Converged World – Converged ICT – Converged Network

Huawei IT Products for Cloud Computing

Libor Nedas, Huawei Austria
Huawei at a Glance

Carrier Business
- Fixed Network
- Wireless Network
- Telecom Software
- Core Network
- Service

Enterprise Business
- Enterprise Networking
- UC&C
- IT
- SecoSpace
- Service

Consumer Business
- Devices Business
- Smart phones
- Home devices
- MBB devices
- Device Chipsets/Cloud

77% of revenue from global top 50 telecom carrier

- 5 of Top 10 Banks
- 160+ Power Companies
- 140+ Countries’ Public Sectors
- 12 of Top 20 Oil & Gas Companies
- 145,000+ km Highway & Railway

Hundreds of millions of people
Architecture of HUAWEI Cloud Solution

**Unified resource management**
- Resource management
- Automated deployment
- Process management
- Service directory

**VDC service**
- Diamond
- Gold
- Bronze
- Business-centric VDC service
  - Independent on-demand VDC service for businesses or organizations
  - SLA assurance and on-demand scalability

**Unified management of multiple DCs**
- Unified operating, maintenance, and management of heterogeneous clouds and non-storage resources
- Rights- and domain-based management

**Cross-DC converged resource pool**
- Virtualized and physical converged resource pools of computing, storage, and network resources
- Cross-DC unified resource scheduling
Over a Decade of Sustained Investment in Storage Technologies

- **3000+ Developers**
- **5 Research centers**
- Sharing core technologies and platforms of Huawei chips, networks, hardware and software

- **2002**
  - Storage research
  - The first generation DAS product: D100

- **2003**

- **2004**
  - Commercial launched the 4Gb SAN product

- **2005**
  - Commercial launched the first FC SAN product F800.

- **2006**
  - Full series NAS/SAN/VIS Product launched

- **2007**
  - Joint Venture from Huawei and Symantec

- **2008**
  - Cloud storage solutions

- **2009**
  - Intelligent & Convergent Concept Released

- **2010**
  - Enterprise Storage, Big Data Storage and Cloud Storage products launched

- **2011**
  - New generation SAN series commercial launched
  - Cloud storage solutions

- **2012**
  - New T series SAN published
  - Full SSD SAN Dorado 2100 commercial launched
  - Media & Entertainment, data protection, Cloud solutions

- **2013**
  - Six consecutive quarters revenue growth ranked No.1 in global market
  - Three consecutive quarters Shipment ranked No.1 in China market
  - Intelligent & Convergent Concept Released
Vision: To be a leading server product and solution provider

Footprint of Huawei Server

Serve for Carriers
- 2002: Start Server R&D
- 2003: 1st-gen blade server T8000 V1
- 2004: 2nd-gen blade server T8000 V2
- 2006: 3rd-gen blade server T8000 V3, No.1 global market share
- 2007: Top global operators, such as Vodafone
- 2008: E6000 blade server
- 2009: Intelligent NIC card, 2nd-gen SSD card
- 2010: X6000 high-density server
- 2011: X8000 high-density rack server, 3rd-gen SSD card
- 2012: Full series V2 rack servers and blade servers
- 2013: X8000 storage node DH628 V2, E9000 new blade CH140, CH242

Innovation
- 2002: 2nd-gen blade server T8000 V2
- 2004: 3rd-gen SSD card
- 2006: Full series V2 rack servers and blade servers
- 2008: E9000 converged architecture blade server
- 2009: High-end 4P/8P RH5885 rack server
- 2010: Market-leading, 4th-gen PCIe SSD card
- 2011: Hong Kong Starhub
- 2013: State Grid, State Administration of Taxation, Ministry of Railways, Imperial College London

New Era
## Huawei Server Portfolio

### Reference architecture and solution

- Enterprise mailbox solution
- HPC solution
- Data analysis solution
- Virtualization integration solution
- RISC-to-IA Migration solution
- Database reference architecture
- SAP HANA reference architecture

### High-density server

- **X6000**
  - 2U 2/4 nodes
- **X8000**
  - 44U Cabinet server

### Blade server

- **E6000**
- **BH620**
- **BH622**
- **BH640**
- **CH121**
- **CH220/221**
- **CH222**
- **CH240**
- **CH140**
- **CH242**

### Converged infrastructure blade server

- **E9000**
- **CH121**
- **CH220/221**
- **CH222**
- **CH240**
- **CH140**
- **CH242**

### Full-width/half-width 2S/4S server blades

- **GE/10GE/FCoE/InfiniBand switching**

### Rack server

- **1U 2S RH1288**
- **2U 2S RH2285**
- **2U 2S RH2288**
- **2U 4S RH2485**
- **4U 4S RH5885**
- **8U 8S RH5885**
Huawei Server Product Strategy

Mission-critical enterprise applications, virtualization, and midrange computer migration

