RS5230
User Manual

Contents

1. Preparation for Use

1.1 Abstract

The main task of this chapter is to describe how to do some basic preparations. They include:

Check the transportation and packaging;

Select a suitable location for the server;

Check the power supply setting switch;

Check the power cord; add the equipment;

Connect the peripheral devices;

Open the display and the server;

Operating system installation preparation.

1.2 Check the Transport Package

Note: The weight of the server will vary according to the configuration. In order to avoid man-made damage, please use multiple people to move the server together.

After unpacking the server, inspect the packaging for obvious damage in transit. If the packaging is damaged, please take a picture of it for reference and write a damage statement quickly. After you have moved the server, please save the packaging and packaging materials, you will need them when you are transporting the server to another location.

Please confirm that the listed items are present and in good condition according to the packing list. If any of these items are damaged or missing, please contact our dealer.

1.3 Select a Suitable Location to Place the Server

Required Conditions	Illustration
With three-pin power socket	A three-pin power outlet that conforms to local electricity standards. The expected overload current is 13A, or less than 100-120VAC/6.5A or less than 200-240VAC. Note: Make sure the server power supply is properly grounded.
Meet the specific environmental regulations	The server can work reliably in a normal office environment. Select an environment that meets the following conditions: Clean and low dust Well-ventilated and far away from the heat source Keep away from environments that may encounter vibration or physical impacts
Isolation from the electromagneticfield and the electrical noise environment	Servers should be isolated from strong electromagnetic fields and equipment that produces electrical noise, such as elevators, copiers, air conditioners, high-power fans, high-power motors, radio and TV transmitters, and high-frequency alert equipment.
Maintain good ventilation And cooling conditions	Good ventilation and cooling conditions should be ensured around the server. Keep around the server clear of obstructions.
Provide space for easy repair and power off	Reserve space for easy server servicing. Be sure to leave a convenient way to remove AC power from the wall outlet or server backplane, as this is a safe way to remove power before repairs and product upgrades. Turning off the DC switch on the server panel doesn't really cut off AC power to the server.

1.4 Mount the Server on the Rack

All Powerleader rack servers are compatible with 19-inch standard racks. For installation steps, see the section "Installation Guide".

1.5 Check the Power Cord

If the supplied AC power cord does not match the model number where the server is being used, do not continue to use it and replace it with a compatible power cord. Compliant power cords are described below. Do not connect power to the server until you are ready to add internal devices.

Power Cord Required	Description
Rate	The AC current that the wires can carry should be rated at 125% of the current required by the server.
To the power socket end connector	The wire must be a grounded-terminated male plug.
Server-side connector	The power plug connected to the server must be a male IEC320, Sheet C13 type plug.
Power cord length and flexibility	The power cord must be shorter than 4.5m, and it must be a flexible <HAR> cord or a VDE certified cord that complies with server safety regulations.

1.6 Add Equipment

Before adding expansion units to your server, make sure the server is not connected to power.

After you have added drives, expansion cards, and storage to your server, or made any kind of internal changes, you need to rebuild the server chassis.

NOTICE: Observe the warnings and cautions listed here whenever you need to remove the chassis cover and access components inside the server.

Only qualified professional and technical personnel can carry out the above operations.

1.7 Connect Peripherals

Make sure the server is not connected to power. When connecting peripheral devices, make sure that the device is not powered, otherwise the device may be damaged.

After installing all internal expansion units and restoring the chassis, connect your keyboard, mouse, monitor, and other peripherals.

You must first install a monitor and keyboard to configure the server. Even if your server normally functions as a web server without a monitor or keyboard, you still need to install

them to configure the server.

If necessary, connect other expansion devices, such as: printer, modem, etc.

1.8 Turn on the Monitor And Server

Warning: The power switch on the front panel does not cut off the AC voltage. To remove AC voltage from the server, the AC power cord must be disconnected.

Make sure all peripherals such as monitor, keyboard, mouse are connected;

Remove the drive protection card (if present) from the disk drive;

turn on the display;

Connect one end of the AC power cord to the power port on the back panel of the server;

Connect the other end of the AC power cord to a three-pin socket on the wall (or on the ground);

When the server does not start when the AC power is connected, press the on/off switch on the panel;

Confirm that the power light on the panel is flashing. After a few seconds the server starts running the POST procedure (Power On Self Test). When the hard disk receives an access signal, the hard disk indicator on the front panel will flash. If a fault occurs, record the error message displayed on the screen and the audible code, see: System Troubleshooting chapter.

2. System Structure Description

2.1 PR 1710 P Front Panel Description and Structural Characteristics

Enlarged view of PR1710P-4-bay front panel and indicator / control panel :

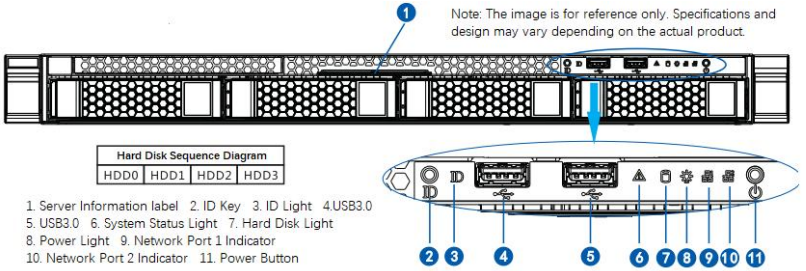


Figure 2- 1 Front panel diagram of PR1710P-4 disk server

Enlarged view of PR1710P-10 bay front panel and indicator / control panel :

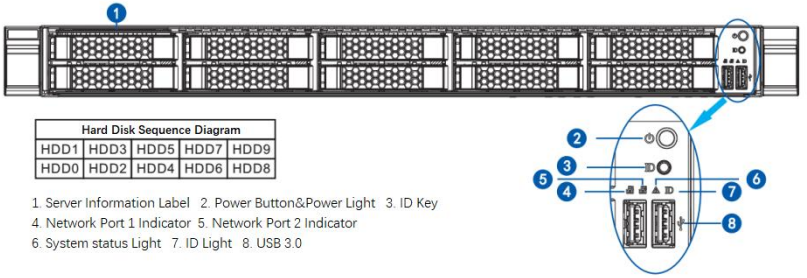


Figure 2- 2 Front panel diagram of PR1710P-10 disk server

Description of the control panel indicators:

Name	Color	State	Illustration
Power Light	Blue	Bright	Server is powered on
Netwok 1 Indicator Light	Green	Bright	Onboard network 1 connection is OK and active
Netwok 2 Indicator Light	Green	Bright	Onboard network 2 connection is OK and active

System Status Light	Red	Flicker	Sensors such as server fan, temperature sensor or voltage are in abnormal state Steady on: The temperature sensor is abnormal 4 Hz: The power module is abnormal 2 Hz: Fan, voltage sensor abnormal
ID Light	Blue	Bright	The server identification light is on
HD Light	Yellow	Flicker	On-board PCH hard disk read and write

Control panel keys and interface description:

Power Button	Turn on the power button, press it once to turn it on when it is powered on; when it is on, press and hold it for 5 seconds to turn off the power.
USB3.0	USB3.0 interface
ID key	ID button, press the ID button, the ID light is on

PR1710P-4-bay 3.5-inch hard disk installation and hard disk bay indicator light description:

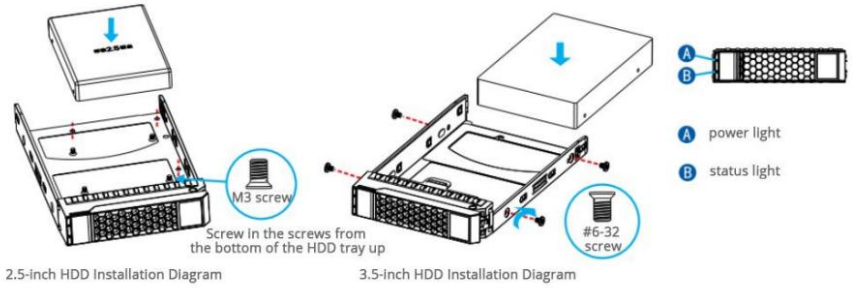


Figure 2- 3 3.5-inch hard drive bay installation and bay indicator description

PR1710P-10 bay 2.5-inch hard disk installation and hard disk bay indicator description:

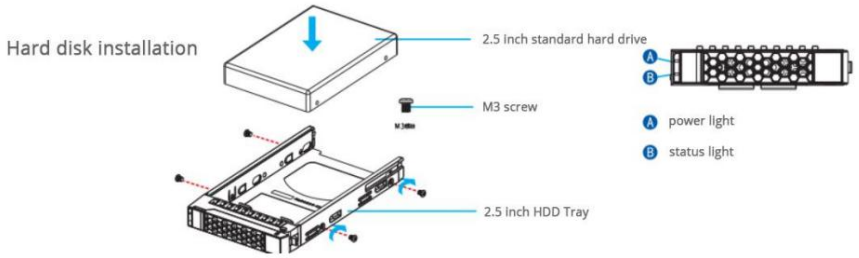


Figure 2- 4 2.5-inch hard drive bay installation and bay indicator description

Power Supply:

Electricity Source	Redundant power supply for servers
Input the AC voltage/ frequency range	100V - 240V , 10A-5A, 50Hz self - adaptive , standard single power supply , optional 1+ 1 redundancy

Chassis-shaped:

Shape System	Rack 1U
Height	44mm
Width	440mm
Depth	740mm
Weight (minimum configuration)	About 18KG

2.2 PR 1710 P Rear Window Description

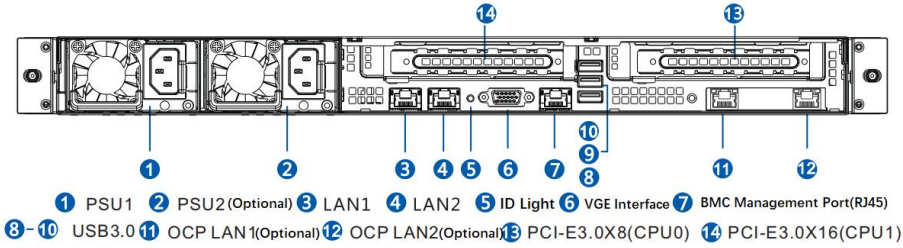


Figure 2- 4 PR1710P rear window IO diagram

2.3 Jumper Settings and Connector Description

Rear Window IO Description:

1-2	Power 1, Power 2 (optional)
3-4	LAN1 2 interface, can be connected to Category 6 Gigabit Ethernet cable (does not support 100M or below network)
5	ID light and BMC restart button, press the switch board ID button, the light will turn on. Press this button to restart the BMC (Note: Please be sure to use this button after the BMC is powered on for about 3 minutes, otherwise the BMC will be damaged)
6	VGA interface, can be connected to display devices such as VGA interface monitors
7	IPMI interface, IPMI2.0 interface, can be connected to Category 6 Gigabit Ethernet cable, monitor and manage the server through this interface
8-10	USB3.0 interface, can connect USB keyboard, mouse, USB3.0 U disk and other devices
11-12	Different types of OCP cards can be selected, OCP network ports 1 and 2
13	PCI-E 3.0 X8 slot, can insert full-height PCI-E 3.0 X8 card, backward compatible
14	PCI-E 3.0 X16 slot, can insert full-height PCI-E 3.0 X16 card, backward compatible

Description of the working status of the rear window network light:

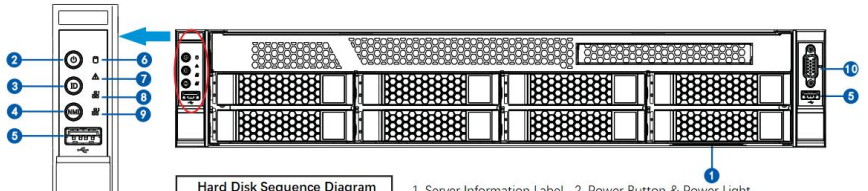
Name	Color	State	Ilustration
BMC Managementport （RJ45）	Yellow	Flicker	Network connection is normal
	Green/Orange	Orange	The IPMI works at 100Mbps

	Double-color	Green	The IPMI works at 1Gbps

LAN1/2	Green	Flicker	The network connection is normal
		Extinguish	No LAN connection
		Green	LAN works at 1Gbps

2.4 PR2710P Front Panel Description and Structural Characteristics

Enlarged view of PR2710P-8-bay front panel and indicator / control panel :

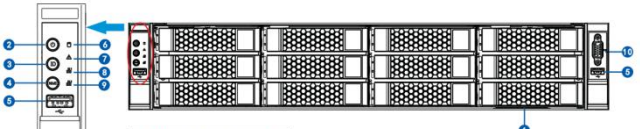


Hard Disk Sequence Diagram			
HDD8	HDD9	HDD10	HDD11
HDD4	HDD5	HDD6	HDD7
HDD0	HDD1	HDD2	HDD3

1. Server Information Label 2. Power Button & Power Light
3. ID Key & ID Light 4. NMI Key 5. USB 3.0 6. Hard Disk Light
7. System Status Light 8. Network Port 1 Indicator
9. Network Port 2 Indicator 10. VGA Interface
Note: The image is for reference only. Specifications and design may vary depending on the actual product.

