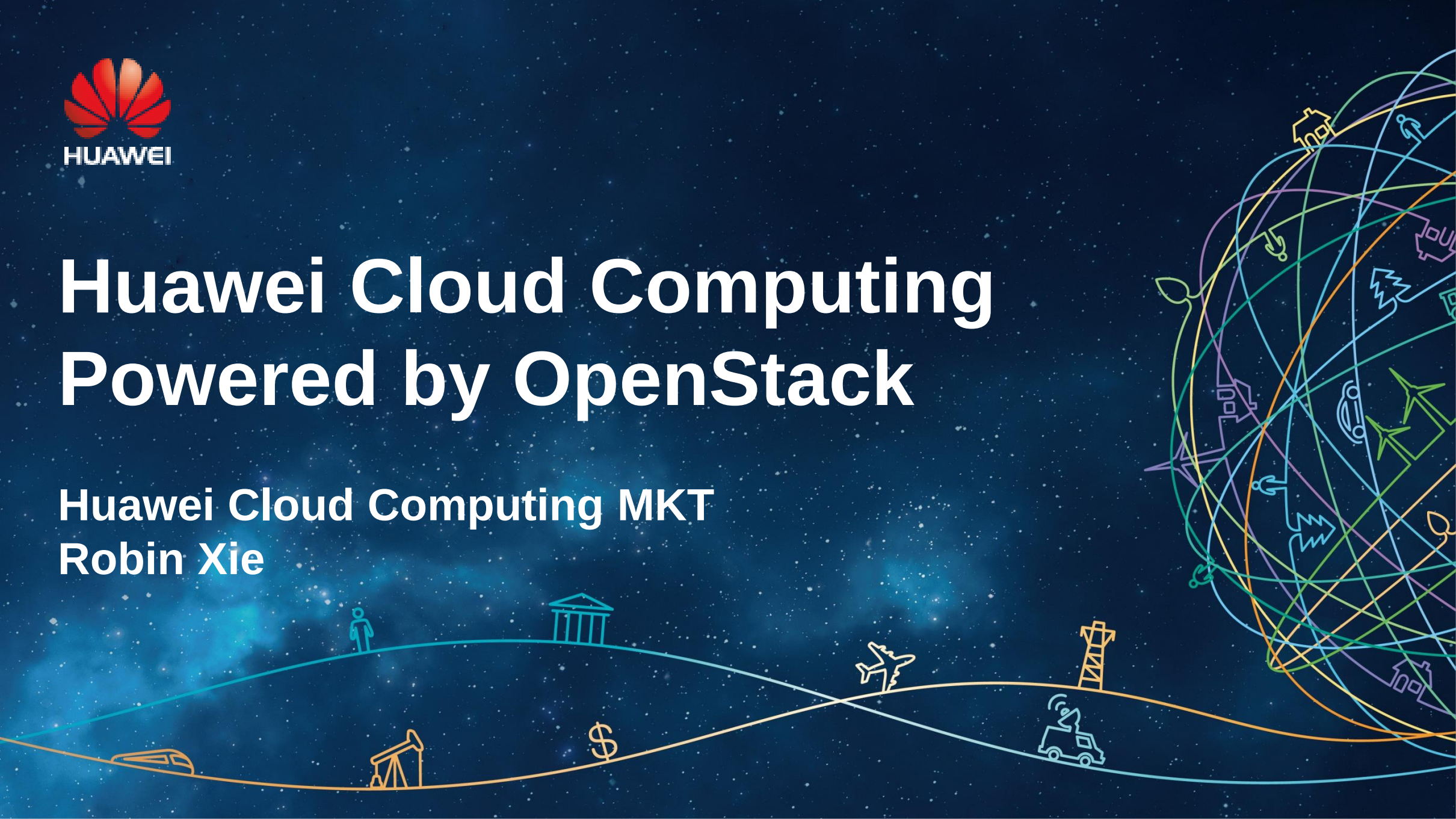

Huawei Cloud Computing Powered by OpenStack

Huawei Cloud Computing MKT
Robin Xie

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1. Huawei OpenStack Journey
2. Huawei OpenStack Solution and Product
3. Huawei OpenStack Case Study

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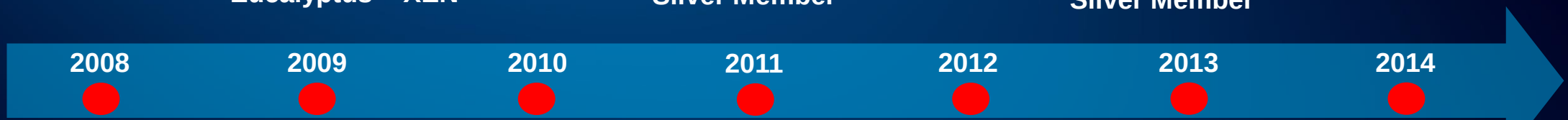
Huawei Cloud Embraces Open-Source



2008
Cloud R&D Team Formed

2009
Cloud OS1.0 Based on Eucalyptus + XEN

2010
Stepped into Hadoop Community and actively contributed

2011
The Apache Software Foundation Silver Member

2012
- BigData Solution Based on Hadoop
- The Linux foundation Gold Member
- Stepped into OpenStack+KVM

2013
- The OpenStack Foundation Gold Member
- OpenDaylight Project Silver Member

2014
- FusionSphere5.0 Based on OpenStack+KVM
- Open Compute Project Silver Member

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Actively contribute and feedback

OpenStack Juno Release:

- Cloud datacenter and NFV scenarios: incubated two projects **"(Compass)" + "Openstack cascading"**
- **Blueprints proposed : 116 , Rank : 2nd**
- **Blueprints accepted : 25 , Rank : 6th**
- **Resolved Bugs : 91, Rank : 9th**
- **Code Lines : 12424 lines; Rank : 16th**
- **Commits submitted : 133 , Rank : 10th**
- **Reviews : 1068 , Rank : 10th**

Source: http://stackalytics.com/ Dec 3rd, 2014

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Toe in the water

Grizzly release – storage driver

- passive reaction and ride OpenStack wave

Havana release – test water

- Embrace OpenStack as a community member
- Applied and accepted as a new Gold member
- Formed a small but dedicated engineering team to contribute to the overall project
- Significant increase in contribution and ranked 20th on commits
- expand contribution team

