]	[3.1.476] Enable/Disable NMI generation on fatal or uncorrectable error	[3.1.477]

[3.1.478] SATA Controller Screen

[3.1.479] The SATA Controller screen provides fields to configure SATA hard disk drives. It also provides information on the hard disk drives that are installed.



[3.1.480] SATA Controller Configuration Screen

[3.1.481] SATA Controller Configuration Fields

[3.1.482] SETUP ITEM	[3.1.483] OPTIONS	[3.1.484] HELP TEXT	[3.1.485] COMMENTS
[3.1.486] SATA Mode	[3.1.487] [Disabled] [3.1.488] [IDE Mode] [3.1.489] [AHCI Mode]	[3.1.490] (1) IDE Mode. (2) AHCI Mode.	[3.1.491] Select SATA Type for onboard SATA ports.
[3.1.492] Serial-ATA Controller 0	[3.1.493] [Disabled] [3.1.494] [Enhanced] [3.1.495] [Compatible]	[3.1.496] Enabled/Disabled Serial ATA Controller 0.	[3.1.497]
[3.1.498] SATA Port0	[3.1.499]	[3.1.500]	[3.1.501] Information only. Displays the device on Port0.
[3.1.502] SATA Port1	[3.1.503]	[3.1.504]	[3.1.505] Information only. Displays the device on Port1.

[3.1.506] SAS Configuration Screen



[3.1.507] SAS Configuration Screen

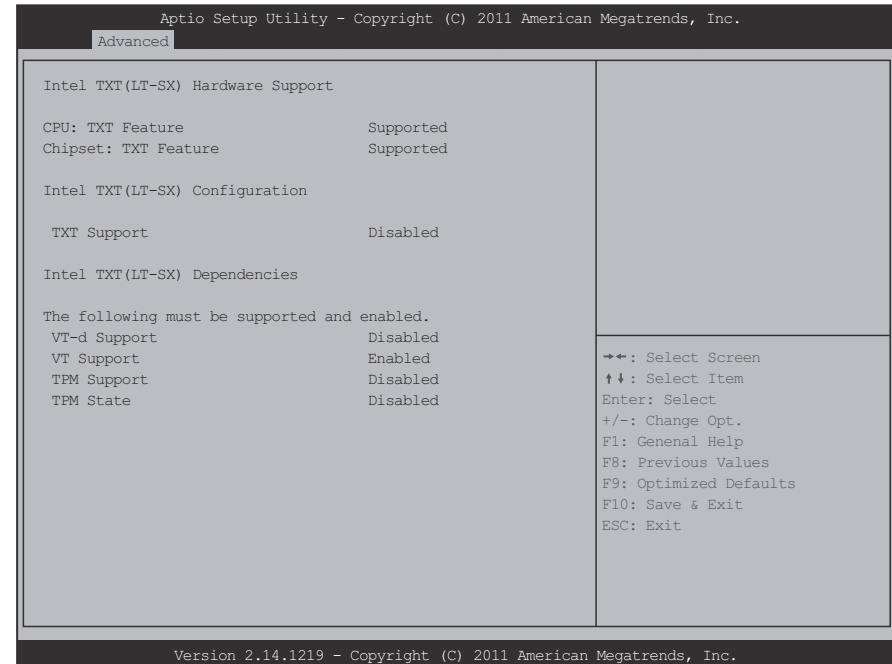
[3.1.508] SAS Configuration Fields

[3.1.509] SETUP ITEM	[3.1.510] OPTIONS	[3.1.511] HELP TEXT	[3.1.512] COMMENTS
[3.1.513] SAS Port 0	[3.1.514]	[3.1.515]	[3.1.516] Information only. Displays the device on SAS Port 0.

[3.1.508] SAS Configuration Fields (Continued)

[3.1.509] SE TUP ITEM	[3.1.510] OP TIONS	[3.1.511] HELP TEXT	[3.1.512] COMMENT S
[3.1.517] SA S Port 1	[3.1.518]	[3.1.519]	[3.1.520] Informati on only. Displays the device on SAS Port 1.
[3.1.521] SA S Port 2	[3.1.522]	[3.1.523]	[3.1.524] Informati on only. Displays the device on SAS Port 2.
[3.1.525] SA S Port 3	[3.1.526]	[3.1.527]	[3.1.528] Informati on only. Displays the device on SAS Port 3.
[3.1.529] SA S Port 4	[3.1.530]	[3.1.531]	[3.1.532] Informati on only. Displays the device on SAS Port 4.
[3.1.533] SA S Port 5	[3.1.534]	[3.1.535]	[3.1.536] Informati on only. Displays the device on SAS Port 5.
[3.1.537] SA S Port 6	[3.1.538]	[3.1.539]	[3.1.540] Informati on only. Displays the device on SAS Port 6.
[3.1.541] SA S Port 7	[3.1.542]	[3.1.543]	[3.1.544] Informati on only. Displays the device on SAS Port 7.

[3.1.545] Intel TXT(LT-SX) Screen



[3.1.546] Intel TXT(LT-SX) Configuration Screen

[3.1.547] Intel TXT(LT-SX) Configuration Fields

[3.1.548] SET UP ITEM	[3.1.549] OP TIONS	[3.1.550] HELP TEXT	[3.1.551] COMMENT S
[3.1.552] CP U: TXT Fea- ture	[3.1.553]	[3.1.554]	[3.1.555] Informati on only. Displays the CPU: TXT Feature.

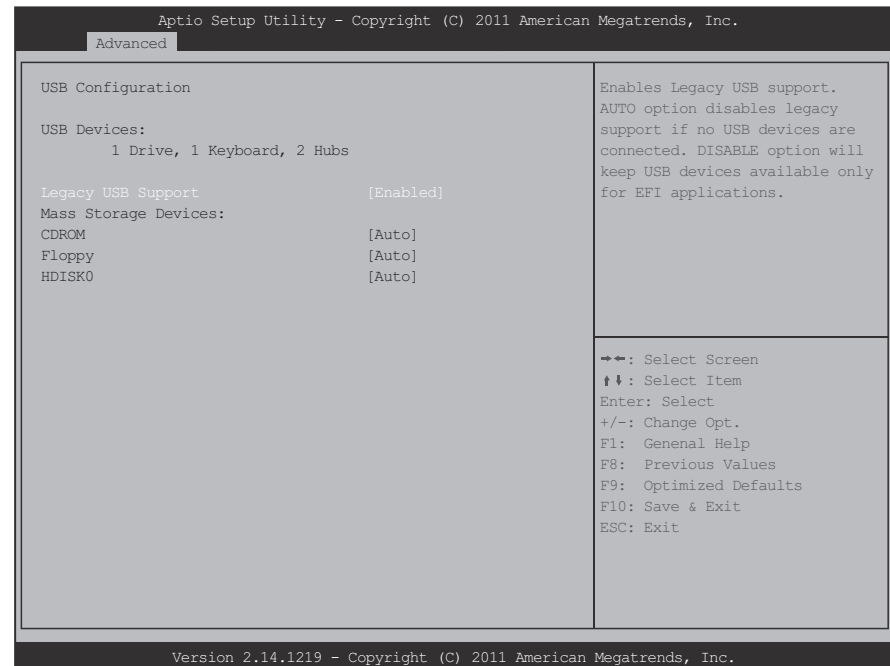
[3.1.547] Intel TXT(LT-SX) Configuration Fields (Continued)

[3.1.548] SET UP ITEM	[3.1.549] OP TIONS	[3.1.550] HELP TEXT	[3.1.551] COMMEN TS
[3.1.556] Chipset: TXT Feature	[3.1.557]	[3.1.558]	[3.1.559] Information only. Displays the Chipset: TXT Feature.
[3.1.560] TXT Support	[3.1.561] [Disabled] [3.1.562] [Enabled]	[3.1.563] TXT requires a properly configured TPM, LT-SX enabled CPU, and the below dependencies be met.	[3.1.564] Only selectable when “CPU: TXT Feature”, “Chipset: TXT Feature”, “VT-d Support”, “VT Support”, “TPM Support” and “TPM State” are all supported.
[3.1.565] VT-d Support	[3.1.566]	[3.1.567]	[3.1.568] Information only. Displays the VT-d Support.
[3.1.569] VT Support	[3.1.570]	[3.1.571]	[3.1.572] Information only. Displays the VT Support.
[3.1.573] TPM Support	[3.1.574]	[3.1.575]	[3.1.576] Information only. Displays Intel TPM Support.
[3.1.577] TPM State	[3.1.578]	[3.1.579]	[3.1.580] Information only. Displays Intel TPM State.

[3.1.581] USB Configuration Screen

[3.1.582] The USB Configuration screen provides fields to configure the USB controller options.

[3.1.583] To access this screen from the Main screen, select Advanced | USB Configuration.



[3.1.584] USB Configuration Screen

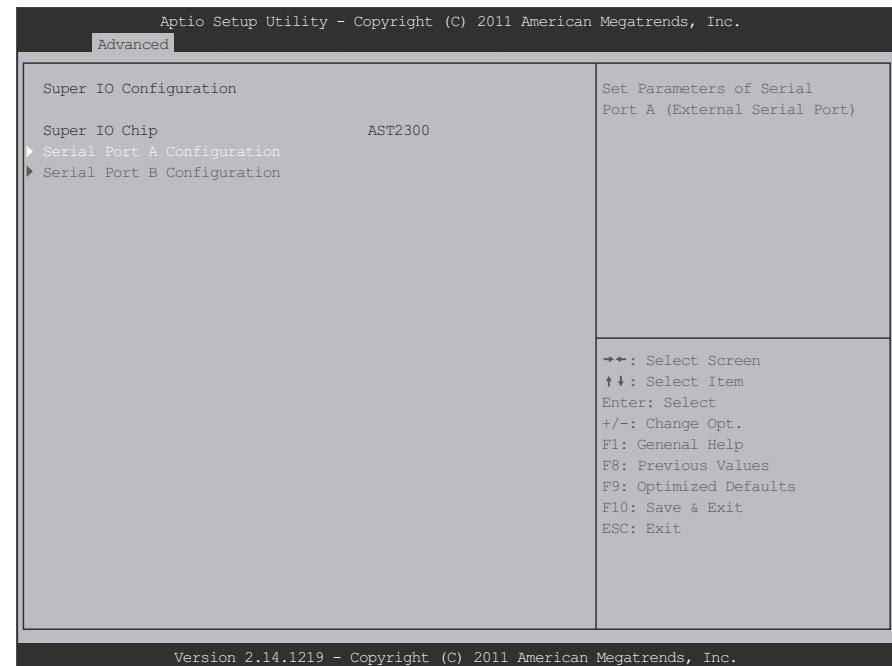
[3.1.585] USB Configuration Fields

[3.1.586] SETUP ITEM	[3.1.587] OPTIONS	[3.1.588] HELP TEXT	[3.1.589] COMMENTS
[3.1.590] USB Devices:	[3.1.591]	[3.1.592]	[3.1.593] Information only. Display all of the USB devices attached.
[3.1.594] Legacy USB Support	[3.1.595] [Enabled] [3.1.596] [Disabled] [3.1.597] [Auto]	[3.1.598] Enables Legacy USB support. AUTO option disables legacy support if no USB devices are connected, DISABLE option will keep USB devices available only for EFI applications.	[3.1.599]
[3.1.600] Mass Storage Devices	[3.1.601] [Auto]	[3.1.602]	[3.1.603] Information only. Display all of the Mass Storage Devices attached.

[3.1.604] Super I/O Configuration Screen

[3.1.605] The Serial Ports screen provides fields to configure the Serial Port [COM Port].

[3.1.606] To access this screen from the Main screen, select Advanced | Super IO Configuration.

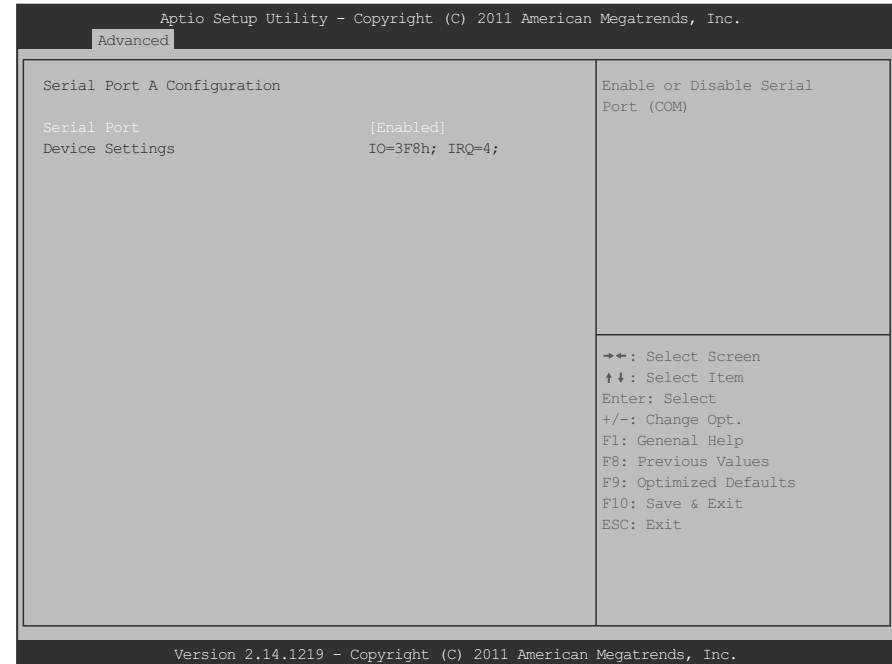


[3.1.607] Super I/O Configuration Screen

[3.1.608] Super I/O Configuration Fields

[3.1.609] SET UP ITEM	[3.1.610] OP TIONS	[3.1.611] HELP TEXT	[3.1.612] COMMEN TS
[3.1.613] Super IO Chip	[3.1.614]	[3.1.615]	[3.1.616] Information only. Display Super IO Chip.
[3.1.617] Serial Port A Configuration	[3.1.618]	[3.1.619] Set Parameters of Serial Port A (External Serial Port).	[3.1.620]
[3.1.621] Serial Port B Configuration	[3.1.622]	[3.1.623] Set Parameters of Serial Port B (Internal Serial Port).	[3.1.624]

[3.1.625] Serial Port Configuration Screen



[3.1.626] Serial Port Configuration Screen

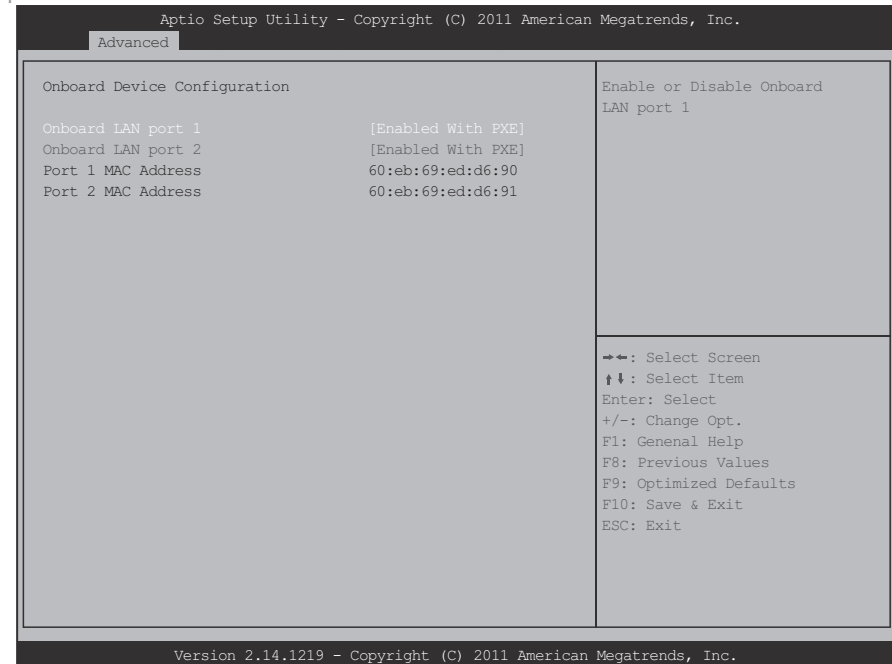
[3.1.627] Serial Port Configuration Fields

[3.1.628] SE TUP ITEM	[3.1.629] OP TIONS	[3.1.630] HELP TEXT	[3.1.631] COMMENT S
[3.1.632] Serial Port	[3.1.633] [Disabled] [3.1.634] [Enabled]	[3.1.635] Enable or Disable Serial Port (COM).	[3.1.636]

[3.1.627] Serial Port Configuration Fields (Continued)

[3.1.628] SETUP ITEM	[3.1.629] OPTIONS	[3.1.630] HELP TEXT	[3.1.631] COMMENTS
[3.1.637] Device Settings	[3.1.638]	[3.1.639]	[3.1.640] Information only. Display Device Settings.

[3.1.641] Onboard Device Configuration Screen

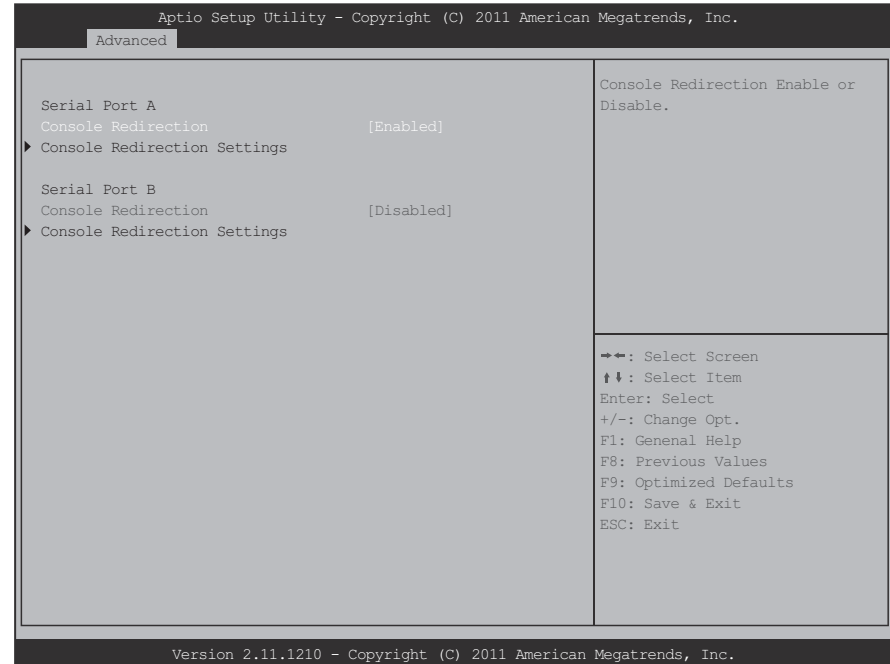


[3.1.642] Onboard Device Configuration Screen

[3.1.643] Onboard Device Configuration Fields

[3.1.644] SETUP ITEM	[3.1.645] OPTIONS	[3.1.646] HELP TEXT	[3.1.647] COMMENTS
[3.1.648] Onboard LAN port 1	[3.1.649] [Disabled] [3.1.650] [Enabled With PXE] [3.1.651] [Enabled Without PXE] [3.1.652] [iSCSI Remote Boot]	[3.1.653] Enable or Disable Onboard LAN port 1.	[3.1.654]
[3.1.655] Onboard LAN port 2	[3.1.656] [Disabled] [3.1.657] [Enabled With PXE] [3.1.658] [Enabled Without PXE] [3.1.659] [iSCSI Remote Boot]	[3.1.660] Enable or Disable Onboard LAN port 2.	[3.1.661]
[3.1.662] Port 1 MAC Address	[3.1.663]	[3.1.664]	[3.1.665] Information only. Display Port 1 MAC Address.
[3.1.666] Port 2 MAC Address	[3.1.667]	[3.1.668]	[3.1.669] Information only. Display Port 2 MAC Address.

[3.1.670] Console Redirection Screen



[3.1.671] Console Redirection Screen

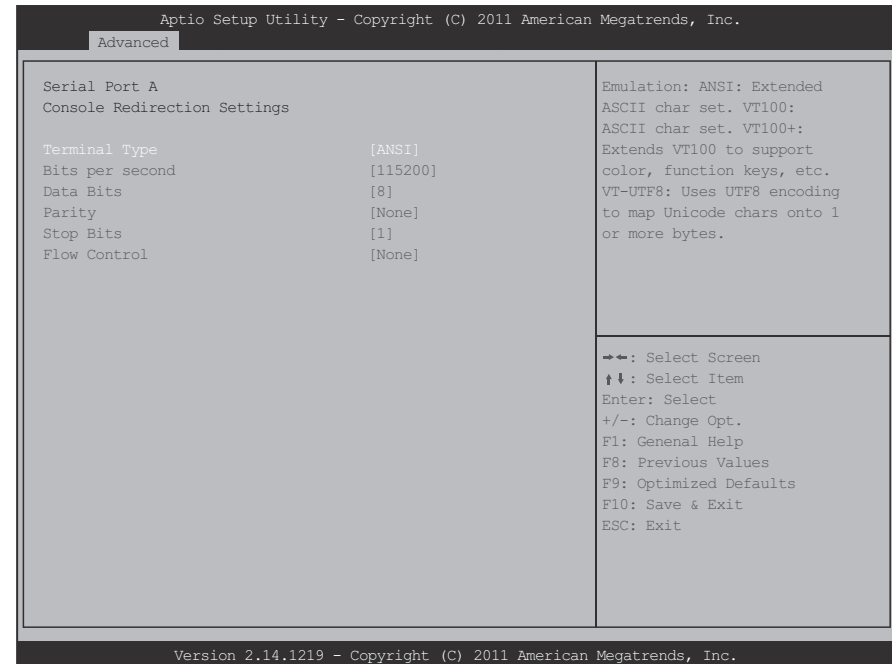
[3.1.672] Console Redirection Fields

[3.1.673] SETUP ITEM	[3.1.674] OPTIONS	[3.1.675] HELP TEXT	[3.1.676] COMMENTS
[3.1.677] Console Redirection	[3.1.678] [Disabled] [3.1.679] [Enabled]	[3.1.680] Console Redirection Enable or Disable.	[3.1.681]

[3.1.672] Console Redirection Fields (Continued)

[3.1.673] SE TUP ITEM	[3.1.674] OP TIONS	[3.1.675] HELP TEXT	[3.1.676] COMMENT S
[3.1.682] Co nsole Redi- rection Set- tings	[3.1.683]	[3.1.684] The set- tings specify how the host computer and the remote computer (which the user is using) will exchange data. Both computers should have the same or compati- ble settings.	[3.1.685] Only accessible if Con- sole Redirection is set to [Enabled].

**[3.1.686] Console Redirection Settings
Screen**



[3.1.687] Console Redirection Settings Screen

[3.1.688] Console Redirection Settings Fields

[3.1.689] SETUP ITEM	[3.1.690] OPTIONS	[3.1.691] HELP TEXT	[3.1.692] COMMENTS
[3.1.693] Terminal Type	[3.1.694] [VT100] [3.1.695] [VT100+] [3.1.696] [VT-UTF8] [3.1.697] [ANSI]	[3.1.698] Emulation: ANSI: Extended ASCII char set. VT100: ASCII char set. VT100+: Extends VT100 to support color, function keys, etc. VT-UTF8: Uses UTF8 encoding to map Unicode chars onto 1 or more bytes.	[3.1.699]
[3.1.700] Bits per second	[3.1.701] [9600] [3.1.702] [19200] [3.1.703] [38400] [3.1.704] [57600] [3.1.705] [115200]	[3.1.706] Selects serial port transmission speed. The speed must be matched on the other side. Long or noisy lines may require lower speeds.	[3.1.707]
[3.1.708] Data Bits	[3.1.709] [7] [3.1.710] [8]	[3.1.711] Data Bits	[3.1.712]

[3.1.688] Console Redirection Settings Fields (Continued)

[3.1.689] SETUP ITEM	[3.1.690] OPTIONS	[3.1.691] HELP TEXT	[3.1.692] COMMENTS
[3.1.713] Parity	[3.1.714] [None] [3.1.715] [Even] [3.1.716] [Odd] [3.1.717] [Mark] [3.1.718] [Space]	[3.1.719] A parity bit can be sent with the data bits to detect some transmission errors. Even: parity bit is 0 if the num of 1's in the data bits is even. Odd: parity bit is 0 if num of 1's in the data bits is odd. Mark: parity bit is always 1. Space: Parity bit is always 0. Mark and Space Parity do not allow for error detection.	[3.1.720]
[3.1.721] Stop Bits	[3.1.722] [1] [3.1.723] [2]	[3.1.724] Stop bits indicate the end of a serial data packet. (A start bit indicates the beginning). The standard setting is 1 stop bit. Communication with slow devices may require more than 1 stop bit.	[3.1.725]

[3.1.688] Console Redirection Settings Fields (Continued)

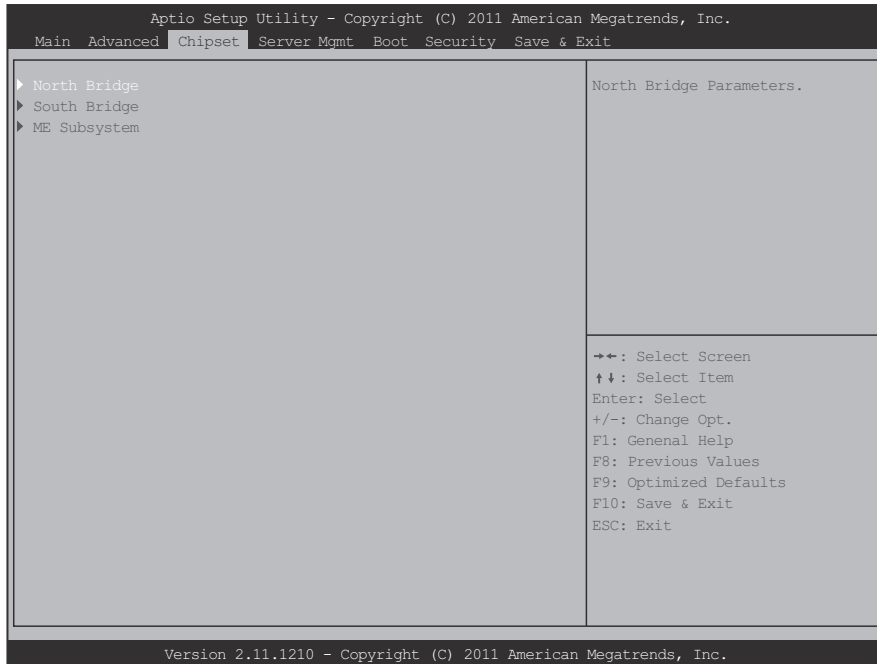
[3.1.689] SETUP ITEM	[3.1.690] OPTIONS	[3.1.691] HELP TEXT	[3.1.692] COMMENTS
[3.1.726] Flow Control	[3.1.727] [None] [3.1.728] [Hardware RTS/CTS]	[3.1.729] Flow control can prevent data loss from buffer overflow. When sending data, if the receiving buffers are full, a 'stop' signal can be sent to stop the data flow. Once the buffers are empty, a 'start' signal can be sent to re-start the flow. Hardware flow control uses two wires to send start/stop signals.	[3.1.730]

[3.1.731]

[3.1.732] Chipset Screen

[3.1.733] The Chipset screen provides an access point to configure several options. On this screen, the user selects the option that is to be configured. Configurations are performed on the selected screen, not directly on the Chipset screen.

[3.1.734] To access this screen from the Main screen, press the right arrow until the Chipset screen is chosen.



[3.1.735] Chipset Screen

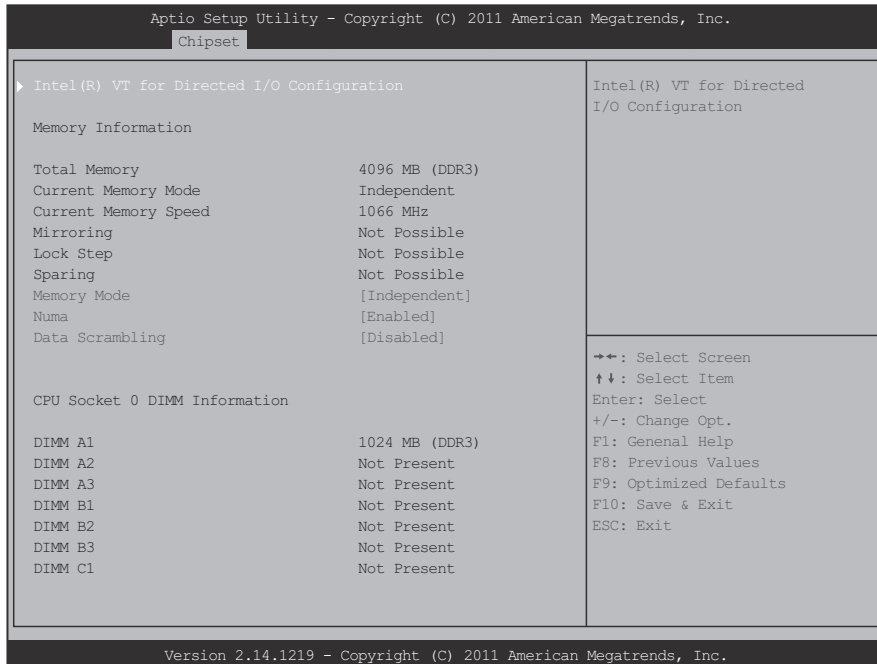
[3.1.736] Chipset Fields (Continued)

[3.1.737] SE TUP ITEM	[3.1.738] OP TIONS	[3.1.739] HELP TEXT	[3.1.740] COMMENT S
[3.1.745] So uth Bridge	[3.1.746]	[3.1.747] South Bridge Parame- ters.	[3.1.748]
[3.1.749] ME Subsystem	[3.1.750]	[3.1.751] ME Sub- system Parame- ters.	[3.1.752]

[3.1.736] Chipset Fields

[3.1.737] SE TUP ITEM	[3.1.738] OP TIONS	[3.1.739] HELP TEXT	[3.1.740] COMMENT S
[3.1.741] No rth Bridge	[3.1.742]	[3.1.743] North Bridge Parame- ters.	[3.1.744]

[3.1.753] North Bridge Screen



[3.1.754] North Bridge Configuration Screen

[3.1.755] North Bridge Configuration Fields

[3.1.756] SET UP ITEM	[3.1.757] OP TIONS	[3.1.758] HELP TEXT	[3.1.759] COMMENT S
[3.1.760] Intel(R) VT for Directed I/O Configuration	[3.1.761]	[3.1.762] Intel(R) VT for Directed I/O Configuration.	[3.1.763]

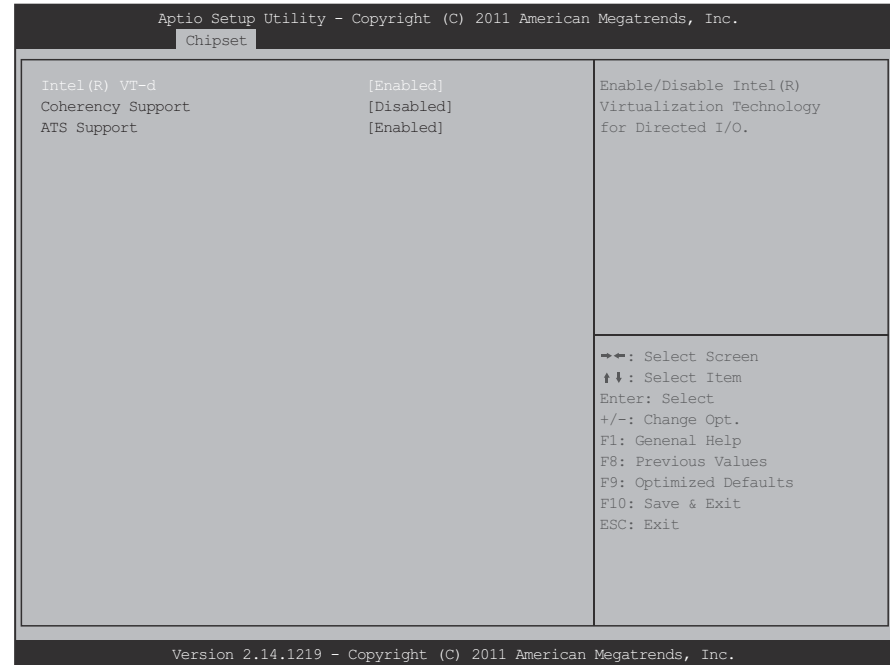
[3.1.755] North Bridge Configuration Fields (Continued)

[3.1.756] SET UP ITEM	[3.1.757] OP TIONS	[3.1.758] HELP TEXT	[3.1.759] COMMENT S
[3.1.764] Total Memory	[3.1.765]	[3.1.766]	[3.1.767] Information only. Displays the Total Memory.
[3.1.768] Current Memory Mode	[3.1.769]	[3.1.770]	[3.1.771] Information only. Displays the Current Memory Mode.
[3.1.772] Current Memory Speed	[3.1.773]	[3.1.774]	[3.1.775] Information only. Displays the Current Memory Speed.
[3.1.776] Mirroring	[3.1.777]	[3.1.778]	[3.1.779] Information only. Displays the Mirroring support state.
[3.1.780] Lock Step	[3.1.781]	[3.1.782]	[3.1.783] Information only. Displays the Lock Step support state.
[3.1.784] Sparing	[3.1.785]	[3.1.786]	[3.1.787] Information only. Displays the Sparing support state.

[3.1.755] North Bridge Configuration Fields (Continued)

[3.1.756] SET UP ITEM	[3.1.757] OP TIONS	[3.1.758] HELP TEXT	[3.1.759] COMMENT S
[3.1.788] Memory Mode	[3.1.789] [Independent] [3.1.790] [Mirroring] [3.1.791] [Lock Step] [3.1.792] [Sparing]	[3.1.793] Select the mode for memory initialization	[3.1.794] If unsupported memory mode is selected, BIOS will use "Independent" as current memory mode during next boot. BIOS will not use the user-select unsupported memory mode until the memory population method is changed to support userselect memory mode.
[3.1.795] Numma	[3.1.796] [Disabled] [3.1.797] [Enabled]	[3.1.798] Enable or Disable Non uniform Memory Access (NUMA)	[3.1.799]
[3.1.800] Data Scrambling	[3.1.801] [Disabled] [3.1.802] [Enabled]	[3.1.803] Enable/Disable Data Scrambling	[3.1.804]
[3.1.805] DIMM Information	[3.1.806]	[3.1.807]	[3.1.808] Information only. Displays the DIMM information.

[3.1.809] Intel(R) VT-d Screen



[3.1.810] Intel(R) VT-d Screen

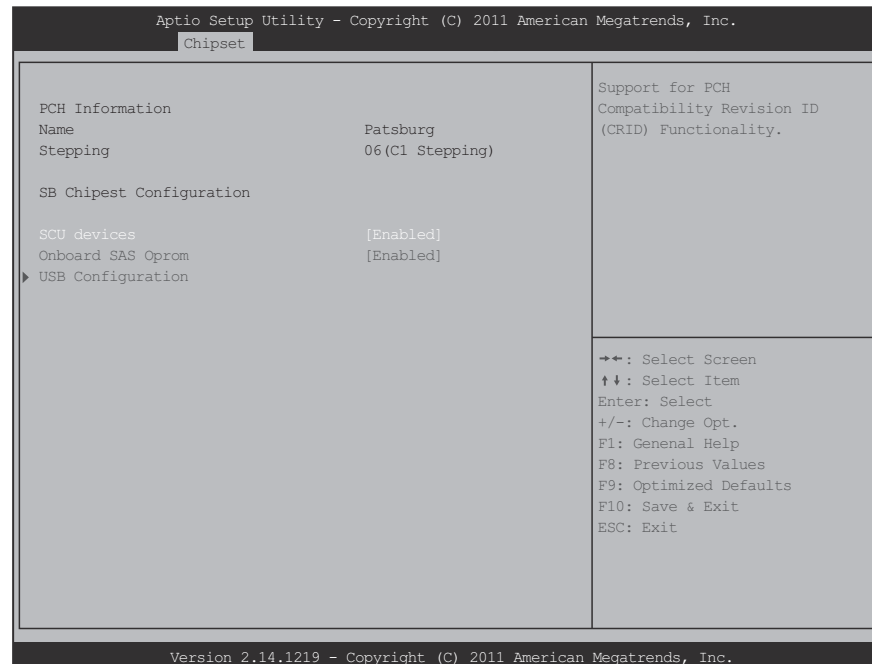
[3.1.811] Intel(R) VT-d Fields

[3.1.812] SET UP ITEM	[3.1.813] OP TIONS	[3.1.814] HELP TEXT	[3.1.815] COMMENT S
[3.1.816] Intel® VT-d	[3.1.817] [Disabled] [3.1.818] [Enabled]	[3.1.819] Enable/Disable Intel® Virtualization Technology for Directed I/O.	[3.1.820]

[3.1.811] Intel(R) VT-d Fields (Continued)

[3.1.812] SE TUP ITEM	[3.1.813] OP TIONS	[3.1.814] HELP TEXT	[3.1.815] COMMENT S
[3.1.821] Co herency Support	[3.1.822] [Di sabled] [3.1.823] [En abled]	[3.1.824] Enabled/ Disabled VT-d Engine Coherency Support.	[3.1.825]
[3.1.826] AT S Support	[3.1.827] [Di sabled] [3.1.828] [En abled]	[3.1.829] Enabled/ Disabled VT-d Engine Address Translation Ser- vices (ATS) sup- port.	[3.1.830]

[3.1.831] South Bridge Screen



[3.1.832] South Bridge Screen

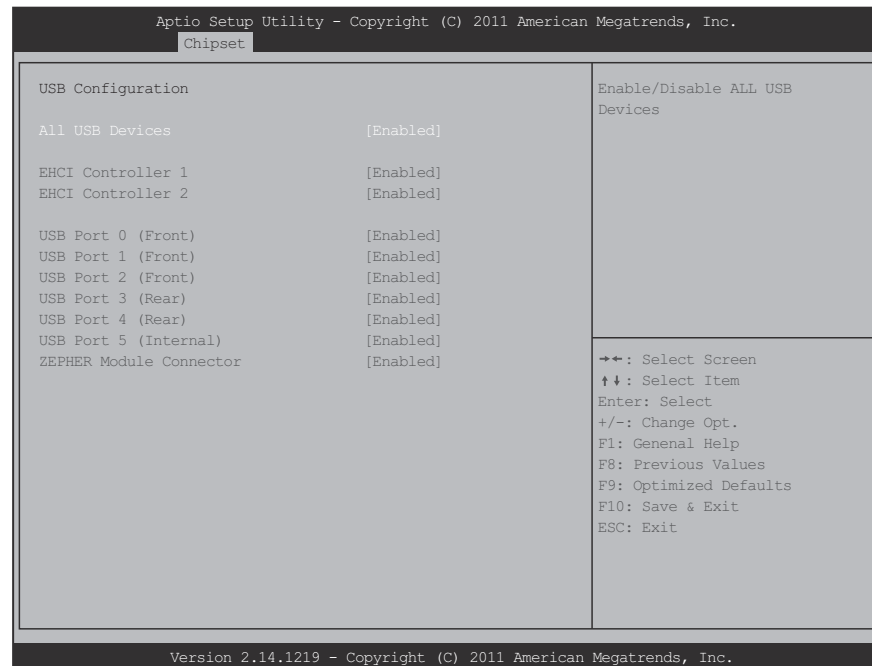
[3.1.833] South Bridge Configuration Fields

[3.1.834] SE TUP ITEM	[3.1.835] OP TIONS	[3.1.836] HELP TEXT	[3.1.837] COMMENT S
[3.1.838] SC U devices	[3.1.839] [Di sabled] [3.1.840] [En abled]	[3.1.841] Enable/ Disable Patsburg SCU devices.	[3.1.842]

[3.1.833] South Bridge Configuration Fields (Continued)

[3.1.834] SE TUP ITEM	[3.1.835] OP TIONS	[3.1.836] HELP TEXT	[3.1.837] COMMEN TS
[3.1.843] On board SAS Oprom	[3.1.844] [Di sabled] [3.1.845] [En abled]	[3.1.846] Enabled/ Disabled onboard SAS option rom if Launch Storage OpROM is enabled.	[3.1.847]
[3.1.848] US B Configura- tion	[3.1.849]	[3.1.850] USB Configuration.	[3.1.851]

[3.1.852] USB Configuration Screen



[3.1.853] USB Configuration Screen

[3.1.854] USB Configuration Fields

[3.1.855] SE TUP ITEM	[3.1.856] OP TIONS	[3.1.857] HELP TEXT	[3.1.858] COMMEN TS
[3.1.859] All USB Devices	[3.1.860] [Di sabled] [Enabled]	[3.1.861] Enabled/ Disabled ALL USB Devices	[3.1.862]

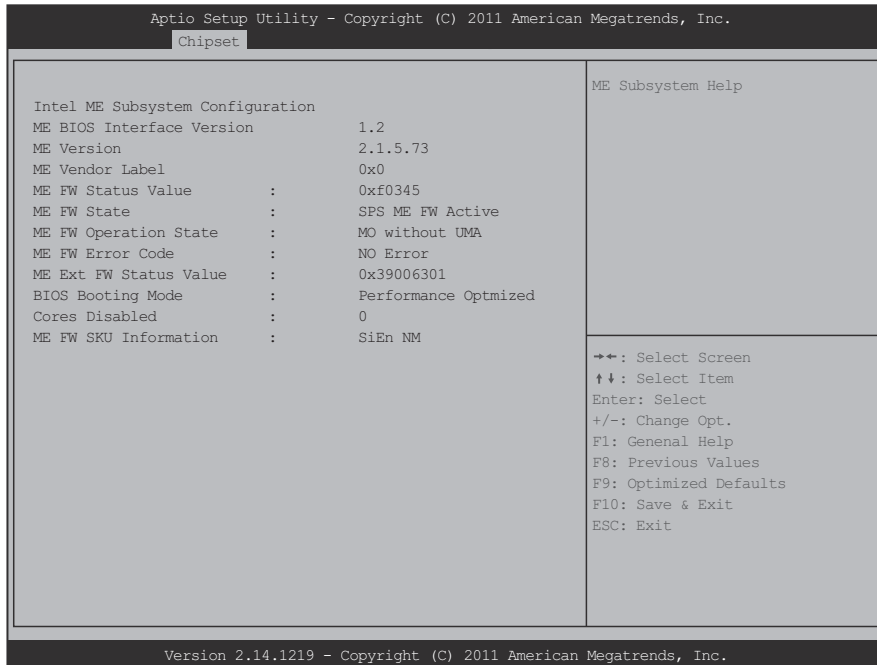
[3.1.854] USB Configuration Fields (Continued)

[3.1.855] SE TUP ITEM	[3.1.856] OP TIONS	[3.1.857] HELP TEXT	[3.1.858] COMMEN TS
[3.1.863] EH CI Controller 1	[3.1.864] [Di sabled] [Enabled]	[3.1.865] Enabled/ Disabled USB EHCI Controller 1.	[3.1.866] Disable the EHCI Control- ler would disable all USB ports from it.
[3.1.867] EH CI Controller 2	[3.1.868] [Di sabled] [Enabled]	[3.1.869] Enabled/ Disabled USB EHCI Controller 2.	[3.1.870] Disable the EHCI Control- ler would disable all USB ports from it.
[3.1.871] US B Port 0 (Front)	[3.1.872] [Di sabled] [Enabled]	[3.1.873] Enabled/ Disabled USB Port 0 (Front).	[3.1.874]
[3.1.875] US B Port 1 (Front)	[3.1.876] [Di sabled] [Enabled]	[3.1.877] Enabled/ Disabled USB Port 1 (Front).	[3.1.878]
[3.1.879] US B Port 2 (Front)	[3.1.880] [Di sabled] [Enabled]	[3.1.881] Enabled/ Disabled USB Port 2 (Front).	[3.1.882]
[3.1.883] US B Port 3 (Rear)	[3.1.884] [Di sabled] [Enabled]	[3.1.885] Enabled/ Disabled USB Port 3 (Rear).	[3.1.886]
[3.1.887] US B Port 4 (Rear)	[3.1.888] [Di sabled] [Enabled]	[3.1.889] Enabled/ Disabled USB Port 4 (Rear).	[3.1.890]
[3.1.891] US B Port 5 (Internal)	[3.1.892] [Di sabled] [Enabled]	[3.1.893] Enabled/ Disabled USB Port 5 (Internal).	[3.1.894]

[3.1.854] USB Configuration Fields (Continued)

[3.1.855] SE TUP ITEM	[3.1.856] OP TIONS	[3.1.857] HELP TEXT	[3.1.858] COMMEN TS
[3.1.895] ZE PHER Mod- ule Connec- tor	[3.1.896] [Di sabled] [Enabled]	[3.1.897] Enabled/ Disabled ZEPHER Module Connector.	[3.1.898]

[3.1.899] ME Subsystem Screen



[3.1.900] ME Subsystem Screen

[3.1.901] ME Subsystem Fields

[3.1.902] SETUP ITEM	[3.1.903] OPTIONS	[3.1.904] HELP TEXT	[3.1.905] COMMENTS
[3.1.906] ME BIOS Interface Version	[3.1.907]	[3.1.908]	[3.1.909] Displays the ME BIOS Interface Version.