Figure 2- 5 Front panel diagram of PR2710P-8 disk server

Enlarged view of PR2710P-12-bay front panel and indicator / control panel :

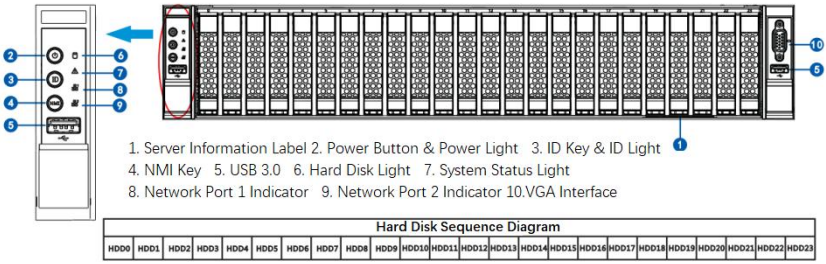


Hard Disk Sequence Diagram			
HDD8	HDD9	HDD10	HDD11
HDD4	HDD5	HDD6	HDD7
HDD0	HDD1	HDD2	HDD3

1. Server Information Label 2. Power Button & Power Light
3. ID Key & ID Light 4. NMI Key 5. USB 3.0 6. Hard Disk Light
7.System Status Light 8. Network Port 1 Indicator
9. Network Port 2 Indicator 10.VGA Interface
Note: The image is for reference only. Specifications and desigrmay vary depending on the actual product

Figure 2- 6 Front panel diagram of PR2710P-8 disk server

Enlarged view of PR2710P-24-bay front panel and indicator / control panel :



1. Server Information Label 2. Power Button & Power Light 3. ID Key & ID Light
4. NMI Key 5. USB 3.0 6. Hard Disk Light 7. System Status Light
8. Network Port 1 Indicator 9. Network Port 2 Indicator 10.VGA Interface

Hard Disk Sequence Diagram																					
HDD0	HDD1	HDD2	HDD3	HDD4	HDD5	HDD6	HDD7	HDD8	HDD9	HDD10	HDD11	HDD12	HDD13	HDD14	HDD15	HDD16	HDD17	HDD18	HDD19	HDD20	HDD21	HDD22	HDD23

Figure 2- 7 Front panel diagram of PR2710P-24-disk server

Description of the control panel indicators:

Name	Color	State	Ilustration
Power Light	Blue	Bright	Server is powered on
Netwok 1 Indicator Light	Green	Bright	Onboard network 1 connection is OK and active
Netwok 2 Indicator Light	Green	Bright	Onboard network 2 connection is OK and active
System Status Light	Red	Flicker	Sensors such as server fan, temperature sensor or voltage are in abnormal state Steady on: The temperature sensor is abnormal 4 Hz: The power module is abnormal 2 Hz: Fan, voltage sensor abnormal
ID Light	Blue	Bright	The server identification light is on
HD Light	Yellow	Flicker	On-board PCH hard disk read and write

Control panel keys and interface description:

Power Button	Turn on the power button, press it once to turn it on when it is powered on; when it is on, press and hold it for 5 seconds to turn off the power.
NMI Key	NMI key, press it when the machine is turned on.
ID Key	The server identification light button, press the ID light once, and then press the ID light to turn off.
USB3.0	USB3.0 interface
VGA interface	Front VGA interface

PR2710P-8-bay 3.5-inch hard drive bay installation and hard drive bay indicator light description:

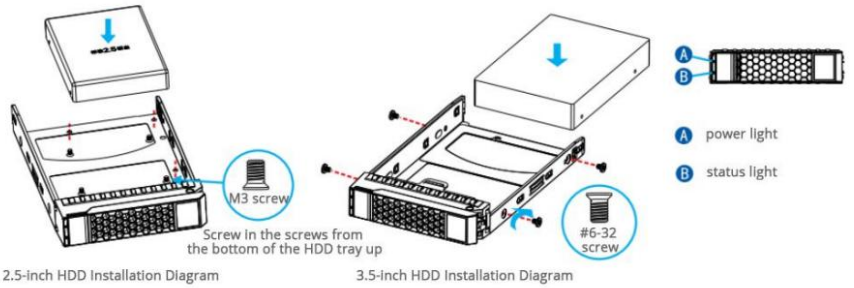


Figure 2- 8 3.5-inch hard drive bay installation and bay indicator description

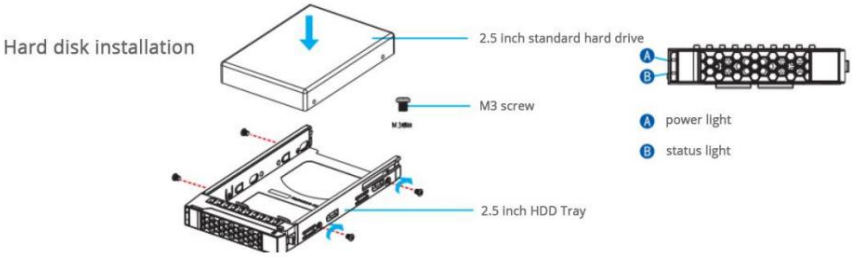


Figure 2- 9 2.5-inch hard drive bay installation and bay indicator description

Power Supply:

Electricity Source	Redundant power supply for servers
Input the AC voltage/ frequency range	100V - 240V , 10A-5A, 50Hz self - adaptive , standard single power supply , optional 1+ 1 redundancy

Chassis-shaped:

Shape System	Rackmount 2 U
Height	88mm
Width	445mm
Depth	745mm
Weight (minimum configuration)	About 23KG

2.5 PR2710P Rear Window Description

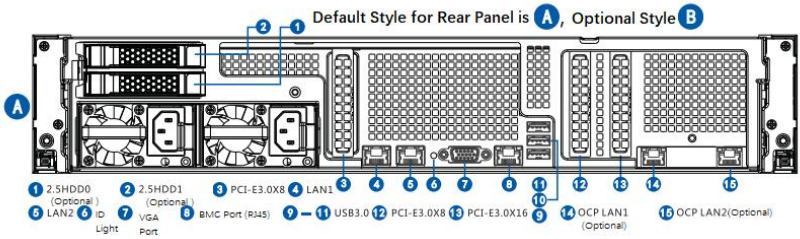


Figure 2- 10 PR2710P style A rear window IO diagram

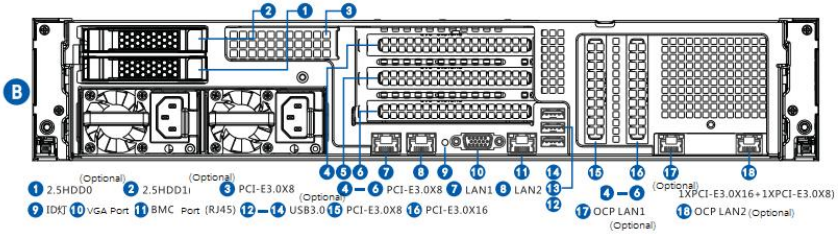


Figure 2- 11 PR2710P style B rear window IO diagram

2.6 2710P Rear Window IO Description

Style A rear window IO description:

1-2	Optional installation of 2.5-inch modules, support for SAS/SATA/NVME hard drives
3	PCI-E 3.0 X8, can insert half-height PCI-E 3.0 X8 card, backward compatible
4-5	LAN1 2 interface, can be connected to Category 6 Gigabit Ethernet cable (does not support 100M or below network)
6	ID light and BMC restart button, press the switch board ID button, the light will turn on. Press this button to restart the BMC (Note: Please be sure to use this button after the BMC is powered on for about 3 minutes, otherwise the BMC will be damaged)
7	VGA interface, can be connected to display devices such as VGA interface monitors

8	IPMI interface, IPMI2.0 interface, can be connected to Category 6 Gigabit Ethernet cable, monitor and manage the server through this interface
9-11	USB3.0 interface, can connect USB keyboard, mouse, USB3.0 U disk and other devices
12	PCI-E 3.0 X8 slot, can insert half-height PCI-E 3.0 X8 card, backward compatible
13	PCI-E 3.0 X16 slot, can insert half-height PCI-E 3.0 X16 card, backward compatible
14-15	Different types of OCP cards can be selected, OCP network ports 1 and 2

Style B rear window IO description:

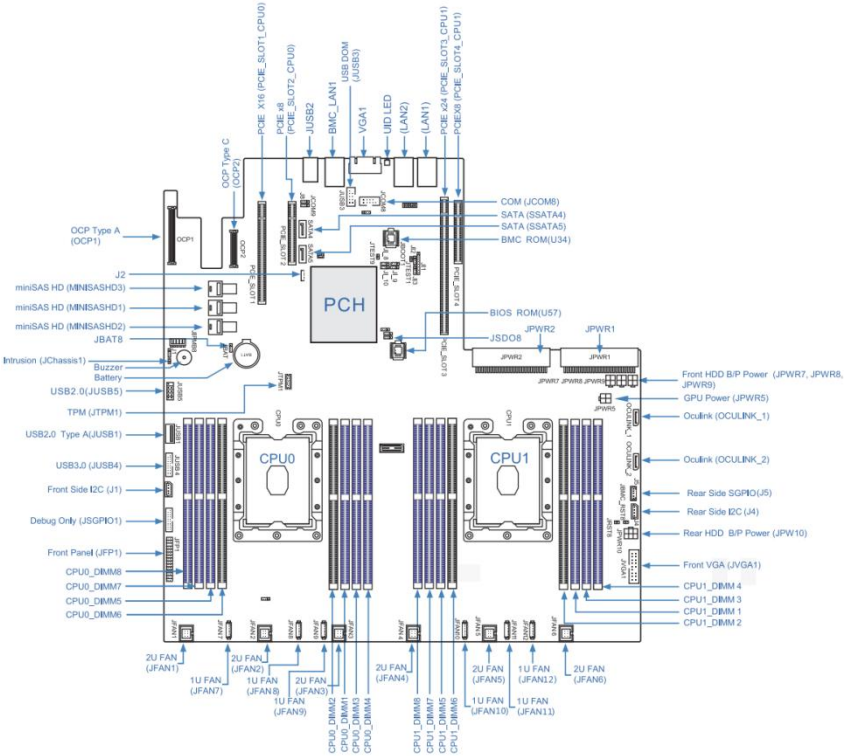
1-2	Optional installation of 2.5-inch modules, support for SAS/SATA/NVME hard drives
3	PCI-E 3.0 X8 riser card (optional when selecting style B rear window)
4-6	3 PCI-E 3.0 X8 riser cards, can be optionally replaced with 1 PCI-E3.0X16 plus 1 PCI-E3.0X8
7-8	LAN1 2 interface, can be connected to Category 6 Gigabit Ethernet cable (does not support 100M or below network)
9	ID light and BMC restart button, press the switch board ID button, the light will turn on. Press this button to restart the BMC (Note: Please be sure to use this button after the BMC is powered on for about 3 minutes, otherwise the BMC will be damaged)
10	VGA interface, can be connected to display devices such as VGA interface monitors
11	IPMI interface, IPMI2.0 interface, can be connected to Category 6 Gigabit Ethernet cable, monitor and manage the server through this interface
12-14	USB3.0 interface, can connect USB keyboard, mouse, USB3.0 U disk and other devices
15	PCI-E 3.0 X8 slot, can insert half-height PCI-E 3.0 X8 card, backward compatible

