SB151-LB

Storage Server Barebone

User's Manual

UM_SB15-LB_v.3_051016

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PREFACE

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- **Changes**

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- **Warning**

  1. A shielded-type power cord is required in order to meet FCC emission limits and also to prevent interference to the nearby radio and television reception. It is essential that only the supplied power cord be used.
  2. Use only shielded cables to connect I/O devices to this equipment.
  3. You are cautioned that changes or modifications not expressly approved by the party responsible for compliance could void your authority to operate the equipment.

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SAFETY INSTRUCTIONS

- Before getting started, please read the following important cautions:
- All cautions and warnings on the equipment or in the manuals should be noted.
- Most electronic components are sensitive to electrical static discharge. Therefore, be sure to ground yourself at all times when installing the internal components.
- Use a grounding wrist strap and place all electronic components in static-shielded devices. Grounding wrist straps can be purchased in any electronic supply store.
- Be sure to turn off the power and then disconnect the power cords from your system before performing any installation or servicing. A sudden surge of power could damage sensitive electronic components.
- Do not open the system's top cover. If opening the cover for maintenance is a must, only a trained technician should do so. Integrated circuits on computer boards are sensitive to static electricity. Before handling a board or integrated circuit, touch an unpainted portion of the system unit chassis for a few seconds. This will help to discharge any static electricity on your body.
- Place this equipment on a stable surface when install. A drop or fall could cause injury.
- Please keep this equipment away from humidity.
- Carefully mount the equipment into the rack, in such manner, that it won't be hazardous due to uneven mechanical loading.
- This equipment is to be installed for operation in an environment with maximum ambient temperature below 35°C.
- The openings on the enclosure are for air convection to protect the equipment from overheating. DO NOT COVER THE OPENINGS.
- Never pour any liquid into ventilation openings. This could cause fire or electrical shock.
- Make sure the voltage of the power source is within the specification on the label when connecting the equipment to the power outlet. The current load and output power of loads shall be within the specification.
- This equipment must be connected to reliable grounding before using. Pay special attention to power supplied other than direct connections, e.g. using of power strips.
- Place the power cord out of the way of foot traffic. Do not place anything over the power cord. The power cord must be rated for the

- product, voltage and current marked on the product's electrical ratings label. The voltage and current rating of the cord should be greater than the voltage and current rating marked on the product.
- If the equipment is not used for a long time, disconnect the equipment from mains to avoid being damaged by transient over-voltage.
- Never open the equipment. For safety reasons, only qualified service personnel should open the equipment.
- If one of the following situations arise, the equipment should be checked by service personnel:
  1. The power cord or plug is damaged.
  2. Liquid has penetrated the equipment.
  3. The equipment has been exposed to moisture.
  4. The equipment does not work well or will not work according to its user manual.
  5. The equipment has been dropped and/or damaged.
  6. The equipment has obvious signs of breakage.
  7. Please disconnect this equipment from the AC outlet before cleaning. Do not use liquid or detergent for cleaning. The use of a moisture sheet or cloth is recommended for cleaning.
- Module and drive bays must not be empty! They must have a dummy cover.

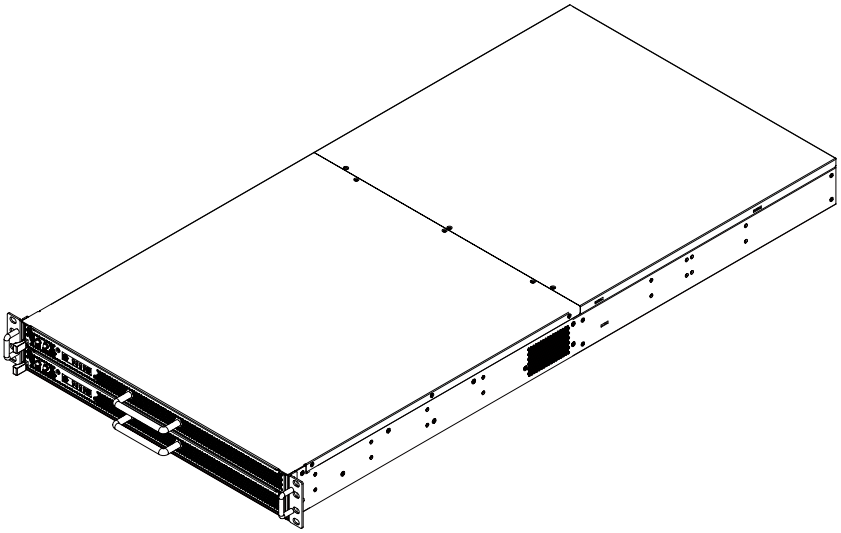
Product features and specifications are subject to change without notice.

CAUTION :
RISK OF EXPLOSION IF BATTERY IS REPLACED BY AN INCORRECT TYPE.
DISPOSE OF USED BATTERIES ACCORDING TO THE INSTRUCTIONS.
AFTER PERFORMING ANY INSTALLATION OR SERVICING, MAKE SURE THE ENCLOSURE ARE LOCK AND SCREW IN POSITION, TURN ON THE POWER.

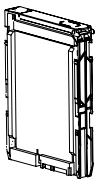
Chapter 1. Prodcut Introduction

1.1 Box Content

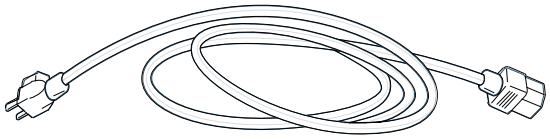
Before removing the subsystem from the shipping carton, visually inspect the physical condition of the shipping carton. Exterior damage to the shipping carton may indicate that the contents of the carton are damaged. If any damage is found, do not remove the components; contact the dealer where the subsystem was purchased for further instructions. Before continuing, first unpack the subsystem and verify that the contents of the shipping carton are all there and in good condition.



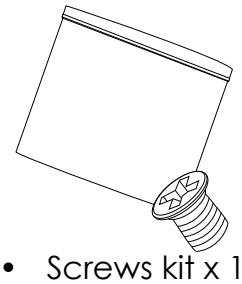
- Enclosure(Power supply, fan, 16 x 3.5" HDD tray included)



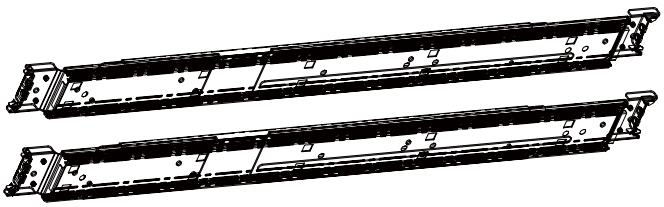
- 3.5'' HDD Tray



- Power cord



- Screws kit x 1pcs
- (Include console serial cable)



- Slide rail x 1set

♦ PACKAGE CONTENT MAY VARY PER REGION.

1.2 Specifications

Dimensions (with chassis ears)	(W x D x H)	mm : 483 x 900 x 66.6	
		inches : 19 x 35.4 x 2.6	
Motherboard	AIC Server Board Libra		
Processor	Processor Support	Two Intel® Xeon® Processors E5-2600 v3 Product Family	
	QPI Speeds	9.6 GT/s, 8 GT/s, 7.2 GT/s	
	Socket Type	Socket R3 (FCLGA2011-3)	
Chipset Support	Intel® C612 Chipset		
System Memory	• 16 DIMM slots across 8 memory channels (4 memory channels per CPU; 2DPC) - 512GB DDR4 2133/1866 RDIMM DRx4 - 128GB DDR4 2133/1866 RDIMM SRx4 - 1024GB DDR4 2133/1866 LRDIMM QRx4 - 2048GB DDR4 2133/1866 LRDIMM 3DS 8Rx4		
Front Panel	• Power on/off • System reset		
LEDs	• Power • Alert • Network acivity		
Drive Bays	Internal	3.5" hot swap	16
		2.5"	2
Backplanes	4 x 4-port 12Gb SAS backplanes with single SFF-8643 connector on each		
Expansion Slots	PCIe 3.0	2 x8	

System BIOS	BIOS Type	• Insyde UEFI BIOS • SPI (Serial Peripheral Interface) FLASH Interface
	BIOS Features	• ACPI • PXE • WOL • AC loss recovery • IPMI 2.0 KCS interface • SMBIOS • Serial console redirection • BIOS Boot Specificaton • BIOS Recovery Mode • SRIOV • iSCSI • TPM • PCIe NTB
On-board Devices	SATA	Built-in SATA controller with RAID support on Intel® C612 Chipset
	IPMI	Aspeed AST2400 Advanced PCIe Graphics & Remote Management Processor • Baseboard Management Controller • Intelligent Platform Interface 2.0 (IPMI 2.0) • iKVM, Media Redirection, IPMI over LAN, Serial over LAN • SMASH Support
	Network Controllers	• Intel® Ethernet Controller X540-BT2 dual port 10GbE, 10GBASE-T, PCIe v2.1, x8 • Intel® Ethernet Controller I210-AT, single port GbE controller, PCIe v2.1, 2.5 GT/s, x1 • Intel® Ethernet Network Connection I217-LM, single port GbE, 1Gbps • Realtek® RTL8201EL single port 10/100 Mbps Ethernet PHYceiver for dedicated BMC port • Optional Intel® Ethernet Controller I350-AM2, dual port GbE, PCIe v2.0 (co-lay with Intel® X540-BT2)
	Graphics	Aspeed AST2400 Advanced PCIe Graphics & Remote Management Processor • PCIe VGA/2D Controller • 1920x1200@60Hz 32bpp

Rear I/O	LAN	2 x RJ45 1 x RJ45 (dedicated BMC port) 2 x RJ45 cabled from two internal 2x5 box pin-header (optional accessory)
	USB	2 x USB 3.0 Type A
	VGA	1 x DB-15
	Serial Port	1 x DB-9
Power Supply	750W 1+1 redundant PSU 80+ Gold	
System Cooling	4 x 6038 PWM easy swap fans	
System Management	• IPMI 2.0 • KVM over IP • Media redirection • Temperature, fan, voltage, PSU sensor monitor • System temperature • System ID / System fail indicator • Remote power on/off/reset • SEL message alarm through mail • SNMP support • Intel NM	

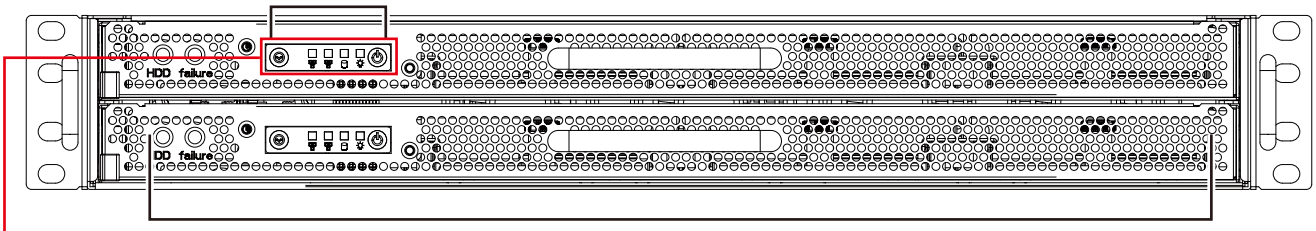
Environmental Specifications	• Operating temperature : 0° - 35°C • Operating altitude condition : 0 - 10K feet • Storage temperature : -20° - 60°C • System relative humidity : 5% - 95% (38°C) non-condensing	
Gross Weight	(w/ PSU & Rail)	kgs : 28
		lbs : 61.6
Packaging Dimensions	(W x D x H)	mm : 590 x 1070 x 280
		inches : 23.2 x 42.1 x 11
Mounting	Standard	30" tool-less slide rail

1.3 General Information

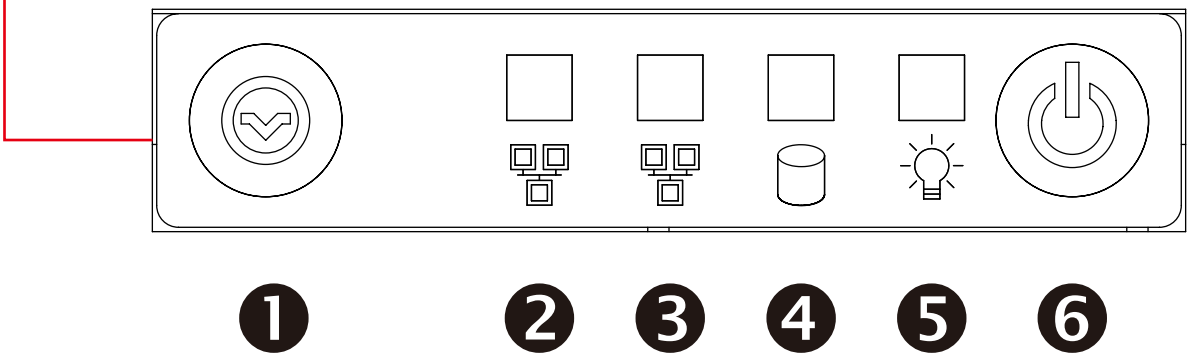
SB151-LB is a 1.5U rackmount chassis with 16 x 3.5"HDD hot swap Bays at Top and single 12G expander on HDD Backplane which is a high performance server storage product.

- Front Panel

System power on/off and system reset

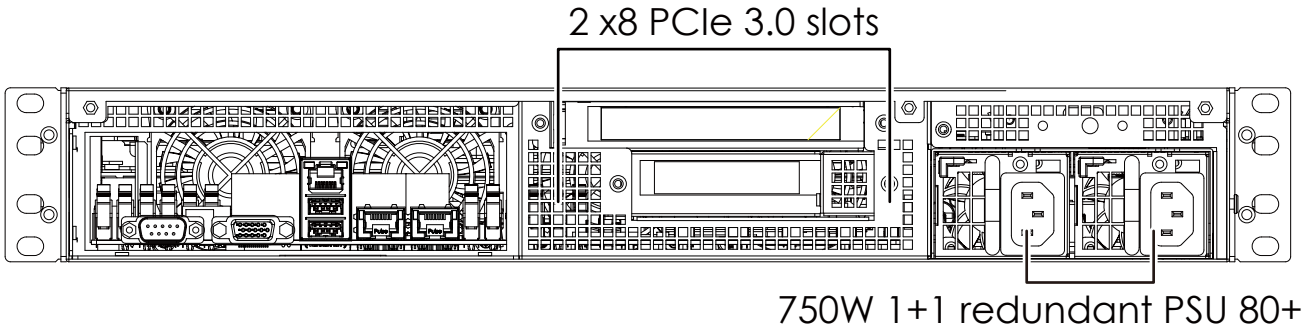


2 drawers, each loads 8 x 3.5" drives



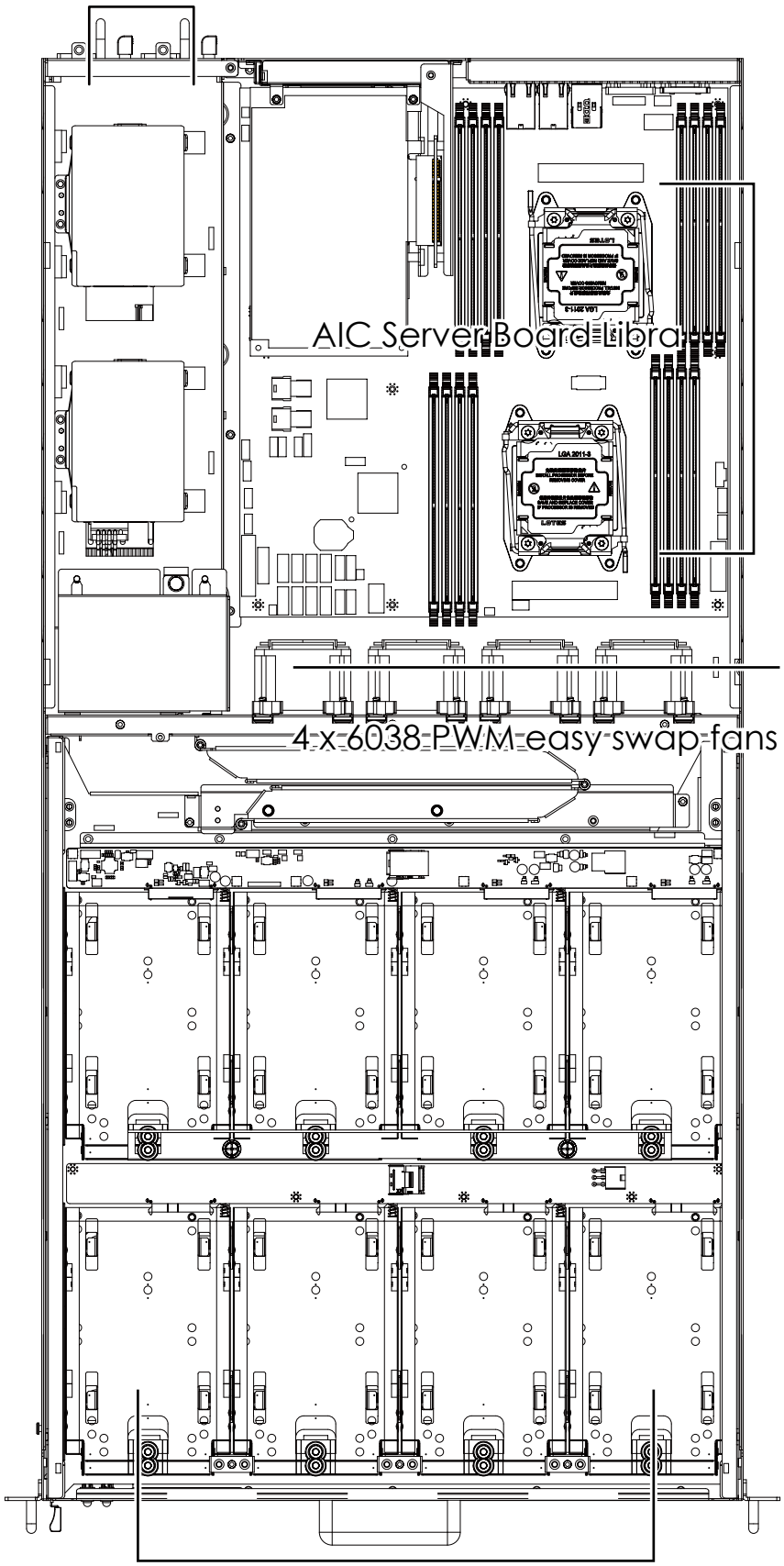
❶ System Reset button ❷ LAN1 Power LED
❸ LAN2 Power LED ❹ System HDD Activity LED
❺ Power System LED ❻ Power On/Off Button

- Rear Panel



- Major Components

750W 1+1 redundant PSU 80+ Gold



Two drawers, each supports 8 x 3.5” drives

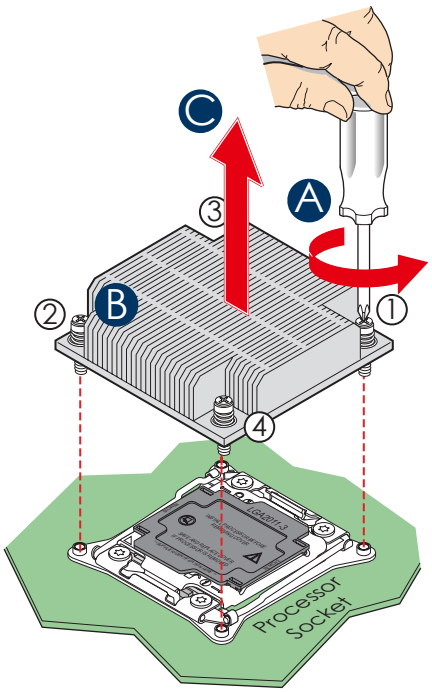
Chapter 2. Hardware Installation

2.1 Central Processing Unit (CPU)

2.1.1 Removing the Processor Heatsink

The heatsink is attached to the server board or processor socket with captive fasteners. Using a #2 Phillips* screwdriver, loosen the four screws located on the heatsink corners in a diagonal manner using the following procedure:

- Using a #2 Phillips* screwdriver, start with screw 1 and loosen it by giving it two rotations and stop (see letter A). (IMPORTANT: Do not fully loosen.)
- Proceed to screw 2 and loosen it by giving it two rotations and stop (see letter B). Similarly, loosen screws 3 and 4. Repeat steps A and B by giving each screw two rotations each time until all screws are loosened.
- Lift the heatsink straight up (see letter C).



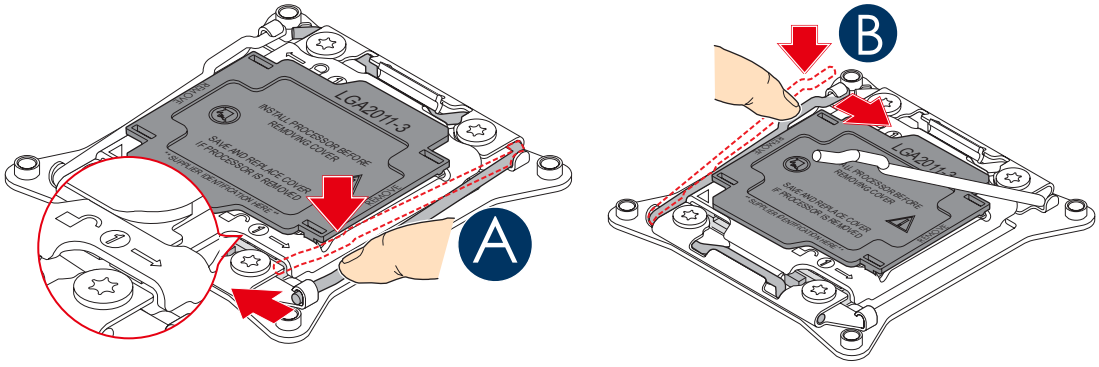
2.1.2 Installing the Processor

CAUTION :
Processor must be appropriate: You may damage the server board if you install a processor that is inappropriate for your server.

CAUTION :
ESD and handling processors: Reduce the risk of electrostatic discharge (ESD) damage to the processor by doing the following:
(1) Touch the metal chassis before touching the processor or server board. Keep part of your body in contact with the metal chassis to dissipate the static charge while handling the processor.
(2) Avoid moving around unnecessarily.

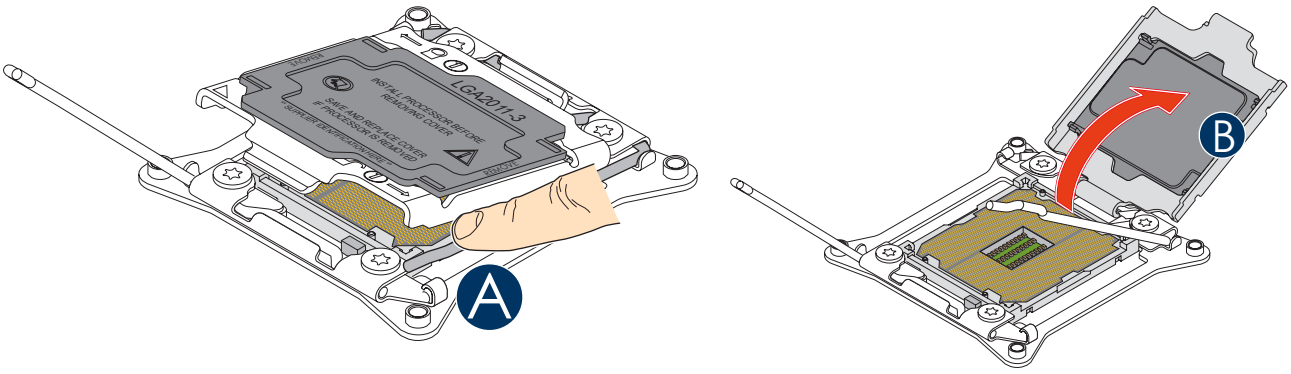
2.1.2.1 Unlatch the CPU Load Plate

- Push the lever handle labeled "OPEN 1st" (see letter A) down and toward the CPU socket. Rotate the lever handle up.
- Repeat the steps for the second lever handle (see letter B).



2.1.2.2 Lift open the Load Plate

- Rotate the right lever handle down until it releases the Load Plate (see letter A).
- While holding down the lever handle, with your other hand, lift open the Load Plate (see letter B).



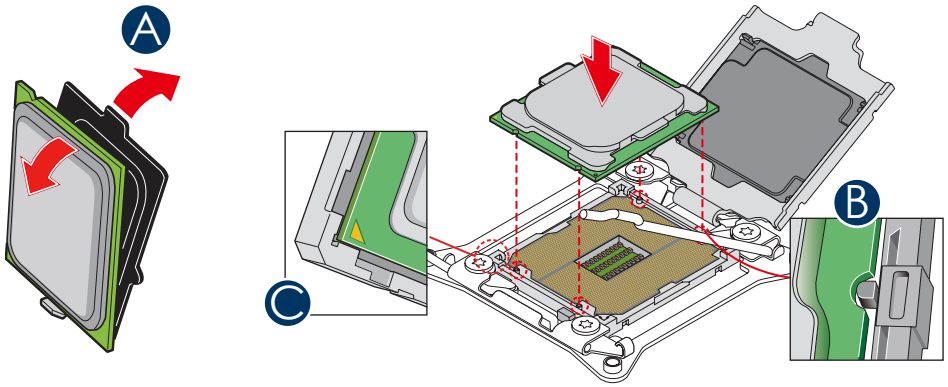
2.1.2.3 Install the Processor

- Remove the processor from its package.
- Carefully remove the protective cover from the bottom side of the CPU, taking care not to touch any CPU contacts (see letter A).
- Orient the processor with the socket so that the processor cutouts match the four orientation posts on the socket (see letter B). Note the location of a gold key at the corner of the processor (see letter C). Carefully place (Do NOT drop) the CPU into the socket.

CAUTION :
THE PINS INSIDE THE CPU SOCKET ARE EXTREMELY SENSITIVE. OTHER THAN THE CPU, NO OBJECT SHOULD MAKE CONTACT WITH THE PINS INSIDE THE CPU SOCKET. A DAMAGED CPU SOCKET PIN MAY RENDER THE SOCKET INOPERABLE, AND WILL PRODUCE ERRONEOUS CPU OR OTHER SYSTEM ERRORS IF USED.

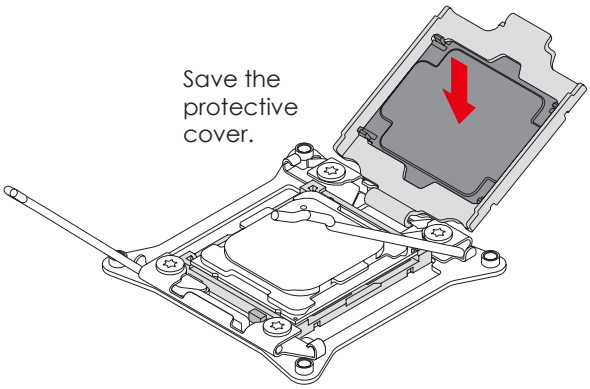
NOTE :
THE UNDERSIDE OF THE PROCESSOR HAS COMPONENTS THAT MAY DAMAGE THE SOCKET PINS IF INSTALLED IMPROPERLY. THE PROCESSOR MUST ALIGN CORRECTLY WITH THE SOCKET OPENING BEFORE INSTALLATION. DO NOT DROP THE PROCESSOR INTO THE SOCKET.

NOTE :
WHEN POSSIBLE, A CPU INSERTION TOOL SHOULD BE USED WHEN INSTALLING THE CPU.

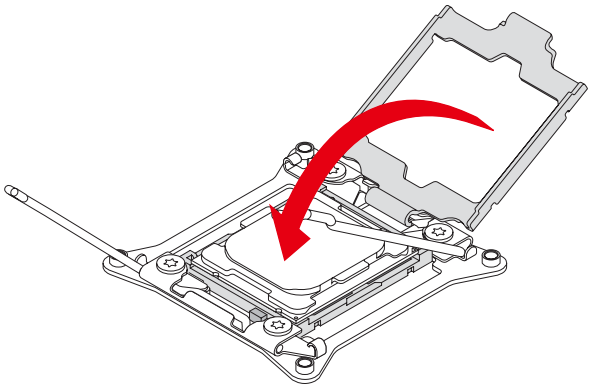


2.1.2.4 Remove the Socket Cover. Remove the socket cover from the load plate by pressing it out.

NOTE :
THE SOCKET COVER SHOULD BE SAVED AND RE-USED SHOULD THE PROCESSOR NEED TO BE REMOVED AT ANYTIME IN THE FUTURE.

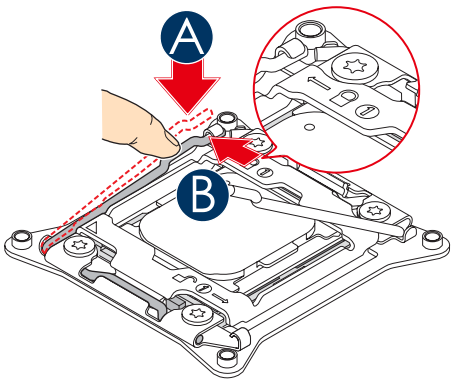


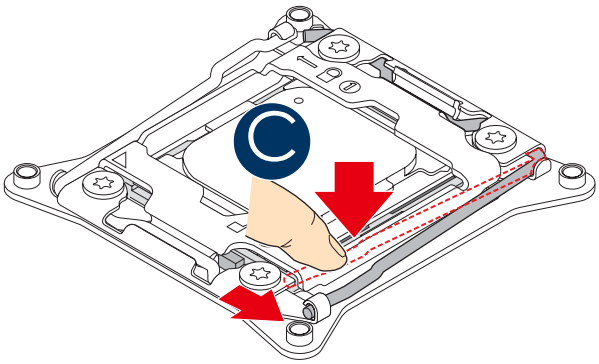
2.1.2.5 Close the Load Plate. Carefully lower the load plate down over the processor.



2.1.2.6 Lock down the Load Plate

- Push down on the locking lever on the CLOSE 1st side (see letter A). Slide the tip of the lever under the notch in the load plate (see letter B). Make sure the load plate tab engages under the socket lever when fully closed.
- b.Repeat the steps to latch the locking lever on the other side (see letter C). Latch the levers in the order as shown.



