Huawei Launches “Fusion” Strategy at Huawei Cloud Congress 2013

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Huawei DC+: Next Generation Innovative Data Center Architecture in Cloud Era
HANGHAI, Sept. 3, 2013 /PRNewswire/ -- Huawei, a leading global information and communications technology (ICT) solutions provider, today announced that it kicked off the Huawei Cloud Congress 2013 (HCC 2013) at the Shanghai Expo Center. Building on its proactive innovation in the IT infrastructure field in collaboration with industry partners such as Intel, SAP and Seagate, Huawei officially launched its “Fusion” strategy for the information technology (IT) area at this year’s HCC. Themed “Make IT Simple, Make Business Agile”, the two-day event attracts over 10,000 participants, including industry experts, partners, customers, media and analysts.

Since the first HCC held in 2010, Huawei has worked closely with global partners to promote the deployment and application of cloud technologies around the world.

“IT industry is an open industry and Huawei has a very clear strategic roadmap. We will focus on developing and offering future-oriented cloud data center solutions and products, including servers, storage, data center networks, cloud operating systems as well as cloud management platforms,” said Mr. Eric Xu, Deputy Chairman of Huawei. “Meanwhile, Huawei is committed to conducting open and close collaborations with partners across multiple industries, jointly offering innovative, competitive and differentiated ICT products and solutions to global enterprises, helping customers realize informationization.”

Open collaboration is central to the future success of the ICT industry. With a strategy to develop an open industry architecture and enhance integration within the industry ecosystem, Huawei is dedicated to developing closer collaborations with partners around the world, jointly offering effective and agile technology solutions to customers to help enterprises improve business efficiency.

“IT is an area of strategic growth for Huawei. With unwavering commitment to technology innovation, we are devoted to the ongoing development and evolution of the IT domain,” said Mr. Zheng Yelai, President, IT Product Line, Huawei. “Today, we have a team of over 10,000 technical experts in IT R&D facilities around the world, including in Europe, Canada and Russia. Through collaboration with these facilities and our partnerships with leading universities, technology institutes and key industry players, we are able to provide reliable IT products and solutions that help customers enhance competitiveness and achieve business success in the era of ICT convergence.”
The highlight of this year’s HCC is the official launch of Huawei’s “Fusion” strategy, which combines an array of IT technologies, including computing, storage, virtualization and data center technologies, to lay the foundation for an open platform that enables third-party system integration, simple deployment, simple management and simple operation and maintenance of enterprise IT infrastructures. At the event, Huawei unveiled and showcase a series of innovative IT products and solutions specifically developed to support the “Fusion” strategy, including the world’s first “converged data plane” storage philosophy, the world’s first fully-distributed cloud operating system FusionSphere 3.0, the high-performance converged all-in-one appliance FusionCube 2.0, and the only converged big data infrastructure platform in the industry integrating storage, filing and analysis.

Delivering on our commitment to customer-centricity, Huawei has been striving to better understand customers’ needs, innovate hand-in-hand with customers, ultimately helping customers realize business success. Building on the cloud platform independently developed by Huawei, and consolidating software development resources in the industry, Huawei successfully helped Shanghai Tower, a new landmark of the city, deploy China’s first Building Information Modeling (BIM) Cloud for engineering construction. BIM Clouds can enable engineering construction companies to rent computing infrastructure, software and system resources on the Internet according to their own needs, substantially reducing the costs for hardware deployment and system maintenance. During HCC 2013, a launch ceremony was hosted by Huawei in conjunction with the Shanghai Tower to unveil the BIM cloud.