16	PCI-E 3.0 X16 slot, can insert half-height PCI-E 3.0 X16 card, backward compatible
17-18	Different types of OCP cards can be selected, OCP network ports 1 and 2

Description of the working status of the rear window network light:

Name	Color	State	Illustration
BMC Managementport （RJ45）	Yellow	Flicker	Network connection is normal
	Green/Orange Double-color	Orange	The IPMI works at 100Mbps
		Green	The IPMI works at 1Gbps
LAN1/2	Green	Flicker	The network connection is normal
		Extinguish	No LAN connection
		Green	LAN works at 1Gbps

2.7 Jumper Settings and Connector Descriptions



Jumpers	Description	Default Setting
JBAT8	Clear CMOS	Pins 1-2 (Restore jumper)
JSDO8	Flash Memory	Pin 1-2 (Normal)

Names	Description
OCP1	OCP Type A Slot
OCP2	OCP Type C Slot
MINISAS HD1	Intel PCH SATA 0-3
MINISAS HD2	Intel PCH SATA4-7
MINISAS HD3	Intel PCH SSATA 0-3
Buzzer	Motherboard buzzer
Battery	Motherboard battery
JTPM1	TPM port
Jchassis1	Intrusion alarm port
JUSB1	USB 2.0 Type A port
JUSB2	3 x Motherboard integrated USB3.0
JUSB3	USB DOM poet
JUSB4,JUSB5	USB3.0 connector. USB2.0 connector
J1	Front I'C port
JSGPIO1	JSGPIO1 (special debugging)
JFP1	Front control panel connector
CPU0_DIMM1-8	Memory slot 1-8 of CPU0
CPU1 DIMM1-8	Memory slot 1-8 of CPU1
JFAN1-JFAN6/J	Connector 1-6 of 2U/1U fan
FAN7-JFAN12	Front VGA connector
JVGA1	Rear 2*2.5 inch HDD module power-supply connector
JPW10	Rear I°C port
J4	Rear 2*2.5 inch HDD SGPIO connector (SSATA4-5)
J5	Oculink1 port/Oculink2 port
Oculink1, Oculink2	VROC Key port
J2	GPU power-supply port

JPWRS	OCP Type A Slot
JPWR7~9	Front HDD hard disk rear panel power-supply ports
JPWR1, JPWR2	Power module 1/2 ports
U57	BIOS ROM port
U34	BMC ROM port
PCI-E_SLOT1	PCI-E3.0x16 (CPU0)
PCI-E_SLOT2	PCI-E3.0x8 (CPUO)/1U horizontal adapter card slot
PCI-E_SLOT3	PCI-E3.0x24 (CPU1), 1U/2U PCIE horizontal adapter card slot
PCI-E_SLOT4	PCI-E3.0x8 (CPU1)
SSATA4-5	Intel PCH SSATA 4-5
JCOM8	Motherboard COM expansion port
LAN1-2	Motherboard integrated network port 1-2
UID LED	Node Recognition LED
VGA1	Motherboard integrated VGA
BMC_LAN1	BCM Dedicated network port

3. System Description and Settings

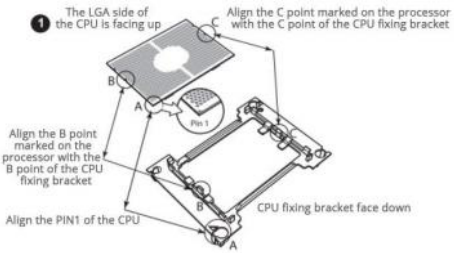
3.1 CPU

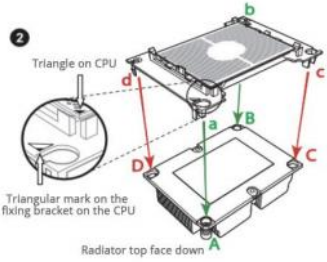
3.1.1 CPU Summary

This series of models supports two Intel Xeon Scalable-SP and 2nd generation Intel Xeon Scalable-SP series processors, with a UPI of up to 10.4 GT/s and a maximum of 165W.

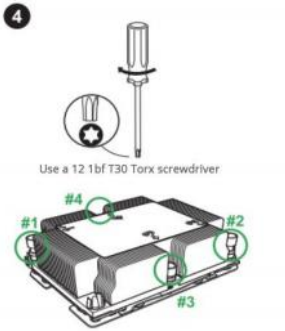
3.1.2 CPU Installation Steps

Instructions for installation steps:





Install the processor cooler into the CPU socket



Tighten the screws in the order of 1234

3.2 RAM

3. 2. 1 Memory Overview

Server has 16 memory slots that can support 16 Load Reduced DIMM (LRDIMM), 3D LRDIMM, Registered DIMM (RDIMM), Non-Volatile DIMM (NV-DIMM) DDR4 (288-pin). ECC 2933/2666/2400/ 2133 MHz memory (does not support mixing of different types of memory), supports up to 4TB memory. The server also supports DCPMM, up to 5TB, please refer to the table below.

DDR4 Memory Support for Intel Xeon Scalable-SP Processors

DDR4 Memory Support						
Type	Ranks Per DIMM & Data Width	DIMM Capacity (GB)		Speed (MT/s); Voltage (V); Slots Per Channel (SPC) and DIMMs Per Channel (DPC)		
				1 Slot Per Channel	2 Slots Per Channel	
		DRAM Density		1DPC (1-DIMM Per Channel)	1DPC (1-DIMM Per Channel)	2DPC (2-DIMM Per Channel)
		4Gb*	8Gb	1.2 V	1.2 V	1.2 V
RDIMM	SRx4	4GB	8GB	2666	2666	2666
RDIMM	SRx8	8GB	16GB	2666	2666	2666
RDIMM	DRx8	8GB	16GB	2666	2666	2666
RDIMM	DRx4	16GB	32GB	2666	2666	2666
RDIMM 3Ds	QRX4	N/A	2H-64GB	2666	2666	2666
RDIMM 3Ds	8RX4	N/A	4H-128GB	2666	2666	2666
LRDIMM	QRx4	32GB	64GB	2666	2666	2666
LRDIMM 3Ds	QRX4	N/A	2H-64GB	2666	2666	2666
LRDIMM 3Ds	8Rx4	N/A	4H-128GB	2666	2666	2666

DDR4 Memory Support for 2nd Gen Intel Xeon Scalable-SP Processors

DDR4 Memory Support							
Type	Ranks Per DIMM & Data Width	DIMM Capacity (GB)			Speed (MT/s); Voltage (V); Slots Per Channel (SPC) and DIMMs Per Channel (DPC)		
					1 Slot Per Channel	2 Slots Per Channel	
		DRAM Density			1DPC (1-DIMM Per Channel)	1DPC (1-DIMM Per Channel)	2DPC (2-DIMM Per Channel)
		4Gb*	8Gb	16Gb	1.2 V	1.2 V	1.2 V
RDIMM	SRx4	4GB	8GB	16GB	2933	2933	2933
RDIMM	SRx8	8GB	16GB	32GB	2933	2933	2933
RDIMM	DRx8	8GB	16GB	32GB	2933	2933	2933
RDIMM	DRx4	16GB	32GB	64GB	2933	2933	2933
RDIMM 3Ds	QRX4	N/A	2H-64GB	2H-128GB	2933	2933	2933
RDIMM 3Ds	8RX4	N/A	4H-128GB	4H-256GB	2933	2933	2933
LRDIMM	QRx4	32GB	64GB	128GB	2933	2933	2933
LRDIMM 3Ds	QRX4	N/A	2H-64GB	2H-128GB	2933	2933	2933
LRDIMM 3Ds	8Rx4	N/A	4H-128GB	4H-256GB	2933	2933	2933

3. 2. 2 Notes on Memory Installation

Because one CPU supports 8 memory slots, and two CPUs support 16 memory slots, the memory installation sequence of using one CPU and using two CPUs is different.

The corresponding relationship between CPU and memory is shown in the following table:

Correspondence Between CPU and Memory									
CPU0	P0-DIMM	1	2	3	4	5	6	7	8
CPU1	P1-DIMM	1	2	3	4	5	6	7	8

See the following table for the installation specifications of CPU and memory:

CPU and Memory Installation Specifications	
Quantity	Installation Order
1 CPU&1 Memory	CPU0_DIMM1
1 CPU&8 or Within 8 Memory	CPU0_DIMM1→CPU0_DIMM5→CPU0_DIMM3→CPU0_DIMM7→ CPU0_DIMM4→CPU0_DIMM8→CPU0_DIMM2→CPU0_DIMM6
2 CPU&2 Memory	CPU0_DIMM1 CPU1_DIMM1
2 CPU& 16 or Within 16 Memory	CPU0_DIMM1→CPU1_DIMM1→ CPU0_DIMM5→CPU1_DIMM5→ CPU0_DIMM3→CPU1_DIMM3→ CPU0_DIMM7→CPU1_DIMM7→ CPU0_DIMM4→CPU1_DIMM4→ CPU0_DIMM8→CPU1_DIMM8→ CPU0_DIMM2→CPU1_DIMM2→ CPU0_DIMM6→CPU1_DIMM6

Notice:

1. In order to ensure the smooth realization of the memory function, it should be ensured that the same server uses exactly the same memory products, mainly including memory capacity and particle model.

2. The operating frequency of the memory depends on the CPU, and different CPUs will support different maximum memory frequencies. 2933Mhz is only supported by the 2nd generation Intel Xeon Scalable-SP (82XX, 62XX) installed.

3. Unbalanced memory topologies, such as having two memory in one memory channel and one memory in the other, can result in degraded memory performance.

3. 2. 2 DCPMM Memory Installation Instructions

The installation method of DCPMM is shown in the following table:

Note: DCPMM is only supported with 2nd Generation Intel Xeon Scalable-SP (82XX/62XX/52XX/4215) CPUs.

Symmetric Population within 1 CPU Socket									
Modes	P1-DIMMF1	P1-DIMME1	P1-DIMMD1	P1-DIMMD2	P1-DIMMA2	P1-DIMMA1	P1-DIMMB1	P1-DIMMC1	Channel Config.
AD	DRAM1	DRAM1	DRAM1	***DCPMM***	***DCPMM***	DRAM1	DRAM1	DRAM1	2-1-1
MM	DRAM2	DRAM2	DRAM2	***DCPMM***	***DCPMM***	DRAM2	DRAM2	DRAM2	2-1-1
AD + MM	DRAM3	DRAM3	DRAM3	***DCPMM***	***DCPMM***	DRAM3	DRAM3	DRAM3	2-1-1
AD	***DCPMM***	DRAM1	DRAM1	-	-	DRAM1	DRAM1	***DCPMM***	1-1-1
MM	***DCPMM***	DRAM1	DRAM1	-	-	DRAM1	DRAM1	***DCPMM***	1-1-1
AD + MM	***DCPMM***	DRAM3	DRAM3	-	-	DRAM3	DRAM3	***DCPMM***	1-1-1

Asymmetric Population within 1 CPU Socket									
Modes	P1-DIMMF1	P1-DIMME1	P1-DIMMD1	P1-DIMMD2	P1-DIMMA2	P1-DIMMA1	P1-DIMMB1	P1-DIMMC1	Channel Config.
AD	DRAM1	DRAM1	DRAM1	-	***DCPMM***	DRAM1	DRAM1	DRAM1	2-1-1
AD*	DRAM1	DRAM1	DRAM1	-	***DCPMM***	DRAM1	DRAM1	DRAM1	2-1-1

Legend (for the two tables above)					
	DDR4 Type				Capacity
DRAM1	RDIMM	3DS RDIMM	LRDIMM	3DS LRDIMM	Refer to Validation Matrix (DDR4 DIMMs validated with DCPMM) below.
DRAM2	RDIMM	-	-	-	
DRAM3	RDIMM	3DS RDIMM	LRDIMM	-	

Notice:

1. 1Rx8 DDR4 memory does not support DCPMM.
2. There is no DCPMM DIMM installed in the memory DIMM corresponding to the second CPU socket.
3. For MM, a typical MM/FM ratio is between 1:4 and 1:16. Excessive FM capacity can be used for AD (NM = near memory; FM = far memory)
4. Please use the same DDR4 memory
5. At present, the operating frequency of the DCPMM module is 2666Mhz, and a symmetrical insertion method is recommended.
6. Mixing of DCPMMs and NVMDIMMs within the same platform is not allowed.
7. The following DCPMM population table is for balanced DCPMM to DRAM cache ratios in MM and MM + AD modes.