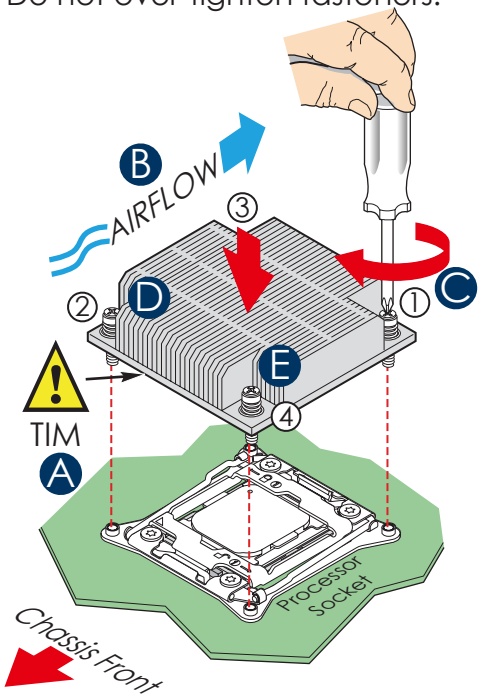


2.1.3 Installing the Processor Heatsink

NOTE :
THE PROCESSOR HEATSINK FOR CPU1 AND CPU2 IS DIFFERENT. FXXCA91X91HS IS FOR CPU1, WHILE FXXEA91X91HS2 IS FOR CPU2. MISLOCATING THE HEATSINK WILL CAUSE SERIOUS THERMAL DAMAGE.

- If present, remove the protective film covering the Thermal Interface Material on the bottom side of the heatsink (see letter A).
- Align the heatsink fins to the front and back of the chassis for correct airflow. The airflow goes from front-to-back of the chassis (see letter B).
- Each heatsink has four captive fasteners and should be tightened in a diagonal manner using the following procedure:
- Using a #2 Phillips* screwdriver, start with screw 1 and engage screw threads by giving it two rotations and stop (see letter C). (Do not fully tighten.)
- Proceed to screw 2 and engage screw threads by giving it two rotations and stop (see letter D). Similarly, engage screws 3 and 4.
- Repeat steps C and D by giving each screw two rotations each time until each screw is lightly tightened up to a maximum of 8 inch-lbs torque (see letter E).

CAUTION:
Do not over-tighten fasteners.



2.1.4 Removing the Processor

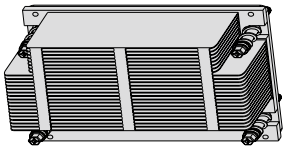
NOTE :

- Remove the processor by carefully lifting it out of the socket, taking care not to drop the processor and not touching any pins inside the socket.
- Install the socket cover if a replacement processor is not going to be installed.

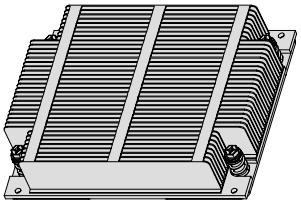
2.1.5 Different heatsink for each of its CPUs

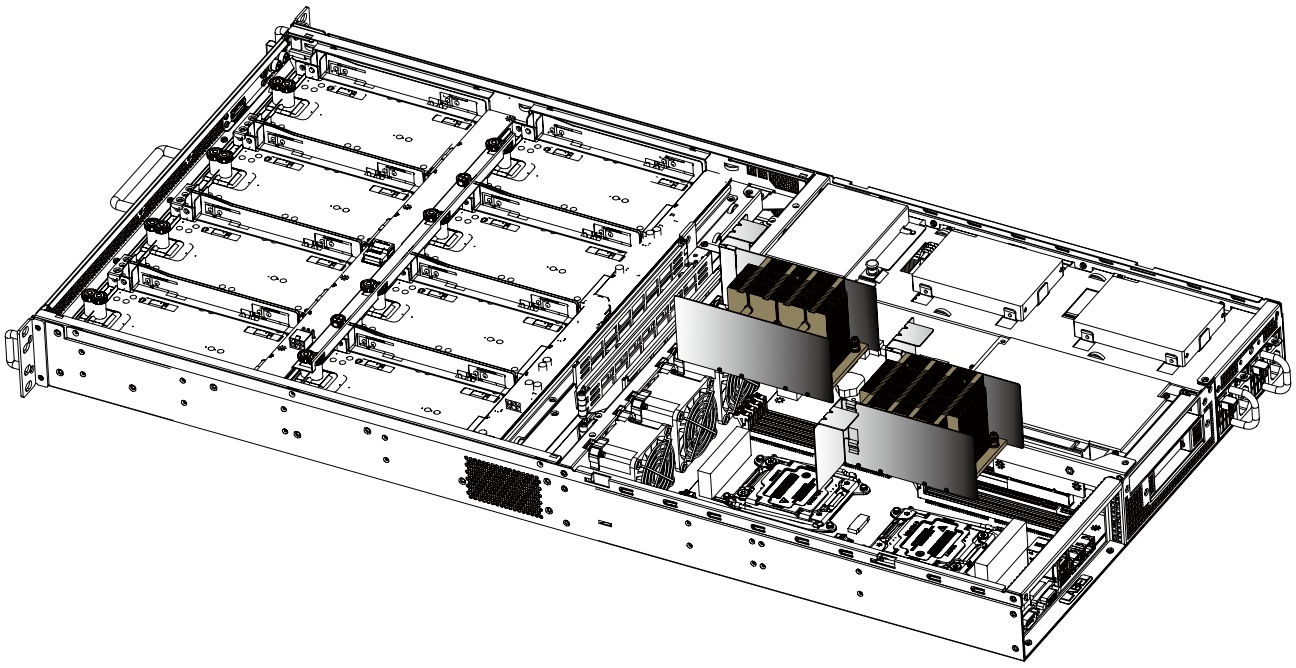
Carefully position heatsink over the CPU0 and CPU1, and align the heatsink screws with the screw holes in the motherboard.

CPU0



CPU1

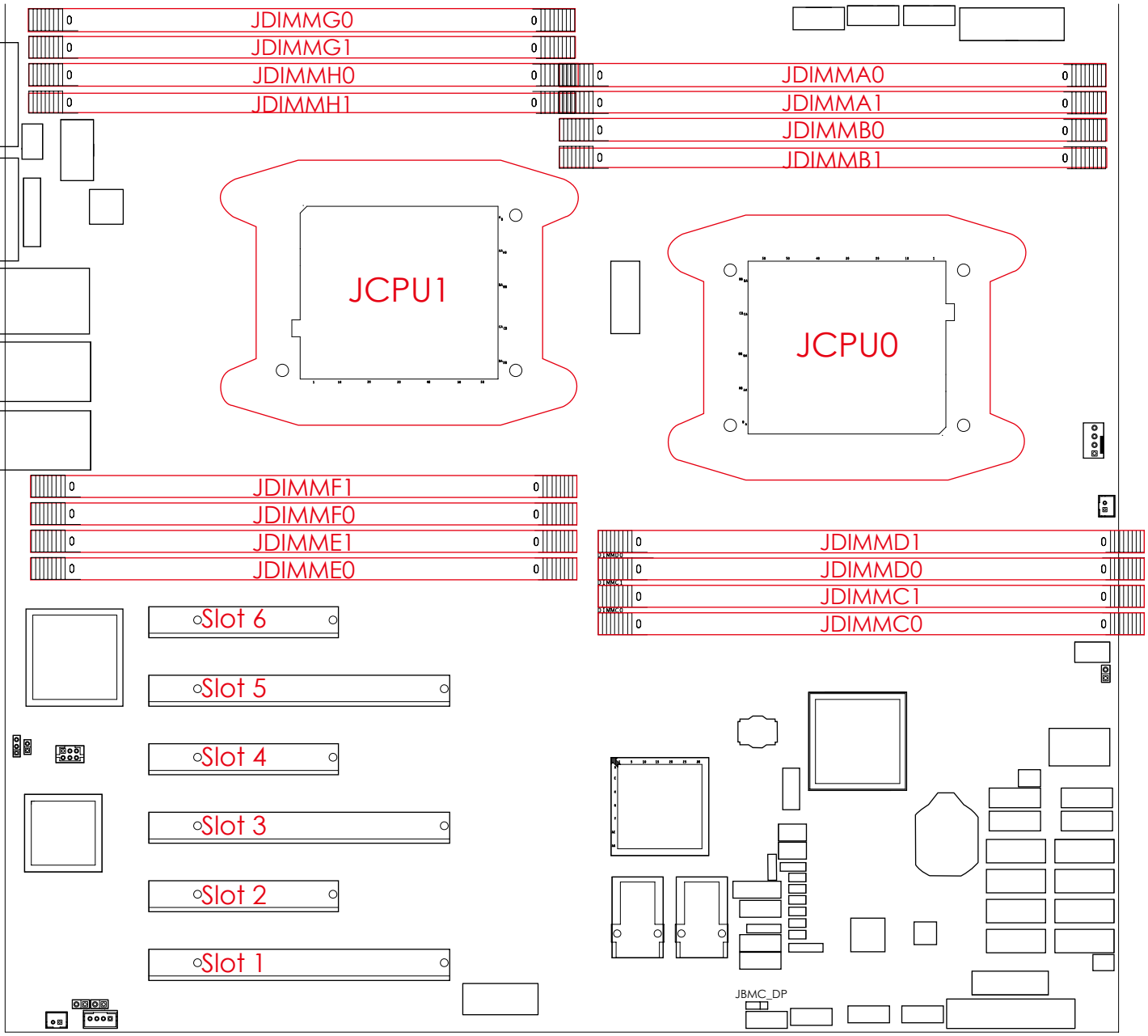




Caution - Possible thermal damage. Avoid moving the heatsink after it has contacted the top of the CPU. Too much movement could disturb the layer of thermal compound, causing voids, and leading to ineffective heat dissipation and component damage.

2.2 System Memory

This server board supports up to sixteen DDR4 1333/1600/1866/2133 Registered ECC SDRAM(RDIMM) / Load-Reduced DIMM (LRDIMM).



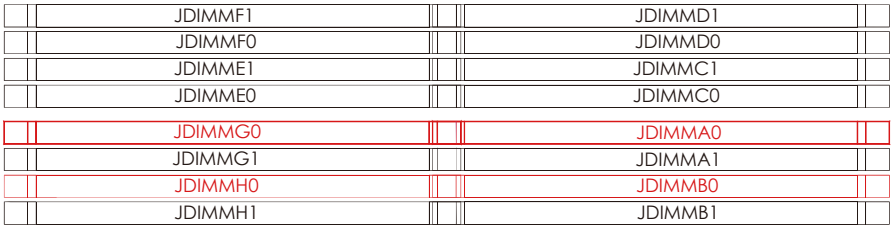
NOTE :

SLOT 1 / SLOT 2 /SLOT 3 AVAILABLE ONLY WHEN JCPU0 PROCESSOR IS INSTALLED.

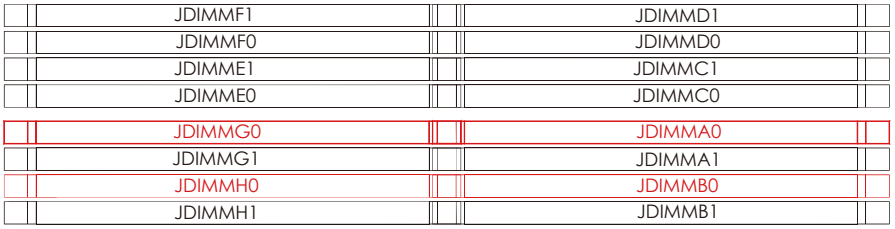
SLOT 4 / SLOT 5 /SLOT 6 AVAILABLE ONLY WHEN JCPU1 PROCESSOR IS INSTALLED.

2.2.1 Populate DIMMs in the following order:

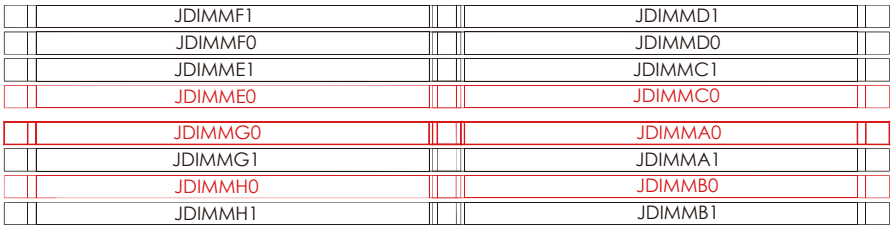
DIMM Numbers	DIMM ARRANGMENT	
2 DIMMs	CPU1	CPU0
	JDIMM_G0	JDIMM_A0



	CPU1	CPU0
4 DIMMs	JDIMM_G0	JDIMM_A0
	JDIMM_H0	JDIMM_B0



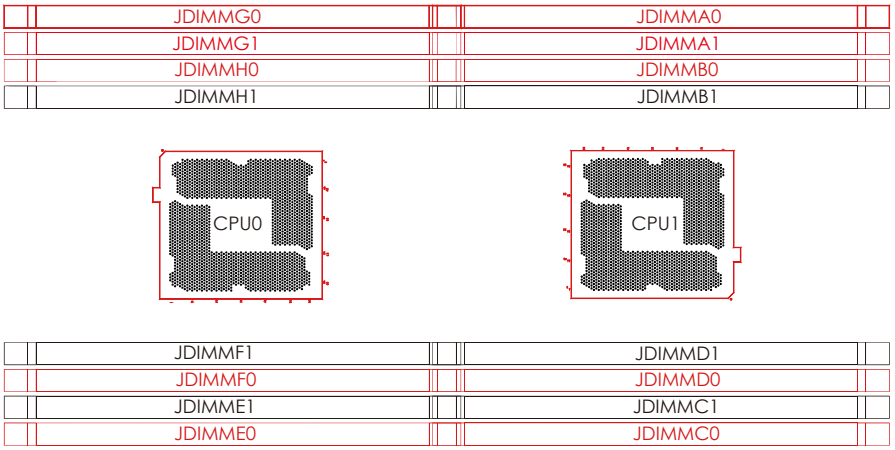
	CPU1	CPU0
6 DIMMs	JDIMM_G0	JDIMM_A0
	JDIMM_H0	JDIMM_B0
	JDIMM_E0	JDIMM_C0



	CPU1	CPU0
8 DIMMs	JDIMM_G0	JDIMM_A0
	JDIMM_H0	JDIMM_B0
	JDIMM_F0	JDIMM_D0
	JDIMM_E0	JDIMM_C0

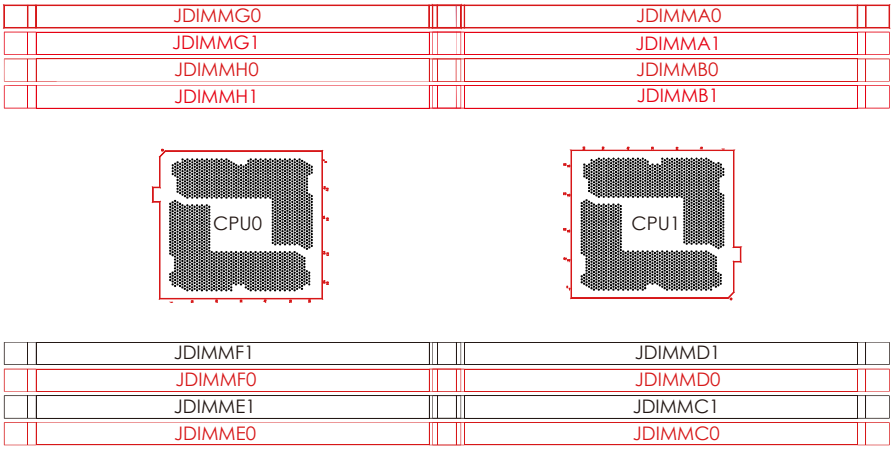
10 DIMMs

CPU1	CPU0
JDIMM_G0	JDIMM_A0
JDIMM_G1	JDIMM_A1
JDIMM_H0	JDIMM_B0
JDIMM_F0	JDIMM_D0
JDIMM_E0	JDIMM_C0



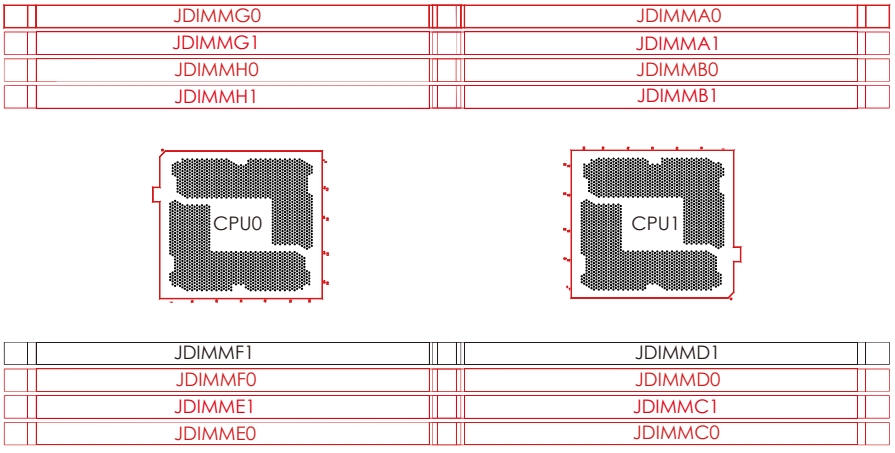
12 DIMMs

CPU1	CPU0
JDIMM_G0	JDIMM_A0
JDIMM_G1	JDIMM_A1
JDIMM_H0	JDIMM_B0
JDIMM_H1	JDIMM_B1
JDIMM_F0	JDIMM_D0
JDIMM_E0	JDIMM_C0



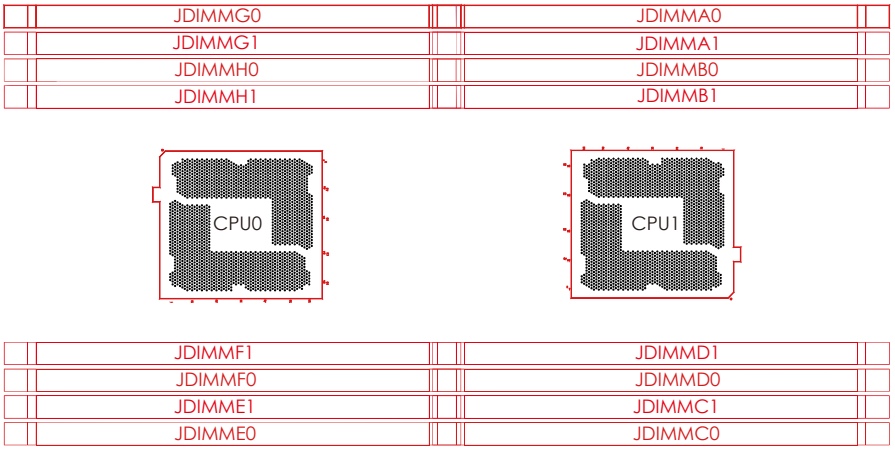
14 DIMMs

CPU1	CPU0
JDIMM_G0	JDIMM_A0
JDIMM_G1	JDIMM_A1
JDIMM_H0	JDIMM_B0
JDIMM_H1	JDIMM_B1
JDIMM_F0	JDIMM_D0
JDIMM_E1	JDIMM_C1
JDIMM_E 0	JDIMM_C0



16 DIMMs

CPU1	CPU0
JDIMM_G0	JDIMM_A0
JDIMM_G1	JDIMM_A1
JDIMM_H0	JDIMM_B0
JDIMM_H1	JDIMM_B1
JDIMM_F1	JDIMM_D1
JDIMM_F0	JDIMM_D0
JDIMM_E1	JDIMM_C1
JDIMM_E0	JDIMM_C0

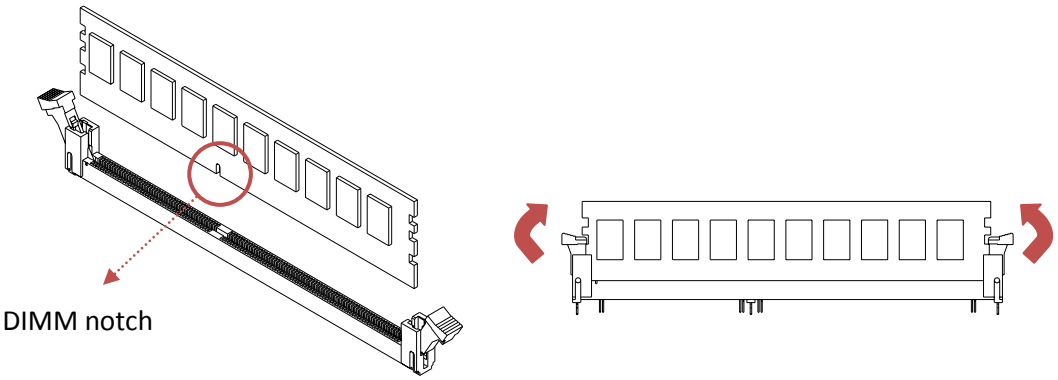


2.2.2 DIMM Installation Procedure

Unlock a DIMM socket by pressing the retaining clips outward.

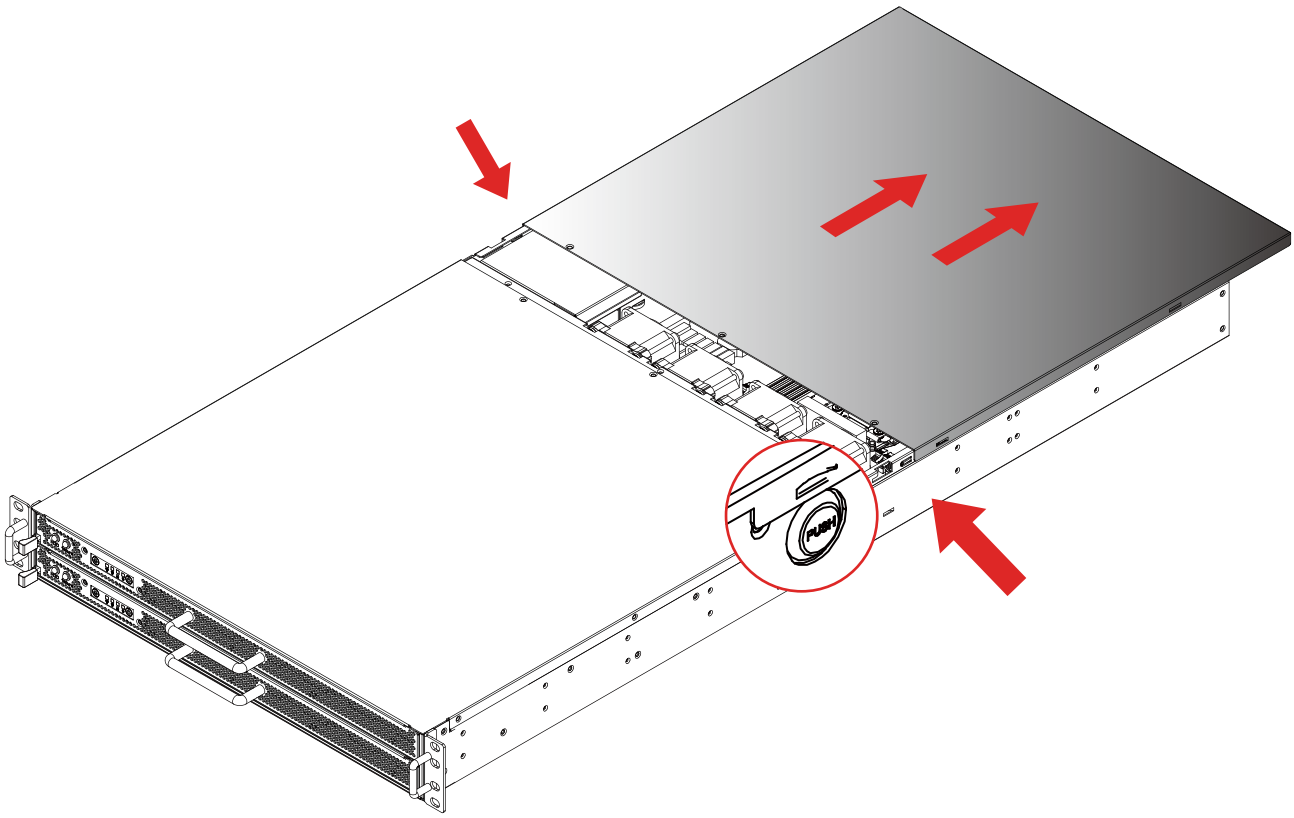
Insert module vertically and press down until it snaps into place.

> NOTE: DIMM NOTCH AND SOCKET BUMP MUST ALIGN AS SHOWN.



2.3 Removing and Installing Top Cover

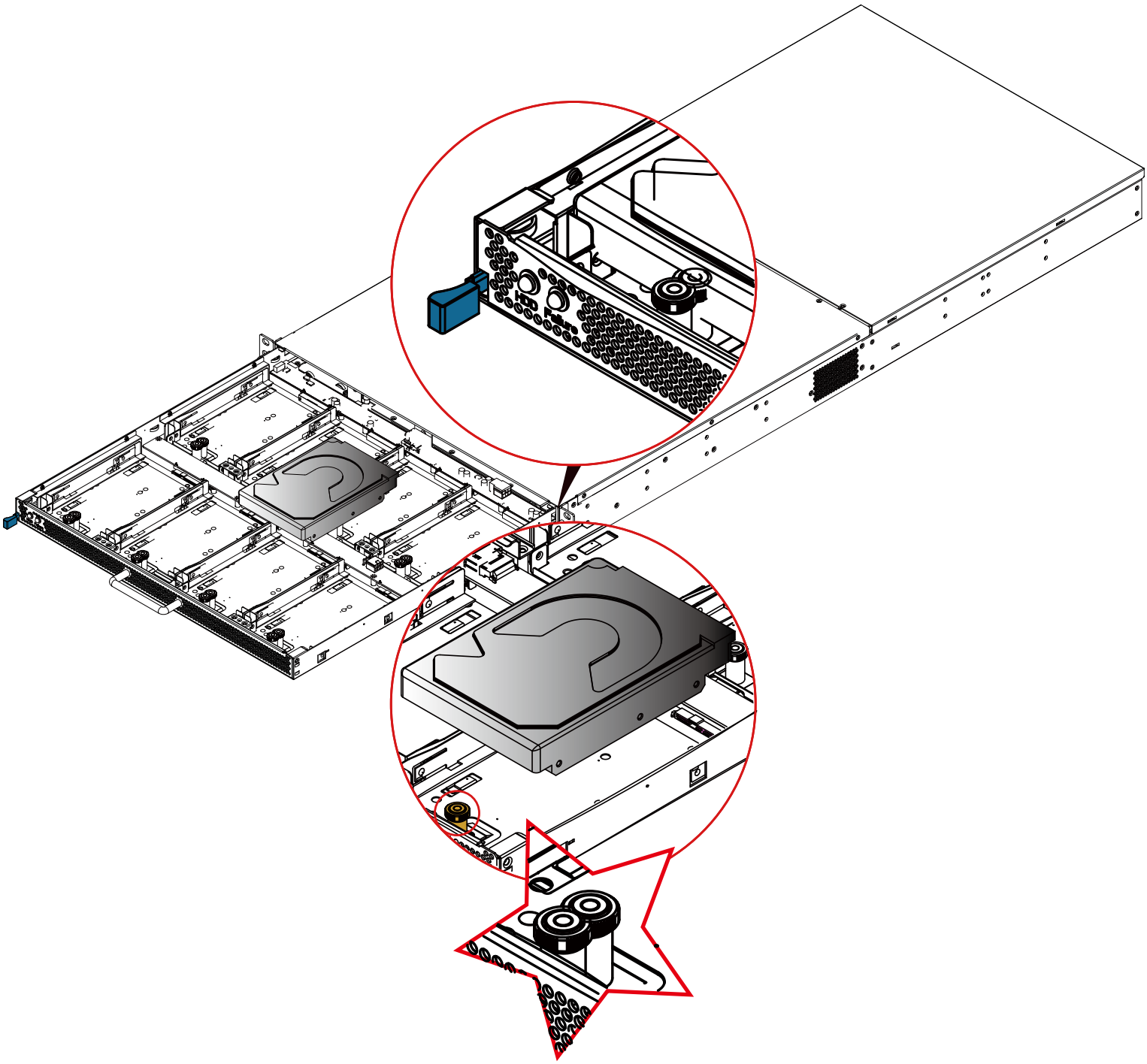
Loosen 10 screws on top cover. Take it out of the enclosure.



2.4 Installing/ Removing a Hard Disk Drive

2.4.1Removing a Hard Disk Drive

1. Slide the tray out of the cage by release the latch.
2. Remove the screw holding the hard drive tray in place.
These screws cannot be removed completely from the tray.
They are fastened to the tray to avoid loss.
Grab the hard drive and pull to remove.



