

Endless Possibilities to Your Storage Demands

– Huawei Symantec Storage Solution Briefing



Huawei Symantec

Contents

- **Huawei Symantec SAN Technology Development and Solutions**
- **Unstructured Data NAS Storage Solution**
- **Cloud Storage Solution**



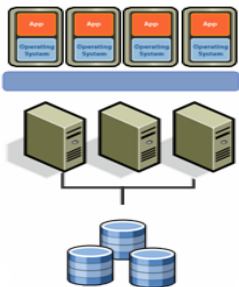
Speaker Background

Chen shaoyuan (Shaoyuan Chen)

- 9 years in storage field, PDT manager
- 6 years working experience in Huawei. Joined Huawei Symantec in 2008
- Specialized at Storage Infrastructure Solution
- E-mail: xxxx@huaweisyntec.com,

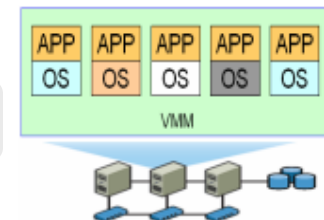


Storage Trends



Data center
virtualization

Storage Virtualization



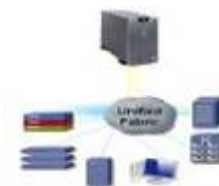
Data Explosion

Expansion On Demand



Easy management

Unified Management

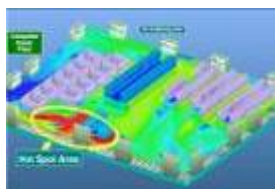
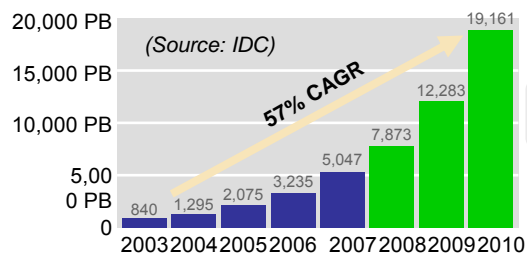


