

Zhongke Jianyou 4U Rack mounted Server Product Technical White Paper



Beijing Zhongke Jianyou Technology Co., Ltd

document version	Release time	Revision notes
V1.0	2025-3-10	First release
V1.1	2025-4-15	Refine memory support
V2.0	2025-11-12	Add GUP configuration instructions

1. Product Overview

FR6420I is a new generation server product launched by Zhongke Jianyou, which has significantly improved CPU and GPU specifications compared to the previous generation. It has excellent heterogeneous computing capabilities, flexible heterogeneous topology configuration, and fully modular design advantages. It can support various types of artificial intelligence acceleration cards to meet the computing power requirements of different AI loads, and is widely used in deep learning model training, inference, high-performance computing and other scenarios.



Figure 1 Server image

2. Product Features

➤ Excellent performance

- Supports 2 4th/5th generation Intel Xeon scalable processors with strong performance.
- The I/O bandwidth rate can reach PCIe 5.0, which increases data bandwidth by 100% compared to the previous generation.
- Supports up to 8 high-performance dual width AI acceleration cards, meeting high-density AI computing applications and suitable for large-scale cluster deployment.
- Supports high-speed interconnection of 200G/400G networks to meet the high-speed demand of artificial intelligence for network bandwidth.

➤ Flexible Expansion

- Modular design to meet the needs of computing, storage, and management of multiple types of networks.

- Supports up to 24 2.5-inch/3.5-inch hard drives, including up to 8 NVMe U.2 SSDs, to meet the storage needs of massive data in artificial intelligence.
- Supports cascading and balanced topology switching, can be configured as needed based on application models, and is flexibly applicable to various scenarios such as AI inference, AI training, and HPC.

➤ **Intelligent Management**

- Support various management functions such as remote health status monitoring and KVM. Convenient for maintenance personnel to quickly locate faults and improve the speed of data center operation and maintenance.
- Out of band visual management, precise positioning of equipment information, intelligent operation and maintenance.

➤ **Safe and Reliable**

- Exquisite heat dissipation design, the system runs stably at 5-35 °C.
- Monitoring and reporting the health status of key components throughout the entire chain, achieving intelligent services throughout the product lifecycle.

2. Product Introduction

2.1 Server Specifications

The following table shows the technical specifications and features of the server. For detailed server configuration, please refer to the configuration list in the box.

Model	FR6420I
Form	4U 机架式服务器
Processor	支持第四代英特尔®至强®可扩展处理器（Sapphire Rapids）和第五代英特尔®至强®可扩展处理器（Emerald Rapids）
GPU	最高支持 8 块双宽 AI 加速卡、提供强大的训练应用性能
Memory	支持最多 32 条 DDR5 内存，支持 32 个内存槽位，支持 RDIMM 或 RDIMM-3DS，最大内存传输速率为 5600MT/s。
Storage	前置最高支持 24 个 3.5 寸/2.5 寸 SAS/SATA 硬盘，最高支持 8 个 NVMeU.2SSD 内置支持 2 个板载 SATAM.2SSD
RAID	支持多种 RAID 模式，可选支持掉电保护
Network	可选 1 个 OCP3.0 网卡，支持标准 PCIe 网卡

PCIe	最大可支持 12 个 PCIe 扩展插槽
Other Interfaces	支持 1 个 RJ45 管理接口和 2 个 VGA 接口, 4 个 USB 接口
Fan	8 个系统风扇模组, 支持 N+1 冗余
Power Supply	支持 3+1 或 2+2 冗余, 支持 2700W/3200W CRPS 高效电源
Management	Integrated BMC chip
Operating System	Windows/Linux operating system
Operating Humidity	5°C~35°C (50°F~95°F)
Operating Humidity	工作 80%RH, 非工作 93%RH
Size	175mm×447mm×898mm
Weight	Maximum weight for full hard drive configuration: 71kg

3. Server Structure

This section introduces the server structure: disk slots and front and rear panel interfaces.



Figure 1 Front panel and disc position



3.1 Introduction to the front panel of the chassis





Figure 3 Front panel buttons and LED indicator lights

1	Fault diagnosis digital tube	2	Power button/indicator light
3	Health status indicator light	4	UID (Unit Identification Light) button/indicator light
5	FLEXIO card 1 in position indicator light	6	FLEXIO card 3 in position indicator light
7	IBMC direct connection management interface indicator light		

3.2 Indicator light introduction

Identification	Indicator lights and buttons	Status Description
	Fault diagnosis digital	Display: The device is functioning properly. Display fault code: The device has a component malfunction.
	Health status indicator light	Extinguish: The device is not powered on or in an abnormal state. Red flashing (1Hz): The system has a serious alarm. Red flashing (5Hz): The system has an emergency alarm. Green constantly on: The device is operating normally.