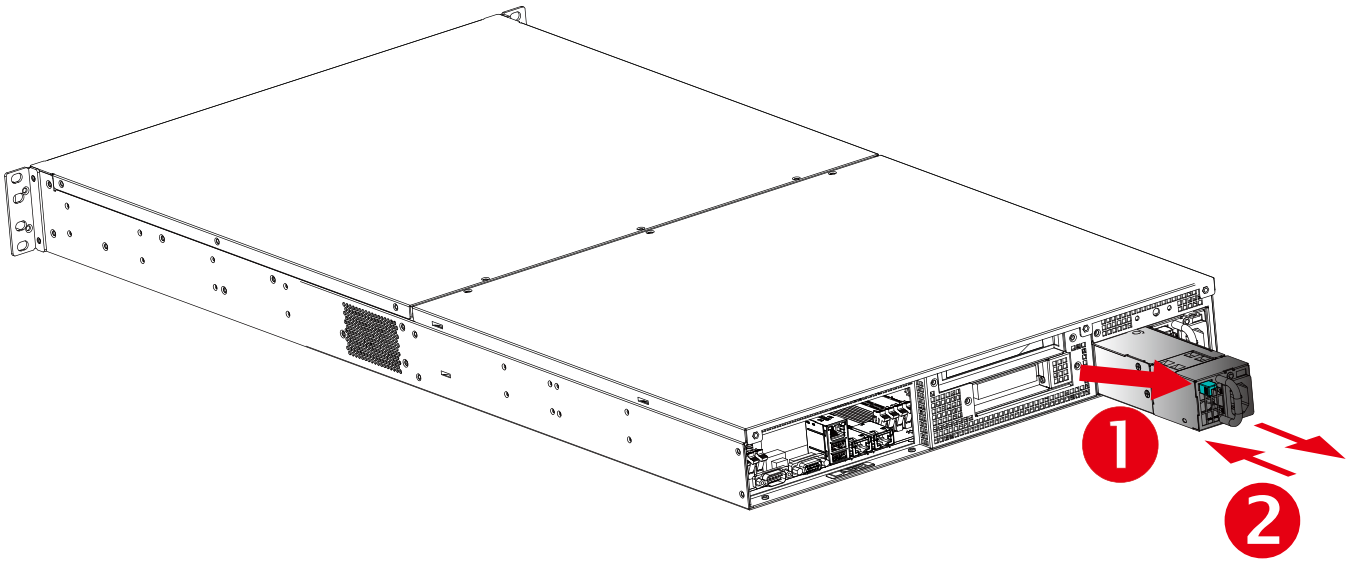
2.5 Removing and Installing a PSU Module

2.5.1 Removing a PSU module

Slide the small levers (see red arrow ❶) to the right. Hold the PSU lever and firmly pull the PSU out of the server chassis.

2.5.2 Installing a PSU Module

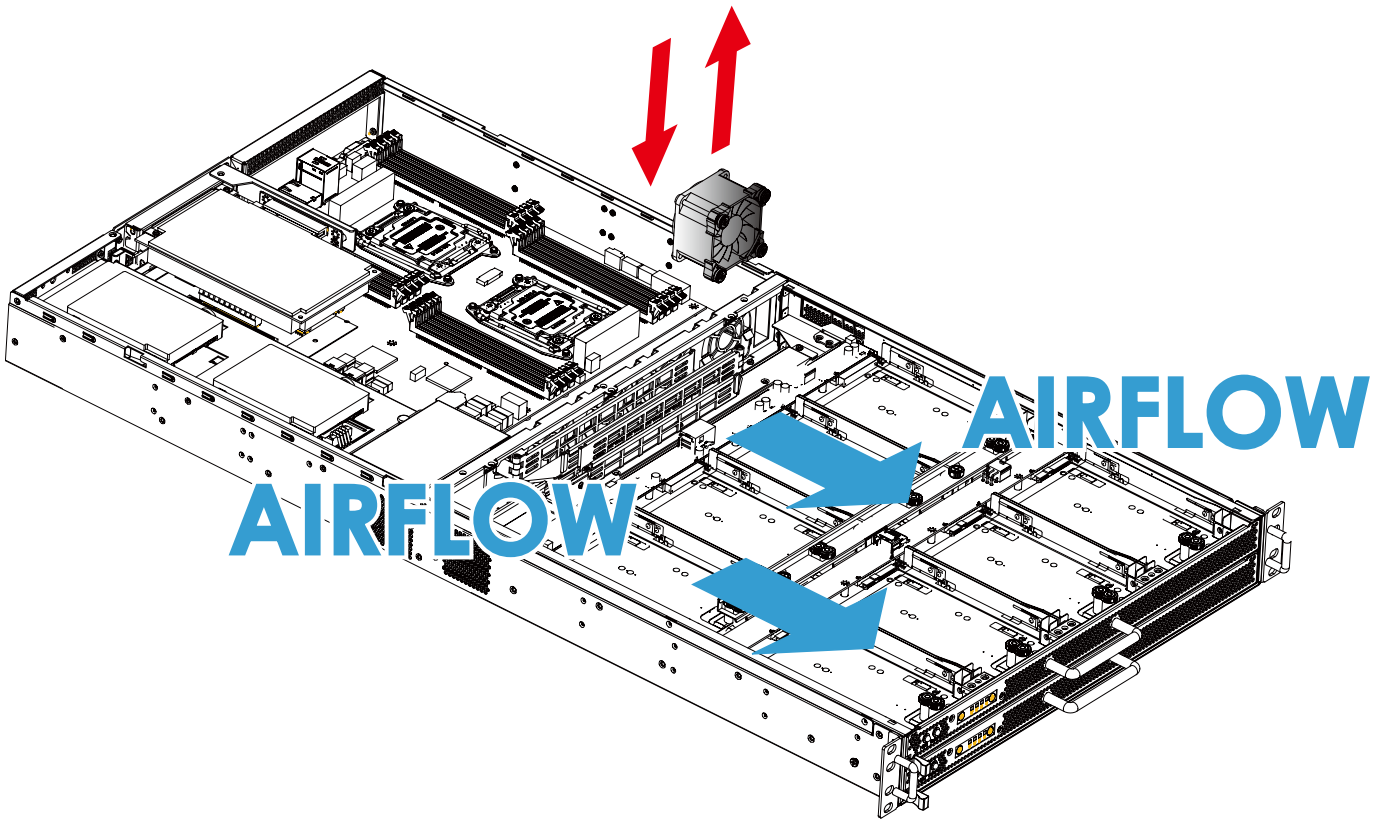
- To install PSU module, follow the reverse order.



2.6 Removing and Installing a Fan Module

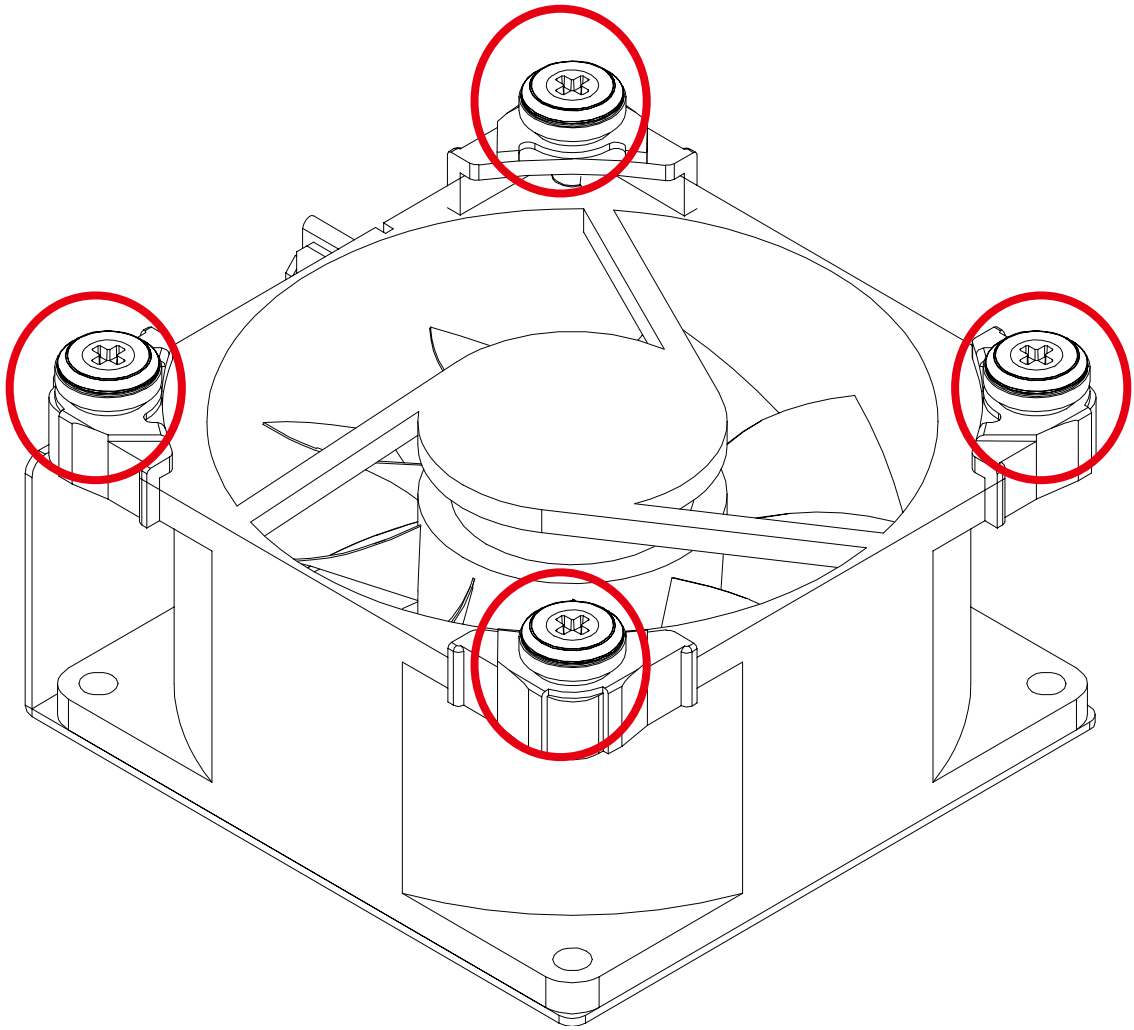
2.6.1 Removing a fan module

Grabbing and removing the fan module from the fan slot.



NOTE: THE HEAT SINK'S FANS SHOULD BE BLOWING TOWARD THE REAR END OF THE CHASSIS. IF ONE OF THE FANS IS FACING THE WRONG DIRECTION, PLEASE REMOVE THE HEAT SINK AND REINSTALL IT SO THAT IT IS FACING THE CORRECT DIRECTION.

Pull the fan module up gently and taking out the fan module by removing rubbers out from the fan bar.



2.6.2 Installing a Fan Module

Make sure the 4 rubbers and connector insert firmly while fan module is inserted.

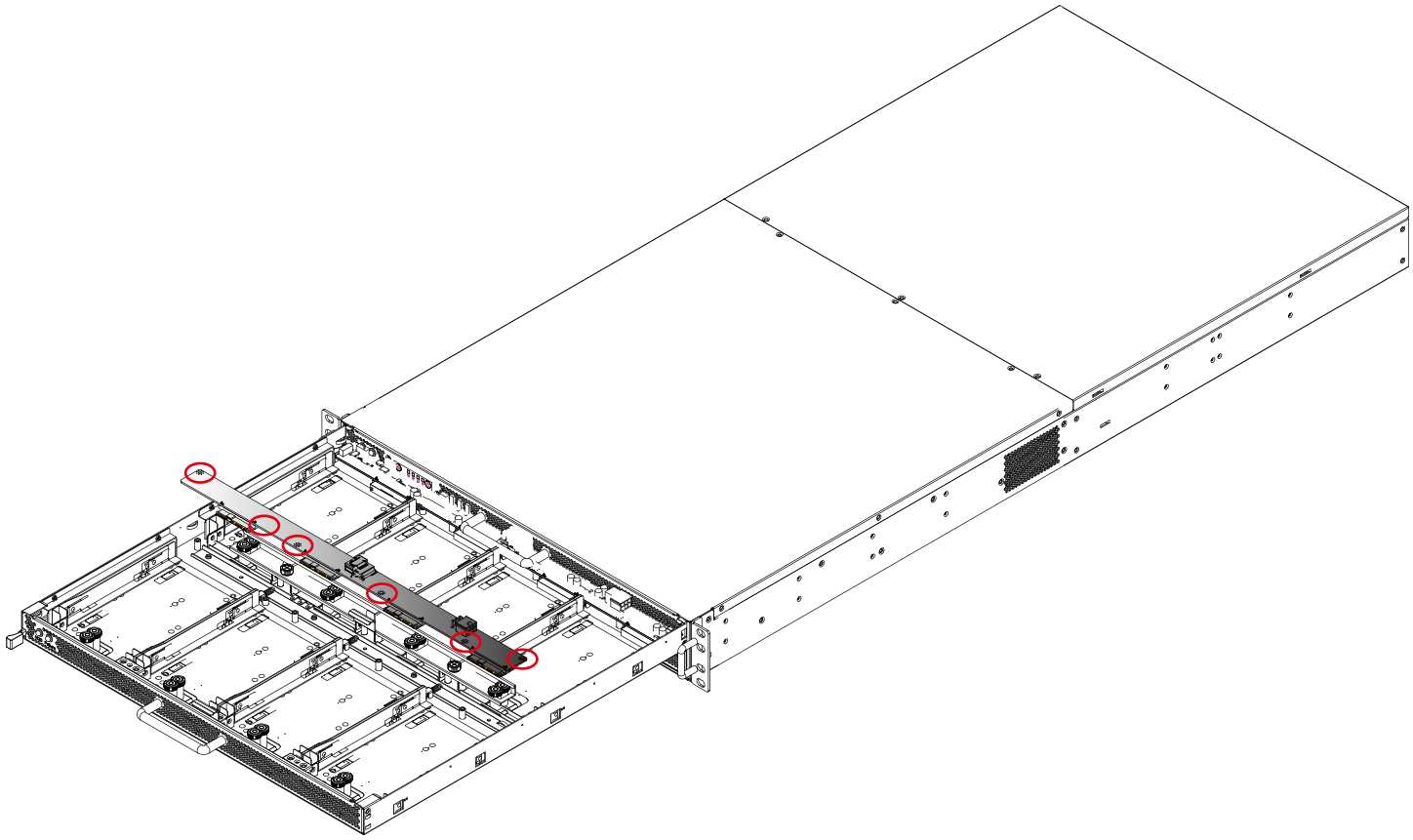
2.7 Removing and Installing the HDD backplane Module

2.7.1 Removing a HDD backplane

- Detach the cables & HDDs from the backplane.
- Lossen the screws x 6pcs on the Backplane module
- Grasp and lift up the blackplane then can get out.

2.7.2 Installing a HDD backplane module

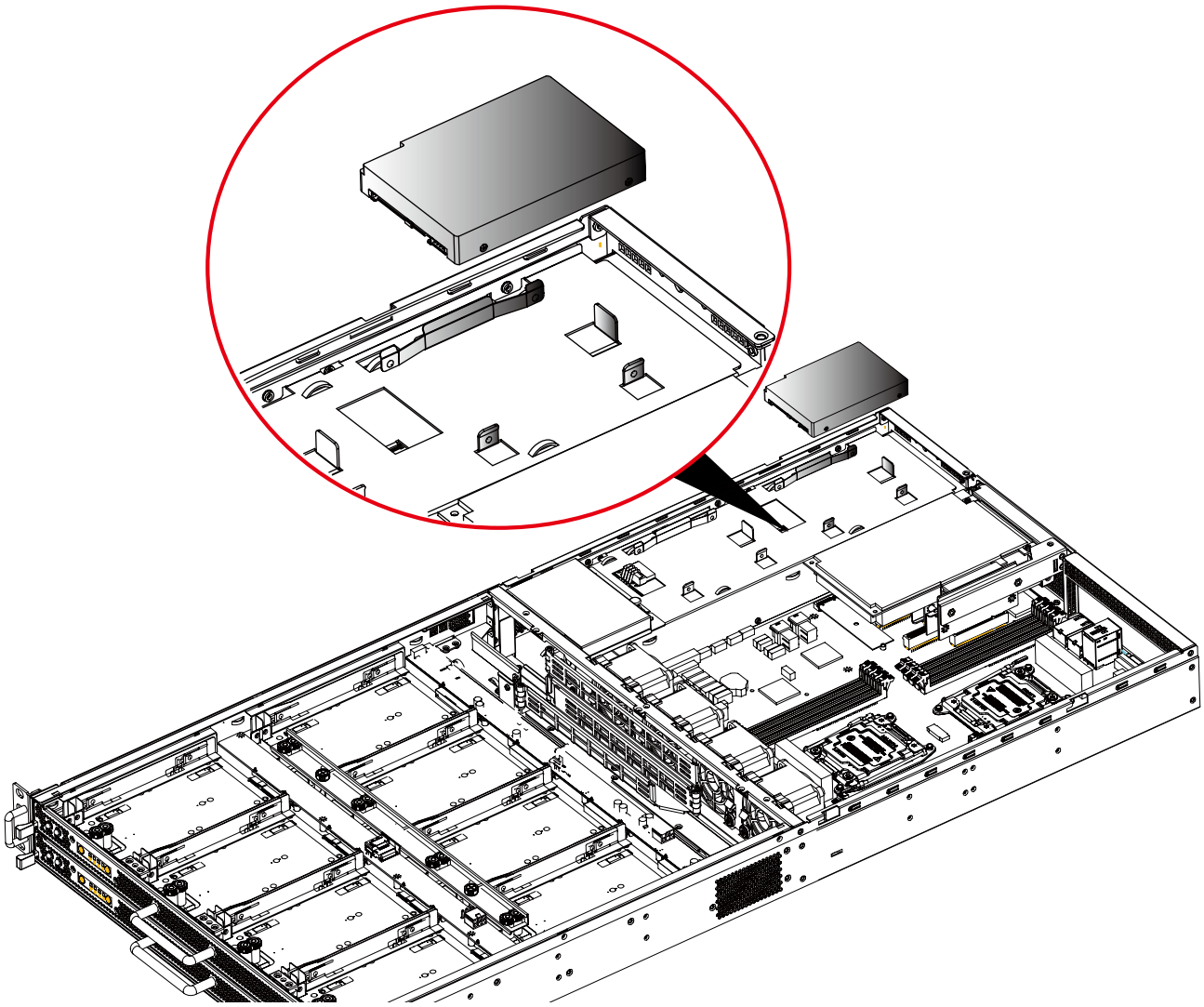
- Slide the HDD backplane module into enclosures.
- Secure the HDD backplane module onto the enclosures using the screws. Follow the reverse order.

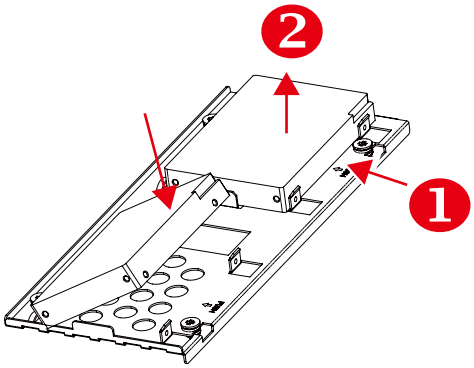


2.8 Removing and Installing a 2.5-inch SSD

2.8.1 Installing a 2.5-inch SSD

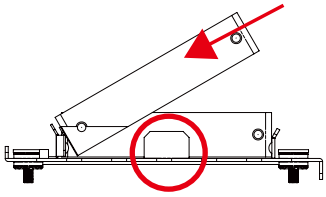
- Obliquely place HDD into the cage with force to hold the spring backward. Align the HDD with rear bracket to make sure the screw holes on HDD match the dimples on the cage.





Push th HDD with force to hold the spring backward and lift it up to release it.

Then place the other side of HDD into the cage until it clips.



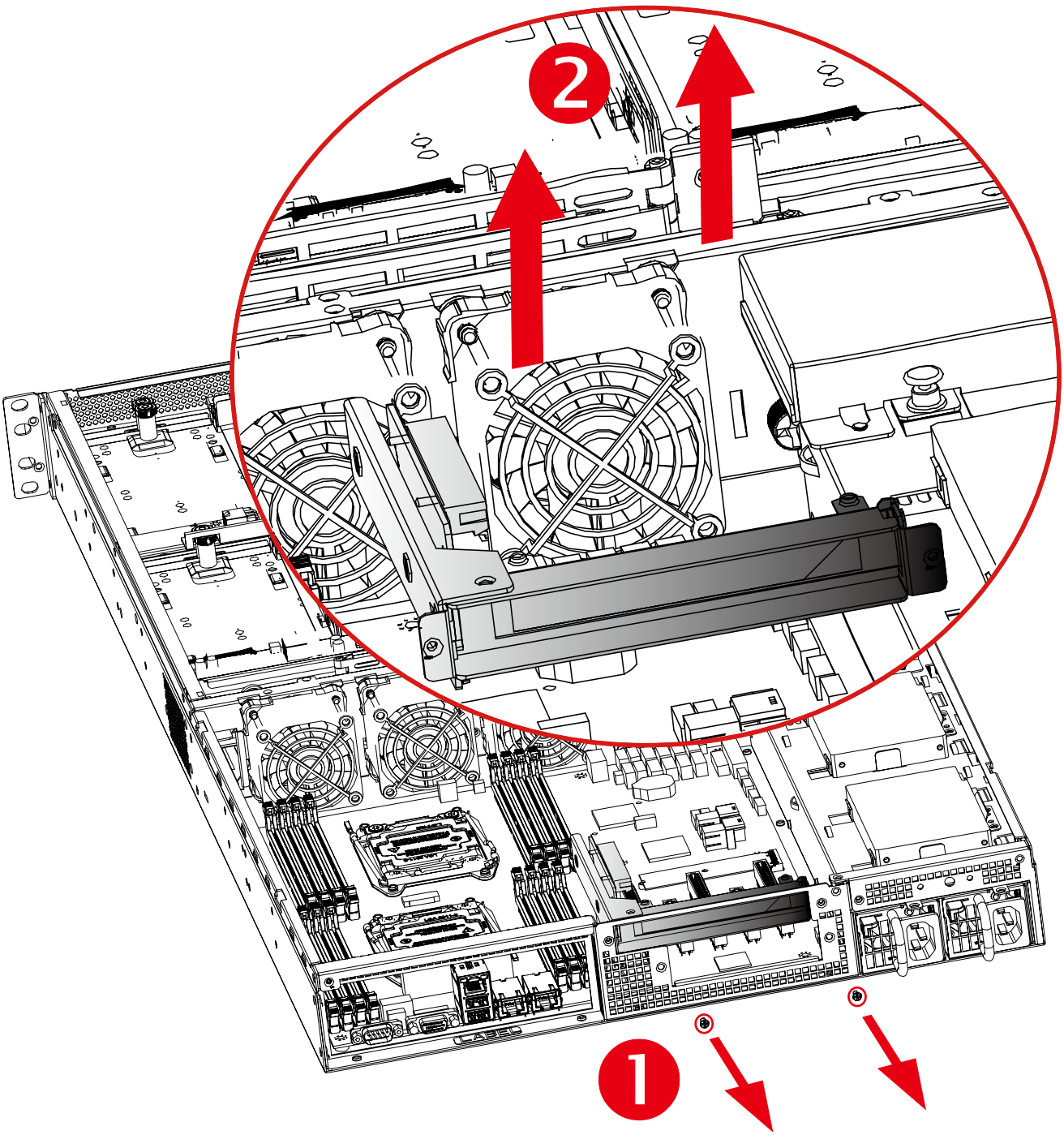
rear bracket

2.9 Removing and Installing a PCIe Card

Turn off your Storage Server Barebone and disconnect all peripheral cables and all telecommunication lines connected to riser connectors or ports on the riser card of the system.

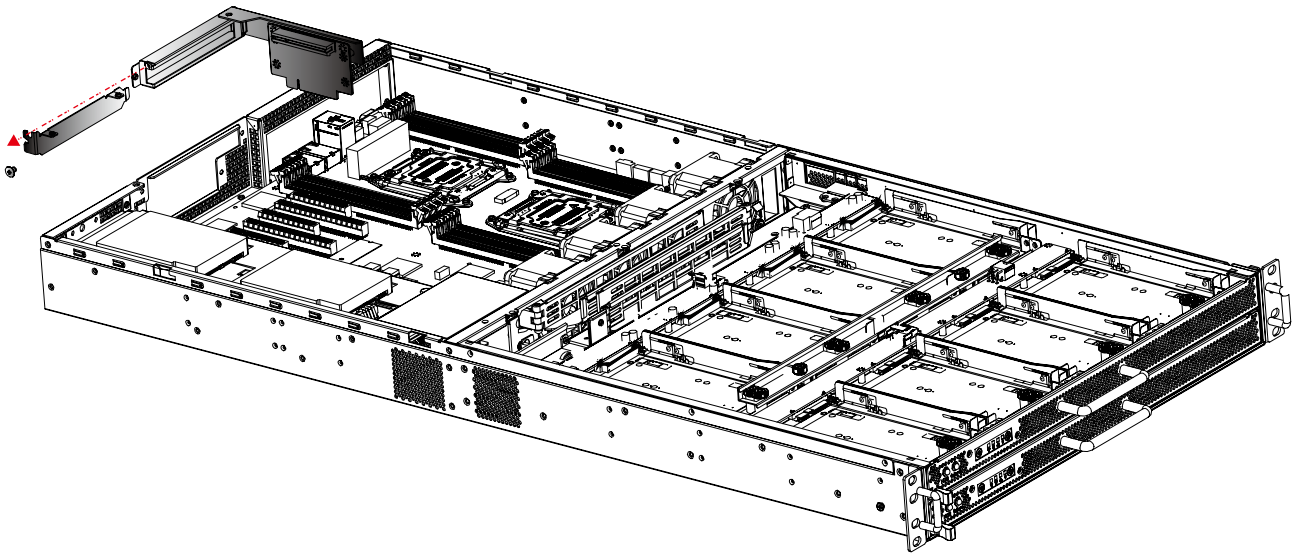
2.9.1 Removing a PCIe Card (Slot 6)

- Loosen the two captive screws securing the riser card to the chassis.
- lift the riser card.



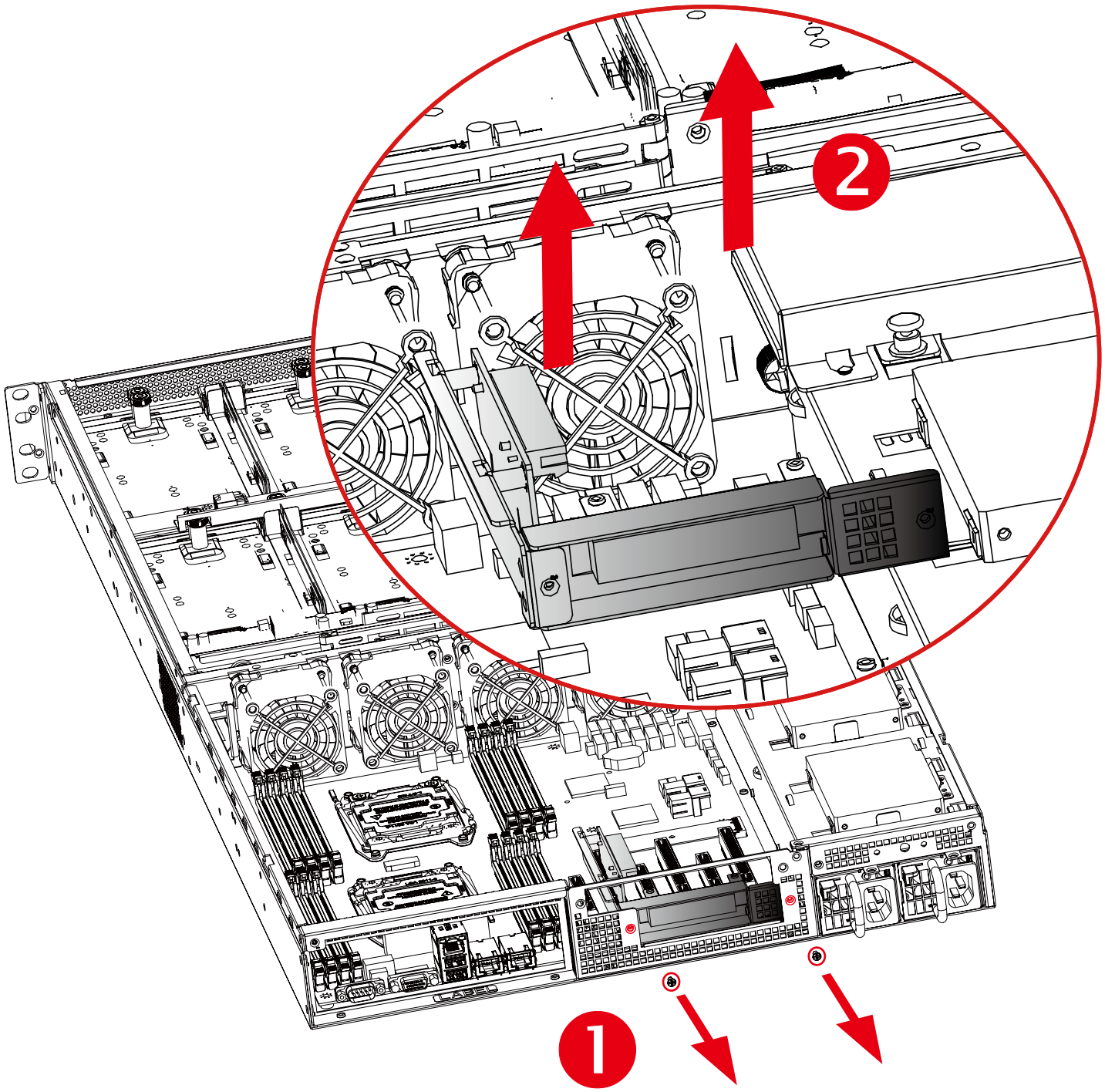
2.9.2 Removing a PCIe Card (Slot 6)

- Remove filler panel from the riser card slot.
- Insert the new PCIe card into the riser assembly and fasten the screw to secure the card.
- To install PCIe Card, follow the reverse order.