[3.1.901] ME Subsystem Fields (Continued)

[3.1.902] SETUP ITEM	[3.1.903] OPTIONS	[3.1.904] HELP TEXT	[3.1.905] COMMENTS
[3.1.910] ME Version	[3.1.911]	[3.1.912]	[3.1.913] Displays the ME Version.
[3.1.914] ME Vendor Label	[3.1.915]	[3.1.916]	[3.1.917] Information only. Displays the ME Vendor Label.
[3.1.918] ME FW Status Value	[3.1.919]	[3.1.920]	[3.1.921] Displays the ME FW Status Value.
[3.1.922] ME FW State	[3.1.923]	[3.1.924]	[3.1.925] Displays the ME FW State.
[3.1.926] ME FW Operation State	[3.1.927]	[3.1.928]	[3.1.929] Displays the ME FW Operation State.
[3.1.930] ME FW Error Code	[3.1.931]	[3.1.932]	[3.1.933] Displays the ME FW Error Code.
[3.1.934] ME Ext FW Status Value	[3.1.935]	[3.1.936]	[3.1.937] Displays the ME Ext FW Status Value.
[3.1.938] BIOS Booting Mode	[3.1.939]	[3.1.940]	[3.1.941] Displays the BIOS Booting Mode.
[3.1.942] Cores Disabled	[3.1.943]	[3.1.944]	[3.1.945] Displays the Cores Disabled.

[3.1.901] ME Subsystem Fields (Continued)

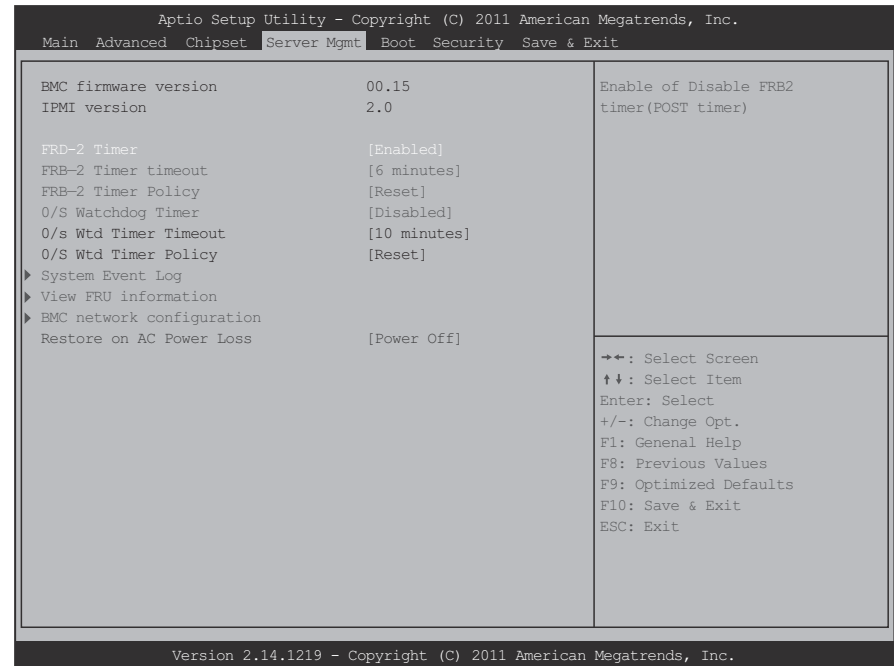
[3.1.902] SETUP ITEM	[3.1.903] OPTIONS	[3.1.904] HELP TEXT	[3.1.905] COMMENTS
[3.1.946] ME FW SKU Information	[3.1.947]	[3.1.948]	[3.1.949] Displays the ME FW SKU Information.

[3.1.950]

[3.1.951] Server Management Screen

[3.1.952] The Server Management screen displays information of the BMC and allows the user to configure desired settings.

[3.1.953] To access this screen from the Main screen, select Server Mgmt Options.



[3.1.954] Server Management Configuration Screen

[3.1.955] Server Management Configuration Fields

[3.1.956] SETUP ITEM	[3.1.957] Options	[3.1.958] HELP TEXT	[3.1.959] COMMENTS
[3.1.960] BMC Self Test Status	[3.1.961]	[3.1.962]	[3.1.963] Information only. Displays the BMC Self Test Status.
[3.1.964] BMC firmware version	[3.1.965]	[3.1.966]	[3.1.967] BMC firmware version.
[3.1.968] IPMI version	[3.1.969]	[3.1.970]	[3.1.971] IPMI version.
[3.1.972] FRB-2 Timer	[3.1.973] [Enabled] [3.1.974] [Disabled]	[3.1.975] Enable or Disable FRB2 timer (POST timer).	[3.1.976]
[3.1.977] FRB-2 Timer timeout	[3.1.978] [3 minutes] [3.1.979] [4 minutes] [3.1.980] [5 minutes] [3.1.981] [6 minutes]	[3.1.982] Enter value Between 3 to 6 min for FRB2 Timer Expiration value.	[3.1.983] Not available if FRB2 Timer is disabled.
[3.1.984] FRB-2 Timer Policy	[3.1.985] [Do Nothing] [3.1.986] [Reset] [3.1.987] [Power Down]	[3.1.988] Configure how the system should respond if the FRB2 Timer expires. Not available if FRB2 Timer is disabled.	[3.1.989]

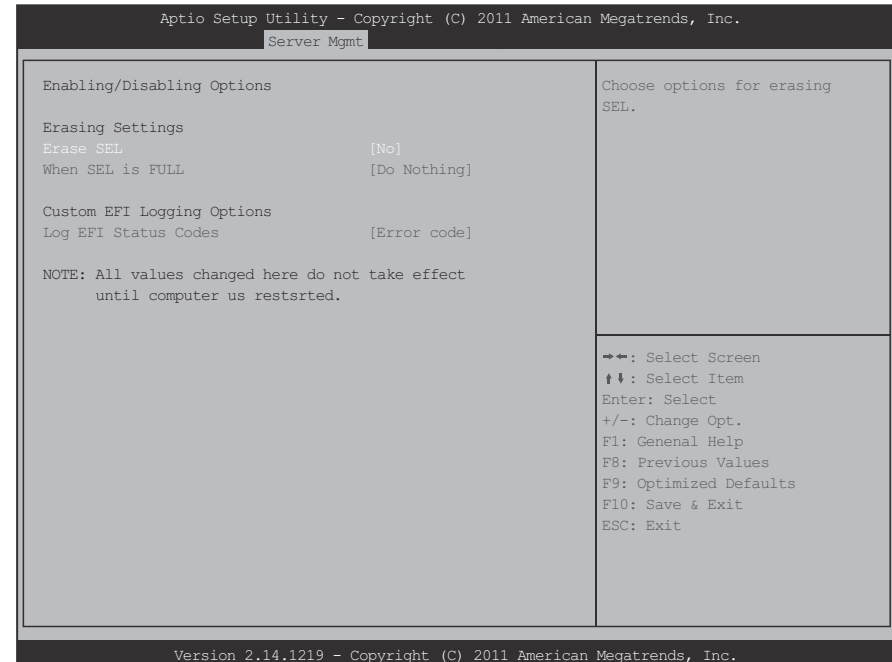
[3.1.955] Server Management Configuration Fields (Continued)

[3.1.956] SETUP ITEM	[3.1.957] Options	[3.1.958] HELP TEXT	[3.1.959] COMMENTS
[3.1.990] O/S Watchdog Timer	[3.1.991] [Enabled] [3.1.992] [Disabled]	[3.1.993] If enabled, starts BIOS timer which can only be shut off by Intel Management Software after OS loads to determine OS successfully loaded or follows O/S Boot Watchdog Timer policy.	[3.1.994]
[3.1.995] O/S Wtd Timer Timeout	[3.1.996] [5 minutes] [3.1.997] [10 minutes] [3.1.998] [15 minutes] [3.1.999] [20 minutes]	[3.1.1000] Configure the length of the O/S Boot Watchdog Timer. Not available if O/S Boot Watchdog Timer is disabled.	[3.1.1001] Not available if O/S Watchdog Timer is disabled.
[3.1.1002] O/S Wtd Timer Policy	[3.1.1003] [Do Nothing] [3.1.1004] [Reset] [3.1.1005] [Power Down]	[3.1.1006] Configure how the system should respond if the O/S Boot Watchdog Timer expires. Not available if O/S Boot Watchdog Timer is disabled.	[3.1.1007] Not available if O/S Watchdog Timer is disabled.

[3.1.955] Server Management Configuration Fields (Continued)

[3.1.956] SETUP ITEM	[3.1.957] Options	[3.1.958] HELP TEXT	[3.1.959] COMMENTS
[3.1.1008] System Event Log	[3.1.1009]	[3.1.1010] Press <Enter> to change the SEL event log configuration.	[3.1.1011]
[3.1.1012] View FRU information	[3.1.1013]	[3.1.1014] Press <Enter> to view FRU information.	[3.1.1015]
[3.1.1016] BMC network configuration	[3.1.1017]	[3.1.1018] Configure BMC network parameters.	[3.1.1019]
[3.1.1020] Restore on AC Power Loss	[3.1.1021] [Power On] [3.1.1022] [Power Off] [3.1.1023] [Last State]	[3.1.1024] System action to take on AC power loss.	[3.1.1025]

[3.1.1026] System Event Log Screen

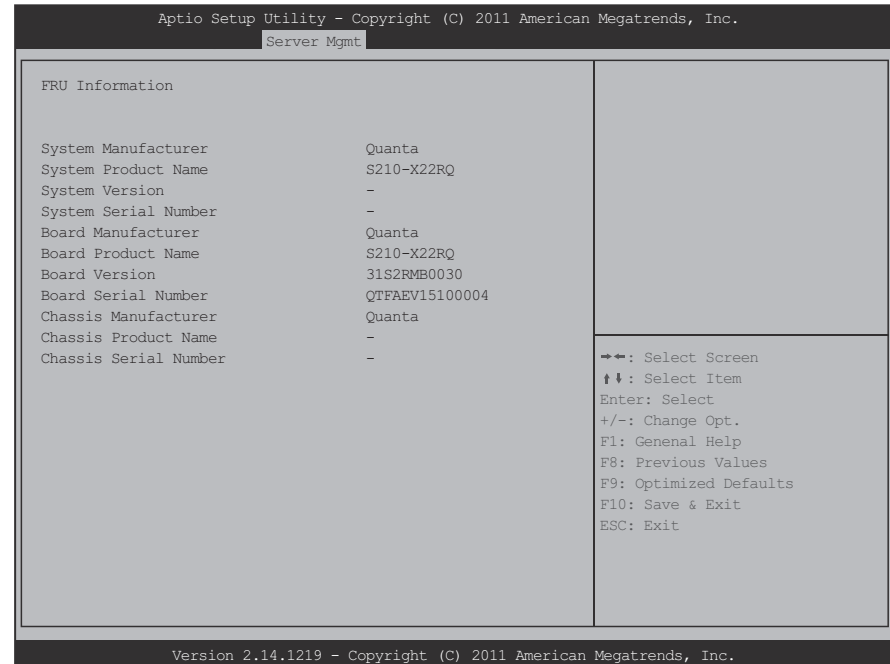


[3.1.1027] System Event Log Screen

[3.1.1028] System Event Log Fields

[3.1.1029] SETUP ITEM	[3.1.1030] OPTIONS	[3.1.1031] HELP TEXT	[3.1.1032] COMMENTS
[3.1.1033] Erase SEL	[3.1.1034] [No] [3.1.1035] [Yes, On next reset] [3.1.1036] [Yes, On every reset]	[3.1.1037] Choose options for erasing SEL.	[3.1.1038]
[3.1.1039] When SEL is Full	[3.1.1040] [Do Nothing] [3.1.1041] [Erase Immediately]	[3.1.1042] Choose options for reactions to a full SEL.	[3.1.1043]
[3.1.1044] Log EFI Status Codes	[3.1.1045] [Disabled] [3.1.1046] [Both] [3.1.1047] [Error code] [3.1.1048] [Progress code]	[3.1.1049] Disable the logging of EFI Status Codes or log only error code or only progress code or both.	[3.1.1050]

[3.1.1051] FRU Information Screen



[3.1.1052] FRU Information Screen

[3.1.1053] FRU Information Fields

[3.1.1054] SETUP ITEM	[3.1.1055] OPTIONS	[3.1.1056] HELP TEXT	[3.1.1057] COMMENTS
[3.1.1058] System Manufacturer	[3.1.1059]	[3.1.1060]	[3.1.1061] Information only. Displays the System Manufacturer.

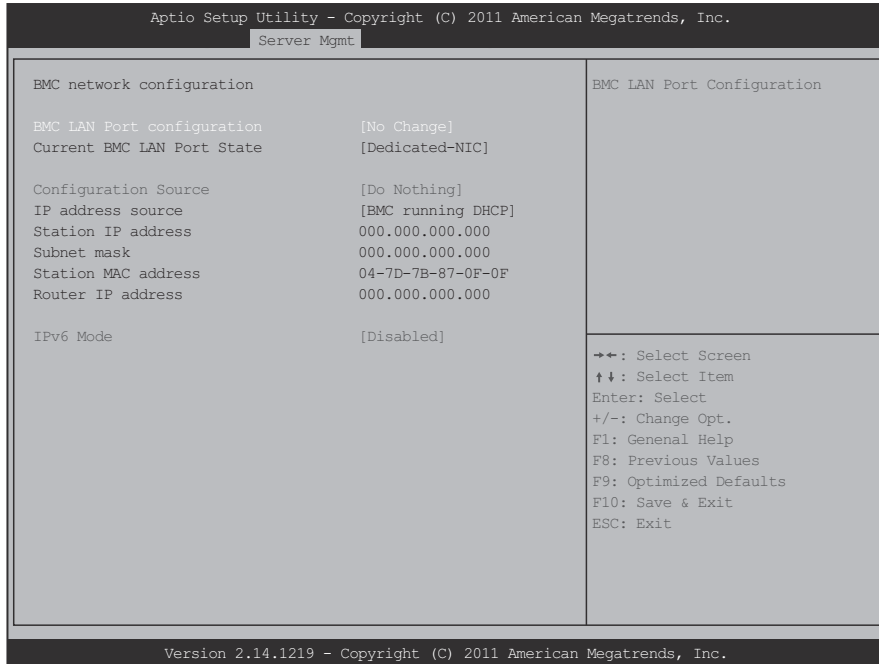
[3.1.1053] FRU Information Fields (Continued)

[3.1.1054] SE TUP ITEM	[3.1.1055] O PTIONS	[3.1.1056] HELP TEXT	[3.1.1057] COMME NTS
[3.1.1062] Sy stem Product Name	[3.1.1063]	[3.1.1064]	[3.1.1065] Informa tion only. Displays the System Prod- uct Name.
[3.1.1066] Sy stem Version	[3.1.1067]	[3.1.1068]	[3.1.1069] Informa tion only. Displays the System Ver- sion.
[3.1.1070] Sy stem Serial Number	[3.1.1071]	[3.1.1072]	[3.1.1073] Informa tion only. Displays the System Serial Number.
[3.1.1074] Bo ard Manufac- turer	[3.1.1075]	[3.1.1076]	[3.1.1077] Informa tion only. Displays the Board Manu- facturer.
[3.1.1078] Bo ard Product Name	[3.1.1079]	[3.1.1080]	[3.1.1081] Informa tion only. Displays the Board Product Name.
[3.1.1082] Bo ard Version	[3.1.1083]	[3.1.1084]	[3.1.1085] Informa tion only. Displays the Board Version.
[3.1.1086] Bo ard Serial Number	[3.1.1087]	[3.1.1088]	[3.1.1089] Informa tion only. Displays the Board Serial Number.

[3.1.1053] FRU Information Fields (Continued)

[3.1.1054] SE TUP ITEM	[3.1.1055] O PTIONS	[3.1.1056] HELP TEXT	[3.1.1057] COMME NTS
[3.1.1090] Ch assis Manu- facturer	[3.1.1091]	[3.1.1092]	[3.1.1093] Informa tion only. Displays the Chassis Manu- facturer.
[3.1.1094] Ch assis Prod- uct Name	[3.1.1095]	[3.1.1096]	[3.1.1097] Informa tion only. Displays the Chassis Prod- uct Name.
[3.1.1098] Ch assis Serial Number	[3.1.1099]	[3.1.1100]	[3.1.1101] Informa tion only. Displays the Chassis Serial Number.

[3.1.1102] BMC Network Configuration Screen



[3.1.1103] BMC Network Configuration Screen

[3.1.1104] BMC Network Configuration Fields

[3.1.1105] SETUP ITEM	[3.1.1106] OPTIONS	[3.1.1107] HELP TEXT	[3.1.1108] COMMENTS
[3.1.1109] BMC LAN Port Configuration	[3.1.1110] [Dedicated-NIC] [3.1.1111] [Shared-NIC] [3.1.1112] [No Change]	[3.1.1113] BMC LAN Port Configuration.	[3.1.1114] Options for send to Dedicated NIC or Shared NIC
[3.1.1115] Current BMC LAN Port State	[3.1.1116]	[3.1.1117]	[3.1.1118] Information only. Displays the current BMC LAN Port State.
[3.1.1119] Configuration Address source	[3.1.1120] [Do Nothing] [3.1.1121] [Static on next reset] [3.1.1122] [Dynamic Obtained by BMC]	[3.1.1123] Select to configure LAN channel parameters statically or dynamically (by BIOS or BMC). Unspecified option will not modify any BMC network parameters during BIOS phase.	[3.1.1124]
[3.1.1125] IP address source	[3.1.1126]	[3.1.1127]	[3.1.1128] Information only. Displays the IP address source.

[3.1.1104] BMC Network Configuration Fields (Continued)

[3.1.1105] SE TUP ITEM	[3.1.1106] O PTIONS	[3.1.1107] HELP TEXT	[3.1.1108] COMME NTS
[3.1.1129] St ation IP address	[3.1.1130]	[3.1.1131]	[3.1.1132] Gray- out if "Configura- tion source" = [Do Nothing]
[3.1.1133] Su bnet mask	[3.1.1134]	[3.1.1135]	[3.1.1136] Gray- out if "Configura- tion source" = [Do Nothing]
[3.1.1137] St ation MAC address	[3.1.1138]	[3.1.1139]	[3.1.1140] Informa- tion only. Displays the Station MAC address.
[3.1.1141] Ro uter IP address	[3.1.1142]	[3.1.1143]	[3.1.1144] Gray- out if "Configura- tion source" = [Do Nothing]
[3.1.1145] IP v6 Mode	[3.1.1146] [D isabled] [3.1.1147] [E nabled]	[3.1.1148] Disable d/Enabled IPv6 internet protocol support.	[3.1.1149]
[3.1.1150] IP v6 AutoCon- fig	[3.1.1151] [U nspecified] [3.1.1152] [S tatic] [3.1.1153] [D ynamic Obtained by BMC run- ning DHCP]	[3.1.1154] Select to configure LAN channel param- eters statically or dynamically (by BIOS or BMC).	[3.1.1155] Option s only show when "IPv6 Mode" = [Enabled]

[3.1.1104] BMC Network Configuration Fields (Continued)

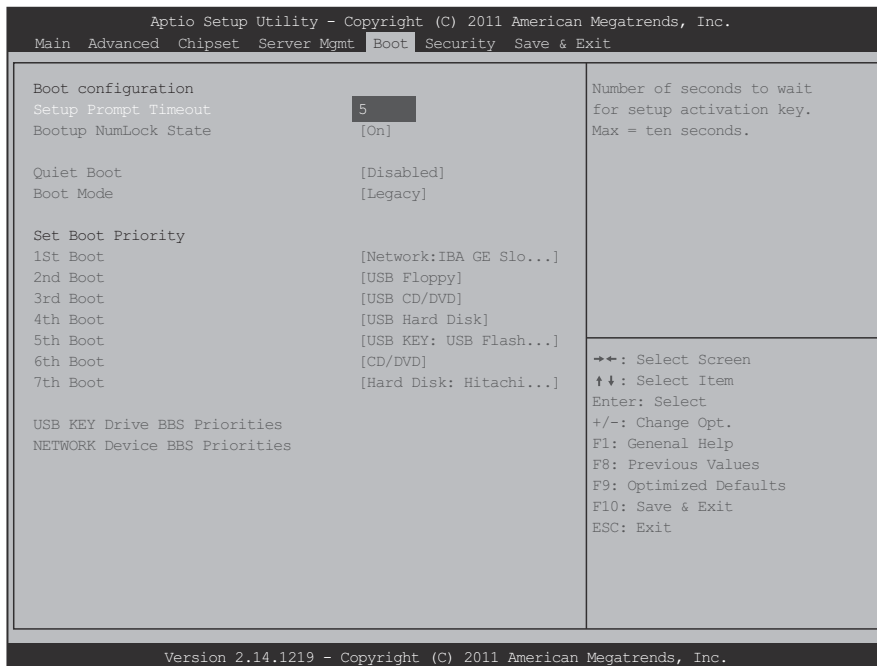
[3.1.1105] SE TUP ITEM	[3.1.1106] O PTIONS	[3.1.1107] HELP TEXT	[3.1.1108] COMME NTS
[3.1.1156] IP v6 IP Address	[3.1.1157]	[3.1.1158] Enter IPv6 BMC Lan IP Address.	[3.1.1159] Option s only show when "IPv6 AutoConfig" = [Static].
[3.1.1160] IP v6 Prefix Length	[3.1.1161]	[3.1.1162] Enter IPv6 BMC Lan IP Prefix Length.	[3.1.1163] Option s only show when "IPv6 AutoConfig" = [Static].
[3.1.1164] IP v6 GateWay Address	[3.1.1165]	[3.1.1166] Enter IPv6 BMC Lan Default Gateway.	[3.1.1167] Option s only show when "IPv6 AutoConfig" = [Static].

[3.1.1168]

[3.1.1169] Boot Option Screen

[3.1.1170] The Boot Options screen displays any bootable media encountered during POST, and allows the user to configure desired boot device.

[3.1.1171] To access this screen from the Main screen, select Boot Options.



[3.1.1172] Boot Option Screen

[3.1.1173] Boot Option Fields

[3.1.1174] SETUP ITEM	[3.1.1175] OPTIONS	[3.1.1176] HELP TEXT	[3.1.1177] COMMENTS
[3.1.1178] Setup Prompt Timeout	[3.1.1179] [< number>]	[3.1.1180] Number of seconds to wait for setup activation key. Max = ten seconds.	[3.1.1181] Default = 5.
[3.1.1182] Boot up NumLock State	[3.1.1183] [On] [3.1.1184] [Off]	[3.1.1185] Select the keyboard NumLock state.	[3.1.1186]
[3.1.1187] Quiet Boot	[3.1.1188] [Disabled] [3.1.1189] [Enabled]	[3.1.1190] Enables or disables Quiet Boot option.	[3.1.1191]
[3.1.1192] Boot Mode	[3.1.1193] [Legacy] [3.1.1194] [UEFI]	[3.1.1195]	[3.1.1196] This item decides what devices (Legacy or UEFI) BIOS should try to boot when let the system auto boot up without manually select boot device.

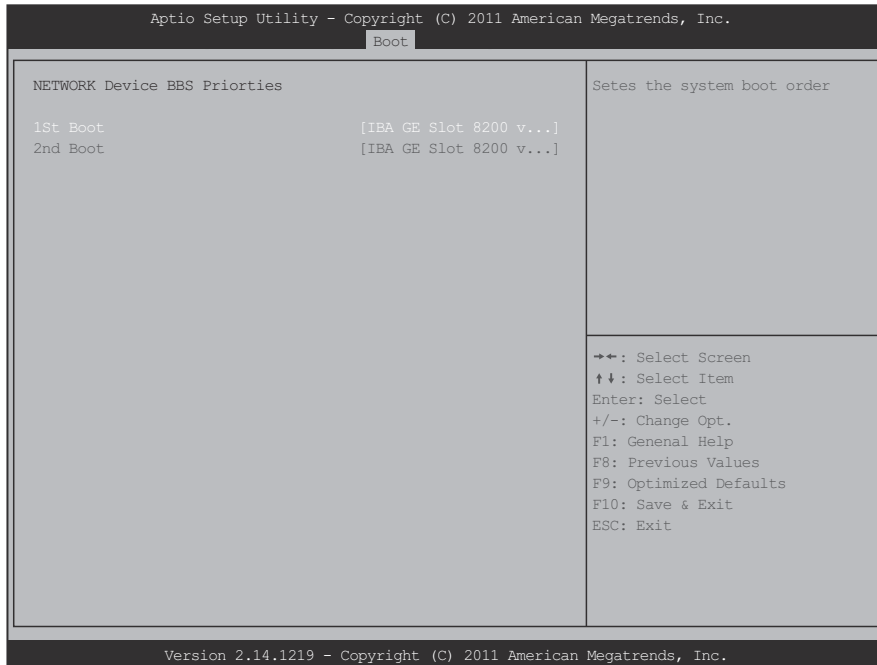
[3.1.1173] Boot Option Fields (Continued)

[3.1.1174] SETUP ITEM	[3.1.1175] OPTIONS	[3.1.1176] HELP TEXT	[3.1.1177] COMMENTS
<p>[3.1.1197] 1st Boot</p> <p>[3.1.1198] 2nd Boot</p> <p>[3.1.1199] 3rd Boot</p> <p>[3.1.1200] 4th Boot</p> <p>[3.1.1201] 5th Boot</p> <p>[3.1.1202] 6th Boot</p> <p>[3.1.1203] 7th Boot</p>	[3.1.1204]	[3.1.1205] Sets the system boot order.	<p>[3.1.1206] Default priority :</p> <ul style="list-style-type: none"> ● 1st: Network ● 2nd: USB Floppy ● 3rd: USB CD/DVD ● 4th: USB Hard Disk ● 5th: USB KEY ● 6th: CD/DVD ● 7th: Hard Disk
[3.1.1207] CD/DVD ROM Drive BBS Priorities	[3.1.1208]	[3.1.1209] Specifies the Boot Device Priority sequence from available CD/DVD Drives.	[3.1.1210] Only appears when at least one CD/DVD Drive is detected.
[3.1.1211] Hard Drive BBS Priorities	[3.1.1212]	[3.1.1213] Specifies the Boot Device Priority sequence from available Hard Drives.	[3.1.1214] Only appears when at least one Hard Disk is detected.
[3.1.1215] USB Floppy Drive BBS Priorities	[3.1.1216]	[3.1.1217] Specifies the Boot Device Priority sequence from available USB Floppy Drives.	[3.1.1218] Only appears when at least one USB Floppy is detected.

[3.1.1173] Boot Option Fields (Continued)

[3.1.1174] SETUP ITEM	[3.1.1175] OPTIONS	[3.1.1176] HELP TEXT	[3.1.1177] COMMENTS
[3.1.1219] USB CD/DVD ROM Drive BBS Priorities	[3.1.1220]	[3.1.1221] Specifies the Boot Device Priority sequence from available USB CD/DVD Drives.	[3.1.1222] Only appears when at least one USB CD/DVD ROM is detected.
[3.1.1223] USB Hard-Disk Drive BBS Priorities	[3.1.1224]	[3.1.1225] Specifies the Boot Device Priority sequence from available USB HardDisk Drives.	[3.1.1226] Only appears when at least one USB Hard Disk is detected.
[3.1.1227] USB KEY Drive BBS Priorities	[3.1.1228]	[3.1.1229] Specifies the Boot Device Priority sequence from available USB KEY Drives.	[3.1.1230] Only appears when at least one USB KEY is detected.
[3.1.1231] Network Device BBS Priorities	[3.1.1232]	[3.1.1233] Specifies the Boot Device Priority sequence from available NETWORK Drives.	[3.1.1234] Only appears when at least one NETWORK Device is detected.

[3.1.1235] Network Device



[3.1.1236] Network Device Screen

[3.1.1237] Network Device Fields

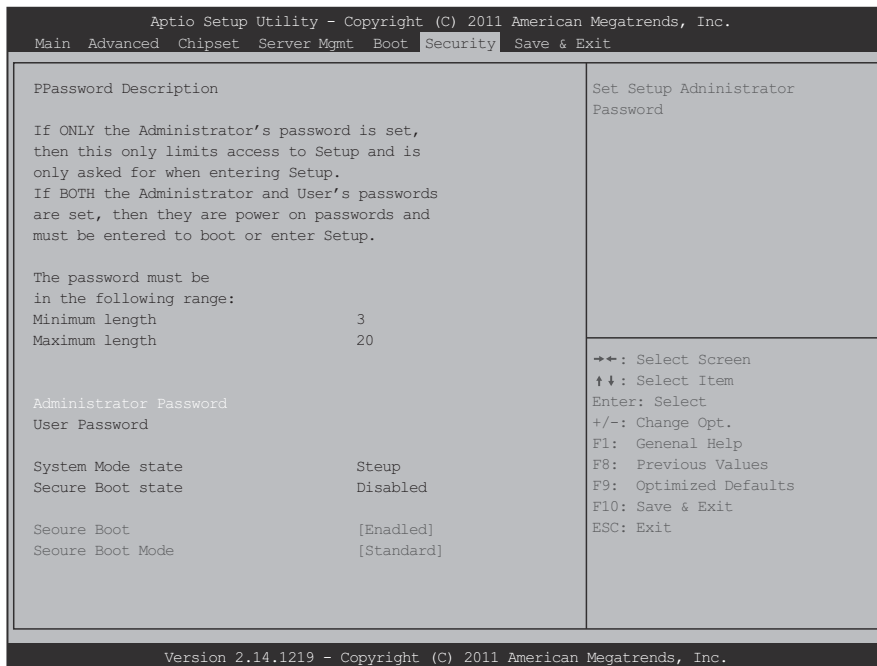
[3.1.1238] SETUP ITEM	[3.1.1239] OPTIONS	[3.1.1240] HELP TEXT	[3.1.1241] COMMENTS
[3.1.1242] 1st Boot	[3.1.1243] [< Device String 1>] [3.1.1244] [< Device String 2>] [3.1.1245] ... [3.1.1246] [D isabled]	[3.1.1247] Sets the system boot order	[3.1.1248]
[3.1.1249] 2nd Boot	[3.1.1250] [< Device String 1>] [3.1.1251] [< Device String 2>] [3.1.1252] ... [3.1.1253] [D isabled]	[3.1.1254] Sets the system boot order	[3.1.1255]

[3.1.1256]

[3.1.1257] Security Screen

[3.1.1258] The Security screen provides fields to enable and set the user and administrative password and to lockout the front panel buttons so they cannot be used.

[3.1.1259] To access this screen from the Main screen, select the Security option.



[3.1.1260] Security Configuration Screen

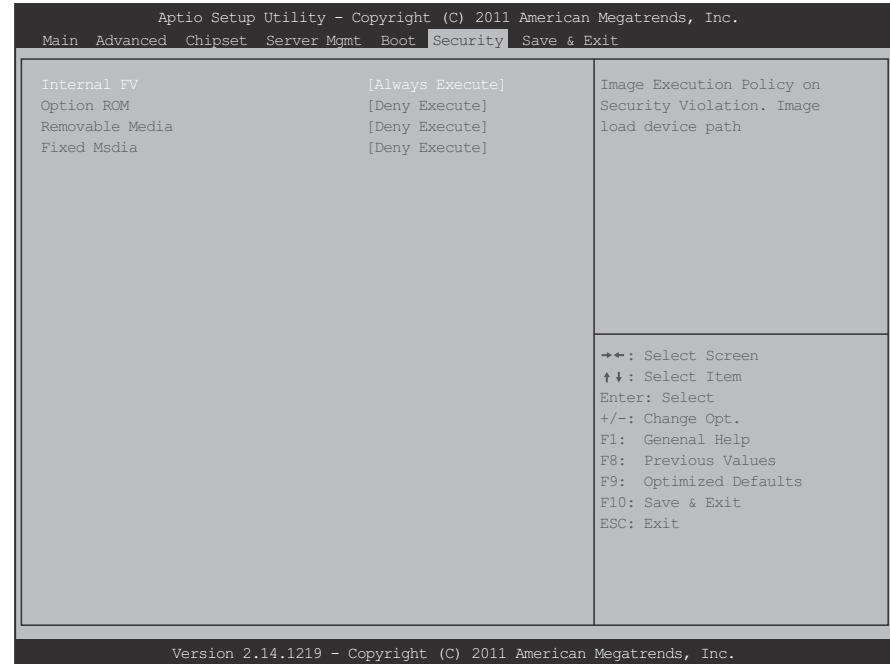
[3.1.1261] Security Configuration Fields

[3.1.1262] SETUP ITEM	[3.1.1263] OPTIONS	[3.1.1264] HELP TEXT	[3.1.1265] COMMENTS
[3.1.1266] Administrator Password	[3.1.1267]	[3.1.1268] Set Setup Administrator Password.	[3.1.1269]
[3.1.1270] User Password	[3.1.1271]	[3.1.1272] Set User Password.	[3.1.1273] Not available if Administrator Password is not set.
[3.1.1274] System Mode state	[3.1.1275]	[3.1.1276]	[3.1.1277] Information only. Displays the System Mode state.
[3.1.1278] Secure Boot state	[3.1.1279]	[3.1.1280]	[3.1.1281] Information only. Displays the Secure Boot state.
[3.1.1282] Secure Boot	[3.1.1283] [Disabled] [3.1.1284] [Enabled]	[3.1.1285] Secure Boot flow control. Secure Boot is possible only if system runs in User Mode	[3.1.1286]

[3.1.1261] Security Configuration Fields (Continued)

[3.1.1262] SE TUP ITEM	[3.1.1263] O PTIONS	[3.1.1264] HELP TEXT	[3.1.1265] COMME NTS
[3.1.1287] Se cure Boot Mode	[3.1.1288] [S tandard] [3.1.1289] [C ustom]	[3.1.1290] Secure Boot mode selector. 'Standard' – fixed Secure boot policy, 'Custom' – Changeable Image Execution policy and Secure Boot Key databases.	[3.1.1291]
[3.1.1292] Im age Execu- tion Policy	[3.1.1293]	[3.1.1294] Press <Enter> to manage the Image Execution Policy on Security Violation.	[3.1.1295] Option only show when "Secure Boot Mode" = [Custom]
[3.1.1296] Ke y Manage- ment	[3.1.1297]	[3.1.1298] Press <Enter> to modify the content of the Secure Boot variables.	[3.1.1299] Option only show when "Secure Boot Mode" = [Custom]

[3.1.1300] Image Execution Policy Screen



[3.1.1301] Image Execution Policy Screen

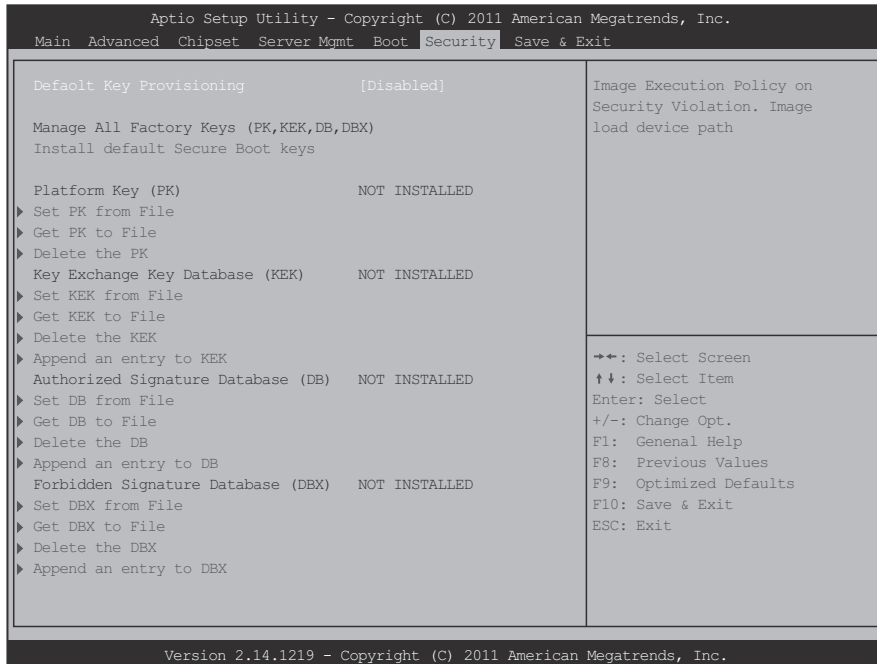
[3.1.1302] Image Execution Policy Fields

[3.1.1303] SE TUP ITEM	[3.1.1304] O PTIONS	[3.1.1305] HELP TEXT	[3.1.1306] COMME NTS
[3.1.1307] Int ernal FV	[3.1.1308] [A lways Exe- cute]	[3.1.1309] Image Execution Policy on Security Viola- tion. Image load device path.	[3.1.1310]
[3.1.1311] O ption ROM	[3.1.1312] [A lways Exe- cute] [3.1.1313] [A lways Deny] [3.1.1314] [A llow Execute] [3.1.1315] [D efer Execute] [3.1.1316] [D eny Exe- cute] [3.1.1317] [Query User]	[3.1.1318] Image Execution Policy on Security Viola- tion. Image load device path	[3.1.1319]

[3.1.1302] Image Execution Policy Fields (Continued)

[3.1.1303] SE TUP ITEM	[3.1.1304] O PTIONS	[3.1.1305] HELP TEXT	[3.1.1306] COMME NTS
[3.1.1320] Re movable Media	[3.1.1321] [A lways Exe- cute] [3.1.1322] [A lways Deny] [3.1.1323] [A llow Execute] [3.1.1324] [D efer Execute] [3.1.1325] [D eny Exe- cute] [3.1.1326] [Query User]	[3.1.1327] Image Execution Policy on Security Viola- tion. Image load device path	[3.1.1328]
[3.1.1329] Fi xed Media	[3.1.1330] [A lways Exe- cute] [3.1.1331] [A lways Deny] [3.1.1332] [A llow Execute] [3.1.1333] [D efer Execute] [3.1.1334] [D eny Exe- cute] [3.1.1335] [Query User]	[3.1.1336] Image Execution Policy on Security Viola- tion. Image load device path	[3.1.1337]

[3.1.1338] Key Management Screen



[3.1.1339] Key Management Screen

[3.1.1340] Key Management Fields

[3.1.1341] SETUP ITEM	[3.1.1342] OPTIONS	[3.1.1343] HELP TEXT	[3.1.1344] COMMENTS
[3.1.1345] Default Key Provisioning	[3.1.1346] [Disabled] [3.1.1347] [Enabled]	[3.1.1348] Force OEM default Secure Boot Keys if System is in Setup Mode.	[3.1.1349]

[3.1.1340] Key Management Fields (Continued)

[3.1.1341] SETUP ITEM	[3.1.1342] OPTIONS	[3.1.1343] HELP TEXT	[3.1.1344] COMMENTS
[3.1.1350] Install default Secure Boot keys	[3.1.1351]	[3.1.1352] Force System to User Mode – install default Secure Boot Variables (PK,KEK,db,dbx). Change takes effect after reboot.	[3.1.1353]
[3.1.1354] Set (PK,KEK,DB, DBX) from File	[3.1.1355]	[3.1.1356] Launches the file browser to set Efi Variable from the file. The file data must be formatted as Efi Variable with Time-Based Authenticated Header.	[3.1.1357]
[3.1.1358] Get (PK,KEK,DB, DBX) to File	[3.1.1359]	[3.1.1360] Dump content of the Variable to a file with a matching name in selected file system's root.	[3.1.1361]
[3.1.1362] Delete the (PK,KEK,DB, DBX)	[3.1.1363]	[3.1.1364] Delete the Variable.	[3.1.1365]

[3.1.1340] Key Management Fields (Continued)

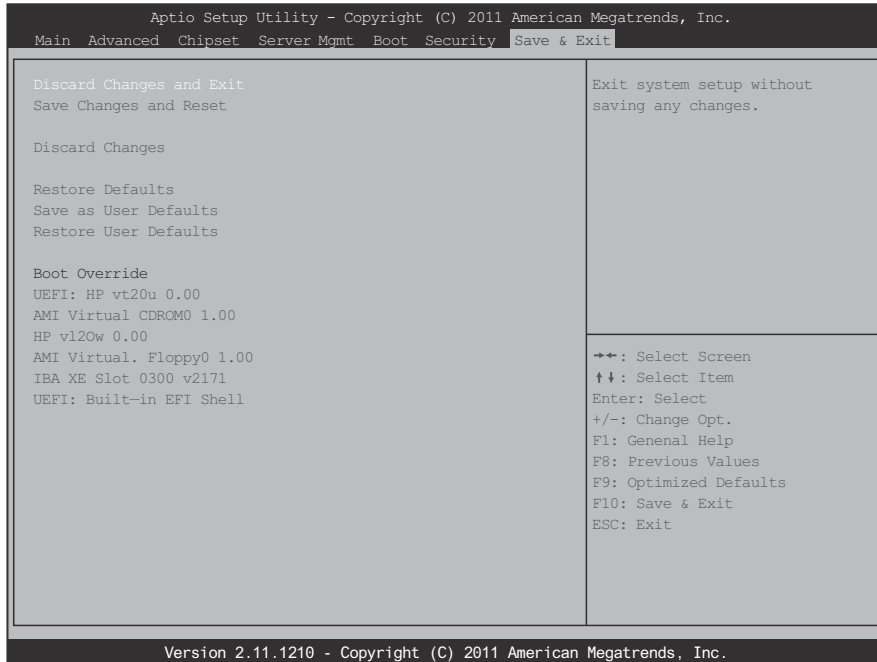
[3.1.1341] SE TUP ITEM	[3.1.1342] O PTIONS	[3.1.1343] HELP TEXT	[3.1.1344] COMME NTS
<p>[3.1.1366] Ap pend an entry to (KEK,DB,DB X)</p>	<p>[3.1.1367]</p>	<p>[3.1.1368] Lauche s the file browser to Append new Sig- nature Database from the file. The file data must be formatted as Efi Variable with Time- Based Authent- icated Header.</p>	<p>[3.1.1369]</p>

[3.1.1370]

[3.1.1371] Exit Screen

[3.1.1372] The Exit screen allows the user to choose to save or discard the configuration changes made on the other screens. It also provides a method to restore the server to the factory defaults or to save or restore a set of user defined default values. If Restore Defaults is selected, the default settings, noted in bold in the tables in this chapter, will be applied. If Restore User Default Values is selected, the system is restored to the

default values that the user saved earlier, instead of being restored to the factory defaults.