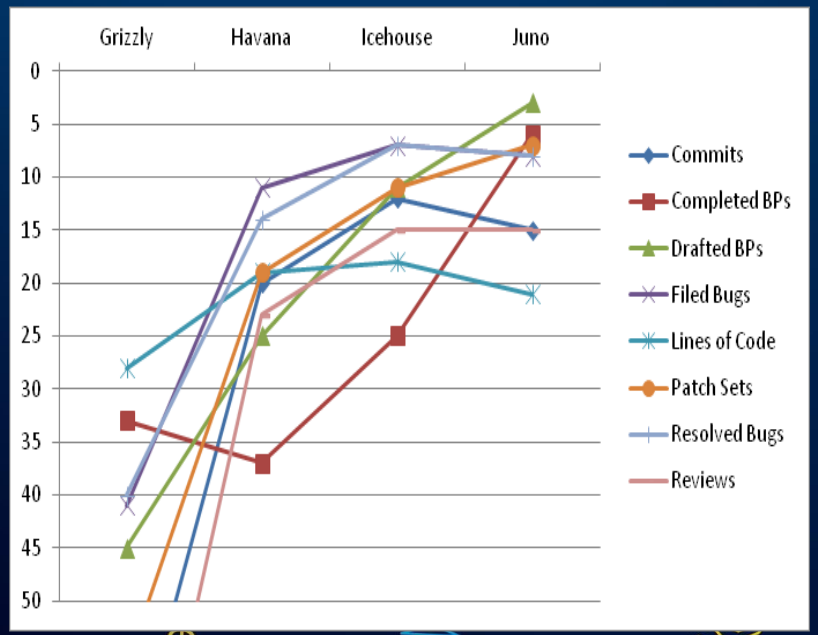
Concentrated Effort

Icehouse Release :

- 2 committers to 30 committers
- 84 commits to 382 Commits, Ranked 20 to 12
- 12k LOC to 24k LOC

Broad Participation

Juno Release



Project Rankings	Ceilometer	Heat	Nova	Cinder	Documents	Keystone	Glance	Neutron
Commits	4	5	9	9	9	9	11	14
Done BPs	7	2	2	1				11
Drafted Bs	1	1	1	1		7	2	5
Emails	13		13	11		14		10
Filed Bugs	3	4	8	5	9	16	8	9
LOC	10	6	13	13	16	11	11	11
Patch Sets	4	4	9	2	10	9	11	9
Person-day	5	6	7	3	10	10		9
Fixed Bugs	2	5	8	23	7	14		12
Reviews	5	5	9	11	21	12		31

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The gap from opensource to commercial deployment

Scope	Functions Not Yet Implemented
Operation and maintenance	1. Automatic OpenStack service deployment 2. Virtual data center (VDC) management 3. VM-based deployment of applications 4. Hardware and virtual resource management 5. Plug-and-play capacity expansion 6. Upgrade and rollback
Service continuity	1. Real-time application fault detection 2. Application backup and disaster recovery 3. OpenStack and application fault detection and recovery
Expansibility	1. Test for a resource pool containing more than 1500 hosts 2. Multiple data centers
Performance	1. Data-plane application virtualization 2. VM internal communication performance 3. Storage performance
Integration	1. Multi-vendor integration 2. Enterprise-level authentication and integration
Network management	1. Virtual topology management 2. Physical and logical topology mapping

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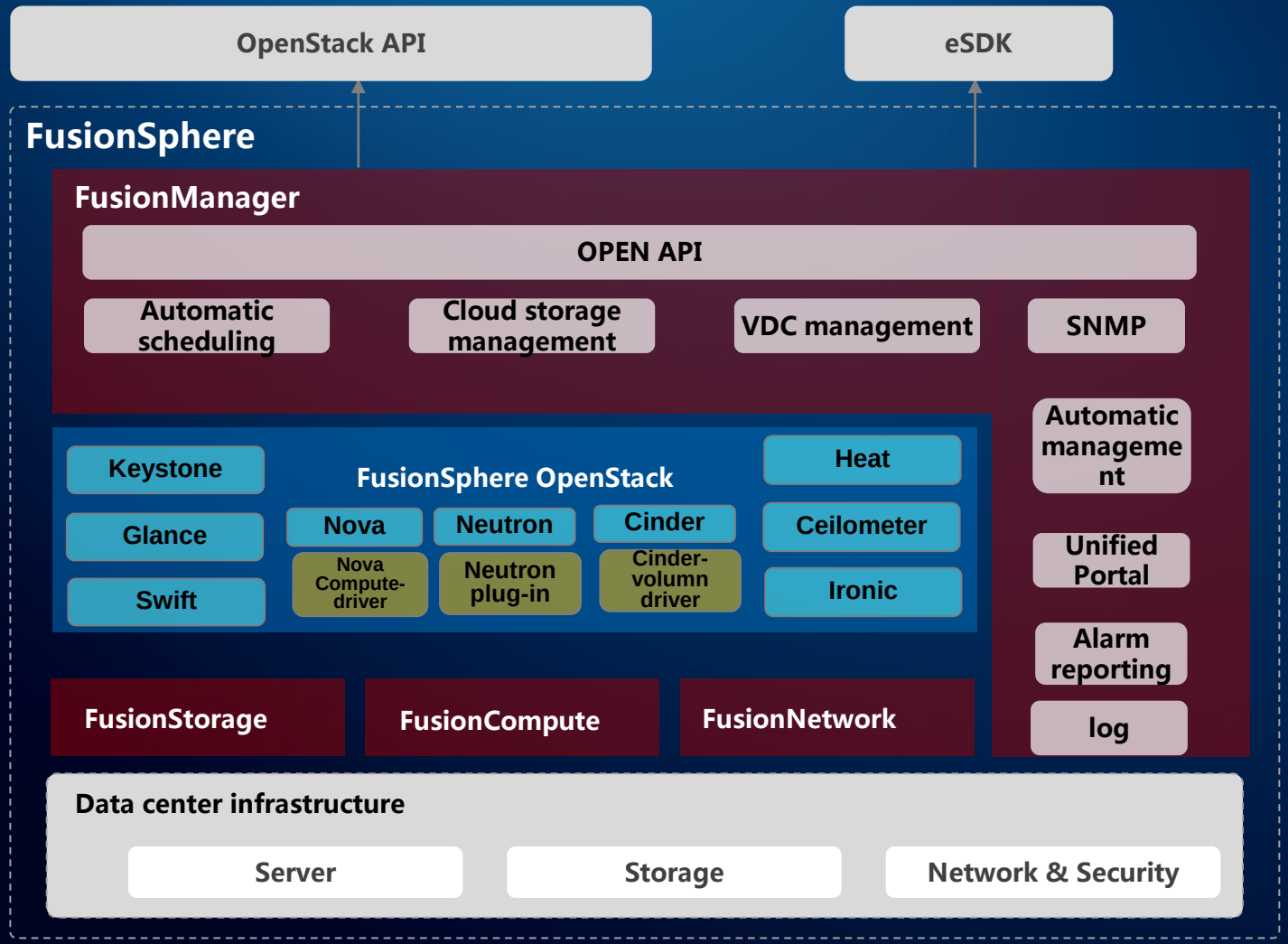
FusionSphere: commercial cloud OS based on OpenStack



FusionSphere

Cloud data center

- Openstack-based edition
- Hybrid cloud management
- Hybrid network automatic SDN
- Virtualized antivirus services
- Host disaster recovery
- Massive distributed storage virtualization

Telecom cloud

- NFV
- High performance , low latency virtualization
- Telecom affinity scheduling
- MANO