By offering competitive products and solutions based on its customer-centric approach to innovation, Huawei has achieved a comprehensive breakthrough in the IT market, gaining recognition from industry customers across government, transportation, energy and power, finance and large enterprise sectors. As of August 2013, Huawei has successfully constructed 330 data centers worldwide, including 70 cloud data centers, and enabled over 260 cloud computing customers around the world to explore the business value of cloud technology with Huawei. In addition, Huawei deployed the world’s largest and most complicated desktop cloud system, which supports 100,000 users on simultaneous business operations within the company. Meanwhile, Huawei also recorded remarkable progress in the storage and server markets, becoming the first Chinese vendor to be included in Gartner’s Magic Quadrant for Blade Servers, as well as its list of global mainstream storage vendors. In the first quarter of 2013, the shipments of Huawei’s storage solutions ranked number one in the China market, while the shipment volume and capacity both ranked number eight globally. The shipment of Huawei servers was ranked number three in China.
Huawei isn’t – as far as we know – but as El Reg pointed out when Hitachi announced the CB500 machines, it sure does look like IBM and Hitachi are tag-teaming on manufacturing for modular systems. Possibly by using the same ODM to bend the metal and make the server node enclosures, perhaps?

The distinction between a blade and a modular system is a subtle one. With modular systems, server nodes are oriented horizontally in the chassis and are taller than a typical vertical blade is wide, allowing for hotter and taller processors as well as taller memory and peripheral cards than you can typically put in a skinny blade server.

The modular nodes can be half-width or full-width in the chassis and offer the same or slightly better compute density as a blade server in a similar-sized rack enclosure, and because of the extra room in the node, can accommodate GPU or x86 coprocessors as well. They are made for peripheral expansion and maximizing airflow around the nodes.

Modular systems generally have converged Ethernet networks for server and storage traffic, but also support an InfiniBand alternative to Ethernet for server networks and Fibre Channel for storage networks, just as do blade servers. Modular systems also tend to have integrated systems management that spans multiple compute node enclosures and are geared for virtualized server clouds. It's not a huge difference, when you get right down to it.

What is most important about modular systems, in this evolving definition, is that they look like – and compete with – the “California” Unified Computing System machines that Cisco put into the field three years ago when it broke into the server racket.

Cisco’s business has been nearly doubling for the past two years and is bucking the slowdown big-time in serverland. Cisco is defining the look of the modern blade server and eating market share. Huawei wants to pull the same California maneuver, peddling its own servers to its installed base of networking and telecom gear customers and driving out the server incumbents.

Huawei lifted the veil on the Tecal E9000 modular machines at the Huawei Cloud Congress show recently in Shanghai, and says that the boxes won’t actually ship until the first quarter of next year – Huawei is clearly not in any kind of a big hurry to get its Cisco-alike boxes out the door.

The Tecal E9000 is based on a 12U chassis that can support either eight full-width nodes or sixteen half-width nodes. The chassis has 95 per cent efficient power supplies, and a total of six supplies can go into the enclosure with redundant spares, rated at 3,000 watts a pop AC and 2,500 watts a pop DC.

The chassis and server nodes have enough airflow that they can operate at 40°C (104°F) without additional water blocks or other cooling mechanisms on the chassis or the rack. This is the big difference with modular designs, and one that was not possible with
traditional blades. Blade enclosures ran hot because they were the wrong shape, and the fact that by simply reorienting the parts you can get the machines to have the same computing capacity in the same form factor just goes to show you that the world still need engineers.

The Tecal E9000 server nodes are all based on Intel’s Xeon E5-2600 or E5-4600 processors, which span two or four processor sockets in a single system image, respectively. There are a couple server node variants to give customers flexibility on memory and peripheral expansion. The nodes and the chassis are NEBS Level 3 certified (which means they can be deployed in telco networks) and also meet the European Telecommunications Standards Institute’s acoustic noise standards (which means workers won’t go deaf working on switching gear).

The CH221 is a single-width server node with two sockets that can be plugged with any of the Xeon E5-2600 series processors, whether they have four, six, or eight cores per socket. Each socket has a dozen DDR3 memory slots for a maximum capacity of 768GB across the two sockets using fat (and crazy expensive) 32GB memory sticks. The CH222, uses the extra node’s worth of memory slots in full-height, half-length dimensions.