[3.1.1373] Exit Screen

[3.1.1374] Exit Fields

[3.1.1375] SETUP ITEM	[3.1.1376] OPTIONS	[3.1.1377] HELP TEXT	[3.1.1378] COMMENTS
[3.1.1379] Discard Changes and Exit	[3.1.1380]	[3.1.1381] Exit system setup without saving any changes.	[3.1.1382]

[3.1.1374] Exit Fields (Continued)

[3.1.1375] SETUP ITEM	[3.1.1376] OPTIONS	[3.1.1377] HELP TEXT	[3.1.1378] COMMENTS
[3.1.1383] Save Changes and Reset	[3.1.1384]	[3.1.1385] Reset the system after saving the changes.	[3.1.1386]
[3.1.1387] Discard Changes	[3.1.1388]	[3.1.1389] Discard changes done so far to any of the setup questions.	[3.1.1390]
[3.1.1391] Restore Defaults	[3.1.1392]	[3.1.1393] Restore /Load Default values for all the setup options.	[3.1.1394]
[3.1.1395] Save as User Defaults	[3.1.1396]	[3.1.1397] Save the changes done so far as User Defaults.	[3.1.1398]
[3.1.1399] Restore User Defaults	[3.1.1400]	[3.1.1401] Restore the User Defaults to all the setup options.	[3.1.1402]
[3.1.1403] [< Device String 1>]	[3.1.1404]	[3.1.1405]	[3.1.1406] Boot with Device <Device String 1>.
[3.1.1407] [< Device String 2>]	[3.1.1408]	[3.1.1409]	[3.1.1410] Boot with Device <Device String 2>.

[3.1.1374] Exit Fields (Continued)

[3.1.1375] S ETUP ITEM	[3.1.1376] O PTIONS	[3.1.1377] HELP TEXT	[3.1.1378] COMME NTS
[3.1.1411] [< Device String 3>]	[3.1.1412]	[3.1.1413]	[3.1.1414] Boot with Device <Device String 3>.
[3.1.1415] [< Device String 4>]	[3.1.1416]	[3.1.1417]	[3.1.1418] Boot with Device <Device String 4>.
[3.1.1419] [< Device String 5>]	[3.1.1420]	[3.1.1421]	[3.1.1422] Boot with Device <Device String 5>.
[3.1.1423] [< Device String 6>]	[3.1.1424]	[3.1.1425]	[3.1.1426] Boot with Device <Device String 6>.

[3.1.1427]

[3.1.1428] Loading BIOS Defaults

[3.1.1429] Different mechanisms exist for resetting the system configuration to the default values. When a request to reset the system configuration is detected, the BIOS loads the default system configuration values during the next POST. The request to reset the system to the defaults can be sent in the following ways:

- A request to reset the system configuration can be generated by pressing <F9> from within the BIOS Setup utility.
- A reset system configuration request can be generated by moving the clear system configuration jumper.

[3.1.1430] BIOS settings are stored on NVRAM. Only the D4 setting uses the CMOS. BIOS implements a mechanism to clear NVRAM and CMOS.

[3.1.1431] After clearing CMOS by battery or jumper, all variables in the BIOS setup Menu load with the default values. BMC related variables, like Set *BMC LAN Configuration* in BIOS setup menu, are able to synchronize from BMC.

[3.1.1432]

[3.2.1433] BIOS Update Utility

[3.2.1434] The flash ROM contains system initialization routines, the BIOS Setup Utility, and runtime support routines. The exact layout is subject to change, as determined by BIOS. The flash ROM also contains initialization code in compressed form for onboard peripherals, like SCSI, NIC and video controllers. The complete ROM is visible, starting at physical address 4 GB minus the size of the flash ROM device.

[3.2.1435] A 16-KB parameter block in the flash ROM is dedicated to storing configuration data that controls the system configuration (ESCD). Application software must use standard APIs to access these areas; application software cannot access the data directly.

[3.2.1436] BIOS Update Utility

[3.2.1437] Server platforms support DOS-based, Windows-based, and Linux-based firmware update utilities. This utility loads a fresh copy of the BIOS into the flash ROM.

[3.2.1438] The BIOS update may affect the following items:

- The system BIOS, including the recovery code, setup utility and strings.
- Onboard video BIOS, RAID BIOS, and other option ROMs for the devices embedded on the server board.
- Memory reference code.
- Microcode updates.
- ME Firmware

[3.2.1439] Recovery Mode

[3.2.1440] Recovery process can be initiated by setting the recovery jumper. BIOS would detect the recovery jumper set and start to execute recovery code.

[3.2.1441] The BIOS consists of three parts, the Main BIOS Section, the NVRAM Section, and the Boot Block Recovery Section. The Main BIOS Section and the NVRAM Section will be updated during recovery process, but the Boot Block will be preserved.

[3.2.1442] BIOS recovery could be held through a USB removable drive, and the recovery media must include the BIOS image file, S4E_REC.ROM.

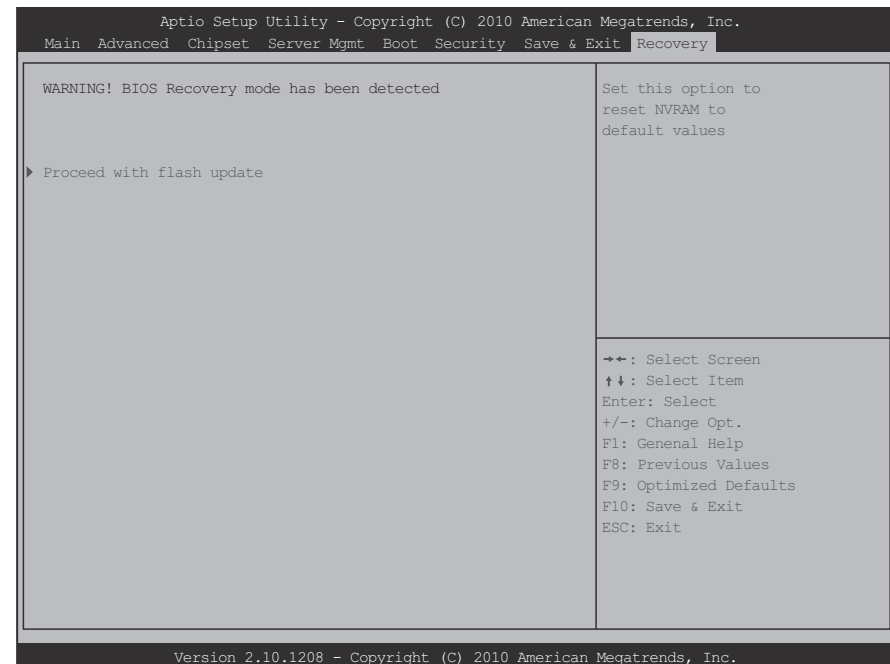
[3.2.1443] Recovery Flow

[3.2.1444] The BIOS has an embedded recovery technique in the 'boot block'. In the event that the BIOS becomes corrupt, the boot block can be used to restore the BIOS to a working state. The routine is called when the 'system block' of the BIOS is empty or corrupt. The restore routine when called will access the USB drive looking for a file named S4E_REC.ROM. This is the reason the USB drive light comes on and the drive appears to be in use. If the file (S4E_REC.ROM) is found it is loaded into the 'system block' of the BIOS to replace the corrupted information. To restore your BIOS copy the most recent version of your mainboards BIOS file to a USB key and rename it S4E_REC.ROM

[3.2.1445] The recovery mode procedure is as follows:

- 3.2.1446.1. Rename the good known BIOS as S2T_RECS2TS_REC.ROM.
- 3.2.1447.2. Plug in a removable USB disk.
- 3.2.1448.3. Save the S2T_RECS2TS_REC.ROM. file into the removable USB disk.
- 3.2.1449.4. Short the BIOS recovery jumper. See *Mainboard Jumpers*.
- 3.2.1450.5. Power on the server.

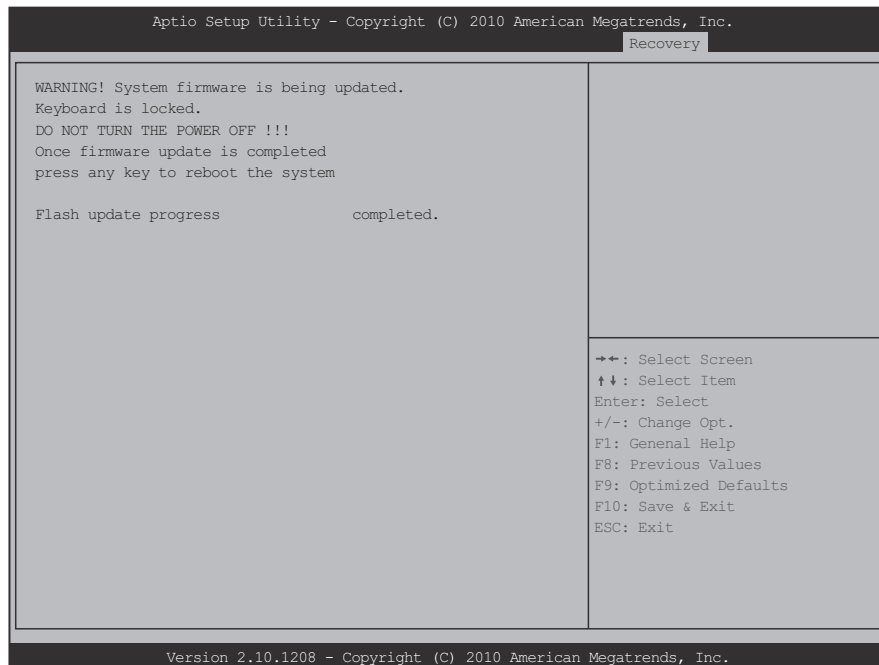
[3.2.1451] The system will automatically enter BIOS Setup menu and display a Recovery page as follows:



[3.2.1452] BIOS Recovery Menu

[3.2.1453] The recovery process begins.

3.2.1454.6. Set the BIOS recovery jumper back to default position and wait until the recovery process is completed. See *Mainboard Jumpers* and Figure 3.2.1455.



[3.2.1455] BIOS Recovery Completed

[3.2.1456] Reboot the system with the new BIOS.

[3.2.1457] Clear CMOS

[3.2.1458] The following steps will load the BIOS defaults by jumper:

- 3.2.1459.1. Power down the system.
- 3.2.1460.2. Move CMOS CLEAR jumper from pins 1-2 to pins 2-3 for a few seconds. See *Mainboard Jumpers*.
- 3.2.1461.3. Move CMOS CLEAR jumper back to pins 1-2. See *Mainboard Jumpers*.
- 3.2.1462.4. System automatically powers on.
- 3.2.1463.5. Check BIOS defaults are loaded.

[3.2.1464] Clear Password

- 3.2.1465.1. Power down the system.
- 3.2.1466.2. Move password clear jumper from pins 1-2 to pins 2-3. See *Mainboard Jumpers*.
- 3.2.1467.3. Power on the system.
- 3.2.1468.4. Make sure password is cleared.
- 3.2.1469.5. Power down the system.

3.2.1470.6. Move password clear jumper from pins 2-3 back to pins 1-2. See *Mainboard Jumpers*.

3.2.1471.7. Power on the system.

3.2.1472.8. Set new password.

[3.3.1473] Server Management

[3.3.1474] The BIOS supports many standard-based server management features and several proprietary features. The Intelligent Platform Management Interface (IPMI) is an industry standard and defines standardized, abstracted interfaces to platform management hardware. The BIOS implements many proprietary features that are allowed by the IPMI specification, but these features are outside the scope of the IPMI specification. This section describes the implementation of the standard and proprietary features.

[3.3.1475] Console Redirection

[3.3.1476] The BIOS supports redirection of both video and keyboard via a serial link (serial port). When console redirection is enabled, the local, or host server, keyboard input and video output are passed both to the local keyboard and video connections, and to the remote console through the serial link. Keyboard inputs from both sources are considered valid and video is displayed to both outputs.

[3.3.1477] As an option, the system can be operated without a host keyboard or monitor attached to the system and run entirely via the remote console. Utilities that can be executed remotely include BIOS Setup.

[3.3.1478] Serial Configuration Settings

[3.3.1479] For optimal configuration of Serial Over LAN or EMP see the BMC Specification.

[3.3.1480] The BIOS does not require that the splash logo be turned off for console redirection to function. The BIOS supports multiple consoles, some of which are in graphics mode and some in text mode. The graphics consoles can display the logo and the text consoles receive the redirected text.

[3.3.1481] Keystroke Mapping

[3.3.1482] During console redirection, the remote terminal sends keystrokes to the local server. The remote terminal can be a dumb terminal with a direct connection and running a communication program. The keystroke mapping follows VT-UTF8 format with the following extensions.

[3.3.1483] Keystroke Mappings

[3.3.1484] KEY	[3.3.1485] ANSI ESCAPE SEQUENCE	[3.3.1486] WINDOWS PLATFORM DESIGN NOTE
[3.3.1487] F1	[3.3.1488] <ESC> <Shift>op	[3.3.1489] <ESC>1

[3.3.1483] Keystroke Mappings (Continued)

[3.3.1484] KEY	[3.3.1485] ANSI ESCAPE SEQUENCE	[3.3.1486] WINDOWS PLATFORM DESIGN NOTE
[3.3.1490] F2	[3.3.1491] <ESC><Shift>oq	[3.3.1492] <ESC>2
[3.3.1493] F3	[3.3.1494] <ESC><Shift>or	[3.3.1495] <ESC>3
[3.3.1496] F4	[3.3.1497] <ESC><Shift>os	[3.3.1498] <ESC>4
[3.3.1499] F5	[3.3.1500]	[3.3.1501] <ESC>5
[3.3.1502] F6	[3.3.1503]	[3.3.1504] <ESC>6
[3.3.1505] F7	[3.3.1506]	[3.3.1507] <ESC>7
[3.3.1508] F8	[3.3.1509]	[3.3.1510] <ESC>8
[3.3.1511] F9	[3.3.1512]	[3.3.1513] <ESC>9
[3.3.1514] F10	[3.3.1515]	[3.3.1516] <ESC>0
[3.3.1517] F11	[3.3.1518]	[3.3.1519] <ESC>!
[3.3.1520] F12	[3.3.1521]	[3.3.1522] <ESC>@
[3.3.1523] Home	[3.3.1524] <ESC><Shift>h	[3.3.1525] <ESC>h

[3.3.1483] Keystroke Mappings (Continued)

[3.3.1484] KEY	[3.3.1485] ANSI ESCAPE SEQUENCE	[3.3.1486] WINDOWS PLATFORM DESIGN NOTE
[3.3.1526] End	[3.3.1527] <ESC><Shift>k	[3.3.1528] <ESC>k
[3.3.1529] Ins	[3.3.1530]	[3.3.1531] <ESC>+
[3.3.1532] Del	[3.3.1533]	[3.3.1534] <ESC>-
[3.3.1535] Page Up	[3.3.1536]	[3.3.1537] <ESC>?
[3.3.1538] Page Down	[3.3.1539]	[3.3.1540] <ESC>/
[3.3.1541] System Reset	[3.3.1542]	[3.3.1543] <ESC>R<ESC>r<ESC>R

[3.3.1544] Limitations

- BIOS Console redirection terminates after an operating system has being loaded. The operating system is responsible for continuing console redirection after that.
- BIOS console redirection is a text console. Graphical data, such as a logo, are not redirected.

[3.3.1545] Interface to Server Management

[3.3.1546] If the BIOS determines that console redirection is enabled, it will read the current baud rate and pass this value to the appropriate management controller via the Intelligent Platform Management Bus (IPMB).

[3.3.1547] PXE Boot

[3.3.1548] The BIOS supports the EFI PXE implementation. To utilize this, the user must load EFI Simple Network Protocol driver and the UNDI driver specific for the network interface card being used. The UNDI driver should be included with the network interface card. The Simple Network Protocol driver can be obtained from <http://developer.intel.com/technology/framework>.

[3.3.1549] The BIOS supports legacy PXE option ROMs in legacy mode and includes the necessary PXE ROMs in the BIOS image for the onboard controllers. The legacy PXE ROM is required to boot a non-EFI operating system over the network.

[3.3.1550] Checkpoints

[3.3.1551] A checkpoint is either a byte or word value output to Debug port. The BIOS outputs checkpoints throughout boot-block and Power-On Self Test (POST) to indicate the task the system is currently executing. Checkpoints are very useful in aiding software developers or technicians in debugging problems that occur during the pre-boot process.

[3.3.1552] Checkpoint Ranges

[3.3.1553] Checkpoint Ranges

[3.3.1554] STAT US CODE RANGE	[3.3.1555] DESCRIPTION
[3.3.1556] 0x01 – 0x0B	[3.3.1557] SEC execution
[3.3.1558] 0x0C – 0x0F	[3.3.1559] SEC errors
[3.3.1560] 0x10 – 0x2F	[3.3.1561] PEI execution up to and including memory detection
[3.3.1562] 0x30 – 0x4F	[3.3.1563] PEI execution after memory detection
[3.3.1564] 0x50 – 0x5F	[3.3.1565] PEI errors
[3.3.1566] 0x60 – 0x8F	[3.3.1567] DXE execution up to BDS

[3.3.1553] Checkpoint Ranges (Continued)

[3.3.1554] STAT US CODE RANGE	[3.3.1555] DESCRIPTION
[3.3.1568] 0x90 – 0xCF	[3.3.1569] BDS execution
[3.3.1570] 0xD0 – 0xDF	[3.3.1571] DXE errors
[3.3.1572] 0xE0 – 0xE8	[3.3.1573] S3 Resume (PEI)
[3.3.1574] 0xE9 – 0xEF	[3.3.1575] S3 Resume errors (PEI)
[3.3.1576] 0xF0 – 0xF8	[3.3.1577] Recovery (PEI)
[3.3.1578] 0xF9 – 0xFF	[3.3.1579] Recovery errors (PEI)

[3.3.1580] Standard Checkpoints

[3.3.1581] SEC Phase

[3.3.1582] SEC Phase

[3.3.1583] STAT US CODE	[3.3.1584] DESCRIPTION
[3.3.1585] 0x00	[3.3.1586] Not used
[3.3.1587] Progress Codes	
[3.3.1588] 0x01	[3.3.1589] Power on. Reset type detection (soft/hard).
[3.3.1590] 0x02	[3.3.1591] AP initialization before microcode loading
[3.3.1592] 0x03	[3.3.1593] North Bridge initialization before microcode loading
[3.3.1594] 0x04	[3.3.1595] South Bridge initialization before microcode loading
[3.3.1596] 0x05	[3.3.1597] OEM initialization before microcode loading
[3.3.1598] 0x06	[3.3.1599] Microcode loading
[3.3.1600] 0x07	[3.3.1601] AP initialization after microcode loading
[3.3.1602] 0x08	[3.3.1603] North Bridge initialization after microcode loading
[3.3.1604] 0x09	[3.3.1605] South Bridge initialization after microcode loading
[3.3.1606] 0x0A	[3.3.1607] OEM initialization after microcode loading
[3.3.1608] 0x0B	[3.3.1609] Cache initialization

[3.3.1582] SEC Phase (Continued)

[3.3.1583] STAT US CODE	[3.3.1584] DESCRIPTION
[3.3.1610] SEC Error Codes	
[3.3.1611] 0x0C – 0x0D	[3.3.1612] Reserved for future AMI SEC error codes
[3.3.1613] 0x0E	[3.3.1614] Microcode not found
[3.3.1615] 0x0F	[3.3.1616] Microcode not loaded

[3.3.1617] PEI Phase

[3.3.1618] PEI Phase

[3.3.1619] STAT US CODE	[3.3.1620] DESCRIPTION
[3.3.1621] Progress Codes	
[3.3.1622] 0x10	[3.3.1623] PEI Core is started
[3.3.1624] 0x11	[3.3.1625] Pre-memory CPU initialization is started
[3.3.1626] 0x12	[3.3.1627] Pre-memory CPU initialization (CPU module specific)
[3.3.1628] 0x13	[3.3.1629] Pre-memory CPU initialization (CPU module specific)
[3.3.1630] 0x14	[3.3.1631] Pre-memory CPU initialization (CPU module specific)
[3.3.1632] 0x15	[3.3.1633] Pre-memory North Bridge initialization is started

[3.3.1618] PEI Phase (Continued)

[3.3.1619] STAT US CODE	[3.3.1620] DESCRIPTION
[3.3.1634] 0x16	[3.3.1635] Pre-Memory North Bridge initialization (North Bridge module specific)
[3.3.1636] 0x17	[3.3.1637] Pre-Memory North Bridge initialization (North Bridge module specific)
[3.3.1638] 0x18	[3.3.1639] Pre-Memory North Bridge initialization (North Bridge module specific)
[3.3.1640] 0x19	[3.3.1641] Pre-memory South Bridge initialization is started
[3.3.1642] 0x1A	[3.3.1643] Pre-memory South Bridge initialization (South Bridge module specific)
[3.3.1644] 0x1B	[3.3.1645] Pre-memory South Bridge initialization (South Bridge module specific)
[3.3.1646] 0x1C	[3.3.1647] Pre-memory South Bridge initialization (South Bridge module specific)
[3.3.1648] 0x1D – 0x2A	[3.3.1649] OEM pre-memory initialization codes
[3.3.1650] 0x2B	[3.3.1651] Memory initialization. Serial Presence Detect (SPD) data reading
[3.3.1652] 0x2C	[3.3.1653] Memory initialization. Memory presence detection
[3.3.1654] 0x2D	[3.3.1655] Memory initialization. Programming memory timing information
[3.3.1656] 0x2E	[3.3.1657] Memory initialization. Configuring memory
[3.3.1658] 0x2F	[3.3.1659] Memory initialization (other).

[3.3.1618] PEI Phase (Continued)

[3.3.1619] STAT US CODE	[3.3.1620] DESCRIPTION
[3.3.1660] 0x30	[3.3.1661] Reserved for ASL (see ASL Status Codes section below)
[3.3.1662] 0x31	[3.3.1663] Memory Installed
[3.3.1664] 0x32	[3.3.1665] CPU post-memory initialization is started
[3.3.1666] 0x33	[3.3.1667] CPU post-memory initialization. Cache initialization
[3.3.1668] 0x34	[3.3.1669] CPU post-memory initialization. Application Processor(s) (AP) initialization
[3.3.1670] 0x35	[3.3.1671] CPU post-memory initialization. Boot Strap Processor (BSP) selection
[3.3.1672] 0x36	[3.3.1673] CPU post-memory initialization. System Management Mode (SMM) initialization
[3.3.1674] 0x37	[3.3.1675] Post-Memory North Bridge initialization is started
[3.3.1676] 0x38	[3.3.1677] Post-Memory North Bridge initialization (North Bridge module specific)
[3.3.1678] 0x39	[3.3.1679] Post-Memory North Bridge initialization (North Bridge module specific)
[3.3.1680] 0x3A	[3.3.1681] Post-Memory North Bridge initialization (North Bridge module specific)
[3.3.1682] 0x3B	[3.3.1683] Post-Memory South Bridge initialization is started
[3.3.1684] 0x3C	[3.3.1685] Post-Memory South Bridge initialization (South Bridge module specific)

[3.3.1618] PEI Phase (Continued)

[3.3.1619] STAT US CODE	[3.3.1620] DESCRIPTION
[3.3.1686] 0x3D	[3.3.1687] Post-Memory South Bridge initialization (South Bridge module specific)
[3.3.1688] 0x3E	[3.3.1689] Post-Memory South Bridge initialization (South Bridge module specific)
[3.3.1690] 0x3F-0x4E	[3.3.1691] OEM post memory initialization codes
[3.3.1692] 0x4F	[3.3.1693] DXE IPL is started
[3.3.1694] PEI Error Codes	
[3.3.1695] 0x50	[3.3.1696] Memory initialization error. Invalid memory type or incompatible memory speed
[3.3.1697] 0x51	[3.3.1698] Memory initialization error. SPD reading has failed
[3.3.1699] 0x52	[3.3.1700] Memory initialization error. Invalid memory size or memory modules do not match.
[3.3.1701] 0x53	[3.3.1702] Memory initialization error. No usable memory detected
[3.3.1703] 0x54	[3.3.1704] Unspecified memory initialization error.
[3.3.1705] 0x55	[3.3.1706] Memory not installed
[3.3.1707] 0x56	[3.3.1708] Invalid CPU type or Speed
[3.3.1709] 0x57	[3.3.1710] CPU mismatch
[3.3.1711] 0x58	[3.3.1712] CPU self test failed or possible CPU cache error

[3.3.1618] PEI Phase (Continued)

[3.3.1619] STAT US CODE	[3.3.1620] DESCRIPTION
[3.3.1713] 0x59	[3.3.1714] CPU micro-code is not found or micro-code update is failed
[3.3.1715] 0x5A	[3.3.1716] Internal CPU error
[3.3.1717] 0x5B	[3.3.1718] Reset PPI is not available
[3.3.1719] 0x5C -0x5F	[3.3.1720] Reserved for future AMI error codes
[3.3.1721] S3 Resume Progress Codes	
[3.3.1722] 0xE0	[3.3.1723] S3 Resume is started (S3 Resume PPI is called by the DXE IPL)
[3.3.1724] 0xE1	[3.3.1725] S3 Boot Script execution
[3.3.1726] 0xE2	[3.3.1727] Video repost
[3.3.1728] 0xE3	[3.3.1729] OS S3 wake vector call
[3.3.1730] 0xE4 -0xE7	[3.3.1731] Reserved for future AMI progress codes
[3.3.1732] S3 Resume Error Codes	
[3.3.1733] 0xE8	[3.3.1734] S3 Resume Failed
[3.3.1735] 0xE9	[3.3.1736] S3 Resume PPI not Found
[3.3.1737] 0xEA	[3.3.1738] S3 Resume Boot Script Error
[3.3.1739] 0xEB	[3.3.1740] S3 OS Wake Error
[3.3.1741] 0xEC -0xEF	[3.3.1742] Reserved for future AMI error codes

[3.3.1618] PEI Phase (Continued)

[3.3.1619] STAT US CODE	[3.3.1620] DESCRIPTION
[3.3.1743] Recovery Progress Codes	
[3.3.1744] 0xF0	[3.3.1745] Recovery condition triggered by firmware (Auto recovery)
[3.3.1746] 0xF1	[3.3.1747] Recovery condition triggered by user (Forced recovery)
[3.3.1748] 0xF2	[3.3.1749] Recovery process started
[3.3.1750] 0xF3	[3.3.1751] Recovery firmware image is found
[3.3.1752] 0xF4	[3.3.1753] Recovery firmware image is loaded
[3.3.1754] 0xF5 -0xF7	[3.3.1755] Reserved for future AMI progress codes
[3.3.1756] Recovery Error Codes	
[3.3.1757] 0xF8	[3.3.1758] Recovery PPI is not available
[3.3.1759] 0xF9	[3.3.1760] Recovery capsule is not found
[3.3.1761] 0xFA	[3.3.1762] Invalid recovery capsule
[3.3.1763] 0xFB - 0xFF	[3.3.1764] Reserved for future AMI error codes

[3.3.1765] DXE Phase

[3.3.1766] DXE Phase

[3.3.1767] STATUS CODE	[3.3.1768] DESCRIPTION
[3.3.1769] 0x60	[3.3.1770] DXE Core is started
[3.3.1771] 0x61	[3.3.1772] NVRAM initialization
[3.3.1773] 0x62	[3.3.1774] Installation of the South Bridge Runtime Services
[3.3.1775] 0x63	[3.3.1776] CPU DXE initialization is started
[3.3.1777] 0x64	[3.3.1778] CPU DXE initialization (CPU module specific)
[3.3.1779] 0x65	[3.3.1780] CPU DXE initialization (CPU module specific)
[3.3.1781] 0x66	[3.3.1782] CPU DXE initialization (CPU module specific)
[3.3.1783] 0x67	[3.3.1784] CPU DXE initialization (CPU module specific)
[3.3.1785] 0x68	[3.3.1786] PCI host bridge initialization
[3.3.1787] 0x69	[3.3.1788] North Bridge DXE initialization is started

[3.3.1766] DXE Phase (Continued)

[3.3.1767] STATUS CODE	[3.3.1768] DESCRIPTION
[3.3.1789] 0x6A	[3.3.1790] North Bridge DXE SMM initialization is started
[3.3.1791] 0x6B	[3.3.1792] North Bridge DXE initialization (North Bridge module specific)
[3.3.1793] 0x6C	[3.3.1794] North Bridge DXE initialization (North Bridge module specific)
[3.3.1795] 0x6D	[3.3.1796] North Bridge DXE initialization (North Bridge module specific)
[3.3.1797] 0x6E	[3.3.1798] North Bridge DXE initialization (North Bridge module specific)
[3.3.1799] 0x6F	[3.3.1800] North Bridge DXE initialization (North Bridge module specific)
[3.3.1801] 0x70	[3.3.1802] South Bridge DXE initialization is started
[3.3.1803] 0x71	[3.3.1804] South Bridge DXE SMM initialization is started
[3.3.1805] 0x72	[3.3.1806] South Bridge devices initialization
[3.3.1807] 0x73	[3.3.1808] South Bridge DXE Initialization (South Bridge module specific)
[3.3.1809] 0x74	[3.3.1810] South Bridge DXE Initialization (South Bridge module specific)
[3.3.1811] 0x75	[3.3.1812] South Bridge DXE Initialization (South Bridge module specific)

[3.3.1766] DXE Phase (Continued)

[3.3.1767] STATUS CODE	[3.3.1768] DESCRIPTION
[3.3.1813] 0x76	[3.3.1814] South Bridge DXE Initialization (South Bridge module specific)
[3.3.1815] 0x77	[3.3.1816] South Bridge DXE Initialization (South Bridge module specific)
[3.3.1817] 0x78	[3.3.1818] ACPI module initialization
[3.3.1819] 0x79	[3.3.1820] CSM initialization
[3.3.1821] 0x7A – 0x7F	[3.3.1822] Reserved for future AMI DXE codes
[3.3.1823] 0x80 – 0x8F	[3.3.1824] OEM DXE initialization codes
[3.3.1825] 0x90	[3.3.1826] Boot Device Selection (BDS) phase is started
[3.3.1827] 0x91	[3.3.1828] Driver connecting is started
[3.3.1829] 0x92	[3.3.1830] PCI Bus initialization is started
[3.3.1831] 0x93	[3.3.1832] PCI Bus Hot Plug Controller Initialization
[3.3.1833] 0x94	[3.3.1834] PCI Bus Enumeration

[3.3.1766] DXE Phase (Continued)

[3.3.1767] STATUS CODE	[3.3.1768] DESCRIPTION
[3.3.1835] 0x95	[3.3.1836] PCI Bus Request Resources
[3.3.1837] 0x96	[3.3.1838] PCI Bus Assign Resources
[3.3.1839] 0x97	[3.3.1840] Console Output devices connect
[3.3.1841] 0x98	[3.3.1842] Console input devices connect
[3.3.1843] 0x99	[3.3.1844] Super IO Initialization
[3.3.1845] 0x9A	[3.3.1846] USB initialization is started
[3.3.1847] 0x9B	[3.3.1848] USB Reset
[3.3.1849] 0x9C	[3.3.1850] USB Detect
[3.3.1851] 0x9D	[3.3.1852] USB Enable
[3.3.1853] 0x9E – 0x9F	[3.3.1854] Reserved for future AMI codes
[3.3.1855] 0xA0	[3.3.1856] IDE initialization is started

[3.3.1766] DXE Phase (Continued)

[3.3.1767] STATUS CODE	[3.3.1768] DESCRIPTION
[3.3.1857] 0xA1	[3.3.1858] IDE Reset
[3.3.1859] 0xA2	[3.3.1860] IDE Detect
[3.3.1861] 0xA3	[3.3.1862] IDE Enable
[3.3.1863] 0xA4	[3.3.1864] SCSI initialization is started
[3.3.1865] 0xA5	[3.3.1866] SCSI Reset
[3.3.1867] 0xA6	[3.3.1868] SCSI Detect
[3.3.1869] 0xA7	[3.3.1870] SCSI Enable
[3.3.1871] 0xA8	[3.3.1872] Setup Verifying Password
[3.3.1873] 0xA9	[3.3.1874] Start of Setup
[3.3.1875] 0xAA	[3.3.1876] Reserved for ASL (see ASL Status Codes section below)
[3.3.1877] 0xAB	[3.3.1878] Setup Input Wait
[3.3.1879] 0xAC	[3.3.1880] Reserved for ASL (see ASL Status Codes section below)

[3.3.1766] DXE Phase (Continued)

[3.3.1767] STATUS CODE	[3.3.1768] DESCRIPTION
[3.3.1881] 0xAD	[3.3.1882] Ready To Boot event
[3.3.1883] 0xAE	[3.3.1884] Legacy Boot event
[3.3.1885] 0xAF	[3.3.1886] Exit Boot Services event
[3.3.1887] 0xB0	[3.3.1888] Runtime Set Virtual Address MAP Begin
[3.3.1889] 0xB1	[3.3.1890] Runtime Set Virtual Address MAP End
[3.3.1891] 0xB2	[3.3.1892] Legacy Option ROM Initialization
[3.3.1893] 0xB3	[3.3.1894] System Reset
[3.3.1895] 0xB4	[3.3.1896] USB hot plug
[3.3.1897] 0xB5	[3.3.1898] PCI bus hot plug
[3.3.1899] 0xB6	[3.3.1900] Clean-up of NVRAM
[3.3.1901] 0xB7	[3.3.1902] Configuration Reset (reset of NVRAM settings)

[3.3.1766] DXE Phase (Continued)

[3.3.1767] STATUS CODE	[3.3.1768] DESCRIPTION
[3.3.1903] 0xB8 – 0xBF	[3.3.1904] Reserved for future AML codes
[3.3.1905] 0xC0 – 0xCF	[3.3.1906] OEM BDS initialization codes
[3.3.1907] DXE Error Codes	
[3.3.1908] 0xD0	[3.3.1909] CPU initialization error
[3.3.1910] 0xD1	[3.3.1911] North Bridge initialization error
[3.3.1912] 0xD2	[3.3.1913] South Bridge initialization error
[3.3.1914] 0xD3	[3.3.1915] Some of the Architectural Protocols are not available
[3.3.1916] 0xD4	[3.3.1917] PCI resource allocation error. Out of Resources
[3.3.1918] 0xD5	[3.3.1919] No Space for Legacy Option ROM
[3.3.1920] 0xD6	[3.3.1921] No Console Output Devices are found
[3.3.1922] 0xD7	[3.3.1923] No Console Input Devices are found

[3.3.1766] DXE Phase (Continued)

[3.3.1767] STATUS CODE	[3.3.1768] DESCRIPTION
[3.3.1924] 0xD8	[3.3.1925] Invalid password
[3.3.1926] 0xD9	[3.3.1927] Error loading Boot Option (LoadImage returned error)
[3.3.1928] 0xDA	[3.3.1929] Boot Option is failed (StartImage returned error)
[3.3.1930] 0xDB	[3.3.1931] Flash update is failed
[3.3.1932] 0xDC	[3.3.1933] Reset protocol is not available

[3.3.1934] ACPI /ASL Checkpoints

[3.3.1935] ACPI/ASL Checkpoints

[3.3.1936] STATUS CODE	[3.3.1937] DESCRIPTION
[3.3.1938] 0x01	[3.3.1939] System is entering S1 sleep state
[3.3.1940] 0x02	[3.3.1941] System is entering S2 sleep state
[3.3.1942] 0x03	[3.3.1943] System is entering S3 sleep state

[3.3.1935] ACPI/ASL Checkpoints (Continued)

[3.3.1936] STATUS CODE	[3.3.1937] DESCRIPTION
[3.3.1944] 0x04	[3.3.1945] System is entering S4 sleep state
[3.3.1946] 0x05	[3.3.1947] System is entering S5 sleep state
[3.3.1948] 0x10	[3.3.1949] System is waking up from the S1 sleep state
[3.3.1950] 0x20	[3.3.1951] System is waking up from the S2 sleep state
[3.3.1952] 0x30	[3.3.1953] System is waking up from the S3 sleep state
[3.3.1954] 0x40	[3.3.1955] System is waking up from the S4 sleep state
[3.3.1956] 0xAC	[3.3.1957] System has transitioned into ACPI mode. Interrupt controller is in APIC mode.
[3.3.1958] 0xAA	[3.3.1959] System has transitioned into ACPI mode. Interrupt controller is in APIC mode.