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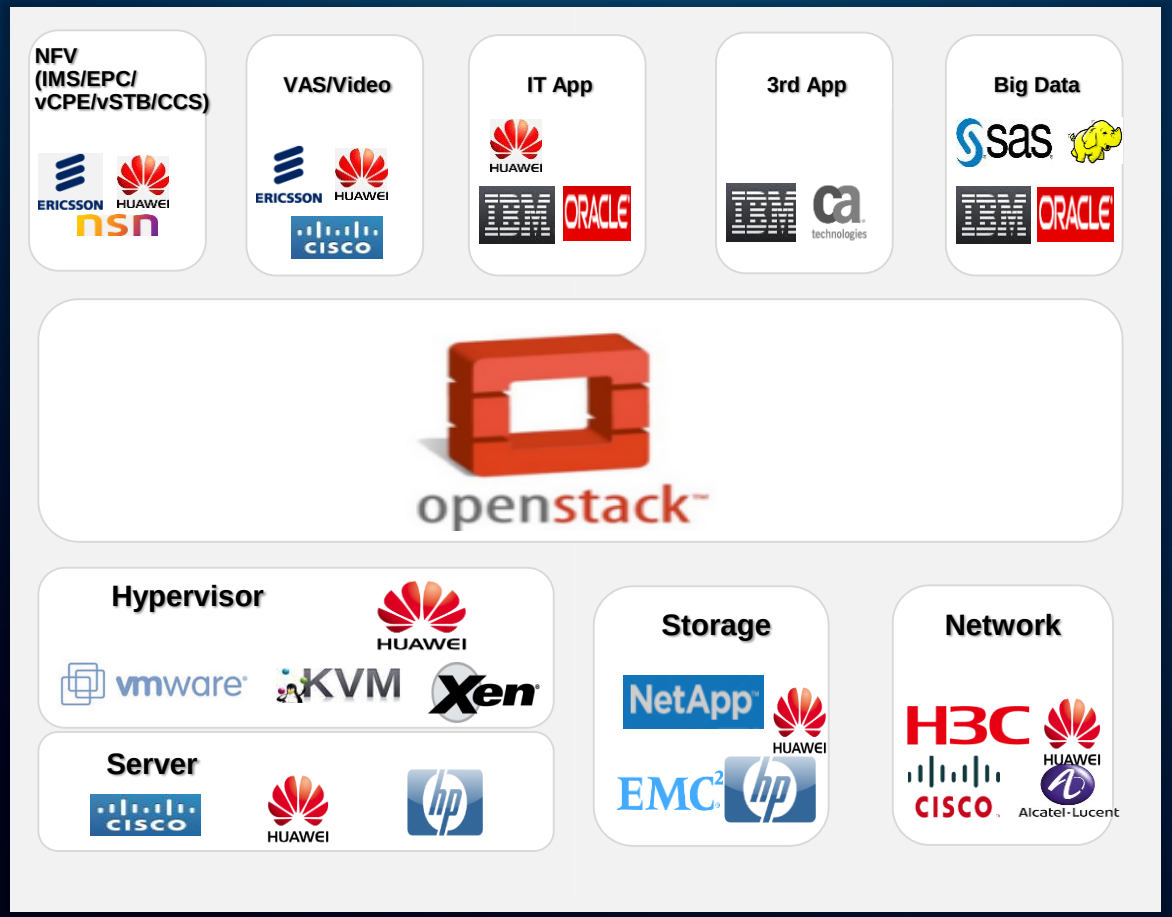
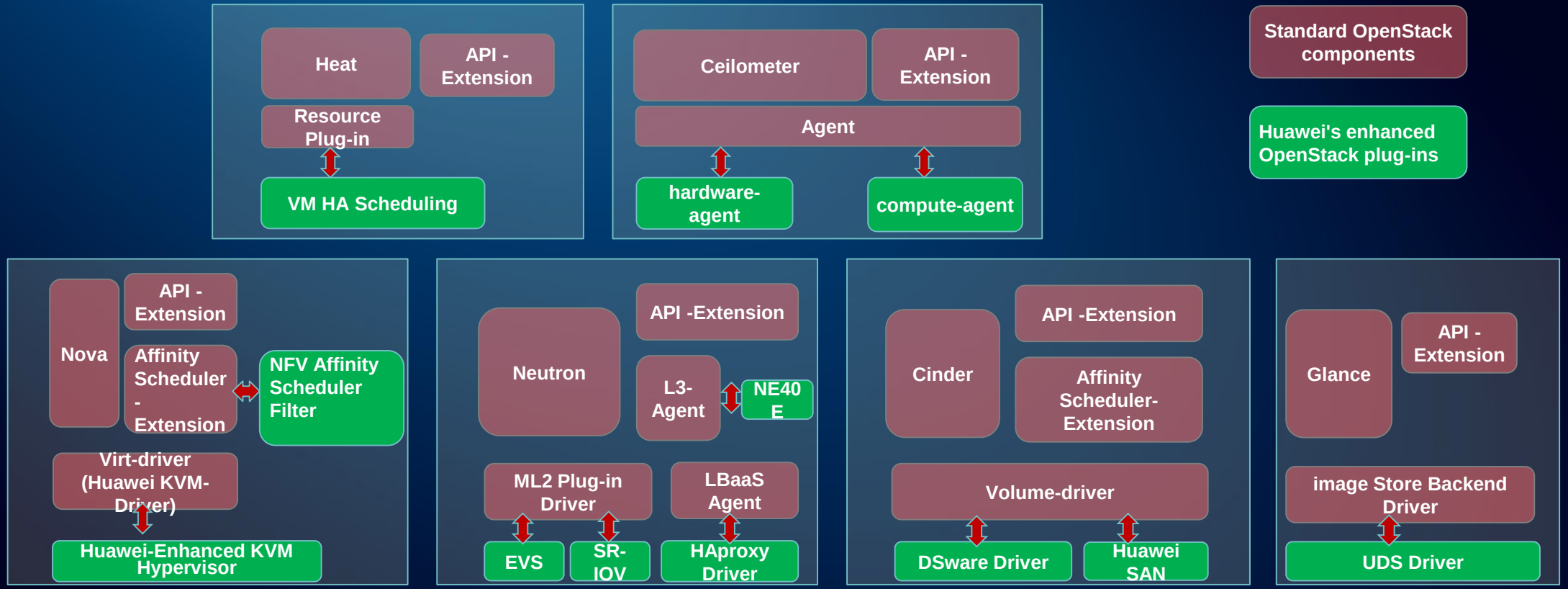
FusionSphere: Open and compatible



OpenStack Gold Member

- **Standard OpenStack APIs**
  - ✓Developed based on native OpenStack APIs.
  - ✓Quickly adapts to new OpenStack versions.
- **Support for third-party products**
  - ✓Supports the OpenStack community ecosystem chain.
  - ✓Supports heterogeneous hypervisors and hardware devices.
- **SOA-based decoupling architecture**
  - ✓Computing, storage, and network resources are decoupled from each other.
  - ✓A resource pool can consist of resources from different vendors.

