ZStack ZSphere

Empower every enterprise to have its own cloud

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ZStack ZSphere is the flagship enterprise virtualization platform crafted by ZStack , dedicated to delivering high-performance, highly secure, self-controlled and exceptionally stable virtualization solutions.

- As a product tailored for next-generation virtualization needs, ZSphere leverages an independently developed core engine to support a variety of compute, storage, and network architectures, ensuring seamless compatibility with diverse environments.
- ZSphere, through deep optimization in computing performance and resource scheduling, offers exceptional virtualization capabilities. In high-concurrency scenarios, it leverages a design of a fully asynchronous lock-free architecture at the core, eliminating performance bottlenecks associated with distributed lock architectures, significantly enhancing overall system performance, and meeting the demanding needs of enterprise-level business for efficient computing.

ZSphere seamlessly integrates high-security features such as security groups and agentless security protection, offering robust control over east-west network traffic and comprehensive antivirus capabilities.

ZSphere has undergone rigorous enterprise-level testing and validation, ensuring self-recovery and data integrity during power outages and failures, thereby maintaining business continuity.

ZSphere's modular architecture and microservices design enhance its flexibility and scalability, enabling seamless cross-version upgrades.

Moreover, ZStack ZSphere excels in unified management, integrating full-stack support for computing, storage, networking, and PCIe devices, including GPU passthrough and virtualization. It caters to both general virtualization and high-complexity scenarios like big data and AI training. With streamlined operations and intelligent management, ZStack ZSphere is pivotal for enterprise virtualization and digital transformation.

Architecture

Auto O&M

Mgmt

- Web Management Interface
- Virtual Resource Management
- Physical Resource Management

O&M

Online Modify IP	Online Change Password	HA	SNMP	Seamless Upgrade
Backup Management	Snapshot Policy	Hardware Monitoring	Resource Tag	Task & Event
DRS	VM Scheduling	Syslog	User & Role	Monitoring & Alarm

Virtualization

Compute			Network			Storage		
Online Migration	CPU Overcommit	CPU/Memory Hot Plug	DPDK	NIC QoS	Distributed Switch	Shared Disk	RDM Disk	Local Storage
Online Snapshot	Memory Reclaim	VM Template	SR-IOV	Security Group	Distributed Port Group	Storage Reclaim	Disk QoS	SAN Storage
GPU/vGPU	Large Page Memory	Nested Virtualization	LLDP	PVLAN	DHCP / Static IP	Online Expansion	Multipath	Distributed Storage
vNUMA	Memory Overcommit		VLAN	IPv6		Online Migration	Thin Provisioning	

Physical

Server	Intel, AMD, Hygon, Zhaoxin, Phytium, Kunpeng	Storage	Local Storage Centralized Storage Distributed Storage	Network	Switch Firewall Physical NIC

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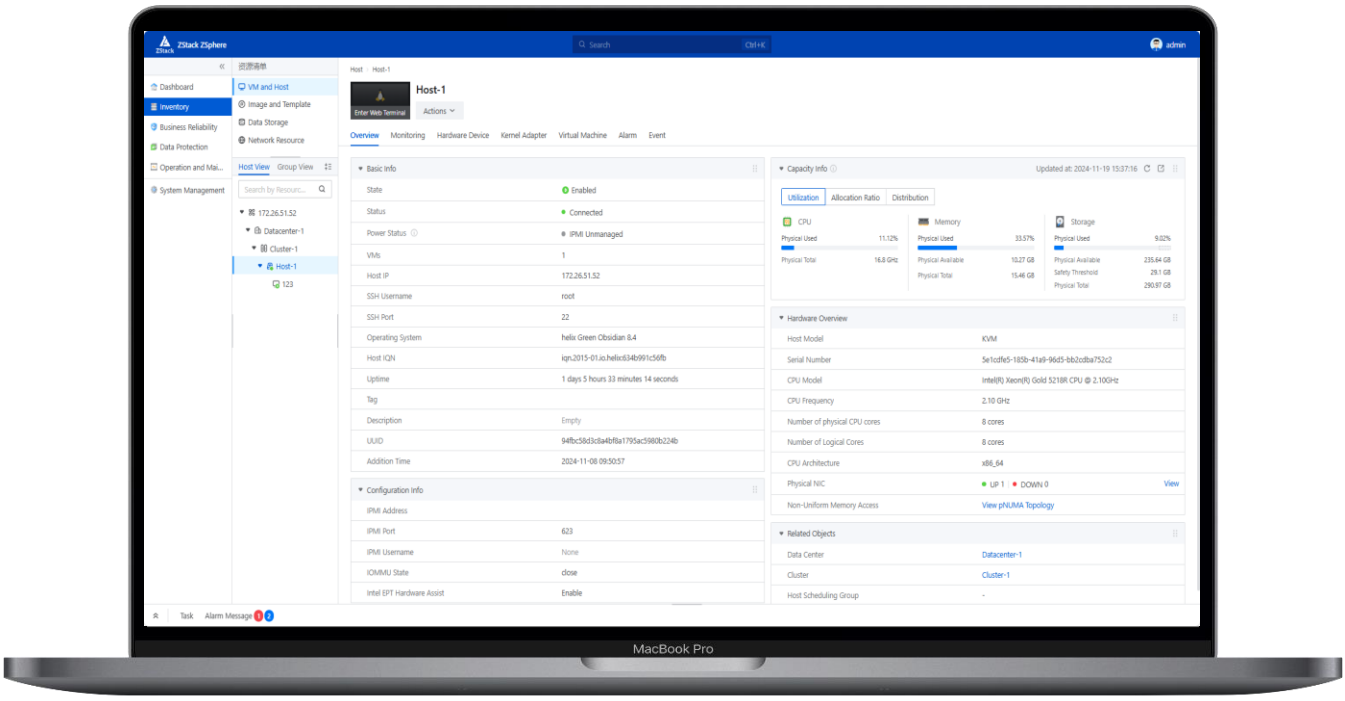
Features