The node has two 2.5-inch disk bays, which can be jammed with SATA or SAS disk drives or solid state disks if you want lots of local I/O bandwidth but not as much capacity for storage on the nodes. The on-node disk controller supports RAID 0, 1, and 10 data protection on the pair of drives. The CH221 machine has one full-height-half-length PCI-Express 3.0 x16 expansion card and two PCI-Express 3.0 x16 mezzanine cards that plug the server node into the midplane and then out to either top-of-rack switches through a pass-through module or to integrated switches in the E9000 enclosure.

The CH221 takes the same server and makes it a double-wide node, which gives it enough room to add six PCI-Express peripheral slots. That’s two x16 slots in full-height, full-length form factors plus four x8 slots with full-height, half-length dimensions.

A modified version of this node, called the CH222, uses the extra node’s worth of space for disk storage instead of PCI-Express peripherals. The node has room for the same two front-plugged 2.5-inch drives plus another thirteen 2.5-inch bays for SAS or SATA disks or solid state drives if you want to get all flash. These hang off the two E5-2600 processors, and the node is upgraded with a RAID disk controller that has 512MB of cache memory and supports RAID 0, 1, 10, 5, 50, 6, and 60 protection algorithms across the drives. This units steps back to one PCI-Express x16 slot and two x16 mezz cards into the backplane.

The Tecal CH221 server node

If you want more processing to be aggregated together in an SMP node, then Huawei is happy to sell you the CH240 node, a four-socket box based on the Xeon E5-4600. Like other machines in this class from other vendors, the CH240 has 48 memory slots, and that taps out at 1.5TB of memory using those fat 32GB memory sticks. The CH240 supports all of the different SKUs of Intel’s Xeon E5-4600 chips, which includes processors with four, six, or eight cores.

The CH240 does not double-up on the system I/O even as it does double-up the processing and memory capacity compared to the CH221. It has the two PCI-Express x16 mezzanine cards to link into the midplane and then out to switches, but no other peripheral expansion beyond that in the base configuration.

This is a compute engine in and of itself, designed predominantly as a database, email, or server virtualization monster. It supports the same RAID disk controller used in the CH221, but because of all that memory crammed into the server node, there’s only enough room for eight 2.5-inch bays for disks or SSDs in the front. If you want to sacrifice some local storage, you can put in a PCI-Express riser card, which lets you put one full-height, 3/4ths length x16 peripheral card into the CH240.

All of the machines are currently certified to run Windows Server 2008 R2, Red Hat Enterprise Linux 6, and SUSE Linux Enterprise Server 11, and presumably will be ready to run the new Windows Server 2012 when they start shipping early next year.

VMware’s ESXi 5.X hypervisor and Citrix Systems’ XenServer 6 hypervisor as well, and again, presumably Hyper-V 3.0 will get certified on the box at some point and maybe even Red Hat’s KVM hypervisor as well. There is no technical reason to believe that the server nodes can’t run any modern release of any of the popular x86 hypervisors, but there’s always a question of driver testing and certification.

On the switch front, Huawei is sticking with three different switch modules, which slide into the back of the E9000 chassis and provide networking to the outside world. The CX110, on the right in the above image, has 32 Gigabit Ethernet ports downstream into the server midplane and out to the PCI-Express mezz cards, which is two per node. The CX110 switch module has a dozen Gigabit and four 10GbE uplinks to talk to aggregation switches in the network.

The CX311 switch module takes the networking up another notch, with 32 10GbE
Huawei previews Cisco-killin’ E9000 modular system

downstream ports and sixteen 10GbE uplinks. This switch also has an expansion slot that can have an additional eight 10GbE ports or eight 8Gb/sec Fibre Channel switch ports linking out to storage arrays.

Huawei also has a QDR/FDR InfiniBand switch model with sixteen downstream ports and eighteen upstream ports, which can run at either 40Gb/sec or 56Gb/sec speeds.

The current midplane in the E9000 chassis is rated at 5.6Tbit/sec of aggregate switching bandwidth across its four networking switch slots, which can be used to drive Ethernet or InfiniBand traffic (depending on the switch module you choose).