Validation Matrix (DDR4 DIMMs Validated w/DCPMM)			
DIMM Type	Ranks Per DIMM & Data Width (Stack)	DIMM Capacity (GB)	
		DRAM Density	
		4Gb	8Gb
RDIMM	1Rx4	8GB	16GB
	2Rx8	8GB	16GB
	2Rx4	16GB	32GB
LRDIMM	4Rx4	N/A	64GB
LRDIMM 3DS	8Rx4 (4H)	N/A	128GB

3.3 Video Controller

Motherboard integrates ASpeed2500 video controller through AST 2500BMC.

3.4 Hard Disk Controller

Support 14 SATA3 hard drives.

3.5 Network Controller

Integrated 1Marvell 88E1512 dual-channel Gigabit network controller , providing two Gigabit Ethernet ports, providing high-speed network connection , optional support for Gigabit or 10 Gigabit OCP network card (selecting 10 Gigabit OCP requires a 622 chipset version motherboard).

3.6 Keyboard and Mouse

Supports USB keyboard / mouse.

3.7 Optical and Floppy Drives

Server is equipped with an optional USB drive.

3.8 Optical and Floppy Drives

PR1710P:

Full height PCI-E 3.0X8 (slot1 CPU0), full height PCI-E 3.0X16 (slot2 CPU1).

PR2710P:

Vertical rear window (style A):

Half-height PCI-E 3.0X16(slot1 CPU0), half-height PCI-E 3.0X8(slot2 CPU0), half-height PCI-E 3.0X8(slot4 CPU1).

Horizontal rear window (style B):

Half-height PCI-E 3.0X16(slot1 CPU0), half-height PCI-E 3.0X8(slot2 CPU0), PCI-E 3.0X24(slot3CPU1, can be converted into 3 full-height PCI-E 3.0X8 or 1 with an adapter card Full height PCI-E 3.0X8+PCI-E 3.0X16), optional half height PCI-E 3.0X8(slot4 CPU1).

3.9 Other Configuration

5 USB 3.0 ports (2 front and 3 rear), 1 USB2.0 (built-in), and 1 BMC management network port.

Number	Operating System
1	Microsoft Windows 2012R2
2	Microsoft Windows 2016
3	Red Hat Enterprise Linux 7.3

3.10 Certified Compatible Operating System

1st generation Intel Xeon Scalable-SP series processors

2nd generation Intel Xeon Scalable-SP series processors

Number	Operating System
1	Microsoft Windows 2016
2	Red Hat Enterprise Linux 7.6

4. The BIOS Settings

BIOS is an acronym for Basic Input Output System. Perform basic management of hardware before entering Windows and other operating systems. Many hardware compatibility issues can be resolved through BIOS upgrades and settings. This chapter focuses on the BIOS setup menu .

BIOS settings

This section focuses on the options and their meanings that BIOS users will often use.

Each settings page menu contains a number of features, except those that only give informational prompts, each feature has a value field containing optional parameters, which can be changed according to the security settings. If a parameter is not modifiable due to security permissions (or other reasons), then the property's range is not optional.

Instructions for the commands used in the setup program are provided at the very bottom of the screen.

After booting, enter the following interface prompts and press < DEL > to enter the BIOS settings.

Press < DEL > to enter SETUP

Keyboard command description table:

<Enter>	Execute command : enter a submenu when the selected property is a submenu, enter an option list when the selected property is a range, or enter another subfield from one subfield in a multivalued field (such as time and date) , when the list of hanging items is displayed, press the Enter key to exit the list and enter the parent menu.
<ESC>	Exit : The < ESC > key provides an exit mechanism from any window and will cancel the execution of the Enter key. Whether you are selecting a value or a menu, pressing < ESC > will re-enter the parent menu. Pressing the < ESC > key on any main menu page will display the Exit/Confirm window to confirm whether to exit without saving the changes. Select list item : used to move through items in the menu item option list or value range selection list, press Enter to complete the

	selection.

< ↑ >,< ↓ >	Switching: The left and right keys are used to switch between the main menu pages. The left and right keys do not work in submenus or selection lists.
<←>,<→>	Select: Used to select between different files, for example the Tab key can go from the hour item to the minute item.
Tab	Change the size of the value : used to change the size of the current value, scrolling the optional values without displaying the full list of values.
<—>,<+>	Change the size of the value : used to change the size of the current value, scrolling the optional values without displaying the full list of values.
<F3>	Default setting : Press < F3 > to bring up the following popup window: Setup Confirmation Load default configuration now? [Yes] [No] If you select " Yes " and press Enter, all BIOS settings will be set to default values and the BIOS will be exited , and the system will reboot. If you select " No " and press Enter, it will return to the BIOS setup window before pressing < F9 > , which has no effect on the current settings.
<F4>	Save and Exit : Press < F4 > to bring up the following popup window: Setup Confirmation Save Configuration changes and exit now? [Yes] [No] If you select " Yes " and press Enter, the changes made to the BIOS settings will be saved and exited. If you select " No " and press Enter, it will return to the window before pressing < F4 >, which has no effect on the current settings .

5. Integrated RAID Configuration

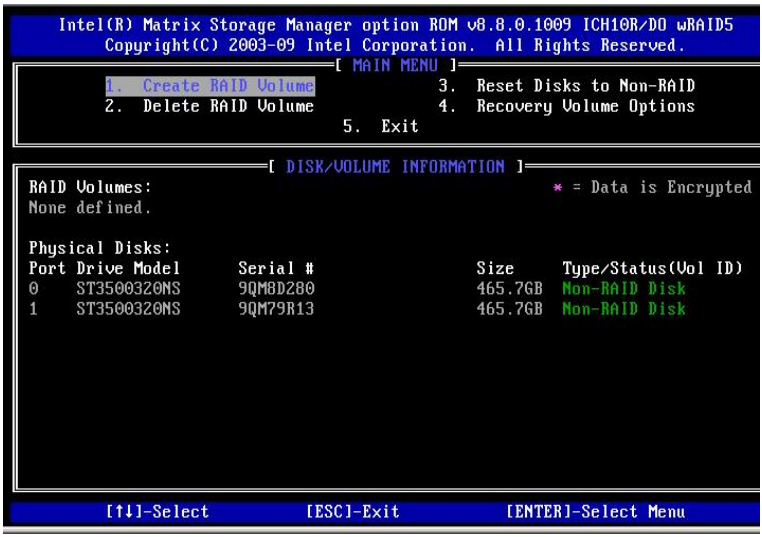
This chapter introduces the use of the motherboard integrated SATA RAID controller to create RAID1 , RAID0 and RAID10. After RAID1 is created, the hard disk capacity is only half of the total capacity, and the hard disk forms a backup, and the reliability is greatly improved. After RAID0 is created, the read and write speed of the hard disk is improved, the reliability is reduced, and the available capacity is equal to the total capacity. After RAID10 is created, it utilizes the extremely high read-write efficiency of RAID 0 and the high data protection and recovery capability of RAID 1. It is a cost-effective level. The controller motherboard integrates RADI to support Raid 1 , 0 , 10 , 5 (only Support WINDOWS system).

5.1 Set the RAID Status in the BIOS

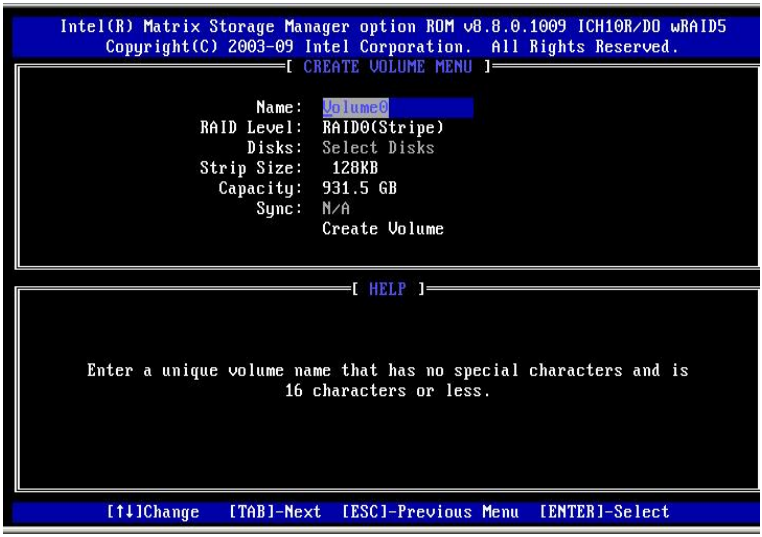
In the factory default settings, the RAID function is not turned on. If you need to create a RAID, please follow the steps below: Press < DEL > at power on to enter the BIOS. In the Platform Configuration menu , select PCH SATA Configuration or PCH sSATA Configuration under the PCH Configuration submenu , and change Configure SATA as [AHCI] to [RAID] to enable the SATA /sSATA RAID controller.

5.1.1 Operating Guide for Mainboard Integrated RAID

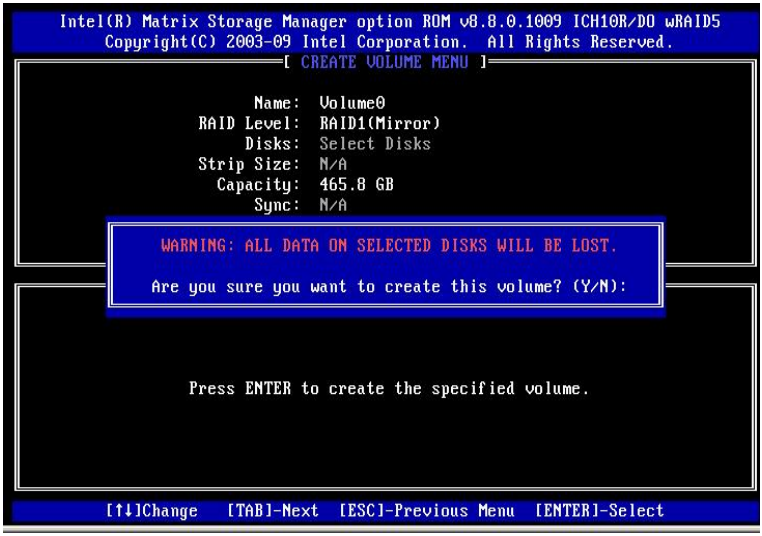
Before configuring the array, set the RAID controller mode in the BIOS, and press the combination of <Ctrl>+< I > to enter the RAID setting during the power-on self-test. After entering, the picture is as follows:



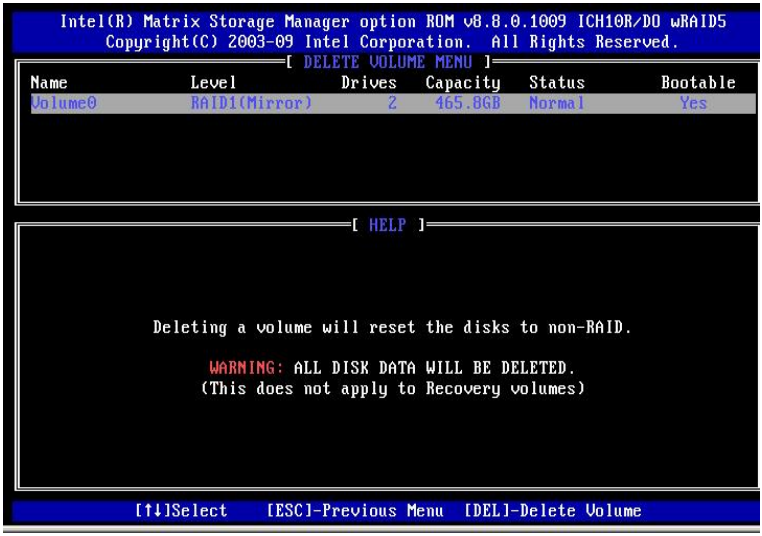
5.2.1.1.1 To create an array, select the Create RAID Volume option and the following menu appears :



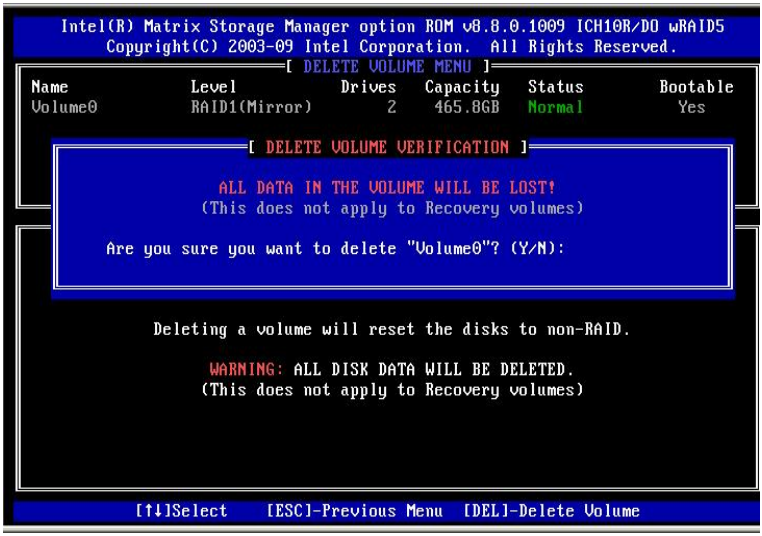
Press the < ↑ >, < ↓ > keys to move the cursor up and down, and select the desired level of the array at RAID Level. The options are RAID0, RAID1 and RAID5. After selecting the array level and the hard disks to be arrayed, click the Create Volume option and follow the prompts to select 'Y' to create an array. As shown below:



5.2.1.1.2 To delete the array, select Delete RAID Volume option, the following menu appears :



After entering, select the array to be deleted, then press 'DEL', and select 'Y' to delete the array, as shown in the following figure:



6. Operating System Installation Instructions

This chapter describes the manual installation and driver installation of the Windows Server 2016 operating system.