High Self-Controlled

High autonomy rate in code and engine

Code-Level: Achieve nearly 100% self-developed code rate.
Engine-Level: Compatible with four major architectures and eight distinct platform environments.

High Stability

Power outage self-recovery, data integrity, and zero downtime

Architecture: Full plugin architecture, in-process microservices, redundant databases and metadata consistency.
Mechanism: Self-healing via HA for management, network, VMs and fault detection for VMs and business operations.
Testing: 100k+ test cases, 1k+ hours of automated testings each version, and monthly 4.5k+ power-off tests.
Practice: 70k+ hours of stable operation, supports enterprise and financial-grade core systems.

High Performacne

Comprehensive optimization in computing, storage and networking for high-performance business support

Compute: Global #1 in SPEC Cloud performance test. High concurrency via message bus.
Storage: VM storage hits 1M IOPS. vhost storage boosts performance by 70%.
Network: OVS-DPDK/SR-IOV boost performance 6x/60x over Linux Bridge. Virtual LB meets global standards.

High Security

Four-level security system safeguards user business

Network: Network traffic access control: Security groups filter east-west traffic.
Business: Virtualized antivirus: Agentless security engine detects and eliminates threats promptly.
System: Comprehensive vulnerability scanning with commercial tools promptly identifies and fixes vulnerabilities, reducing attack risks and repair costs.
Data&Account: Commercial encryption and identity authentication build a cybersecurity encryption barrier.

High Unification

Unified IT management supports diverse devices, leverages existing infrastructure, and protects investments

Compute: Multi-architecture CPU and multi-brand server reuse safeguards investments.
Storage: Support LocalStorage, iSCSI, FC, RBD, NFS, GPFS, ShareMountPoint and other protocols.
Network: Offer virtualized distributed switch capabilities with port group isolation support.
PCIe Devices: Fully support GPU and PCIe device passthrough/virtualization for large models and big data.

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Use Cases

Core production environments, ensuring efficient and stable apps and databases operations

Test & dev environments, maximizing use of existing equipment

Computing virtualization storage-compute separation

Commercial cryptography, ensuring data confidentiality and integrity

Standalone disaster recovery environment, ensuring business continuity

Data center construction, renovation, and expansion

Benefits

High Performance & Scalability
Offer robust virtualization for efficient resource management and system performance, supporting business growth and dynamic resource needs.

HA & Disaster Recovery
Provide VM HA policies, along with sub-minute and minute-level backup and disaster recovery capabilities, ensuring high availability and business continuity.

Optimized Economic Benefits
Leverage existing resources to optimize hardware investments and TCO. Simplify operations for immediate use.

Simplified Management
Provide unified management of VMs and baremetal, with customizable interfaces and bulk management capabilities, simplifying daily operations.

Flexibility & Agility
Support for flexible resource allocation and dynamic adjustments, enabling rapid response to changing business needs and enhancing IT environment agility.

Integration & Compatibility
Support multiple chips and server brands, compatible with various hardware environments, enabling unified clusters across generations and models. Integrate with other ZStack products and third-party solutions.

Intelligent Monitoring & Analysis
Provide real-time monitoring and resource usage prediction, helping users optimize resource allocation, prevent potential issues, and enhance system performance.

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