Decrease Opex
and power consumption

Application of SSD



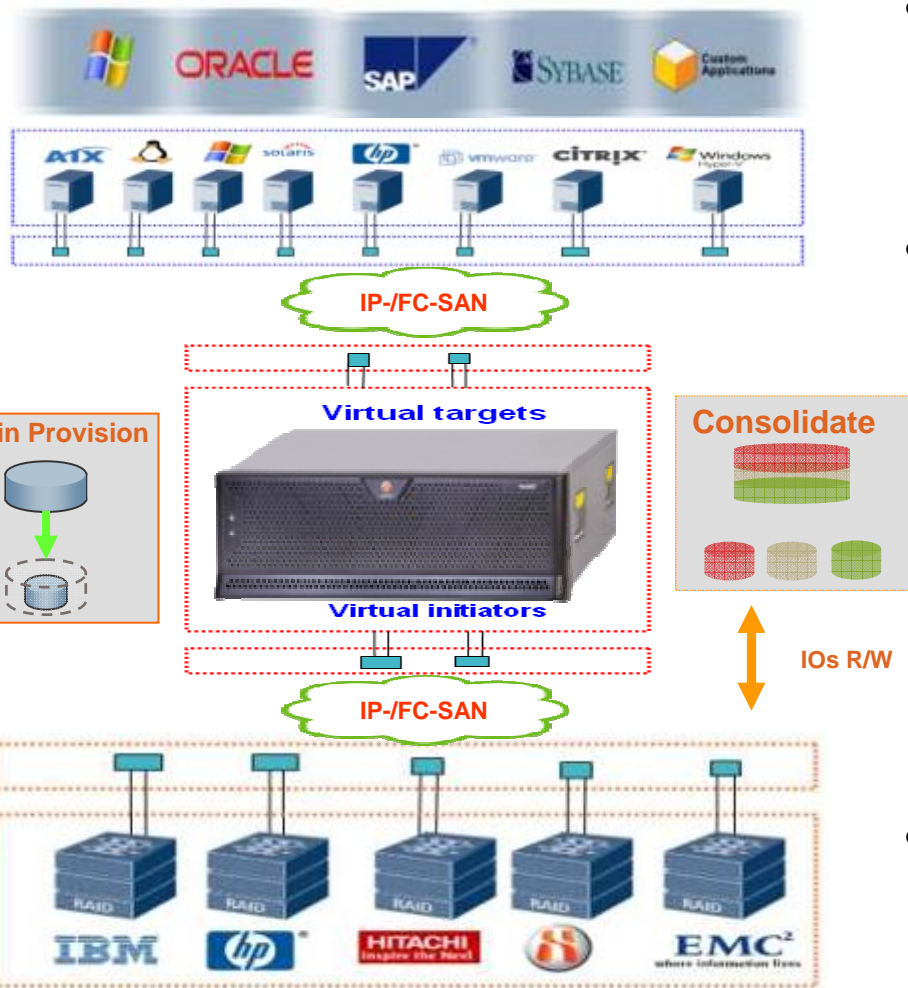
Trends



Virtualization



Consolidation & Thin Provisioning



- **Challenges**

- Difficult to manage, centralize or consolidate heterogeneous storage platform

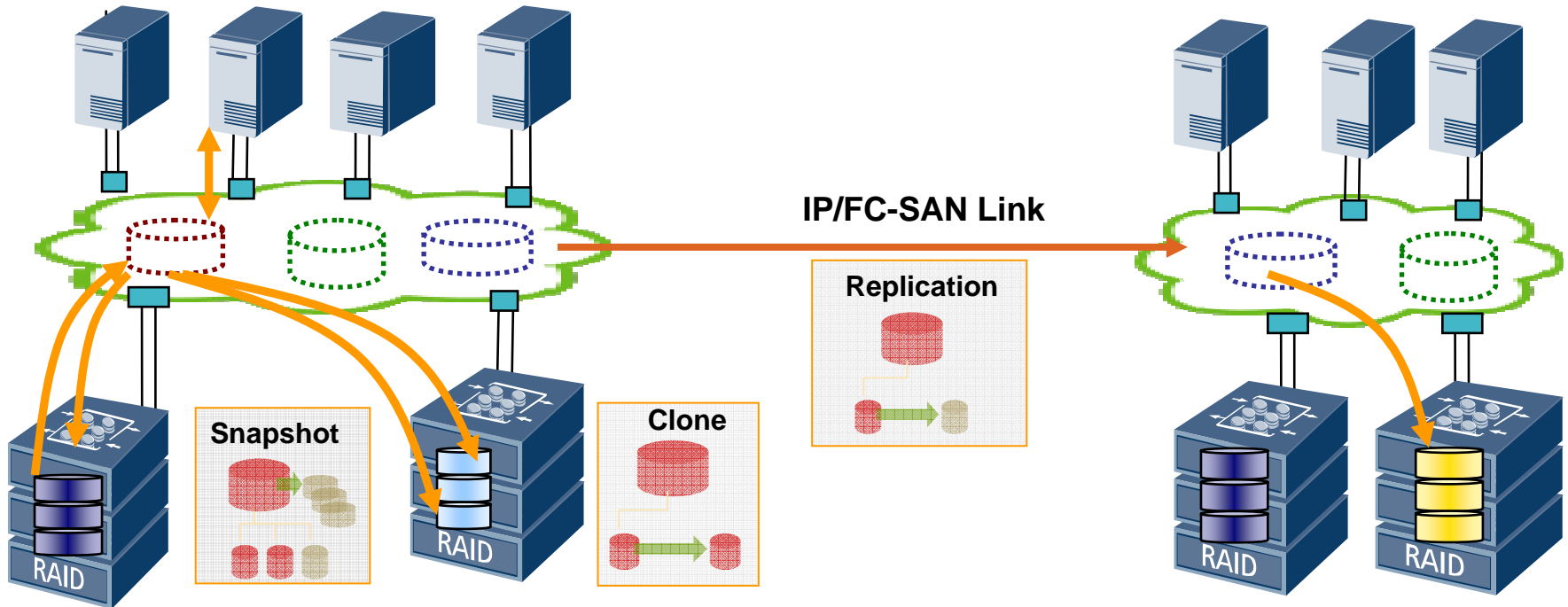
- **Huawei Symantec Solution**

- **Consolidate** physical storage devices across heterogeneous storage platform
 - Simplify volume presentation and management
 - Centralize management control
- **Thin Provisioning**
 - Allow array to “cheat” about the size of a LUN to host through storage virtualization nodes