FusionSphere: enhanced



Orchestration&Management

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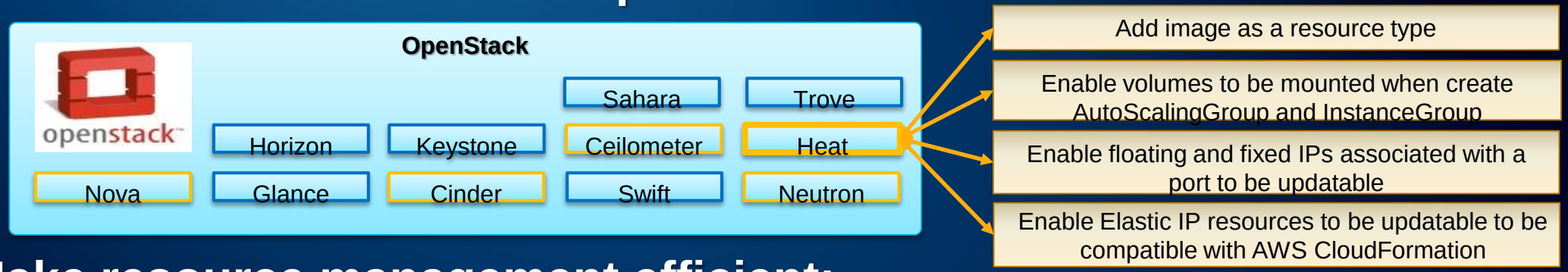
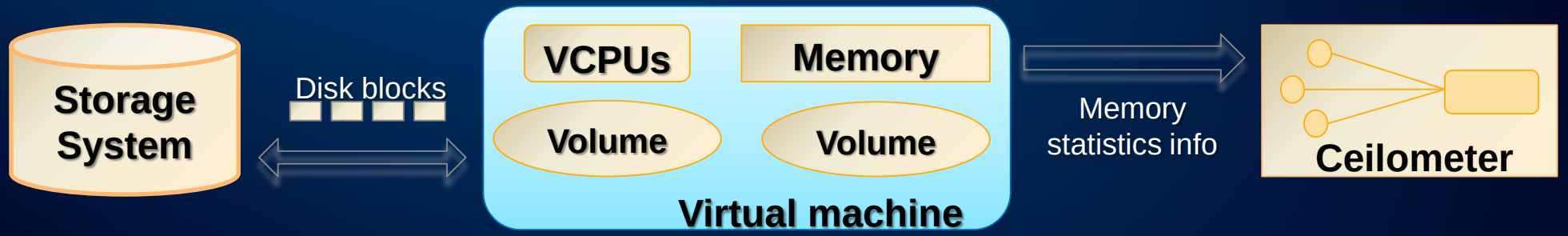
Management&Orchestration

Make resource orchestrator powerful:



Make resource management efficient:



Make orchestration and management friendly

work with the community to maintain and refine existing APIs to better address user requirements
——Nova(VM), Heat(Event)

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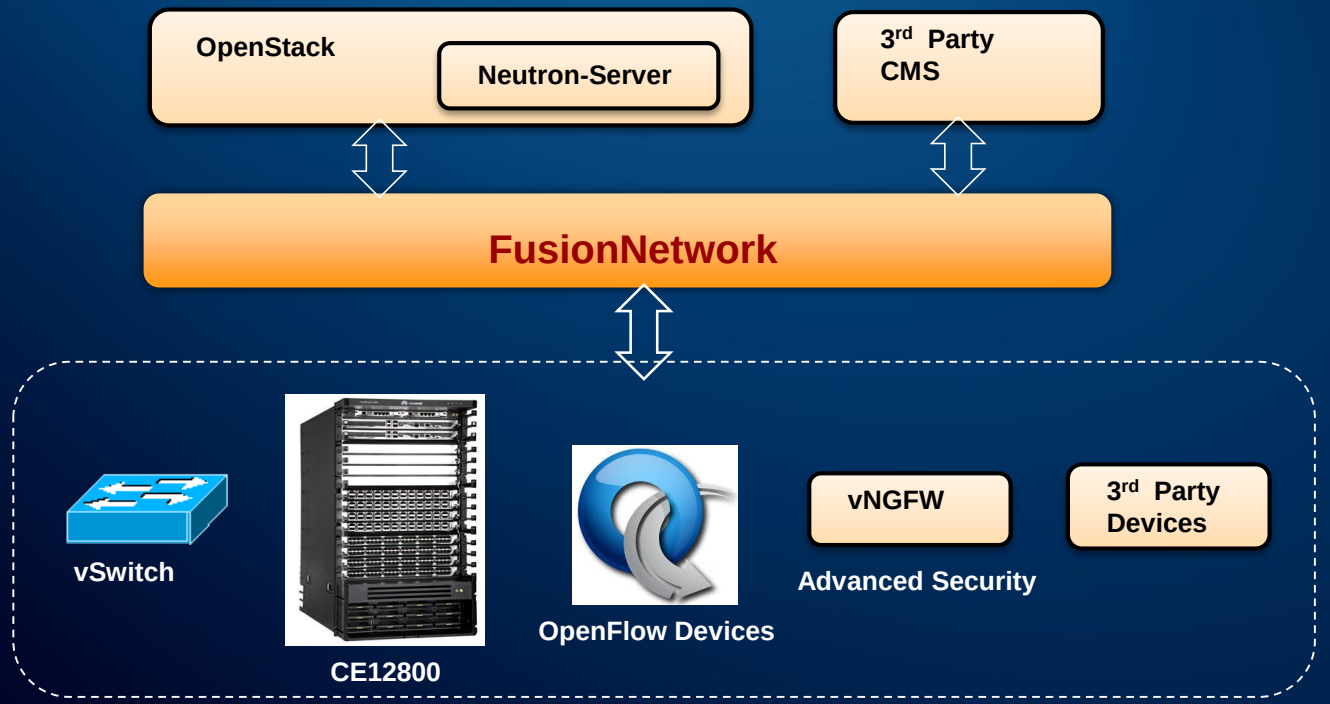
Network

FusionNetwork ：Born for Cloud & OpenStack Affinitive

- For NFV and large scale DC, customer needs a reliable & powerful OpenStack network;



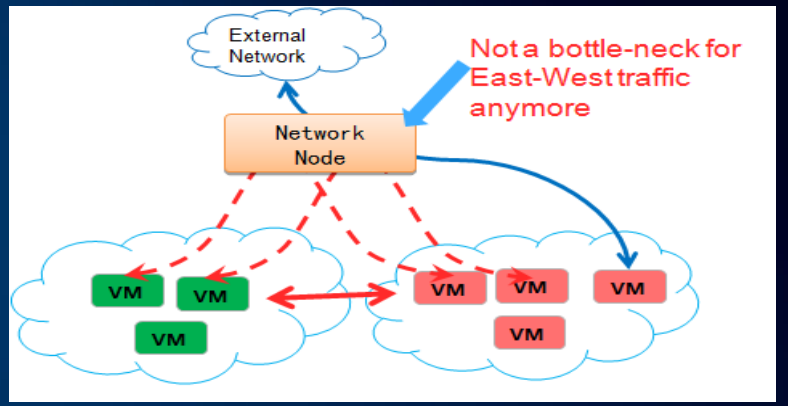
Key Values

- SDN Enabled
- OpenStack Integrated
- Vendor Lockin-free
- Reliability
- High Performance
- Scalability
- Agile Service Delivery
- Automation

- Actively participate in and contribute to OpenStack Neutron, to make it feature-rich, easy to use and with a high performance.