Here’s the important thing: the Tecal E9000 midplane will have an upgrade option that will allow it to push that enclosure midplane bandwidth up to 14.4Tbit/sec, allowing it to push Ethernet at 40 and 100 Gigabit speeds and next-generation InfiniBand EDR, which will run at 100Gb/sec; 16Gb/sec and 32Gb/sec Fibre Channel will also be supported after the midplane is upgraded. It is not clear when this upgraded midplane will debut.

Pricing on all of this Tecal E9000 gear has not been set yet, according to Huawei.®
Huawei positioned in third place in Chinese X86 server market

Huawei Tecal Server has now boasted servers of RH, E, and X series and application acceleration solutions

News | by CIOL Bureau

BANGALORE, INDIA: Huawei, a leading global information and communications technology (ICT) solutions provider is positioned in 3rd place in the Chinese x86 server market (Market Share Alert: Server Shipments, Worldwide, 1Q13) and has also been named a Niche Player in Gartner’s Magic Quadrant for Blade Servers, April 29, 2013.

Gartner’s magic quadrant for blade servers focuses on the market that is becoming ever more complex and diverse, due to the convergence of related modular form factors, a fast-growing interest in fabric-based infrastructure and the influence of cloud computing on buying behavior.

Huawei Tecal Server has now boasted servers of RH, E, and X series and application acceleration solutions based on value-added components with twelve-year’s experience. These series servers and solutions meet customer different requirements for rack servers, blade servers, and multi-node servers. Now Huawei Tecal Server are widely adopted by all kinds of industries including Internet Service Providers (ISPs), governments, energy, telecom carriers, large enterprises, etc.

Mr. Goober, Director IT Solutions, Huawei Enterprise India commented, “Huawei is committed to delivering innovation around custom integration, virtualization and parallel computing. Today, we all are operating in diverse markets and keeping pace with the ever growing technology needs. In this scenario, Huawei’s blade server business compliments its better-known technology businesses like core networking and telecommunications.”
Huawei and Intel team up on server, cloud products

Pulling the telecom-to-datacenter California alley-oop

By Jon Yeomans | September 6, 2012 – 16:01 GMT (09:01 PDT)
Follow @jonyeomans1

Summary: The two companies have signed a memorandum of understanding promising to co-operate further on server, datacentre, storage and cloud computing products.

Huawei has signed a memorandum of understanding (MoU) with Intel, signalling the two companies’ intention to work together in a number of fields.

The firms will collaborate on new server, datacentre, storage and cloud computing products, with a view to selling them in Huawei’s home market of China and elsewhere, the pair announced on Thursday. No further details on the new products were given.

“We have had an excellent collaboration over the past 10 years with Intel,” said Zheng Yelai, president of Huawei’s IT product line. “The strategic global co-operation MoU on IT will only help to strengthen the Huawei and Intel relationship, and allow us both to innovate around customer demand — providing more efficient, more valuable ICT solutions to our customers.”

Huawei most recently used Intel tech in its Tecal V2 server line, which is based on Intel Xeon E5 and E7 processors and was released in July.

On Tuesday, Huawei published a report pledging to uphold cybersecurity. The white paper, written by Huawei’s global security officer and former UK government CIO John Suffolk, was seen by some as an attempt to allay concerns that its connections to the Chinese government make its products a security risk to western nations.
Huawei leans on SAP to give enterprise push a boost

German ERP vendor gives Huawei’s HANA appliances its stamp of approval

By Mikael Ricknäs
March 8, 2013 09:18 AM ET

IDG News Service - Huawei Technologies' enterprise division further ramped up its European presence by gaining certification to run SAP’s HANA in-memory platform on its servers.

Deals with SAP and other big software vendors will be key for Huawei to succeed in the enterprise.

This week’s CeBIT trade show illustrated how serious the Chinese vendor is about making its mark in the enterprise sector. Buses ferrying people between the halls were plastered with the company’s ads, and its 900-square-meter stand was filled with servers, storage and networking equipment.

But big news from Hanover was that SAP has certified Huawei’s Tecal RH5885 V2 server for use as a HANA appliance.

HANA stores information to be processed in-memory, instead of moving it on and off of disks, which speeds up performance, according to SAP.

