



CSC2-N48SPK3

| RISC-V Server

V1.0 2026-4-30

FIREFLY TECHNOLOGY





Product features



48 Computing Nodes, Providing Strong Computing Power

The server is built-in with 48 SpacemiT K3 computing nodes, and the quantity of computing nodes is optional. Each node adopts 8-core X100 + 8-core A100 processors with a maximum main frequency of 2.4GHz and peak computing power up to 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.



Expandable with 48 M.2 PCIe NVMe SSDs

The board is equipped with 48 onboard M.2 PCIe interfaces, compatible with PCIe NVMe 2280 SSDs. It connects a large number of high-speed storage devices to greatly improve data read and write performance, meet high-density storage requirements, and easily expand the system to ultra-large TB-level storage capacity.



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	2U rack-mounted computing power server
	Architecture	RISC-V architecture
	Number of nodes	48 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	2880 TOPS (60T × 48, 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 × 48 (8/16/32GB)
	Storage	128GB UFS2.2 × 48
	Storage expansion	2280 PCIe NVMe SSD × 48 (Optional)
	Power	2 AC redundant power supplies (Hot-swappable supported)
	Screen	1 touch display, capable of real-time displaying device information such as chassis temperature, energy efficiency, fan speed, network IP, date and time
	Fan module	12 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 2U rack servers: 724.0mm (L) × 430.0mm (W) × 88.8 mm (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	Net weight of the server: 23.1kg, total weight with packaging: 25.3kg
	Environment	Operating Temperature: 0°C ~ 35°C, Storage Temperature: -40°C ~ 60°C, Operating Humidity: 5% ~ 80%RH (non-condensing)
Interface Specifications	Internet	4 × 10G Ethernet (SFP+), 1 × Gigabit Ethernet (RJ45, MGMT used as BMC management network)
	Console	1 × Console (RJ45, BMC debug serial port, baud rate 115200)
	Display	1 × HDMI (Maximum resolution 1080P, BMC management display)
	USB	2 × USB3.0 (The lower USB is USB3.0 OTG, and the BMC can be upgraded OTG using a USB flash drive)
	Button	1 × Reset button, 1 × Power button, 1 × Restart BMC button



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. At the top, there is a navigation bar with 'Open Build Service' logo, 'Watchlist', and a search box. Below the navigation bar, the breadcrumb path is 'Projects / home:Admin:k3-demo / Overview'. The main content area has a sub-navigation bar with 'Overview', 'Repositories', 'Monitor', 'Requests', 'Users', 'Subprojects', 'Project Config', 'Attributes', 'Meta', and 'Status'. The title is 'K3 OBS Demo Project' with a subtitle 'Demo project for video recording on k3 multi-node workers'. There are three buttons: '+ Create Patchinfo', 'Edit Project', and 'Delete Project'. Below this, there are two main sections: 'Packages 3' and 'Build Results'. The 'Packages' section shows a table with columns 'Name' and 'Changed'. The 'Build Results' section shows a 'riscv_demo' build with a 'succeeded: 3' status.

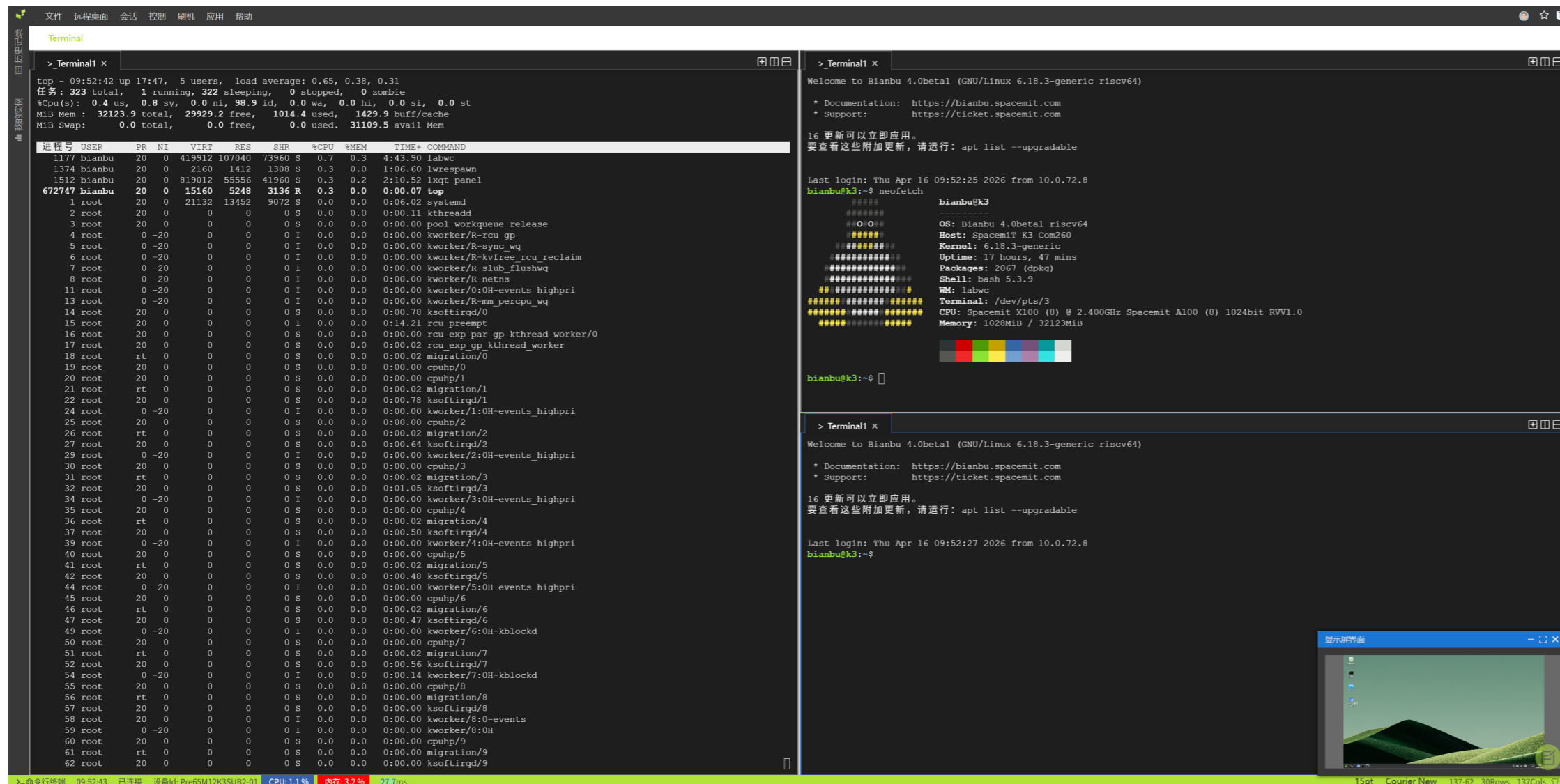
Name	Changed
demo-hello	22 minutes
demo-info	18 minutes
demo-time	22 minutes