HPC

Application acceleration card

E9000

Private cloud
Appliance
Virtualization

X6000

Cloud server

X8000

Massive data processing
Web 2.0 application
Public cloud

2S RH22XX

4S RH5885

8S RH5885

16S ~ 64S RH8XXX

SSD card

iNIC

Data compression card

Application acceleration card

Converged

Scale up

Scale out

Scale up

Scale out

Converged
FusionCube - Uniform Platform Supporting Flexible Configurations and Various Enterprise Applications

- **High integration**
  - Space of equipment room required reduced by 50%

- **Excellent reliability**
  - Database deployed on physical servers
  - No external cable connection

- **High performance**
  - Built-in distributed storage software
  - Built-in 56 Gb/s IB card
  - Built-in SSD card
FusionCube Hardware Platform

E9000 Based

1. **Leading Computing Density**
   - 32*2P notes and 64*Romley EP 130W CPU per chassis
   - Maximum floating point performance 16.5TFlops / chassis

2. **Leading Storage Density**
   - CH222 (Full width) support 15*2.5 inch HDDs
   - Single-frame support 120*2.5 inch HDDs

3. **Leading Switch Performance**
   - E9000 switch module based on advanced Huawei DataCenter Switch Technology
   - 15.6T midplane switch capacity, support maximum 128*10GE ports and evolution to 40GE and 100GE
   - Support Ethernet, IB, FC ports, flexible networking

4. **Leading Reliability**
   - Support running at 40°C
   - The failure rate is 15% lower than competitors

5. **Leading Energy Efficiency**
   - Rank first in China Mobile and China Unicom competition testing
   - Chinese green energy certification

6. **Convenient O&M**
   - Plug and Play
   - Automatic configuration and transmission data, including BIOS, RAID, network card

---

**High Performance**:
- NVDIMM as Cache
- High Speed PCI-E SSD as Storage
Scale On Demand Smoothly

- **Start from small**
  - One chassis - Half configuration with 4 full-width blades

- **Up to 8 chassis concatenation w/o external switches**
  - Up to 4096 vCores, 96TB RAM, and 1.9PB Storage

- **Scale out with external switches**
  - Auto-discover, auto-configure
  - Up to $20 \times 3 \times 512 = 30,720$ vCores, 240TB RAM and 6PB Storage

- Single Chassis
- One Rack with 3 Chassis
- Multiple Racks
- Up to 20 Racks
Top 6 Key Features of FusionSphere 5.0

- Open cloud services and resource scheduling: Huawei OpenStack (Enterprise Edition)
- High-performance hypervisor: FusionCompute
- Enterprise-level distributed software-defined storage: FusionStorage
- Service-driven, software-defined networking (SDN): FusionNetwork
- Visualized, centralized, and automatic management engine: FusionManager
- Disaster recovery (DR) and backup reliability protection: FusionDR & FusionDP
Core Architecture Features of FusionSphere 5.0

- **Scalability**: Provides a distributed cloud that supports up to 100 data centers (DCs), with 100,000 hosts, 1,000,000 VMs, 1,000,000 network nodes, and 2000 PB storage.

- **High performance**: The computing virtualization performance of FusionSphere is 20% higher than that of VMware. The overlay virtual network forwarding performance of FusionSphere is 300% higher than that of VMware. The storage performance of FusionSphere is 500% higher than that of VMware, because FusionSphere uses software-defined storage that supports 12 million IOPS for 1024 hosts in a resource pool and provides the latency of only 100 µs.

- **Zero manual intervention and maintenance**: FusionSphere allows initial management nodes to be installed within 80 minutes, 100 bare hosts to be concurrently installed within 40 minutes, 100 non-linked clone VMs to be created within 30 minutes, 100 linked clones to be created within 2 minutes, and 2000 VMs to be concurrently started within 35 minutes.

- **High efficiency of the Service-Oriented Architecture (SOA)**: Huawei leverages multiple technologies, such as computing virtualization, software-defined storage and networks, extended OpenStack functions, and open-source OpenStack trunk, to implement SOA decoupling, real-time synchronization with the OpenStack community (maximum synchronization interval: six months), and smooth upgrade.
Why Huawei?

Comprehensive solutions
Industry's most complete cloud infrastructure
End-to-end DC solutions

Constant innovation
A decade of IT technology experience with constant innovation ability
Cloud Infrastructure Product Innovation Award: Frost & Sullivan 2013

R&D strengths
7 global R&D centers with 10,000+ R&D engineers
150+ approved technical standards and 1500+ approved and submitted technology patents

Excellence
Constant pursuit of best performance and highest cost performance

Openness
Over 400 business partners
Membership of over 100 standard organizations

Service capabilities
Customer-centric service capabilities
Global operating & localization service

Recognition
No. 1 among global developed DC vendors
No. 2 in terms of growth rate of DCs based on a converged architecture

Why Huawei?