[3.3.1960]

[3.3.1961] OEM-Reserved Checkpoint Ranges

[3.3.1962] OEM Reserved Checkpoint Ranges

[3.3.1963] STATUS CODE	[3.3.1964] DESCRIPTION
[3.3.1965] 0x05	[3.3.1966] OEM SEC initialization before microcode loading
[3.3.1967] 0x0A	[3.3.1968] OEM SEC initialization after microcode loading
[3.3.1969] 0x1D – 0x2A	[3.3.1970] OEM pre-memory initialization codes
[3.3.1971] 0x3F – 0x4E	[3.3.1972] OEM PEI post memory initialization codes
[3.3.1973] 0x80 – 0x8F	[3.3.1974] OEM DXE initialization codes
[3.3.1975] 0xC0 – 0xCF	[3.3.1976] OEM BDS initialization codes

[3.3.1977]

[4.0.1] BMC

Chapter 4

[4.1.1] Server Management Software

[4.1.2] Introduction

[4.1.3] This section introduces the Baseboard Management Controller (BMC), its recovery procedure in DOS, Linux, and Windows environment as well as web-based graphical user interface (GUI).

[4.1.4]

[4.1.5] BMC Key Features and Functions

- Supports IPMI v1.5 and v2.0
- Out-of-band monitoring and control for server management over LAN.
- Share NIC and dedicated NIC for remote management via network
- The FRU information report includes main board part number, product name, manufacturer, etc.
- Health status/Hardware monitoring report.

- Events log, view, and clear.
- Event notification via chassis LED indicator and PET (Platform Event Trap).
- Platform Event Filtering (PEF) to take selected actions for selected events, including NMI.
- Chassis management includes power control and a status report, front panel buttons and LED control.
- Watchdog and auto server restart and recovery
- Supports multi-session users, and alert destination for LAN channel.
- Support IPMB connector that advanced server management card can communicate with BMC.
-

[4.1.6] Power System

[4.1.7] BMC controls system power through GPIO pins and IPMI chassis commands.

[4.1.8]

[4.1.9] Front Panel User Interface

[4.1.10] The BMC provides control panel interface functionality including indicators (Fault/status and Identify LEDs) and buttons (Power/ID).

[4.1.11] Power Button

[4.1.12] The Power buttons allow to control the system status.

[4.1.13] ID Button

[4.1.14] The control panel Chassis Identify button toggles the state of the Chassis ID LED. If the ID LED is off, then a button press will turn the LED on (blinking). If the LED is on, a button press or IPMI Chassis Identify command will turn the LED off.

[4.1.15] LEDs

[4.1.16] The following table contains information on Status, ID and Heartbeat LED's

[4.1.17] Status LED, ID LED, and Heartbeat LED

[4.1.18] LEDs	[4.1.19] COLOR	[4.1.20] STATUS	[4.1.21] DESCRIPTION
[4.1.22] Status LED	[4.1.23] Amber	[4.1.24] Blinking	[4.1.25] System Event [4.1.26] [4.1.57] (See following Status LED table.)
	[4.1.27] Green	[4.1.28] On	[4.1.29] Normal status without System Event
[4.1.30] ID LED	[4.1.31] Blue	[4.1.32] Off	[4.1.33] Normal status
		[4.1.34] Blinking	[4.1.35] Identify the system
[4.1.36] Heartbeat LED	[4.1.37] Green	[4.1.38] Solid On/Off	[4.1.39] BMC is not Ready
		[4.1.40] Blinking	[4.1.41] BMC is Ready

[4.1.42] The following table contains information on Status LED when amber blinking.

[4.1.43] Status LED Activity

No	[4.1.45] STATUS LED [4.1.46] ACTIVITY	[4.1.47] DESCRIPTION
1.	[4.1.49] Temperature Sensor	[4.1.50] Non-critical / critical event asserted
2	[4.1.52] Fan Sensors	[4.1.53] Non-critical / critical event asserted
3	[4.1.55] Voltage Sensors	[4.1.56] Critical event asserted
4	[4.1.58] Power Supply	[4.1.59] State asserted
5.	[4.1.61] Processor	[4.1.62] Thermal trip
6	[4.1.64] Event Logging Disable	<ul style="list-style-type: none"> • SEL almost full • SEL full
7	[4.1.66] Post Error	[4.1.67] System firmware error
8	[4.1.69] Memory	<ul style="list-style-type: none"> • Correctable EEC error • Uncorrectable ECC error • Correctable ECC error logging limit reached
9.	[4.1.71] PCI-E Bus	<ul style="list-style-type: none"> • Bus correctable error • Bus uncorrectable error • Bus fatal error

[4.1.43] Status LED Activity (Continued)

No	[4.1.45] STATUS LED [4.1.46] ACTIVITY	[4.1.47] DESCRIPTION
10	[4.1.73] Watchdog 2	<ul style="list-style-type: none"> • Timer expired • Hard Reset • Power Down • Power cycle

[4.1.74] LAN Interface

[4.1.75] BMC LAN interface in AST2300 is assigned to dedicated NIC LAN (Default) and a shared NIC in Short Model Name. IPMI Specification v2.0 defines how IPMI messages, encapsulated in RMCP/RMCP+ packet format, can be sent to and from the BMC. This capability allows a remote console application to access the BMC and perform the following operations:

- Chassis control: obtain chassis status, reset and power-up the chassis
- Obtain system sensor status
- Obtain and Set system boot options
- Obtain Field Replaceable Unit (FRU) information
- Obtain System Event Log (SEL) entries

- Obtain Sensor Data Records (SDR)
- Set Platform Event Filtering (PEF)
- Set LAN configurations

[4.1.76] In addition, the BMC supports LAN alerting in the form of SNMP traps that conform to the IPMI Platform Event Trap (PET) format.

[4.1.77] Session and User

[4.1.78] This BMC supports ten (10) user accounts. Each can have a different user name, password and privilege level. Four accounts can login simultaneously. The available user privilege levels are User, Operator, and Administrator.

[4.1.79] RMCP+

[4.1.80] Besides RMCP defined by DMTF, AST2150 also supports RMCP+ protocol defined in IPMI 2.0.

- Authentication Algorithm types supported: RAKP-none, RAKP-HMAC-SHA1, RAKP-HMAC-MD5.
- Integrity Algorithm types supported: none, HMAC-SHA1-96, HMAC-MD5-128, MD5-128.
- Confidentiality Algorithm types supported: none, AES-CBC-128.

[4.1.81]

[4.1.82] Serial Over LAN

[4.1.83] BMC supports 1 IPMI (Spec v2.0) specific SOL session. BMC supports redirect data from UART interface.

[4.1.84] Time Sync

[4.1.85] In S2L BMC design, BMC does not have a local RTC to know what time it is. Each time the server powers on, BIOS will use Set SEL Time command to initialize BMC time. The remote console program interpret this time as pre-initial.

[4.1.86] SEL

[4.1.87] BMC supports IPMI 1.5/2.0 standard SEL operation. It can keep to maximum 909 entries SEL log. Event happened in BIOS side will be logged by using Add SEL Entry command. BMC will store them in FLASH, the time stamp field will be filled by BMC. When SEL is full, the new SEL won't be logged but will go through PEF as usual. If AC powers off, all SELs will remain in NV.

[4.1.88] Platform Event

[4.1.89] Platform Event Filter

[4.1.90] The BMC implements selectable action on an event or LAN alerting base on event. By default, no any PEF entries or actions exist, applications need to configure it to enable.

- The number of Platform Event Filter Table is 40.
- The number of Alert Policy Table is 120 and Alert Destination Table is 30. (Include Dedicated and Shared NIC)
- The policy to match an event to Platform Event Filter Table entry is IPMI 1.5 standard.
- The action support Power Off, Power Reset, Power Cycle and NMI.
- All Platform Event Filter Table is default disabled.
- PEF Startup Delay and Last Processed Event tracking is not supported.
- PEF table lookup isn't correlated to log SEL to SEL Repository.
- Serial Alerting is no support.

[4.1.91] BMC Firmware Update

[4.1.92] The BMC will allow users to upgrade firmware image on following entities:

- BMC
- All other upgradable entities

[4.1.93] The update capability is provided by local and remote interfaces.

[4.1.94]

[4.1.95] DOS Recovery Utility

[4.1.96] SOCFLASH Utility and KCSFlash Utility

[4.1.97] WebUI Update

[4.1.98] Remote update can be performed through the remote Web console.

[4.1.99] Temperature Monitoring

[4.1.100] The supported temperature sensors are included in the following table.

[4.1.101] Temperature Monitoring

[4.1.102] TEMPERATURE (°C)	[4.1.103] SENSOR NUMBER	[4.1.104] LCT	[4.1.105] LNCT	[4.1.106] UNCT	[4.1.107] UCT	[4.1.108] UNRT	[4.1.109] READING AVAILABLE
[4.1.110] Temp_CPU_0	[4.1.111] 0xB0	[4.1.112] N/A	[4.1.113] N/A	[4.1.114] Tjmax-1	[4.1.115] Tjmax	[4.1.116] N/A	[4.1.117] DA
[4.1.118] Temp_CPU_1	[4.1.119] 0xB1	[4.1.120] N/A	[4.1.121] N/A	[4.1.122] Tjmax-1	[4.1.123] Tjmax	[4.1.124] N/A	[4.1.125] DA
[4.1.126] Temp_CPU_2	[4.1.127] 0xB2	[4.1.128] N/A	[4.1.129] N/A	[4.1.130] Tjmax-1	[4.1.131] Tjmax	[4.1.132] N/A	[4.1.133] DA
[4.1.134] Temp_CPU_3	[4.1.135] 0xB3	[4.1.136] N/A	[4.1.137] N/A	[4.1.138] Tjmax-1	[4.1.139] Tjmax	[4.1.140] N/A	[4.1.141] DA

[4.1.101] Temperature Monitoring (Continued)

[4.1.102] TEMPERATURE (°C)	[4.1.103] SENSOR NUMBER	[4.1.104] LCT	[4.1.105] LNCT	[4.1.106] UNCT	[4.1.107] UCT	[4.1.108] UNRT	[4.1.109] READING AVAILABLE
[4.1.142] Temp_MB1	[4.1.143] 0xB4	[4.1.144] N/A	[4.1.145] N/A	[4.1.146] 57	[4.1.147] 59	[4.1.148] N/A	[4.1.149] DA
[4.1.150] Temp_MB2	[4.1.151] 0xB5	[4.1.152] N/A	[4.1.153] N/A	[4.1.154] 57	[4.1.155] 59	[4.1.156] N/A	[4.1.157] DA
[4.1.158] Temp_DIM_AB	[4.1.159] 0xB6	[4.1.160] N/A	[4.1.161] N/A	[4.1.162] 92	[4.1.163] 94	[4.1.164] N/A	[4.1.165] DA
[4.1.166] Temp_DIM_CD	[4.1.167] 0xB7	[4.1.168] N/A	[4.1.169] N/A	[4.1.170] 92	[4.1.171] 94	[4.1.172] N/A	[4.1.173] DA
[4.1.174] Temp_DIM_EF	[4.1.175] 0xB8	[4.1.176] N/A	[4.1.177] N/A	[4.1.178] 92	[4.1.179] 94	[4.1.180] N/A	[4.1.181] DA
[4.1.182] Temp_DIM_GH	[4.1.183] 0xB9	[4.1.184] N/A	[4.1.185] N/A	[4.1.186] 92	[4.1.187] 94	[4.1.188] N/A	[4.1.189] DA

[4.1.101] Temperature Monitoring (Continued)

[4.1.102] TEMPERATURE (°C)	[4.1.103] SENSOR NUMBER	[4.1.104] LCT	[4.1.105] LNCT	[4.1.106] UNCT	[4.1.107] UCT	[4.1.108] UNRT	[4.1.109] READING AVAILABLE
[4.1.190] Temp_DIM_M_JK	[4.1.191] 0xBA	[4.1.192] N/A	[4.1.193] N/A	[4.1.194] 92	[4.1.195] 94	[4.1.196] N/A	[4.1.197] DA
[4.1.198] Temp_DIM_M_LM	[4.1.199] 0xBB	[4.1.200] N/A	[4.1.201] N/A	[4.1.202] 92	[4.1.203] 94	[4.1.204] N/A	[4.1.205] DA
[4.1.206] Temp_DIM_M_NP	[4.1.207] 0xBC	[4.1.208] N/A	[4.1.209] N/A	[4.1.210] 92	[4.1.211] 94	[4.1.212] N/A	[4.1.213] DA
[4.1.214] Temp_DIM_M_RT	[4.1.215] 0xBD	[4.1.216] N/A	[4.1.217] N/A	[4.1.218] 92	[4.1.219] 94	[4.1.220] N/A	[4.1.221] DA
[4.1.222] Temp_FP	[4.1.223] 0xBE	[4.1.224] N/A	[4.1.225] N/A	[4.1.226] 46	[4.1.227] 48	[4.1.228] N/A	[4.1.229] DA
[4.1.230] Temp_HSBP	[4.1.231] 0xBF	[4.1.232] N/A	[4.1.233] N/A	[4.1.234] 48	[4.1.235] 50	[4.1.236] N/A	[4.1.237] DA

[4.1.101] Temperature Monitoring (Continued)

[4.1.102] TEMPERATURE (°C)	[4.1.103] SENSOR NUMBER	[4.1.104] LCT	[4.1.105] LNCT	[4.1.106] UNCT	[4.1.107] UCT	[4.1.108] UNRT	[4.1.109] READING AVAILABLE
[4.1.238] Temp_LAN	[4.1.239] 0xC0	[4.1.240] N/A	[4.1.241] N/A	[4.1.242] 103	[4.1.243] 105	[4.1.244] N/A	[4.1.245] DA
[4.1.246] Temp_PCH	[4.1.247] 0xC1	[4.1.248] N/A	[4.1.249] N/A	[4.1.250] 89	[4.1.251] 91	[4.1.252] N/A	[4.1.253] DA
[4.1.254] Temp_GPU_Slot1	[4.1.255] 0x40	[4.1.256] N/A	[4.1.257] N/A	[4.1.258] 95	[4.1.259] 100	[4.1.260] 105	[4.1.261] DA
[4.1.262] Temp_GPU_Slot3	[4.1.263] 0x41	[4.1.264] N/A	[4.1.265] N/A	[4.1.266] 95	[4.1.267] 100	[4.1.268] 105	[4.1.269] DA
[4.1.270] Temp_GPU_Slot6	[4.1.271] 0x42	[4.1.272] N/A	[4.1.273] N/A	[4.1.274] 95	[4.1.275] 100	[4.1.276] 105	[4.1.277] DA
[4.1.278] Temp_GPU_Slot7	[4.1.279] 0x43	[4.1.280] N/A	[4.1.281] N/A	[4.1.282] 95	[4.1.283] 100	[4.1.284] 105	[4.1.285] DA

[4.1.101] Temperature Monitoring (Continued)

[4.1.102] TEMPERATURE (°C)	[4.1.103] SENSOR NUMBER	[4.1.104] LCT	[4.1.105] LNCT	[4.1.106] UNCT	[4.1.107] UCT	[4.1.108] UNRT	[4.1.109] READING AVAILABLE
[4.1.286] Temp_GPU_Slot8	[4.1.287] 0x44	[4.1.288] N/A	[4.1.289] N/A	[4.1.290] 95	[4.1.291] 100	[4.1.292] 105	[4.1.293] DA
<p>[4.1.294] In reading available:</p> <ul style="list-style-type: none"> • AI. AC in • DA. DC on and After post end • DB. DC on and Before post end • Tjmax is stored in CPU, it's different with different type of CPU. 							

[4.1.295] Voltage Monitoring

[4.1.296] The system supports the following voltage sensors:

[4.1.297] Voltage Monitoring

[4.1.298] VOLTAGE SENSOR	[4.1.299] SENSOR NUMBER	[4.1.300] NORMAL	[4.1.301] LCT	[4.1.302] LNCT	[4.1.303] UNCT	[4.1.304] UCT	[4.1.305] READING AVAILABLE
[4.1.306] PVCC_P_CPU0	[4.1.307] 0xC4	[4.1.308] 1.00V	[4.1.309] 0.65V	[4.1.310] 0.668V	[4.1.311] 1.847V	[4.1.312] 1.883V	[4.1.313] DA
[4.1.314] PVCC_P_CPU1	[4.1.315] 0xC5	[4.1.316] 1.00V	[4.1.317] 0.65V	[4.1.318] 0.668V	[4.1.319] 1.847V	[4.1.320] 1.883V	[4.1.321] DA
[4.1.322] PVCC_P_CPU2	[4.1.323] 0xC6	[4.1.324] 1.00V	[4.1.325] 0.65V	[4.1.326] 0.668V	[4.1.327] 1.847V	[4.1.328] 1.883V	[4.1.329] DA
[4.1.330] PVCC_P_CPU3	[4.1.331] 0xC7	[4.1.332] 1.00V	[4.1.333] 0.65V	[4.1.334] 0.668V	[4.1.335] 1.847V	[4.1.336] 1.883V	[4.1.337] DA
[4.1.338] P1V1_PBG	[4.1.339] 0xC8	[4.1.340] 1.1V	[4.1.341] 1.019V	[4.1.342] 1.046V	[4.1.343] 1.163V	[4.1.344] 1.181V	[4.1.345] DA

[4.1.297] Voltage Monitoring (Continued)

[4.1.298] VOL TAGE SENSO R	[4.1.299] SENS OR NUMB ER	[4.1.300] NORM AL	[4.1.301] LCT	[4.1.302] LNCT	[4.1.303] UNCT	[4.1.304] UCT	[4.1.305] READING AVAILAB LE
[4.1.346] P3V_V BAT	[4.1.347] 0xC9	[4.1.348] 3.0V	[4.1.349] 2.797 V	[4.1.350] 2.855 V	[4.1.351] 3.377 V	[4.1.352] 3.464 V	[4.1.353] AI
[4.1.354] P5V_S TBY	[4.1.355] 0xCA	[4.1.356] 5.0V	[4.1.357] 4.64V	[4.1.358] 4.736 V	[4.1.359] 5.264 V	[4.1.360] 5.36V	[4.1.361] AI
[4.1.362] P12V_ AUX	[4.1.363] 0xCB	[4.1.364] 12.0V	[4.1.365] 11.06 9V	[4.1.366] 11.36 4V	[4.1.367] 12.66 2V	[4.1.368] 12.83 9V	[4.1.369] AI
[4.1.370] P12V	[4.1.371] 0xCC	[4.1.372] 12.0V	[4.1.373] 11.06 9V	[4.1.374] 11.36 4V	[4.1.375] 12.66 2V	[4.1.376] 12.83 9V	[4.1.377] DA
[4.1.378] P5V	[4.1.379] 0xCD	[4.1.380] 5.0V	[4.1.381] 4.64V	[4.1.382] 4.736 V	[4.1.383] 5.264 V	[4.1.384] 5.36V	[4.1.385] DA
[4.1.386] P3V3_ STBY	[4.1.387] 0xCE	[4.1.388] 3.3V	[4.1.389] 3.06V	[4.1.390] 3.135 V	[4.1.391] 3.48V	[4.1.392] 3.54V	[4.1.393] AI
[4.1.394] P3V3	[4.1.395] 0xCF	[4.1.396] 3.3V	[4.1.397] 3.06V	[4.1.398] 3.135 V	[4.1.399] 3.48V	[4.1.400] 3.54V	[4.1.401] DA

[4.1.402] Fan Speed Monitoring

[4.1.403] The fan speed thresholds are included in the following table.

[4.1.404] Fan Speed Monitoring

[4.1.405] ROTATIO N (RPM)	[4.1.406] SENSOR NUMBER	[4.1.407] LCT	[4.1.408] LNCT	[4.1.409] UNCT	[4.1.410] UCT	[4.1.411] READING AVAILABLE
[4.1.412] FAN_SY S1	[4.1.413] 0x38	[4.1.414] 480	[4.1.415] 1040	[4.1.416] N/A	[4.1.417] N/A	[4.1.418] DA
[4.1.419] FAN_SY S2	[4.1.420] 0x39	[4.1.421] 480	[4.1.422] 1040	[4.1.423] N/A	[4.1.424] N/A	[4.1.425] DA
[4.1.426] FAN_SY S3	[4.1.427] 0x3A	[4.1.428] 480	[4.1.429] 1040	[4.1.430] N/A	[4.1.431] N/A	[4.1.432] DA
[4.1.433] FAN_SY S4	[4.1.434] 0x3B	[4.1.435] 480	[4.1.436] 1040	[4.1.437] N/A	[4.1.438] N/A	[4.1.439] DA
[4.1.440] FAN_SY S5	[4.1.441] 0x3C	[4.1.442] 480	[4.1.443] 1040	[4.1.444] N/A	[4.1.445] N/A	[4.1.446] DA
[4.1.447] FAN_SY S6	[4.1.448] 0x3D	[4.1.449] 480	[4.1.450] 1040	[4.1.451] N/A	[4.1.452] N/A	[4.1.453] DA

[4.1.404] Fan Speed Monitoring (Continued)

[4.1.405] ROTATION (RPM)	[4.1.406] SENSOR NUMBER	[4.1.407] LCT	[4.1.408] LNCT	[4.1.409] UNCT	[4.1.410] UCT	[4.1.411] READING AVAILABLE
[4.1.454] FAN_SY S7	[4.1.455] 0x3E	[4.1.456] 500	[4.1.457] 1040	[4.1.458] N/A	[4.1.459] N/A	[4.1.460] DA
[4.1.461] FAN_SY S8	[4.1.462] 0x3F	[4.1.463] 500	[4.1.464] 1040	[4.1.465] N/A	[4.1.466] N/A	[4.1.467] DA

[4.1.468] Processor Error Detection**[4.1.469] Thermal Trip / Processor Hot**

[4.1.470] Thermal Trip and Processor Hot can be detected by GPIO. When an error is detected, the event will be added to SEL.

[4.1.471]**[4.1.472] Watchdog**

[4.1.473] For the BIOS and OS Agent watchdog, this system adopts a standard design as specified IPMI 1.5.

[4.1.474] Pre-Timeout Interrupt Support

[4.1.475] For the watchdog pre-timeout's interrupt, BMC supports SMI and NMI. SMI is used in BIOS implementation

already, so using the watchdog with pre-timeout SMI is not recommended.

[4.1.476] Timeout Action Support

[4.1.477] For watchdog timeout actions, BMC supports power down, power cycle and power reset.

[4.1.478]

[4.1.479] IPMI 1.5 / 2.0 Command Support List

[4.1.480] This chapter lists all IPMI 1.5 / 2.0 mandatory and optional command support. For more detailed information please refer to the core IPMI Commands Support document. In the following section, if the command support is the same as that listed in the core IPMI commands support document, a detail description is omitted. Items listed hereafter are the only exceptions to the core document. For the following command information refers to *"IPMI v2.0 Document Revision 1.0 February 12, 2004 June 12, 2009 Markup"*. Should there be any discrepancy the IPMI specification takes priority.

[4.1.481] IPM Device Global Commands

[4.1.482] COMMAND	[4.1.483] NETFN	[4.1.484] CMD	[4.1.485] O/M	[4.1.486] SUPPORT ED?
[4.1.487] Get Device ID	[4.1.488] App	[4.1.489] 01h	[4.1.490] M	[4.1.491] Yes
[4.1.492] Cold Reset	[4.1.493] App	[4.1.494] 02h	[4.1.495] O	[4.1.496] Yes
[4.1.497] Warm Reset	[4.1.498] App	[4.1.499] 03h	[4.1.500] O	[4.1.501] No
[4.1.502] Get Self Test Results	[4.1.503] App	[4.1.504] 04h	[4.1.505] M	[4.1.506] Yes
[4.1.507] Manufacture Test On	[4.1.508] App	[4.1.509] 05h	[4.1.510] O	[4.1.511] Yes
[4.1.512] Set ACPI Power State	[4.1.513] App	[4.1.514] 06h	[4.1.515] O	[4.1.516] Yes
[4.1.517] Get ACPI Power State	[4.1.518] App	[4.1.519] 07h	[4.1.520] O	[4.1.521] Yes
[4.1.522] Get Device GUID	[4.1.523] App	[4.1.524] 08h	[4.1.525] O	[4.1.526] Yes
[4.1.527] Broadcast Commands				
[4.1.528] Broadcast 'Get Device ID	[4.1.529] App	[4.1.530] 01h	[4.1.531] M	[4.1.532] No

[4.1.533] BMC Device and Messaging Commands

[4.1.534] Device and Messaging Commands

[4.1.535] COMMAND	[4.1.536] NETFN	[4.1.537] CMD	[4.1.538] O/M	[4.1.539] SUPPORT ED?
[4.1.540] Set BMC Global Enables	[4.1.541] App	[4.1.542] 2Eh	[4.1.543] M	[4.1.544] Yes
[4.1.545] Get BMC Global Enables	[4.1.546] App	[4.1.547] 2Fh	[4.1.548] M	[4.1.549] Yes
[4.1.550] Clear Message Buffer Flags	[4.1.551] App	[4.1.552] 30h	[4.1.553] M	[4.1.554] Yes
[4.1.555] Get Message Buffer Flags	[4.1.556] App	[4.1.557] 31h	[4.1.558] M	[4.1.559] Yes
[4.1.560] Enable Message Channel Receive	[4.1.561] App	[4.1.562] 32h	[4.1.563] O	[4.1.564] Yes
[4.1.565] Get Message	[4.1.566] App	[4.1.567] 33h	[4.1.568] M	[4.1.569] Yes
[4.1.570] Send Message	[4.1.571] App	[4.1.572] 34h	[4.1.573] M	[4.1.574] Yes
[4.1.575] Read Event Message Buffer	[4.1.576] App	[4.1.577] 35h	[4.1.578] O	[4.1.579] Yes
[4.1.580] Get BT Interface Capabilities	[4.1.581] App	[4.1.582] 36h	[4.1.583] M	[4.1.584] No
[4.1.585] Get System GUID	[4.1.586] App	[4.1.587] 37h	[4.1.588] O	[4.1.589] Yes

[4.1.534] Device and Messaging Commands (Continued)

[4.1.535] COMMAND	[4.1.536] NETFN	[4.1.537] CMD	[4.1.538] O/M	[4.1.539] SUPPORT ED?
[4.1.590] Get Channel Authentication Capabilities	[4.1.591] App	[4.1.592] 38h	[4.1.593] O	[4.1.594] Yes
[4.1.595] Get Session Challenge	[4.1.596] App	[4.1.597] 39h	[4.1.598] O	[4.1.599] Yes
[4.1.600] Activate Session Command	[4.1.601] App	[4.1.602] 3Ah	[4.1.603] O	[4.1.604] Yes
[4.1.605] Set Session Privilege Level Command	[4.1.606] App	[4.1.607] 3Bh	[4.1.608] O	[4.1.609] Yes
[4.1.610] Close Session	[4.1.611] App	[4.1.612] 3Ch	[4.1.613] O	[4.1.614] Yes
[4.1.615] Get Session Information	[4.1.616] App	[4.1.617] 3Dh	[4.1.618] O	[4.1.619] Yes
[4.1.620] Get Authentication Code Command	[4.1.621] App	[4.1.622] 3Fh	[4.1.623] O	[4.1.624] Yes
[4.1.625] Set Channel Access Commands	[4.1.626] App	[4.1.627] 40h	[4.1.628] O	[4.1.629] Yes
[4.1.630] Get Channel Access Commands	[4.1.631] App	[4.1.632] 41h	[4.1.633] O	[4.1.634] Yes
[4.1.635] Get Channel Info Command	[4.1.636] App	[4.1.637] 42h	[4.1.638] O	[4.1.639] Yes
[4.1.640] Set User Access Commands	[4.1.641] App	[4.1.642] 43h	[4.1.643] O	[4.1.644] Yes

[4.1.534] Device and Messaging Commands (Continued)

[4.1.535] COMMAND	[4.1.536] NETFN	[4.1.537] CMD	[4.1.538] O/M	[4.1.539] SUPPORT ED?
[4.1.645] Get User Access Commands	[4.1.646] App	[4.1.647] 44h	[4.1.648] O	[4.1.649] Yes
[4.1.650] Set User Name Commands	[4.1.651] App	[4.1.652] 45h	[4.1.653] O	[4.1.654] Yes
[4.1.655] Get User Name Commands	[4.1.656] App	[4.1.657] 46h	[4.1.658] O	[4.1.659] Yes
[4.1.660] Set User Password Commands	[4.1.661] App	[4.1.662] 47h	[4.1.663] O	[4.1.664] Yes
[4.1.665] Active Payload Command	[4.1.666] App	[4.1.667] 48h	[4.1.668] O	[4.1.669] Yes
[4.1.670] Deactivate Payload Command	[4.1.671] App	[4.1.672] 49h	[4.1.673] O	[4.1.674] Yes
[4.1.675] Get Payload Activation Status	[4.1.676] App	[4.1.677] 4Ah	[4.1.678] O	[4.1.679] Yes
[4.1.680] Get Payload Instance Info Command	[4.1.681] App	[4.1.682] 4Bh	[4.1.683] O	[4.1.684] Yes
[4.1.685] Set User Payload Access	[4.1.686] App	[4.1.687] 4Ch	[4.1.688] O	[4.1.689] Yes
[4.1.690] Get User Payload Access	[4.1.691] App	[4.1.692] 4Dh	[4.1.693] O	[4.1.694] Yes
[4.1.695] Get Channel Payload Support	[4.1.696] App	[4.1.697] 4Eh	[4.1.698] O	[4.1.699] Yes

[4.1.534] Device and Messaging Commands (Continued)

[4.1.535] COMMAND	[4.1.536] NETFN	[4.1.537] CMD	[4.1.538] O/M	[4.1.539] SUPPORT ED?
[4.1.700] Get Channel Payload Version	[4.1.701] App	[4.1.702] 4Fh	[4.1.703] O	[4.1.704] Yes
[4.1.705] Get Channel OEM Payload Info	[4.1.706] App	[4.1.707] 50h	[4.1.708] O	[4.1.709] Yes
[4.1.710] Master Write-Read I ² C	[4.1.711] App	[4.1.712] 52h	[4.1.713] M	[4.1.714] Yes
[4.1.715] Get Channel Cipher Suites	[4.1.716] App	[4.1.717] 54h	[4.1.718] O	[4.1.719] Yes
[4.1.720] Suspend/Resume Payload Encryption	[4.1.721] App	[4.1.722] 55h	[4.1.723] O	[4.1.724] Yes
[4.1.725] Set Channel Security Keys	[4.1.726] App	[4.1.727] 56h	[4.1.728] O	[4.1.729] Yes
[4.1.730] Get System Interface Capabilities	[4.1.731] App	[4.1.732] 57h	[4.1.733] O	[4.1.734] No

[4.1.735] BMC Watchdog Timer Commands

[4.1.736] Watchdog Timer Commands

[4.1.737] COMMAND	[4.1.738] NETFN	[4.1.739] CMD	[4.1.740] O/M	[4.1.741] SUPPORT ED?
[4.1.742] Reset Watchdog Timer	[4.1.743] App	[4.1.744] 22h	[4.1.745] M	[4.1.746] Yes
[4.1.747] Set Watchdog Timer	[4.1.748] App	[4.1.749] 24h	[4.1.750] M	[4.1.751] Yes
[4.1.752] Get Watchdog Timer	[4.1.753] App	[4.1.754] 25h	[4.1.755] M	[4.1.756] Yes

[4.1.757] Chassis Commands

[4.1.758] Chassis Commands

[4.1.759] COMMAND	[4.1.760] NETFN	[4.1.761] CMD	[4.1.762] O/M	[4.1.763] SUPPORT ED?
[4.1.764] Get Chassis Capabilities	[4.1.765] Chassis	[4.1.766] 00h	[4.1.767] M	[4.1.768] Yes
[4.1.769] Get Chassis Status	[4.1.770] Chassis	[4.1.771] 01h	[4.1.772] M	[4.1.773] Yes
[4.1.774] Chassis Control	[4.1.775] Chassis	[4.1.776] 02h	[4.1.777] M	[4.1.778] Yes
[4.1.779] Chassis Reset	[4.1.780] Chassis	[4.1.781] 03h	[4.1.782] O	[4.1.783] No
[4.1.784] Chassis Identify	[4.1.785] Chassis	[4.1.786] 04h	[4.1.787] O	[4.1.788] Yes
[4.1.789] Set Chassis Capabilities	[4.1.790] Chassis	[4.1.791] 05h	[4.1.792] O	[4.1.793] Yes
[4.1.794] Set Power Restore Policy	[4.1.795] Chassis	[4.1.796] 06h	[4.1.797] O	[4.1.798] Yes
[4.1.799] Get System Reset Cause	[4.1.800] Chassis	[4.1.801] 07h	[4.1.802] O	[4.1.803] Yes
[4.1.804] Set System Boot Options	[4.1.805] Chassis	[4.1.806] 08h	[4.1.807] O	[4.1.808] Yes
[4.1.809] Get System Boot Options	[4.1.810] Chassis	[4.1.811] 09h	[4.1.812] O	[4.1.813] Yes

[4.1.758] Chassis Commands (Continued)

[4.1.759] COMMAND	[4.1.760] NETFN	[4.1.761] CMD	[4.1.762] O/M	[4.1.763] SUPPORT ED?
[4.1.814] Set Front Panel Button Enable	[4.1.815] Chassis	[4.1.816] 0Ah	[4.1.817] O	[4.1.818] Yes
[4.1.819] Set Power Cycle Interval	[4.1.820] Chassis	[4.1.821] 0Bh	[4.1.822] O	[4.1.823] Yes
[4.1.824] Get POH Counter	[4.1.825] Chassis	[4.1.826] 0Fh	[4.1.827] O	[4.1.828] No

[4.1.829] Event Commands

[4.1.830] Event Commands

[4.1.831] COMMAND	[4.1.832] NETFN	[4.1.833] CMD	[4.1.834] O/M		[4.1.835] SUPPORT ED?
			[4.1.836] EVENT RECEIVER	[4.1.837] EVENT GENERATOR	
[4.1.838] Set Event Receiver	[4.1.839] S/E	[4.1.840] 00h	[4.1.841] M	[4.1.842] M	[4.1.843] Yes
[4.1.844] Get Event Receiver	[4.1.845] S/E	[4.1.846] 01h	[4.1.847] M	[4.1.848] M	[4.1.849] Yes

[4.1.830] Event Commands (Continued)

[4.1.831] COMMAND	[4.1.832] NETFN	[4.1.833] CMD	[4.1.834] O/M		[4.1.835] SUPPORT ED?
			[4.1.836] EVENT RECEIVER	[4.1.837] EVENT GENERATOR	
[4.1.850] Platform Event	[4.1.851] S/E	[4.1.852] 02h	[4.1.853] M	[4.1.854] M	[4.1.855] Yes

[4.1.856] SEL Commands

[4.1.857] SEL Commands

[4.1.858] COMMAND	[4.1.859] NETFN	[4.1.860] CMD	[4.1.861] O/M	[4.1.862] SUPPORT ED?
[4.1.863] Get SEL Info	[4.1.864] Storage	[4.1.865] 40h	[4.1.866] M	[4.1.867] Yes
[4.1.868] Get SEL Allocation Info	[4.1.869] Storage	[4.1.870] 41h	[4.1.871] O	[4.1.872] Yes
[4.1.873] Reserve SEL	[4.1.874] Storage	[4.1.875] 42h	[4.1.876] O	[4.1.877] Yes
[4.1.878] Get SEL Entry	[4.1.879] Storage	[4.1.880] 43h	[4.1.881] M	[4.1.882] Yes
[4.1.883] Add SEL Entry	[4.1.884] Storage	[4.1.885] 44h	[4.1.886] M	[4.1.887] Yes

[4.1.857] SEL Commands (Continued)

[4.1.858] COMMAND	[4.1.859] NETFN	[4.1.860] CMD	[4.1.861] O/M	[4.1.862] SUPPORT ED?
[4.1.888] Partial Add SEL Entry	[4.1.889] Storage	[4.1.890] 45h	[4.1.891] M	[4.1.892] No*
[4.1.893] Delete SEL Entry	[4.1.894] Storage	[4.1.895] 46h	[4.1.896] O	[4.1.897] Yes
[4.1.898] Clear SEL	[4.1.899] Storage	[4.1.900] 47h	[4.1.901] M	[4.1.902] Yes
[4.1.903] Get SEL Time	[4.1.904] Storage	[4.1.905] 48h	[4.1.906] M	[4.1.907] Yes
[4.1.908] Set SEL Time	[4.1.909] Storage	[4.1.910] 49h	[4.1.911] M	[4.1.912] Yes
[4.1.913] Get Auxiliary Log Status	[4.1.914] Storage	[4.1.915] 5Ah	[4.1.916] O	[4.1.917] No
[4.1.918] Set Auxiliary Log Status	[4.1.919] Storage	[4.1.920] 5Bh	[4.1.921] O	[4.1.922] No
[4.1.923] * "Partial Add SEL" is not supported when "Add SEL" is active.				

[4.1.924] SDR Repository Commands**[4.1.925] SDR Repository Commands**

[4.1.926] COMMAND	[4.1.927] NETFN	[4.1.928] CMD	[4.1.929] O/M	[4.1.930] SUPPORT ED?
[4.1.931] Get SDR Repository Info	[4.1.932] Storage	[4.1.933] 20h	[4.1.934] M	[4.1.935] Yes
[4.1.936] Get SDR Repository Allocation Info	[4.1.937] Storage	[4.1.938] 21h	[4.1.939] O	[4.1.940] No
[4.1.941] Reserve SDR Repository	[4.1.942] Storage	[4.1.943] 22h	[4.1.944] M	[4.1.945] Yes
[4.1.946] Get SDR	[4.1.947] Storage	[4.1.948] 23h	[4.1.949] M	[4.1.950] Yes
[4.1.951] Add SDR	[4.1.952] Storage	[4.1.953] 24h	[4.1.954] M	[4.1.955] No
[4.1.956] Partial ADD SDR	[4.1.957] Storage	[4.1.958] 25h	[4.1.959] M	[4.1.960] Yes
[4.1.961] Delete SDR	[4.1.962] Storage	[4.1.963] 26h	[4.1.964] O	[4.1.965] No
[4.1.966] Clear SDR Repository	[4.1.967] Storage	[4.1.968] 27h	[4.1.969] M	[4.1.970] Yes
[4.1.971] Get SDR Repository Time	[4.1.972] Storage	[4.1.973] 28h	[4.1.974] O	[4.1.975] Yes
[4.1.976] Set SDR Repository Time	[4.1.977] Storage	[4.1.978] 29h	[4.1.979] O	[4.1.980] Yes

[4.1.925] SDR Repository Commands (Continued)

[4.1.926] COMMAND	[4.1.927] NETFN	[4.1.928] CMD	[4.1.929] O/M	[4.1.930] SUPPORT ED?
[4.1.981] Enter SDR Repository Update Mode	[4.1.982] Storage	[4.1.983] 2Ah	[4.1.984] O	[4.1.985] No
[4.1.986] Exit SDR Repository Update Mode	[4.1.987] Storage	[4.1.988] 2Bh	[4.1.989] O	[4.1.990] No
[4.1.991] Run Initialization Agent	[4.1.992] Storage	[4.1.993] 2Ch	[4.1.994] O	[4.1.995] Yes

[4.1.996] FRU Inventory Device Commands**[4.1.997] FRU Inventory Device Commands**

[4.1.998] COMMAND	[4.1.999] NETFN	[4.1.1000] CMD	[4.1.1001] O/M	[4.1.1002] SUPPORT ED?
[4.1.1003] Get FRU Inventory Area Info	[4.1.1004] Storage	[4.1.1005] 10h	[4.1.1006] M	[4.1.1007] Yes
[4.1.1008] Read FRU Inventory Data	[4.1.1009] Storage	[4.1.1010] 11h	[4.1.1011] M	[4.1.1012] Yes
[4.1.1013] Write FRU Inventory Data	[4.1.1014] Storage	[4.1.1015] 12h	[4.1.1016] M	[4.1.1017] Yes

[4.1.1018] Sensor Device Commands**[4.1.1019] Sensor Device Commands**

[4.1.1020] COMMAND	[4.1.1021] NETFN	[4.1.1022] CMD	[4.1.1023] O/M	[4.1.1024] SUPPORT ED?
[4.1.1025] Get Device SDR Info	[4.1.1026] S/E	[4.1.1027] 20h	[4.1.1028] O	[4.1.1029] No
[4.1.1030] Get Device SDR	[4.1.1031] S/E	[4.1.1032] 21h	[4.1.1033] O	[4.1.1034] No
[4.1.1035] Reserve Device SDR Repository	[4.1.1036] S/E	[4.1.1037] 22h	[4.1.1038] O	[4.1.1039] No
[4.1.1040] Get Sensor Reading Factors	[4.1.1041] S/E	[4.1.1042] 23h	[4.1.1043] O	[4.1.1044] Yes
[4.1.1045] Set Sensor Hysteresis	[4.1.1046] S/E	[4.1.1047] 24h	[4.1.1048] O	[4.1.1049] Yes
[4.1.1050] Get Sensor Hysteresis	[4.1.1051] S/E	[4.1.1052] 25h	[4.1.1053] O	[4.1.1054] Yes
[4.1.1055] Set Sensor Threshold	[4.1.1056] S/E	[4.1.1057] 26h	[4.1.1058] O	[4.1.1059] Yes
[4.1.1060] Get Sensor Threshold	[4.1.1061] S/E	[4.1.1062] 27h	[4.1.1063] O	[4.1.1064] Yes
[4.1.1065] Set Sensor Event Enable	[4.1.1066] S/E	[4.1.1067] 28h	[4.1.1068] O	[4.1.1069] Yes
[4.1.1070] Get Sensor Event Enable	[4.1.1071] S/E	[4.1.1072] 29h	[4.1.1073] O	[4.1.1074] Yes

[4.1.1019] Sensor Device Commands (Continued)

[4.1.1020] COMMAND	[4.1.1021] NETFN	[4.1.1022] CMD	[4.1.1023] O/M	[4.1.1024] SUPPORT ED?
[4.1.1075] Re-arm Sensor Events	[4.1.1076] S/E	[4.1.1077] 2Ah	[4.1.1078] O	[4.1.1079] Yes
[4.1.1080] Get Sensor Event Status	[4.1.1081] S/E	[4.1.1082] 2Bh	[4.1.1083] O	[4.1.1084] Yes
[4.1.1085] Get Sensor Reading	[4.1.1086] S/E	[4.1.1087] 2Dh	[4.1.1088] M	[4.1.1089] Yes
[4.1.1090] Set Sensor Type	[4.1.1091] S/E	[4.1.1092] 2Eh	[4.1.1093] O	[4.1.1094] No
[4.1.1095] Get Sensor Type	[4.1.1096] S/E	[4.1.1097] 2Fh	[4.1.1098] O	[4.1.1099] No
[4.1.1100] Set Sensor Reading and Event Status	[4.1.1101] S/E	[4.1.1102] 30h	[4.1.1103] M	[4.1.1104] Yes

[4.1.1105] LAN Command**[4.1.1106] LAN Commands**

[4.1.1107] COMMAND	[4.1.1108] NETFN	[4.1.1109] CMD	[4.1.1110] O/M	[4.1.1111] SUPPORT ED?
[4.1.1112] Set LAN Configuration Parameters*	[4.1.1113] Transport	[4.1.1114] 01h	[4.1.1115] M	[4.1.1116] Yes
[4.1.1117] Get LAN Configuration Parameters*	[4.1.1118] Transport	[4.1.1119] 02h	[4.1.1120] M	[4.1.1121] Yes
[4.1.1122] Suspend BMC ARP	[4.1.1123] Transport	[4.1.1124] 03h	[4.1.1125] O	[4.1.1126] No
[4.1.1127] Get IP/UDP/RMCP Statistics	[4.1.1128] Transport	[4.1.1129] 04h	[4.1.1130] O	[4.1.1131] No
[4.1.1132] *Parameters 9 and 25 are not supported.				