- **Benefits**

- Reduce TCO
- Improve resource utilization & optimization
- Increase IT Operation Efficiency
- Enhance IT Manageability
- Enhance Green IT

Network-Based Disaster Recovery



–Challenges

- Difficult to manage discover recovery issues across heterogeneous storage platform

–Huawei Symantec Solution

- **Remote Replication**
 - Provide complete I/O-based replication technologies over IP/FC-SAN link
 - » synchronous, asynchronous, and cyclical
 - Key factors: RPO or/and RTO, bandwidth, I/O change rate
- **Virtual Snapshot**
 - Provide point-in-time snapshot for instant data-volume rollback
- **Virtual Mirroring Snapshot or Clone**
 - Provide full volume copy for backup, test, reporting, etc

• Benefits

- Improve SLA
- Meet regulatory requirement
- Improve application availability
- Increase Agility
- Reduce TCO

Expansion On Demand



- 8 controller
- 512G Cache
- 1920 HDD
- 8G FC/ 10GE
- Thin-provisioning, DST.
- online data migration.

Functions

- Modularization , on demand, easy installation
- Automation
- Smoothly expansion (performance ,capacity)

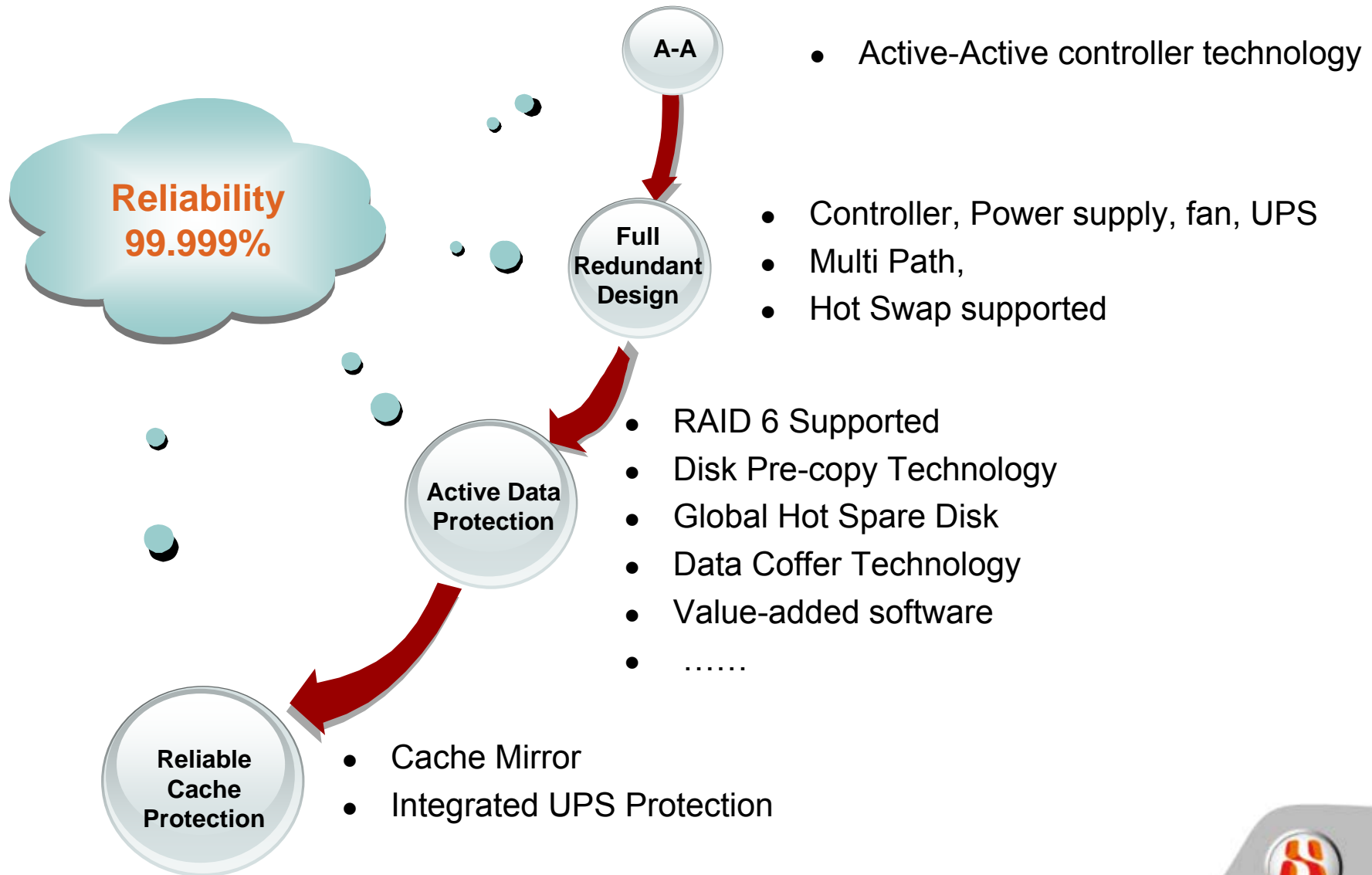
Value

- Initial investment cost down
- Expansion on demand
- Expansion online

Reliability



High Reliability



Green



Green Storage

- **High density design**

- Each Enclosure supports 24 disks, it can save 30% energy per TB.

