



# CSB1-N10SPK3

| RISC-V Server

V1.0 2026-4-30

FIREFLY TECHNOLOGY





# Product features



## 10 Computing Nodes, Providing Strong Computing Power

The server is built-in with 10 SpacemiT K3 computing nodes, and the number of computing nodes is optional. Each node adopts an 8-core X100 + 8-core A100 processor with a maximum main frequency of 2.4GHz and a peak computing power of 60TOPS (SquareINT4), capable of running 30B large models.



## Supports Mainstream Linux Distribution Build Systems

Supports mainstream build systems such as Open Build Server and Koji. Its native compilation performance is over 7 times higher than X86 QEMU, with cost performance improved by 15 times compared with equivalent-spec X86 devices.



## Complete RISC-V Hardware Virtualization

Supports RISC-V hardware virtualization. It delivers CPU and memory virtualization capabilities via the RVH1.0 extension, interrupt virtualization through the RV AIA extension, and peripheral virtualization with the RV IOMMU extension.



## Higher-Level Security Defense Technology

Supports M/S/U three-level privileges, defends against Spectre, Meltdown and other vulnerability attacks at the hardware level, adopts RISC-V PMP/ePMP and dedicated IOPMP mechanisms to establish high-level security protection, supports secure boot, secure storage and signature verification, and integrates AES, SHA, RSA, SM2, SM3 and SM4 algorithms.

# Product features



## Bundled BMC Management System

Equipped with an intelligent BMC management system, it enables real-time monitoring, software and hardware configuration, troubleshooting, anomaly alarms, system upgrades and remote O&M. Secondary development is also available.



## Remote RISC-V Debugging Function

It supports remote automatic flashing, remote serial port debugging, remote SSH, WEB IDE and remote desktop, delivering an out-of-the-box remote debugging environment.



## Ultra-high Energy Efficiency Ratio

The overall power consumption of the server ranges from approximately 150W to 300W. Its computing performance is comparable to that of a mid-range X86 server, delivering a 60% reduction in electricity costs compared with X86 servers at the same performance level.



## Wide Range of Application Scenarios

Widely applicable to intelligent computing servers, edge computing, local deployment of large models, smart city, smart healthcare, smart industry, intelligent security and other related products and fields.

# Specifications



Specifications		
Technical Specifications	Server form	1U rack-mounted computing power server
	Architecture	RISC-V architecture
	Number of nodes	10 distributed computing nodes + 1 control node
	Compute nodes	8-core X100™ 64-bit RISC-V AI processor SpacemiT Key Stone K3, with a maximum main frequency of 2.4GHz. A single node delivers 130K DMIPS of general-purpose computing power and fully complies with the RVA23 Profile. Its single-core SpecInt2006 exceeds 9.0/GHz, with performance equivalent to ARM-A76.
	Codec	Video Encoding: 4K@60fps H.265/H.264 Video Decoding: 4K@120fps H.265/H.264/VP9
	Control nodes	Octa-core 64-bit processor RK3588, main frequency up to 2.4GHz, the highest computing power is 6TOPS
	AI performance	600 TOPS (60T × 10, SquareINT4). It supports the RVV vector instruction set, native FP8 inference and multimodal algorithm acceleration. A single node can run 30B local models, with model performance exceeding 10 Tokens/S@30B, enabling deployment of all AI algorithms and models.
	RAM	32GB LPDDR5 × 10 (8/16/32GB)
	Storage	128GB UFS2.2 × 10
	Storage expansion	3.5-inch/2.5-inch SATA3.0 SSD hard drive slot × 1 (Supports hot swapping; BMC can directly operate the hard drive, and computing child nodes can indirectly access the hard drive through the network sharing method provided by BMC)
	Power	1 × AC power supply
	Fan module	6 high-speed cooling fans
BMC	The BMC management system is integrated with the web-based management interface, supporting Redfish, VNC, NTP, monitoring advanced and virtual media, and the BMC management system can be redeveloped	
Physical Specifications	Size	Standard 1U rack servers: 494.0mm(L) × 440.5mm(W) × 44.4mm(H)
	Installation requirements	IEC 297 Universal Cabinet Installation: 19 inches wide and 800 mm deep and above Retractable slideway installation: The distance between the front and rear holes of the cabinet is 543.5mm~848.5mm
	Full weight	Server net weight: 8.1kg, total weight with packaging: 10.3kg
	Environment	Operating Temperature: 0°C ~ 45°C, Storage Temperature: -40°C ~ 60°C, Operating Humidity: 5% ~ 80%RH (non-condensing)
Interface Specifications	Internet	2 × 10G Ethernet (SFP+), 2 × Gigabit Ethernet (RJ45), 1 × Gigabit Ethernet (RJ45, MGMT is used as BMC management network)
	Console	1 × Console (RJ45, BMC debug serial port, baud rate 115200)
	Display	1 × VGA (maximum resolution 1080P, BMC management display)
	USB	2 × USB3.0 (The lower USB is USB3.0 OTG, and the BMC can be upgraded OTG by using a USB flash drive)
	Button	1 × Reset, 1 × UID, 1 × Power
	Other interfaces	1 × RS232 (DB9, baud rate 115200), 1 × RS485 (DB9, baud rate 115200)