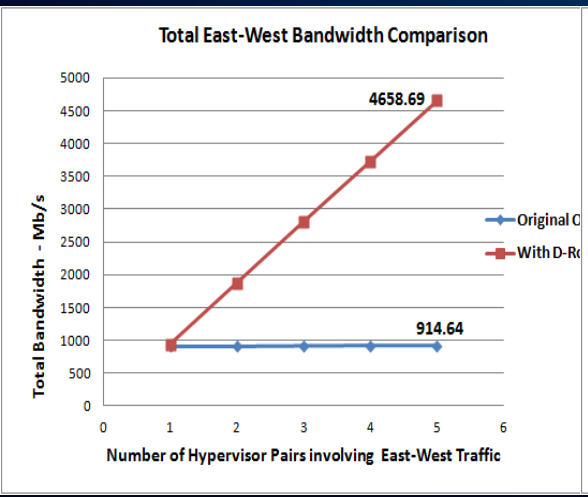
DVR: Essential Neutron Feature in Juno

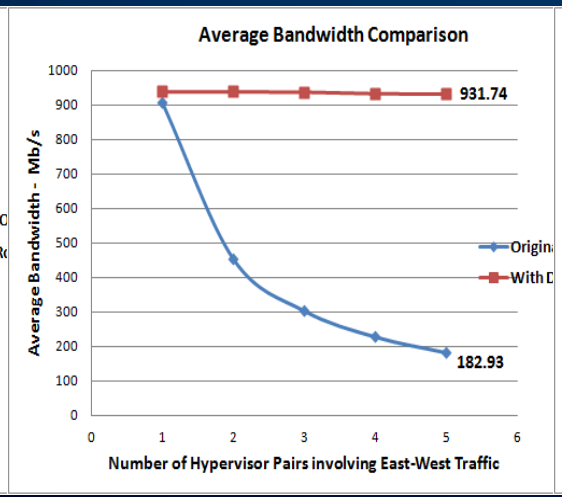
- Routing has always been the pain of Neutron…
  - **Network node is bottle-neck of East-West traffic;**
  - **Tenant VM bandwidth has a sharp decrease under high concurrency;**
  - **Bandwidth competition between North-South and East-West traffic;**
  - **Unnecessary circuitous path, when east-west session happens between two VMs on the same hypervisor;**

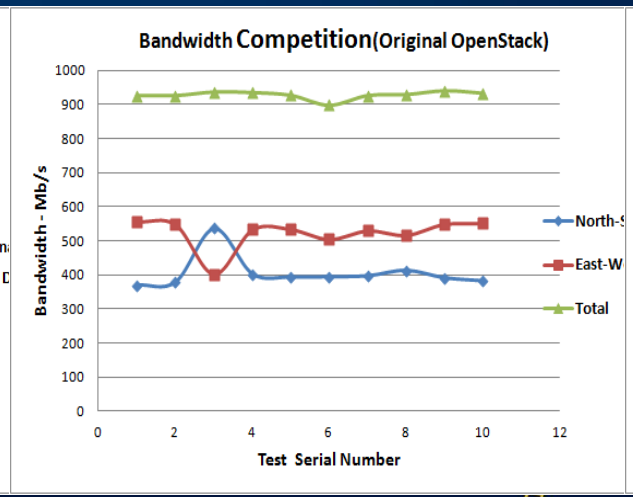


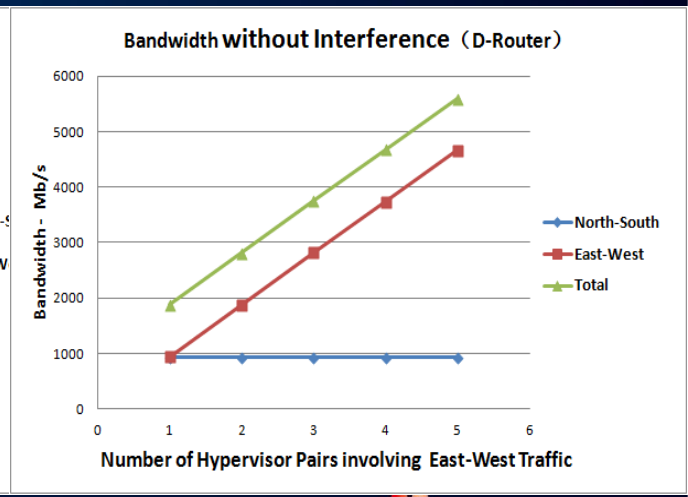
Proposed before Icehouse

- Contribute Proposal & Data, our pursuit of a better OpenStack never ends.









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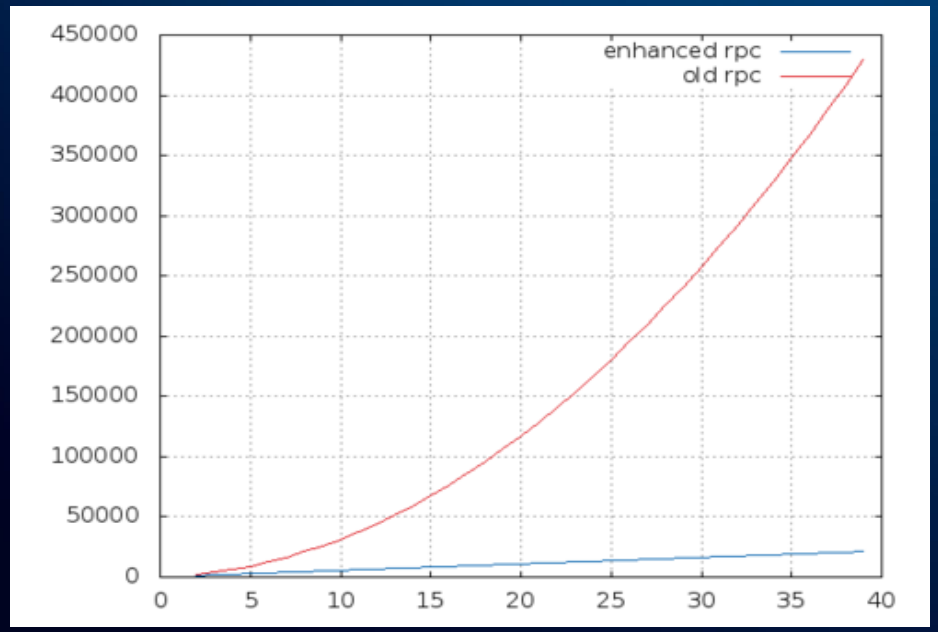
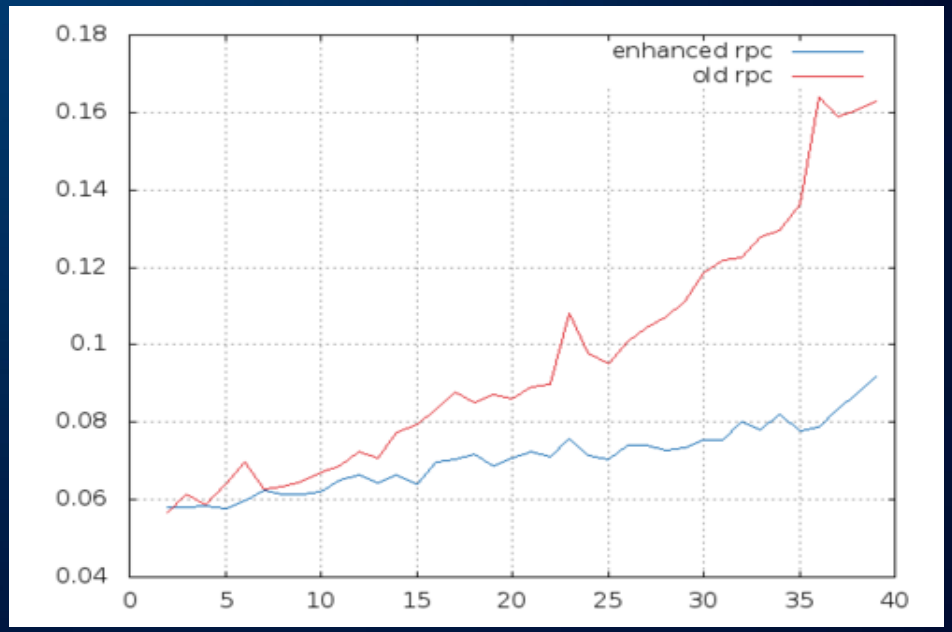
Security Group: Dramatic Performace Optimization in Juno