[4.1.1133] SOL Command

[4.1.1134] SOL Command

[4.1.1135] COMMAND	[4.1.1136] NETFN	[4.1.1137] CMD	[4.1.1138] O/M	[4.1.1139] SUPPORT ED?
[4.1.1140] SOL Activating	[4.1.1141] Transport	[4.1.1142] 20h	[4.1.1143] O	[4.1.1144] No
[4.1.1145] Set SOL Configuration Parameters	[4.1.1146] Transport	[4.1.1147] 21h	[4.1.1148] O	[4.1.1149] Yes
[4.1.1150] Get SOL Configuration Parameters	[4.1.1151] Transport	[4.1.1152] 22h	[4.1.1153] O	[4.1.1154] Yes

[4.1.1155] PEF/PET Alerting Commands

[4.1.1156] PEF/PET Alerting Commands

[4.1.1157] COMMAND	[4.1.1158] NETFN	[4.1.1159] CMD	[4.1.1160] O/M	[4.1.1161] SUPPORT ED?
[4.1.1162] Get PEF Capabilities	[4.1.1163] S/E	[4.1.1164] 10h	[4.1.1165] M	[4.1.1166] Yes
[4.1.1167] Arm PEF Postpone Timer	[4.1.1168] S/E	[4.1.1169] 11h	[4.1.1170] M	[4.1.1171] Yes

[4.1.1156] PEF/PET Alerting Commands

[4.1.1157] COMMAND	[4.1.1158] NETFN	[4.1.1159] CMD	[4.1.1160] O/M	[4.1.1161] SUPPORT ED?
[4.1.1172] Set PEF Configuration Parameters	[4.1.1173] S/E	[4.1.1174] 12h	[4.1.1175] M	[4.1.1176] Yes
[4.1.1177] Get PEF Configuration Parameters	[4.1.1178] S/E	[4.1.1179] 13h	[4.1.1180] M	[4.1.1181] Yes
[4.1.1182] Set Last Processed Event ID	[4.1.1183] S/E	[4.1.1184] 14h	[4.1.1185] M	[4.1.1186] Yes
[4.1.1187] Get Last Processed Event ID	[4.1.1188] S/E	[4.1.1189] 15h	[4.1.1190] M	[4.1.1191] Yes
[4.1.1192] Alert Immediate	[4.1.1193] S/E	[4.1.1194] 16h	[4.1.1195] O	[4.1.1196] Yes
[4.1.1197] PET Acknowledge	[4.1.1198] S/E	[4.1.1199] 17h	[4.1.1200] O	[4.1.1201] Yes

[4.1.1202] OEM Command

[4.1.1203] OEM Command

[4.1.1202] No.	[4.1.1205] COMMAND	[4.1.1206] NETFN / LUN	[4.1.1207] CMD	[4.1.1208] C	[4.1.1209] U	[4.1.1210] O	[4.1.1211] A
[4.1.1202] 1	[4.1.1213] Set POST Start	[4.1.1214] 0x30/00	[4.1.1215] 0x73	[4.1.1216]	[4.1.1217]	[4.1.1218]	[4.1.1219] X

[4.1.1203] OEM Command

[4.1.1203] No.	[4.1.1205] COMMAND	[4.1.1206] NETFN / LUN	[4.1.1207] CMD	[4.1.1208] C	[4.1.1209] U	[4.1.1210] O	[4.1.1211] A
[4.1.1221] 2	[4.1.1221] Set POST End	[4.1.1222] 0x30/00	[4.1.1223] 0x74	[4.1.1224]	[4.1.1225]	[4.1.1226]	[4.1.1227] X
[4.1.1229] 3	[4.1.1229] Set DIMM Information	[4.1.1230] 0x30/00	[4.1.1231] 0x1C	[4.1.1232]	[4.1.1233]	[4.1.1234]	[4.1.1235] X
[4.1.1237] 4	[4.1.1237] Get DIMM Information	[4.1.1238] 0x30/00	[4.1.1239] 0x1D	[4.1.1240]	[4.1.1241] X	[4.1.1242] X	[4.1.1243] X
[4.1.1245] 5	[4.1.1245] Set Pro- cessor Information	[4.1.1246] 0x30/00	[4.1.1247] 0x1A	[4.1.1248]	[4.1.1249]	[4.1.1250]	[4.1.1251] X
[4.1.1253] 6	[4.1.1253] Get Pro- cessor Information	[4.1.1254] 0x30/00	[4.1.1255] 0x1B	[4.1.1256]	[4.1.1257] X	[4.1.1258] X	[4.1.1259] X
[4.1.1261] 7	[4.1.1261] Get MB Position	[4.1.1262] 0x30/00	[4.1.1263] 0x7D	[4.1.1264]	[4.1.1265]	[4.1.1266]	[4.1.1267] X
[4.1.1269] 8	[4.1.1269] Set BIOS Version	[4.1.1270] 0x30/00	[4.1.1271] 0x72	[4.1.1272]	[4.1.1273]	[4.1.1274]	[4.1.1275] X
[4.1.1277] 9	[4.1.1277] Get BIOS Version	[4.1.1278] 0x30/00	[4.1.1279]	[4.1.1280]	[4.1.1281] X	[4.1.1282] X	[4.1.1283] X

[4.2.1284] BMC Recovery

[4.2.1285] This section provides guidelines on BMC recovery process in DOS, Linux, and Windows systems.

[4.2.1286] Recovery Process in DOS System

[4.2.1287] To recover BMC on a DOS system, do as follows:

4.2.1288.1.Boot into DOS.

4.2.1289.2.Navigate to the *Upgrade Utility* folder.

4.2.1290.3.Run *dos.bat*.

[4.2.1291] The BMC recovery is complete.

[4.2.1292] Recovery Process in Linux System

[4.2.1293] To recover BMC on a Linux system, do as follows:

4.2.1294.1.Boot into Linux.

4.2.1295.2.Navigate to the *Upgrade Utility* folder.

4.2.1296.3.Run *linux.sh*.

[4.2.1297] The BMC recovery is complete.

[4.2.1298] Recovery Process in Windows System

[4.2.1299] To recover BMC on a Windows system, do as follows:

4.2.1300.1.Boot into Windows.

4.2.1301.2.Navigate to the *Upgrade Utility* folder.

4.2.1302.3.Run *win.bat*.

[4.2.1303] The BMC recovery is complete.

[4.2.1304]

[4.3.1305] Web Graphical User Interface for ESMS

[4.3.1306] Using the Web GUI

[4.3.1307] The BMC firmware features an embedded web server enabling users to connect to the BMC using a Web browser (e.g. Microsoft Internet Explorer). The Web GUI shows system information, system events, system status of managed servers, and other system-related information.

[4.3.1308] The Web-based GUI is supported on the following browsers:

- Internet Explorer 7 and above
- Firefox 2.0 and above
- Google Chrome 2.0 and above
- Safari 3.0 and above
- Opera 9.64 and above

[4.3.1309] Login

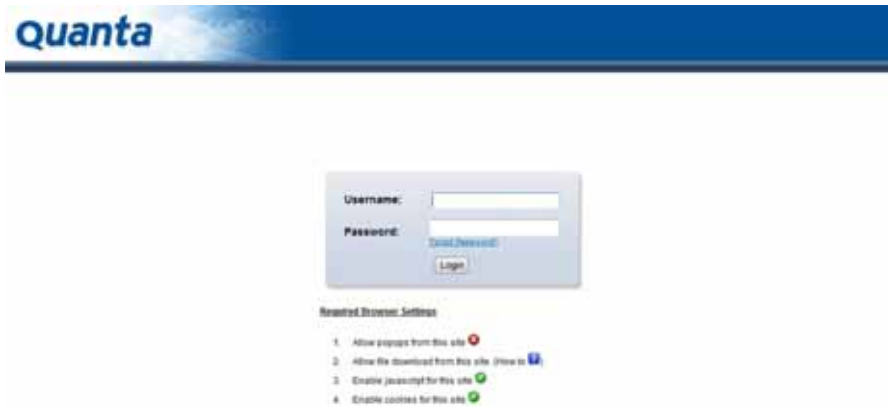
[4.3.1310] Enter the IP address or URL (default DHCP\static IP address) into the address bar of the web browser.

[4.3.1311] When connecting to the BMC the Login screen prompts for the username and password. This authentication with SSL protection prevents unauthorized intruders from gaining access to the BMC web server.

[4.3.1312] When a user is authenticated they can manage the server according to the privilege of their role.

[4.3.1313] The OEM Proprietary, Administrator and Operator privilege levels are authorized to login to the web interface. The

User and No Access privilege levels do not allow access through the BMC web GUI.



[4.3.1314] Login Web Page

[4.3.1315] Default Username and Password

[4.3.1316] FIELD	[4.3.1317] DEFAULT
[4.3.1318] Username	[4.3.1319] admin
[4.3.1320] Password	[4.3.1321] admin

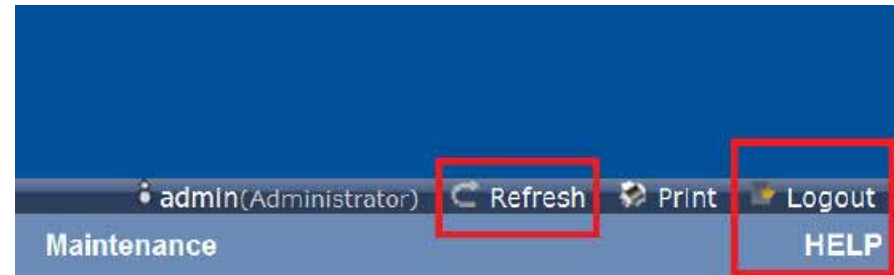
[4.3.1322] After passing authentication, the following web page appears.



Note:

[4.3.1323] The default username and password are in lower-case characters. It is advised to change the admin password once you have logged in.

[4.3.1324] Click the **Help** button on the right corner of the page for assistance, the **Refresh** button to refresh the page, or the **Logout** button to exit.



[4.3.1325] Main Web Page

[4.3.1326] Main Web Page

[4.3.1327] MENU ITEM	[4.3.1328] DESCRIPTION
[4.3.1329] System Information	[4.3.1330] Shows system information.
[4.3.1331] Server Health	[4.3.1332] Monitoring status of the server.
[4.3.1333] Configuration	[4.3.1334] Configuration of the IPMI settings.
[4.3.1335] Remote Control	[4.3.1336] Launch KVM console and perform power control.
[4.3.1337] Maintenance	[4.3.1338] Allows the user to do firmware update.

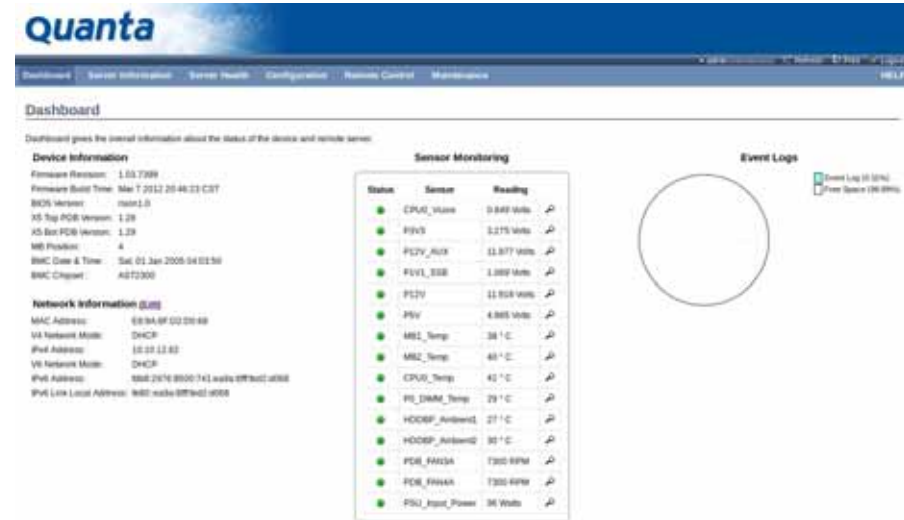
[4.3.1326] Main Web Page (Continued)

[4.3.1327] MENU ITEM	[4.3.1328] DESCRIPTION
[4.3.1339] Language	[4.3.1340] Sets interface language. Note: [4.3.1341] Currently only supports English.

[4.3.1342] Dashboard

[4.3.1343] The Dashboard page displays the overall information on status of the device.

[4.3.1344] To open the **Dashboard** page, click Dashboard from the main menu. A sample screenshot of the Dashboard page is as follows:



[4.3.1345] Dashboard

[4.3.1346] A brief description of the Dashboard page is given in the next section.

[4.3.1347] Device Information

[4.3.1348] The Device Information displays the following information:

[4.3.1349] Device Information Page

[4.3.1350] ITEM	[4.3.1351] DESCRIPTION
[4.3.1352] Firmware Revision	[4.3.1353] The revision number of the firmware.
[4.3.1354] Firmware Build Time	[4.3.1355] Firmware date and time.
[4.3.1356] BMC Chipset	[4.3.1357] This field shows BMC chipset type.

**Note:**

[4.3.1358] BMC Chipset type support list is as follows:

- AST2300: supports virtual KVM function and related setting item.
- AST2300 without RKVM: does not support virtual KVM function and related setting item.

Note:

[4.3.1359] If BMC Chipset type is AST2300 without RKVM, the Console Redirection, Mouse Mode, Remote Session, and Virtual Media menu items are not visible.

[4.3.1360] Network Information

[4.3.1361] The Network Information of the device with the following fields is shown in the following table. To edit the network information, click **Edit**.

[4.3.1362] Network Information




[4.3.1363] ITEM	[4.3.1364] DESCRIPTION
[4.3.1365] MAC Address	[4.3.1366] Read only field showing the IP address of the device.
[4.3.1367] V4 Network Mode	[4.3.1368] The v4 network mode options are the following disable, static, or DHCP.
[4.3.1369] IPv4 Address	[4.3.1370] The IPv4 address of the device (could be static or DHCP).
[4.3.1371] V6 Network Mode	[4.3.1372] The v6 network mode options are disable, static, or DHCP.
[4.3.1373] IPv6 Address:	[4.3.1374] The IPv6 address of the device.


[4.3.1375] Sensor Monitoring

[4.3.1376] Lists all the available sensors on the device.

[4.3.1377] The status column displays the state of the device as follows:

Table 4-1:

[4.3.1378] STATUS (ICON)	[4.3.1379] DESCRIPTION
[4.3.1380] 	[4.3.1381] Normal state
[4.3.1382] 	[4.3.1383] Warning state
[4.3.1384] 	[4.3.1385] Critical state

[4.3.1386] If you click on  , the sensor page for that particular sensor will be displayed.

[4.3.1387] Event Logs

[4.3.1388] A graphical representation of all events incurred by various sensors as well as occupied/available space in logs. Clicking on the color-coded rectangle in the Legend for the chart, allows to view a list of specific events only.

[4.3.1389] Server Information

[4.3.1390] The Server Information Group consists of the following three items:

- FRU Information
- Server Component
- Server Identify

[4.3.1391] The following screenshot displays the Server Information menu items:

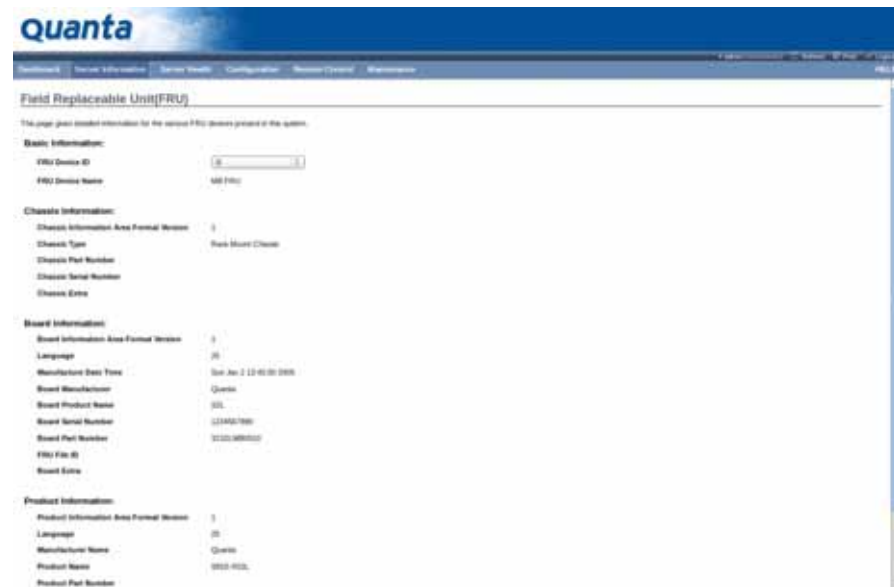


[4.3.1392] Server Information – Menu

[4.3.1393] FRU Information

[4.3.1394] The FRU Information Page displays the BMC FRU file information. The information displayed in this page is Basic Information, Common Header Information, Chassis Information, Board Information and Product Information of the FRU device.

[4.3.1395] To open the FRU Information Page, click on **FRU Information** on top menu. Select a FRU Device ID from the Basic Information section to view the details of the selected device. A screenshot of FRU Information page is shown as follows:



[4.3.1396] FRU Information Page

[4.3.1397] A brief description of the fields is given in the following sections.

[4.3.1398] Basic Information

[4.3.1399] Basic Information

[4.3.1400] ITEM	[4.3.1401] DESCRIPTION
[4.3.1402] FRU device ID	[4.3.1403] The ID of the device.
[4.3.1404] FRU Device Name	[4.3.1405] The device name of the selected FRU device.

[4.3.1406] Chassis Information

- Chassis Information Area Format Version
- Chassis Type
- Chassis Part Number
- Chassis Serial Number
- Chassis Extra

[4.3.1407] Board Information

- Board Information Area Format Version
- Language
- Manufacture Date Time

- Board Manufacturer
- Board Product Name
- Board Serial Number
- Board Part Number
- FRU File ID
- Board Extra

[4.3.1408] Product Information

- Product Information Area Format Version
- Language
- Manufacturer Name
- Product Name
- Product Part Number
- Product Version
- Product Serial Number
- Asset Tag

[4.3.1409] Server Component

[4.3.1410] The Component Information page displays the CPU and memory information.



[4.3.1411] Component Information Page

[4.3.1412] Component Information Page

[4.3.1413] ITEM	[4.3.1414] DESCRIPTION
[4.3.1415] CPU Information	<p>[4.3.1416] Displays the following information:</p> <ul style="list-style-type: none"> ● CPU ID, ● Status, ● Socket, ● Manufacturer, ● Model, ● Frequency

[4.3.1412] Component Information Page (Continued)

[4.3.1413] ITEM	[4.3.1414] DESCRIPTION
[4.3.1417] Memory Information	<p>[4.3.1418] Displays the following information:</p> <ul style="list-style-type: none"> ● Memory ID, ● Status, ● Socket, ● Module Size, ● Model, ● Frequency, and ● Memory type*.



Note:

[4.3.1419] *DDR3 ECC or non-ECCUDIMM, RDIMM, and LRDIMM memory types support both normal voltage (1.5V) and low voltage (1.35V).

[4.3.1420] Server identify

[4.3.1421] The Server Identify page displays the indicator LED status. You can select a Server Identify Operation to control the indicator LED.



[4.3.1422] Server Identify Page

[4.3.1423] Server Identify Page

[4.3.1424] ITEM	[4.3.1425] DESCRIPTION
[4.3.1426] Current Server Identify Status	[4.3.1427] The server status: On or Off.

[4.3.1423] Server Identify Page (Continued)

[4.3.1424] ITEM	[4.3.1425] DESCRIPTION
[4.3.1428] Server Identify Operation	[4.3.1429] Server identify LED operation with the following options: <ul style="list-style-type: none"> • ON • OFF • Blink
[4.3.1430] Server Identify Timeout	[4.3.1431] Server timeout value when a Blink Identify Operation is selected. For Blink Operation the time period must be from 1 to 255 seconds. When 255 seconds is selected, the blinking is continuous.
[4.3.1432] Perform Action	[4.3.1433] Executes the selected Server Identify Operation.

[4.3.1434] Server Health Group

[4.3.1435] The Server Health Group consists of the following three items:

- Sensor Readings
- Event Log
- System and Audio Log

[4.3.1436] The Server Health screenshot allows to select Sensor Readings or Event Log as shown in the following image:



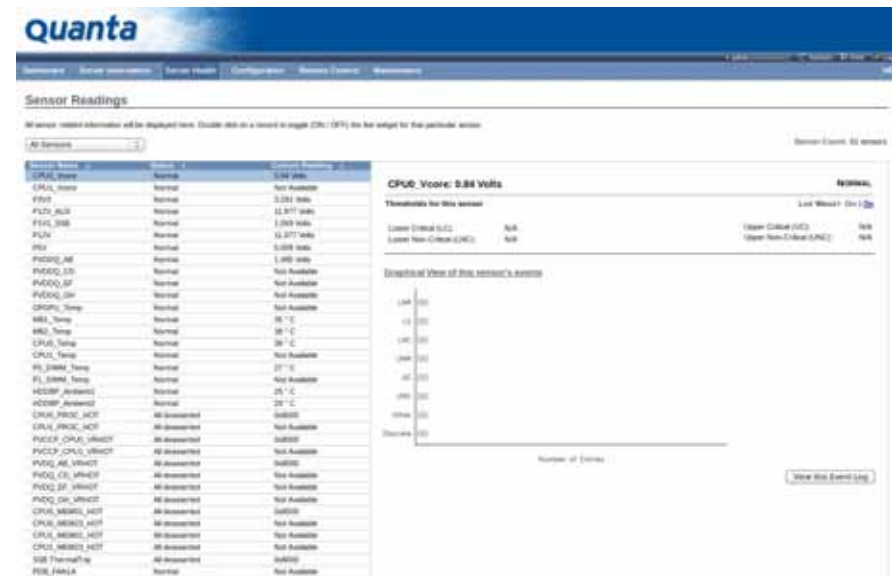
[4.3.1437] Server Health – Menu

[4.3.1438] Sensor Readings

[4.3.1439] The Sensor Readings page displays all the sensor related information.

[4.3.1440] To open the Sensor readings page, click **Server Health > Sensor Readings** from the top menu. Click on a record to display more information on a particular sensor, including thresholds and a graphical representation of all asso-

ciated events. A screenshot of Sensor Readings page is shown in the following image:



[4.3.1441] Sensor Readings Page

[4.3.1442] A brief description of the Sensor Readings page fields is given in the following sections.

[4.3.1443] Sensor Type

[4.3.1444] You can select a specific type of sensor from a drop-down menu. The list of sensors include the Sensor Name, Status, and Current Reading. The All Sensors option allows to view all the available sensor details, and select a specific type of sensor.

[4.3.1445] When a specific type of sensor is selected, on the right hand side of the screen will be displayed the Thresholds for the sensor.

[4.3.1446] The total of six thresholds are available as follows:

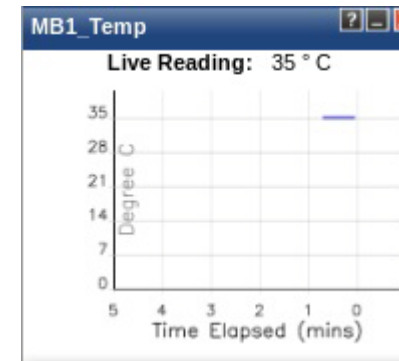
- Lower Non-Recoverable (LNR)
- Lower Critical (LC)
- Lower Non-Critical (LNC)
- Upper Non-Recoverable (UNR)
- Upper Critical (UC)
- Upper Non-Critical (UNC)

[4.3.1447] The threshold states can be Lower Non-critical - going low, Lower Non-critical - going high, Lower Critical - going low, Lower Critical - going high, Lower Non-recoverable - going low, Lower Non-recoverable - going high, Upper Non-critical - going low, Upper Non-critical - going high, Upper Critical - going low, Upper Critical - going high, Upper Non-recoverable - going low, Upper Non-recoverable - going high.

[4.3.1448] Live Widget

[4.3.1449] The widget window can be turned On and Off for a selected sensor. Widget provides a dynamic representation of

the readings for the sensor. The following image shows an example widget:



[4.3.1450] Widget Window



Note:

[4.3.1451] Widgets provide real time information on a particular sensor. User can track a sensor's behavior over a specific amount of time at specific intervals. The result will be displayed as a line graph on the widget. The data on widgets are updating in real time until the widget is closed.

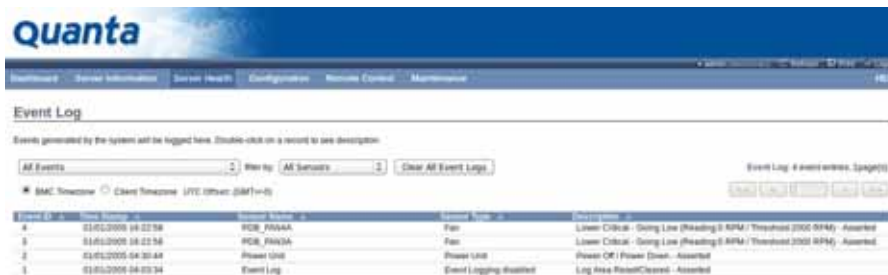
[4.3.1452] View this Event Log

[4.3.1453] View the Event Log page for the selected sensor.

[4.3.1454] Event Log

[4.3.1455] This page displays the list of event logs occurred by the different sensors on this device. Double click on a record to see the details of that entry. You can use the sensor type or sensor name filter options to view those specific events or you can also sort the list of entries by clicking on any of the column headers.

[4.3.1456] To open the Event Log page, click **Server Health > Event Log** from the top menu. A sample screenshot of Event Log page is shown below.



[4.3.1457] Event Log Page

[4.3.1458] A brief description of the Even Log page fields is given in the following sections.

[4.3.1459] Event Log Category

[4.3.1460] The category could be either a sensor-specific event, BIOS generated event or system management software event.

[4.3.1461] Event Log Category

[4.3.1462] ITEM	[4.3.1463] DESCRIPTION
[4.3.1464] Filter Type	[4.3.1465] The type of filter listed. Note: [4.3.1466] Once the Event Log category and Filter type are selected, the list of events will be displayed with the Event ID, Time Stamp, Sensor Type, Sensor Name and Description.
[4.3.1467] BMC Timezone	[4.3.1468] BMC UTC offset timestamp value of the events.
[4.3.1469] Client Timezone	[4.3.1470] Events of client UTC offset time-stamp.
[4.3.1471] Clear All Event Logs	[4.3.1472] Deletes all the existing records for all the sensors.

[4.3.1473] Procedure:

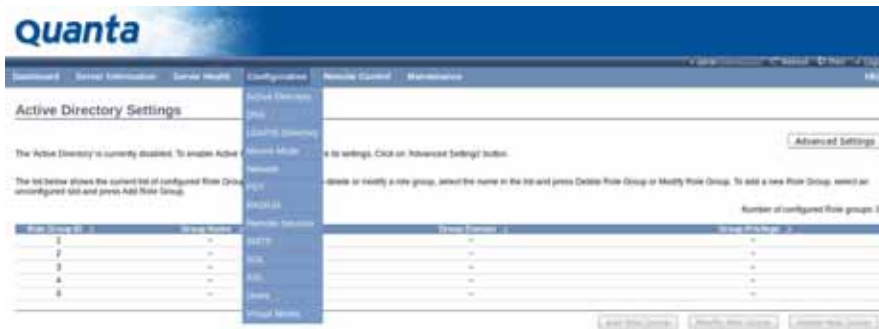
- 4.3.1474.1. From the **Event Log Category** drop down menu select the event categories.
- 4.3.1475.2. From the **Filter Type** drop down list select the sensor name filter to view the event for the selected filter.

4.3.1476.3. Select either **BMC Timezone** or **Client Timezone**.

4.3.1477.4. To clear all events from the list, click **Clear All Event Logs** button.

[4.3.1478] Configuration Group

[4.3.1479] Configuration Group page allows access to various configuration settings. A screenshot of the Configuration Group menu is shown in the following figure:



[4.3.1480] Configuration Group Menu

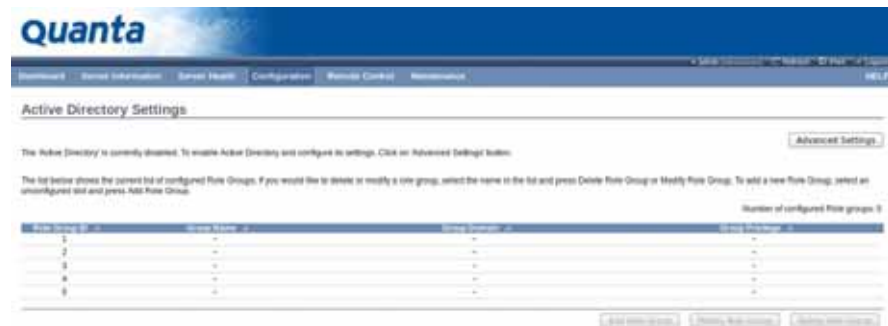
[4.3.1481] A detailed description of the Configuration menu is given in the following sections.

[4.3.1482] Active Directory

[4.3.1483] An Active Directory (AD) is a directory structure used in Microsoft Windows based computers and servers, to store information and data on networks and domains. AD provides a variety of functions including the ability to provide information on objects, organizes these objects for easy retrieval and access, allows the access of end users and administrators, and allows the administrator to set up security for the directory.

[4.3.1484] This Active Directory Settings page as shown on the following figure, allows to Configure Active Directory Server Settings.

[4.3.1485] To open Active Directory Settings page, click **Configuration > Active Directory** from the main menu. A sample screenshot of Active Directory Settings Page is shown in the following screenshot:



[4.3.1486] Active Directory Settings Page

[4.3.1487] Active Directory Settings Page

[4.3.1488] ITEM	[4.3.1489] DESCRIPTION
[4.3.1490] Advanced Settings	<p>[4.3.1491] Active Directory advanced settings configuration options are as follows:</p> <ul style="list-style-type: none"> • Enable Active Directory Authentication, • User Domain name, • Time Out, and • Up to three Domain Controller Server Addresses.
[4.3.1492] Role Group ID	<p>[4.3.1493] The name that identifies the role group in the Active Directory.</p> <ul style="list-style-type: none"> • Role Group Name is a string of 255 alphanumeric characters. • Special symbols hyphen and underscore are allowed.
[4.3.1494] Group Name	<p>[4.3.1495] This name identifies the role group in Active Directory.</p> <p>Note:</p> <ul style="list-style-type: none"> • Role Group Name is a string of 255 alphanumeric characters. • Special symbols hyphen and underscore are allowed.

[4.3.1487] Active Directory Settings Page (Continued)

[4.3.1488] ITEM	[4.3.1489] DESCRIPTION
[4.3.1496] Group Domain	<p>[4.3.1497] The domain where the role group is located.</p> <p>Note:</p> <ul style="list-style-type: none"> • Domain Name is a string of 255 alphanumeric characters. • Special symbols hyphen, underscore and dot are allowed.
[4.3.1498] Group Privilege	[4.3.1499] The level of privilege to assign to this role group.
[4.3.1500] Add Role Group	[4.3.1501] To add a new role group to the device.
[4.3.1502] Modify role Group	[4.3.1503] To modify that role group. Alternatively, double click on the configured slot.
[4.3.1504] Delete Role Group	[4.3.1505] To delete an existing Role Group.

[4.3.1506] Procedure:

[4.3.1507] Entering the details in Advanced Active Directory Settings Page

4.3.1508.1. Click on **Advanced Settings** to open the Advanced Active Directory Settings Page.

[4.3.1509] Advanced Active Directory Settings Page

4.3.1510.2. In the Active Directory Settings Page, enter the following details.

4.3.1511.3. **Active Directory Authentication:** To enable/disable Active Directory, check or uncheck the **Enable** checkbox respectively.



Note:

[4.3.1512] If you have enabled Active Directory Authentication, enter the required information to access the Active Directory server.

4.3.1513.4. Specify the Domain Name for the user in the **User Domain Name** field. e.g. MyDomain.com

4.3.1514.5. Specify the time (in seconds) to wait for Active Directory queries to complete in the **Time Out** field.



Note:

- Default Time out value: 120 seconds.
- Range from 15 to 300 allowed.

4.3.1515.6. Configure IP addresses in **Domain Controller Server Address1, Domain Controller Server Address2 & Domain Controller Server Address3.**



Note:

[4.3.1516] IP address of Active Directory server: At least one Domain Controller Server Address must be configured.

- IP Address made of 4 numbers separated by dots as in "xxx.xxx.xxx.xxx".
- Each number ranges from 0 to 255.
- First number must not be 0.

Note:

[4.3.1517] Domain Controller Server Addresses will supports IPv4 Address format and IPv6 Address format.

4.3.1518.7. Click **Save** to save the entered settings and return to Active Directory Settings Page.

4.3.1519.8. Click **Cancel** to cancel the entry and return to Active Directory Settings Page.

[4.3.1520] To add a Role Group

4.3.1521.9. In the Active Directory Settings Page, select a blank row and click **Add Role Group** to open the Add Role group Page as shown in the screenshot below.

[4.3.1522] Add Role group Page

4.3.1523.10. In the **Role Group Name** field, enter the name that identifies the role group in the Active Directory.



Note:

- Role Group Name is a string of 255 alpha-numeric characters.
- Special symbols hyphen and underscore are allowed.

4.3.1524.11. In the **Role Group Domain** field, enter the domain where the role group is located.



Note:

- Domain Name is a string of 255 alpha-numeric characters.
- Special symbols hyphen, underscore and dot are allowed.

4.3.1525.12. In the **Role Group Privilege** field, enter the level of privilege to assign to this role group.

4.3.1526.13. Click **Add** to save the new role group and return to the Role Group List.

4.3.1527.14. Click **Cancel** to cancel the settings and return to the Role Group List.

[4.3.1528] To modify a Role Group

4.3.1529.15. In the Advanced Directory Settings Page, select the row that you wish to modify and click **Modify Role Group**.

4.3.1530.16. Make the necessary changes and click **Save**.

[4.3.1531] To delete a Role Group

4.3.1532.17. In the Advanced Directory Settings Page, select the row that you wish to delete and click **Delete Role Group**.

[4.3.1533] DNS

[4.3.1534] The **Domain Name System (DNS)** is a distributed hierarchical naming system for computers, services, or any resource connected to the Internet or a private network. It associates the information with domain names assigned to each of the participants. Most importantly, it translates domain names meaningful to humans into the numerical (binary) identifiers associated with networking equipment for the purpose of locat-

ing and addressing these devices worldwide. The DNS Server settings page is used to manage the DNS settings of a device.

[4.3.1535] To open DNS Server Settings page, click **Configuration > DNS** from the main menu. A sample screenshot of DNS Server Settings Page is shown in the screenshot below.



[4.3.1536] DNS Server Settings Page

[4.3.1537] The fields of DNS Server Settings page are explained below.

[4.3.1538] DNS Server Settings Page

[4.3.1539] ITEM	[4.3.1540] DESCRIPTION
[4.3.1541] Host configuration	

[4.3.1538] DNS Server Settings Page (Continued)

[4.3.1539] ITEM	[4.3.1540] DESCRIPTION
[4.3.1542] Host Settings	[4.3.1543] Choose either Automatic or Manual settings.
[4.3.1544] Host Name	[4.3.1545] It displays hostname of the device. If the Host setting is chosen as Manual, then specify the hostname of the device.
[4.3.1546] Domain Name Configuration	
[4.3.1547] Domain Settings	[4.3.1548] It lists the option for domain interface as Manual, v4 or v6 for multiLAN channels. Note: [4.3.1549] If you choose DHCP, then select v4 or v6 for DHCP servers.
[4.3.1550] Domain Name	[4.3.1551] It displays the domain name of the device. If the Domain setting is chosen as Manual, then specify the domain name of the device. If you chose Automatic, the Domain Name cannot be configured as it will be done automatically. The field will be disabled.
[4.3.1552] IPv4 Domain Name Server Configuration	
[4.3.1553] DNS Server Settings:	[4.3.1554] It lists the option for v4 DNS settings for the device, Manual and available LAN interfaces.
[4.3.1555] Preferred DNS Server	[4.3.1556] The DNS (Domain Name System) server v4 address to be configured to the device. <ul style="list-style-type: none"> ● IP Address made of 4 numbers separated by dots as in "xxx.xxx.xxx.xxx". ● Each number ranges from 0 to 255. ● First number must not be 0.

[4.3.1538] DNS Server Settings Page (Continued)

[4.3.1539] ITEM	[4.3.1540] DESCRIPTION
[4.3.1557] Alternate DNS Server	[4.3.1558]
[4.3.1559] IPv6 Domain Name Server Configuration	
[4.3.1560] DNS Server Settings	[4.3.1561] It lists the option for v6 DNS settings for the device, Manual and available LAN interfaces. If you choose Manual setting, you have to configure the DNS Server IP addresses. If you have chosen DHCP, then you have to select the interface from which the IP address is to be received. Example of IPv6 address - 2001:db8:0:101
[4.3.1562] Preferred DNS Server, Alternate DNS Server	[4.3.1563] Specify the DNS (Domain Name System) server v6 address to be configured to the device.
[4.3.1564] Save	[4.3.1565] To save the entered changes.
[4.3.1566] Reset	[4.3.1567] To reset the entered changes.

[4.3.1568] Procedure:

4.3.1569.1. Choose the **Host Configuration** as either Automatic or Manual.

**Note:**

[4.3.1570] Under Automatic, a Host Name is not necessary but under Manual, a Host Name is not.

4.3.1571.2. Enter the **Host Name** in the given field if you have chosen Manual Configuration.

4.3.1572.3. Under **Register BMC**,

- Check the option **Register BMC** to register with this DNS settings.
- Choose the option Direct Dynamic DNS to register with direct dynamic DNS or choose **DHCP Client FQDN** to register through DHCP server.

4.3.1573.4. In the **Domain name Configuration Settings**,

- Select the domain settings from the dropdown list.
- Enter the **Domain Name** in the given field

4.3.1574.5. In **IPv4 Domain Name Server Configuration**,

- Select the **DNS Server Settings**, from the dropdown list.
- In the **Preferred DNS Server** field, enter the preferred IP address.
- In the **Alternate DNS Server** field, enter the alternate address.

4.3.1575.6. In **IPv6 Domain Name Server Configuration**,

- Select the **DNS Server Settings**, from the dropdown list.
- In the **Preferred DNS Server** field, enter the preferred IP address.
- In the **Alternate DNS Server** field, enter the alternate address.

4.3.1576.7. Click **Save** to save the entries.

4.3.1577.8. Click **Reset** to reset the entries.

[4.3.1578] LDAP/E-Directory

[4.3.1579] The **Lightweight Directory Access Protocol (LDAP)** is an application protocol for querying and modifying data of directory services implemented in Internet Protocol (IP) networks.

[4.3.1580] LDAP is an Internet protocol that BMC can use to authenticate users. If you have an LDAP server configured on your network, you can use it as an easy way to add, manage and authenticate BMC users. This is done by passing login requests to your LDAP Server. This means that there is no need to define an additional authentication mechanism, when using the BMC. Since your existing LDAP Server keeps an authentication centralized, you will always know who is accessing the network resources and can easily define the user or group-based policies to control access.

[4.3.1581] To open LDAP Settings page, click **Configuration > LDAP** from the main menu. A sample screenshot of LDAP Settings Page is shown in the screenshot below.



[4.3.1582] LDAP Settings Page

[4.3.1583] The fields of LDAP Settings Page are explained below.