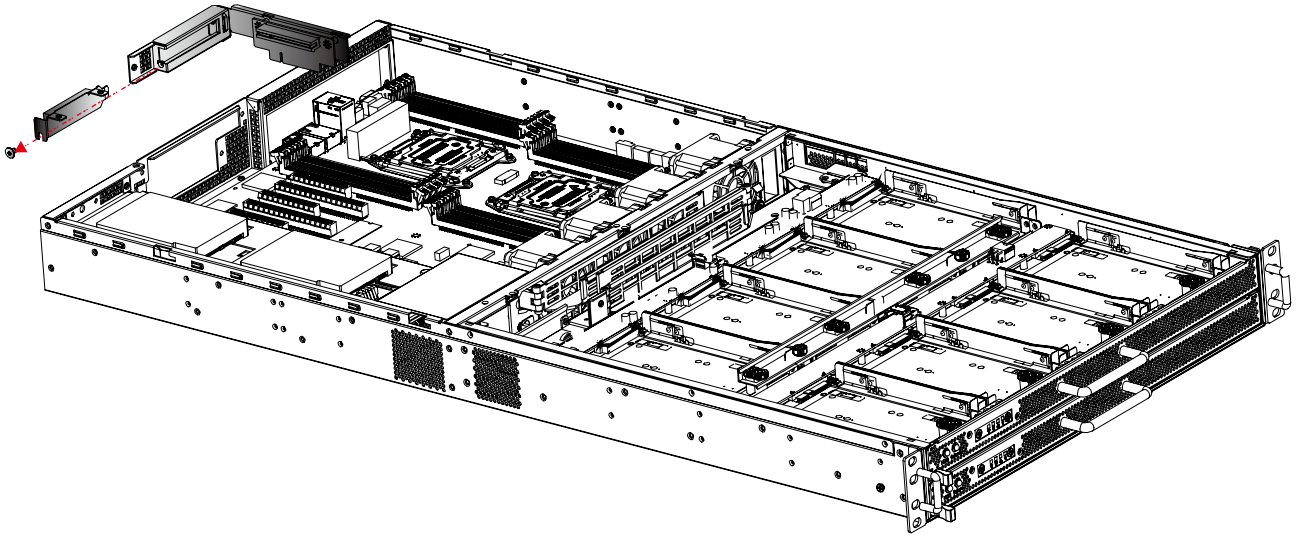
2.9.3 Removing a PCIe Card (Slot 4 or Slot 5)

- Loosen the two captive screws securing the riser card to the chassis.
- lift the riser card.



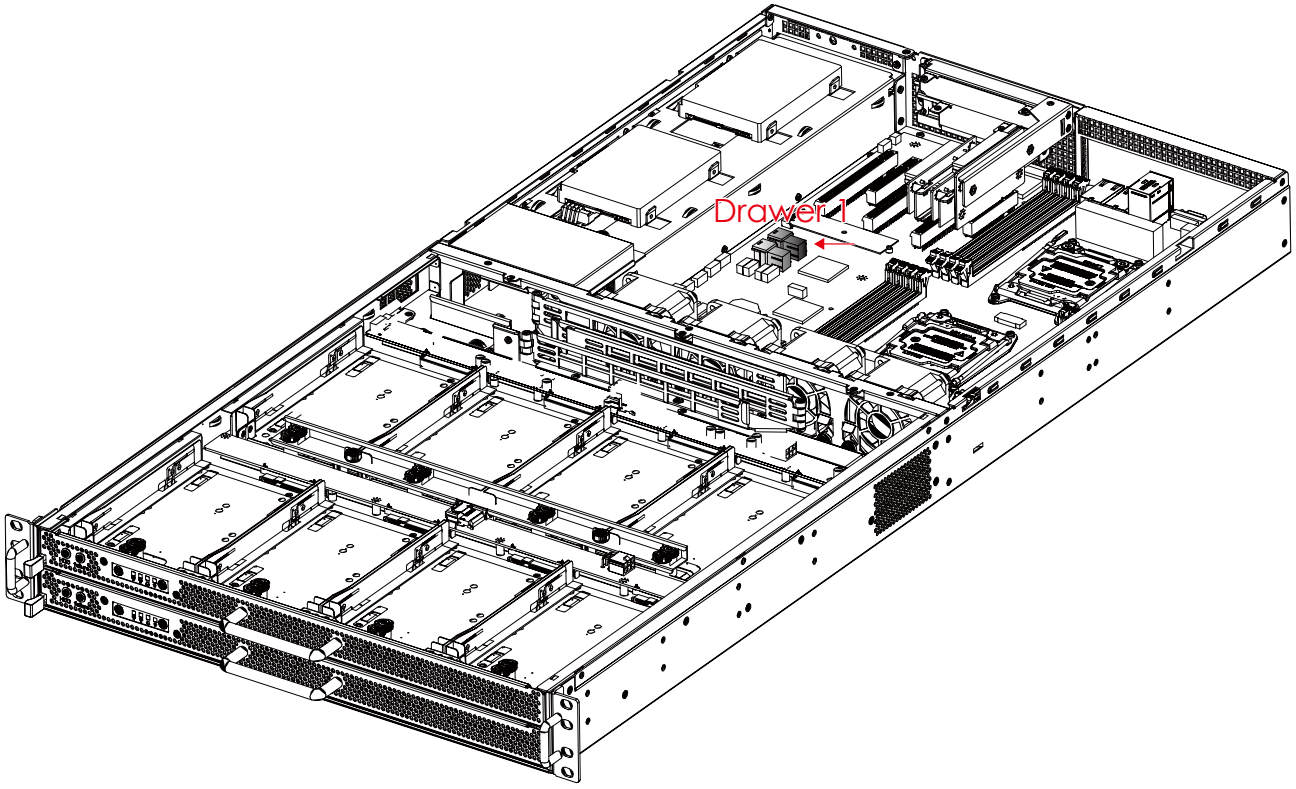
2.9.4 Removing a PCIe Card (Slot 4 or Slot 5)

- Remove filler panel from the riser card slot.
- Insert the new PCIe card into the riser assembly and fasten the screw to secure the card.
- To install the PCIe Card, follow the reverse order.



2.10 Configure the SAS Signal Link setting

Insert one end of the SFF-8643 to SFF-8643 cable into expander borad ports of the barebone. Insert the other end of the SFF-8643 to SFF-8643 cable into the corresponding expander borad ports on site of the barebone.



2.11 Removing and Installing a RJ45 Module

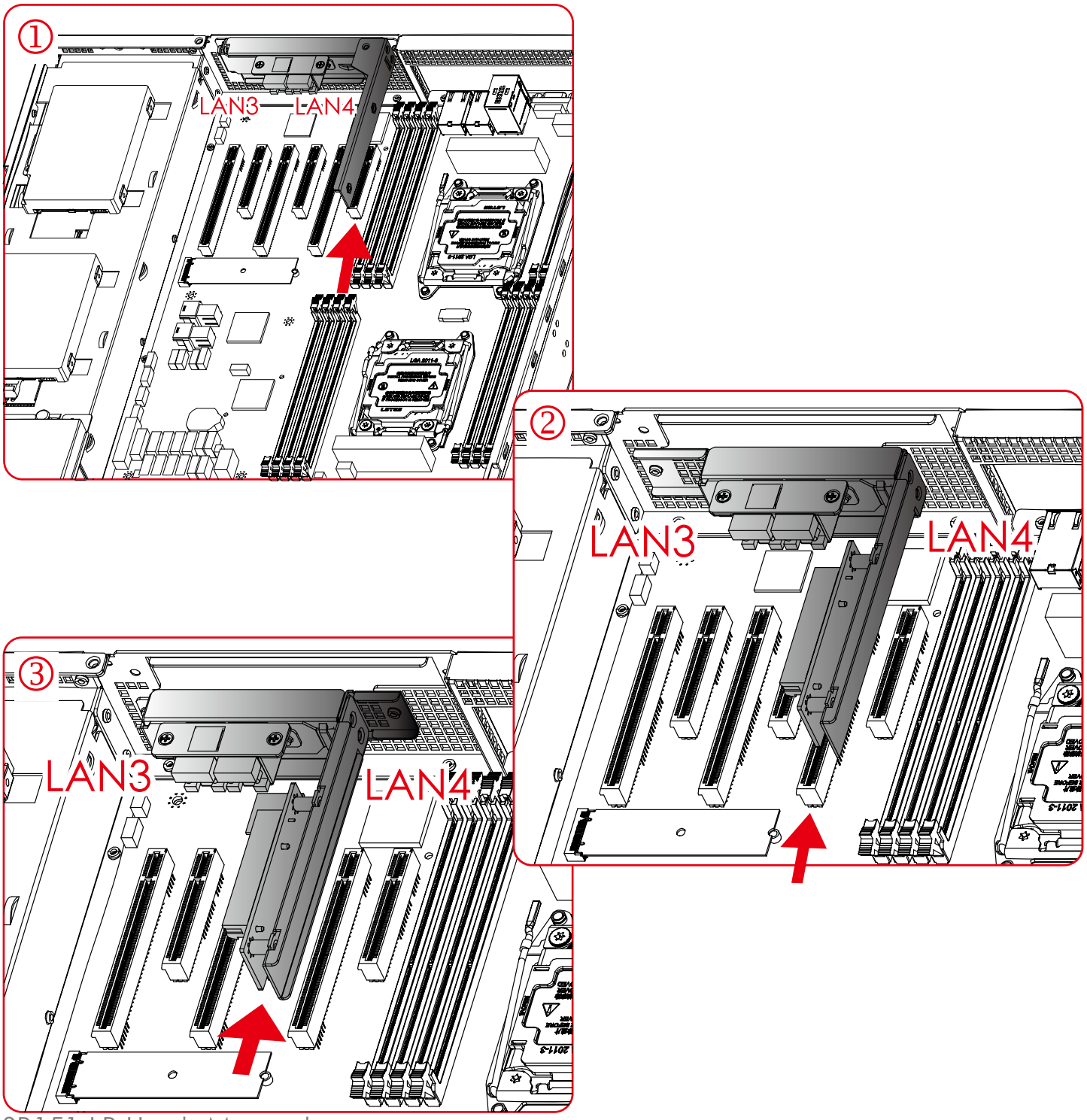
Turn off your Storage Server Barebone and disconnect the power supply.

2.11.1 Installing a RJ45 Module

Installation Instructions for two RJ45 module types .

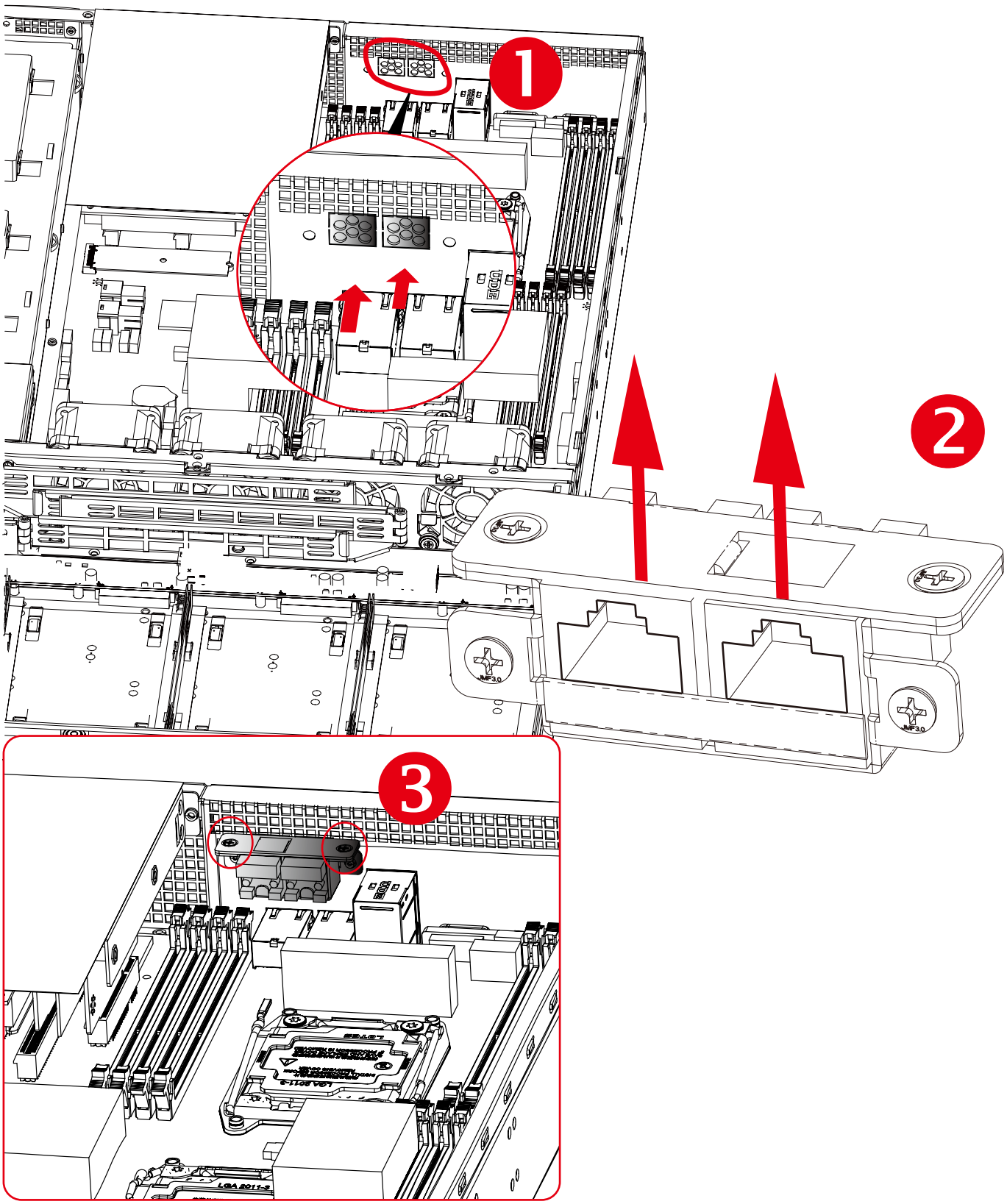
- Type ❶

1. Remove PCI Bracket Slot Cover. SEE 2.9 Removing and Installing a PCIe Card
2. Take the RJ45 module insert the either one slot onto the chassis.
3. Be sure the RJ45 module insert to chassis properly.



- Type 2

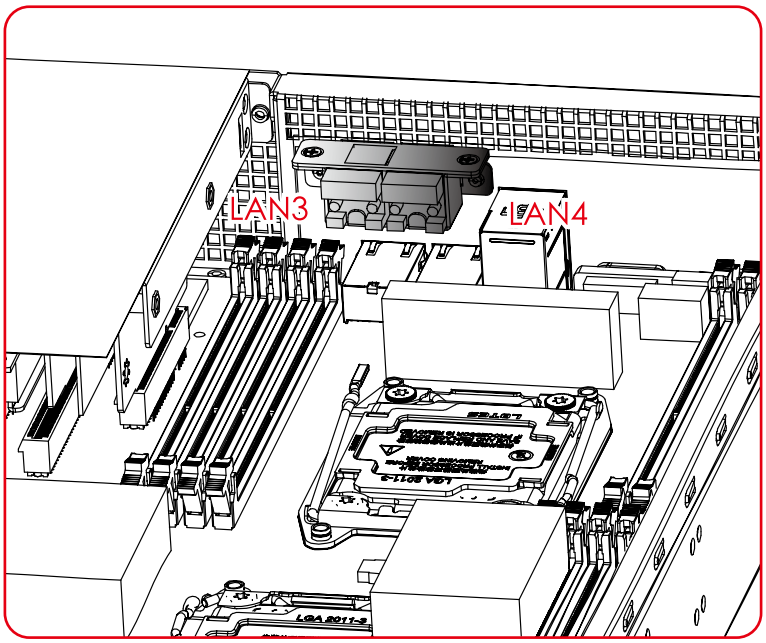
1. Punch out additional flashing on the I/O shield to make room for RJ45 module.
2. Align the module to the top and botton of the I/O shield for correct direction.
3. Secure the RJ45 module on the I/O shield using the screws.



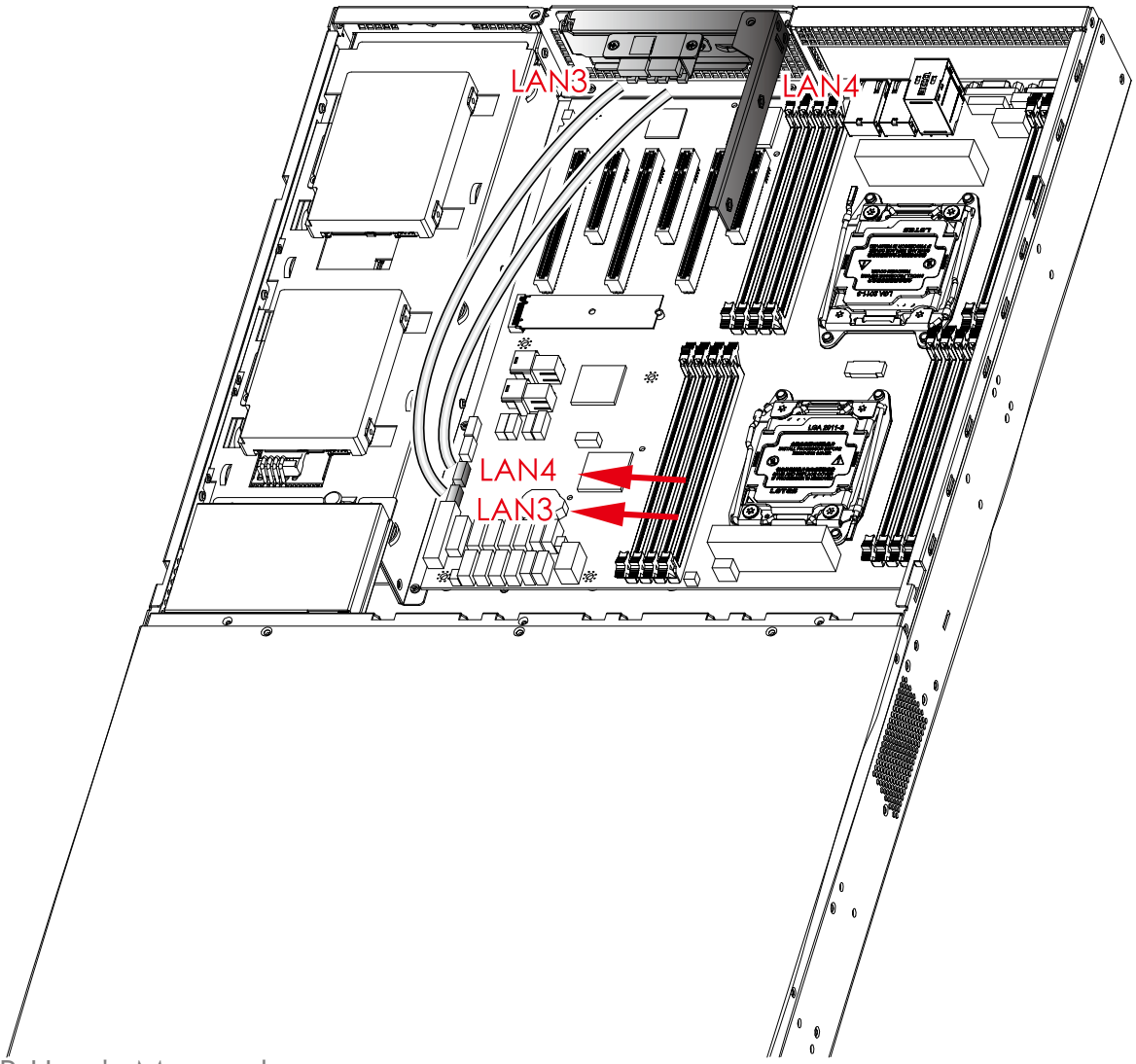
2.11.2 Configure the RJ45 function setting

Insert one end of the cable into port **LAN3** of the barebone. Insert the other end of the cable into the corresponding port **LAN4** on site of the barebone.

1. Type ❶

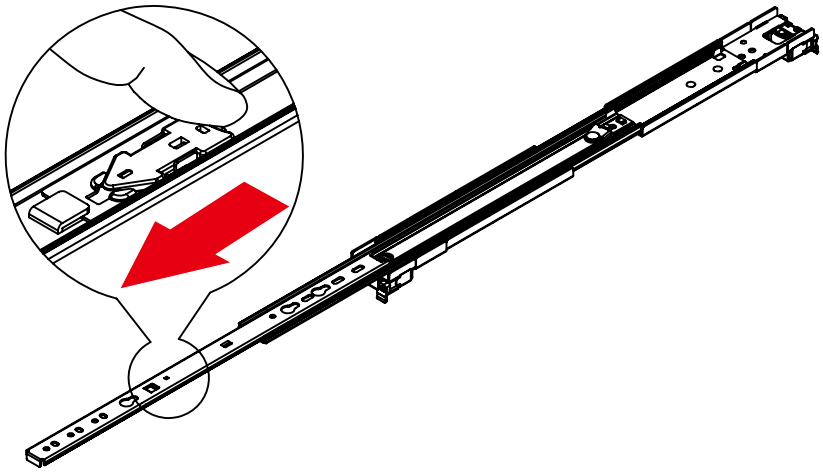


2. Type ❷

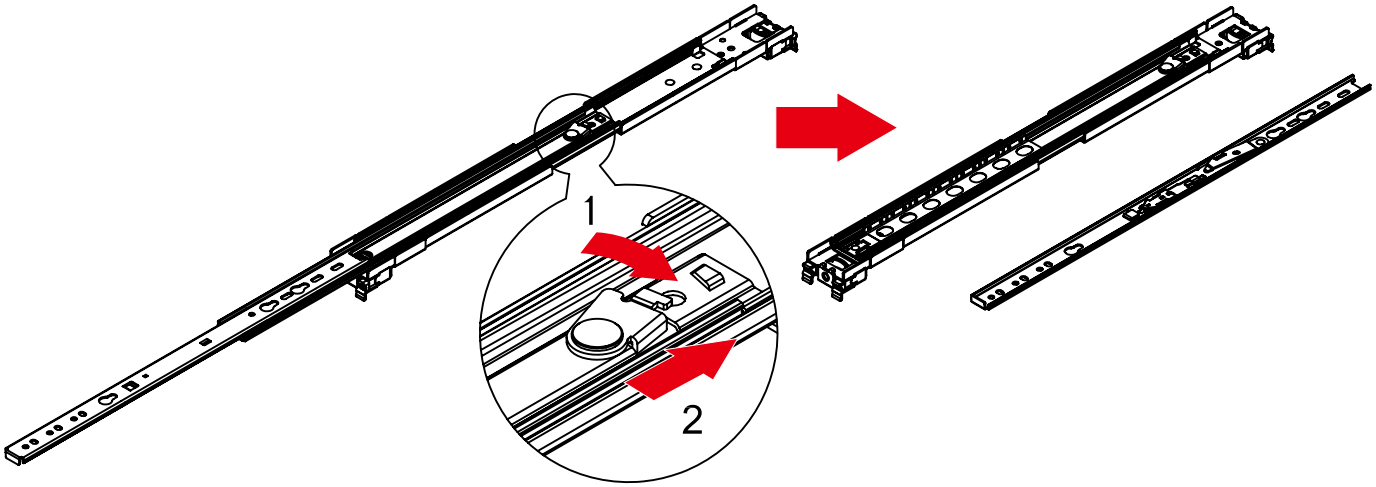


2.12 Tool-less Blade Slide Installation Introduction

1. Pull on the ‘’Front-Release’’to unlock the inner channel from the Slide Assembly.

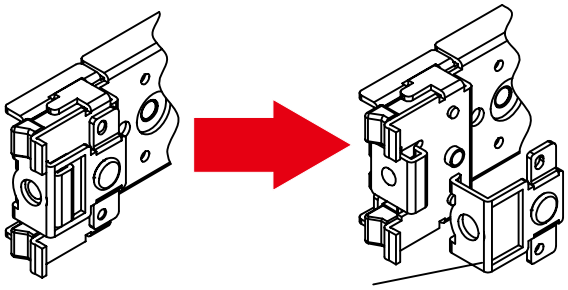


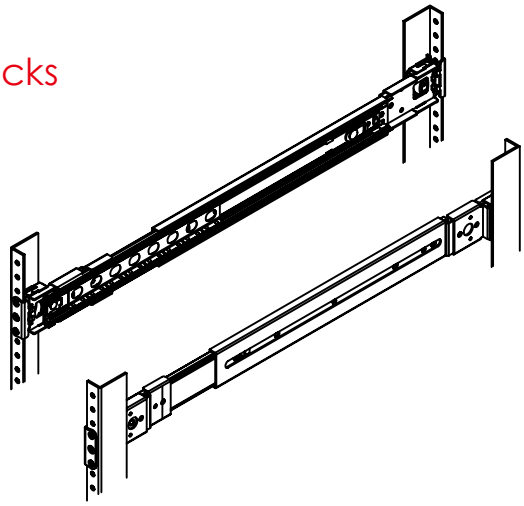
2. Release the Detent-Lock and push Middle Channel inwards to retract Middle Channel.



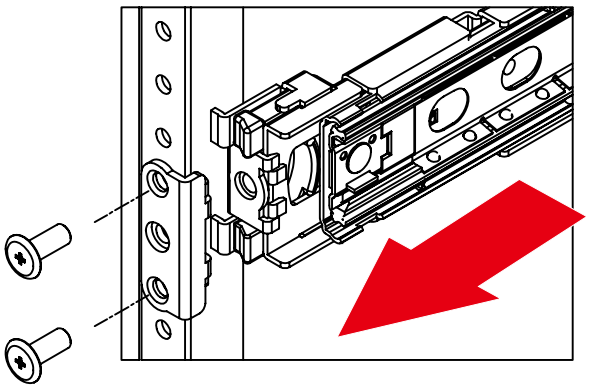
Optional:
Remove Metal Spacer for Aluminium Racks

Metal Spacer

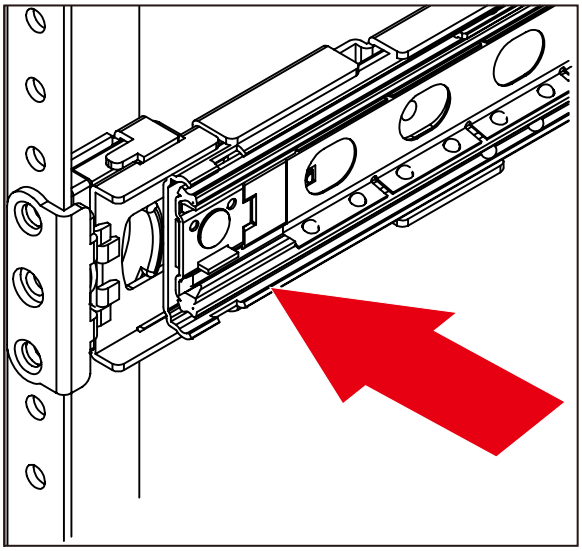




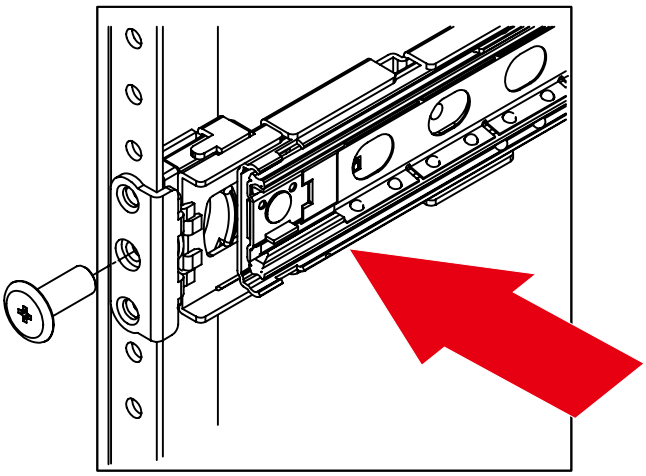
3. Aligning the Front Bracket with the Mounting Hole.



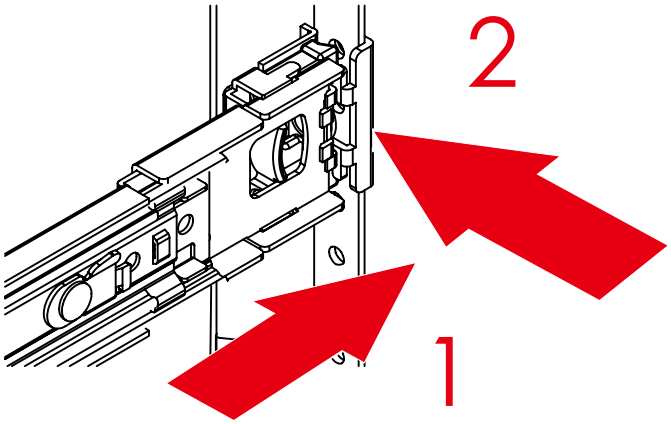
4. Push in to assembly the Front Bracket onto the Rack.



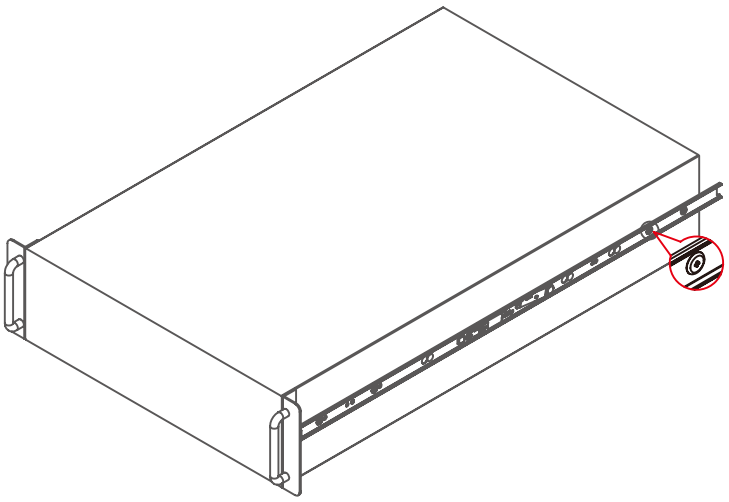
5. Now the bracket is fixed onto the Rack.
   (Optional M6x10L screws are to secure the rails with posts if needed.)