- SG is so popular, but users met losts of issues in large scale.
  - **Giant SG message between Neutron-Server and Agent ， > 20M-600M is observed;**
  - **Very long processing time on both server/agent side， > 60 sec is observed;**
  - **Even a single port changes, giant MSG and long-time processing is triggered;**
- Made great efforts to build a scale SG service, without above issues



Message size (Y) vs. Number of ports (X)



RPC execution time in seconds (Y) vs. Number of ports (X)

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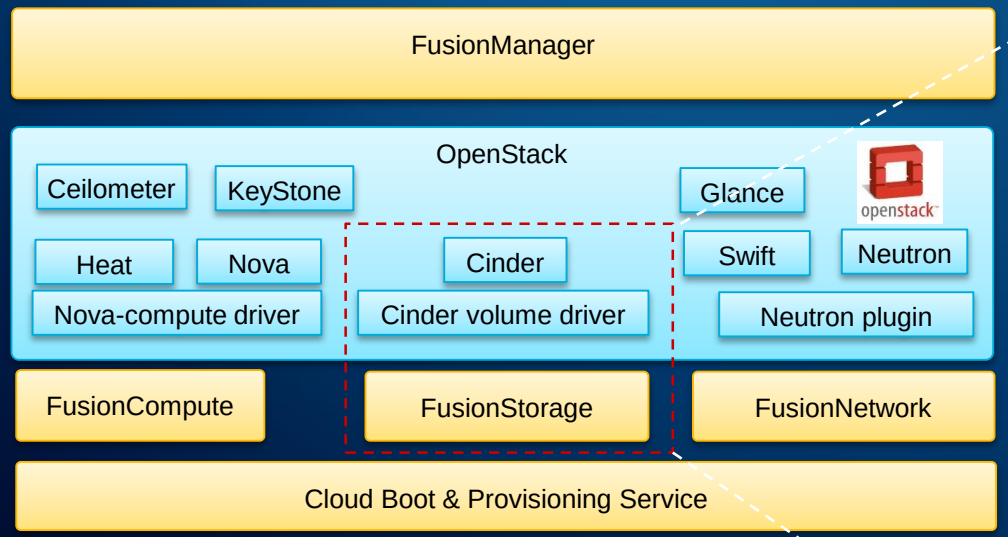
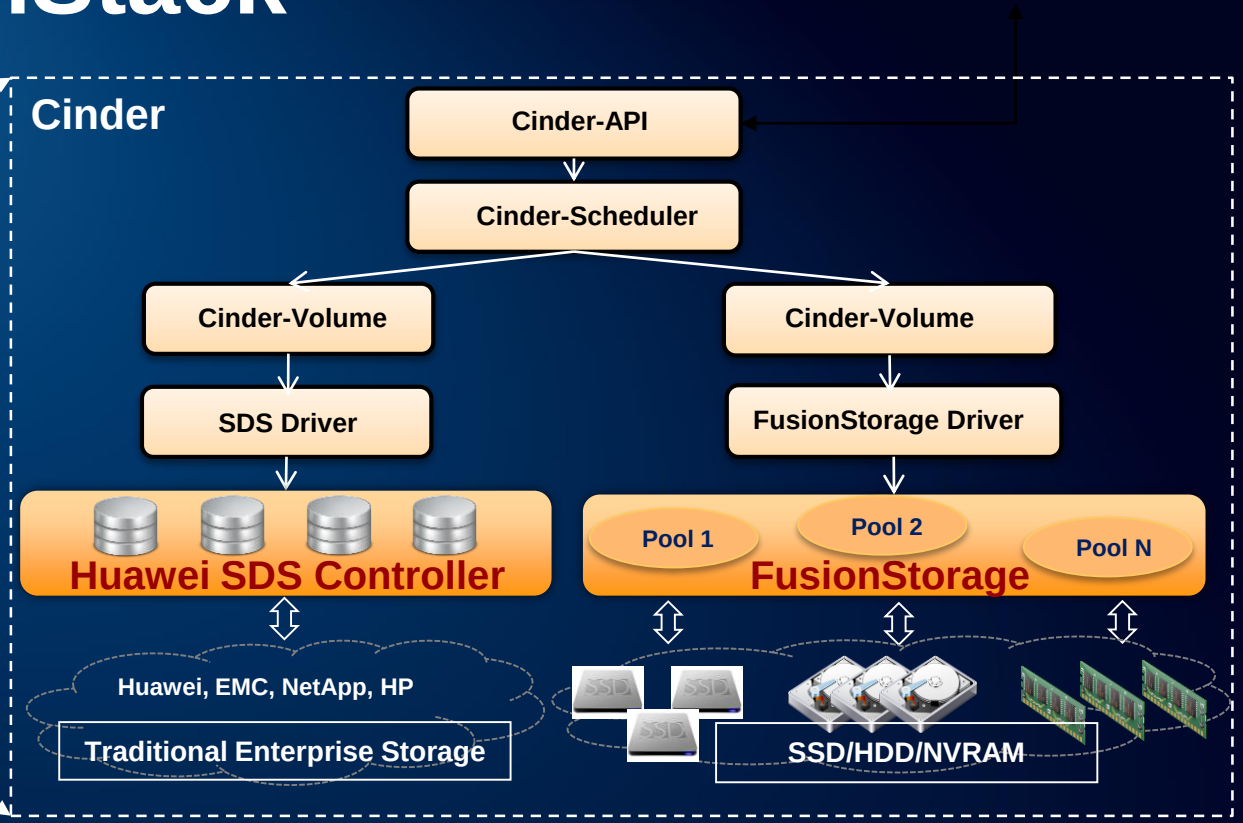
Storage

