Huawei FusionSphere Virtualization Solution

Leader of Simple, Extreme Virtualization Solutions

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Overview of Huawei FusionSphere Virtualization Solution

FusionManager: Huawei virtualization management software provides multi-resource pool management (including heterogeneous vendors), service catalogs, automated resource provisioning, centralized monitor and O&M, and more lightweight operations capabilities.

Resource scheduling software (Virtual Resource Management, VRM).

Virtualization engine (Compute Node Agent, CAN).

VMware resource takeover.

FusionSphere Virtualization Suite

FusionManager

VMware vSphere

FusionCompute
VRM
CNA

eBackup

UltraVR

Infrastructure

Server | Storage | Network

FusionCompute: Virtualization server, storage and network resources to form elastic IT resource pools, implementing automated resource scheduling and management.

eBackup and UltraVR are backup and disaster recovery (DR) components. Based on storage array replication, local storage HA, metropolitan active-active DR, and active/standby DR can be implemented.

Simple Management, Extreme Performance

FusionSphere is a world-leading server virtualization solution launched by Huawei. It consists of FusionCompute (a virtualization engine), FusionManager (virtualization manage-ment software), eBackup (backup software), and UltraVR (DR software).

FusionSphere virtualizes hardware resources by deploying a hypervisor on physical servers, allowing a physical server to function as multiple virtual servers. By consolidating existing workloads onto a smaller number of servers with FusionSphere, idle servers are free to deploy new applications and solutions, driving up server utilization. FusionSphere centraliz-es management of virtual and hardware resources, providing the following capabilities: Basic backup and DR, Multi-resource pool management (including heterogeneous resources), Lightweight O&M, Infrastructure and performance transparency and Performance manage-ment.
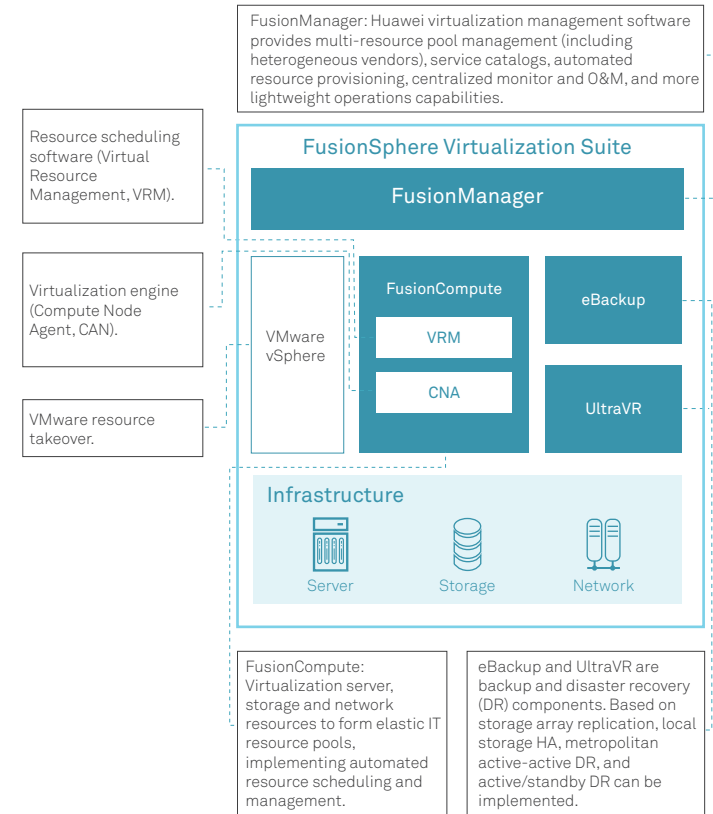
Huawei FusionSphere virtualization suite significantly improves data center infrastructure efficiency and provides the following benefits for customers:

- Improve infrastructure resource utilization data centers.
- Significantly accelerate service rollout.
- Substantially reduce power consumption in data centers.
- Leverage high availability and powerful restoration capabilities of virtualized infrastructure to provide rapid fault recovery for services, thereby cutting data center costs and increasing system runtime.

FusionSphere Virtualization, Simplified and Optimized

Compute virtualization

Compatible with mainstream hardware, both in and outside of China, and with hundreds of operating systems across 27+ categories.

Server utilization increases from 5%-15% to 60%-80% or even higher.

GPU virtualization & passthrough enhance VM computing and graphics processing.

Optimized memory overcommitment algorithm increases memory utilization, driving up VM density by 50%.

Storage virtualization

VIMS, the virtual cluster file system, shields management complexity in the case of multiple storage types.

Online, on-demand disk scaling for VMs while ensuring service continuity.

Raw storage devices passed through to VMs to support the high performance requirements of Oracle RAC.

Network virtualization

40GE NICs support mission-critical and I/O-intensive applications.

DPDK+OVS supports high-performance network forwarding and reduces latency, improving data throughput by up to 50%.

Agile management of network QoS ensures smooth VM network communication.

Simple management

Unified management of sites and branches.

Capable of managing heterogeneous resource pools created on other virtualization platforms (VMware).

Unified and lightweight O&M.

Secure and reliable

Hardened operating systems compliant with industry security standards.

Highly reliable virtualization platform with default HA support for management nodes.

Agentless antivirus solution ensures VM security.

Complete backup and DR solutions.

Easy to install and maintain

Unified tool to simplify deployment, available for free trial.

Professional migration tool, Rainbow, facilitates workload migration.

24x7 support from Huawei professional service teams.

