



Moving into the future with Cloud SANOG Conference 2016- Kathmandu, Nepal

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Huawei Business Consulting Team
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HUAWEI TECHNOLOGIES CO., LTD.



Raymond Fung

Senior Managing Consultant (ICT – Data Center), Business Consulting South East Asia region



- Experience**
- 7+ years of APAC Region Data Center Design, Construction and Operation Experience
 - Relevant experience in past 3 years:
 - Global Business Consulting focus in business convergence and resource optimization (APAC, South Africa, Canada) |
 - ICT Business Consulting in South Eastern Asia Region
 - Oversees over 80% of Global Fortune 500 Companies Data Center build out with accumulative over 3,000 racks deployment
 - Data Center Deployment Manager (Equinix, Hong Kong)
 - Data Center APAC Regional Business Process Owner (Equinix, APAC)
 - Business Management and Core Data Center Infrastructure Build out (Equinix, China)
 - Other related experience includes:
 - Data Center Civil, Mechanical & Electrical Engineering

- Education**
- MBA , IE Business School, Madrid, Spain
 - Bachelor of Civil Engineering, Ryerson University, Toronto, Canada



Agenda

1. Cloud Transformation Challenges, Approach & Deliverables
 - Unleash Operators' potential in Cloud Computing markets
2. Business Case Sharing:
 - Teleco Operators Cloud Computing on Vertical Markets
3. Technical Case Sharing:
 - Banks/ Financial Securities Cloud setup

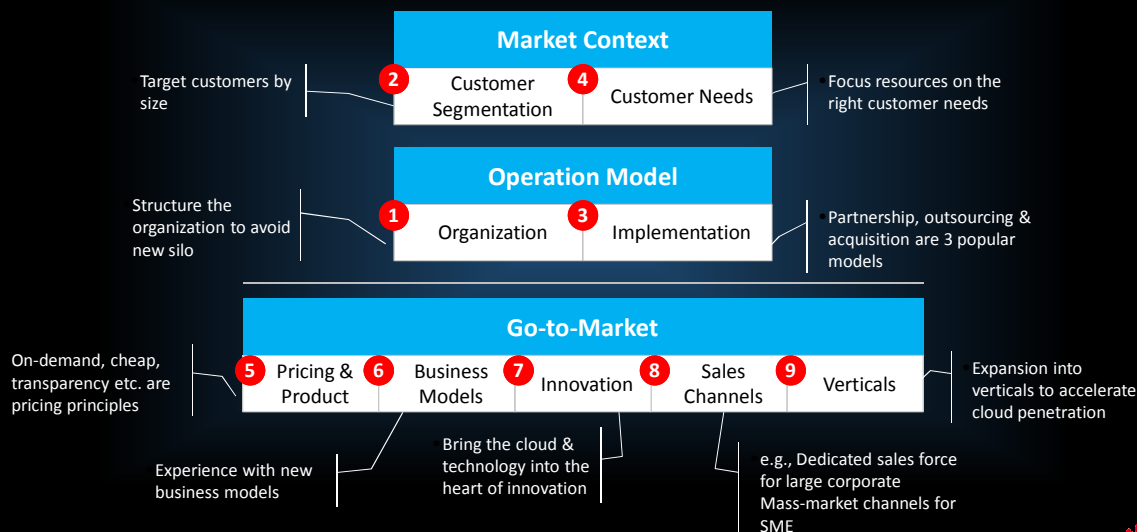


Challenges & Approach

Challenges	<p>Enterprise customers in many sectors lack the knowledge on ICT and cloud; Needs a trusted source to get advice and procure these services</p>	<p>Operator want to grow new revenue streams with its large enterprise customer base but requires more insights and expertise on offering cloud and ICT solutions</p>	<p>Need advisory on packaging and bundling new value-add services to targeted sectors based on cloud platform with existing telecom services</p>	<p>Require a cloud business strategy and Go-To-Market (GTM) plan to engage with the targeted customers</p>
Approach & Deliverables				
Results	<ul style="list-style-type: none"> • Enable operator to launch cloud based solutions (horizontal and industry specific) and implement a replicable delivery model to drive cloud adoptions among the selected sector • Develop innovations to the business processes of enterprise customers through cloud based ICT solutions, creating higher stickiness with customers • Proposal was accepted as the engagement model to grow new revenue streams and drive new customer acquisition • Joint innovation between Huawei and operator to develop additional industry verticals to grow cloud service revenue 			



Using the 9 Key Building Blocks (9KBB) Methodology for CSP's Cloud Computing to analyze Operators' Cloud Services Deployment