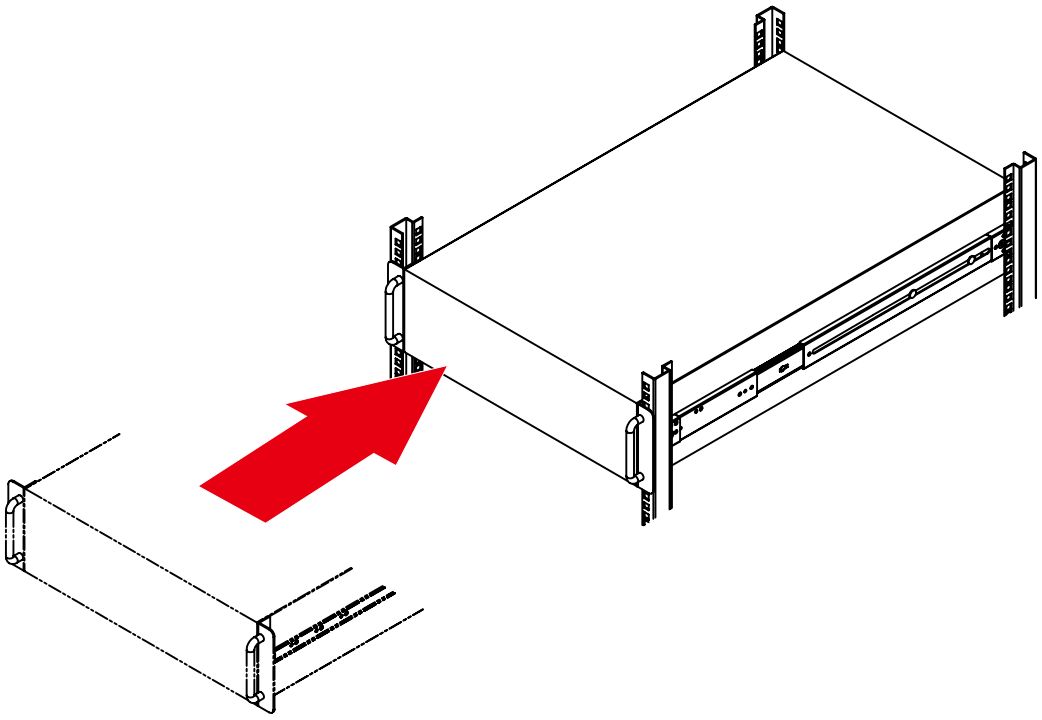
6. Refer to Diagram 3. & 4. to assemble the End Bracket onto the Rack.



7. Assemble the inner channel onto the chassis using thescrews provided.



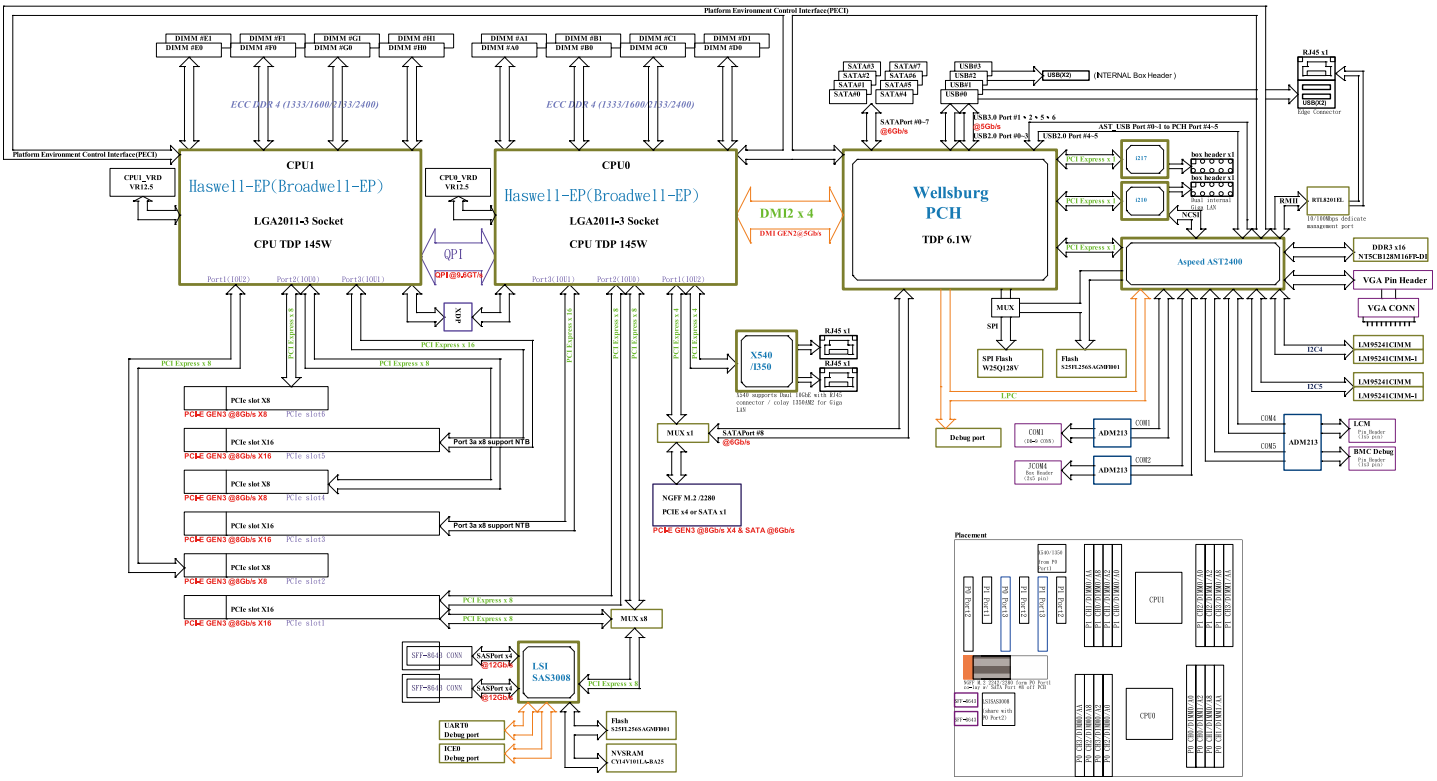
8. Push the chassis with inner channels into Slide to complete Rack Installation.



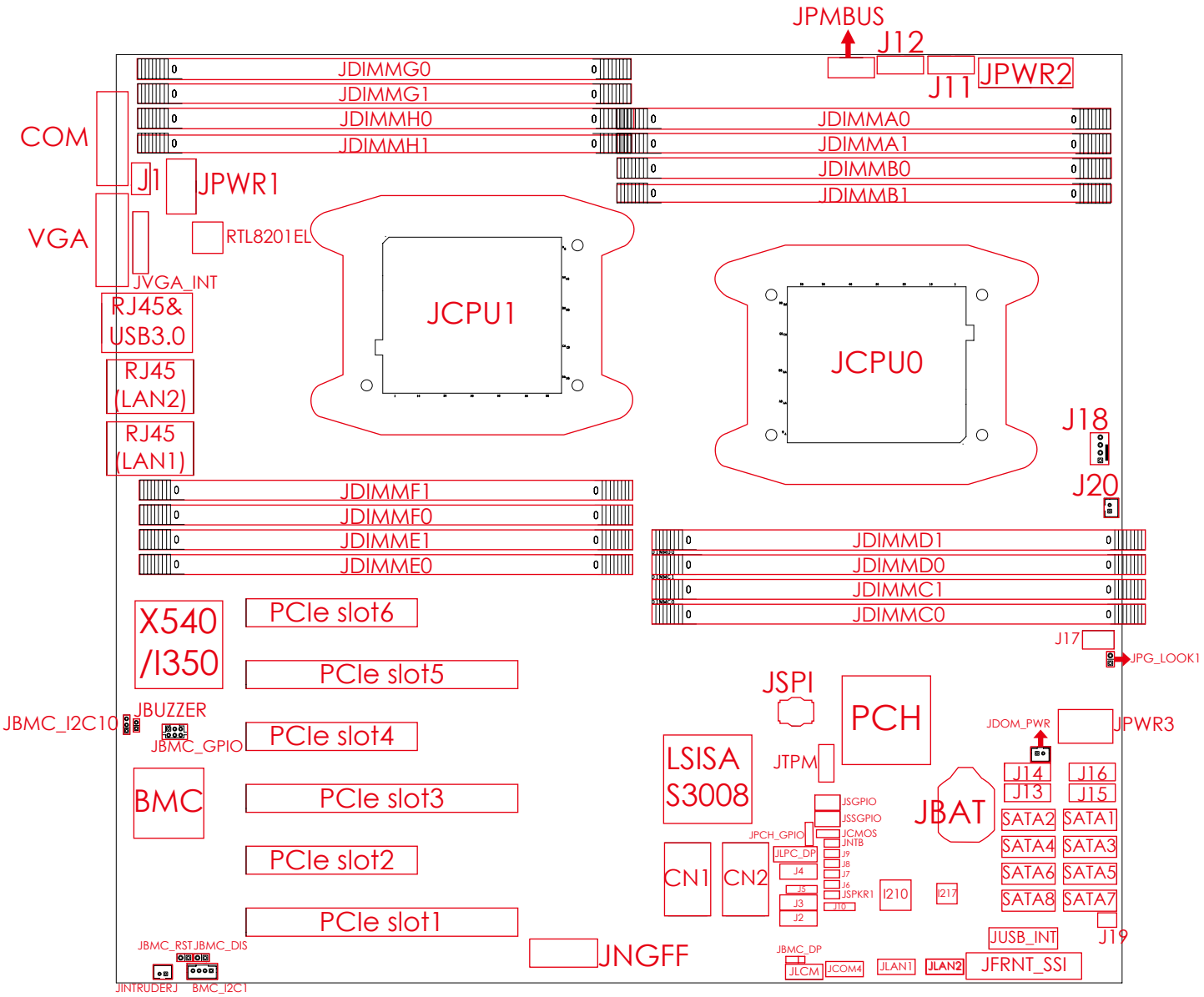
Chapter 3. Motherboard Settings

This section describes the jumpers, internal connectors, and internal LEDs setting on Libra motherboard. Motherboard layout and important jumper settings are listed as below.

3.1 Motherboard block diagram



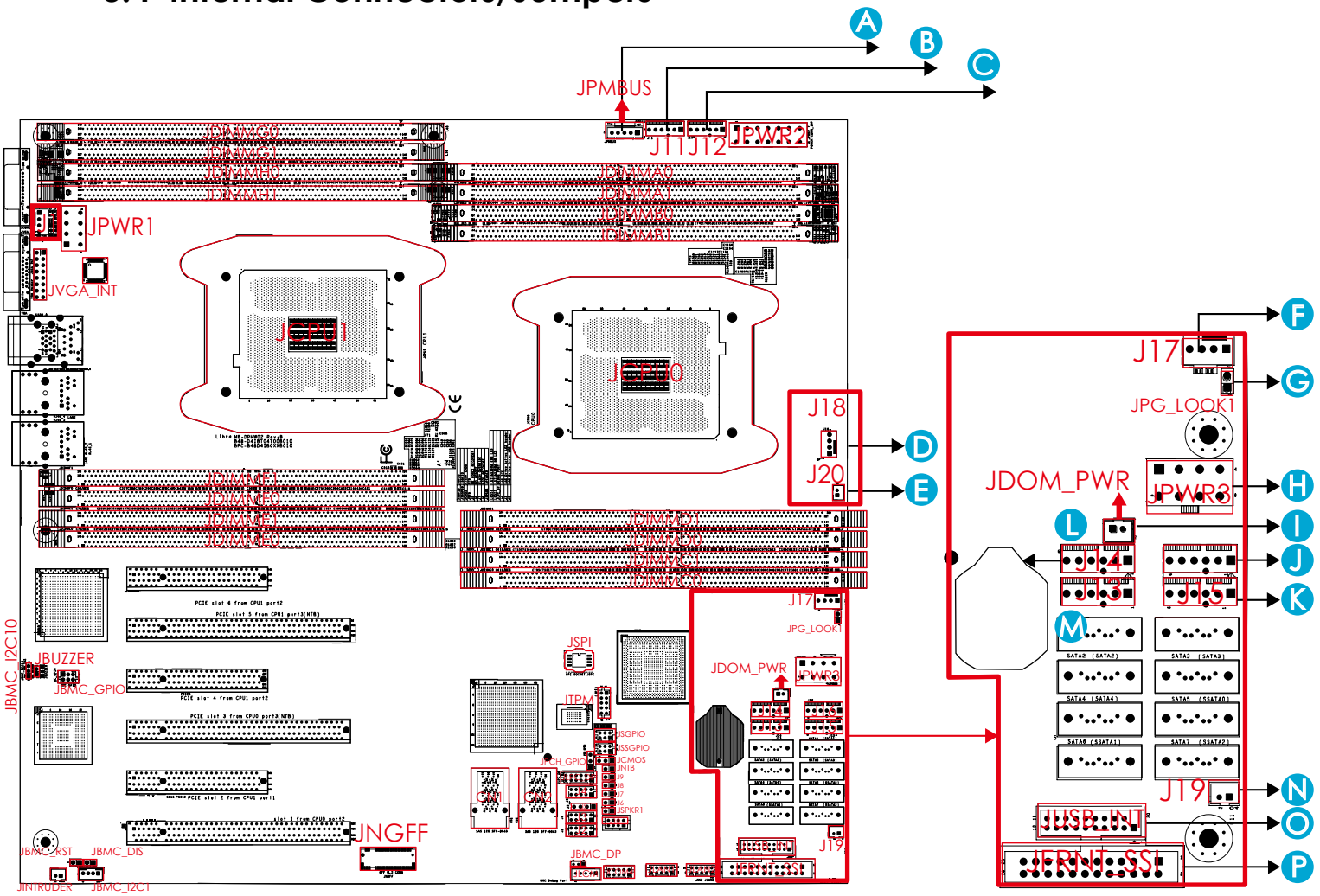
3.2 Motherboard block diagram

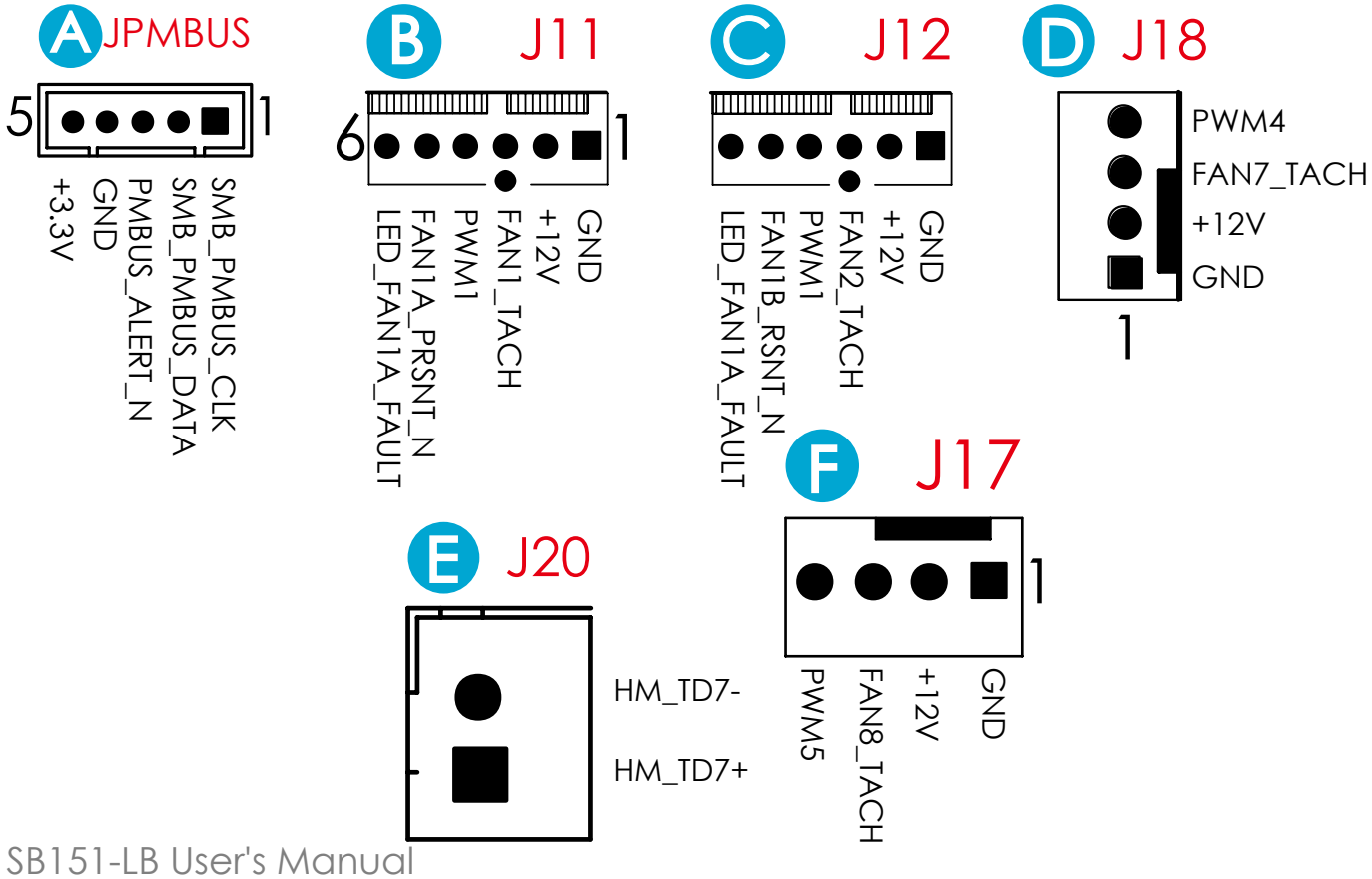


3.3 Motherboard Content List

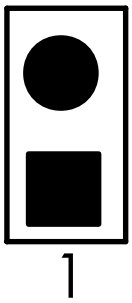
Connectors		Location	Connectors		Location
1	Ethernet (Single Port)	LAN1,LAN2	28	Intruder	JINTRUDER
2	Ethernet (Dual Port)	RJ45	29	PMBUS	JPMBUS
3	USB Port (Dual Port)	USB3.0	30	SPI ROM Socket	JSPI
4	COM Port	COM	31	Speaker	JSPKR1
5	VGA Port	VGA	32	BMC Reset	JBMC_RST
6	Power Supply (4x2 pin)	JPWR1	33	BMC Disable	JBMC_DIS
7	Power Supply (7x2 pin)	JPWR2	34	System PG Lock	JPG_LOCK
8	Power Supply (4x2 pin)	JPWR3	35	BMC Buzzer	JBUZZER
9	SATA-DOM Power	JDOM_PWR	36	BIOS Recovery Mode	J6
10	SSI Front Panel	JFRNT_SSI	37	ME Force Recovery Mode	J9
11	Serial ATA	SATA1~ SATA4	38	Flash Descriptor Security override	J7
12	SSATA	SATA5~ SATA8	39	No Reboot(Watch Dog)	J8
13	VGA Pin header	JVGA_INT	40	NTB (Non-Transparent Bridge)	JNTB
14	COM Port	JCOM4	41	PCH GPIO	JPCH_GPIO
15	Front USB	JUSB_INT	42	LCM(COM Port)	JLCM
16	CPU XDP header	JCPU_XDP	43	LAN3/LAN4	JLAN1/JLAN2
17	CPU Sockets	CPU0/CPU1	44	SAS Drive Error LEDs	J2
18	Debug port	JLPC_DP	45	SAS Drive Active LEDs	J3
19	TPM Port	JTPM	46	SAS ICE0	J4
20	BMC debug Port	JBMC_DP	47	SAS UART0	J5
21	BMC GPIO	JBMC_GPIO	48	LAN3/LAN4 LEDs	J10
22	SGPIO	JSGPIO	49	External Thermal Sensor	J19/J20
23	SSGPIO	JSSGPIO	50	SFF-8643 CONN	CN1,CN2
24	Clear CMOS	JCMOS	51	NGFF M.2 CONN	JNGFF
25	BMC_I2C10	JBMC_I2C10	52	4-PIN FAN	J1,J17,J18
26	BMC IPMI	JBMC_I2C1	53	6-PIN FAN	J11~J16
27	Battery Socket	JBAT	54		

3.4 Internal Connectors/Jumpers



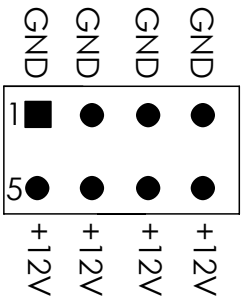


G JPG_LOOK1

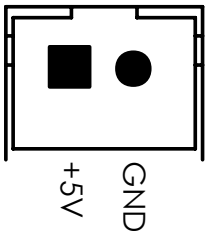


JPG_LOCK1	Setting	
Short	Lock	
Open	Normal	(Default)

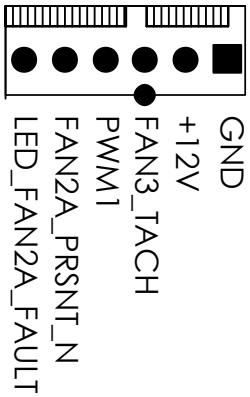
H JPWR3



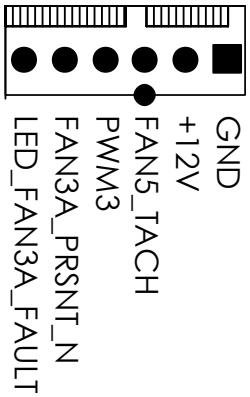
I JDOM_PWR



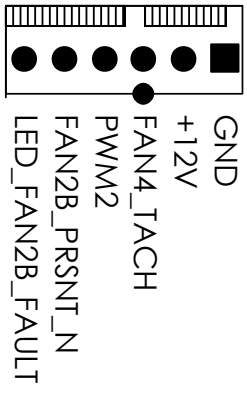
J J16



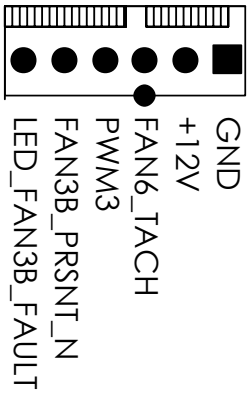
K J15



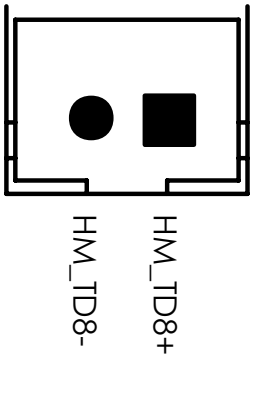
L J14



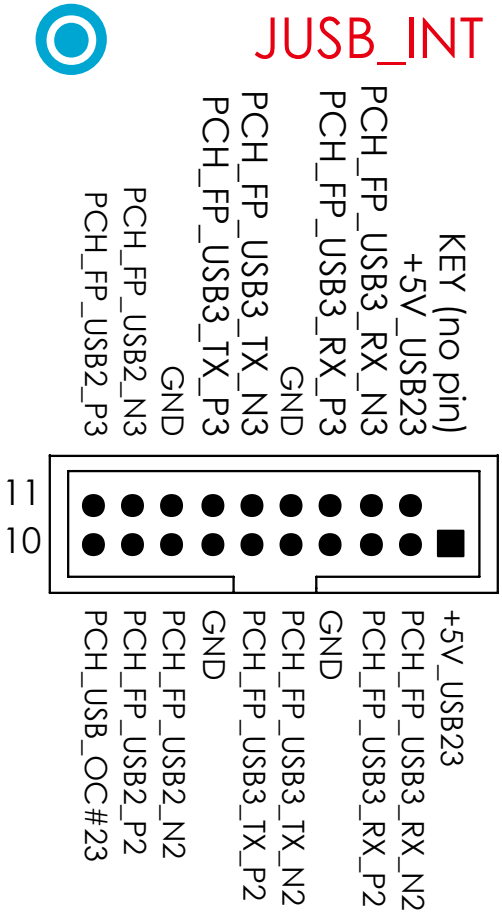
M J13



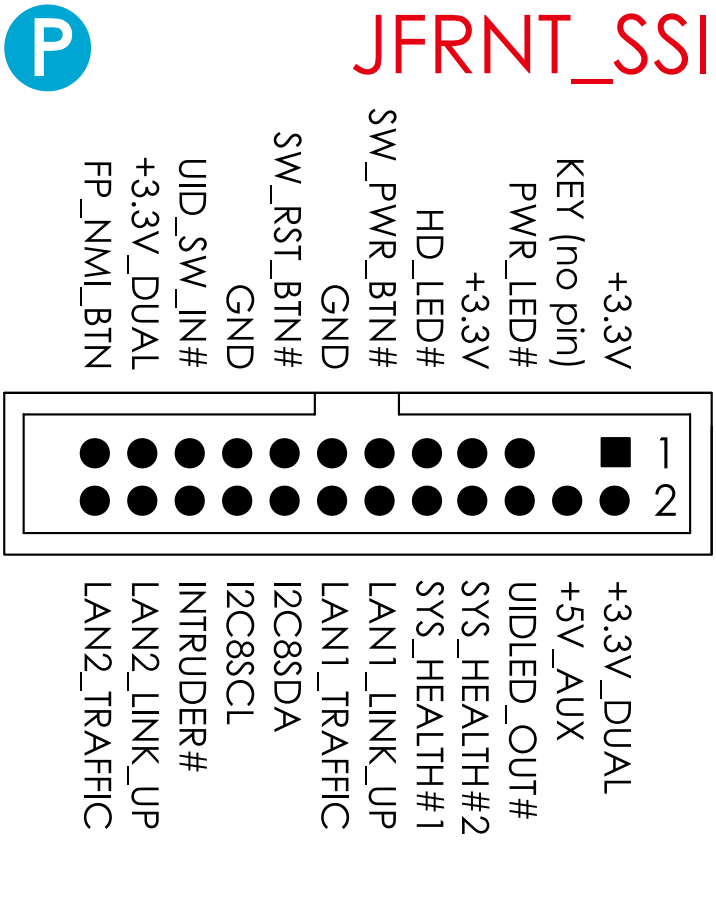
N J19



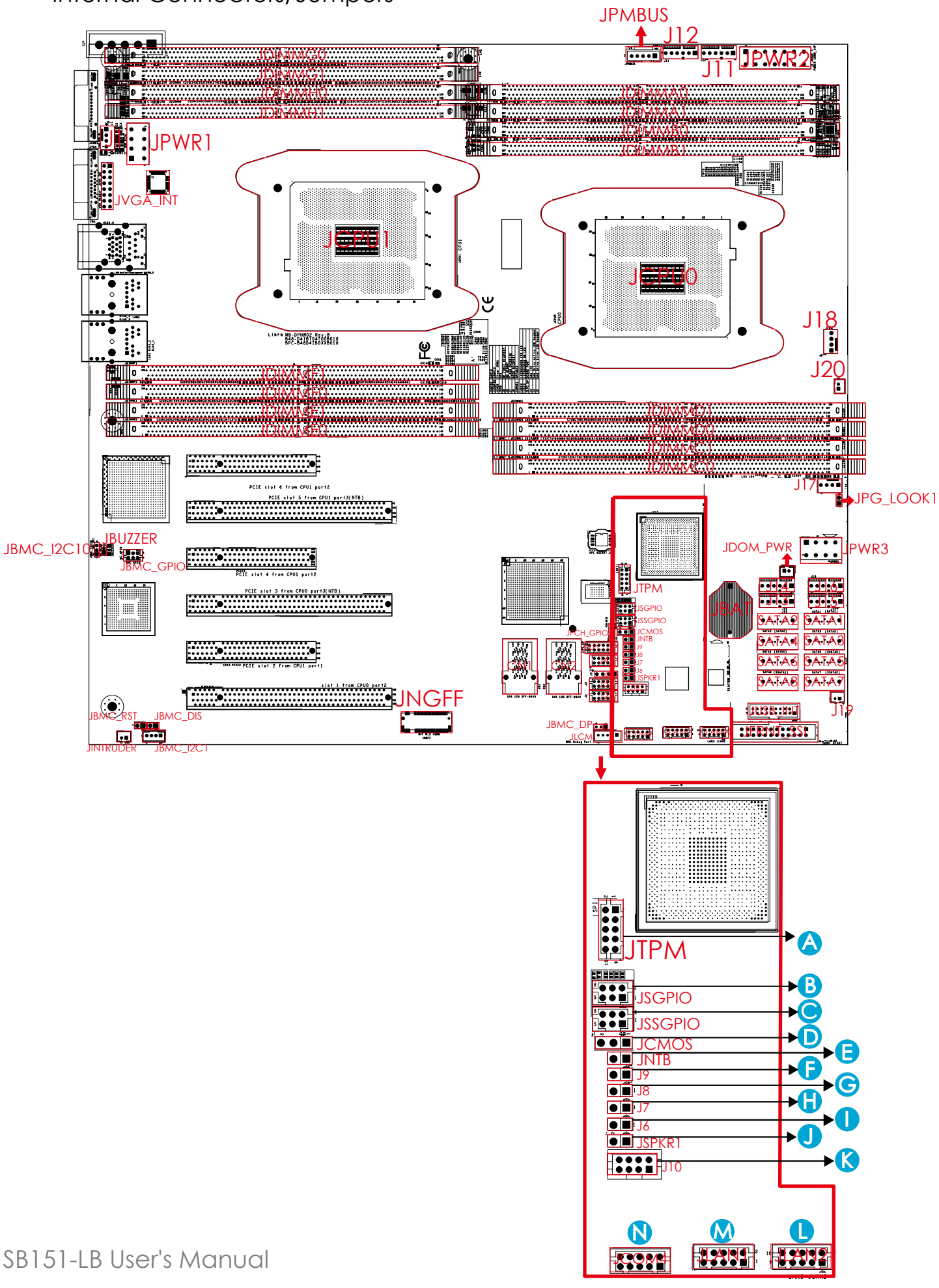
O JUSB_INT



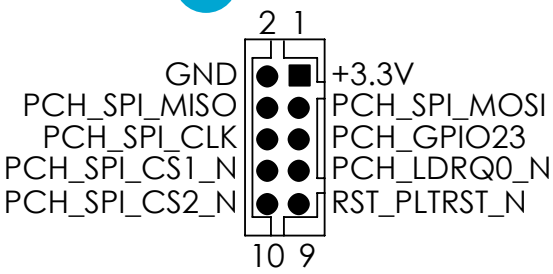
P JFRNT_SSI



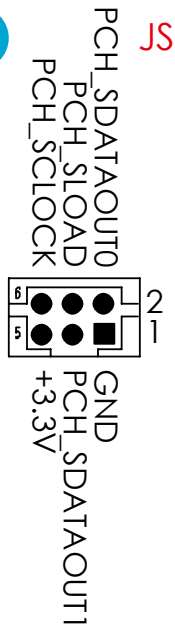
Internal Connectors/Jumpers



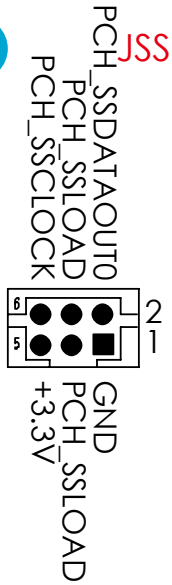
A JTPM



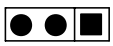
B JSGPIO



C JSSGPIO



D JCMOS



JCMOS	Setting	
Pin1-2	Normal	(Default)
Pin2-3	Clear CMOS	

E JNTB

JNTB	Setting	
Short	Downstream port	
Open	Upstream port	(Default)