The direct benefit is that Huawei can now sell systems in an important growth area of the market, according to Gartner research director Adrian O’Connell. There are also indirect benefits in terms of raising the profile of Huawei as a server vendor, both for users and other technology partners, increasing the credibility of the technology capabilities of its offerings, he said via email.

Huawei accounted for around 5% of server volumes in Asia Pacific during the last three months of 2012, but its share in Europe, the Middle East and Africa was less than 1%, according to Gartner’s data.

Growing that to meaningful volumes won’t be easy. The server market in Europe is very mature and highly consolidated, with the top three vendors accounting for nearly 75% of volumes, according to O’Connell.

"New vendors not only have to contend with the challenges of setting up a business operation across the geography and then scaling it, but also convince users that they provide a better option than vendors that they’ve been working with for a long time," O’Connell said.

To succeed, Huawei could learn a thing or two from Cisco Systems, the last vendor that managed to break into the server market, according to Giorgio Nebuloni, research manager at IDC.

"It should learn from Cisco’s focus on ISVs. It started with VMware, and has expanded with SAP, Microsoft and Oracle to create communities around the different software platforms," Nebuloni said.

The deal with SAP is a step forward for Huawei, but it needs a whole ecosystem of software partners. If that isn’t in place it might be able to sell some boxes, but not whole enterprise solutions, according to Nebuloni. It also needs to build out a channel and work on improving its brand, he said.

Getting a foothold in the storage market may turn out to be easier for Huawei. While the server market is very consolidated, the storage sector is more fragmented and growing faster.

"You still have lots of innovation going on. So with disruptive technologies you can innovate and gain a larger share," Nebuloni said.

Like any company Huawei wants to play off its strengths when entering the enterprise sector, and for Huawei that’s networking. That the company decided to place its CeBIT booth in the networking hall is no coincidence.

In this sector, Huawei is already a vendor to be reckoned with, according to Alan Weckel, vice president at Dell’Oro Group. Huawei is already a top five vendor in enterprise networking, but most of that is in China, Weckel said via email.

Again execution and channel expansion are the keys to success. Huawei is aware of this and has prioritized partnerships with the enterprise business branches of several European telecommunication operators, to whom it is already a strategic partner by supplying telco network equipment, the company said.

For Huawei, the Enterprise division is still only in start-up mode, as it was created just two years ago.

Send news tips and comments to mikael_ricknäs@idg.com
Huawei Technologies’ enterprise division is ramping up its European presence, helped by the announcement this week that SAP has certified the company’s servers to run its HANA in-memory platform. Such deals with SAP and other big software vendors will be key for Huawei to succeed in the enterprise.

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For Huawei, the Enterprise division is still only in start-up mode, as it was created just two years ago.
of California Deploys Huawei’s Cloud Storage System to Support Computational Astrophysics Research

Since April 2013, Huawei has been providing its high-performance one petabyte Universal Distributed Storage (UDS) system to pair with the Hyades supercomputer system. After three months of tests performed by Hyades system engineers, the UDS system was proven to provide powerful scalability and superb performance in large-scale data storage scenarios.

Huawei’s UDS cloud storage system employs the unique Advanced RISC Machine (ARM) architecture, which enables flexible capacity expansion from petabyte to exabyte as well as a 4.2 W/TB ultralow power consumption. In addition to attractive features such as 2.1 PB per cabinet high-density design and Zero Touch, the UDS system also features multiple data center management, allowing for secure and reliable cross-regional data movement in a unified resource pool, enabling UCSC astrophysicists to better collaborate with affiliated research centers across the United States.

“Hyades features over ten times improvement in performance than its predecessor,” said Mr. Piero Madau, Professor of Astronomy and Astrophysics, UCSC cum Principal Investigator of the National Science Foundation (NSF) grant. “With the Huawei system providing storage for our simulation results, we can maximize the value of those results by making them available to the astrophysics community.”