[4.3.1584] LDAP Settings Page

[4.3.1585] ITEM	[4.3.1586] DESCRIPTION
[4.3.1587] Advanced Settings	[4.3.1588] To configure LDAP Advanced Settings. Options are Enable LDAP Authentication, IP Address, Port and Search base.
[4.3.1589] Add Role Group	[4.3.1590] To add a new role group to the device. Alternatively, double click on a free slot to add a role group.
[4.3.1591] Modify Role Group	[4.3.1592] To modify the particular role group.
[4.3.1593] Delete Role Group	[4.3.1594] To be delete a role group from the list.

[4.3.1595] Procedure:**[4.3.1596] Entering the details in Advanced LDAP Settings Page**

4.3.1597.1. In the LDAP Settings Page, click Advanced Settings. A sample screenshot of LDAP Settings page is given below.

[4.3.1598] Advanced LDAP Settings

4.3.1599.2. To enable/disable LDAP Authentication, check or uncheck the **Enable** checkbox respectively.

**Note:**

[4.3.1600] At login prompt, enter username to login as an LDAP group member.

4.3.1601.3. Enter the IP address of LDAP server in the **IP Address** field.

**Note:**

- IP Address made of 4 numbers separated by dots as in 'xxx.xxx.xxx.xxx'.
- Each Number ranges from 0 to 255.
- First Number must not be 0.
- Supports IPv4 Address format and IPv6 Address format.

4.3.1602.4. Specify the LDAP Port in the **Port** field.

**Note:**

[4.3.1603] Default Port is 389. For Secure connection, default port is 636.

4.3.1604.5. Enter the Search Base. The Search base tells the LDAP server which part of the external directory tree to search. The search base may be something equivalent to the organization, group of external directory.

**Note:**

- Searchbase is a string of 4 to 63 alpha-numeric characters.
- It must start with an alphabetical character.
- Special Symbols like dot(.), comma(,), hyphen(-), underscore(_), equal-to(=) are allowed.
- Example: ou=login,dc=domain,dc=com.

4.3.1605.6. Click **Save** to save the settings.

4.3.1606.7. Click **Cancel** to cancel the modified changes.

[4.3.1607] To add a new Role Group

4.3.1608.8. In the LDAP Settings Page, select a blank row and click **Add Role Group** to open the Add Role group Page as shown in the screenshot below.

[4.3.1609] Add Role group Page

4.3.1610.9. In the **Role Group Name** field, enter the name that identifies the role group.



Note:

- Role Group Name is a string of 255 alpha-numeric characters.
- Special symbols hyphen and underscore are allowed.

4.3.1611.10. In the Role Group Search Base field, enter the path from where the role group is located to Base DN.



Note:

- Search Base is a string of 255 alpha-numeric characters.
- Special symbols hyphen, underscore and dot are allowed.

4.3.1612.11. In the **Role Group Privilege** field, enter the level of privilege to assign to this role group.

4.3.1613.12. Click **Add** to save the new role group and return to the Role Group List.

4.3.1614.13. Click **Cancel** to cancel the settings and return to the Role Group List.

[4.3.1615] To Modify Role Group

4.3.1616.14. In the LDAP Settings Page, select the row that you wish to modify and click Modify Role Group.

4.3.1617.15. Make the necessary changes and click Save.

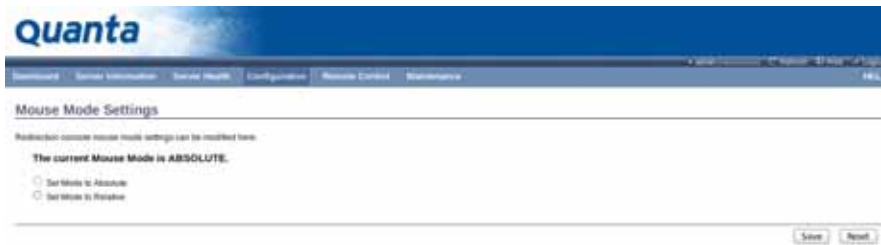
[4.3.1618] To Delete a Role Group

4.3.1619.16. In the LDAP Settings Page, select the row that you wish to delete and click Delete Role Group.

[4.3.1620] Mouse Mode

[4.3.1621] Redirection Console handles mouse emulation from local window to remote screen in either of two methods. User has to be an Administrator to configure this option.

[4.3.1622] To open Mouse Mode page, click **Configuration > Mouse Mode** from the main menu. A sample screenshot of Mouse Mode Settings Page is shown in the screenshot below.



[4.3.1623] Mouse Mode Settings Page

[4.3.1624] The fields of Mouse Mode Settings page are explained below.

[4.3.1625] Mouse Mode Settings Page

[4.3.1626] ITEM	[4.3.1627] DESCRIPTION
[4.3.1628] Absolute Mode	[4.3.1629] The absolute position of the local mouse is sent to the server.
[4.3.1630] Relative Mode	[4.3.1631] Relative mode sends the calculated relative mouse position displacement to the server.

[4.3.1625] Mouse Mode Settings Page (Continued)

[4.3.1626] ITEM	[4.3.1627] DESCRIPTION
[4.3.1632] Save	[4.3.1633] To save any changes made.
[4.3.1634] Reset	[4.3.1635] To Reset the modified changes.

[4.3.1636] Procedure:

4.3.1637.1. Choose either of the following as your requirement:

- Set Mode to Absolute



Note:

[4.3.1638] Applicable for all Windows versions, versions above RHEL6, and versions above FC14.

- Set Mode to Relative



Note:

[4.3.1639] Applicable for all Windows versions, versions above RHEL6, and versions above FC14.

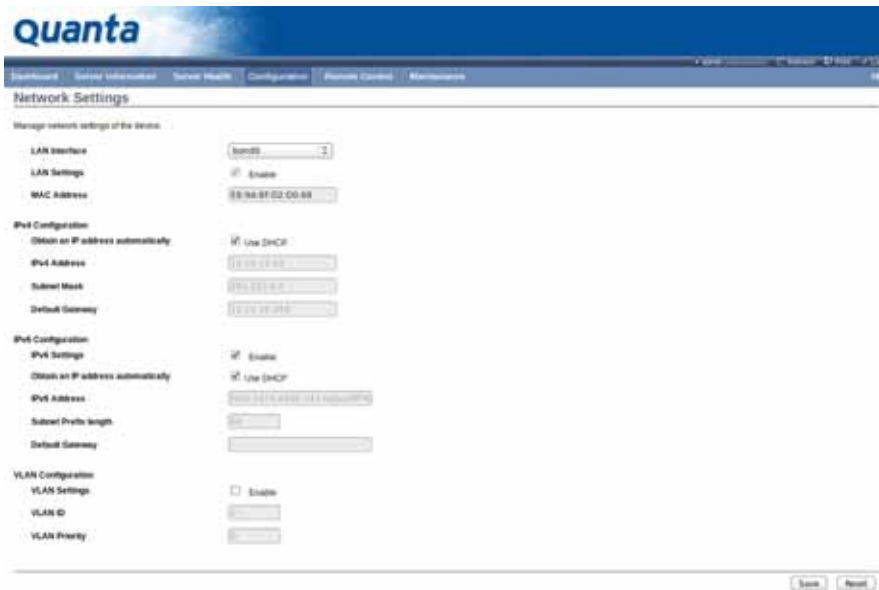
4.3.1640.2. Click **Save** button to save the changes made.

4.3.1641.3. Click **Reset** to reset the modified changes.

[4.3.1642] Network

[4.3.1643] The Network Settings Page is used to configure the network settings for the available LAN channels.

[4.3.1644] To open Network Settings page, click **Configuration > Network** from the main menu. A sample screenshot of Network Settings Page is shown in the screenshot below.



[4.3.1645] Network Settings Page

[4.3.1646] The fields of Network Settings page are explained below.

[4.3.1647] Network Settings Page

[4.3.1648] ITEM	[4.3.1649] DESCRIPTION
[4.3.1650] LAN Interface	[4.3.1651] Lists the LAN interfaces.
[4.3.1652] LAN Settings	[4.3.1653] To enable or disable the LAN Settings.
[4.3.1654] MAC Address	[4.3.1655] This field displays the MAC Address of the device. This is a read only field.
[4.3.1656] IPv4 Settings	<p>[4.3.1657] This option lists the IPv4 configuration settings.</p> <ul style="list-style-type: none"> ● Obtain IP Address automatically: This option is to dynamically configure IPv4 address using DHCP (Dynamic Host Configuration Protocol). ● IPv4 Address, Subnet Mask, and Default Gateway: These fields are for specifying the static IPv4 address, Subnet Mask and Default Gateway to be configured to the device. <p>Note:</p> <ul style="list-style-type: none"> ● IP Address made of 4 numbers separated by dots as in "xxx.xxx.xxx.xxx". ● Each Number ranges from 0 to 255. ● First Number must not be 0.

[4.3.1647] Network Settings Page (Continued)

[4.3.1648] ITEM	[4.3.1649] DESCRIPTION
[4.3.1658] IPv6 Configuration	<p>[4.3.1659] This option lists the following IPv6 configuration settings.</p> <ul style="list-style-type: none"> ● IPv6 Settings: This option is to enable the IPv6 settings in the device. ● Obtain an IPv6 address automatically: This option is to dynamically configure IPv6 address using DHCP (Dynamic Host Configuration Protocol). ● IPv6 Address: To specify a static IPv6 address to be configured to the device. Eg: 2004:2010 ● Subnet Prefix length: To specify the subnet prefix length for the IPv6 settings. <p>Note: [4.3.1660] Value ranges from 0 to 128.</p> <ul style="list-style-type: none"> ● Default Gateway: Specify v6 default gateway for the IPv6 settings.

[4.3.1647] Network Settings Page (Continued)

[4.3.1648] ITEM	[4.3.1649] DESCRIPTION
[4.3.1661] VLAN Configuration	<p>[4.3.1662] It lists the VLAN configuration settings.</p> <ul style="list-style-type: none"> ● VLAN Settings: To enable/disable the VLAN support for selected interface. ● VLAN ID: The Identification for VLAN configuration. <ul style="list-style-type: none"> ■ Value ranges from 1 to 4095. ● VLAN Priority: The priority for VLAN configuration. <ul style="list-style-type: none"> ■ Value ranges from 1 to 7. ■ 7 is the highest priority for VLAN.
[4.3.1663] Save	[4.3.1664] To save the entries.
[4.3.1665] Reset	[4.3.1666] To Reset the modified changes.

[4.3.1667] Procedure:

- 4.3.1668.1. Select the **LAN Interface** from the drop down list.
- 4.3.1669.2. Check **Enable** to enable the LAN Settings.
- 4.3.1670.3. In IPv4 Configuration, enable **Use DHCP to Obtain an IP address automatically** to dynamically configure IPv4 address using DHCP.
- 4.3.1671.4. If the field is disabled, enter the **IPv4 Address**, **Subnet Mask** and **Default Gateway** in the respective fields.

- 4.3.1672.5. In IPv6 Configuration, if you wish to enable the IPv6 settings, check **Enable**.
- 4.3.1673.6. If the IPv6 setting is enabled, enable or disable the option **Use DHCP for obtaining the IP address automatically**.
- 4.3.1674.7. If the field is disabled, enter the **IPv6 Address**, **Subnet Prefix length** and **Default Gateway** in the given field.
- 4.3.1675.8. In VLAN Configuration, if you wish to enable the VLAN settings, check **Enable**.
- 4.3.1676.9. Enter the **VLAN ID** in the specified field.
- 4.3.1677.10. Enter the **VLAN Priority** in the specified field.
- 4.3.1678.11. Click **Save** to save the entries.
- 4.3.1679.12. Click **Reset** if you want to reset the modified changes.

[4.3.1680] PEF

[4.3.1681] Platform Event Filtering (PEF) provides a mechanism for configuring the BMC to take selected actions on event messages that it receives or has internally generated. These actions include operations such as system power-off, system reset, as well as triggering the generation of an alert. The PEF Management is used to configure the following features:

- Event Filter
- Alert Policy

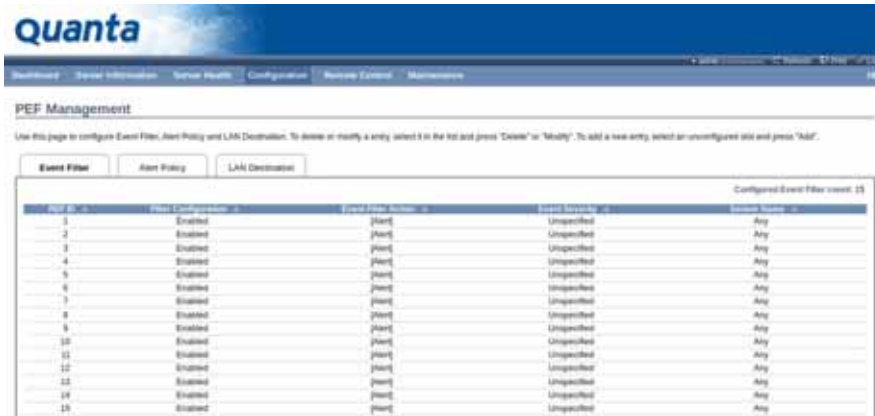
- LAN Destination

[4.3.1682] To open PEF Management Settings page, click **Configurations > PEF** from the main menu. A sample screenshot of PEF Management Settings Page is shown in the screen shot below along with an explanation of each of the tabs.

[4.3.1683] Event Filter Tab

[4.3.1684] A PEF implementation is recommended to provide at least 16 entries in the event filter table. A subset of these entries should be pre-configured for common system failure events, such as over-temperature, power system failure, fan failure events, etc. Remaining entries can be made available for 'OEM' or System Management Software configured events. Note that individual entries can be tagged as being reserved for

system use - so this ratio of pre-configured entries to run-time configurable entries can be reallocated if necessary.



[4.3.1685] PEF Management – Event Filter

[4.3.1686] The fields of PEF Management – Event Filter Tab are explained below.

[4.3.1687] This page contains the list of configured PEF’s.

[4.3.1688] PET Management - Event Filter

[4.3.1689] ITEM	[4.3.1690] DESCRIPTION
[4.3.1691] PEF ID	[4.3.1692] This field displays the ID for the newly configured PEF entry (read-only).
[4.3.1693] Filter configuration	[4.3.1694] Check box to enable the PEF settings.

[4.3.1688] PET Management - Event Filter (Continued)

[4.3.1689] ITEM	[4.3.1690] DESCRIPTION
[4.3.1695] Event Filter Action	[4.3.1696] Check box to enable PEF Alert action. This is a mandatory field.
[4.3.1697] Event Severity	[4.3.1698] To choose any one of the Event severity from the list.
[4.3.1699] Sensor Name	[4.3.1700] To choose the particular sensor from the sensor list.
[4.3.1701] Add	[4.3.1702] To add the new event filter entry and return to Event filter list.
[4.3.1703] Modify	[4.3.1704] To modify the existing entries.
[4.3.1705] Cancel	[4.3.1706] To cancel the modification and return to Event filter list.

[4.3.1707] Procedure:

- 4.3.1708.1. Click the **Event Filter** Tab to configure the event filters in the available slots
- 4.3.1709.2. To Add an Event Filter entry, select a free slot and click **Add** to open the Add event Filter entry Page. A sam-

ple screenshot of Add Event Filter Page is in seen the screenshot below.

[4.3.1710] Add Event Filter Entry Page

4.3.1711.3. In the Event Filter Configuration section,

- PEF ID displays the ID for configured PEF entry (read-only).
- In filter configuration, check the box to enable the PEF settings.
- In Event Severity, select any one of the Event severity from the list.

4.3.1712.4. In the Filter Action configuration section,

- Event Filter Action is a mandatory field and checked by default, which enable PEF Alert action (read-only).
- Select any one of the Power action either Power down, Power reset or Power cycle from the drop down list
- Choose any one of the configured alert policy number from the drop down list.



Note:

[4.3.1713] Alert Policy has to be configured - under **Configuration > PEF > Alert Policy**.

4.3.1714.5. In the Generator ID configuration section,

- Check Generator ID Data option to fill the Generator ID with raw data.
- Generator ID 1 field is used to give raw generator ID1 data value.
- Generator ID 2 field is used to give raw generator ID2 data value.



Note:

[4.3.1715] In RAW data field, to specify hexadecimal value prefix with '0x'.

- In the Event Generator section, choose the event generator as Slave Address - if event was generated from IPMB. Otherwise as System Software ID - if event was generated from system software.

- In the Slave Address/Software ID field, specify corresponding I2C Slave Address or System Software ID.
- Choose the particular channel number that event message was received over. Or choose '0' if the event message was received via the system interface, primary IPMB, or internally generated by the BMC.
- Choose the corresponding IPMB device LUN if event generated by IPMB.

4.3.1716.6. In the Sensor configuration section,

- Select the s type of sensor that will trigger the event filter action.
- In the sensor name field, choose the particular sensor from the sensor list.
- Choose event option to be either All Events or Sensor Specific Events.

4.3.1717.7. In the Event Data configuration section,

- Event Trigger field is used to give Event/Reading type value.



Note:

[4.3.1718] Value ranges from 1 to 255.

- Event Data 1 AND Mask field is used to indicate wild-carded or compared bits.



Note:

[4.3.1719] Value ranges from 0 to 255.

- Event Data 1 Compare 1 & Event Data 1 Compare 2 field is used to indicate whether each bit position's comparison is an exact comparison or not.



Note:

[4.3.1720] Value ranges from 0 to 255.

4.3.1721.8. In the Event Data 2 configuration section,

- Event Data 2 AND Mask field is similar to Event Data 1 AND Mask.
- Event Data 2 Compare 1 & Event Data 2 Compare 2 fields are similar to Event Data 1 Compare 1 and Event Data 1 Compare 2 respectively.

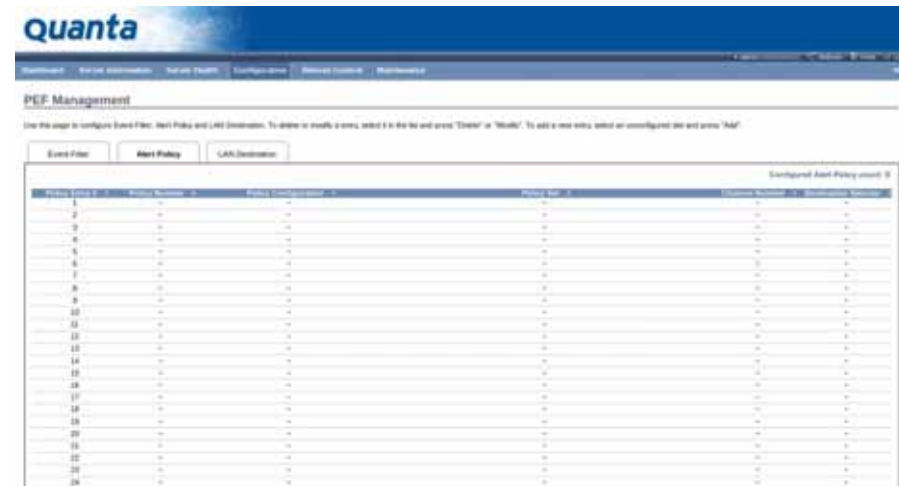
4.3.1722.9. In the Event Data 3 configuration section,

- Event Data 3 AND Mask field is similar to Event Data 1 AND Mask.
- Event Data 3 Compare 1 & Event Data 3 Compare 2 fields are similar to Event Data 1 Compare 1 and Event Data 1 Compare 2 respectively.

- 4.3.1723.10. Click **Modify** to accept the modification and return to Event filter list.
- 4.3.1724.11. Click **Reset** to reset the modification done.
- 4.3.1725.12. Click on Cancel to cancel the modification and return to Event filter list.
- 4.3.1726.13. In the Event filter list, click **Modify** to modify the existing filter.
- 4.3.1727.14. In the Event filter list, click **Delete** to delete the existing filter.

[4.3.1728] Alert Policy Tab

[4.3.1729] This page is used to configure the Alert Policy and LAN destination. You can add, delete or modify an entry in this page.



[4.3.1730] PEF Management – Alert Policy

[4.3.1731] The fields of the PEF Management – Alert Policy Tab are explained below.

[4.3.1732] PEF Management - Alert Policy

[4.3.1733] ITEM	[4.3.1734] DESCRIPTION
[4.3.1735] Policy Entry #	[4.3.1736] Displays Policy entry number for the newly configured entry (read-only).

[4.3.1732] PEF Management - Alert Policy (Continued)

[4.3.1733] ITEM	[4.3.1734] DESCRIPTION
[4.3.1737] Policy Number	[4.3.1738] Displays the Policy number of the configuration.
[4.3.1739] Policy Configuration	[4.3.1740] To enable or disable the policy settings.
[4.3.1741] Policy Set	<p>[4.3.1742] To choose any one of the Policy set values from the list.</p> <ul style="list-style-type: none"> ● 0: Always send alert to this destination. ● 1: If alert to previous destination was successful, do not send alert to this destination. Proceed to ESMS Functional Specification For SI v0.11 next entry in this policy set. ● 2: If alert to previous destination was successful, do not send alert to this destination. Do not process any more entries in this policy set. ● 3: If alert to previous destination was successful, do not send alert to this destination. Proceed to next entry in this policy set that is to a different channel. ● 4: If alert to previous destination was successful, do not send alert to this destination. Proceed to next entry in this policy set that is to a different destination type.
[4.3.1743] Channel Number	[4.3.1744] To choose a particular channel from the available channel list.

[4.3.1732] PEF Management - Alert Policy (Continued)

[4.3.1733] ITEM	[4.3.1734] DESCRIPTION
[4.3.1745] Destination Selector	<p>[4.3.1746] To choose a particular destination from the configured destination list.</p> <p>Note: [4.3.1747] LAN Destination has to be configured - under Configuration > PEF > LAN Destination.</p>
[4.3.1748] Add	[4.3.1749] To save the new alert policy and return to Alert Policy list.
[4.3.1750] Modify	[4.3.1751] To modify the existing entries.
[4.3.1752] Cancel	[4.3.1753] To cancel the modification and return to Alert Policy list.

[4.3.1754] Procedure:

4.3.1755.1. In the Alert Policy Tab, select the slot for which you have to configure the Alert policy. That is, In the **Event Filter Entry Page**, if you have chosen Alert Policy number as 4, you have to configure the 4th slot (the slot with Policy Number 4) in the Alert Policy Tab.

4.3.1756.2. Select the slot and click **Add** to open the **Add Alert Policy Entry Page** as shown in the screenshot below.

[4.3.1757] Add Alert Policy Entry Page

- 4.3.1758.3. **Policy Entry #** is a read only field.
- 4.3.1759.4. Select the **Policy Number** from the list.
- 4.3.1760.5. In the **Policy Configuration** field, check **Enable** if you wish to enable the policy settings.
- 4.3.1761.6. In the **Policy Set** field, choose any of the Policy set from the list.
- 4.3.1762.7. In the **Channel Number** field, choose particular channel from the available channel list.

4.3.1763.8. In the **Destination Selector** field, choose particular destination from the configured destination list.



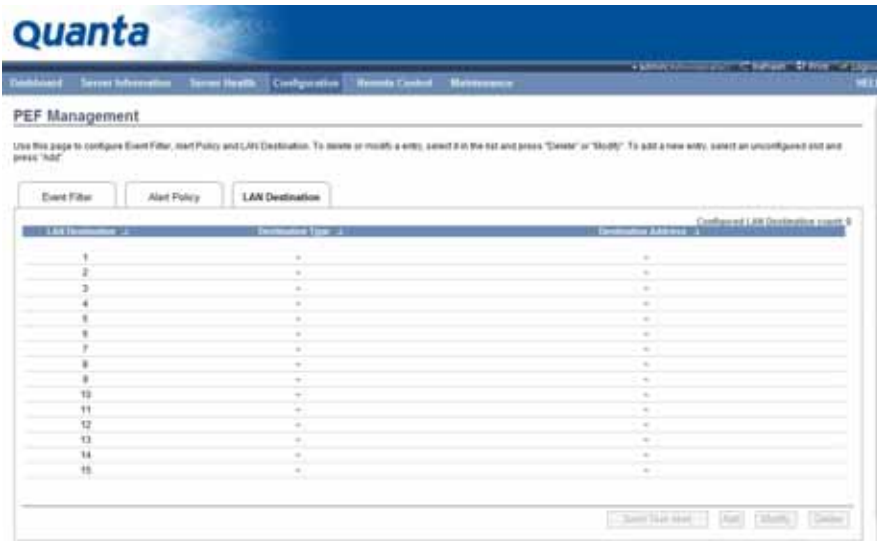
Note:

[4.3.1764] LAN Destination has to be configured under **Configuration > PEF > LAN Destination**. That is if you select the number 4 for destination selector in Alert Policy Entry page, then you have to configure the 4th slot (LAN Destination Number 4) in the LAN Destination tab.

- 4.3.1765.9. In the **Alert String** field, enable the check box if the Alert policy entry is Event Specific.
- 4.3.1766.10. In the **Alert String Key** field, choose any one value that is used to look up the Alert String to send for this Alert Policy entry.
- 4.3.1767.11. Click **Add** to save the new alert policy and return to Alert Policy list.
- 4.3.1768.12. Click **Cancel** to cancel the modification and return to Alert Policy list.
- 4.3.1769.13. In the Alert Policy list, to modify a configuration, select the slot to be modified and click **Modify**.
- 4.3.1770.14. In the Modify Alert Policy Entry Page, make the necessary changes and click **Modify**.
- 4.3.1771.15. In the Alert Policy list, to delete a configuration, select the slot and click **Delete**.

[4.3.1772] PEF Management LAN Destination Page

[4.3.1773] This page is used to configure the Event filter, Alert Policy and LAN destination. A sample screenshot of PEF Management LAN Destination Page is given below.



[4.3.1774] PEF Management LAN Destination

[4.3.1775] The fields of PEF Management – LAN Destination Tab are explained below.

[4.3.1776] PEF Management - LAN Destination

[4.3.1777] ITEM	[4.3.1778] DESCRIPTION
[4.3.1779] LAN Destination	[4.3.1780] Displays Destination number for the newly configured entry (read-only).
[4.3.1781] Destination Type	[4.3.1782] Destination type can be either an SNMP Trap or an Email alert. [4.3.1783] For Email alerts, the 3 fields - destination Email address, subject and body of the message needs to be filled. The SMTP server information also has to be added - under Configuration > SMTP . [4.3.1784] For SNMP Trap, only the destination IP address has to be filled.
[4.3.1785] Destination Address	[4.3.1786] If Destination type is SNMP Trap, then enter the IP address of the system that will receive the alert. Destination address will support the following: <ul style="list-style-type: none"> ● IPv4 address format. ● IPv6 address format. [4.3.1787] If Destination type is Email Alert, then give the email address that will receive the email.
[4.3.1788] Subject & Message	[4.3.1789] These fields must be configured if email alert is chosen as destination type. An email will be sent to the configured email address in case of any severity events with a subject specified in subject field and will contain the message field's content as the email body.
[4.3.1790] Add	[4.3.1791] To save the new LAN destination and return to LAN destination list.

[4.3.1776] PEF Management - LAN Destination (Continued)

[4.3.1777] ITEM	[4.3.1778] DESCRIPTION
[4.3.1792] Cancel	[4.3.1793] To cancel the modification and return to LAN destination list.

[4.3.1794] Procedure:

4.3.1795.1. In the **LAN Destination Tab**, choose the slot to be configured. This should be the same slot that you have selected in the Alert Policy Entry- Destination Selector field. That is if you have chosen the Destination Selector as 4 in the Alert Policy Entry page of Alert Policy Tab, then you have to configure the 4th slot of LAN Destination Page.

4.3.1796.2. Select the slot and click **Add**. This opens the **Add LAN Destination entry**.


[4.3.1797] Add LAN Destination entry Page

4.3.1798.3. In the **LAN Destination** field, the destination for the newly configured entry is displayed and this is a read only field.

4.3.1799.4. In the **Destination Type** field, select the one of the types.

4.3.1800.5. In the **Destination Address** field, enter the destination address.

**Note:**

[4.3.1801] If Destination type is Email Alert, then give the email address that will receive the email.

4.3.1802.6. Select the **User Name** from the list of users.

4.3.1803.7. In the **Subject** field, enter the subject.

4.3.1804.8. In the **Message** field, enter the message.

4.3.1805.9. Click **Add** to save the new LAN destination and return to LAN destination list.

4.3.1806.10. Click **Cancel** to cancel the modification and return to LAN destination list.

4.3.1807.11. In the LAN Destination Tab, to modify a configuration, select the row to be modified and click **Modify**.

4.3.1808.12. In the Modify LAN Destination Entry page, make the necessary changes and click **Modify**.

4.3.1809.13. In the LAN Destination Tab, to delete a configuration, select the slot and click **Delete**.

[4.3.1810] RADIUS

[4.3.1811] RADIUS is a modular, high performance and feature-rich RADIUS suite including server, clients, development libraries and numerous additional RADIUS related utilities.

[4.3.1812] This page is used to set the RADIUS Authentication.

[4.3.1813] To open RADIUS Settings page, click Configuration > RADIUS from the main menu. A sample screenshot of RADIUS Settings Page is shown in the screenshot below.



[4.3.1814] RADIUS Settings Page

[4.3.1815] The fields of RADIUS Settings Page are explained below.

[4.3.1816] RADIUS Settings Page

[4.3.1817] ITEM	[4.3.1818] DESCRIPTION
[4.3.1819] RADIUS Authentication	[4.3.1820] Option to enable RADIUS authentication.
[4.3.1821] Port	[4.3.1822] The RADIUS Port number. Note: [4.3.1823] Default Port is 1812.
[4.3.1824] Time Out	[4.3.1825] The Time out value in seconds. Note: <ul style="list-style-type: none"> Default Timeout value is 3seconds. Timeout value ranges from 3 to 300.
[4.3.1826] Server Address	[4.3.1827] The IP address of RADIUS server. Note: <ul style="list-style-type: none"> IP Address made of 4 numbers separated by dots as in "xxx.xxx.xxx.xxx". Each Number ranges from 0 to 255. First Number must not be 0.
[4.3.1828] Secret	[4.3.1829] The Authentication Secret for RADIUS server. Note: <ul style="list-style-type: none"> This field will not allow more than 31 characters. Secret must be at least 4 characters long. White space is not allowed.

[4.3.1816] RADIUS Settings Page (Continued)

[4.3.1817] ITEM	[4.3.1818] DESCRIPTION
[4.3.1830] Save	[4.3.1831] To save the settings.
[4.3.1832] Reset	[4.3.1833] To reset the modified changes.

[4.3.1834] Procedure:

- 4.3.1835.1.Enable the **RADIUS Authentication** checkbox to authenticate the RADIUS.
- 4.3.1836.2.Enter the port number in the **Port Number** field.
- 4.3.1837.3.Enter the time out value in seconds in the **Time out** field.
- 4.3.1838.4.Enter the address of the server in the **Server Address** field.
- 4.3.1839.5.Enter the authentication secret for RADIUS Server in the **Secret** field.
- 4.3.1840.6.Click **Save** to save the entered details.
- 4.3.1841.7.Click **Reset** to reset the entered details.

[4.3.1842] Remote Session

[4.3.1843] Use this page to configure virtual media configuration settings for the next redirection session. Encryption is disabled by default.

[4.3.1844] To open Remote Session page, click **Configuration > Remote Session** from the main menu. A sample screenshot of Remote Session Page is shown in the screenshot below.



[4.3.1845] Remote Session

[4.3.1846] The fields of Remote Session Settings Page are explained below.

[4.3.1847] Remote Session Settings Page

[4.3.1848] ITEM	[4.3.1849] DESCRIPTION
[4.3.1850] KVM Encryption	[4.3.1851] Enable/Disable encryption on KVM data for the next redirection session.
[4.3.1852] Media Encryption	[4.3.1853] Enable/Disable encryption on Media data for the next redirection session.
[4.3.1854] Virtual Media Attach Mode	<p>[4.3.1855] Two types of VM attach mode are available:</p> <ul style="list-style-type: none"> ● Attach: Immediately attaches Virtual Media to the server upon bootup. ● Auto Attach: Attaches Virtual Media to the server only when a virtual media session is started.

[4.3.1847] Remote Session Settings Page (Continued)

[4.3.1848] ITEM	[4.3.1849] DESCRIPTION
[4.3.1856] Save	<p>[4.3.1857] To save the current changes.</p> <p>Note:</p> <p>[4.3.1858] It will automatically close the existing remote redirection either KVM or Virtual media sessions, if any.</p>
[4.3.1859] Reset	[4.3.1860] To reset the modified changes.

[4.3.1861] Procedure:

4.3.1862.1. In **KVM encryption**, check or uncheck the option **Enable**.

4.3.1863.2. In **Media Encryption**, check or uncheck the option **Enable**.

4.3.1864.3. In **Virtual media Attach mode**, select **Auto Attach** or **Attach** from the dropdown list as required.

4.3.1865.4. Click **Save** to save the entries.

4.3.1866.5. Click **Reset** to reset the entries

**Note:**

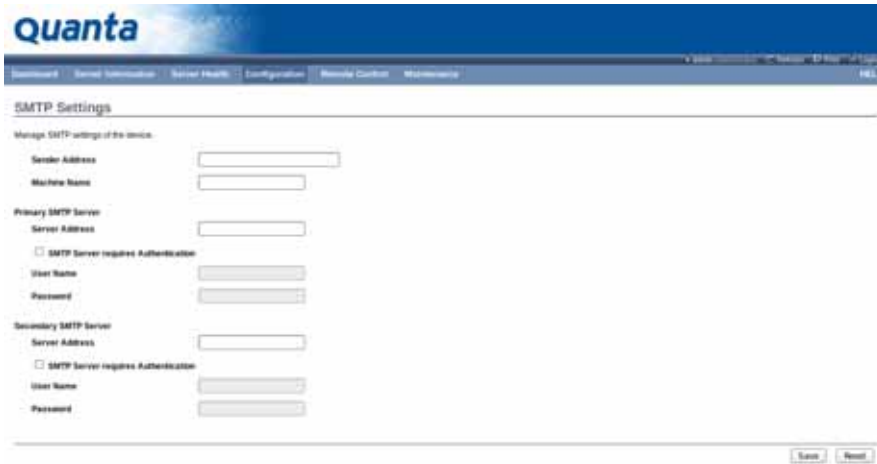
- If we choose more than one virtual CDROMs, then the RHEL5 host displays only one CDROM in the “Computer” window. When we redirect second CDROM, the second CDROM device will appear in “Computer” window.
- If we choose more than 2 virtual Hard disks, then the RHEL5 host displays only two hard disks in “Computer” window. When we redirect third hard disk, the third hard disk will appear in “Computer” window.

[4.3.1867] SMTP

[4.3.1868] Simple Mail Transfer Protocol (SMTP) is an Internet standard for electronic mail (e-mail) transmission across Internet Protocol (IP) networks.

[4.3.1869] Using Web GUI, you can configure the SMTP settings of the device.

[4.3.1870] To open SMTP Settings page, click **Configuration > SMTP** from the main menu. A sample screenshot of SMTP Settings Page is shown in the screenshot below.



[4.3.1871] SMTP Settings Page

[4.3.1872] The fields of SMTP Settings Page are explained below.

[4.3.1873] SMTP Settings Page

[4.3.1874] ITEM	[4.3.1875] DESCRIPTION
[4.3.1876] LAN Channel Number	[4.3.1877] Displays the list of LAN channels available.
[4.3.1878] Sender Address	[4.3.1879] The 'Sender Address' valid on the SMTP Server.

[4.3.1873] SMTP Settings Page (Continued)

[4.3.1874] ITEM	[4.3.1875] DESCRIPTION
[4.3.1880] Machine Name	<p>[4.3.1881] The 'Machine Name' of the SMTP Server.</p> <ul style="list-style-type: none"> Machine Name is a string of maximum 15 alpha-numeric characters. Space, special characters are not allowed.
[4.3.1882] Primary SMTP Server	[4.3.1883] Lists the Primary SMTP Server configuration.
[4.3.1884] Server Address	<p>[4.3.1885] The 'IP address' of the SMTP Server. It is a mandatory field.</p> <p>Note:</p> <ul style="list-style-type: none"> IP Address made of 4 numbers separated by dots as in "xxx.xxx. xxx.xxx". Each Number ranges from 0 to 255. First Number must not be 0. Supports IPv4 Address format and IPv6 Address format.

[4.3.1873] SMTP Settings Page (Continued)

[4.3.1874] ITEM	[4.3.1875] DESCRIPTION
<p>[4.3.1886] SMTP Server requires Authentication</p>	<p>[4.3.1887] To enable/disable SMTP Authentication.</p> <p>Note: [4.3.1888] SMTP Server Authentication Types supported are:</p> <ul style="list-style-type: none"> ● CRAM-MD5 ● LOGIN ● PLAIN <p>[4.3.1889] If the SMTP server does not support any one of the above authentication types, the user will get an error message stating, "Authentication type is not supported by SMTP Server"</p>
<p>[4.3.1890] Username</p>	<p>[4.3.1891] The username to access SMTP Accounts.</p> <p>Note:</p> <ul style="list-style-type: none"> ● User Name can be of length 4 to 64 alphanumeric characters. ● It must start with an alphabet. ● Special characters ','(comma), ':'(colon), ';' (semicolon), ' '(space) and '\'(backslash) are not allowed.

[4.3.1873] SMTP Settings Page (Continued)

[4.3.1874] ITEM	[4.3.1875] DESCRIPTION
<p>[4.3.1892] Password</p>	<p>[4.3.1893] The password for the SMTP User Account.</p> <p>Note:</p> <ul style="list-style-type: none"> ● Password must be at least 4 characters long. ● White space is not allowed. ● This field will not allow more than 64 characters.
<p>[4.3.1894] Secondary SMTP Server</p>	<p>[4.3.1895] It lists the Secondary SMTP Server configuration. It is an optional field. If the Primary SMTP server is not working fine, then it tries with Secondary SMTP Server configuration.</p>
<p>[4.3.1896] Save</p>	<p>[4.3.1897] To save the new SMTP server configuration.</p>
<p>[4.3.1898] Reset</p>	<p>[4.3.1899] To reset the modified changes.</p>

[4.3.1900] Procedure:

- 4.3.1901.1. Select the **LAN Channel Number** from the drop-down list.
- 4.3.1902.2. Enter the **Sender Address** in the specified field.
- 4.3.1903.3. Enter the **Machine Name** in the specified field.
- 4.3.1904.4. In Primary SMTP Server, enter the **Server Address** in the specified field.

- 4.3.1905.5. Enable the check box **SMTP Server requires Authentication** if you want to authenticate SMTP Server.
- 4.3.1906.6. Enter your **User name** and **Password** in the respective fields.
- 4.3.1907.7. In Secondary SMTP Server, enter the **Server Address** in the specific field.
- 4.3.1908.8. Enable the check box **SMTP Server requires Authentication** if you want to authenticate SMTP Server.
- 4.3.1909.9. Enter your **User name** and **Password** in the respective fields.
- 4.3.1910.10. Click **Save** to save the entered details.
- 4.3.1911.11. Click **Reset** to update the entered details.

[4.3.1912] SOL

[4.3.1913] Here, you can configure the Serial over LAN settings, select or change values for each attribute and click the Save button to save any changes.



[4.3.1914] SOL Settings Page

[4.3.1915] The fields of SOL Settings Page are explained below.

[4.3.1916] SOL Settings Page

[4.3.1917] ITEM	[4.3.1918] DESCRIPTION
[4.3.1919] Enable Serial over LAN	[4.3.1920] Checked=Enabled; Unchecked=Disabled.

[4.3.1916] SOL Settings Page (Continued)

[4.3.1917] ITEM	[4.3.1918] DESCRIPTION
[4.3.1921] Channel Privilege Level Limit	<p>[4.3.1922] Select the IPMI Serial over LAN minimum user privilege:</p> <ul style="list-style-type: none"> ● Administrator ● Operator ● User
[4.3.1923] Save	[4.3.1924] Use this button to save your settings.
[4.3.1925] Advanced SOL Settings	[4.3.1926] Use this button to go to advanced SOL page.

[4.3.1927] SSL

[4.3.1928] The Secure Socket Layer protocol was created by Netscape to ensure secure transactions between web servers and browsers. The protocol uses a third party, a Certificate Authority (CA), to identify one end or both end of the transactions.

[4.3.1929] Using Web GUI, configure SSL certificate into the BMC. Using this, the device can be accessed in a secured mode.

[4.3.1930] To open SSL Certificate Configuration page, click **Configuration > SSL** from the main menu. There are three tabs on this page.

- Upload SSL option is used to upload the certificate and private key file into the BMC.
- Generate SSL option is used to generate the SSL certificate based on configuration details.
- View SSL option is used to view the uploaded SSL certificate in readable format.

[4.3.1931] A sample screenshot of SSL Management Page is shown in the screenshot below.



[4.3.1932] SSL Certificate Configuration – Upload SSL

[4.3.1933] The fields of SSL Certificate Configuration – Upload SSL tab are explained below.

[4.3.1934] SSL Certificate Configuration - Upload SSL

[4.3.1935] ITEM	[4.3.1936] DESCRIPTION
[4.3.1937] Current Certificate	[4.3.1938] Current certificate information will be displayed (read-only).

[4.3.1934] SSL Certificate Configuration - Upload SSL

[4.3.1935] ITEM	[4.3.1936] DESCRIPTION
[4.3.1939] New Certificate	[4.3.1940] Certificate file should be of pem type
[4.3.1941] Current Privacy Key	[4.3.1942] Current privacy key information will be displayed (read-only).
[4.3.1943] New Privacy Key	[4.3.1944] Privacy key file should be of pem type.
[4.3.1945] Upload	[4.3.1946] To upload the SSL certificate and privacy key into the BMC.