F J9

J9	Setting	
Short	ME Recovery Mode	
Open	Normal	(Default)

G J8

J8	Setting	
Short	Enable	
Open	Disable	(Default)

H J7

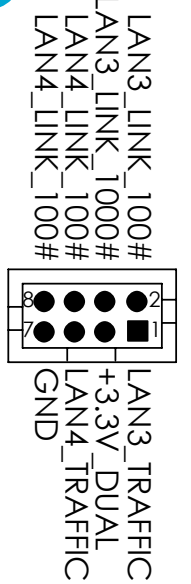
J7	Setting	
Short	Flash Security override	
Open	Normal	(Default)

I J6

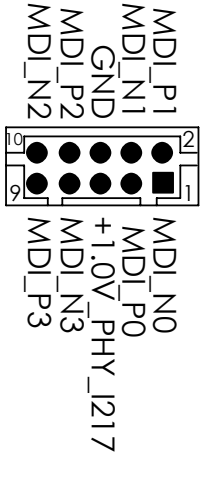
J6	Setting	
Short	BIOS Recovery Mode	
Open	Normal	(Default)

J JSPKR1

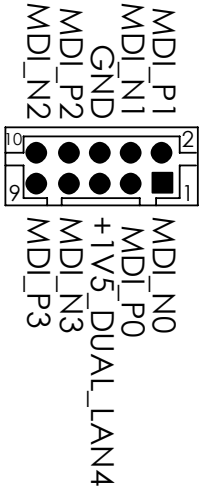
K J10



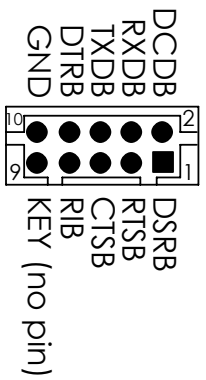
L JLAN2



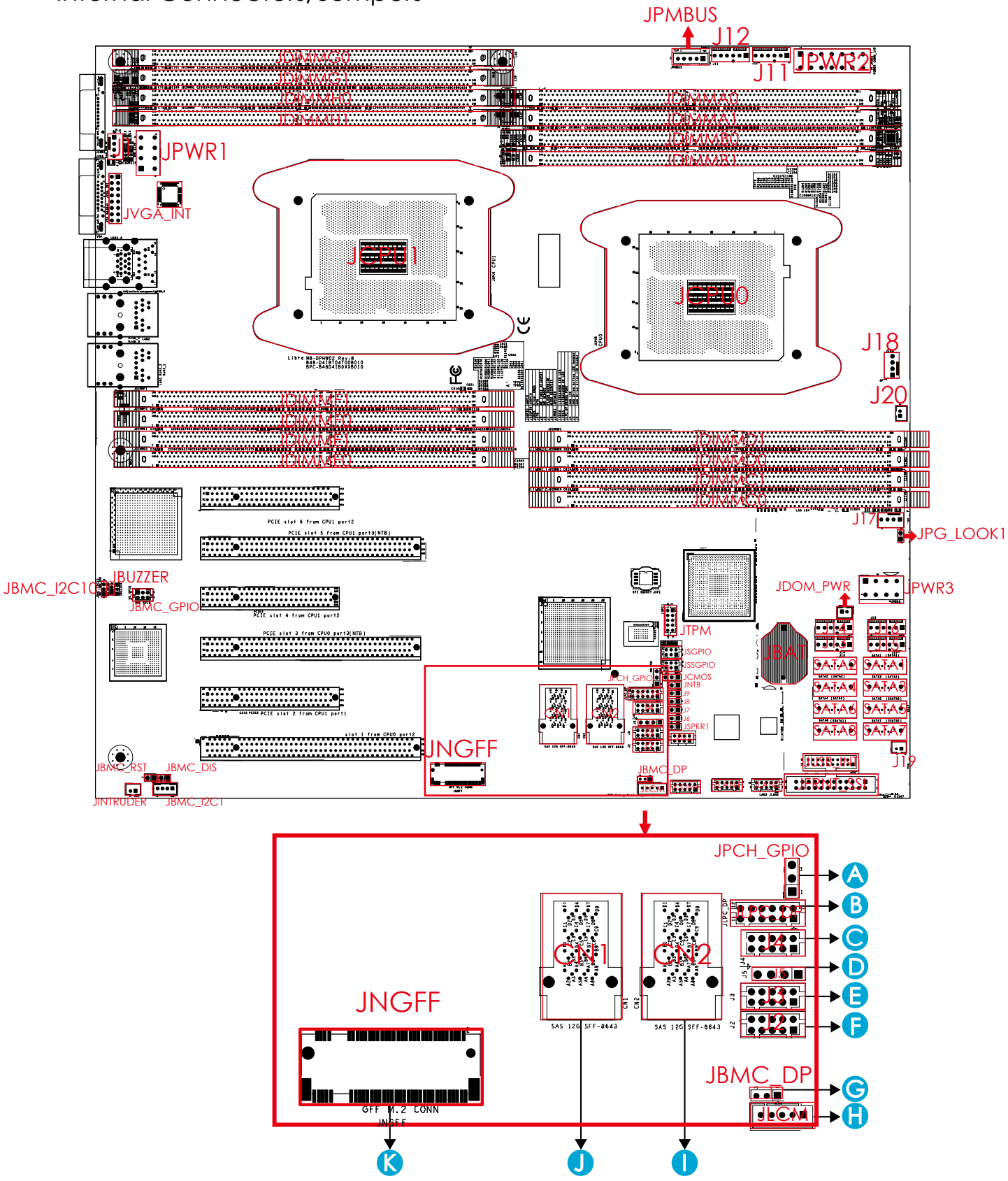
M JLAN1

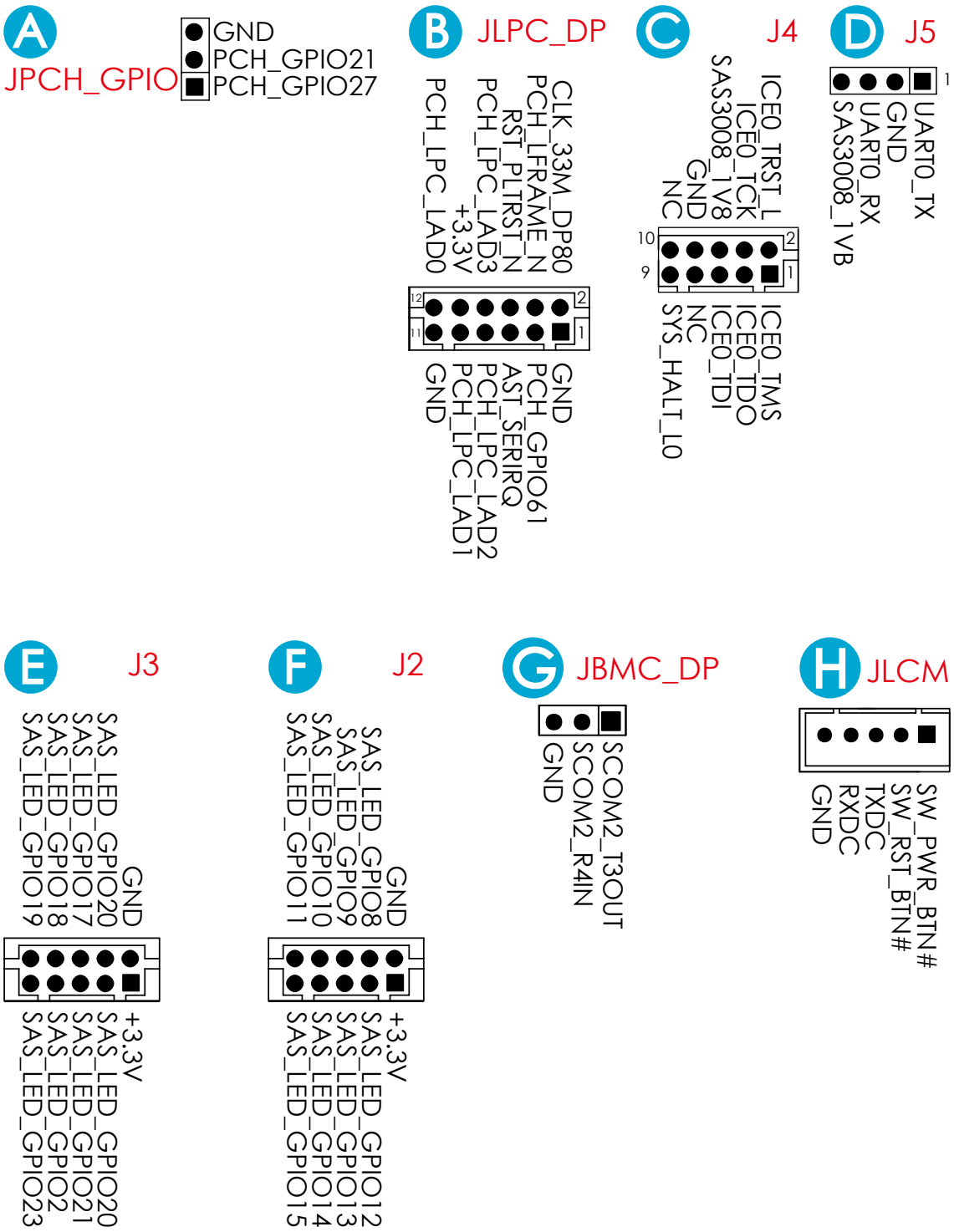


N JLAN4

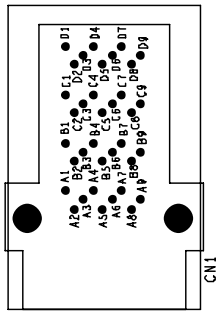


Internal Connectors/Jumpers

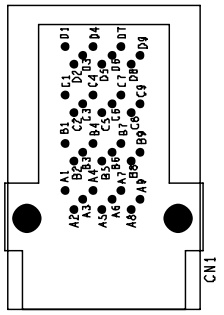



A
JPCH_GPIO
GND
PCH_GPIO21
PCH_GPIO27
B
JLPC_DP
CLK_33M_DP80
PCH_LFRAME_N
RST_PLTRST_N
PCH_LPC_LAD3
+3.3V
PCH_LPC_LAD0
GND
PCH_GPIO61
AST_SERIRQ
PCH_LPC_LAD2
PCH_LPC_LAD1
C
J4
ICE0_TRST_L
ICE0_TCK
SAS3008_1V8
GND
NC
ICE0_TMS
ICE0_TDO
ICE0_TDI
NC
SYS_HALT_L0
D
J5
UART0_TX
GND
UART0_RX
SAS3008_1VB
E
J3
SAS_LED_GPIO20
SAS_LED_GPIO17
SAS_LED_GPIO18
SAS_LED_GPIO19
GND
+3.3V
SAS_LED_GPIO20
SAS_LED_GPIO21
SAS_LED_GPIO2
SAS_LED_GPIO23
F
J2
SAS_LED_GPIO8
SAS_LED_GPIO9
SAS_LED_GPIO10
SAS_LED_GPIO11
GND
+3.3V
SAS_LED_GPIO12
SAS_LED_GPIO13
SAS_LED_GPIO14
SAS_LED_GPIO15
G
JBMC_DP
SCOM2_T3OUT
SCOM2_R4IN
GND
H
JLCM
SW_PWR_BTN#
SW_RST_BTN#
TXDC
RXDC
GND

I



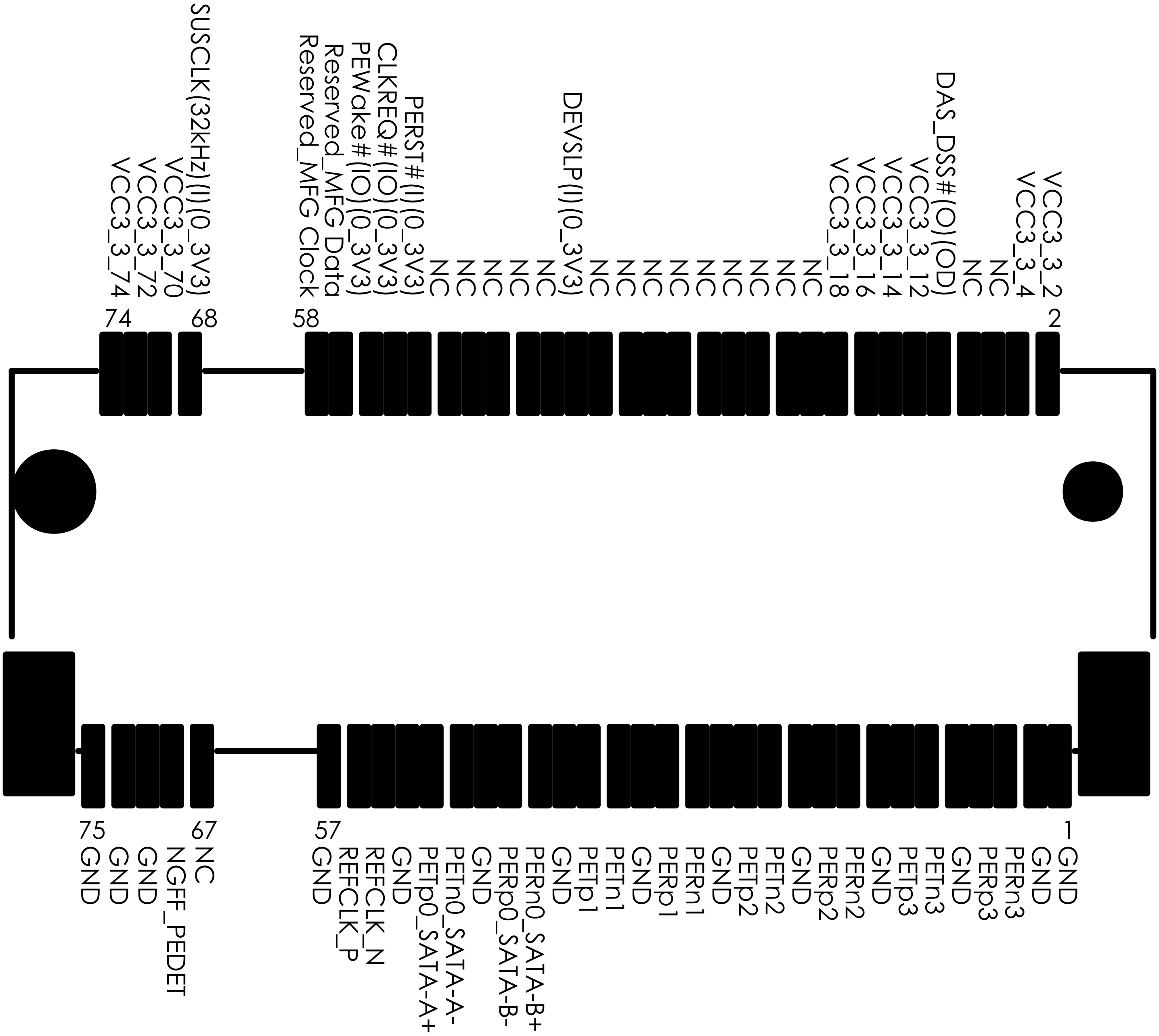
J



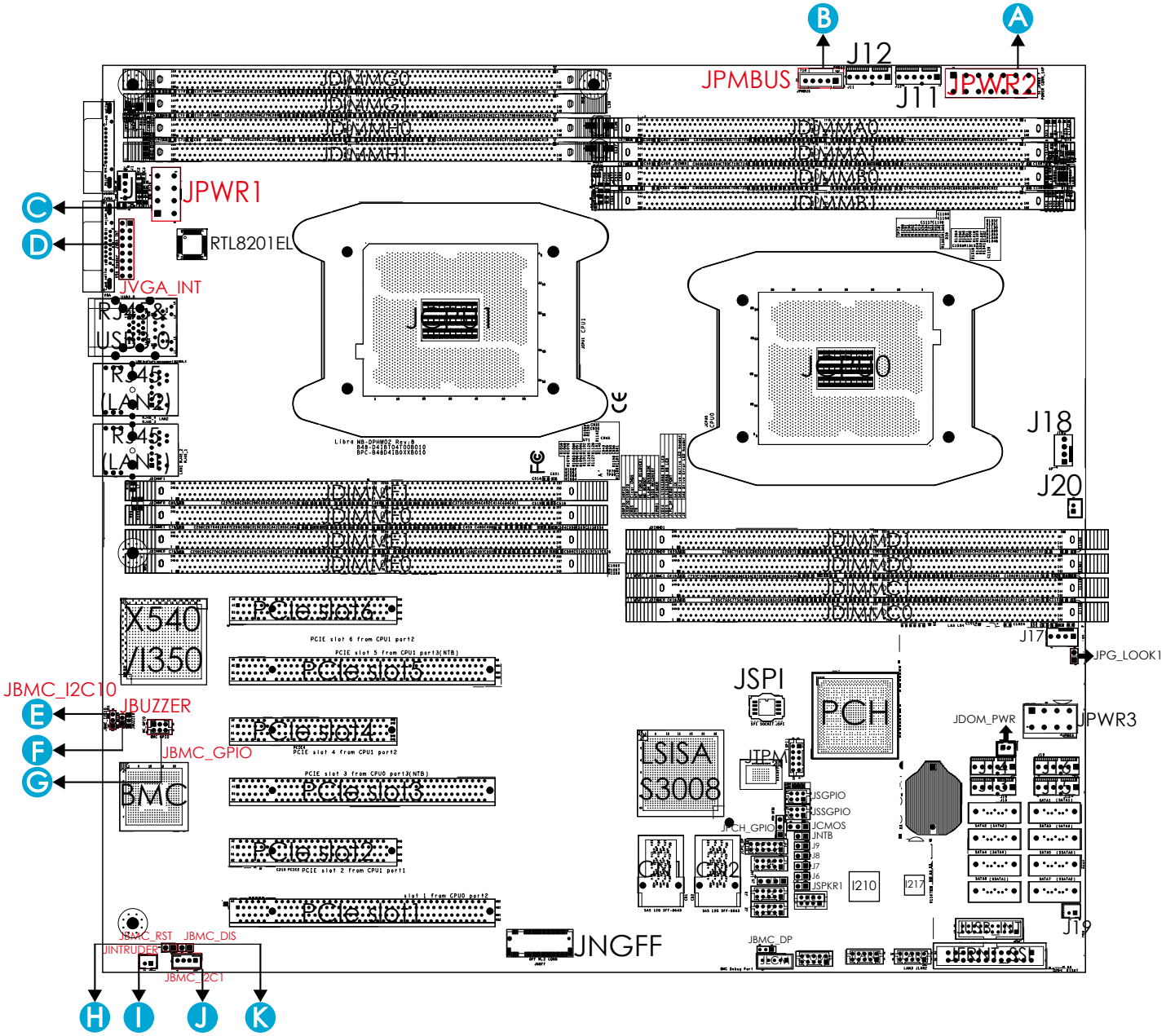
SFF-8643 CONN	CN2
A1.NC	C1.SIO0_SAS_DIN
A2.SIO0_SAS_CLK	C2.GND
A3.GND	C3.GND
A4.SAS_EXP_RX_P2	C4. SAS_EXP_TX_P2
A5. SAS_EXP_RX_N2	C5. SAS_EXP_TX_N2
A6.GND	C6.GND
A7. SAS_EXP_RX_P3	C7. SAS_EXP_TX_P3
A8. SAS_EXP_RX_N3	C8. SAS_EXP_TX_N3
A9.GND	C9.GND
B1.GND	D1.SIO0_SAS_DOUT
B2.SIO0_SAS_LOAD	D2.NC
B3.GND	D3.GND
B4. SAS_EXP_RX_P1	D4. SAS_EXP_TX_P1
B5. SAS_EXP_RX_N1	D5. SAS_EXP_TX_N1
B6.GND	D6.GND
B7. SAS_EXP_RX_P0	D7. SAS_EXP_TX_P0
B8. SAS_EXP_RX_N0	D8. SAS_EXP_TX_N0
B9. GND	D9.GND

SFF-8643 CONN	CN1
A1.NC	C1.SIO1_SAS_DIN
A2.GND	C2.GND
A3.GND	C3.GND
A4.SAS_EXP_RX_P6	C4. SAS_EXP_TX_P6
A5. SAS_EXP_RX_N6	C5. SAS_EXP_TX_N6
A6.GND	C6.GND
A7. SAS_EXP_RX_P7	C7. SAS_EXP_TX_P7
A8. SAS_EXP_RX_N7	C8. SAS_EXP_TX_N7
A9.GND	C9.GND
B1.GND	D1.SIO1_SAS_DOUT
B2.SIO1_SAS_LOAD	D2.NC
B3.GND	D3.GND
B4. SAS_EXP_RX_P5	D4. SAS_EXP_TX_P5
B5. SAS_EXP_RX_N5	D5. SAS_EXP_TX_N5
B6.GND	D6.GND
B7. SAS_EXP_RX_P4	D7. SAS_EXP_TX_P4
B8. SAS_EXP_RX_N4	D8. SAS_EXP_TX_N4
B9. GND	D9.GND

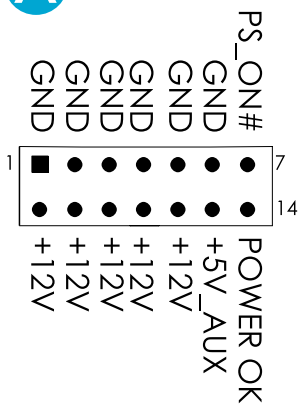
JNGFF


VCC3_3_2
VCC3_3_4
NC
NC
DAS_DSS#(O)(OD)
VCC3_3_12
VCC3_3_14
VCC3_3_16
VCC3_3_18
NC
NC
NC
NC
NC
NC
NC
DEVSLP(I)(0_3V3)
NC
NC
NC
NC
NC
PERST#(I)(0_3V3)
CLKREQ#(IO)(0_3V3)
PEWake#(IO)(0_3V3)
Reserved_MFG Data
Reserved_MFG Clock
SUSCLK(32kHz)(I)(0_3V3)
VCC3_3_70
VCC3_3_72
VCC3_3_74
74
68
58
2
75
67
57
1
GND
GND
PERn3
PERp3
GND
PETn3
PETp3
GND
PERn2
PERp2
GND
PETn2
PETp2
GND
PERn1
PERp1
GND
PETn1
PETp1
GND
PERn0_SATA-B+
PERp0_SATA-B-
GND
PETn0_SATA-A-
PETp0_SATA-A+
GND
REFCLK_N
REFCLK_P
GND
NC
NGFF_PEDET
GND
GND
GND

Internal Connectors/Jumpers

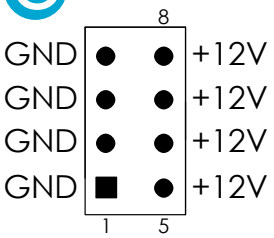


A JPWR2

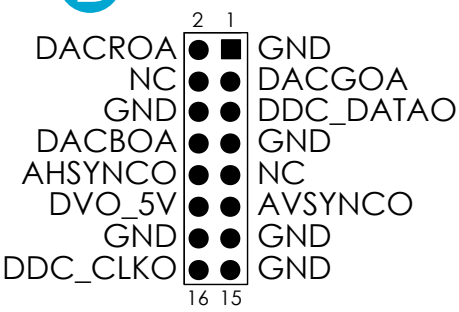


B JPMBUS

C JPWR1



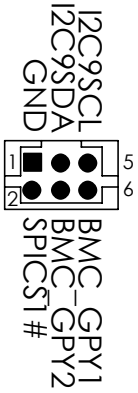
D JVGA_INT



E JBMC_I2C10

F JBUZZER

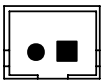
G JBMC_GPIO



H JBMC_RST

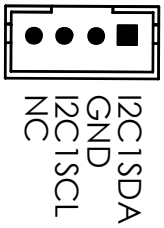
JBMC_RST	Setting	
Short	Reset BMC	
Open	Normal	(Default)

I JINTRUDER



JINTRUDER	Setting	
Short	Case Open	
OFF	Enable	(Default)

J JBMC_I2C1



K JBMC_DIS

JBMC_DIS	Setting	
Short	Disable	
Open	Normal	(Default)

3.5 LEDs

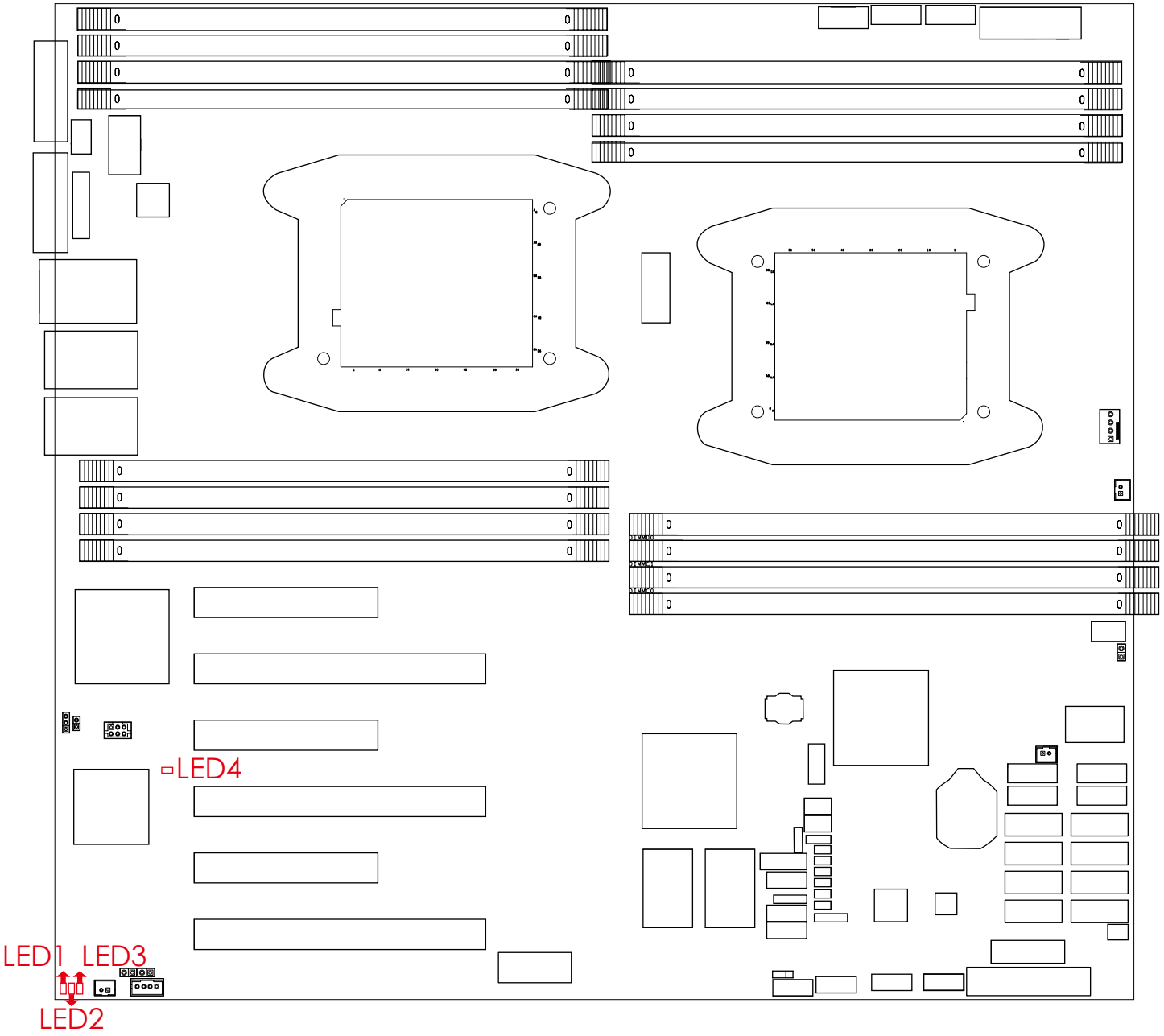
3.5.1 Front Panel LED

Power	Yellow	System is On
	Blinking	System is in Standby; System is off, but has AC power
	Off	System has no AC power
UID	Blue	UID activity detected
	Off	No UID activity detected
System Error	Red	Critical system failure detected (processors, memory, voltage regulators, thermal events,fan failures, NMI, etc)
	Off	No critical failures detected
Hard Disk	Green (Blinking)	Disk activity detected
	Off	No disk activity detected
LAN 1	Green (Blinking)	LAN1 activity detected
	Off	LAN1 is not active
LAN 2	Green (Blinking)	LAN2 activity detected
	Off	LAN2 is not active

3.5.2 Rear Panel LED

LAN* (Right)	Green (Blinking)	LAN* activity detected
	Off	LAN* is not active, LAN cable no connect
LAN* (Left)	Status LED	100M: Green 10M/No connect: Off
LAN1 (Right)	Green (Blinking)	LAN1 activity detected
	Off	LAN1 is not active, LAN cable no connect
LAN1 (Left)	Status LED	10G : Green, 1G : Yellow, 10M/No connect: Off(X540)
		1G : Yellow, 100M: Green, 10M/No connect: Off(I350)
LAN2 (Right)	Green (Blinking)	LAN2 activity detected
	Off	LAN2 is not active, LAN cable no connect
LAN2 (Left)	Status LED	10G : Green, 1G : Yellow, 10M/No connect: Off(X540)
		1G : Yellow, 100M: Green, 10M/No connect: Off(I350)

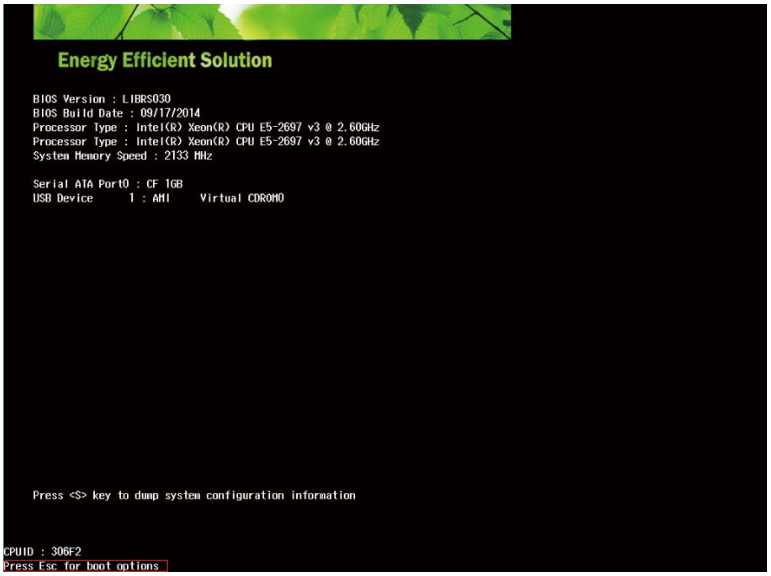
3.5.3 Internal LEDs



HEART BIT	ON(Blinking)	BMC activity detected
(LED4)	OFF	BMC is not active
SYS PG LED	ON	System power good ready
(LED2)	OFF	System power good is not ready
RSMRST PG LED	ON	Resume Well Reset ready
(LED3)	OFF	Resume Well Reset is not ready
UID LED	ON	UID activity detected
(LED1)	OFF	UID not activity detected

CAUTION: WHEN QUIET BOOT IS ENABLED, OEM LOGO WILL BE DISPLAYED INSTEAD OF POST MESSAGES.