6.1 Microsoft Windows Server 2016 Installation Instructions

This guide is suitable for the manual installation of the Microsoft Windows 2008 Server R2 SP1 operating system.

6.1.1 Preparations:

RAID driver when installing the operating system , please prepare a U disk and a random driver CD. If your server is configured with a RAID external card, you need to prepare the external card driver CD. Then follow the steps below to copy the corresponding driver from the driver CD or external card driver CD to the U disk:

1. Insert the U disk into the USB port of a computer with Windows operating system , and a new removable disk will appear on the computer. If using an integrated RAID drive, insert the random driver CD into this computer, and double-click to open the driver CD. If it is an external card RAID card, insert the random external card driver CD into this computer, and double-click to open it.
2. Select the driver that needs to install the operating system and copy it to the U disk.
3. Load the driver steps in step 9 of subsection 6.1.2.

6.1.2 Installation Steps:

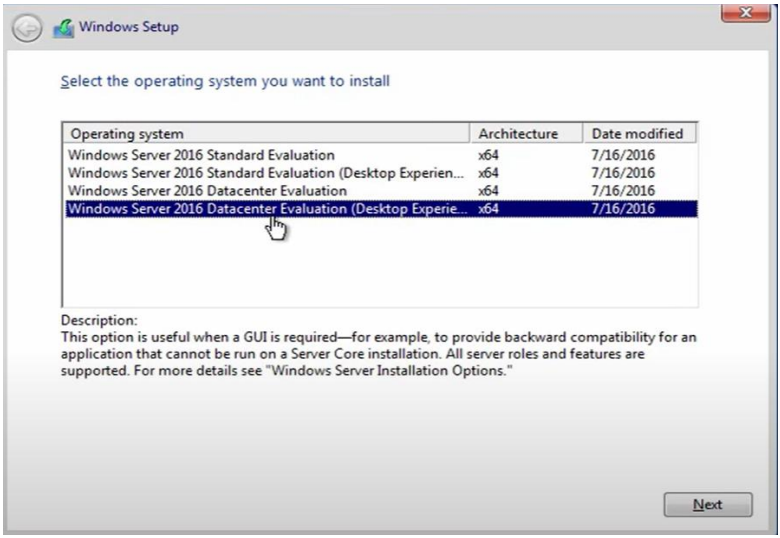
1. Set the CD-ROM as the first boot device in the BIOS, insert the Windows 2016 Server installation CD, save the BIOS settings, and restart.

2. Boot from CD, loading

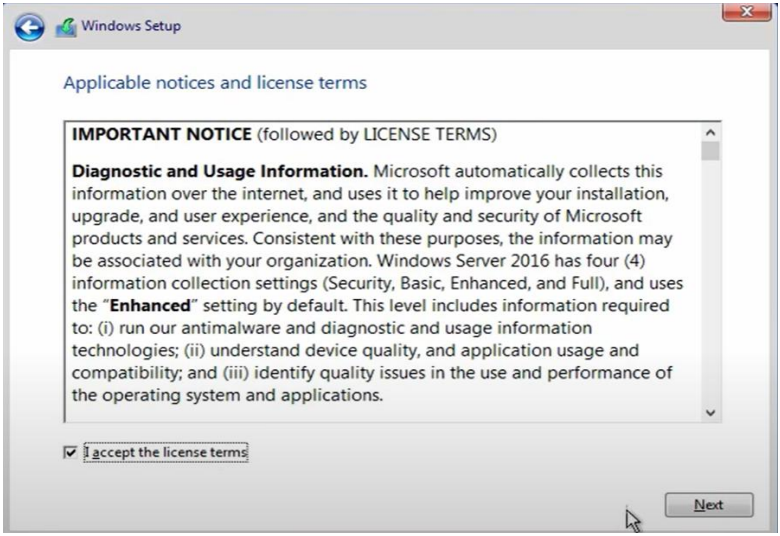
3. Enter the following screen, select language/keyboard:

4. Click to start the installation:

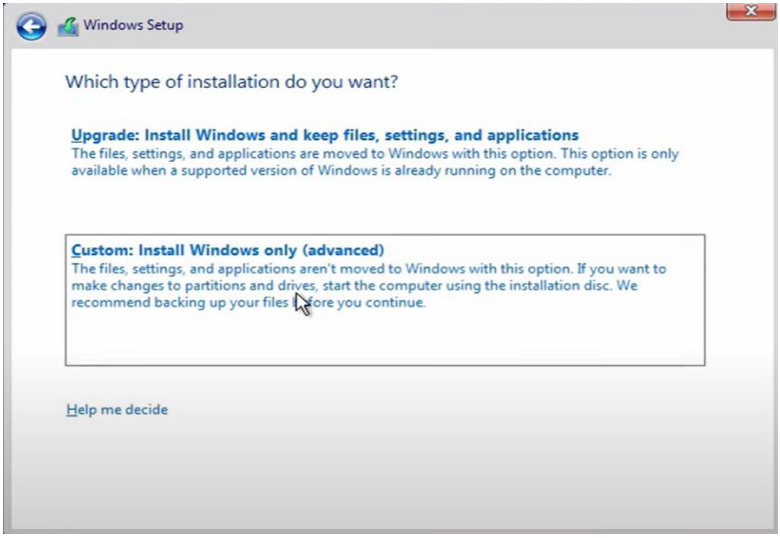
5. Select the type of operating system that you want to install, and press Next



6. Read the User License Agreement with PAGE DOWN / PAGE UP:

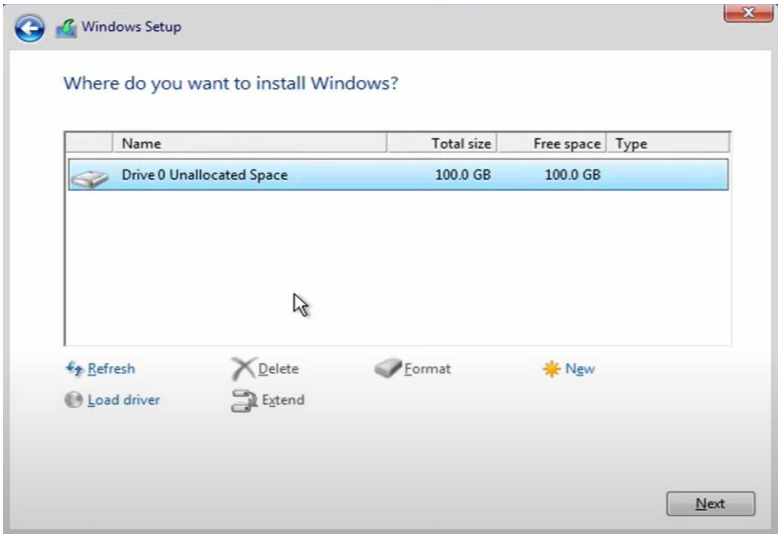


7. Select "I accept the license terms", press "Next"
8. Choose how to install the operating system

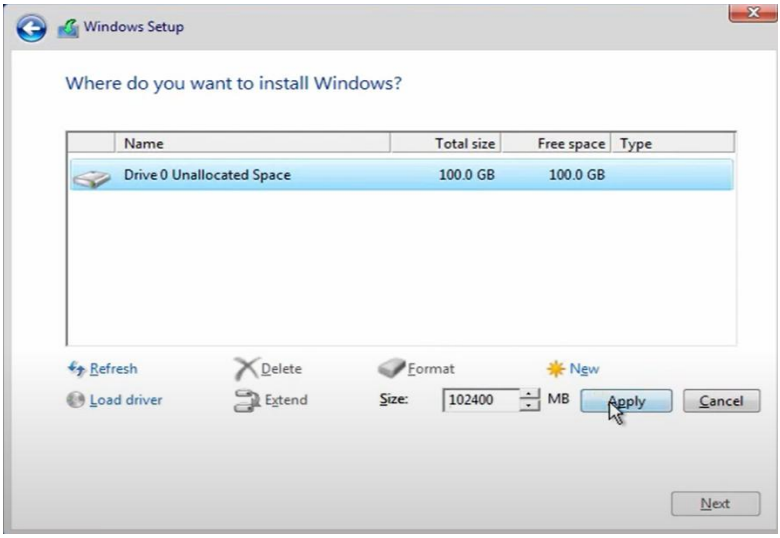


9. If you do RAID , the disk will not be found. Choose to load the driver, load the RAID driver, and then you can see the disk array. Click the left mouse button to load the driver, and the Load

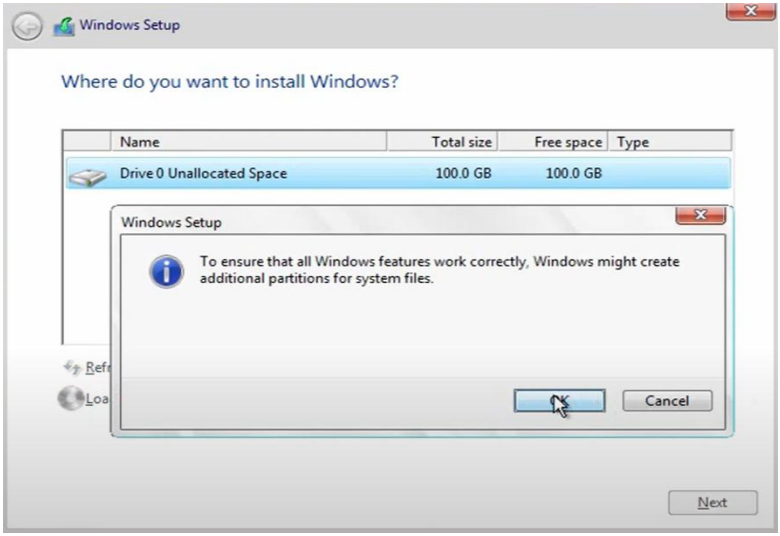
Directory dialog box will pop up, select the copy directory in step 2 in 6.1.1 . If the SATA disk is connected to the on-board AHCI mode, the disk can be directly recognized without loading the driver.