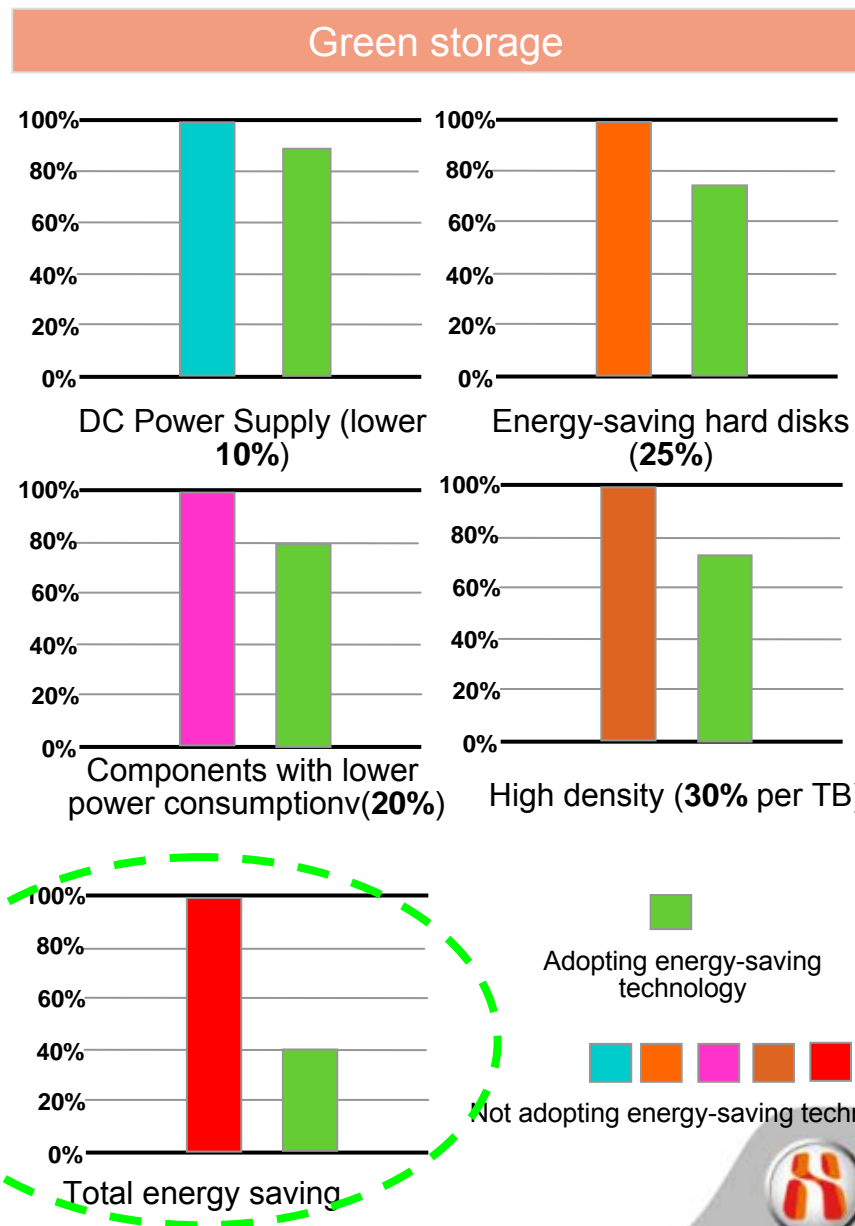
- **Energy-saving technology**

- Spin Down Technology
- Intelligent Fan Adaptive System