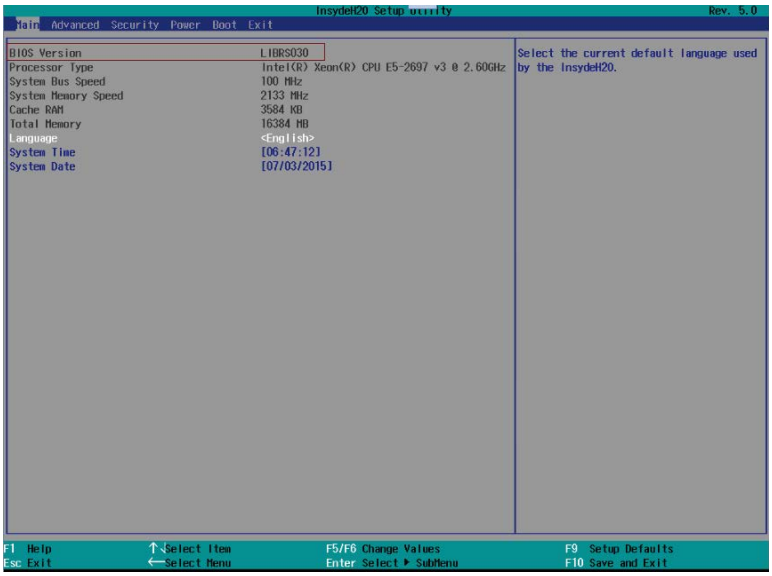
Press ESC to run the setup procedure.



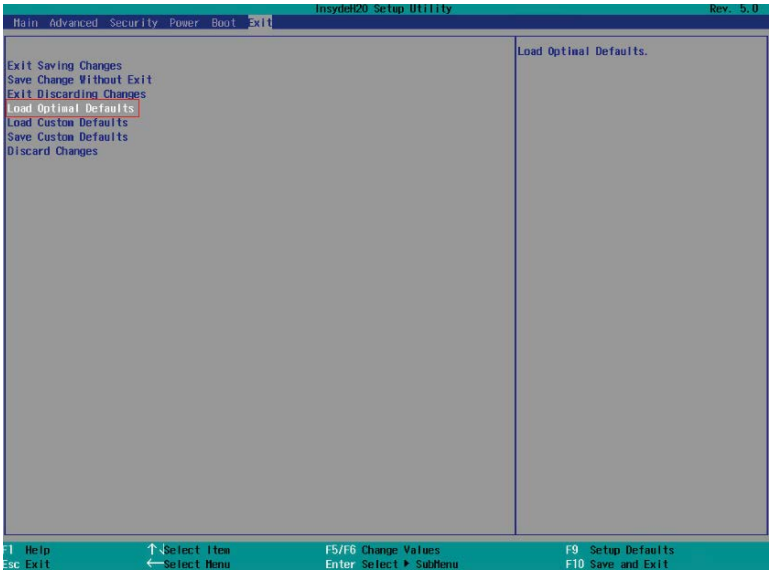
There will be a message "Entering SETUP" displayed on the diagnostics screen.

CAUTION: FOR THE OFFICIAL RELEASED VERSION, THE LAST DIGIT OF THE BIOS VERSION MUST END IN AN "0."

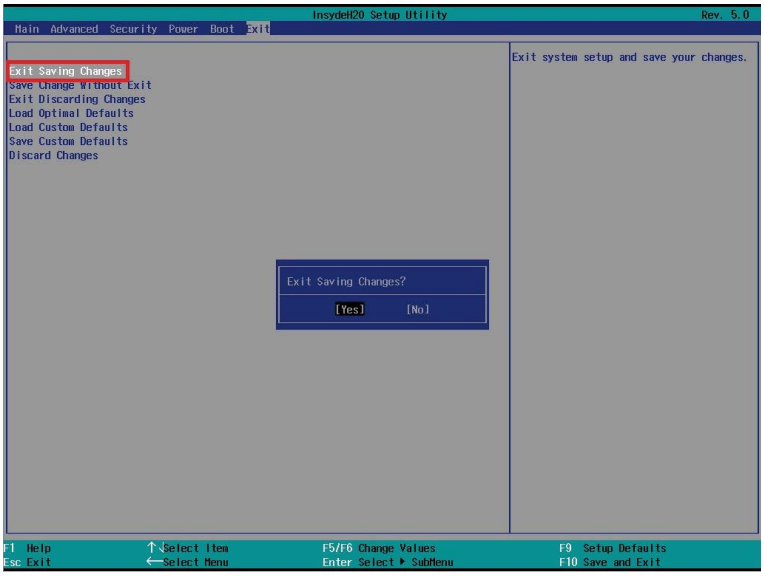
Identify the BIOS Version



Load Optimal Default setting



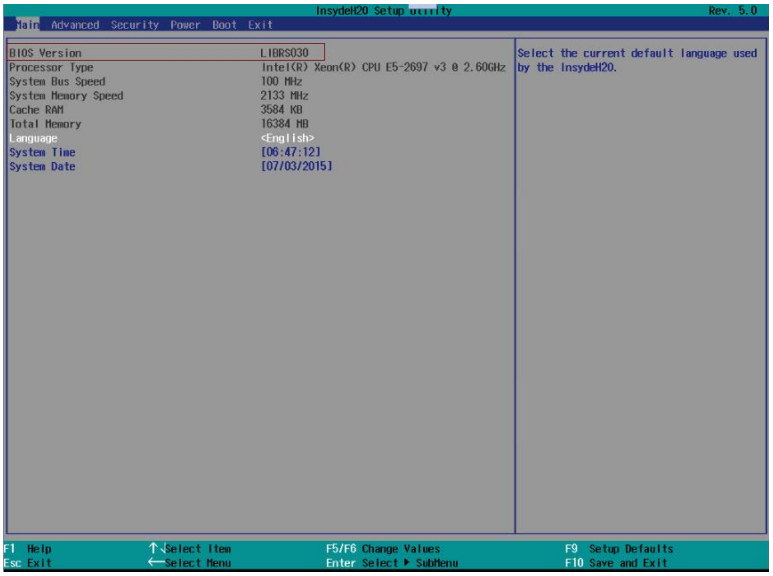
Save the setting and exit the BIOS setup utility.



4.1 Updating BIOS

Important Notes:

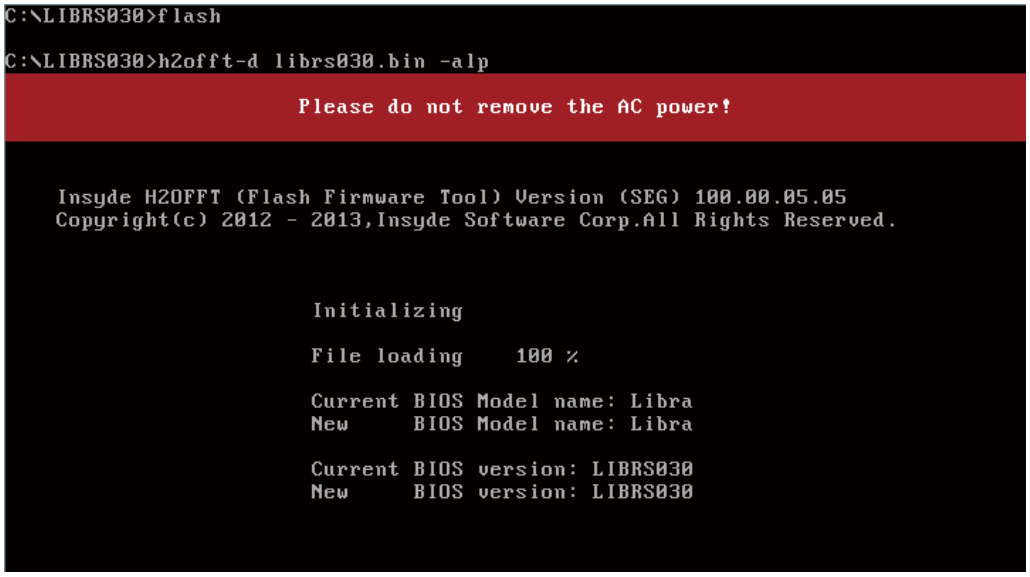
To identify the current BIOS version, please check out on BIOS setup.



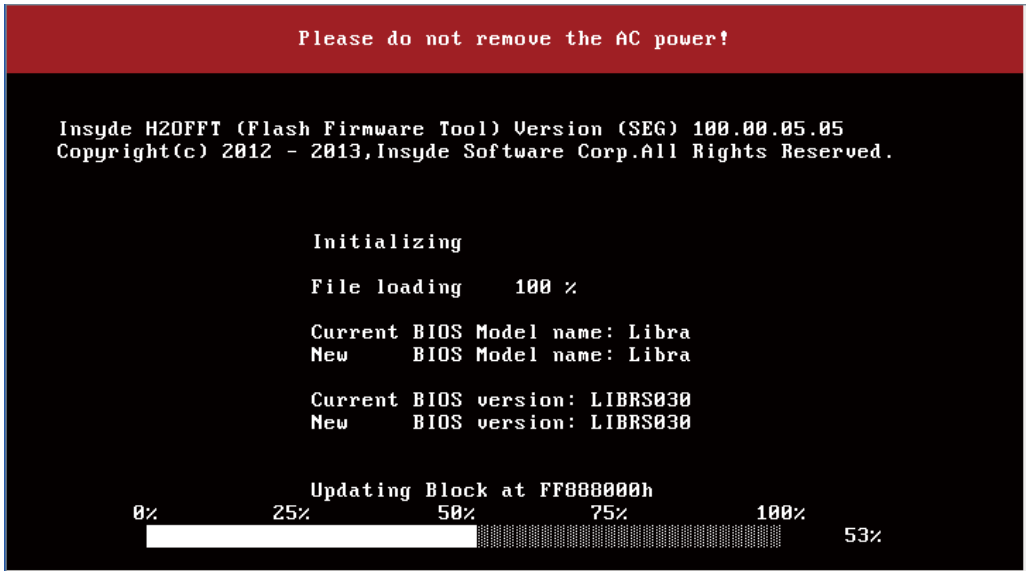
Update BIOS by INSYDE H2OFFT-D utility under DOS environment

If you need to update Flash in the DOS environment, please use H2OFFT-D utility. To use this utility, you must include the flash.bat , H2OFFT-D.exe, and bin file in the same folder. Please follow the instructions to update whole flash part:

Execute flash.bat to update Flash in the DOS environment.

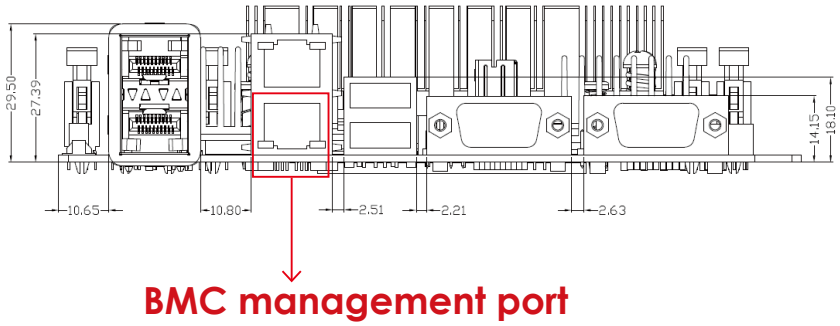


Reboot system.



Chapter 5.
BMC Configuration and Settings

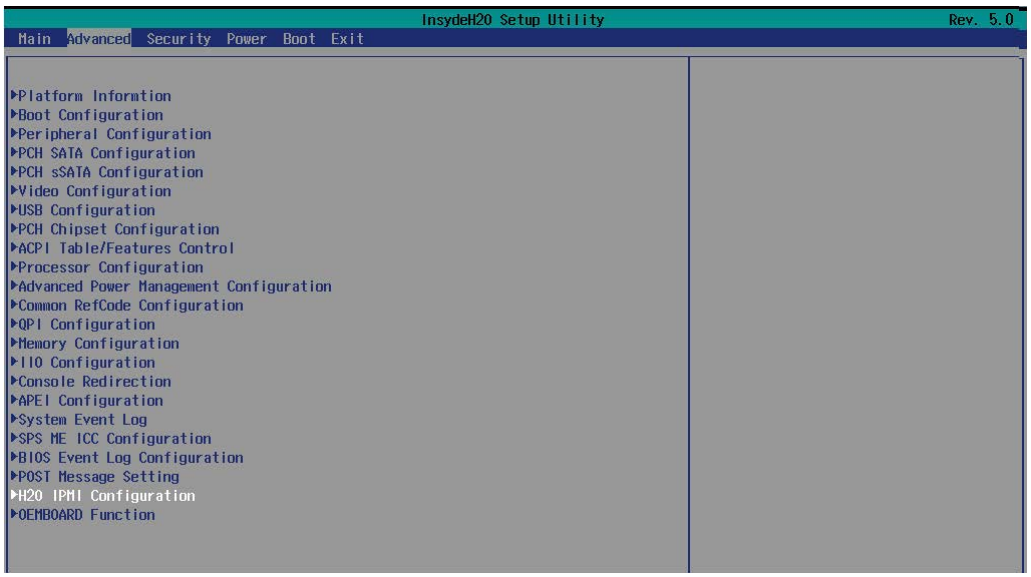
Insert Ethernet LAN cable into the BMC LAN port. There are two methods to setup BMC IP:

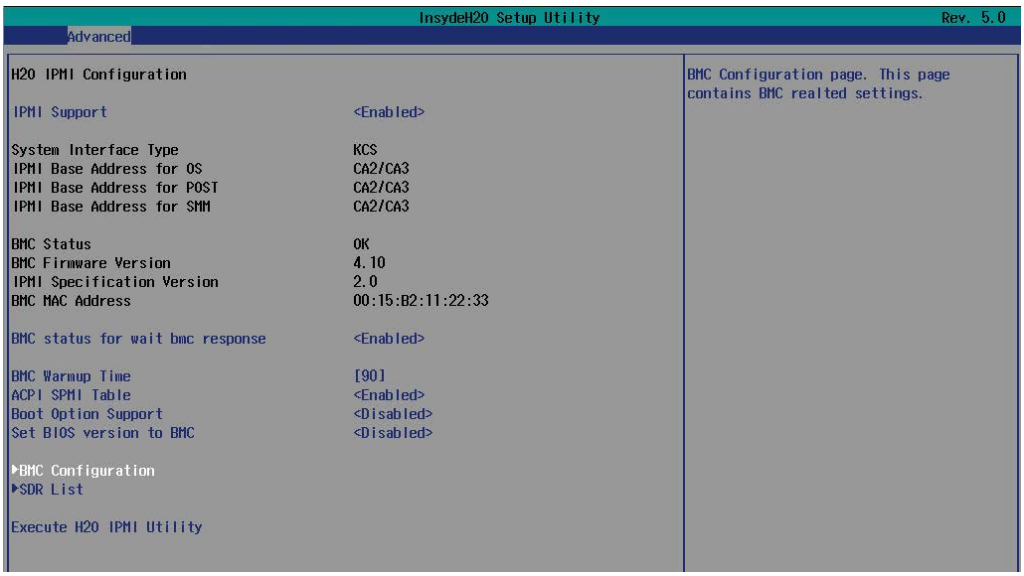


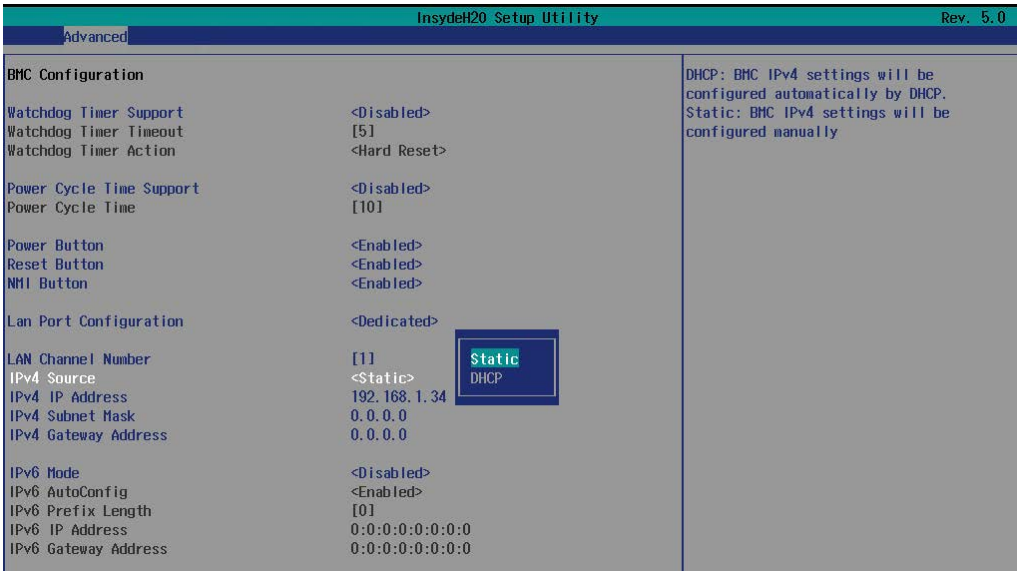
BMC management port

5.1 Method 1 (Use the BIOS setup)

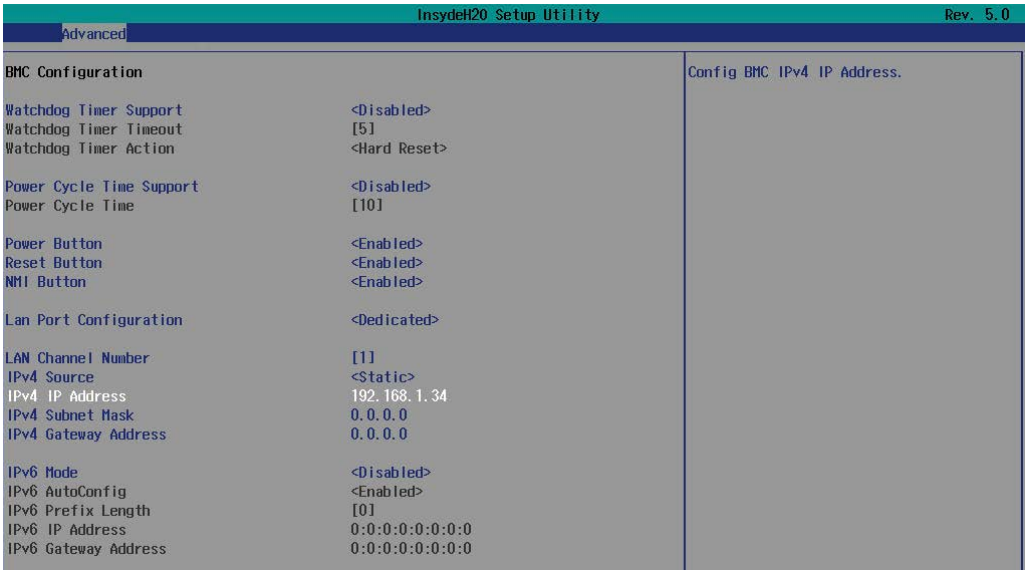
- BIOS SETUP→Server Mgmt→BMC network configuration→Configuration Address source→Static



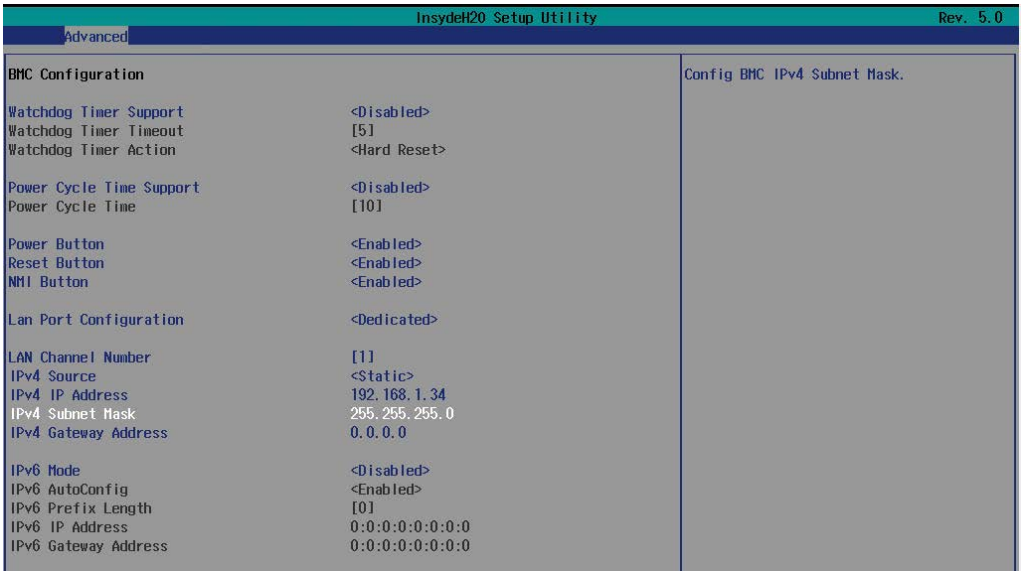




2. Input IP address. Set static IP.



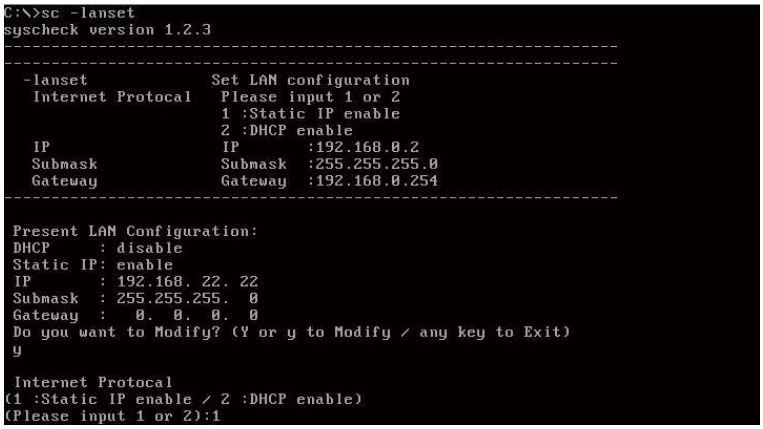
3. Input subnet mask address.



5.2 Method 2 (Use a Dos tool - Syscheck)

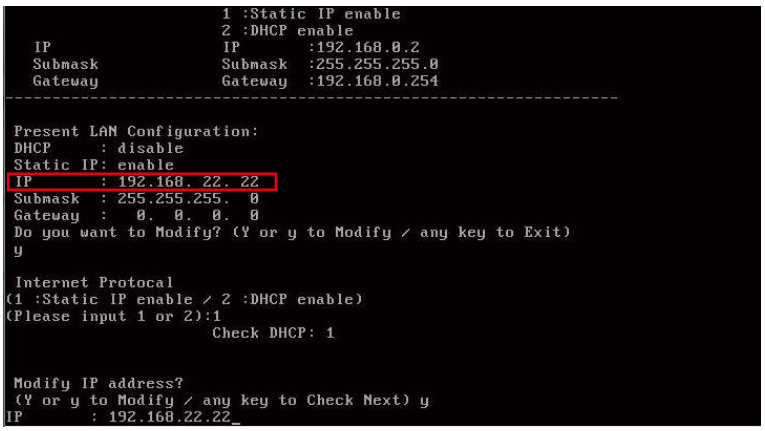
1. Type : sc –lanset

2. Modify IP setting

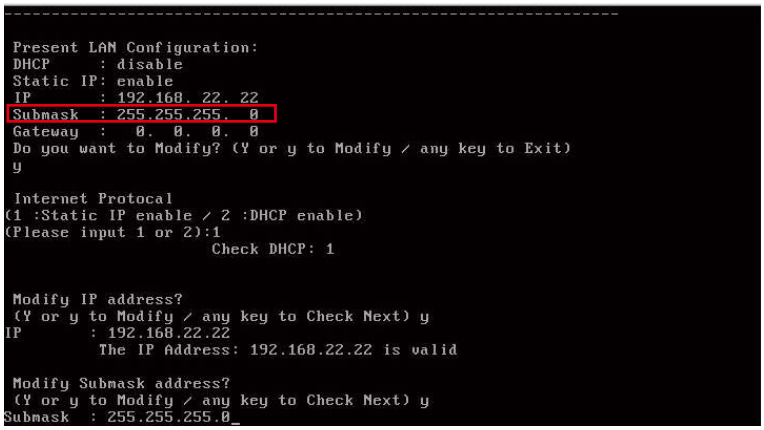


> NOTE: TYPE 1 FOR SELECTING STATIC IP MODE OR TYPE 2 FOR SELECTING DHCP MODE.

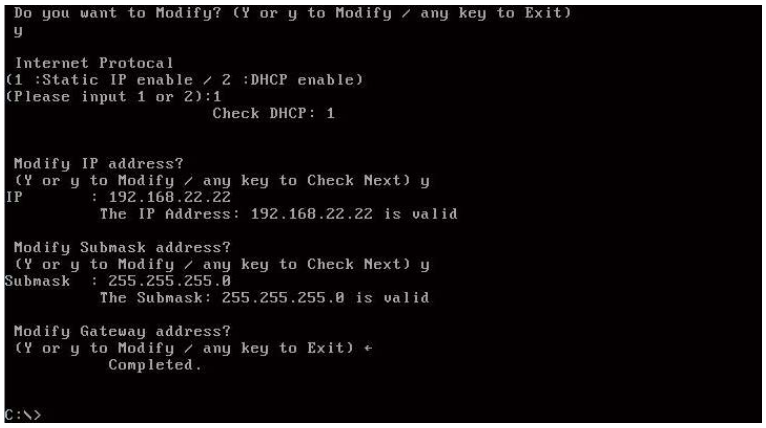
3. Input IP address



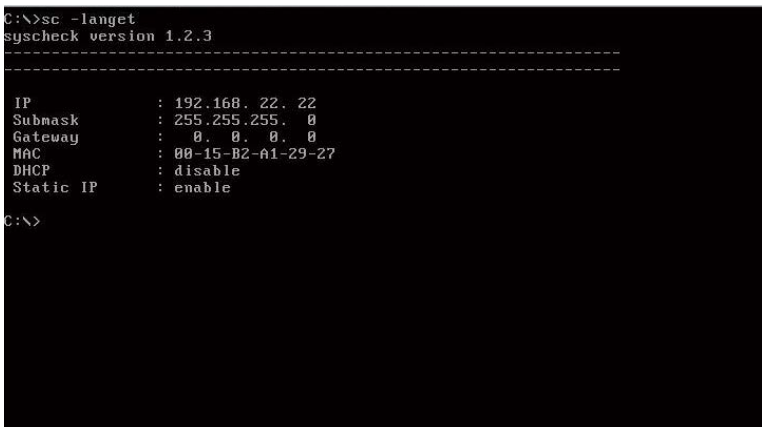
4. Input submask address.
   Below IP address is an example using a default IP setting. User is allowed to change the IP address for realistic use.



5. Finish BMC IP configuration.



NOTE: TYPE SC.EXE –LANGET COMMAND TO OBTAIN BMC IP AND MAC ADDRESS.

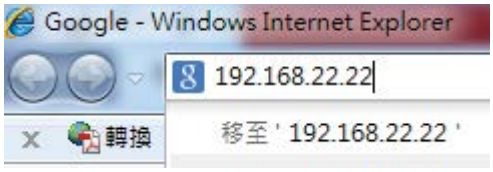


5.3 Connect to BMC

> NOTE: THIS FEATURE WORKS WITH JAVA 6 RUNTIME INSTALLED CONSOLE ENVIRONMENT.