Note:

[4.3.1947] Upon successful upload, HTTPs service will get restarted to use the newly uploaded SSL certificate.



[4.3.1948] SSL Certificate Configuration – Generate SSL

[4.3.1949] The fields of SSL Certificate Configuration – Generate SSL tab are explained below.

[4.3.1950] SSL Certificate Configuration - Generate SSL

[4.3.1951] ITEM	[4.3.1952] DESCRIPTION
[4.3.1953] Common Name (CN)	<p>[4.3.1954] Common name for which certificate is to be generated.</p> <ul style="list-style-type: none"> • Maximum length of 64 characters. • Special characters '#' and '\$' are not allowed.
[4.3.1955] Organization (O)	<p>[4.3.1956] Organization name for which the certificate is to be generated.</p> <ul style="list-style-type: none"> • Maximum length of 64 characters. • Special characters '#' and '\$' are not allowed.
[4.3.1957] Organization Unit (OU)	<p>[4.3.1958] Over all organization section unit name for which certificate is to be generated.</p> <ul style="list-style-type: none"> • Maximum length of 64 characters. • Special characters '#' and '\$' are not allowed.
[4.3.1959] City or Locality (L)	<p>[4.3.1960] City or Locality of the organization (mandatory).</p> <ul style="list-style-type: none"> • Maximum length of 64 characters. • Special characters '#' and '\$' are not allowed.
[4.3.1961] State or Province (ST)	<p>[4.3.1962] State or Province of the organization (mandatory).</p> <ul style="list-style-type: none"> • Maximum length of 64 characters. • Special characters '#' and '\$' are not allowed.

[4.3.1950] SSL Certificate Configuration - Generate SSL

[4.3.1951] ITEM	[4.3.1952] DESCRIPTION
[4.3.1963] Country (C)	<p>[4.3.1964] Country code of the organization (mandatory).</p> <ul style="list-style-type: none"> • Only two characters are allowed. • Special characters are not allowed.
[4.3.1965] Email Address	[4.3.1966] Email Address of the organization (mandatory).
[4.3.1967] Valid for	<p>[4.3.1968] Validity of the certificate.</p> <ul style="list-style-type: none"> • Value ranges from 1 to 3650 days.
[4.3.1969] Key Length	[4.3.1970] The key length bit value of the certificate.
[4.3.1971] Generate	[4.3.1972] To generate the new SSL certificate.



Note:

[4.3.1973] HTTPs service will get restarted, to use the newly generated SSL certificate.



[4.3.1974] SSL Certificate Configuration – View SSL

[4.3.1975] The fields of SSL Certificate Configuration – View SSL tab are explained below.

[4.3.1976] SSL Certificate Configuration – View SSL

[4.3.1977] ITEM	[4.3.1978] DESCRIPTION
[4.3.1979] Basic Information	<p>[4.3.1980] This section displays the basic information about the uploaded SSL certificate. It displays the following fields.</p> <ul style="list-style-type: none"> ● Version ● Serial Number ● Signature Algorithm ● Public Key
[4.3.1981] Issued From	<p>[4.3.1982] This section describes the following Certificate Issuer information</p> <ul style="list-style-type: none"> ● Common Name (CN) ● Organization (O) ● Organization Unit(OU) ● City or Locality (L) ● State or Province (ST) ● Country (C) ● Email Address
[4.3.1983] Validity Information	<p>[4.3.1984] This section displays the validity period of the uploaded certificate.</p> <ul style="list-style-type: none"> ● Valid From ● Valid To

[4.3.1976] SSL Certificate Configuration – View SSL (Continued)

[4.3.1977] ITEM	[4.3.1978] DESCRIPTION
[4.3.1985] Issued To	<p>[4.3.1986] This section display the information about the certificate issuer.</p> <ul style="list-style-type: none"> ● Common Name (CN) ● Organization (O) ● Organization Unit (OU) ● City or Locality (L) ● State or Province (ST) ● Country (C) ● Email Address

[4.3.1987] Procedure:

- 4.3.1988.1. Click the Upload SSL Tab, **Browse the New Certificate and New Privacy key.**
- 4.3.1989.2. Click **Upload** to upload the new certificate and privacy key.
- 4.3.1990.3. In **Generate SSL** tab, enter the following details in the respective fields
 - The **Common Name** for which the certificate is to be generated.
 - The **Name of the Organization** for which the certificate is to be generated.
 - The **Overall Organization Section Unit** name for which certificate to be generated.

- The **City or Locality** of the organization
- The **State or Province** of the organization
- The **Country** of the organization
- The **email address** of the organization.
- The number of days the certificate will be valid in the **Valid For** field.

4.3.1991.4. Choose the **Key Length** bit value of the certificate

4.3.1992.5. Click **Generate** to generate the certificate.

4.3.1993.6. Click **View SSL** tab to view the uploaded SSL certificate in user readable format.



Note:

- Once you Upload/Generate the certificates, only HTTPs service will get restarted.
- You can now access your BMC securely using the following format in your IP Address field from your Internet browser: `https://<your BMC's IP address here>`
- For example, if your BMC's IP address is 192.168.0.30, enter the following: `https://192.168.0.30`
- Please note the <s> after <http>. You must accept the certificate before you are able to access your Generic BMC.

[4.3.1994] User Management

[4.3.1995] The User Management page allows you to view the current list of user slots for the server. You can add a new user and modify or delete the existing users.

[4.3.1996] To open User Management page, click **Configuration > Users** from the main menu. A sample screenshot of User Management Page is shown in the screenshot below.

User ID	Username	User Status	User Role	Valid Until
1	admin	Enabled	Administrator	-
2	admin	Enabled	Administrator	-
3	-	-	-	-
4	-	-	-	-
5	-	-	-	-
6	-	-	-	-
7	-	-	-	-
8	-	-	-	-
9	-	-	-	-
10	-	-	-	-

[4.3.1997] User Management

[4.3.1998] The fields of User Management Page are explained below.

[4.3.1999] User Management Page

[4.3.2000] ITEM	[4.3.2001] DESCRIPTION
[4.3.2002] User ID	[4.3.2003] Displays the ID number of the user. Note: [4.3.2004] The list contains a maximum of ten users only.
[4.3.2005] User Name	[4.3.2006] Displays the name of the user.
[4.3.2007] User Access	[4.3.2008] To enable or disable the access privilege of the user.
[4.3.2009] Network Privilege	[4.3.2010] Displays the network access privilege of the user.
[4.3.2011] SNMP Status	[4.3.2012] Displays if the SNMP status for the user is enabled or Disabled.
[4.3.2013] Email ID	[4.3.2014] Displays email address of the user.
[4.3.2015] Add User	[4.3.2016] To add a new user. Modify.
[4.3.2017] User	[4.3.2018] To modify an existing user.
[4.3.2019] Delete User	[4.3.2020] To delete an existing user.

[4.3.2021] Procedure:

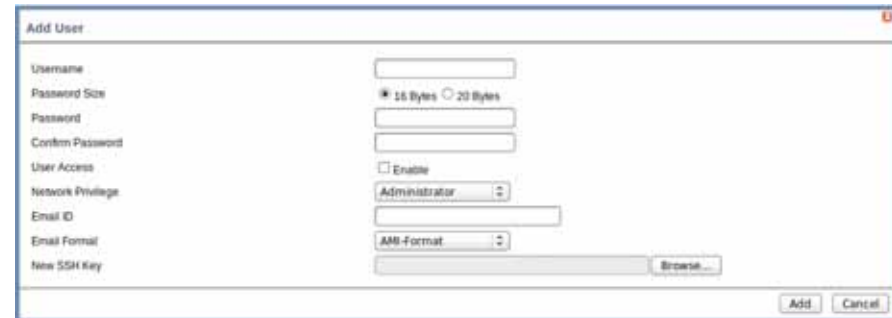


Note:

[4.3.2022] The Free slots are denoted by "~" in all columns for the slot.

[4.3.2023] Add a new user:

4.3.2024.1. To add a new user, select a free slot and click **Add User**. This opens the Add User screen as shown in the screenshot below.



[4.3.2025] Add User Page

4.3.2026.2. Enter the name of the user in the **User Name** field.



Note:

- User Name is a string of 4 to 16 alpha-numeric characters.
- It must start with an alphabetical character.
- It is case-sensitive.
- Special characters ','(comma), '.'(period), ':'(colon), ';' (semi-colon), ' '(space), '/'(slash), '\'(backslash), '('(left bracket) and ')' (right bracket) are not allowed.

4.3.2027.3. In the **Password and Confirm Password** fields, enter and confirm your new password.



Note:

- Password must be at least 8 characters long.
- White space is not allowed.
- This field will not allow more than 20 characters.

4.3.2028.4. Enable or Disable the User Access Privilege.

4.3.2029.5. In the **Network Privilege** field, enter the network privilege assigned to the user which could be Administrator, Operator, User or No Access.

4.3.2030.6. Check the **SNMP Status** check box to enable SNMP access for the user.



Note:

[4.3.2031] Password field is mandatory, if SNMP Status is enabled.

4.3.2032.7. Choose the SNMP Access level option for user from the **SNMP Access** dropdown list. Either it can be Read Only or Read Write.

4.3.2033.8. Choose the **Authentication Protocol** to use for SNMP settings from the drop down list.



Note:

[4.3.2034] Password field is mandatory, if Authentication protocol is changed.

4.3.2035.9. Choose the Encryption algorithm to use for SNMP settings from the **Privacy protocol** dropdown list.

4.3.2036.10. In the **Email ID** field, enter the email ID of the user. If the user forgets the password, the new password will be mailed to the configured email address.



Note:

[4.3.2037] SMTP Server must be configured to send emails.

- Email Format: Two types of formats are available:
 - AMI-Format: The subject of this mail format is 'Alert from (your Hostname)'. The mail content shows sensor information, ex: Sensor type and Description.
 - Fixed-Subject Format: This format displays the message according to user's setting. You must set the subject and message for email alert.

4.3.2038.11. In the **New SSK Key** field, click Browse and select the SSH key file.



Note:

[4.3.2039] SSH key file should be of pub type.

4.3.2040.12. Click **Add** to save the new user and return to the users list.

4.3.2041.13. Click **Cancel** to cancel the modification and return to the users list.

[4.3.2042] Modify an existing user:

4.3.2043.14. Select an existing user from the list and click **Modify User**. This opens the Add User screen as shown in the screenshot below.

[4.3.2044] Modify User Page

4.3.2045.15. Edit the required fields.

4.3.2046.16. To change the password, enable the **Change Password** option.

4.3.2047.17. After editing the changes, click **Modify** to return to the users list page.

[4.3.2048] Delete an existing User

4.3.2049.18. To delete an existing user, select the user from the list and click **Delete User**.

[4.3.2050] Virtual Media

[4.3.2051] This page to configure Virtual Media device settings. If you change the configuration of the virtual media in this page, it shows the appropriate device in the JViewer Vmedia dialog. For example, if you select two floppy devices in Configure Virtual Media page, then in JViewer > Vmedia, you can view two floppy device panel.

[4.3.2052] To open Virtual Media page, click **Configuration > Virtual Media** from the main menu. A sample screenshot of User Management Page is shown in the screenshot below.

[4.3.2053] Configure Virtual Media Devices

[4.3.2054] The following fields are displayed in this page.

[4.3.2055] Configure Virtual Media Devices

[4.3.2056] ITEM	[4.3.2057] DESCRIPTION
[4.3.2058] Floppy devices	[4.3.2059] The number of floppy devices that support for Virtual Media redirection.
[4.3.2060] CD/DVD devices	[4.3.2061] The number of CD/DVD devices that support for Virtual Media redirection.
[4.3.2062] Hard disk devices	[4.3.2063] The number of hard disk devices that support for Virtual Media redirection.
[4.3.2064] Local Media Support	[4.3.2065] To enable or disable the local media support for Virtual Media redirection.
[4.3.2066] Save	[4.3.2067] To save the configured settings.
[4.3.2068] Reset	[4.3.2069] To reset the previously-saved values.

[4.3.2070] Procedure:

4.3.2071.1. Select the number of Floppy devices, CD/DVD devices and Hard disk devices from the dropdown list.



Note:

[4.3.2072] Maximum of two devices can be added in Floppy, CD/DVD and Hard disk drives.

4.3.2073.2. Enable the **Local Media Support** if needed.

4.3.2074.3. Click **Save** to save the changes made else click **Reset** to reset the previously saved values.



Note:

[4.3.2075] If there are two device panels for each device, and when you click the Connect button, then the redirected device panel will be disabled.

[4.3.2076] Remote Control

[4.3.2077] The Remote Control consists of the following menu items.

- Console Redirection
- Server Power Control

[4.3.2078] A sample screenshot of the Remote Control menu is given below.



[4.3.2079] Remote Control Menu

[4.3.2080] A detailed description of the menu items are given ahead

[4.3.2081] Console Redirection

[4.3.2082] The remote console application, which is started using the WebGUI, allows you to control your server's operating system remotely, using the screen, mouse, and keyboard, and to redirect local CD/DVD, Floppy diskette and Hard disk/USB thumb drives as if they were connected directly to the server.

[4.3.2083] List of Supported Client Operating Systems

- WinXP
- W2K3 - 32 bit
- W2K3 - 64 bit
- RHEL 4 - 32 bit
- RHEL 4 - 64 bit
- RHEL 5.4 - 32 bit
- RHEL 5.4 - 64 bit
- RHEL 6.0 - 64 bit
- RHEL 6.0 - 32 bit
- Ubuntu 9.10 LTS - 32
- Ubuntu 9.10 LTS - 64
- Ubuntu 8.10 -32
- Ubuntu 8.10 -64

- OpenSuse 11.2 -32
- OpenSuse 11.2 -64
- FC 9 - 32
- FC 9 - 64
- FC 10 - 32
- FC 10 - 64
- FC 12 - 32
- FC 12 - 64
- FC 13 - 32
- FC 13 - 64
- FC 14 - 32
- FC 14 - 64
- MAC -32
- MAC-64

[4.3.2084] List of Supported Host OS

- RHEL 5
- RHEL 6
- W2K3
- W2K8
- RHEL 4

- OpenSuse 11.2
- OpenSuse 10.x
- Ubuntu 8.10
- Ubuntu 9.10
- Ubuntu 11.04

[4.3.2085] Browser Settings

[4.3.2086] For Launching the KVM, pop-up block should be disabled. For Internet explorer, enable the download file options from the settings.

[4.3.2087] Java Console

[4.3.2088] This is an OS independent plug-in which can be used in Windows as well as Linux with the help of JRE. JRE should be installed in the client's system. You can install JRE from the following link.

[4.3.2089] <http://www.java.com/en/download/manual.jsp>

[4.3.2090] Procedure:

[4.3.2091] The Java Console can be launched in two ways:

4.3.2092.1.Open the Dashboard Page and in Remote control section, click Launch for Java Console.

4.3.2093.2.Open **Remote Control > Console Redirection** Page and click **Java Console**.

[4.3.2094] This will download the **.jnlp** file from the BMC.

[4.3.2095] To open the .jnlp file, use the appropriate JRE version (Javaws)

[4.3.2096] The Console Redirection window opens when the downloading is done.

[4.3.2097] The Console Redirection main menu consists of the following menu items.

- Video
- Keyboard
- Mouse
- Options
- Media
- Keyboard Layout
- Video Record
- Power
- Active Users
- Help

[4.3.2098] A detailed explanation of these menu items are given below.

[4.3.2099] Video

[4.3.2100] This menu contains the following sub menu items.

[4.3.2101] Video

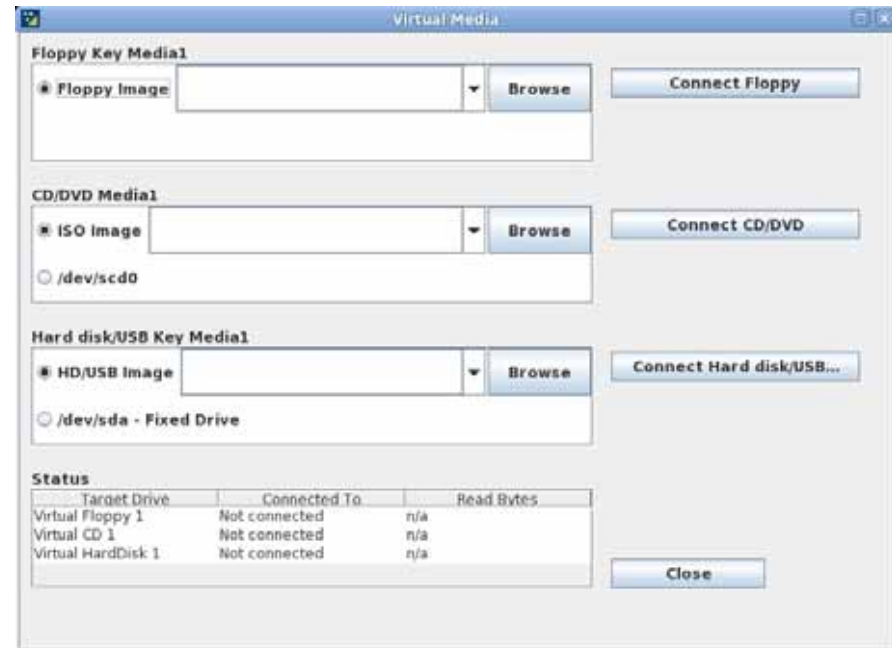
[4.3.2102] ITEM	[4.3.2103] DESCRIPTION
[4.3.2104] Pause redirection	[4.3.2105] This option is used for pausing Console Redirection.
[4.3.2106] Resume Redirection	[4.3.2107] This option is used to resume the Console Redirection when the session is paused.
[4.3.2108] Refresh Video	[4.3.2109] This option can be used to update the display shown in the Console Redirection window.
[4.3.2110] Turn Off Host display	[4.3.2111] If you enable this option, the server display will be blank but you can view the screen in Console Redirection. If you disable this option, the display will be back in the server screen.
[4.3.2112] Full Screen	[4.3.2113] This option is used to view the Console Redirection in full screen mode (Maximize). This menu is enabled only when both the client and host resolution are same.
[4.3.2114] Exit	[4.3.2115] This option is used to exit the console redirection screen.

[4.3.2116] Keyboard

[4.3.2117] This menu contains the following sub menu items.

[4.3.2118] Keyboard

[4.3.2119] ITEM	[4.3.2120] DESCRIPTION
[4.3.2121] Hold Right Ctrl Key	[4.3.2122] This menu item can be used to act as the right-side <CTRL> key when in Console Redirection.
[4.3.2123] Hold Right Alt Key	[4.3.2124] This menu item can be used to act as the right-side <ALT> key when in Console Redirection.
[4.3.2125] Hold Left Ctrl Key	[4.3.2126] This menu item can be used to act as the left-side <CTRL> key when in Console Redirection.
[4.3.2127] Hold Left Alt Key	[4.3.2128] This menu item can be used to act as the left-side <ALT> key when in Console Redirection.
[4.3.2129] Left Windows Key	[4.3.2130] This menu item can be used to act as the left-side <WIN> key when in Console Redirection. You can also decide how the key should be pressed: Hold Down or Press and Release.
[4.3.2131] Right Windows Key	[4.3.2132] This menu item can be used to act as the right-side <WIN> key when in Console Redirection. You can also decide how the key should be pressed: Hold Down or Press and Release.
[4.3.2133] Alt+Ctrl+Del	[4.3.2134] This menu item can be used to act as if you depressed the <CTRL>, <ALT> and keys down simultaneously on the server that you are redirecting.



[4.3.2135] Virtual Media

[4.3.2136] Virtual Media

[4.3.2137] ITEM	[4.3.2138] DESCRIPTION
[4.3.2139] Floppy Key Media	<p>[4.3.2140] This menu item can be used to start or stop the redirection of a physical floppy drive and floppy image types such as *.img.</p> <p>Note:</p> <p>[4.3.2141] Floppy Redirection is not an available feature on all versions of the BMC.</p>

[4.3.2136] Virtual Media (Continued)

[4.3.2137] ITEM	[4.3.2138] DESCRIPTION
[4.3.2142] CD/DVD Media	[4.3.2143] This menu item can be used to start or stop the redirection of a physical DVD/CD-ROM drive and cd image types such as iso.
[4.3.2144] Hard disc/USB Key Media	<p>[4.3.2145] This menu item can be used to start or stop the redirection of a Hard Disk/USB key image and USB key image such as *.img.</p> <p>Note:</p> <ul style="list-style-type: none"> • For windows client, if the logical drive of the physical drive is dismount then the logical device is redirected with Read/Write Permission else it is redirected with Read permission only. • For MAC client, External USB Hard disk redirection is only supported. • For Linux client, fixed hard drive is redirected only as Read Mode. It is not Write mode supported. • For USB key image redirection, support FAT 16, FAT 32 and NTFS.

[4.3.2146] Keyboard Layout

[4.3.2147] Keyboard Layout

[4.3.2148] ITEM	[4.3.2149] DESCRIPTION
[4.3.2150] Auto Detect	[4.3.2151] This option is used to detect keyboard layout automatically. The languages supported automatically are English – US, French – France, Spanish – Spain, German- Germany, Japanese- Japan. If the client and host languages are same, then for all the languages other than English mentioned above, you must select this option to avoid typo errors.
[4.3.2152] Soft Keyboard	<p>[4.3.2153] This option allows you to select the keyboard layout. It will show the dialog as similar to onscreen keyboard. If the client and host languages are different, then for all the languages other than English mentioned above, you must select the appropriate language in the list shown in JViewer and use the soft keyboard to avoid typo errors.</p> <p>Note:</p> <p>[4.3.2154] Soft keyboard is applicable only for JViewer Application not for other application in the client system.</p>

[4.3.2155] Video Record



Note:

[4.3.2156] This option is available only when you launch the Java Console.

[4.3.2157] Video Record

[4.3.2158] ITEM	[4.3.2159] DESCRIPTION
[4.3.2160] Important	[4.3.2161] To view this menu option you must download the Java Media FrameWork (JMF). It can be downloaded from the link [4.3.2162] http://www.oracle.com/technetwork/java/javase/download-142937.html
[4.3.2163] Start Record	[4.3.2164] This option is to start recording the screen.
[4.3.2165] Stop Record	[4.3.2166] This option is used to stop the recording.
[4.3.2167] Settings	[4.3.2168] To set the settings for video recording.

[4.3.2169] Procedure:



Note:

[4.3.2170] Before you start recording, you have to enter the settings.

4.3.2171.1. Click **Video Record > Settings** to open the settings page as shown in the screenshot below.



[4.3.2172] Video Record Settings Page

4.3.2173.2. Enter the **Video Length** in seconds.

4.3.2174.3. **Browse** and enter the location where you want the video to be saved.

4.3.2175.4. Enable the option **Normalized video resolution to 1024X768**.

4.3.2176.5. Click **OK** to save the entries and return to the Console Redirection screen.

4.3.2177.6. Click **Cancel** if you don't wish to save the entries.

4.3.2178.7. In the Console Redirection window, click **Video Record > Start Record**.

4.3.2179.8. Record the process.

4.3.2180.9. To stop the recording, click **Video Record > Stop Record**.

[4.3.2181] Power

[4.3.2182] The power option is to perform any power cycle operation. Click on the required option to perform the **following operation. Reset Server**: To reboot the system without powering off (warm boot).

[4.3.2183] Power

[4.3.2184] ITEM	[4.3.2185] DESCRIPTION
[4.3.2186] Power Off Server - Immediate	[4.3.2187] To immediately power off the server.
[4.3.2188] Power Off Server - Orderly Shutdown	[4.3.2189] To initiate operating system shutdown prior to the shutdown.
[4.3.2190] Power On Server	[4.3.2191] To power on the server.
[4.3.2192] Power Cycle Server	[4.3.2193] To first power off, and then reboot the system (cold boot).

[4.3.2194] Active Users

[4.3.2195] Click this option to displays the active users and their system IP address.

[4.3.2196] Help

[4.3.2197] Jviewer: Displays the copyright and version information

[4.3.2198] Quick Buttons

[4.3.2199] The lower right of Console Redirection windows displays all the quick buttons. These quick buttons helps you to perform these functions by just clicking them.



Note:

[4.3.2200] This option is available only when you launch the Java Console. Server Power Control.

[4.3.2201] Server Power Control

[4.3.2202] This page allows you to view and control the power of your server.

[4.3.2203] To open Power Control and Status page, click **Remote Control > Server Power Control** from the main

menu. A sample screenshot of Power Control and Status page is shown in the screenshot below.



[4.3.2204] Power Control and Status Page

[4.3.2205] The various options of Power Control are given below.

[4.3.2206] Server Power Control

[4.3.2207] ITEM	[4.3.2208] DESCRIPTION
[4.3.2209] Reset Server	[4.3.2210] This option will reboot the system without powering off (warm boot).
[4.3.2211] Power Off Server – Immediate	[4.3.2212] This option will immediately power off the server.
[4.3.2213] Power Off Server – Orderly Shutdown	[4.3.2214] This option will initiate operating system shutdown prior to the shutdown.
[4.3.2215] Power On Server	[4.3.2216] This option will power on the server.

[4.3.2206] Server Power Control (Continued)

[4.3.2207] ITEM	[4.3.2208] DESCRIPTION
[4.3.2217] Power Cycle Server	[4.3.2218] This option will first power off, and then reboot the system (cold boot).
[4.3.2219] Perform Action	[4.3.2220] Click this option to perform the selected operation.

[4.3.2221] Procedure:

[4.3.2222] Select an action and click Perform Action to proceed with the selected action.



Note:

[4.3.2223] You will be asked to confirm your choice. Upon confirmation, the command will be executed and you will be informed of the status.

[4.3.2224] Maintenance Group

[4.3.2225] This group of pages allows you to do maintenance tasks on the device. The menu contains the following items:

- Firmware Update
- Preserve Configuration
- Restore Factory Defaults

- System Administrator



[4.3.2226] Maintenance Menu

[4.3.2227] Firmware Update

[4.3.2228] This wizard takes you through the process of firmware up gradation. A reset of the box will automatically follow if the upgrade is completed or cancelled. An option to preserve configuration will be presented. Enable it, if you wish to preserve configured settings through the upgrade.



WARNING!

[4.3.2229] Please note that after entering update mode widgets, other web pages and services will not work. All open widgets will be closed automatically. If upgrade process is cancelled in the middle of the wizard, the device will be reset.



Note:

[4.3.2230] The firmware upgrade process is a crucial operation. Make sure that the chances of a power or connectivity loss are minimal when performing this operation.

[4.3.2231] Once you enter into Update Mode and choose to cancel the firmware flash operation, the BMC card must be reset. This means that you must close the Internet browser and log back onto the BMC card before you can perform any other types of operations.

[4.3.2232] To open Firmware Update page, click **Maintenance > Firmware Update** from the main menu. A sample screenshot of Firmware Update Page is shown in the screenshot below.



[4.3.2233] Firmware Update Page

[4.3.2234] Procedure:

[4.3.2235] Click **Enter Update Mode** to upgrade the current device firmware. As below step by step:

- 4.3.2236.1. Closing all active client requests.
- 4.3.2237.2. Preparing device for firmware upgrade.
- 4.3.2238.3. Uploading firmware image.
- 4.3.2239.4. Verifying firmware image.
- 4.3.2240.5. Flashing firmware image.

4.3.2241.6. Resetting Device.



Note:

[4.3.2242] You can now follow the instructions presented in the subsequent pages to successfully update the card's firmware. The device will reset if update is canceled. The device will also reset upon successful completion of firmware update.

[4.3.2243] Preserve Configuration

[4.3.2244] This page allows the user to configure the preserve configuration items, which will be used by the Restore factory defaults to preserve the existing configuration without overwriting with default configuration.

[4.3.2245] Restore Factory Defaults

[4.3.2246] This option is used to restore the factory defaults of the device firmware.



WARNING!

[4.3.2247] Please note that after entering restore factory widgets, other web pages and services will not work. All open widgets will be closed automatically. The device will reset and reboot within a few minutes.

[4.3.2248] To open Restore Factory Defaults page, click **Maintenance > Restore Factory Defaults** from the main menu. A

sample screenshot of Restore Factory Defaults Page is shown in the screenshot below.



[4.3.2249] Restore Factory Defaults Page

[4.3.2250] Procedure:

[4.3.2251] Click Restore Factory to restore the factory defaults of the device firmware.

[4.3.2252] Log Out

[4.3.2253] To log out of the Web GUI, click the logout link on the top right corner of the screen.

[4.3.2254] User Privilege

[4.3.2255] User Privilege

[4.3.2256] WEB GUI PRIVILEGE LIST	[4.3.2257] PRIVILEGE ASSOCIATION BETWEEN IPMI AND WEB GUI			
	[4.3.2258] ADMINIST RATOR	[4.3.2259] OPERATO R	[4.3.2260] USER	[4.3.2261] OEM
[4.3.2262] login BMC from Web GUI, SSH	[4.3.2263] <input type="radio"/>	[4.3.2264] <input type="radio"/>	[4.3.2265] <input checked="" type="checkbox"/>	[4.3.2266] <input type="radio"/>
[4.3.2267] configure BMC from Web GUI	[4.3.2268] <input type="radio"/>	[4.3.2269] <input checked="" type="checkbox"/>	[4.3.2270] <input checked="" type="checkbox"/>	[4.3.2271] <input checked="" type="checkbox"/>
[4.3.2272] configure users from Web GUI	[4.3.2273] <input type="radio"/>	[4.3.2274] <input checked="" type="checkbox"/>	[4.3.2275] <input checked="" type="checkbox"/>	[4.3.2276] <input checked="" type="checkbox"/>
[4.3.2277] clear logs from Web GUI	[4.3.2278] <input type="radio"/>	[4.3.2279] <input checked="" type="checkbox"/>	[4.3.2280] <input checked="" type="checkbox"/>	[4.3.2281] <input checked="" type="checkbox"/>
[4.3.2282] execute server power control from Web GUI	[4.3.2283] <input type="radio"/>	[4.3.2284] <input checked="" type="checkbox"/>	[4.3.2285] <input checked="" type="checkbox"/>	[4.3.2286] <input checked="" type="checkbox"/>
[4.3.2287] virtual KVM redirection	[4.3.2288] <input type="radio"/>	[4.3.2289] <input checked="" type="checkbox"/>	[4.3.2290] <input checked="" type="checkbox"/>	[4.3.2291] <input checked="" type="checkbox"/>
[4.3.2292] virtual media	[4.3.2293] <input type="radio"/>	[4.3.2294] <input checked="" type="checkbox"/>	[4.3.2295] <input checked="" type="checkbox"/>	[4.3.2296] <input checked="" type="checkbox"/>
[4.3.2297] View Users	[4.3.2298] <input type="radio"/>	[4.3.2299] <input type="radio"/>	[4.3.2300] <input checked="" type="checkbox"/>	[4.3.2301] <input checked="" type="checkbox"/>
[4.3.2302] View DNS	[4.3.2303] <input type="radio"/>	[4.3.2304] <input type="radio"/>	[4.3.2305] <input checked="" type="checkbox"/>	[4.3.2306] <input checked="" type="checkbox"/>

[4.3.2255] User Privilege (Continued)

[4.3.2256] WEB GUI PRIVILEGE LIST	[4.3.2257] PRIVILEGE ASSOCIATION BETWEEN IPMI AND WEB GUI			
	[4.3.2258] ADMINIST RATOR	[4.3.2259] OPERATO R	[4.3.2260] USER	[4.3.2261] OEM
[4.3.2307] View Net- work	[4.3.2308] ○	[4.3.2309] ○	[4.3.2310] X	[4.3.2311] X
[4.3.2312] View PEF	[4.3.2313] ○	[4.3.2314] ○	[4.3.2315] X	[4.3.2316] X

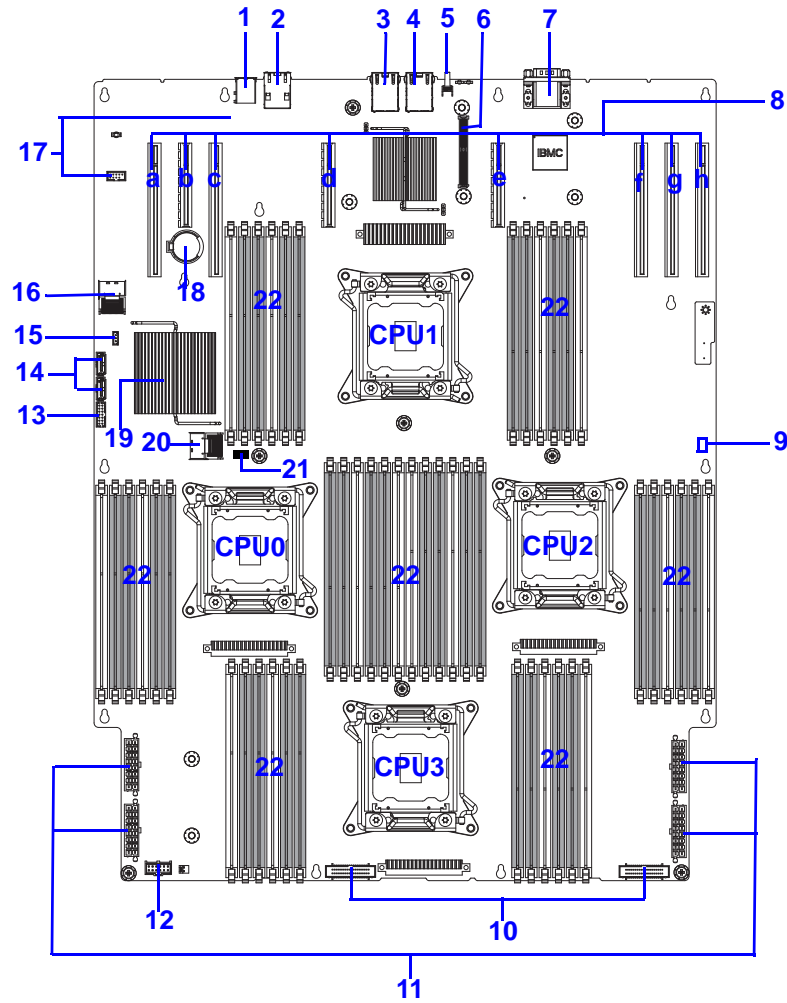
[5.0.1] Connectors and Jumpers

Chapter 5

[5.1.1] Mainboard Connectors and Jumpers

[5.1.2] Connectors and Jumpers

[5.1.3] This section provides information on basic connectors and jumpers on system mainboard.



[5.1.4] Mainboard Connectors and Jumpers

[5.1.5] Mainboard Connector and Jumper Locations

[5.1.6] LOCATION	[5.1.7] CONNECTOR AND JUMPERS
[5.1.8] 1	[5.1.9] External USB
[5.1.10] 2	[5.1.11] Management Port
[5.1.12] 3	[5.1.13] LAN1 Port
[5.1.14] 4	[5.1.15] LAN2 Port
[5.1.16] 5	[5.1.17] ID Button
[5.1.18] 6	[5.1.19] PCIe Mezzanine Slot
[5.1.20] 7	[5.1.21] Serial Port
[5.1.22] 8	[5.1.23] PCIe Expansion Slots x8 in order a to h
[5.1.24] 9	[5.1.25] XDP JTAG Access to CPU1
[5.1.26] 10	[5.1.27] Fan Control Connectors x2
[5.1.28] 11	[5.1.29] PDB Power Connectors x4
[5.1.30] 12	[5.1.31] Sideband Connector
[5.1.32] 13	[5.1.33] USB Connector
[5.1.34] 14	[5.1.35] On-Board SATA Connectors x2
[5.1.36] 15	[5.1.37] J1D1 Password Clear Jumper, J1D2 ME Firmware Update Jumper, J1D3 BIOS Recovery Mode Jumper, J1D4 RTC Reset Jumper. Note: [5.1.38] See table <i>Mainboard Jumpers</i> for details on jumpers.
[5.1.39] 16	[5.1.40] Mini SAS Connector (HDD 4 to 7)

[5.1.5] Mainboard Connector and Jumper Locations (Continued)

[5.1.6] LOCATION	[5.1.7] CONNECTOR AND JUMPERS
[5.1.41] 17	[5.1.42] Internal USB Headers x2s
[5.1.43] 18	[5.1.44] Mainboard Battery
[5.1.45] 19	[5.1.46] PCH / Heatsink
[5.1.47] 20	[5.1.48] Mini SAS Connector (HDD 0 to 3)
[5.1.49] 21	[5.1.50] J3E1 XDP X8 / X4 Mode Jumper
[5.1.51] 22	[5.1.52] Memory Slots x48

[5.1.53] Mainboard Jumpers

[5.1.54] LOCATION	[5.1.55] JUMPER POSITIONS	[5.1.56] FUNCTION	[5.1.57] DEFAULT SETTING
[5.1.58] CMOS CLEAR			
[5.1.59] J1D4	[5.1.60] 1-2	[5.1.61] Normal RTC RST	[5.1.62] V
	[5.1.63] 2-3	[5.1.64] CLR RTC Registers	[5.1.65]
[5.1.66] PASSWORD CLEAR			
[5.1.67] J1D1	[5.1.68] 1-2	[5.1.69] Normal Operation	[5.1.70] V
	[5.1.71] 2-3	[5.1.72] Clear Passwords	[5.1.73]
[5.1.74] ME FIRMWARE UPDATE JUMPER			

[5.1.53] Mainboard Jumpers

[5.1.54] LOCATION	[5.1.55] JUMPER POSITIONS	[5.1.56] FUNCTION	[5.1.57] DEFAULT SETTING
[5.1.75] J1D2	[5.1.76] 1-2	[5.1.77] Normal Mode	[5.1.78] V
	[5.1.79]	[5.1.80] ME IN Force Update Mode	[5.1.81]
[5.1.82] BIOS RECOVERY JUMPER			
[5.1.83] J1D3	[5.1.84] 1-2	[5.1.85] Normal (system)	[5.1.86] V
	[5.1.87] 2-3	[5.1.88] Reset BIOS to Default Settings	[5.1.89]
[5.1.90] XDP X8/X4 MODE			
[5.1.91] J3E1	[5.1.92] 1-2	[5.1.93] X4 Mode	[5.1.94] V
	[5.1.95] 2-3	[5.1.96] X8 Mode	[5.1.97]
[5.1.98] XDP JTAG PASS TO CPU1			
[5.1.99] J9E1	[5.1.100] 1-2	[5.1.101] Normal Mode	[5.1.102] V
	[5.1.103] 2-3	[5.1.104] Force JTAG bypass of CPU1	[5.1.105]

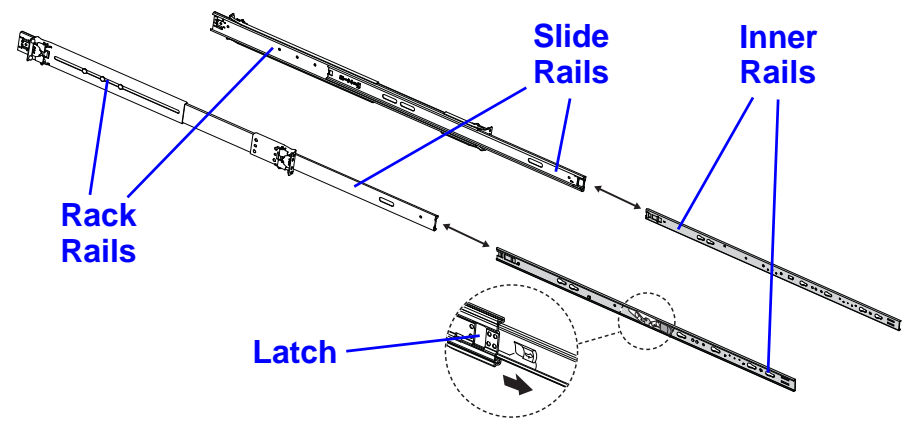
[6.0.1] Rail Kit Assembly

Chapter 6

[6.1.1] Installation and Configuration

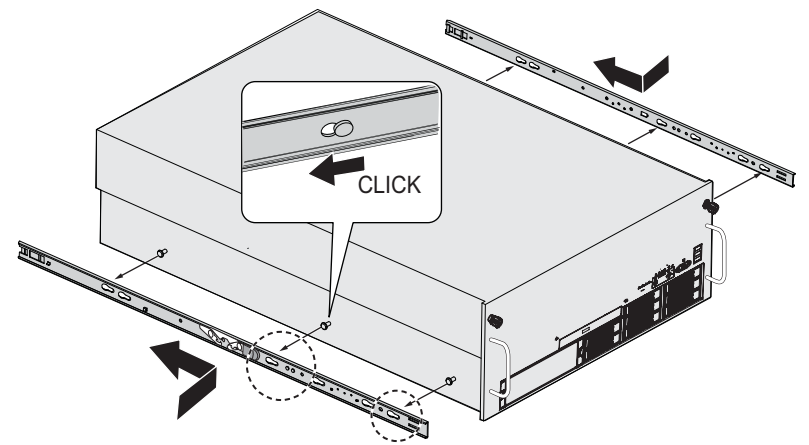
[6.1.2] Installing the Rails

6.1.3.1. Press the latch and remove the inner rail.



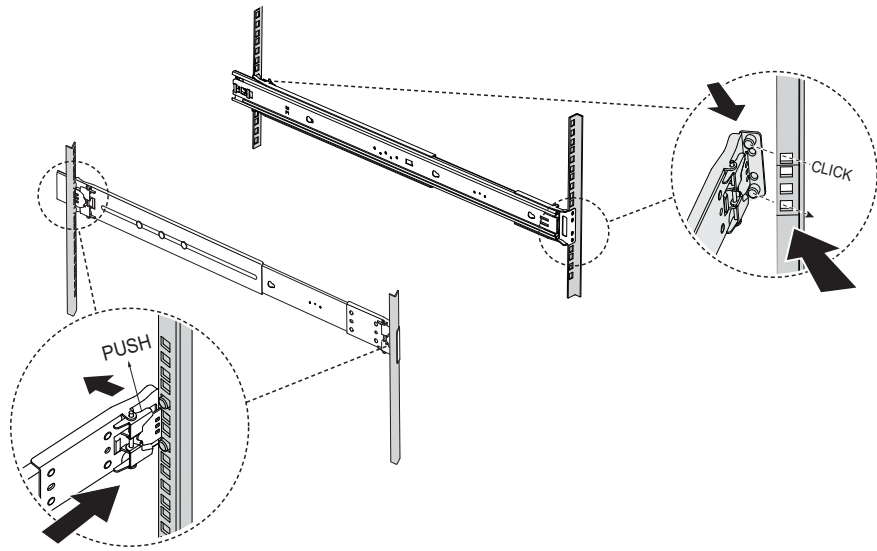
[6.1.4] Removing the Inner Rail

6.1.5.2. Slide the inner rails onto the chassis.



[6.1.6] Securing the Inner Rails

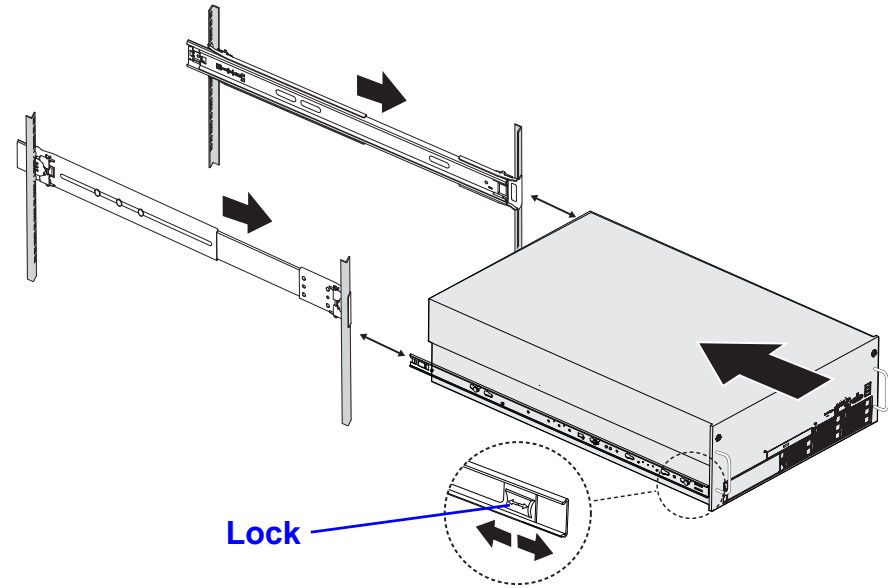
6.1.7.3. Secure the rack rails to the rack.