- **Green hardware**

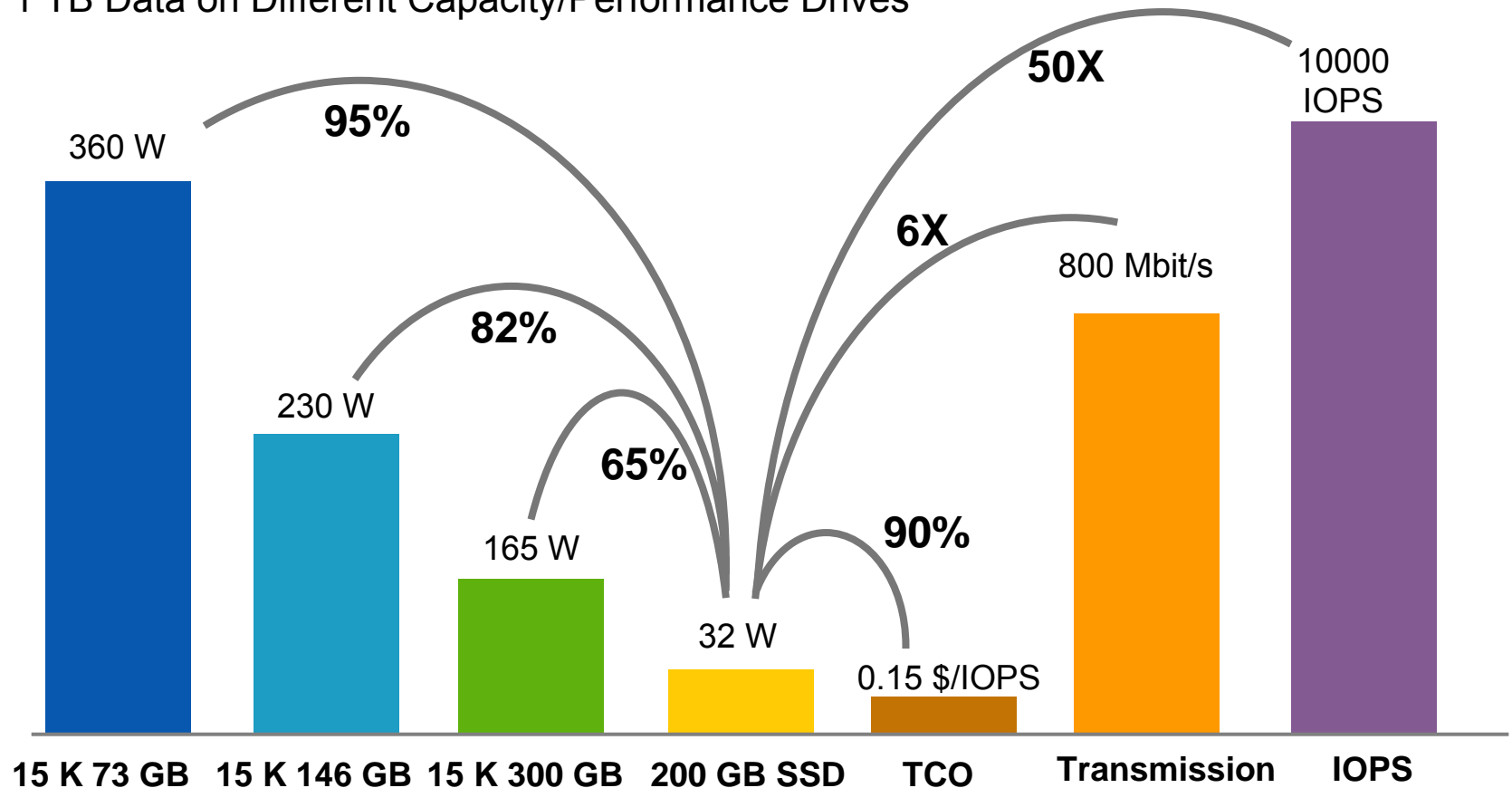
- RoHS standard Compliant,
- **SSD supported**

Total 40% energy saving !