Leading market position

According to the "2017H2 SDC Software Tracker" IDC report, Huawei is No. 1 in China's Software Defined Compute (SDC) market, and No. 2 globally.

Excellent virtualization performance, with a top score in SPECvirt tests.

Superior Chinese vendor named in Gartner's Magic Quadrant for x86 Server Virtualization Infrastructure- NICHE PLAYERS.

Huawei FusionSphere Feature List

The following table lists the components and features available with different editions of FusionSphere Virtualization Suite.

Component & Feature	Standard Edition	Advanced Edition	Platinum Edition
FusionCompute	•	•	•
VM resource management	•	•	•
VM life cycle management	•	•	•
VM template	•	•	•
Enhanced computing performance (GPU virtualization, GPU pass-through)	•	•	•
Distributed resource scheduling	•	•	•
VM snapshot	•	•	•
VM peripherals	•	•	•
vSwitch	•	•	•

Component & Feature	Standard Edition	Advanced Edition	Platinum Edition
SR-IOV	•	•	•
OVS+DPDK	•	•	•
Network resource pool	•	•	•
Storage virtualization	•	•	•
SSD pass-through	•	•	•
Storage management	•	•	•
Management node reliability	•	•	•
VM HA	•	•	•
Management security	•	•	•
Data security	•	•	•
Secure protocols	•	•	•
Security Group	•	•	•
FusionCompute API	•	•	•
FusionManager		•	•
VM life cycle management		•	•
Cloud storage		•	•
Virtual volume		•	•
Cloud monitoring		•	•
Network QoS		•	•
Virtual private cloud		•	•
Multi-tenant VDC		•	•
Cloud network resource pool management		•	•
Resource pool management		•	•
APIs for cloud infrastructure services		•	•
eBackup	•	•	•
VM disk backup	•	•	•
UltraVR			•
Active/standby DR			•
Metropolitan active-active DR			•

Huawei FusionSphere Technical Specifications

The table lists main technical specifications of FusionSphere (6.5) Virtualization Suite.

Management Capacity	Specification
Maximum quantity of hosts supported per VRM node	5000
Maximum quantity of host clusters supported per VRM node	64
Maximum quantity of VMs supported per VRM node	10,000 running VMs or 51,200 registered VMs
Maximum quantity of virtual switches supported per VRM node	128
Maximum quantity of hosts supported per logical cluster	128
Maximum quantity of VMs supported per cluster	8000
Physical Host	**Specification**
Maximum quantity of logical CPU cores per host	768
Maximum memory size per host	16TB
Maximum quantity of VMs per host	1024
Maximum quantity of virtual disks attached to a host	2048
Maximum quantity of volumes per host	2048
Maximum quantity of non-uniform memory access (NUMA) nodes per host	16
Maximum quantity of concurrently migratable VMs from a host	8

VM	Specification
Maximum quantity of vCPUs per VM	255
Maximum quantity of NICs per VM	16
Maximum quantity of virtual disks per VM	60
Maximum memory size per VM	6 TB
Maximum virtual disk size per VM	64 TB
Maximum snapshots per VM	32
Storage Capacity	**Quantity**
Maximum quantity of LUNs that can be mounted to a physical host	1024
Maximum quantity of hard disks supported by distributed storage	49,152
Maximum quantity of resource pools supported by distributed storage	128
Maximum quantity of hosts supported by distributed storage	4096
Maximum quantity of hosts supported by the VIMS cluster	64
Network Capacity	**Quantity**
Maximum quantity of distributed virtual switches (DVSs) supported by a system	50
Maximum quantity of hosts per DVS	1000
Maximum quantity of port groups per DVS	10,000
Maximum quantity of DVSs per host	4

Huawei FusionSphere Success Stories

State Grid Corporation of China

Huawei FusionSphere service virtualization solution helped State Grid increase server utilization by 30%+ and reuse more resources, reducing future hardware spending by 30% to 40%. Annual energy savings reached 27 million RMB, and O&M efficiency was improved 10-fold. The virtualization platform has been running steadily for more than three years with zero downtime.

France SFR

SFR is a French telecommunications company that provides integrated telecommunications services and Internet access services. Huawei built two production sites and one test site for SFR, and adopted FusionSphere solution to implement hardware resource virtualization and cloud scheduling. IT resource scheduling automation and deployment automation, the SFR business on-line time is shortened greatly, from 3 months to 1 day. Server virtualization make the utilization of hardware increased by 40%, thereby saving the expansion of equipment spending and saving TCO 38 %.

Sinotrans

Sinotrans Limited is one of the largest logistics companies in China. Its business scope includes sea, land, and air freight forwarding, along with warehousing, dock services, delivery, shipping agency, and more. It is a large modern international enterprise group subordinate to and administered by the State-owned Assets Supervision and Administration Commission (SASAC) of China. By deploying Huawei FusionSphere virtualization platform, Sinotrans has been able to virtualize diverse physical resources and drive up their IT resource utilization from 20% to 70%. Time to market (TTM) for new services has been reduced from months to three weeks, and O&M staff reduced to 1/16. Sinotrans also discovered the platform is capable of dynamic scaling while ensuring both the security and reliability of workloads.

China Telecom Sichuan

By leveraging Huawei FusionSphere vitalization and management platform, China Telecom Sichuan was able to build a cloud data center to consolidate all their pre-existing IT infrastructure resources into unified resource pools. Server utilization increased from 15% to 85% through shared resource usage. TTM per service was reduced by 80%.