[6.1.8] Securing the Rack Rails

6.1.9.4. Align the slide rail with the inner rail.

6.1.10.5. Release the lock on the inner rail and slide the server into the rack.



[6.1.11] Inserting the Server

6.1.12.6. Secure the server to the rack with the captive screws.

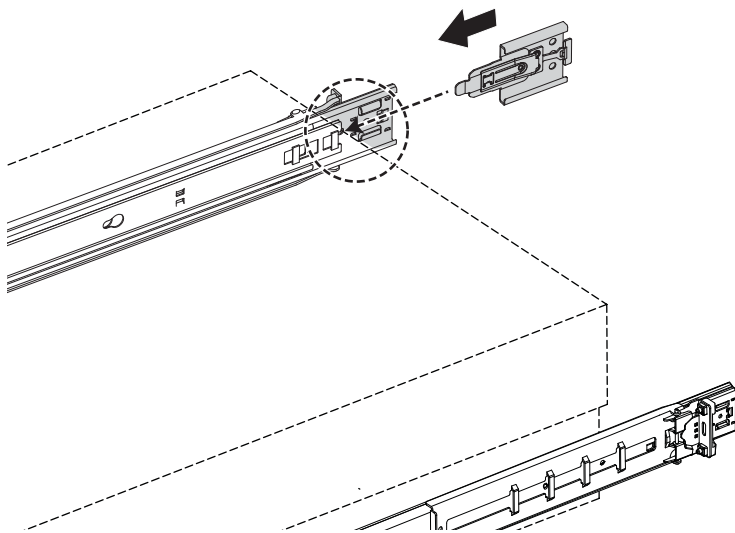
[6.1.13] Installing the Cable Management Arm (CMA)



Note:

[6.1.14] In these steps, left means left when looking at the server from the front.

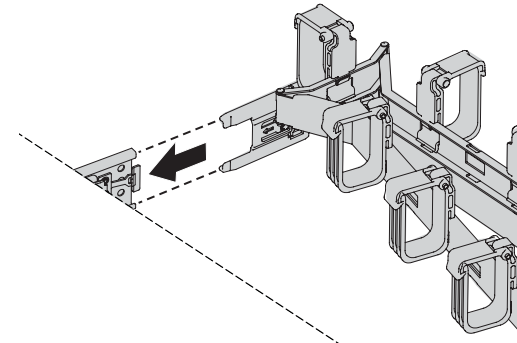
6.1.15.1. Insert the CMA extension into the left outer rail.



[6.1.16] Inserting the CMA Extension

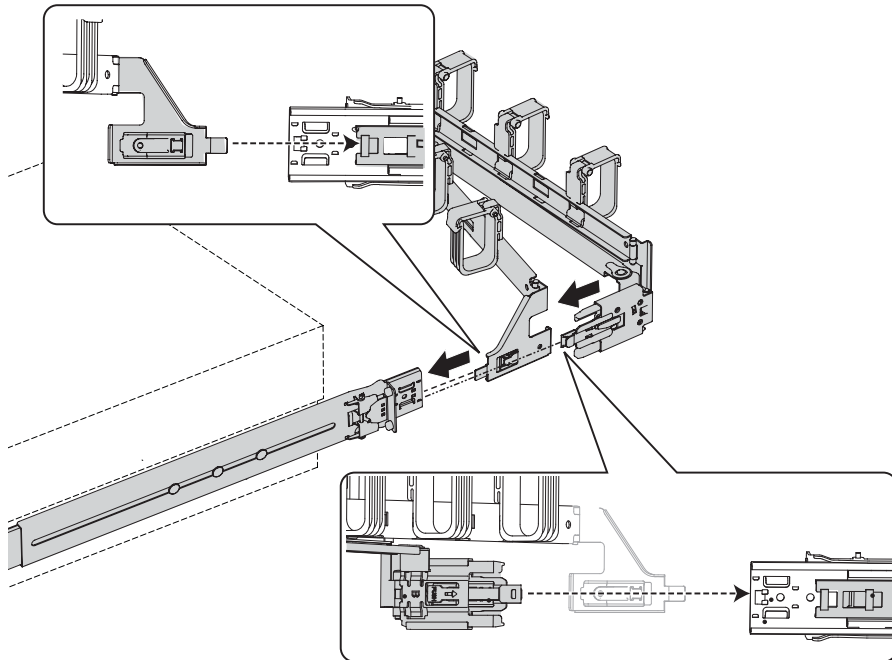
6.1.17.2. Insert the CMA connector of the inner arm of the CMA into the right inner slide rail.

6.1.18.3. Insert the CMA connector of the outer arm of the cable management arm into the right outer rail.



[6.1.19] Inserting the CMA Connector

6.1.20.4. Insert the connector of the CMA into the CMA extension placed in the left outer rail in step 1.



[6.1.21] Inserting the CMA into the Extension

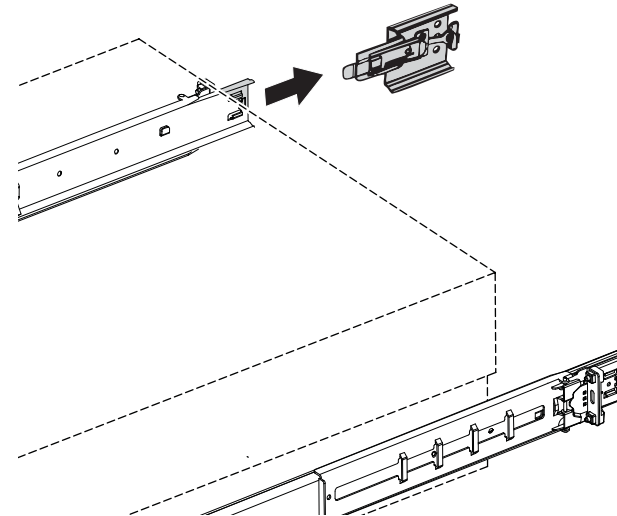
[6.1.22] Removing the Cable Management Arm (CMA)



Note:

[6.1.23] In these steps, left means left when looking at the server from the front.

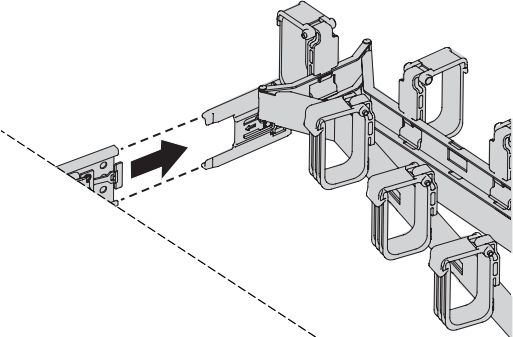
6.1.24.1. Press the latch to remove the CMA from the cable management extension on the left outer rail.



[6.1.25] Removing the CMA Extension

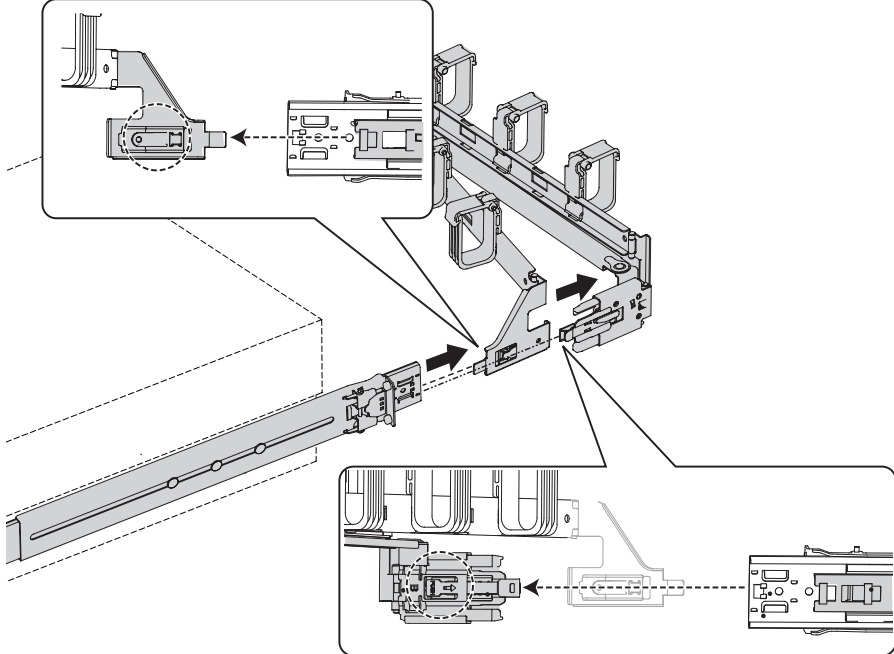
6.1.26.2. Press the latch to remove the CMA connector of the outer arm of the CMA from the right outer rail.

6.1.27.3. Press the latch to remove the CMA connector of the inner arm of the CMA from the right inner rail.



[6.1.28] Removing the CMA Connector

6.1.29.4. Press the latch to remove the CMA extension from the left outer rail.



[6.1.30] Removing the CMA Extension

[7.0.1] Troubleshooting

Chapter 7

[7.1.1] Troubleshooting

[7.1.2] System does not Boot after initial installation:

- *Power Cord Not Plugged In*
- *Processor Issues*
- *Memory Issues*
- *Monitor Issues*
- *Power Supply, Chassis and Fan Issues*
- *Cable Issues*
- *Electrical Short or Overload*
- *Defective Components*

[7.1.3] System does not boot after configuration changes:

- *Hardware Changes*
- *Software Changes*
- *BIOS Changes*
- *Installation Problems*
- *Troubleshooting External Connections*

[7.1.4] System does not Boot after Initial Installation

[7.1.5] Power Cord Not Plugged In

[7.1.6] If the power supply cable is not plugged into the chassis power connector, the system cannot boot up, even though chassis front panel LEDs and the fan may be operational. Verify that the power connections are good.

[7.1.7] Processor Issues

[7.1.8] Boot failure situations are also caused by the following:

[7.1.9] Incompatible processor - ensure the selected processor model is correct for your server board. If the processor is compatible, try removing and reinstalling the processor to ensure it is installed correctly.

[7.1.10] Processor overheat-the system does not boot or shuts down shortly after booting.

- Ensure that the cooling fans are correctly installed and running.
- Ensure that the correct thermal interface material or the thermal grease is applied to the processor.

- Ensure that the power supply fan is running.
- Ensure that the air intakes for the fans are unobstructed.

[7.1.11] Memory Issues

[7.1.12] If you have installed incompatible memory modules, the system may not boot. Verify the memory you've installed has been tested with your board (Please refer to www.qss-cit.com for details on valid memory). If the installed memory is compatible, remove and reinstall the memory modules. Defective memory modules may cause boot errors. To isolate a specific memory module as defective, boot the system with just one memory module installed at a time.

[7.1.13] Monitor Issues

[7.1.14] Monitor configurations can cause boot failure. Run through the following checklist to verify monitor operation:

- Ensure the monitor is plugged in and turned on.
- Ensure all cables are connected properly between the monitor and the computer.
- Check the brightness and contrast controls on the monitor are not too low.

[7.1.15] Most monitors employ indicator LEDs showing status. Refer to the monitor's documentation to confirm operation. If the problem still persists, try replacing the monitor or test the monitor on a different AC outlet/different system.

[7.1.16] Power Supply, Chassis and Fan Issues

- Ensure that the chassis and power supply is appropriate for system requirement. (*Power Sub-System* on page 1-13).
- Ensure that the chassis and power supply is appropriate for system requirement. (*Power Sub-System* on page 1-13).
- Ensure all power cables and connectors are firmly connected to the power supply and the AC outlet.
- If the power supply or the AC outlet has an on/off switch, make sure that it is on and verify that the outlet is supplying current.
- Check for foreign objects inside the chassis such as screws that can short circuit connections.
 - To isolate a specific PSU as defective, boot the system with just one PSU installed at a time.
 - Check fan speed in WEBUI & event log to find out if there are any defective fans. If failure happens, please contact your dealer for assistance.

[7.1.17] Cable Issues

[7.1.18] Ensure that all cable connections, both internal and external, are attached correctly and securely.

[7.1.19] Electrical Short or Overload

[7.1.20] Remove non-essential items such as extra controller cards (e.g SAS 6G Mezz/B, 10G Mezz/B) or HDD devices to check for shorts and overloads.

[7.1.21] If the system boots correctly, there may be a short or overload associated with one of the components.

[7.1.22] Replace each of non-essential items one at a time to isolate which one is causing the problem.

[7.1.23] If the problem occurs even after removing the non-essential components, the problem has to be with the server board, power supply, memory, or processor.

[7.1.24] Defective Components

[7.1.25] Defective components, especially processor and memory, can cause system boot issues.

- Swap the memory modules with known good memory. Verify correct operation of the suspected memory in a known working system.
- Swap the processor with a known good processor. Verify correct operation of the suspected processor in a known working system.

[7.1.26] System does not boot after Configuration Changes

[7.1.27] Hardware Changes

[7.1.28] If the system does not boot after making changes to hardware or adding new components, verify that the component installed is compatible with the server.

[7.1.29] Software Changes

[7.1.30] If you recently installed new software or new device drivers:

- Try booting into Safe Mode and uninstall the new software or driver. If you can now boot normally, there may be a compatibility issue between the new software or driver and some component in your system. Contact the software manufacturer for assistance

[7.1.31] BIOS Changes

[7.1.32] Changes to some advanced BIOS settings can cause boot issues. Changes to Advanced BIOS settings should only be made by experienced users.

[7.1.33] If the BIOS Setup Utility is accessible by pressing **F2** during boot, reset the BIOS to factory defaults by pressing **F9**. Save and exit the BIOS Setup

[7.1.34] If you cannot access the BIOS Setup Utility, clear the CMOS by performing the following steps:

- 7.1.35.1. Power down the server. Do not unplug the power cord.
- 7.1.36.2. Open the server chassis
- 7.1.37.3. Move the CMOS CLEAR jumper from the default operation position, covering pins 1 and 2, to the reset / clear CMOS, covering pins 2 and 3.
- 7.1.38.4. Remove AC power.
- 7.1.39.5. Wait 5 seconds.
- 7.1.40.6. Move the jumper back to default position, covering pins 1 and 2.
- 7.1.41.7. Close the server chassis and power up the server.

[7.1.42] The CMOS is now cleared and can be reset by going into BIOS setup.

[7.1.43] Please refer to www.qsscit.com for the BIOS update.

[7.1.44] Installation Problems

[7.1.45] Perform the following checks if you are troubleshooting an installation problem:

[7.1.46] Check all cable and power connections (including all rack cable connections). Unplug the power cord, and wait one minute. Then reconnect the power cord and try again. If the network is reporting an error, see if the server has enough memory and disk space available. Remove all added options, one at a time, and try to power up the system. If after removing an option the server works, you may find that it is a problem with the option or a configuration problem between the option and the server. Contact the option vendor for assistance.

- If the system doesn't power on, check the LED display. If the power LED is not on, you may not be receiving AC power. Check the AC power cord to make sure that it is securely connected.

[7.1.47] Troubleshooting External Connections

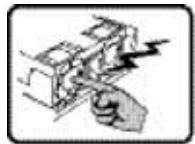


[7.1.48] Loose or improperly connected cables are the most likely source of problems for the system, monitor, and other peripherals (such as a keyboard, mouse, or other external device). Ensure that all external cables are securely attached to the external connectors on your system.

[7.1.49]

[8.0.1] Installation and Assembly Safety Instructions

Chapter 8

[8.1.1] Installation Assembly Safety Instructions

	<p>[8.1.2] The power supply in this product contains no user-serviceable parts.</p> <p>[8.1.3] Refer servicing only to qualified personnel.</p>
	<p>[8.1.4] Do not attempt to modify or use the supplied AC power cord if it is not the exact type required. A product with more than one power supply will have a separate AC power cord for each supply.</p>
	<p>[8.1.5] The power button on the system does not turn off system AC power.</p> <p>[8.1.6] To remove AC power from the system, you must unplug each AC power cord from the wall outlet or power supply.</p> <p>[8.1.7] The power cord(s) is considered the disconnect device to the main (AC) power. The socket outlet that the system plugs into shall be installed near the equipment and shall be easily accessible.</p>



[8.1.8] SAFETY STEPS: Whenever you remove the chassis covers to access the inside of the system, follow these steps:

[8.1.9] 1. Turn off all peripheral devices connected to the system.

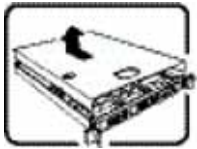
[8.1.10] 2. Turn off the system by pressing the power button.

[8.1.11] 3. Unplug all AC power cords from the system or from wall outlets.

[8.1.12] 4. Label and disconnect all cables connected to I/O connectors or ports on the back of the system.

[8.1.13] 5. Provide some electrostatic discharge (ESD) protection by wearing an antistatic wrist strap attached to chassis ground of the system-any unpainted metal surface-when handling components.

[8.1.14] 6. Do not operate the system with the chassis covers removed.



[8.1.15] After you have completed the six SAFETY steps above, you can remove the system covers. To do this:

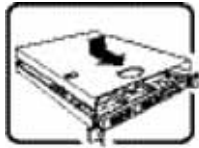
[8.1.16] 1. Unlock and remove the padlock from the back of the system if a padlock has been installed.

[8.1.17] 2. Remove and save all screws from the covers.

[8.1.18] 3. Remove the cover(s).



[8.1.19] A microprocessor and heat sink may be hot if the system has been running. Also, there may be sharp pins and edges on some board and chassis parts. Contact should be made with care. Consider wearing protective gloves.



[8.1.20] For proper cooling and airflow, always reinstall the chassis covers before turning on the system. Operating the system without the covers in place can damage system parts. To install the covers:

[8.1.21] 1. Check first to make sure you have not left loose tools or parts inside the system.

[8.1.22] 2. Check that cables, add-in cards, and other components are properly installed.




[8.1.23] 3. Attach the covers to the chassis with the screws removed earlier, and tighten them firmly.

[8.1.24] 4. Insert and lock the padlock to the system to prevent unauthorized access inside the system.

[8.1.25] 5. Connect all external cables and the AC power cord(s) to the system.



[8.1.26] Danger of explosion if the battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the equipment manufacturer. Dispose of used batteries according to manufacturer's instructions.

	<p>[8.1.27] The system is designed to operate in a typical office environment.</p> <p>[8.1.28] Choose a site that is:</p> <ul style="list-style-type: none"> • Clean and free of airborne particles (other than normal room dust). • Well ventilated and away from sources of heat including direct sunlight. • Away from sources of vibration or physical shock. • Isolated from strong electromagnetic fields produced by electrical devices. • In regions that are susceptible to electrical storms, we recommend you plug your system into a surge suppressor and disconnect telecommunication lines to your modem during an electrical storm. • Provided with a properly grounded wall outlet. • Provided with sufficient space to access the power supply cord(s), because they serve as the product's main power disconnect.
	<p>WARNING!</p> <p>[8.1.29] The server system is safety certified as rack-mounted equipment for use in a server room or computer room, using the customer rack kit.</p> <p>[8.1.30] The rail racks are designed to carry only the weight of the server system. Do not place additional load onto any rail-mounted equipment.</p> <p>[8.1.31] System rack kits are intended to be installed in a rack by trained service technicians.</p>
	<p>[8.1.32] Heavy object. Indicates two people are required to safely handle the system.</p>

[8.1.33]

[9.0.1] Safety Information

Chapter 9

[9.1.1] Server Safety Information

[9.1.2] To reduce the risk of bodily injury, electrical shock, fire, and equipment damage, read this document and observe all warnings and precautions in this guide before installing or maintaining your server product.

[9.1.3] In the event of a conflict between the information in this document and information provided with the product or on the website for a particular product, the product documentation takes precedence.

[9.1.4] Your server should be integrated and serviced only by technically qualified persons.

[9.1.5] You must adhere to the guidelines in this guide and the assembly instructions in your server manuals to ensure and maintain compliance with existing product certifications and approvals. Use only the described, regulated components specified in this guide. Use of other products / components will void the UL Listing and other regulatory approvals of the product, and may result in noncompliance with product regulations in the region(s) in which the product is sold.

[9.1.6] Safety Warnings and Cautions

[9.1.7] To avoid personal injury or property damage, before you begin installing the product, read, observe, and adhere to all of the following safety instructions and information. The following safety symbols may be used throughout the documentation and may be marked on the product and / or the product packaging.

[9.1.8] CAUTION

[9.1.9] Indicates the presence of a hazard that may cause minor personal injury or property damage if the CAUTION is ignored.

[9.1.10] WARNING

[9.1.11] Indicates the presence of a hazard that may result in serious personal injury if the WARNING is ignored.

[9.1.12]









[9.1.13] Indicates potential hazard if indicated information is ignored.


[9.1.14]



[9.1.15] Indicates shock hazards that result in serious injury or death if safety instructions are not followed.



[9.1.16]		[9.1.17] Indicates hot components or surfaces.
[9.1.18]		[9.1.19] Indicates do not touch fan blades, may result in injury.
[9.1.20]		[9.1.21] Indicates to unplug all AC power cord(s) to disconnect AC power.
[9.1.22]		[9.1.23] Please recycle battery.
[9.1.24]		[9.1.25] The rail racks are designed to carry only the weight of the server system. Do not use rail-mounted equipment as a workspace. Do not place additional load onto any rail-mounted equipment.
[9.1.26]		[9.1.27] Indicates two people are required to safely handle the system.

[9.1.28]		<p>[9.1.29] Restricted Access Location: The server is intended for installation only in a Server Room or Computer Room where both these conditions apply:</p> <ul style="list-style-type: none"> ■ access can only be gained by SERVICE PERSONS or by USERS who have been instructed about the reasons for the restrictions applied to the location and about any precautions that shall be taken; and ■ access is through the use of a TOOL or lock and key, or other means of security, and is controlled by the authority responsible for the location.
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[9.1.30] Intended Application Uses

[9.1.31] This product was evaluated as Information Technology Equipment (ITE), which may be installed in offices, schools, computer rooms, and similar commercial type locations. The suitability of this product for other product categories and environments (such as medical, industrial, residential, alarm systems, and test equipment), other than an ITE application, may require further evaluation.

[9.1.32] Site Selection

[9.1.33] The system is designed to operate in a typical office environment. Choose a site that is:

- Clean, dry, and free of airborne particles (other than normal room dust).
- Well-ventilated and away from sources of heat including direct sunlight and radiators.
- Away from sources of vibration or physical shock.
- Isolated from strong electromagnetic fields produced by electrical devices.
- In regions that are susceptible to electrical storms, we recommend you plug your system into a surge suppressor and disconnect telecommunication lines to your modem during an electrical storm.
- Provided with a properly grounded wall outlet.
- Provided with sufficient space to access the power supply cord(s), because they serve as the product's main power disconnect.
- Provided with either two independent AC power sources or two independent phases from a single source.

[9.1.34] Equipment Handling Practices

[9.1.35] Reduce the risk of personal injury or equipment damage:

- Conform to local occupational health and safety requirements when moving and lifting equipment.
- Use mechanical assistance or other suitable assistance when moving and lifting equipment.
- To reduce the weight for easier handling, remove any easily detachable components.

[9.1.36] Power and Electrical Warnings



CAUTION!

[9.1.37] THE POWER BUTTON, INDICATED BY THE STAND-BY POWER MARKING, DOES NOT COMPLETELY TURN OFF THE SYSTEM AC POWER, 5V STANDBY POWER IS ACTIVE WHENEVER THE SYSTEM IS PLUGGED IN. TO REMOVE POWER FROM SYSTEM, YOU MUST UNPLUG THE AC POWER CORD FROM THE WALL OUTLET. YOUR SYSTEM MAY USE MORE THAN ONE AC POWER CORD. MAKE SURE ALL AC POWER CORDS ARE UNPLUGGED. MAKE SURE THE AC POWER CORD(S) IS / ARE UNPLUGGED BEFORE YOU OPEN THE CHASSIS, OR ADD OR REMOVE ANY NON HOT-PLUG COMPONENTS.

**CAUTION!**

[9.1.38] DO NOT ATTEMPT TO MODIFY OR USE AN AC POWER CORD IF IT IS NOT THE EXACT TYPE REQUIRED. A SEPARATE AC CORD IS REQUIRED FOR EACH SYSTEM POWER SUPPLY.

**CAUTION!**

[9.1.39] SOME POWER SUPPLIES IN SERVERS USE NEUTRAL POLE FUSING. TO AVOID RISK OF SHOCK USE CAUTION WHEN WORKING WITH POWER SUPPLIES THAT USE NEUTRAL POLE FUSING.

**CAUTION!**

[9.1.40] THE POWER SUPPLY IN THIS PRODUCT CONTAINS NO USER-SERVICEABLE PARTS. DO NOT OPEN THE POWER SUPPLY. HAZARDOUS VOLTAGE, CURRENT AND ENERGY LEVELS ARE PRESENT INSIDE THE POWER SUPPLY. RETURN TO MANUFACTURER FOR SERVICING.

**CAUTION!**

[9.1.41] WHEN REPLACING A HOT-PLUG POWER SUPPLY, UNPLUG THE POWER CORD TO THE POWER SUPPLY BEING REPLACED BEFORE REMOVING IT FROM THE SERVER.

**CAUTION!**

[9.1.42] WHEN REPLACING A HOT-PLUG POWER SUPPLY, UNPLUG THE POWER CORD TO THE POWER SUPPLY BEING REPLACED BEFORE REMOVING IT FROM THE SERVER.

[9.1.43] Power Cord Warnings

[9.1.44] If an AC power cord was not provided with your product, purchase one that is approved for use in your country.

**CAUTION!**

[9.1.45] TO AVOID ELECTRICAL SHOCK OR FIRE, CHECK THE POWER CORD(S) THAT WILL BE USED WITH THE PRODUCT AS FOLLOWS:

- Do not attempt to modify or use the AC power cord(s) if they are not the exact type required to fit into the grounded electrical outlets.
- The power cord(s) must meet the following criteria: The power cord must have an electrical rating that is greater than that of the electrical current rating marked on the product.

**CAUTION!**

[9.1.46] THE POWER CORD MUST HAVE SAFETY GROUND PIN OR CONTACT THAT IS SUITABLE FOR THE ELECTRICAL OUTLET.

**CAUTION!**

[9.1.47] THE POWER SUPPLY CORD(S) IS / ARE THE MAIN DISCONNECT DEVICE TO AC POWER. THE SOCKET OUTLET(S) MUST BE NEAR THE EQUIPMENT AND READILY ACCESSIBLE FOR DISCONNECTION.

**CAUTION!**

[9.1.48] THE POWER SUPPLY CORD(S) MUST BE PLUGGED INTO SOCKET-OUTLET(S) THAT IS /ARE PROVIDED WITH A SUITABLE EARTH GROUND.

[9.1.49] System Access Warnings



CAUTION!

[9.1.50] TO AVOID PERSONAL INJURY OR PROPERTY DAMAGE, THE FOLLOWING SAFETY INSTRUCTIONS APPLY WHENEVER ACCESSING THE INSIDE OF THE PRODUCT:

- Turn off all peripheral devices connected to this product.
- Turn off the system by pressing the power button to off.
- Disconnect the AC power by unplugging all AC power cords from the system or wall outlet.
- Disconnect all cables and telecommunication lines that are connected to the system.
- Retain all screws or other fasteners when removing access cover(s). Upon completion of accessing inside the product, refasten access cover with original screws or fasteners.
- Do not access the inside of the power supply. There are no serviceable parts in the power supply. Return to manufacturer for servicing.
- Power down the server and disconnect all power cords before adding or replacing any non hot-plug component.
- When replacing a hot-plug power supply, unplug the power cord to the power supply being replaced before removing the power supply from the server.



CAUTION!

[9.1.51] IF THE SERVER HAS BEEN RUNNING, ANY INSTALLED PROCESSOR(S) AND HEAT SINK(S) MAY BE HOT.



CAUTION!

[9.1.52] UNLESS YOU ARE ADDING OR REMOVING A HOT-PLUG COMPONENT, ALLOW THE SYSTEM TO COOL BEFORE OPENING THE COVERS. TO AVOID THE POSSIBILITY OF COMING INTO CONTACT WITH HOT COMPONENT(S) DURING A HOT-PLUG INSTALLATION, BE CAREFUL WHEN REMOVING OR INSTALLING THE HOT-PLUG COMPONENT(S).



CAUTION!

[9.1.53] TO AVOID INJURY DO NOT CONTACT MOVING FAN BLADES. IF YOUR SYSTEM IS SUPPLIED WITH A GUARD OVER THE FAN, DO NOT OPERATE THE SYSTEM WITHOUT THE FAN GUARD IN PLACE.

[9.1.54] Rack Mount Warnings

[9.1.55] The following installation guidelines are required by UL for maintaining safety compliance when installing your system into a rack.

[9.1.56] The equipment rack must be anchored to an unmovable support to prevent it from tipping when a server or piece of equipment is extended from it. The equipment rack must be installed according to the rack manufacturer's instructions.

[9.1.57] Install equipment in the rack from the bottom up, with the heaviest equipment at the bottom of the rack.

[9.1.58] Extend only one piece of equipment from the rack at a time.

[9.1.59] You are responsible for installing a main power disconnect for the entire rack unit. This main disconnect must be readily accessible, and it must be labeled as controlling power to the entire unit, not just to the server(s).

[9.1.60] To avoid risk of potential electric shock, a proper safety ground must be implemented for the rack and each piece of equipment installed in it.

[9.1.61] Elevated Operating Ambient - If installed in a closed or multi-unit rack assembly, the operating ambient temperature of the rack environment may be greater than room ambient. Therefore, consideration should be given to installing the equip-

ment in an environment compatible with the maximum ambient temperature (T_{ma}) specified by the manufacturer.

[9.1.62] Reduced Air Flow - Installation of the equipment in a rack should be such that the amount of air flow required for safe operation of the equipment is not compromised.

[9.1.63] Mechanical Loading - Mounting of the equipment in the rack should be such that a hazardous condition is not achieved due to uneven mechanical loading.

[9.1.64] Circuit Overloading - Consideration should be given to the connection of the equipment to the supply circuit and the effect that overloading of the circuits might have on overcurrent protection and supply wiring. Appropriate consideration of equipment nameplate ratings should be used when addressing this concern.

[9.1.65] Reliable Earthing - Reliable earthing of rack-mounted equipment should be maintained.

[9.1.66] Particular attention should be given to supply connections other than direct connections to the branch circuit (e.g. use of power strips).

[9.1.67] Electrostatic Discharge (ESD)



CAUTION!

[9.1.68] ESD CAN DAMAGE DRIVES, BOARDS, AND OTHER PARTS. WE RECOMMEND THAT YOU PERFORM ALL PROCEDURES AT AN ESD WORKSTATION. IF ONE IS NOT AVAILABLE, PROVIDE SOME ESD PROTECTION BY WEARING AN ANTISTATIC WRIST STRAP ATTACHED TO CHASSIS GROUND -- ANY UNPAINTED METAL SURFACE -- ON YOUR SERVER WHEN HANDLING PARTS.

[9.1.69] Always handle boards carefully. They can be extremely sensitive to ESD. Hold boards only by their edges. After removing a board from its protective wrapper or from the server, place the board component side up on a grounded, static free surface. Use a conductive foam pad if available but not the board wrapper. Do not slide board over any surface.

[9.1.70] Other Hazards

[9.1.71] Battery Replacement



CAUTION!

[9.1.72] THERE IS THE DANGER OF EXPLOSION IF THE BATTERY IS INCORRECTLY REPLACED. WHEN REPLACING THE BATTERY, USE ONLY THE BATTERY RECOMMENDED BY THE EQUIPMENT MANUFACTURER.



CAUTION!

[9.1.73] DISPOSE OF BATTERIES ACCORDING TO LOCAL ORDINANCES AND REGULATIONS.



CAUTION!

[9.1.74] DO NOT ATTEMPT TO RECHARGE A BATTERY.



CAUTION!

[9.1.75] DO NOT ATTEMPT TO DISASSEMBLE, PUNCTURE, OR OTHERWISE DAMAGE A BATTERY.

[9.1.76] Cooling and Airflow



CAUTION!

[9.1.77] CAREFULLY ROUTE CABLES AS DIRECTED TO MINIMIZE AIRFLOW BLOCKAGE AND COOLING PROBLEMS. FOR PROPER COOLING AND AIRFLOW, OPERATE THE SYSTEM ONLY WITH THE CHASSIS COVERS INSTALLED. OPERATING THE SYSTEM WITHOUT THE COVERS IN PLACE CAN DAMAGE SYSTEM PARTS. TO INSTALL THE COVERS:

- Check first to make sure you have not left loose tools or parts inside the system.
- Check that cables, add-in cards, and other components are properly installed.
- Attach the covers to the chassis according to the product instructions.

[9.1.78] Laser Peripherals or Devices



CAUTION!

[9.1.79] TO AVOID RISK OF RADIATION EXPOSURE AND / OR PERSONAL INJURY:

- Do not open the enclosure of any laser peripheral or device
- Laser peripherals or devices are not serviceable
- Return to manufacturer for servicing.

[10.0.1] Regulatory and Compliance Information

Chapter 10

[10.1.1] Electromagnetic Compatibility Notices

[10.1.2] FCC Verification Statement (USA)

[10.1.3] This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

[10.1.4] This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and the receiver

- Connect the equipment to an outlet on a circuit other than the one to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

[10.1.5] Any changes or modifications not expressly approved by the grantee of this device could void the user's authority to operate the equipment. The customer is responsible for ensuring compliance of the modified product.

[10.1.6] Only peripherals (computer input/output devices, terminals, printers, etc.) that comply with FCC Class A or B limits may be attached to this computer product. Operation with non-compliant peripherals is likely to result in interference to radio and TV reception.

[10.1.7] All cables used to connect to peripherals must be shielded and grounded. Operation with cables, connected to peripherals, that are not shielded and grounded may result in interference to radio and TV reception.

[10.1.8] Europe (CE Declaration of Conformity)

[10.1.9] This product has been tested in accordance too, and complies with the Low Voltage Directive (73/23/EEC) and EMC Directive (89/336/EEC). The product has been marked with the CE Mark to illustrate its compliance.

[10.1.10] VCCI (Japan)

この装置は、情報処理装置等電波障害自主規制協議会（VCCI）の基準に基づくクラスA情報技術装置です。この装置を家庭環境で使用すると電波妨害を引き起こすことがあります。この場合には使用者が適切な対策を講ずるよう要求されることがあります。

[10.1.11] English translation of the notice above:

[10.1.12] This is a Class A product based on the standard of the Voluntary Control Council for Interference (VCCI) from Information Technology Equipment. If this is used near a radio or television receiver in a domestic environment, it may cause radio interference. Install and use the equipment according to the instruction manual.

[10.1.13] BSMI (Taiwan)

[10.1.14] The BSMI Certification Marking and EMC warning is located on the outside rear area of the product

警告使用者：
這是甲類的資訊產品，在居住的環境中使用時，可能會造成射頻干擾，在這種情況下，使用者會被要求採取某些適當的對策

[10.1.15] Regulated Specified Components

[10.1.16] To maintain the UL listing and compliance to other regulatory certifications and/or declarations, the following regulated components must be used and conditions adhered to. Interchanging or use of other component will void the UL listing and other product certifications and approvals.

[10.1.17] Updated product information for configurations can be found on the site at the following URL: www.qsscit.com

[10.1.18] If you do not have access to the Web address, please contact your local representative.

- Add-in cards: must have a printed wiring board flammability rating of minimum UL94V-1. Add-in cards containing external power connectors and/or lithium batteries must

be UL recognized or UL listed. Any add-in card containing modem telecommunication circuitry must be UL listed. In addition, the modem must have the appropriate telecommunications, safety, and EMC approvals for the region in which it is sold.

- Peripheral Storage Devices: must be UL recognized or UL listed accessory and TUV or VDE licensed. Maximum power rating of any one device is 19 watts. Total server configuration is not to exceed the maximum loading conditions of the power supply.

[10.1.19] Restriction of Hazardous Substances (RoHS) Compliance

[10.1.20] Quanta® Computer Inc. has a system in place to restrict the use of banned substances in accordance with the European Directive 2002/95/EC. Compliance is based on declaration that materials banned in the RoHS Directive are either (1) below all applicable threshold limits or (2) an approved / pending RoHS exemption applies.

[10.1.21] RoHS implementation details are not fully defined and may change.

[10.1.22] Threshold limits and banned substances are noted below:

[10.1.23]

- Quantity limit of 0.1% by mass (1000 PPM) for:
 - Lead
 - Mercury
 - Hexavalent Chromium
 - Polybrominated Biphenyls Diphenyl Ethers (PBDE)
- Quantity limit of 0.01% by mass (100 PPM) for:
 - Cadmium



[10.1.24] End of Life / Product Recycling

[10.1.25] Product recycling and end-of-life take-back systems and requirements vary by country. Contact the retailer or distributor of this product for information about product recycling and / or take-back.



[10.2.26] Product Regulatory Compliance Markings

[10.2.27] This product is marked with the following product certification markings:

[10.2.28] Product Regulatory Compliance Markings

[10.2.29] REGULATORY COMPLIANCE	[10.2.30] REGION	[10.2.31] MARKING
[10.2.32] cULus Listing Marks	[10.2.33] USA / Canada	
[10.2.34] CE Mark	[10.2.35] Europe	
[10.2.36] FCC Marking (Class A)	[10.2.37] USA	<p>[10.2.38] This device complies with Part 15 of the FCC Rules. Operation of this device is subject to the following two conditions:</p> <p>[10.2.39] (1) This device may not cause harmful interference, and</p> <p>[10.2.40] (2) This device must accept any interference received, including interference that may cause undesired operation.</p>

[10.2.28] Product Regulatory Compliance Markings (Continued)

[10.2.41] VCCI Marking (Class A)	[10.2.42] Japan	<p>この装置は、クラス A 情報技術装置です。この装置を家庭環境で使用すると電波妨害を引き起こすことがあります。この場合には使用者が適切な対策を講ずるよう要求されることがあります。VCCI-A</p>
[10.2.43] BSMI Certification Number & Class A Warning	[10.2.44] Taiwan	 <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p>警告使用者： 這是甲類的資訊產品，在居住的環境中使用時，可能會造成射頻干擾，在這種情況下，使用者會被要求採取某些適當的對策</p> </div>
[10.2.45] ICES	[10.2.46] Canada	<p>[10.2.47] This Class A digital apparatus complies with Canadian ICES-003.</p> <p>[10.2.48] Cet appareil numérique de la classe A est conforme à la norme NMB-003 du Canada.</p>
[10.2.49] Recycling Package Mark	[10.2.50] Other than China	

[10.2.51]