Huawei’s storage business experienced significant growth in 2012, with rapid increases in sales revenue in both domestic and overseas enterprise markets. Since 2013, Huawei’s storage product business adopted the philosophy of “Intelligence on Demand, Convergence for Future”, directly addressing unpredicted storage requirements brought by explosive data growth, as well as the urgency to improve data management efficiency. In particular, Huawei’s flagship UDS cloud storage system has been deployed at the European Organization for Nuclear Research (CERN), and since then, has been highly sought after by a number of research institutes and carrier operators across the world.
A leading telecom solutions provider, Huawei recently announced, in 2013 the world Red Dot Award (red dot design Award) ceremony held Germany Essen held, Huawei high-end HVS storage product design won the red dot award(product design 2013), becoming the only one won the award of the storage products. The red dot award was set up in 1955 by Europe’s most prestigious German famous designers association Design Zentrum Nordrhein Westfalen in the city of Essen, known as the industrial design [...]

HUAWEI HVS HIGH-END STORAGE WON THE 2013 WORLD RED DOT DESIGN AWARD
Huawei-Intel Collaboration Boosts Performance of Huawei FusionSphere

by Biztech2.com Staff | 20th September, 2013 | in Cloud Computing

Huawei, the information and communications technology (ICT) solutions provider, and Intel, the computing innovator, reaffirmed their collaboration and highlighted the incorporation of Intel’s innovative hardware virtualisation technologies into Huawei’s cloud operating system FusionSphere at the 2013 Huawei Cloud Congress (HCC 2013). The collaboration has substantially boosted FusionSphere’s reliability, compatibility, and security.

FusionSphere is Huawei’s proprietary enterprise- and telco-facing cloud computing platform, which supports integration of computing, storage, and network resources from different vendors on a datacentre. The integrated cloud platform helps customers improve IT infrastructure utilisation, increase operating and management efficiency, and reduce costs on IT system management.

Intel’s Non-Uniform Memory Access (NUMA) technology has significantly improved the memory access efficiency and performance of virtual machines running on FusionSphere. FusionSphere 3.0, the latest version of the product, received an impressive score of 4687 in the SPECvirt_sc2010 benchmark of datacentre server performance, outscoring all competitors in the category of virtualisation performance based on the same hardware environment.

FusionSphere uses Fault Tolerance (FT) technology, which is supported by the COLO solution developed in collaboration between Huawei and Intel. FT technology supports hot backup of virtual machines that use single- or multi-core CPUs, reduces overhead for active/standby synchronisation and performance, and enhances reliability and fault recovery capabilities of the virtualisation system.

FusionSphere has also adopted Intel’s FlexMigrate capability, which allows it to support live migration of virtual machines that use CPUs of different models from the same chip maker. In addition, Intel Virtual Machine Device Queue (VMDq)-enabled network adapters support live migration of virtual machines, and its Single Root I/O Virtualisation (SR-IOV) technology allows virtual machines to share a single network adapter, and its Single Root I/O Virtualisation (SR-IOV) technology allows virtual machines to share a single network adapter. These technologies significantly enhance the mutual compatibility of virtual machines using different network adapters and CPU generations.

FusionSphere has incorporated Intel’s embedded security technologies into its virtual operating system and desktop applications, making the entire cloud platform visible and controllable. This level of manageability has increased end users’ trust in cloud computing services.

"Intel devotes itself to building innovative virtual hardware platforms for our partners, and together making cloud infrastructure simpler, more secure, and more efficient," said He Jing Xiang, General Manager of Intel Asia Pacific R&D Co., Ltd. and Intel Software and Services Division. "Through persistent project implementation, testing, and verification, we hope to promote the evolution of cloud computing and application implementation. In this regard, Huawei has been a major strategic partner of Intel. Huawei FusionSphere cloud operating system incorporates cutting-edge technologies from both companies, and it will continue to bring significant business value to customers."