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1 Organization: Think like how Operators would think, learn their end customers' needs



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2 Customer Segment: In-depth research are used to identify the needs as well as corresponding cloud services for different segment



Facts on Market Composition (3M registered businesses)

- Medium & Large Enterprise: 1% of total, but 69.6% of GDP
- Small Businesses: 99% of total registered biz, 30.4% of GDP

Enterprise IT spending, 2014, 100% = \$9 bn

Segment	Percentage
Retail & Distribution	36%
Manufacturing	22%
Telecom & IT	15%
Hotel & Restaurants	6%
Property	5%
Administrative Services	4%
Professional Services	3%
Transportation	2%
Hospitals	1%
Others	4%

Other Analysis

Managed Services: Spending Over Next Two Years

Size of Thailand restaurant industry is 40.0 US bn and expected to grow 15% p.a. in 2014

1) Retail & Restaurant Verticals

- Restaurants & Hotels
- Retail & Distribution
- Manufacturing
- Property

- Reviewing market study of current and potential, restaurant verticals are selected as the first vertical to trial ICT services
- Various cloud-based services are defined (e.g. ePOS, CRM, Cloud WiFi)

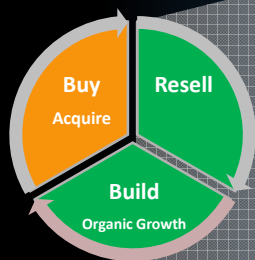
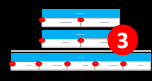
Select target Verticals

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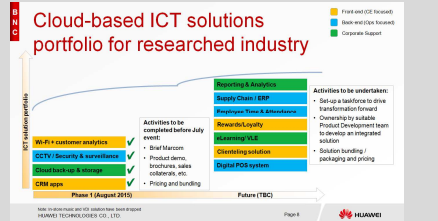


3 Implementation: Provide holistic picture on implementation of its digital and partner strategy



Identify Potential Partners

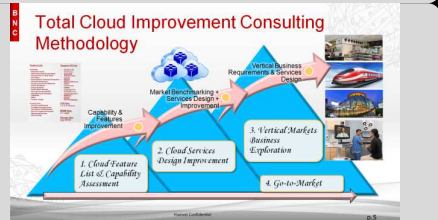
Identify and provide roadmaps for solutions, where its partners helps grow the whole ICT Eco-system for providing ICT Services



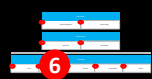
Unleash the Potential Together

Organic Growth through Partnerships & Capabilities Grooming

- Empowers the operator, partners, with market and technological knowledge



6 Business Models: New Models are tested by Operators and its partners to obtain a win-win scenario in the local market



Different business models are adopted to cater for effective partnerships

<p>Free</p> <ul style="list-style-type: none"> e.g., free trial 		<p>Free Trial to its basic bundle to all of its potential customers. In addition, for large enterprise customers, PoC environment can be set up to help enterprise test their cloud services</p>
<p>Pay per Use</p> <ul style="list-style-type: none"> Common for IaaS and SaaS solutions to SMEs 		<p>IaaS services supports the Pay-per-Use model, where end-users will be charged based on their monthly usage. Subsequent SaaS applications offered will also be running this model</p>
<p>Subscription</p> <ul style="list-style-type: none"> Popular for marketplace software 		<p>Subscription models are also utilised by certain partners (e.g. Microsoft 365) who have already established a mature partnership model</p>
<p>Bundle</p> <ul style="list-style-type: none"> e.g., with Broadband service 		<p>Smart Business Package are rolled out for SMEs who are looking at a one-stop-shop services for connectivity, fixedline and cloud services</p>



8 Sales Channel: Utilize multiple channels for GTM strategies for cloud-based services and solutions



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Through global experiences, BNC team helps identifies the best practices to sell cloud, as well recommends partners to assist True Business & True IDC in their channel strategy

9 Industry Verticals: While solutions for each vertical exists, horizontal solutions are also included to help with basic ICT needs

Business and Network Consultants helped to adopt the vertical strategy for its SMB sector, with the restaurant vertical launched in 2015 and 2 other verticals (retail and manufacturing) in 2016, with these solutions to showcased its Cloud Business Center

Industry Solutions on Cloud	<ul style="list-style-type: none"> • Restaurant (Wi-Fi, CRM App, ...) • Retail • Manufacturing 	Horizontal Cloud Solutions	<ul style="list-style-type: none"> • Office 365 • Flow Accounting • ERP on Cloud • Simply Cloud (Compute & Storage) • Digital Signage • CCTV on Cloud • Transportation • Additional Ascend Solutions
Cloud Co-Working Space	<ul style="list-style-type: none"> • Google Chromebook • Wi-Fi / Internet • Entertainment 		