# Compilation scenario

The server supports mainstream distributed build systems such as Open Build Server and Koji. The single-node compilation performance is 7 times higher than that of X86 Qemu, and the cost performance is improved by 15 times compared with X86 servers of the same specification.

The screenshot shows the Open Build Service (OBS) web interface for the 'K3 OBS Demo Project'. The interface includes a navigation menu with options like Overview, Repositories, Monitor, Requests, Users, Subprojects, Project Config, Attributes, Meta, and Status. The main content area displays the project name 'K3 OBS Demo Project' and a description: 'Demo project for video recording on k3 multi-node workers'. Below this, there are buttons for 'Create Patchinfo', 'Edit Project', and 'Delete Project'. A 'Packages' section shows a table with 3 entries:

Name	Changed
demo-hello	22 minutes
demo-info	18 minutes
demo-time	22 minutes

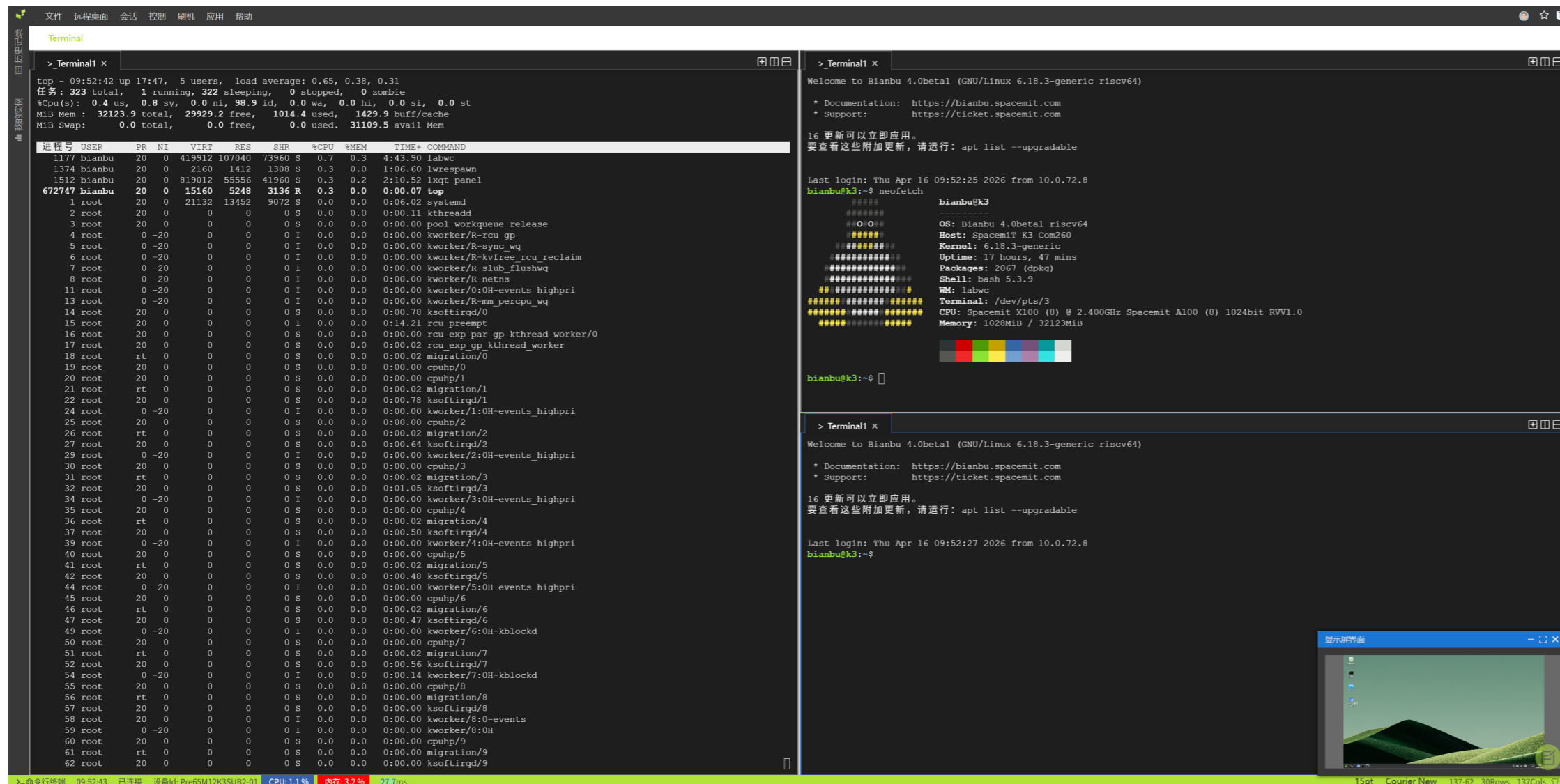
The interface also shows a 'Build Results' section with a 'Refresh' button and a status indicator for 'riscv64' showing 'succeeded: 3'. At the bottom, there are buttons for 'Create Package' and 'Branch Existing Package'.