"Huawei has worked closely with Intel in the development of Cloud Computing," said Ren Zhipeng, President of Huawei IT Cloud Computing Product Line. "Bringing the two parties’ respective advantages in software and hardware into play has greatly enriched FusionSphere in all aspects — virtualisation performance has significantly improved, and its reliability, compatibility, and security have been enhanced. These improvements will allow customers to get more value out of FusionSphere. Huawei highly values its cooperation with partners and independent software vendors. We are engaged in building a healthy business ecosystem and are committed to providing customers with full-featured and high-performance solutions."
Huawei Launches Next Generation Data Center Architecture for the Cloud Era

With the development of enterprises and operators, earlier data center architectures, which are dispersed and independent, cannot support changing service applications. Leveraging its in-depth understanding of customer, Huawei introduced the innovative DC² architecture, which successfully consolidates multiple dispersed, layered, and heterogeneous data centers into a new distributed cloud data center, thereby helping customer improve resource utilization, enhance management efficiency and protect investment.

Christian Perry, Senior Analyst of the analyst firm Technology Business Research (TBR), said: “Huawei’s continued innovation in data center was reflected in TBR’s 2012Q3 Data Center Benchmark, in which Huawei earned highest data center score, based on its financial, go-to-market, and resource management strategies. The company’s strategy of seamlessly molding cloud around modern data center infrastructure with its DC² initiative reflects trends we’re increasingly seeing in the market and meets customer requirements for more flexibility and better management.”

“As part of Huawei’s efforts to address the challenges that face data centers brought by cloud computing, the new DC² architecture is able to lower the TCO, increase IT flexibility and boost management efficiency of data centers by optimizing resource scheduling and utilization, effectively supporting customers’ business,” said Chen Shijun, General Manager of Huawei IT Data Center Solutions.

There are two key technologies in DC². Huawei FusionSphere enabled by OpenStack ensures the architecture is open. It supports plug-and-play of IT devices with heterogeneous interfaces and multiple virtual products. Huawei ManageOne conducts unified management of dispersed and layered data centers, even the remote branch.

Huawei has been an active innovator in the data center field for more than a decade. By Q4 2012, Huawei helped global customers build more than 260 data centers, 35 of which are cloud data centers, including State Information Center of China, Digital Hospital of Ghana government and China Mobile International Information Port, which occupies more than 300,000 m² and is one of the world’s largest data centers.
Huawei Launches “Fusion” Strategy at Huawei Cloud Congress 2013

DC²: Next Generation Innovative Data Center Architecture in Cloud Era

Gaia is a living organism that contains all the lifeforms and other non-living material in the galaxy, every piece of information is stored in its collective consciousness.

Galactic Empire by Isaac Asimov

Great science fiction writers are like prophets. They help readers cross the threshold of time and advance towards the future of the world. Verne’s description of a moon landing a century ago was strikingly consistent with the later manifestation thereof, while Asimov’s Three Laws of Robotics later became regarded as the golden rules for the entire field of robotics. As humanity’s technological capabilities continue to develop, prophecy will become a reality.

Difficulties and Challenges of Data Center Carriers

The rapid development of ultra-wideband network, the emergence of software defined networking (SDN) technology, and the development of multiple technologies involved in cloud computing over more than a decade have all promoted a new round of changes in the data center. All data center carriers (carriers for short) have encountered the following challenges:

Grasp the opportunity to lead change, take advantage of existing systems, and introduce new architectures to meet the industry’s demand. Resolve the problems, such as high investment risk, long construction periods, high energy consumption, low resource utilization, system isolation, slow service response, and high operating expense (OPEX), caused by intensive construction of traditional data centers.

Technologies and other features of a traditional data center vary according to different construction stages. For example, there is a global carrier that has constructed over 85 data centers (equipment rooms) of different sizes in more than 20 years based on the technical capabilities and business demands in different development stages. This global carrier has more than 5,000 servers of different specifications, supporting over 4,000 types of applications and more than 10 types of heterogeneous databases. Diverse and heterogeneous IT data centers support the business and development of this global carrier, but also bring great management, upgrade, maintenance, and operating costs, and delay subsequent developments. This global carrier has to spend huge amounts of human resources to maintain the existing large-scale data centers and overall businesses, while at the same time carefully exploring new frameworks.