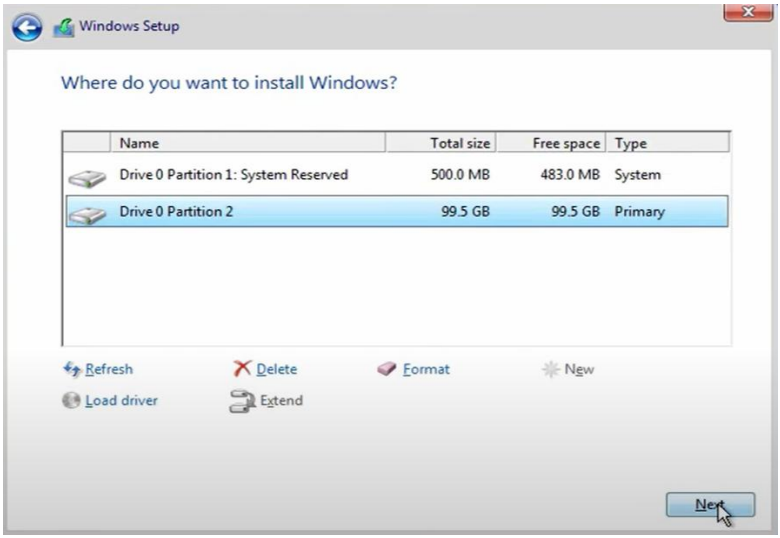
10. Set aside space on the disk array to install Windows Server 2016



11. Click OK to confirm the partition:

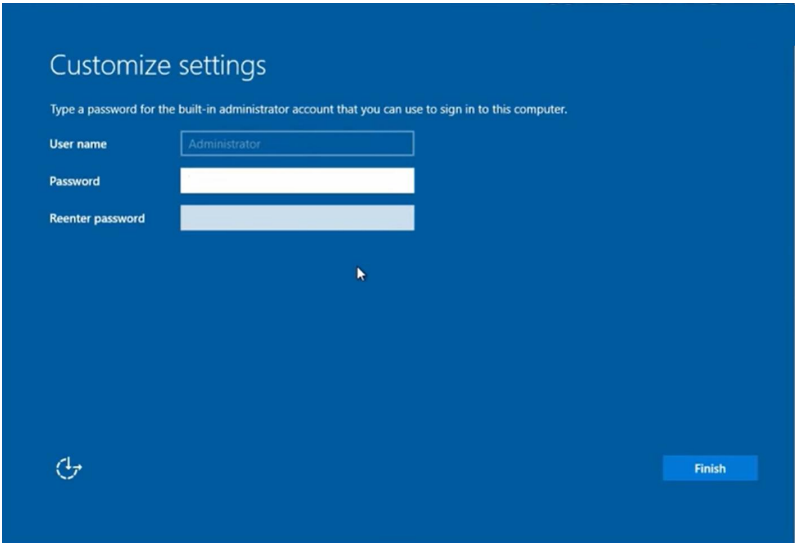


12. Complete the partition, click Next to install the system;

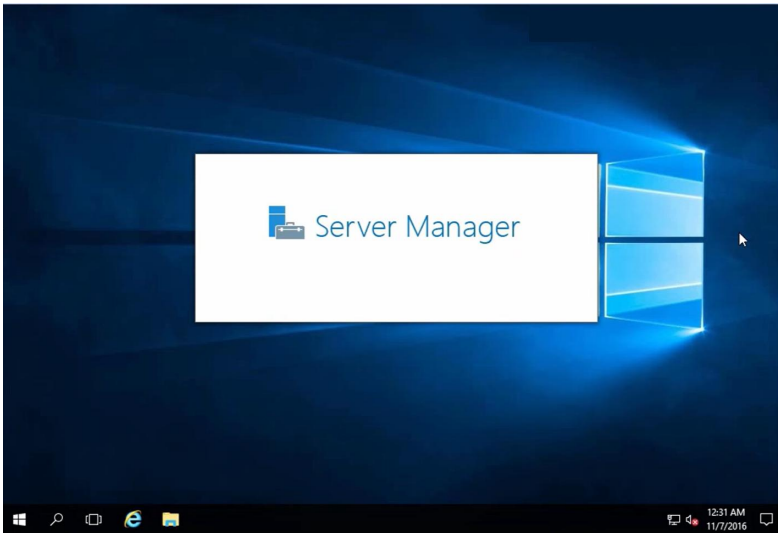


13. Start copying the data, and install the system:

14. Complete the installation, and restart the computer
15. Before entering the system, you need to reset the password:



16. Enter the password to enter the system:



17. Install the driver, put in the random drive disc, the drive disc open as shown below:

18. Click "Windows" to select the chip and controller to be driven, as shown in the figure below;

Install chipset, and other chip drivers, graphics card and external card drivers in the expansion card driver CD. After the installation is complete, choose to restart the computer:

Chipset is the motherboard chipset driver;

LAN is an integrated network card driver for the motherboard;

SATA RAID is the motherboard integrated SATA and SATA driver;

USB3.0 is the motherboard integrated 3.0 driver;

VGA is the motherboard integrated graphics driver.

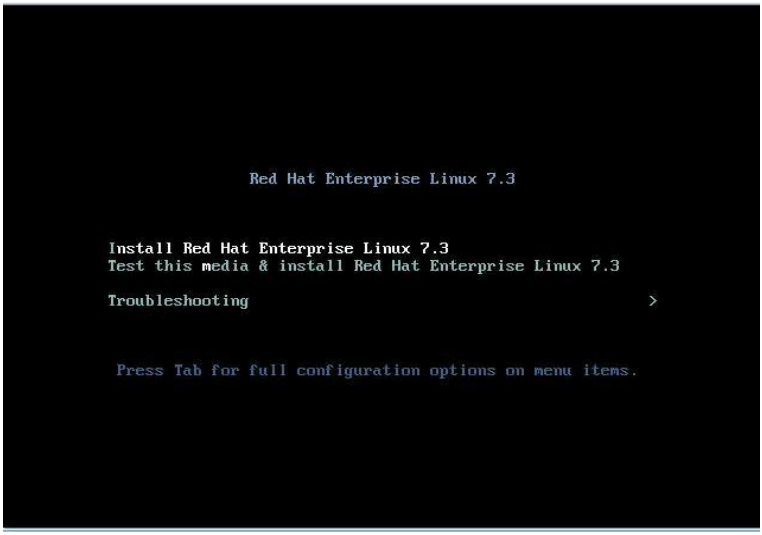
6.2 Redhat Enterpise Linux7.3 Installation Instructions

6.2.1 Preparations:

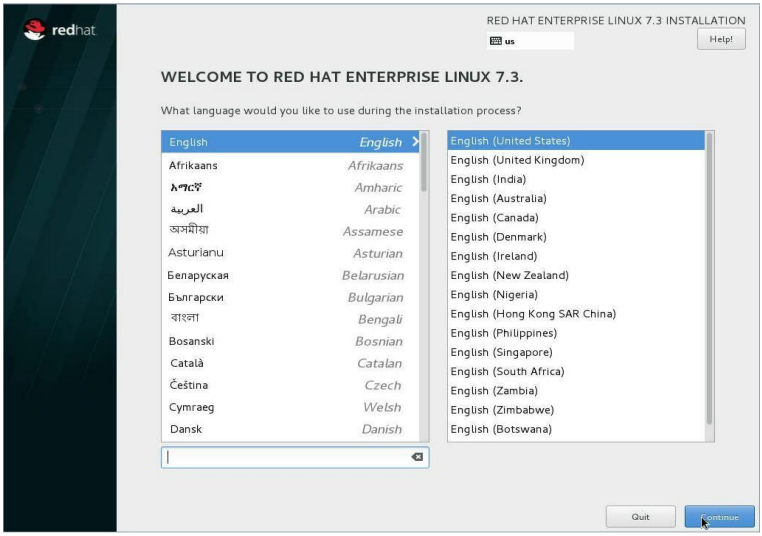
RAID driver when installing the operating system , please prepare a U disk and a random driver CD. If your server is configured with a RAID external card, you need to prepare the external card driver CD.

6.1.2 Installation Steps:

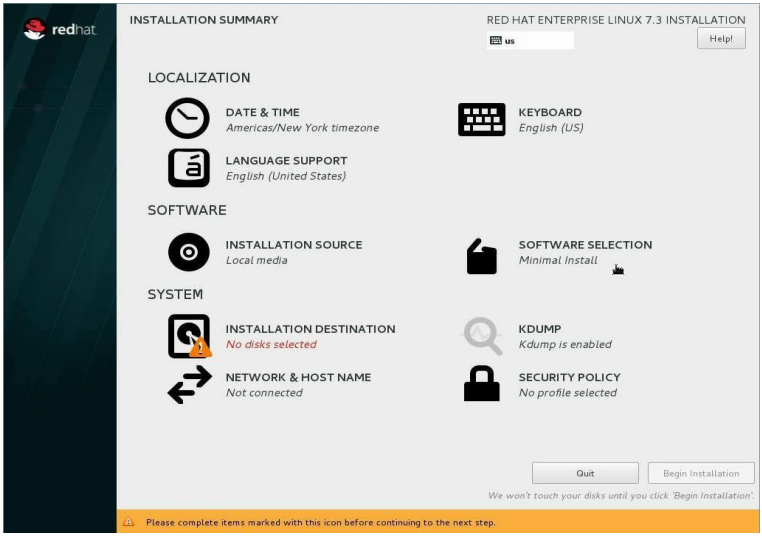
1. Set the CD-ROM as the first boot device in the BIOS, insert the installation CD, save the BIOS settings, and restart.
2. Boot from the CD, the following interface will pop up during loading, select: Install Rat Hat Enterprise Linux 7.3 and press Enter as shown in the figure.



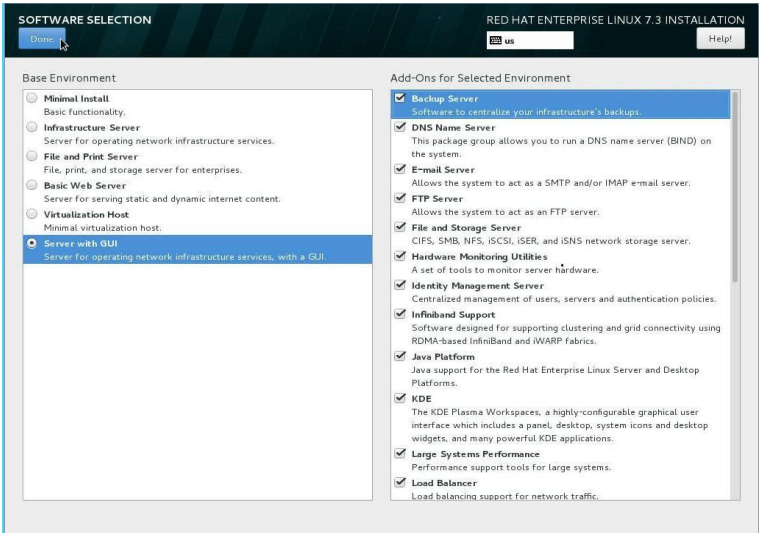
3. Select the system language, the default English, and click on Next



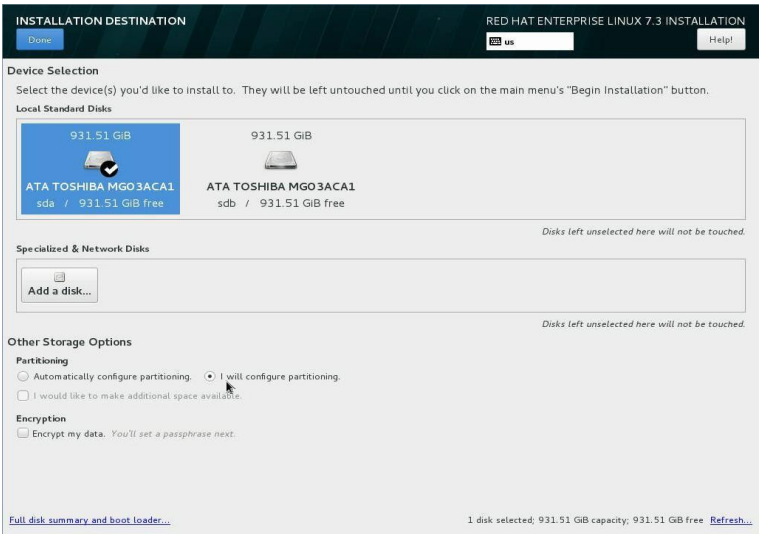
4. The system goes to the following interface. (Set time, system package, hard disk partition)