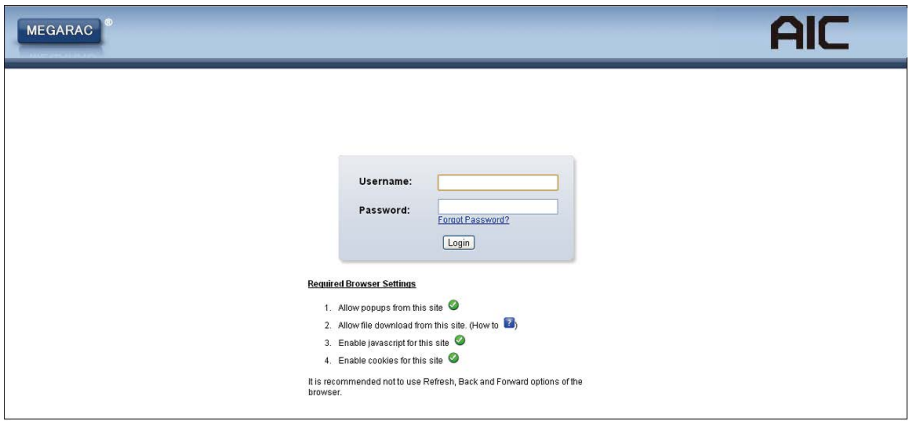
Below IP address is an example using default IP setting. User is allowed to change the IP address for realistic use.

1. Open the browser then type default BMC IP address: 192.168.22.22



2. Use the default user name and password for first-time login to BMC WEB GUI.

Field:	Default
UserName:	admin
Password:	admin



> NOTE: THE DEFAULT USER NAME AND PASSWORD ARE IN LOWER-CASE CHARACTERS.

> NOTE: USERS WHO LOGIN WITH THE ADMIN USER NAME AND PASSWORD WILL HAVE FULL ADMINISTRATIVE POWER.
> THE ADMIN PASSWORD CAN BE CHANGED AFTER LOGIN.

5.4 Web UI

5.4.1 Dashboard

Device Information

Displays the Firmware Revision and Firmware Build Time (Date and Time).

Network Information

Shows network settings for the device. Click on the link Edit to view the Network Settings Page.

Remote Control

Not support this function.

Remote Console Preview Box

It will show the console preview of the remote server using java application. Click on 'Refresh' button to reload the console preview.

Sensor Monitoring

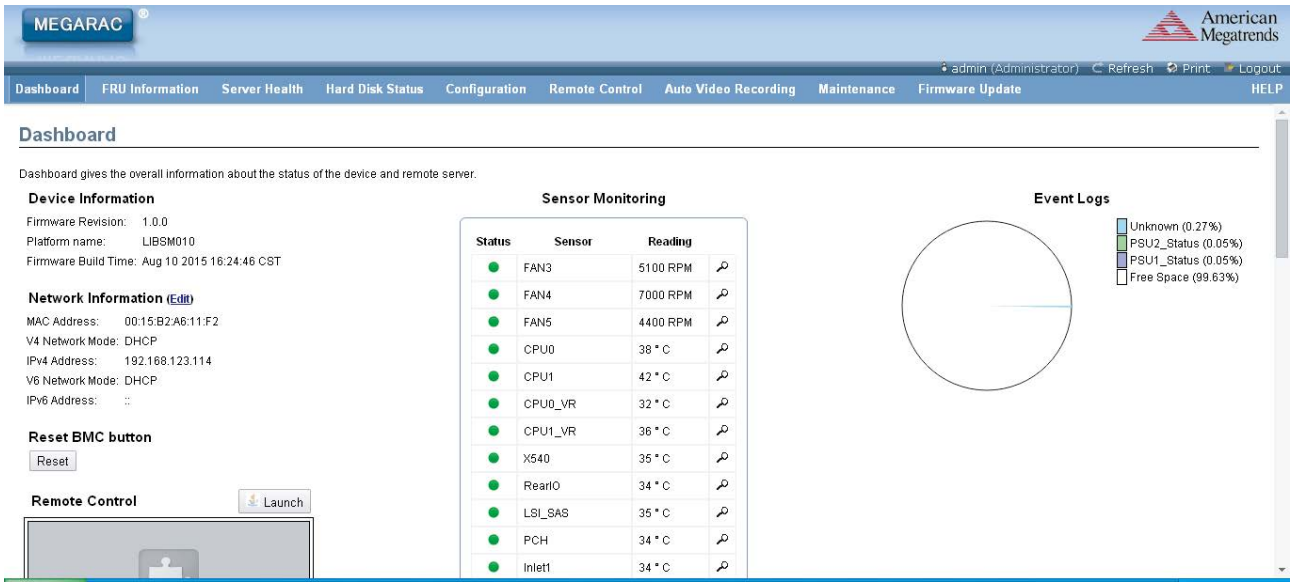
It lists all available sensors on the device, with information such as status, name, reading, and status icon, as well as a link to that sensor's page. There are 3 possible states for a Sensor:

- Green dot denotes a Normal state.
- Yellow exclamation mark denotes a Warning state.
- Red x denotes a Critical state.

The magnifying glass allows access to the Sensor details page for that sensor.

Event Logs

A graphical representation of all events incurred by the various sensors and % occupied/available space in logs. If you click on the color-coded rectangle in the Legend for the chart, you can view a list of those specific events only.



5.4.2 FRU information

This page displays the BMC FRU file information. On selecting a particular FRU Device ID its corresponding FRU information will be displayed.

Basic Information

It displays the FRU device ID and device name for the selected FRU device ID.

Chassis Information

It displays the following Chassis information fields.

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

Board Information

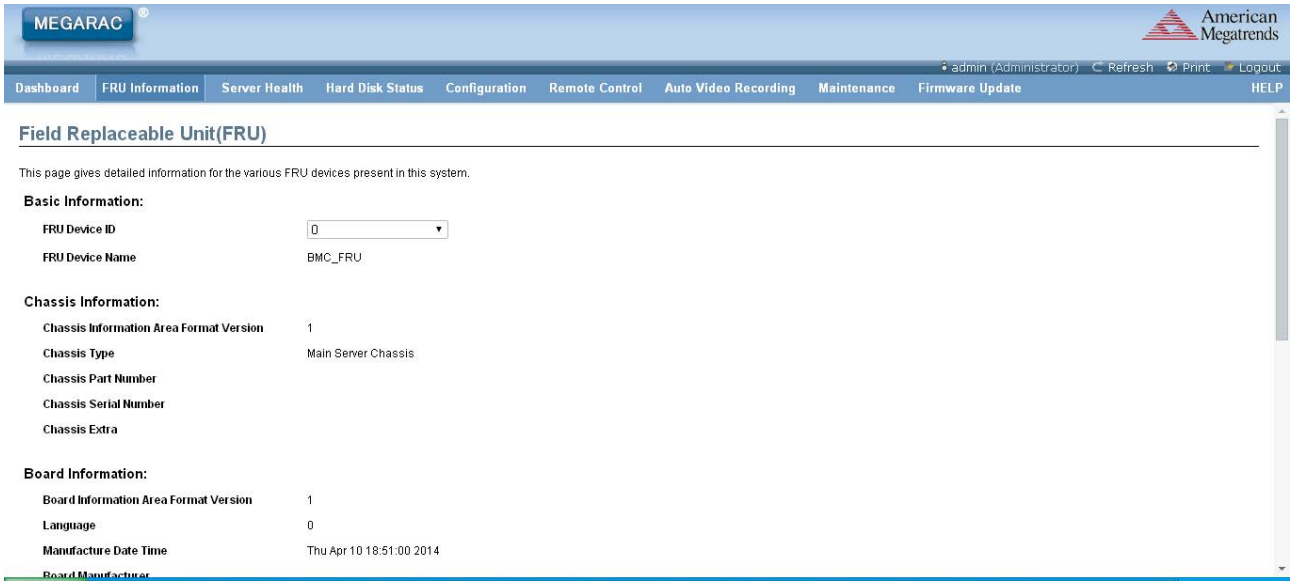
It displays the following Board information fields.

- Area Format Version
- Language
- Manufacture Date Time
- Board Manufacturer
- Board Product Name
- Board Serial Number
- Board Part Number
- FRU File ID
- Board Extra

Product Information

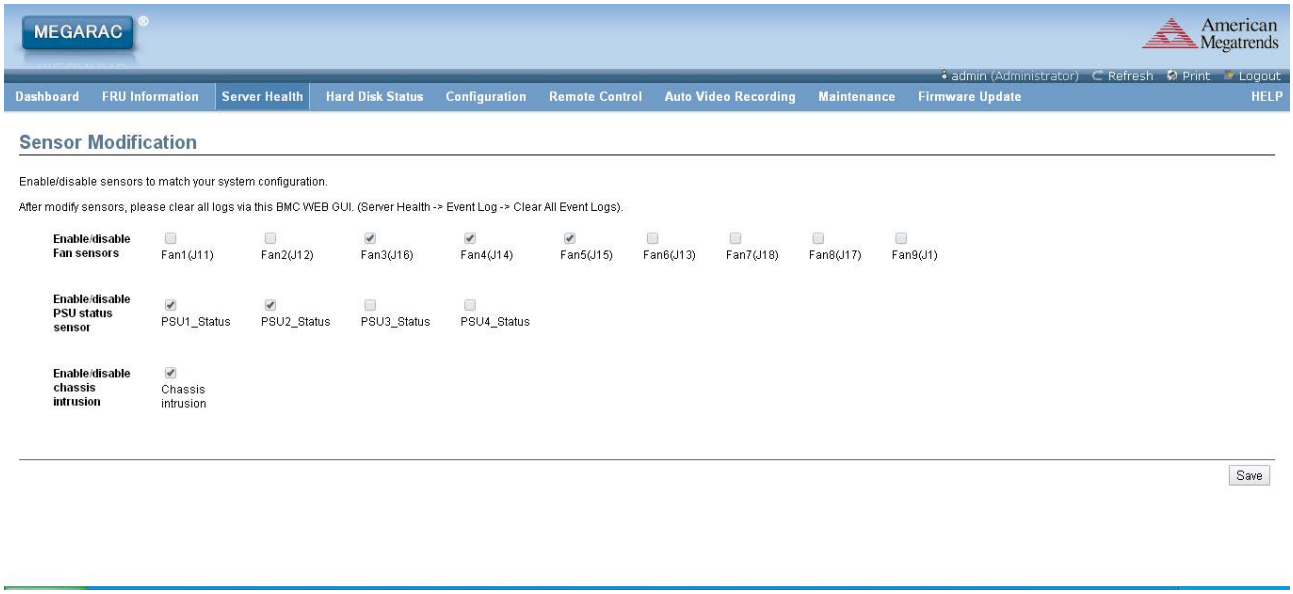
It displays the following Product information fields.

- Area Format Version
- Language
- Manufacturer Name
- Product Name
- Product Part Number
- Product Version
- Product Serial Number
- Asset Tag
- FRU File ID
- Product Extra



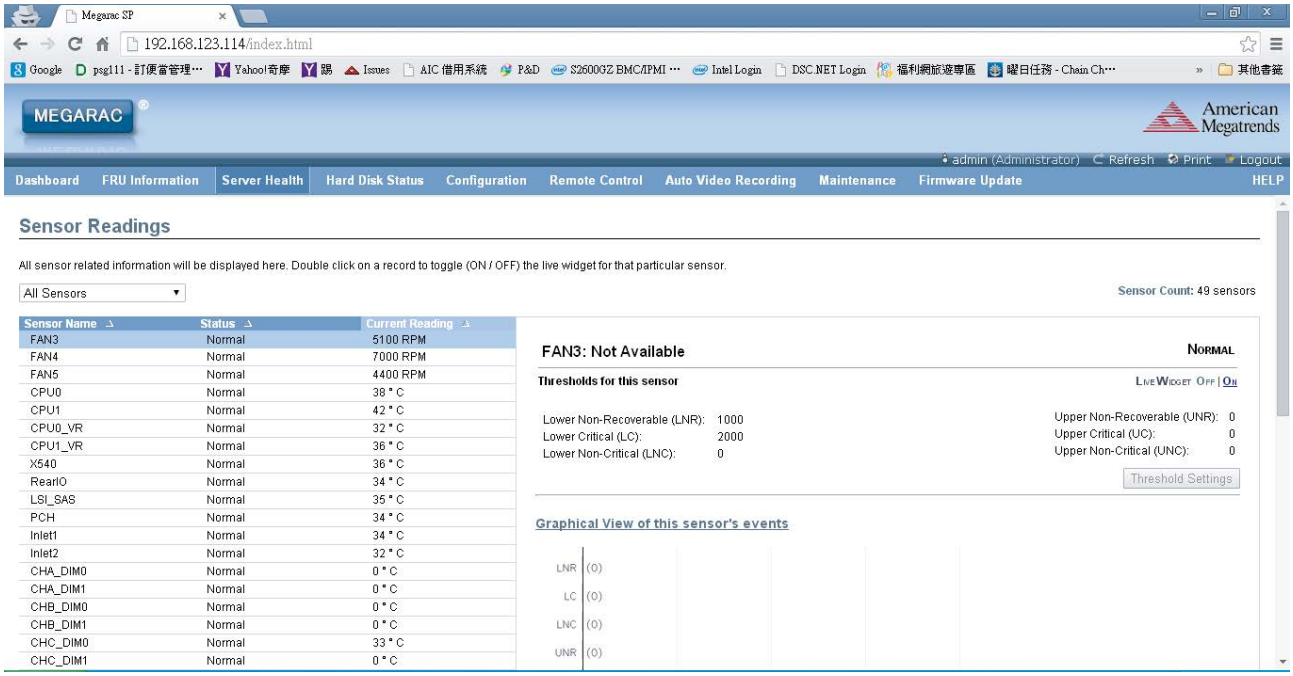
5.4.3 Sensor Modification

Enable/disable sensors to match your system configuration.
After modify sensors, please clear all logs via this BMC WEB GUI.
Server HealthgEvent LoggClear All Event Logs).



5.4.4 Sensor reading

All sensor related information will be displayed here. Double click on a record to loggle(ON/OFF)the live widget for that particular sensor.



5.4.5 Event Log

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

BMC Timezone

Check this option to display the event log entries logged with the BMC Timezone value.

Client Timezone

Check this option to display the event log entries logged with the Client (user's) Timezone value.

UTC Offset

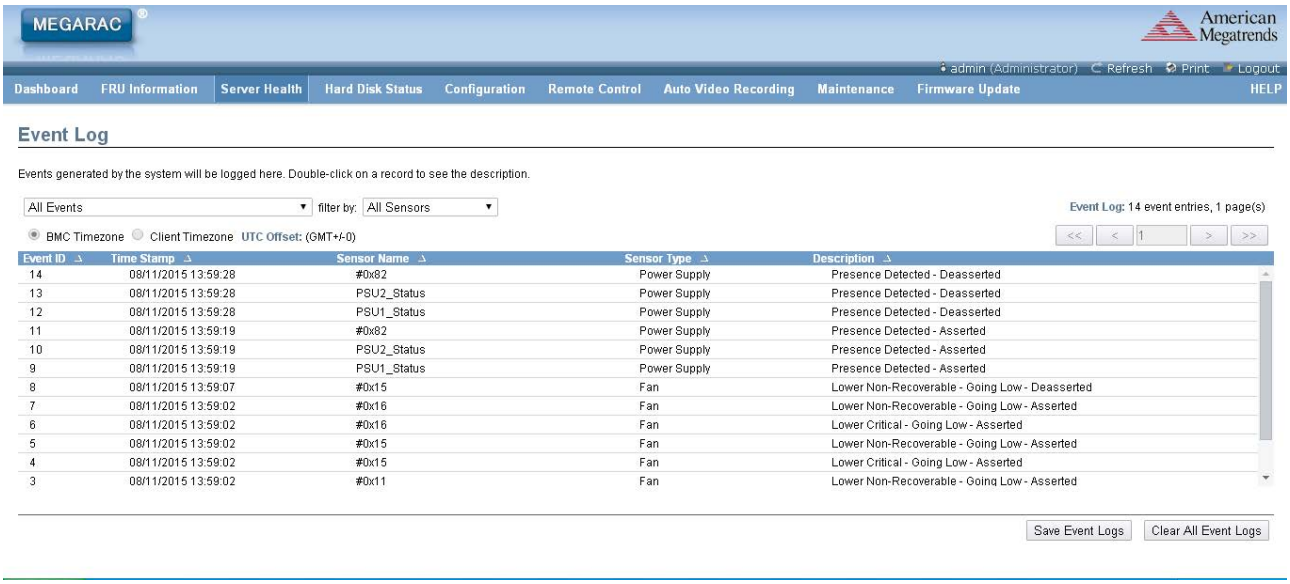
Displays the current UTC Offset value based on which event Time Stamps will be updated. Navigational arrows can be used to selectively access different pages of the Event Log.

Clear All Event Logs

Clear All Event Logs option will delete all existing records for all sensors.

Save All Event Logs

Save All Event Logs option will save all existing records for all sensors.

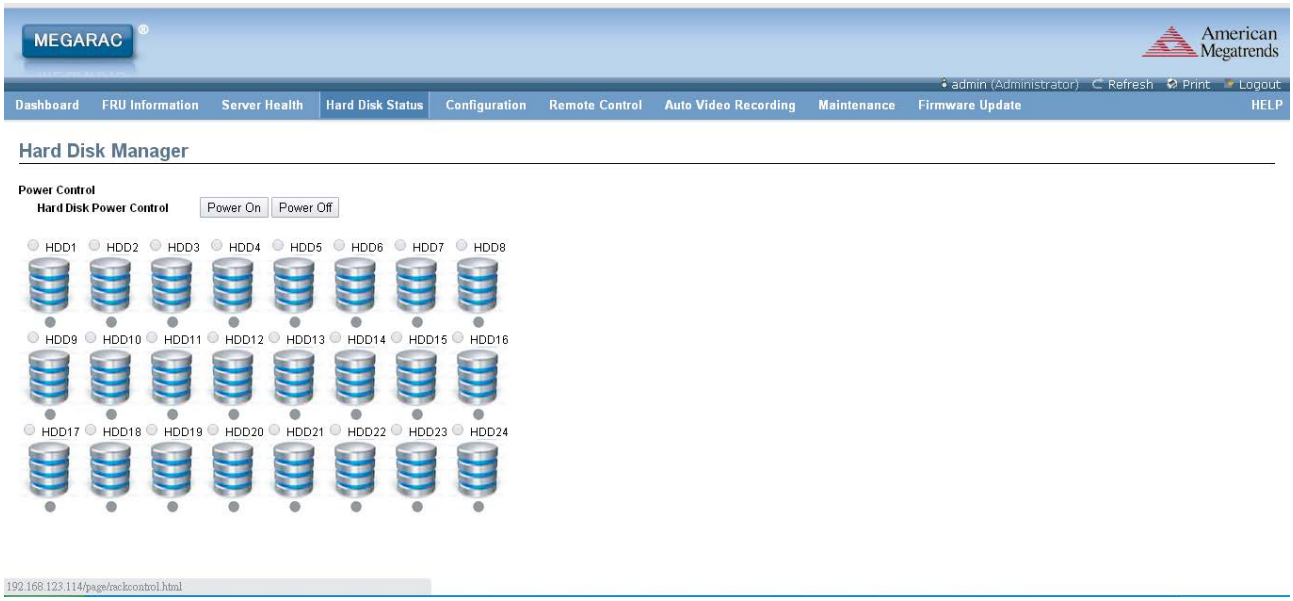


5.4.6 Hard Disk Status

This page displays all the HDD power on/off status, using the "Power On" and "Power Off" button to control HDD status.

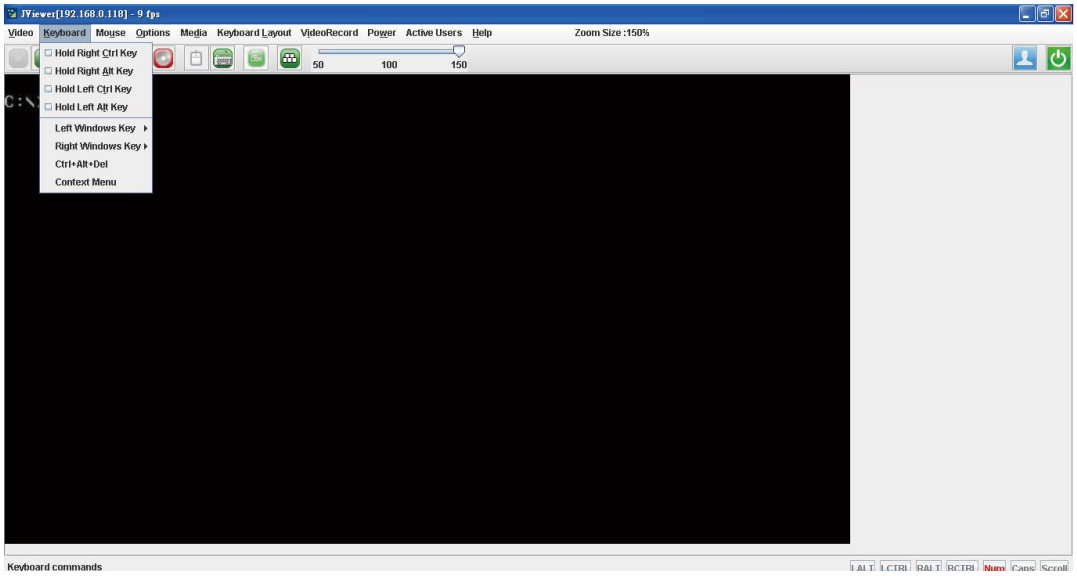
ACTIONS

Power On
Select a HDD to turn it power on.
Power off
Select a HDD to turn it power off.
Icon status
Green: This slot inserted HDD and power on.
Blue: This slot inserted HDD and power off.
Red: This slot inserted HDD and got error.
Gray: This slot not inserted HDD.
Orange: This slot is rebuilding.

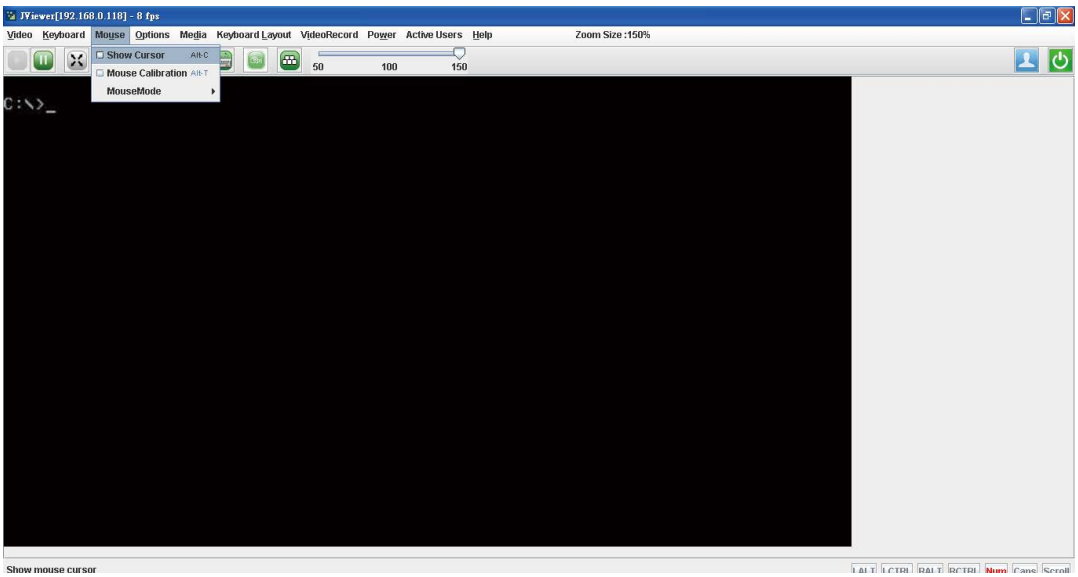


5.4.7 Remote Control:

Environmental setting:



Press "ALT+C" for local and remote OS mouse control switching.



5.5 Updating BMC Firmware

1. Boot to the DOS (MS-DOS or Free DOS is workable)
2. Enter BMC firmware directory [XXXXXZYY]; XXXXX: project name ; YY: firmware version; Z: Identify character, C for official, B for Beta.
3. Execute a.bat batch file to update the BMC firmware
   Example:
   A:>cd 301C01
   A:\ 301C01>a.bat
   This is just an example. The latest BMC firmware version is available from the FAE or AIC website.
4. After update BMC firmware, please power off and then power on system.

> NOTES:
> 1. DO NOT USE EMM386 IN DOS ENVIRONMENT WHEN UPDATING FIRMWARE OR YOU WILL GET A FAIL.
> 2. IN SOME CRITICAL CONDITION, AFTER UPDATING BMC FIRMWARE OR CONFIG FILE, YOU MIGHT NEED TO UNPLUG AC POWER CORD 5 SECONDS AND THEN PLUG AC POWER CORD TO RESET BMC, THEN UPDATED NEW FUNCTION CAN WORK PROPERLY.

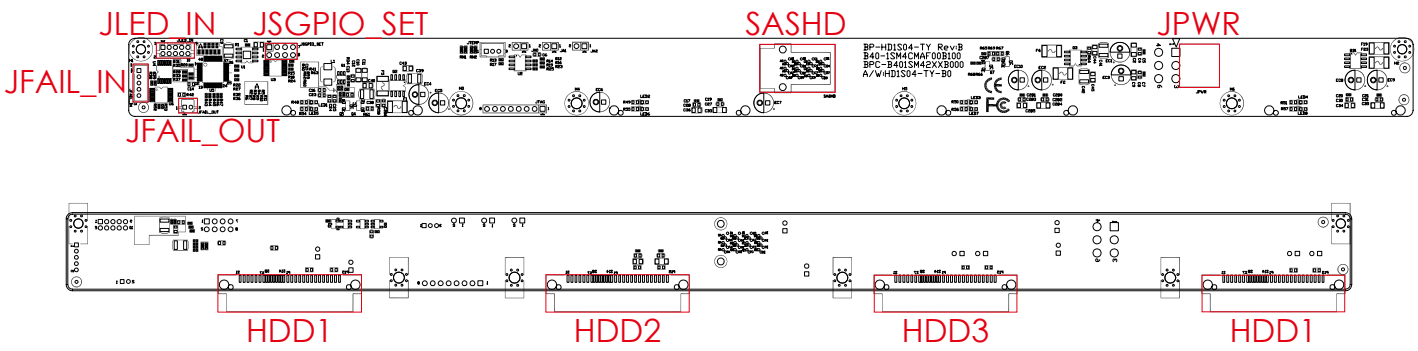
Chapter 6. Hardware Introduction

This chapter provides detailed instruction guide on hardware instruction

6.1 HARDWARE DESIGN SPECIFICATION

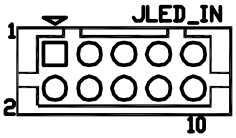
6.1.1 Placement_Backplane

PCBA Placement



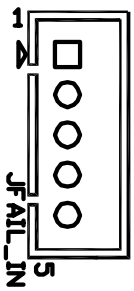
6.1.2 Internal Connectors/Jumpers

Led status Header - JLED_IN



Pin	Description	Pin	Description
1	GND	2	NC
3	HDD1_ACT	4	HDD1_FAIL
5	HDD2_ACT	6	HDD2_FAIL
7	HDD3_ACT	8	HDD3_FAIL
9	HDD4_ACT	10	HDD4_FAIL

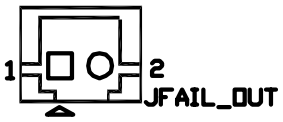
Led Fail status Header – JFAIL_IN



Pin	Description
1	GND
2	FAIL_IN_1
3	FAIL_IN_2
4	FAIL_IN_3
5	FAIL_IN_4

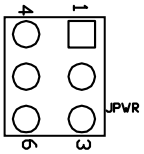
6.1.2 Internal Connectors/Jumpers

Led Fail Header – JFAIL_OUT



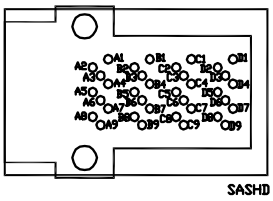
Pin	Description
1	+3V3
2	FAULT_DRIVE

Power Connector – JPWR

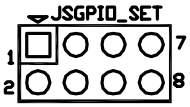


Pin	Description	Pin	Description
4	+12V	1	GND
5	+12V	2	GND
6	+5V	3	GND

MINI-SAS HD Connector – SASHD



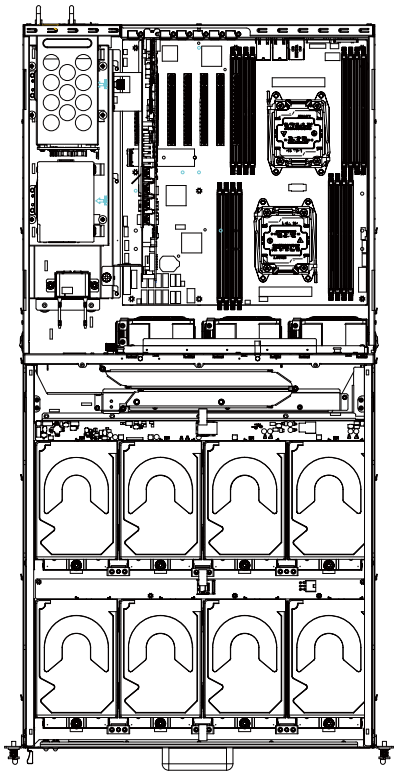
Function and SGPIO setting – JSGPIO_SET



Pin	Pin	Description
1,2	Open	Disable External Access LED input.
	Close	Enable External Access LED input.
3,4	Open	Access LED from HDD Pin P11.
	Close	Access LED from SGPIO.
5,6	Open	Identify behavior according to Host.
	Close	Blinking the Identify LED behavior.
7,8	Open	Disable SGPIO.
	Close	Enable SGPIO.

Note: For Expander jumper: JSGPIO_SET [2] [3,4] [6][8]
For HBA/RAID card : JSGPIO_SET [2] [3,4] [6][7,8]

6.2 Drive Slot Map



FIRST LEVEL

HBA Card			
0	1	2	3
0	1	2	3

SENCOND LEVEL

HBA Card			
0	1	2	3
0	1	2	3

.
.
.
AND SO ON

FIRST LEVEL

MegaRaid Card			
1	2	3	4
1	2	3	4

.
.
.
AND SO ON

Chapter 7. Technical Support

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