Science fiction masters foresee the future with their forward-looking visions, while technology masters respond: “The best way to predict the future is to create it.” Gaia integrates all types of separated systems into a complete and unified wisdom. Similarly, with the support of new technologies, Huawei is able to integrate carriers’ micro-, medium-, and macro-data centers across the globe into a physically dispersed but logically unified intelligent data center called Distributed Cloud Data Center (DC²). The DC² can make full use of carriers’ capabilities to support long-term future development.
New-Generation Data Center in Cloud Era—DC²

The DC² end-to-end solution changes the traditional model of data centers, with scattered, hierarchical, and heterogeneous architectures, into distributed cloud data centers with a flat architecture, point-to-point interconnection, and unified resource management. The DC² solution virtualizes data centers in different regions, stages, and scales into a logical resource pool that incorporates physical and virtual resources. This allows carriers to achieve unified management, presentation, and operation.

Huawei DC² fulfills enterprise data center transformation with 2 key technologies below:

1. Huawei FusionSphere scheduling engine based on OpenStack
   - Huawei FusionSphere is based on OpenStack and extends features required by carriers to construct their IT facilities and service platforms. Huawei FusionSphere can support third-party computing, storage, network, and security devices (including physical devices and virtualized products). In addition, Huawei FusionSphere provides extended services, such as backup, hot migration, resource scheduling between data centers, cloud customized extension, elastic service scheduling, smart pipe scheduling, distributed engines, and physical resource pools. Huawei FusionSphere is compatible with the OpenStack cloud bus, which helps resolve vendor lock-in problem and changes the construction mode of data centers.

2. Huawei ManageOne unified O&M management support platform compatible with heterogeneous systems
   - The ManageOne promotes easy management, agile operation, and energy conservation. The ManageOne realizes comprehensive management during the resource life cycle, including unified maintenance, unified management of cloud and non-cloud resources, automatic discovery and configuration, resource allocation and reclaiming, service application deployment, flexible product defining, and rapid service rollout.

The development of efficient modular data center technologies makes it possible to construct data centers that are physically distributed but logically integrated. The new-generation data center facilities must be integrated, efficient, and flexible. The Huawei DC² data center facility solution (CloudPower) adheres to the efficient modular construction concept by providing five subsolutions that flexibly combine basic components, including the cabinet, confined channel, refrigeration, power supply, and distribution components. CloudPower not only satisfies construction requirements for outdoor rapid deployment and mobile applications, but is also appropriate for micro, small, medium, and large data center service scenarios. The five subsolutions are distinctive and highly complementary, and fully meet the facility requirements of the DC² data center.
Benefits

- Uses management efficiency as a core concept, improving ROI.
- Compatible with heterogeneous systems, supports unified management for physical and virtual resources, and makes full use of DC resources to reduce investments. Supports seamless expansion, with up to millions of physical nodes. Pools DC resources, thereby maximizing management efficiency and minimizing manual intervention.
- Provides user-centric services, ensuring SLA.
- Focuses on user experience. For example, roaming users can enjoy excellent services when using applications. Integrates service automation with the intelligent network channel to ensure the quality of service (QoS) and provide stable services. Uses the hot and cold data separation deployment mode and DR system to ensure the reliability and sustainability of the DC².
- Uses optimal resource scheduling and deployment as a target, reducing TCO.
- Integrates dispersed computing, storage, and network physical and virtual resources to construct a unified and logical cloud resource pool, thereby maximizing resource reuse rates. Implements proper service deployment, sends intelligent and unified resource requests, and performs SDN scheduling across DC nodes, thereby achieving the maximum energy efficiency ratio (EER). Supports multiple flexible and efficient resource management modes, including direct service release modes (such as the hosting mode) and indirect service modes (such as the VDC and PDC).

Conclusion: unification after prolonged division

There are high requirements for DCs due to new economic and environmental constraints on services. The goal of the Huawei new-generation DC² is to consolidate traditional DCs, introduce innovative technologies, maintain existing services, and exploit new opportunities. The Huawei DC² comes at a transformative moment for carriers’ DC services and aspires to be part of this transformation.