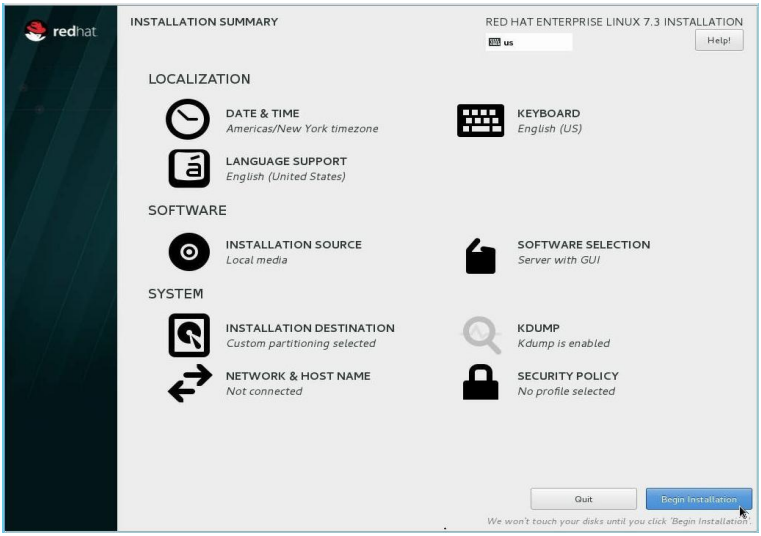
5. Click SOFTWARE SELECTION to select the system software; click Done to return to the step 4 interface;



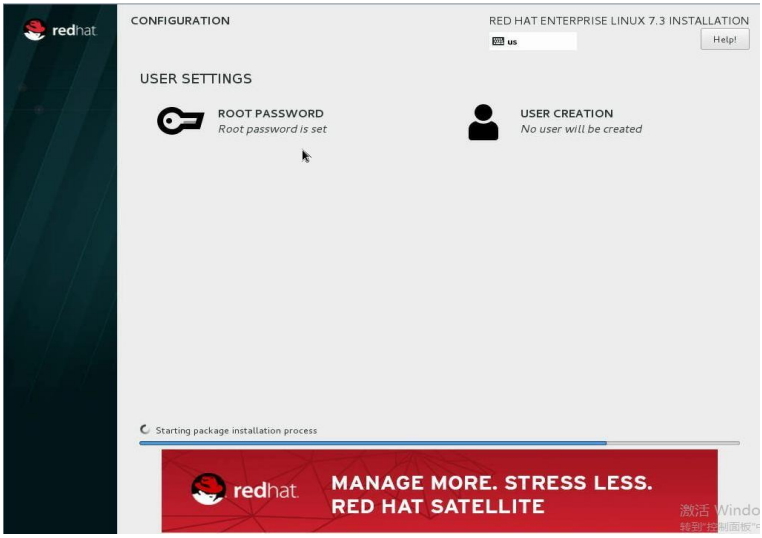
6. Select INSTALLATION DESTINATION, hard disk partition; (optional automatic or manual partition)



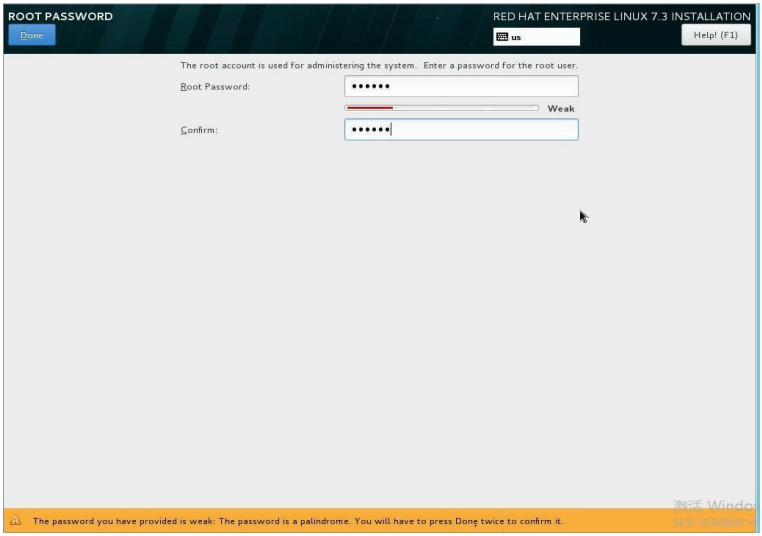
7. Click on Next,



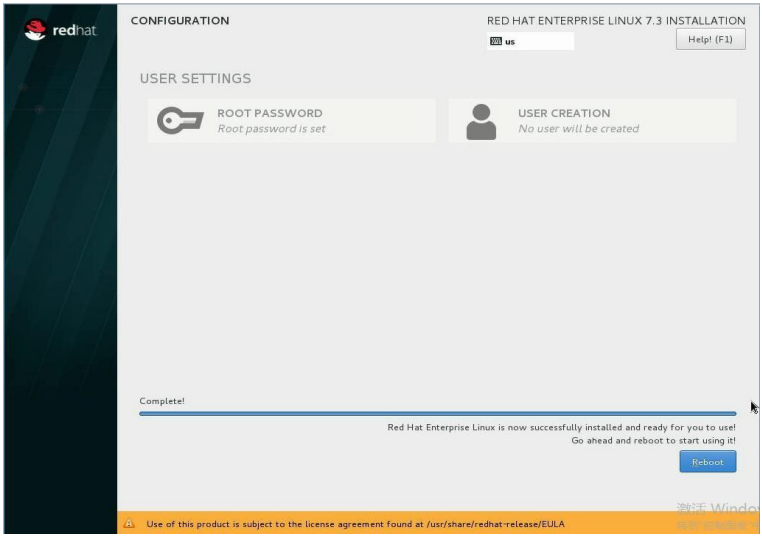
8. Start to install the system, as shown below



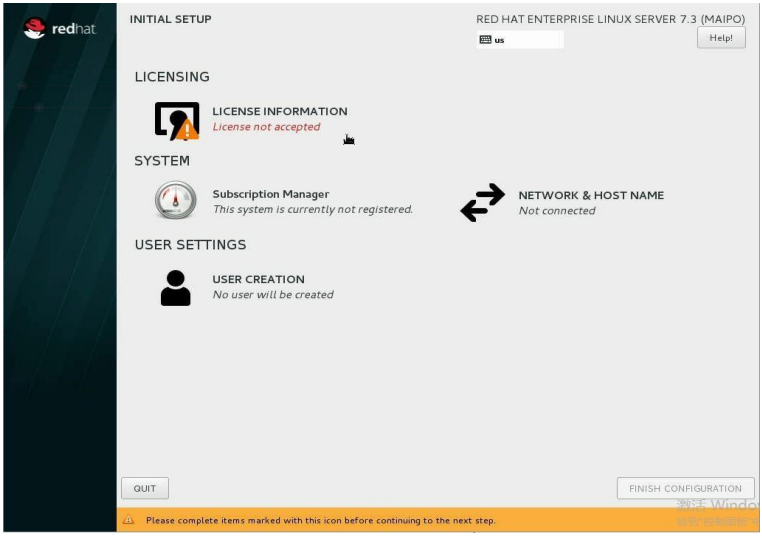
9. Set the Root user password, and then click Done, see the figure below



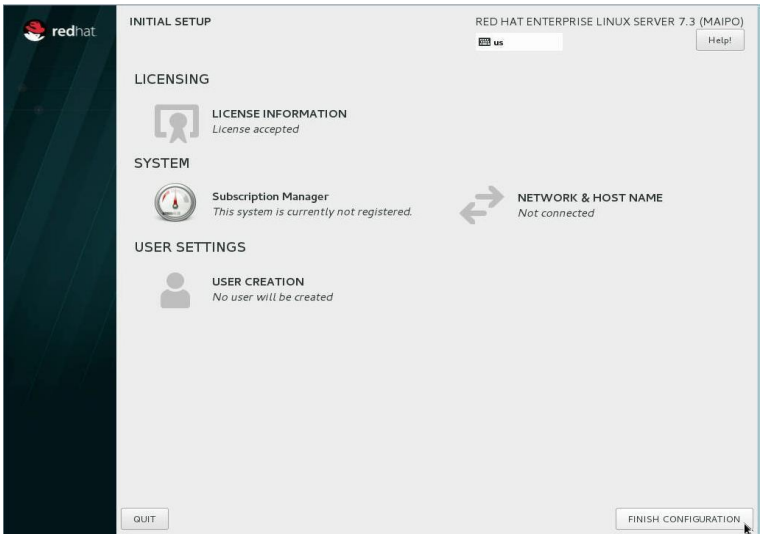
10. After the installation is complete, click REBOOT, see the figure below



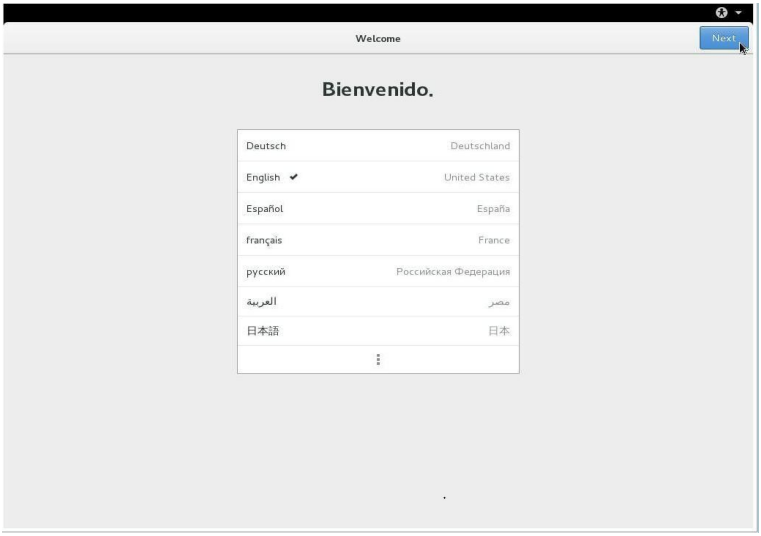
11. License information



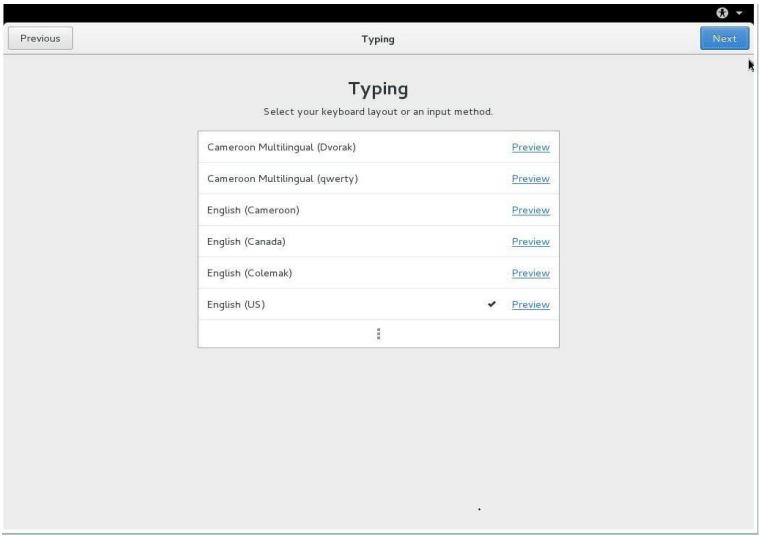
12. Default click FINISH CONFIGURATION ,as following picture shows:



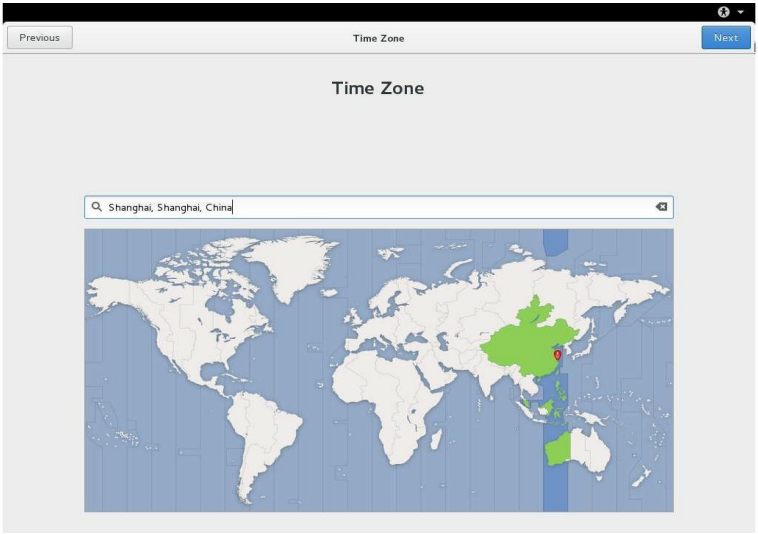
13. Click on Next by default, see the figure below