	<p>UID button/indicator light</p>	<p>The UID button/indicator light is used to locate the device to be operated, in order to quickly find the device to be operated. UID indicator light description: Extinguish: The device has not been located. Blue flashing/constantly on: The device has been located UID button description: You can manually press the UID button or use iBMC remote control to turn off or turn on the light. Short press the UID button to turn on/off the positioning light. Long press the UID button for 4 to 6 seconds to reset the iBMC management system.</p>
	<p>Power button/indicator light</p>	<p>Power indicator light description: Off: The device is not powered on. Green constantly on: The device is powered on normally. Yellow flashing: BMC management system is starting, and the power button is locked and cannot be operated at this time. The iBMC management system completes startup in about 1 minute, and the power indicator light turns yellow and stays on. Yellow constant light: The device is in standby mode Power button description: Short press the power button while powered on, and the OS will shut down normally. Instructions Different operating systems may need to shut down the operating system based on the prompts on the operating system interface. Press and hold the power button for 6 seconds while powered on to force the device to power off. Short press the power button in standby mode to power on.</p>

3.3 Rear panel interface description

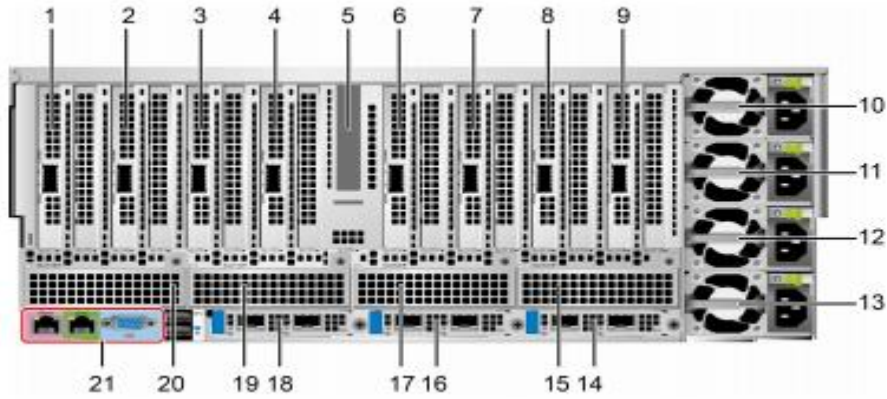


Figure 4 Schematic diagram of rear panel interface

1	Slot1 (PCIe 5.0x16)	2	Slot3 (PCIe 5.0x16)
3	Slot5 (PCIe 5.0x16)	4	Slot4 (PCIe 5.0x16)
5	Slot9 (PCIe 5.0x16)	6	Slot10 (PCIe 5.0x16)
7	Slot12 (PCIe 5.0x16)	8	Slot14 (PCIe 5.0x16)
9	Slot16(PCIe 5.0x16)	10	power module1
11	power module2	12	power module3
13	power module4	14	FLEX IO card 3
15	Slot21 (PCIe 5.0 x16)	16	FLEX IOcard 2
17	Slot20 (PCIe 5.0 x16)	18	FLEX IOcard 1
19	Slot19 (PCIe 5.0 x16)	20	Slot18 (PCIe 5.0 x16)
21	BMC Card		

Note:
 The screen printing slots Slot2/4/6/8/11/13/15/17 on the chassis are not available.
 a: Only supported in the direct expansion board scenario.
 b: Only supported in the scenario of swapping expansion boards.

4. Compatibility List

4.1 Memory

Description	Brand
DDR5 4800 16GB	Samsung, Hynix
DDR5 4800 32GB	Samsung, Hynix
DDR5 4800 64GB	Samsung, Hynix
DDR5 5600 32GB	Samsung, Hynix
DDR5 5600 64GB	Samsung, Hynix

Note: For component models not listed in this table, please consult pre-sales personnel.

4.2 Hard Disk

Category	Description	Brand
3.5 -inch SATA HDD	4T/8T/12T/16T/18T/20T	Seagate, Western Digital
3.5 -inch SAS HDD	4T/6T/8T/10T/12T	Seagate, Western Digital
2.5 -inchSAS HDD	600G/1.2T/1.8T/2.4T	Seagate, Toshiba
2.5-inch SATA SSD	480G/960G/1.92T/3.84T	Samsung, Intel
U.2 SSD	1.92T/3.84T/7.68T/1.6T/3.2T/6.4T	Samsung

Note: For component models not listed in this table, please consult pre-sales personnel.

4.3 Network Card

Model	Brand
MCX631102AN-ADAT dual port 25G SFP28	Mellanox
MLX MCX623105AN-CDAT single port 100G QSFP56	
MLX MCX623106AN-CDAT dual port 100G QSFP56	

Note: For component models not listed in this table, please consult pre-sales personnel.

4.4 RAID

型号	Brand
BCM 9560-16i 8G -E4x8 SE Tri-M RAID card-SA	Broadcom
BCM 9540-8i -E4x8 SE Tri-Mode RAID carf	
BCM 9500 -E4x8 8i SE Tri-Mode HBA card	
BCM 9500 -E4x8 16i SE Tri-Mode HBA card	

Note: For component models not listed in this table, please consult pre-sales personnel.