Summary from 9KBB Framework Analysis: Enable Operator capabilities at all levels to compete in the local cloud market



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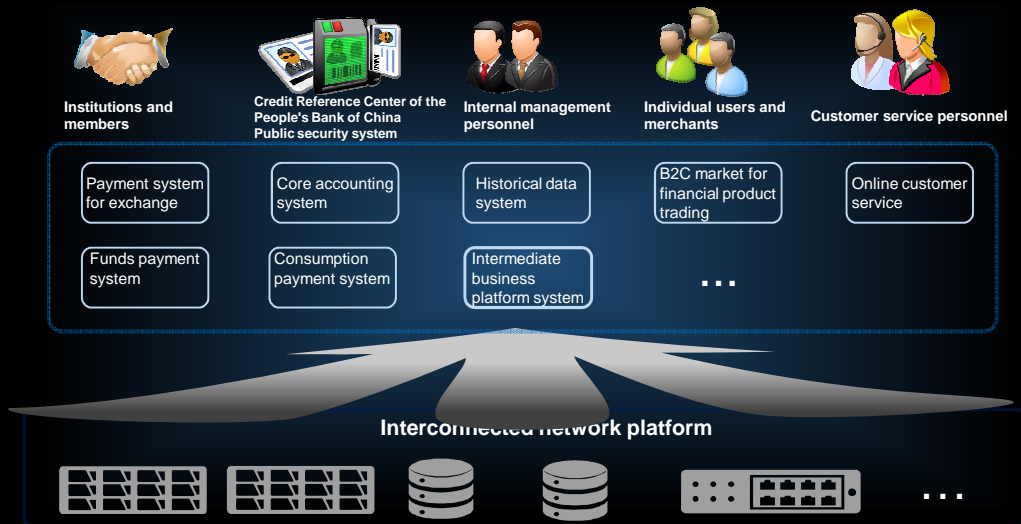
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Building an Interconnected Network Platform in Financial Securities Industry



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Requirements for the IT System

1. High reliability

- Supports core service systems, such as transaction, payment, and settlement systems.
- Provides 24/7 uninterrupted core services.

2. High Capacity Performance

- Allows 50 million users to access the platform and gains more than 5 million transactions per day.
- Supports up to 250 million daily accesses to the B2C market for financial product trading.

3. Elastic resource allocation and rapid service launch

- Elastically allocates resources based on service requirements.
- Supports the developing, verification, and launching of a large number of new services in the development and test environment.
- Provides high scalability to meet the explosive future service growth.

4. Openness and controllability

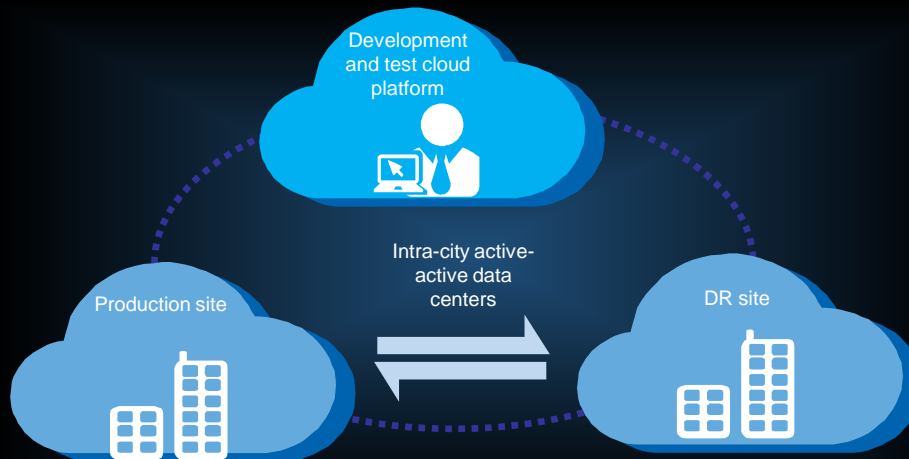
- Uses open architecture and supports mainstream hardware and software.
- Supports hierarchical decoupling of components.
- Developed by Huawei and financial companies for joint innovations and can be separately managed by securities companies.