	RISC-V K3	x86 qemu-user
Specifications	X100 @ 2.4GHz	INTEL(R) XEON(R) GOLD 6548Y+ @2.5GHz
Build Threads	8 threads	8 threads
Build Target	linux-6.18	linux-6.18
Build Time	22m 28s	2h 50m



# RISC-V Software porting

Pre-installed with a full Linux distribution, it delivers out-of-the-box RISC-V software ecosystem adaptation and compatibility verification capabilities. It supports seamless integration with CI/CD systems to implement end-to-end automated testing for the RISC-V software ecosystem.



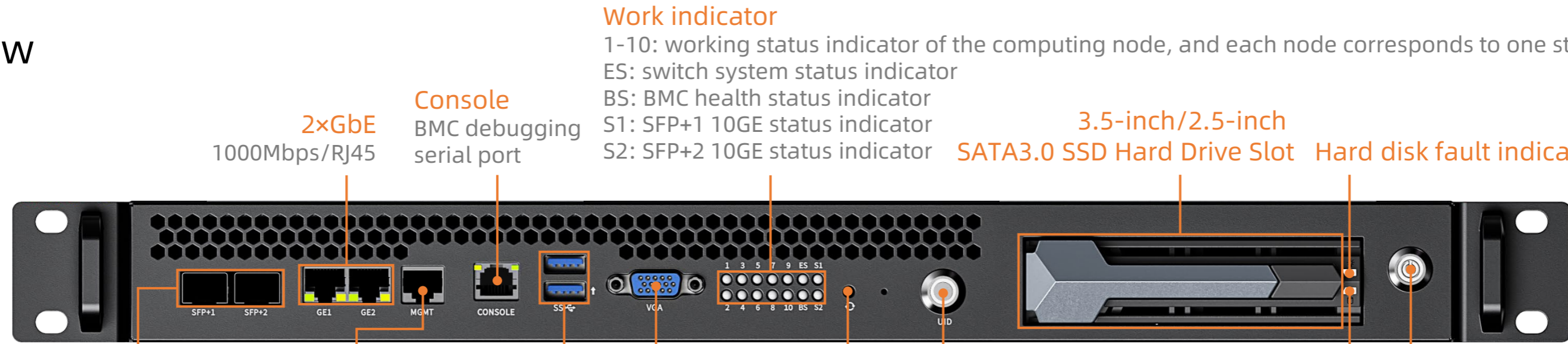
Supports the following scenarios:

- Automatic firmware flashing and upgrade
- Remote SSH Terminal
- Remote serial port debugging
- Remote desktop operation
- Remote file management
- Remote Web IDE debugging



# Interface description

## Front view



### Work indicator

1-10: working status indicator of the computing node, and each node corresponds to one status indicator  
 ES: switch system status indicator  
 BS: BMC health status indicator  
 S1: SFP+1 10GE status indicator  
 S2: SFP+2 10GE status indicator

### Console

BMC debugging serial port

2xGbE  
1000Mbps/RJ45

3.5-inch/2.5-inch  
SATA3.0 SSD Hard Drive Slot Hard disk fault indicator

2x10GbE

SFP+

MGMT

RJ45/Used as BMC management network

2xUSB3.0

Lower USB is OTG

VGA

1080P

Reset

Restart BMC: Short press

Reset password: Press and hold for 5 seconds until the BS light flashes slowly

Factory reset: Press and hold for 10 seconds until the BS light flashes quickly

Accidental press recovery: Press and hold without releasing until the BS light returns to solid on

Hard disk Active indicator

Power button

Yellow (solid): The server is in standby  
 Yellow (flashing): BMC management system is starting