	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

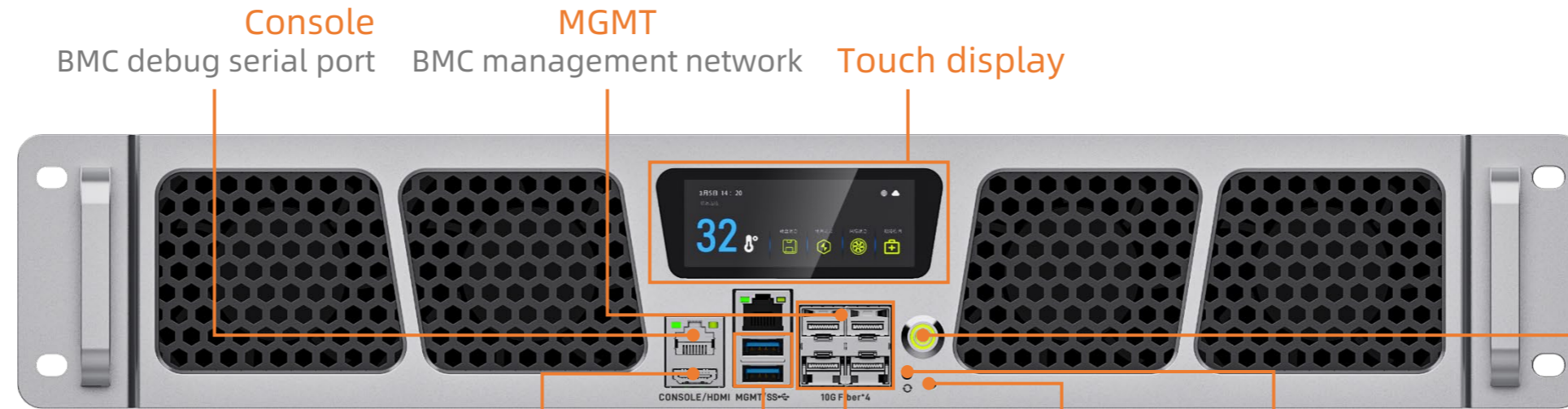
Pre-installed with a full Linux distribution, it delivers out-of-the-box RISC-V software ecosystem adaptation and compatibility verification capabilities. It supports seamless integration with CI/CD systems to implement end-to-end automated testing for the RISC-V software ecosystem.



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



Power button

Blue (solid): The server is in standby
 Blue (flashing): BMC management system is starting
 Green (solid): The server is powered on
 Off: The server is not powered on

HDMI 1080P

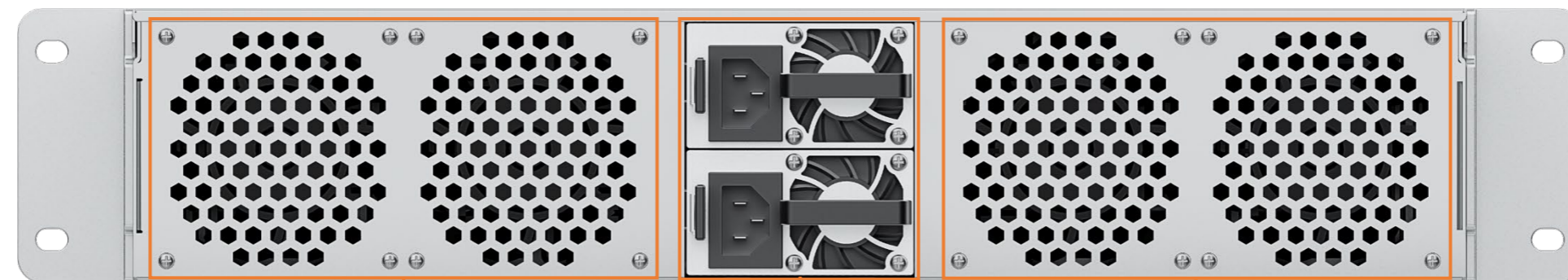
2xUSB3.0 Lower: OTG

4x10GE SFP+

Restart BMC button
Short press

Reset button

Reset password: Press and hold for 5s until the BS light flashes slowly
 Factory reset: Press and hold for 10s until the BS light flashes
 Wrong press to recover: Press and hold until the BS light returns to solid on



Fan module

2xPower module


Fan module


Dimension






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