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Building Three Cloud Platforms



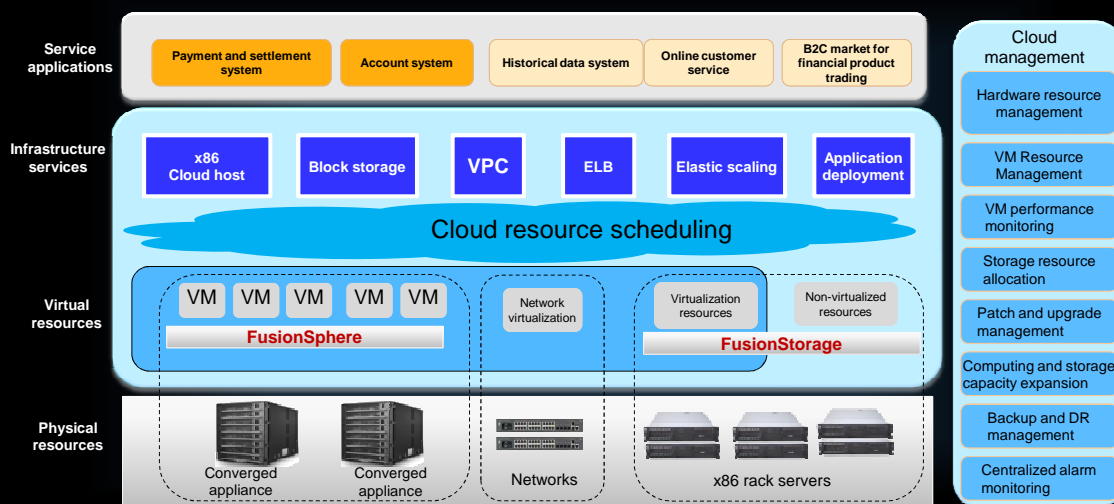
- Builds active-active data centers between two cities (call it City A & City B) to support all IT service systems, including payment and accounting systems.
- Builds a development and test cloud platform to achieve the rapid iterative verification and service launch.

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Overall Solution Architecture

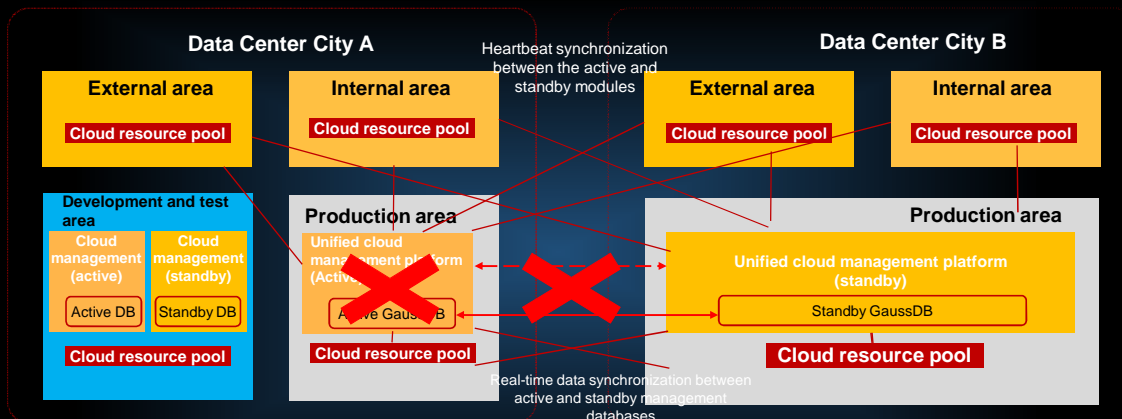


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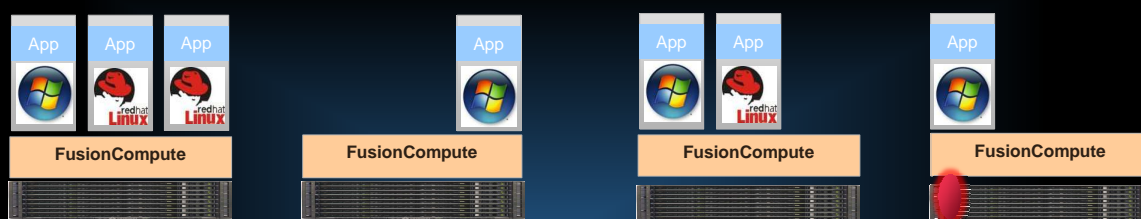
Constructing Secure and Reliable Active-Active Data Centers



- The unified cloud management platform centrally manages and maintains six resource pools in both DC A & DC B.
- The standby module of unified cloud management platform is remotely deployed in the resource pool of Tonglian production area. If the active module becomes faulty, heartbeat communication between the active and standby modules interrupts, and the standby module takes over services of the active module, ensuring 24/7 uninterrupted core services.
- Multiple resource pools are centrally managed through open interfaces.