Green (solid): The server is powered on  
 Off: The server is not powered on

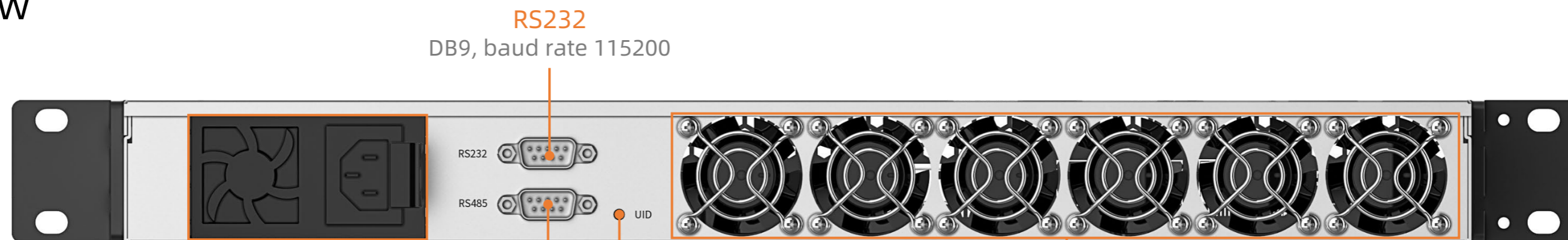
UID button

UID Indicator (Bezel)

Off: The server is not located

Yellow blinking (blinking for 255 seconds): The server is focused

## Rear view



Power module

RS232  
DB9, baud rate 115200

RS485  
DB9, baud rate 115200

UID indicator

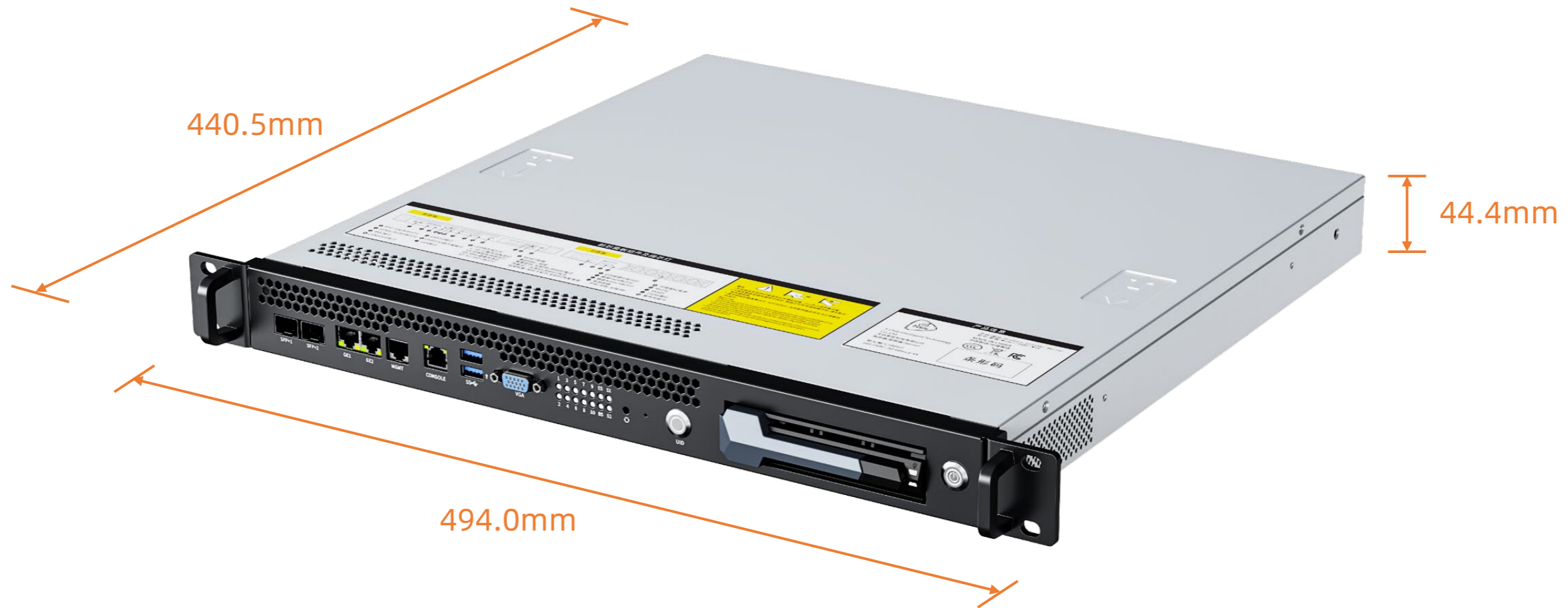
Off: The server is not located

Yellow blinking (blinking for 255 seconds): The server is focused

Fan module

6 high-speed cooling fans


# Dimension







## FIREFLY TECHNOLOGY

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 Contact Us  
(+86)18688117175

 E-mail  
global@t-firefly.com

 Website  
<https://en.t-firefly.com/>

 Address  
Room 2101, Hongyu Building, #57 Zhongshan 4Rd, East District,  
Zhongshan, Guangdong, China.