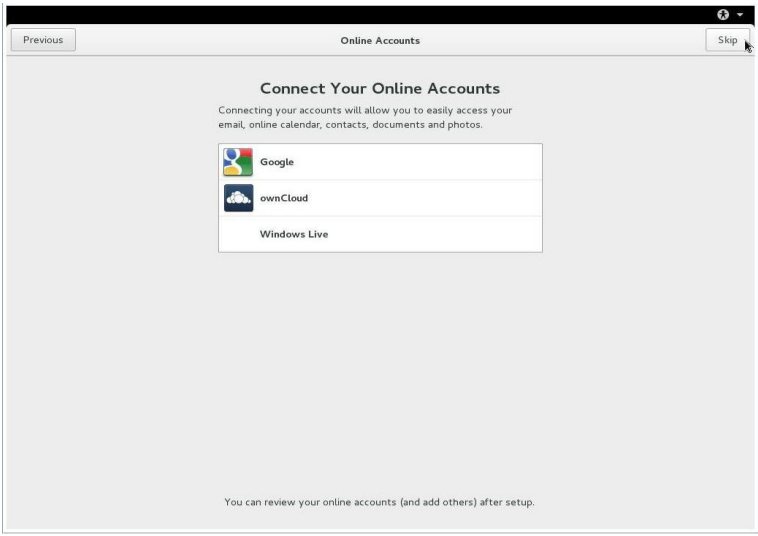
14. Click on Next by default, see the figure below



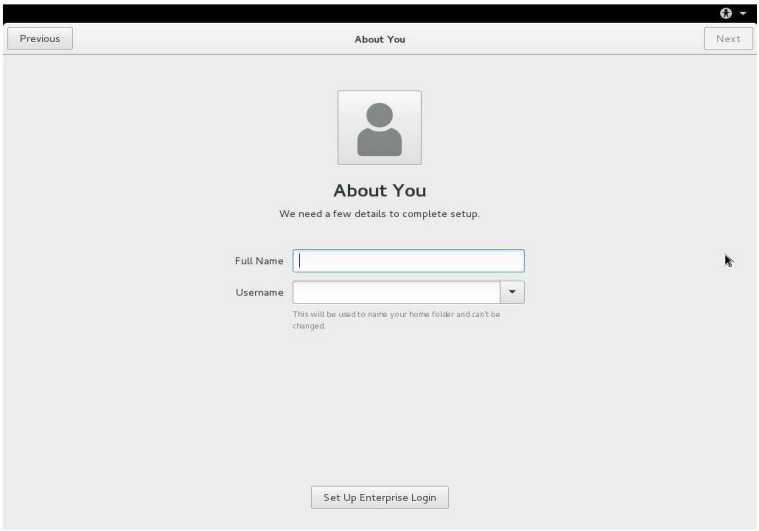
15. Select the time zone (such as Shanghai) and click on Next, see the figure below



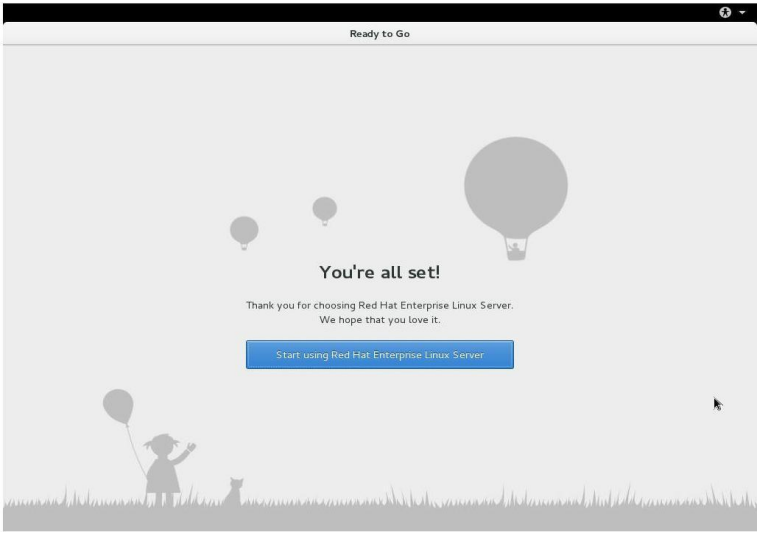
16. Click on Skip and see the figure below



17. Create a user, see the figure below



18. Click Start using Red Hat Enterprise Linux Server to enter the system, see the figure below



7. System Troubleshooting

7.1 Introduction to System Reset

This chapter helps you to check and solve the problems that you may encounter in the process of using the Boyd server system.

Task	Keys (combination)
Warm Boot: Clears system memory and reloads the operating system.	<Ctrl>+<Alt>+<Del> (depending on OS)
System reset: Clear system memory, redo POST and reload operating system.	System Reset Button
Cold Boot: Clears system memory, reruns power-on self-test (POST), reloads operating system, and stops power to all external devices	Power button

7.2 The System Started for the First Time

Problems with the first boot of the system are usually caused by incorrect installation or configuration. Generally, there are relatively few failures caused directly by the hardware.

Check steps:

Are all cables connected correctly and securely.

- Are all external cards fully inserted into the slots on the motherboard.
- Are all jumpers on the motherboard set correctly.
- All jumpers and switches on the card and external devices are set correctly. To check these settings, refer to the manufacturer's documentation that came with them. To ensure that the card can be used, check for resource conflicts.
- Are all DIMMs installed correctly.
- Are all external devices installed correctly.
- If the system has a hard disk, whether it has been formatted or configured.
- Are all device drivers installed correctly.
- Is the configuration set by the SSU correct.
- Whether the operating system is loaded correctly (refer to the operating system

documentation).

• The server has been turned on by pressing the system power button on the front panel (the power-on light should be on).

• The system power cord is properly connected to the system and plugged into an outlet.

• Check if the wall outlet has AC power.

• If these items are correct and the problem still occurs, see the following introduction.

7.3 Other Problems and Solutions

7.3.1 Prepare the System for Diagnostic Procedures

Turn off devices before unplugging cables: Turn off external devices connected to the system before disconnecting external cables from the system. Otherwise, it may cause damage to the system or external devices.

1. Turn off all external devices connected to the system. Disconnect all of them from the system except the keyboard, mouse and monitor.

2. Make sure the system power cord is plugged into a reliable AC outlet.

3. Make sure your monitor, keyboard and system are properly connected. Turn on the monitor and adjust its brightness and contrast to at least two-thirds of the maximum (see the documentation that came with the monitor).

4. Turn on the system. If the power light is off, see the troubleshooting instructions for the power light off below.

7.3.2 Verifying System Indicators

After POST detects the system configuration, the system tests for the presence of each mass storage device. After each device has passed the test, the corresponding indicator light will flash briefly.

Please check the following:

• If a hard drive is installed in the system, check for a brief flash of the hard drive activity light on the control panel. If not, please contact technical support or an authorized reseller for assistance.

7.4 Specific Questions

7.4.1 The Power Light Is Not Lit

Please check the following:

• Are all power cords plugged in securely. Whether the power cord is connected to the junction box or socket. Whether your fuse or fuse is damaged.

• Whether the system is operating normally. If OK, there may be a problem with the power light, or a loose cable from the front panel to the motherboard.

• Whether there are other problems with the system. If yes, check the items listed in "System cooling fan is not spinning properly".

If all checks are correct and the problem persists, please contact technical support or an authorized dealer for assistance.

7.4.2 The Screen Does Not Display Characters

Check the following:

• The keyboard is working properly. Check to see if the "Num Lock" light is on.

• The monitor is plugged in securely and the power is turned on. Many monitors now automatically turn off when not in use, and require a period of warm-up when activated.

• The brightness and contrast of the monitor are properly adjusted.

• The monitor settings are correct.

• Whether the signal cable of the monitor is installed correctly.

• Whether the on-board video controller is functioning properly.

7.4.3 Incorrect or Distorted Characters Cisplayed on the Screen

Please check the following:

• The brightness and contrast of the monitor are properly adjusted. See the monitor manufacturer's documentation.

• The monitor's signal line power cable is installed correctly.

• The correct graphics card is installed in the operating system.

If the problem persists, the monitor may be faulty or may be the wrong model. Please contact technical support or an authorized reseller for assistance.

7.4.4 The System Fan Does Not Rotate Normally

If the system cooling fan is not functioning properly, system components may be damaged. At this point, check the following:

• Is there AC power at the wall outlet.

• The system power cord is properly connected to the system and to the wall outlet.

• Whether the power button was pressed.

• Is the power indicator on?

• Whether the fan motor is stopped (use the server management subsystem to check the fan

status).

• Whether the fan power connector is properly connected to the board. Whether the cables coming out of the front panel are properly connected to the motherboard.

• Whether the power cord is properly connected to the motherboard.

• Is there a short circuit due to a pinched cable or a power connector incorrectly inserted into the power connector connector.

If the connections are correct and the wall outlet has AC power, please contact technical support or an authorized dealer for assistance.

7.4.5 The Working Indicator of the Hard Disk Drive Does not Light up

If one or more hard disks are already installed in the system, check the following:

• Check whether the power cable and signal cable of the hard disk are installed correctly.

• All relevant switches and jumpers on the hard drive and adapter are set correctly.

• Whether the hard disk configuration is correct.

7.4.6 The Working Indicator of the CD-ROM Drive Does Not Light up

Please check the following items:

• Are the power and signal cables on the CD-ROM installed correctly.

• All relevant switches and jumpers on the CD-ROM are set correctly.

• Is the CD-ROM configured correctly.

• Whether the motherboard integrated IDE controller has been enabled.

Notice:

IDE and SATA devices indicated by front panel indicators: The hard drive activity indicator on the front panel illuminates when an IDE hard drive or a SATA device controlled by the motherboard's integrated SATA controller is in use. This light does not show CD-ROM activity.

7.4.7 Bootable CD Does Not Boot Itself

If you are using a bootable CD, please check the following settings:

• Whether the CD-ROM is set as the first boot device in the BIOS setup.

8. Statement on Environmental Protection

8.1 ROHS Statement

The RoHS Directive 2011 / 65 / EU (ROHS 2.0) was published in the official EU magazine on 1 July 2011 and in 2011 Effective on 21 July.

According to ROHS 2.0, we collected the supplier material information and controlled the production process within the company. Therefore, our company (including subsidiaries) hereby guarantees that the products / components provided in the following list or through the accessories listed meet the items and control values of the ROHS Directive 2011 / 65 / EU control listed in the following table. Once signed this statement, we agree to assume liability arising from the breach of this ROHS statement and any part of all materials.

No.	Restricted Substances	Eucontrol Value(PPM)	Powerleader control Value(PPM) Cannon	Remark
1	Pb	<1000	<1000	
2	Hg	<1000	<1000	
3	Cd	<100	<100	
4	CrVI	<1000	<1000	
5	PBB	<1000	<1000	
6	PBDE	<1000	<1000	
7	HBCDD	<1000	<1000	

8	DEHP	<1000	<1000	
9	DBP	<1000	<1000	
10	BBP	<1000	<1000	

8.2 Instructions for Recycling Waste Electronic Products

In order to protect the environment and protect human health, according to the Law of the People's Republic of China on the Prevention and Control of Environmental Pollution by Solid Waste and the Regulations on the Administration of the Recycling and Disposal of Waste Electrical and Electronic Products, users should collect, classify, mark, transfer and manage waste electronic products in a unified manner. It should be handed over to a " professional technical environmental protection company " for recycling, dismantling and landfilling to reduce or eliminate its hazardous components and meet environmental protection requirements.

The main control objects of waste products are: waste paper boxes and other packaging materials, waste PE bags, plastic bottles and other plastic products, waste glass containers, waste batteries containing zinc and cadmium, waste organic solvents, waste computer machines, and waste monitors.