Elastic Scaling Based on Service Applications



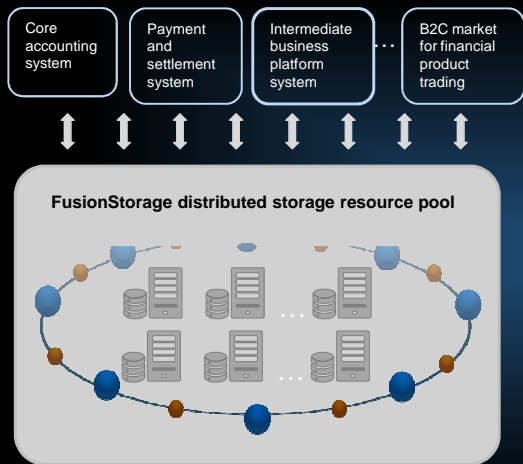
➤ Enables the automatic scheduling policy during the service peak period to achieve load balancing and **enhance** service efficiency.

➤ Enables the automatic scheduling policy during off-peak period to gather VMs and intelligently power off idle hosts, **reducing power consumption**.

FusionSphere provides an elastic scaling mechanism for application resources to avoid resource waste and improve resource utilization **by over 30%**.



Ten Millions of IOPS Meets Storage Performance Requirements for Core Services



◆ **Distributed architecture:** Resolves performance bottleneck, supports I/O parallel processing and up to ten millions of IOPS.

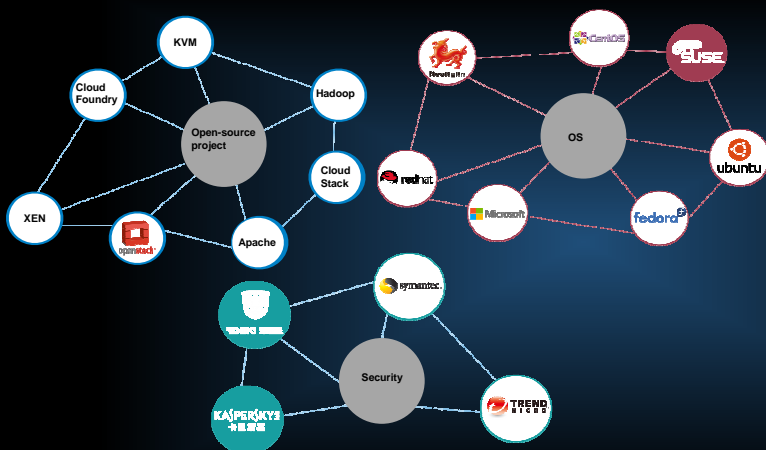
◆ **Industry-leading distributed cache:** Support read/write cache, uses SSD disks as main memory, and dynamically adjusts read/write cache as required.

◆ **Allows 50 million users to access B2C market for financial product trading and gains more than 250 million of daily accesses.**

FusionStorage provides ten millions of IOPS to meet concurrent access requirements for ten millions of users.



Controllable Platform with An Open Architecture



◆ **Uses the OpenStack architecture** and supports hierarchical decoupling of components, preventing single vendor lock-in.

◆ **Supports more than 5000 service applications** and various service systems and security software of the financial industry.

◆ **Developed by an R&D team with more than 6000 members**, this platform has continuous evolution capability, can be separately managed by financial companies, and ensures service innovation in future.

FusionSphere supports hierarchical decoupling of components **and more than 5000 service applications.**



Customer Benefits

1 Builds leading active-active cloud data centers

- Builds **active-active data centers** between City A and City B.
- Provides 24/7 core services without interruption.



2 Consolidates scattered computing and storage resources into centralized storage resource pools

- Provides a computing resource pool housing over 200 servers.
- Constructs the high-performance SDS resource pool supporting up to 1200 TB storage space.



3 Improves management efficiency and resource utilization

- Centrally manages and allocates resources in data centers.
- FusionManager **dynamically schedules resources based on service loads to improve resource utilization by more than 30%.**



4 Constructs a network platform for information sharing

- Launches services rapidly and improves the efficiency by **over three times** to meet the concurrent access requirements for ten millions of users, with **more than 250 million of daily accesses.**



5 Uses open architecture to prevent single vendor lock-in

- Uses the OpenStack architecture and supports **hierarchical decoupling of components, preventing single vendor lock-in.**
- Developed by Huawei and financial companies for joint innovations and **can be separately managed** by securities companies.



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