Huawei Storage & OpenStack





FusionStorage

Success case

中国电信 CHINA TELECOM

Scaling cost: ↓ 20%;
I/O: ↑ 3 times

INFOCAST The Leading Source

Transaction Capability
↑ 20 times
Transaction time:
↓ 90%

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OpenStack Cascading

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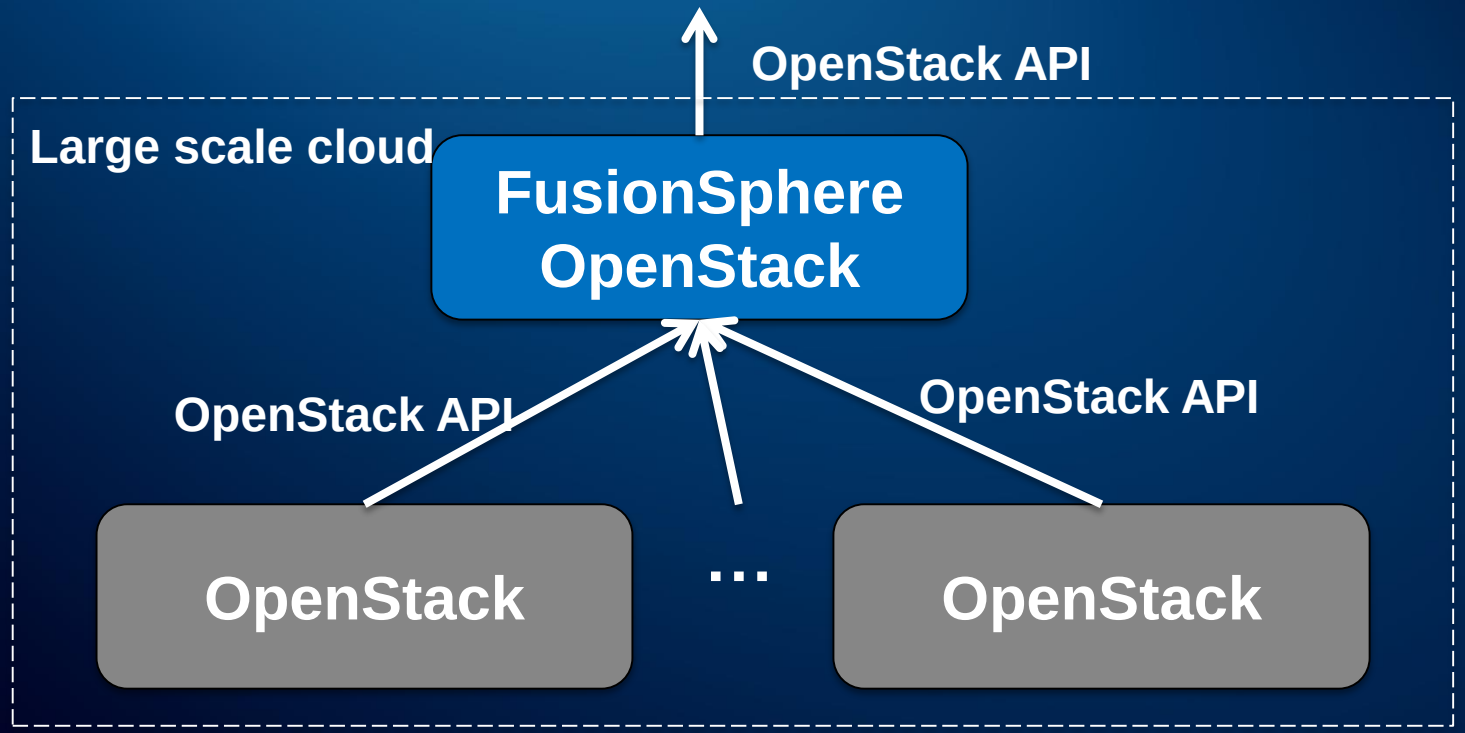
FusionSphere OpenStack Cascading: Massive Scalability



Cascading OpenStack

Cascaded OpenStack

Cascading OpenStack:
Provide API, schedule and orchestrate cascaded OpenStacks

Cascaded OpenStack:
Provision the VM, Volume and virtual networking resources

Highlights:

- **Massive scalability out to 100 DCs with 1 million VMs**
- **Fault isolation**

Customer benefit:

- **Enable multi-site cloud deployment**
- **Make ultra-large scale cloud feasible**

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FusionCube: Hyper Converged Appliance

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All in One, Making Everything Easier

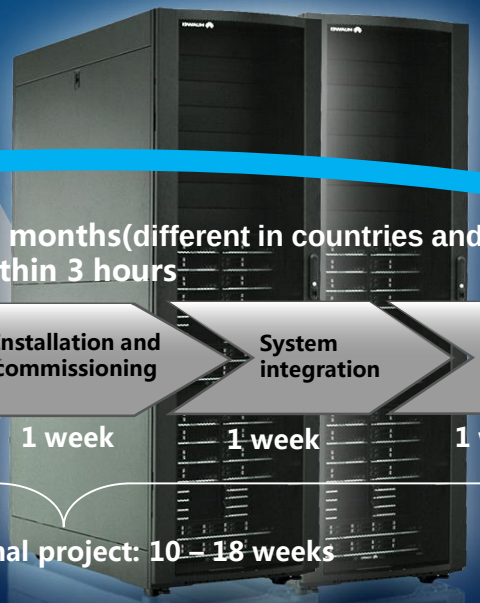

SSD


Computing


iNIC


Network

FusionCube



FusionCube: delivered within 1 months(different in countries and regions) + installed and commissioned within 3 hours

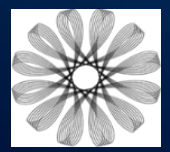
Project initiation	Solution design	Procurement from different vendors	Batch delivery	Installation and commissioning	System integration	Platform setup	Comprehensive commissioning	Application deployment	Service rollout
GPU	1-3 weeks	1-3 weeks	4-8 weeks	1 week	1 week	1 week	1 week	1 months	
			Storage						

Traditional project: 10 – 18 weeks

- End-to-end software and hardware optimization, ensuring compatibility
- Integratio efore delivery,
- Smooth expansion
- Built-in security mechanism


FusionManager software


Virtualization software


Distributed storage engine

All in one

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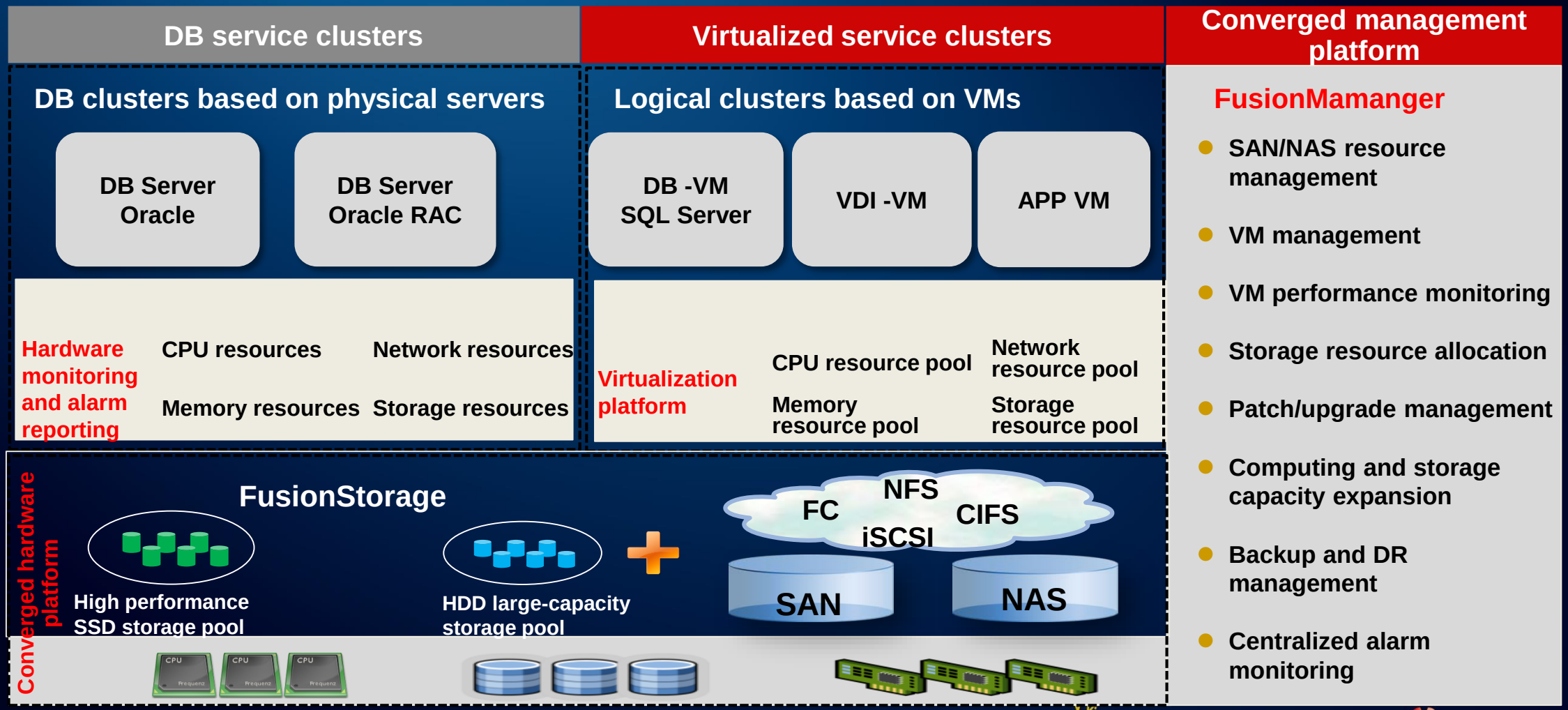
Hybrid Deployment of Virtualization Services and DB Services



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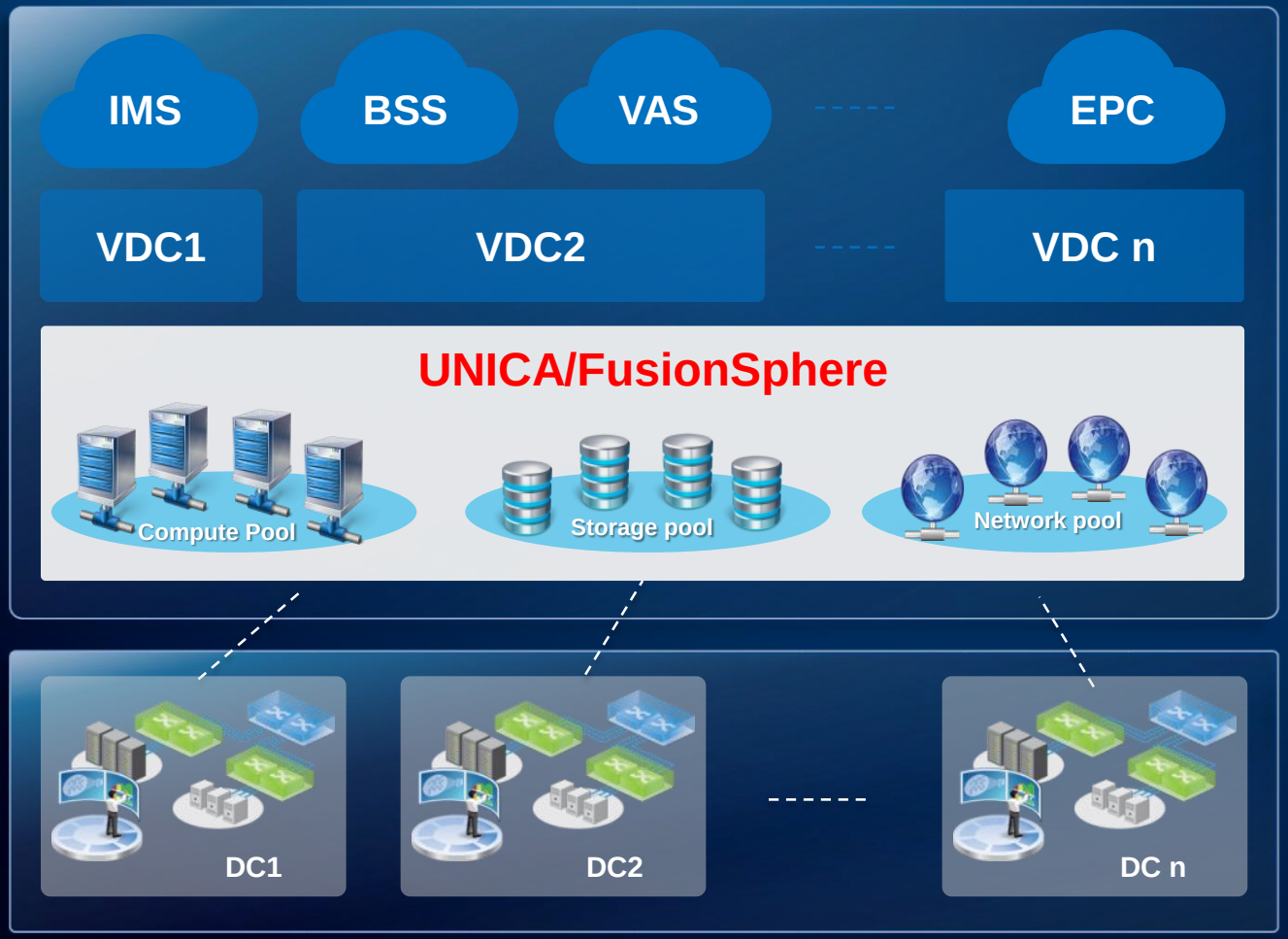
FusionSphere case study: Telefonica UNICA INFRA



UNICA
next generation carrier infrastructure

- A cloud reference architecture to bear private cloud , public cloud hybrid, NFV and other services
- Hierarchical, decoupled, modularized and open-source

FusionSphere
UNICA core engine

- Open and distributed architecture to fulfill UNICA requirement
- Carrier-grade cloud OS

Save TCO by 40%

Accelerate service TTM from 3 months to 1 day

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THANK YOU

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