Green SSD

1 TB Data on Different Capacity/Performance Drives



- Reducing the power consumption of systems by 65% to 95%
- Improving IOPS performance by 30 to 50 times and promoting the maximum transmission speed of random access by 6 times under the circumstance of supporting the same capacity
- Reducing TCO by 90% under the circumstance of providing the same performance

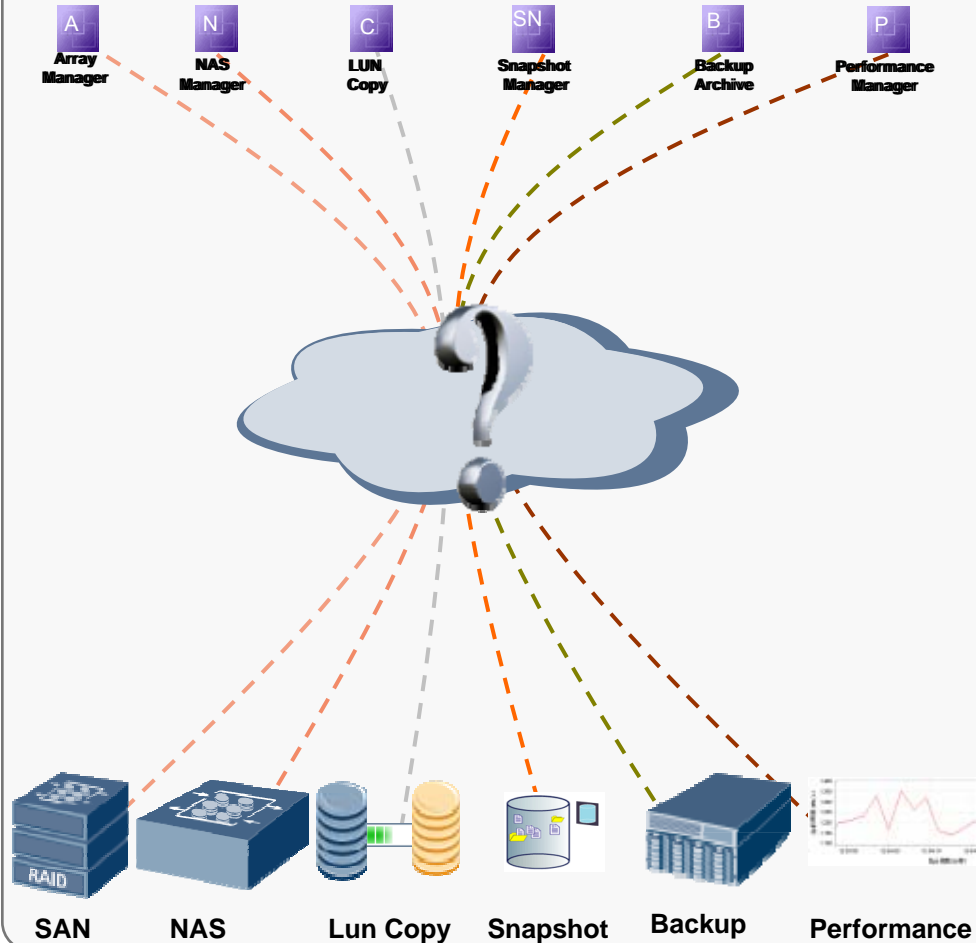


Unified Management



Integrated Storage Management

Various separate storage device management software



Can Do...

➤ Device Management

- ✓ All HS storage including NAS/VTL products

➤ Cloud Storage Management

- ✓ Cloud software & Hardware

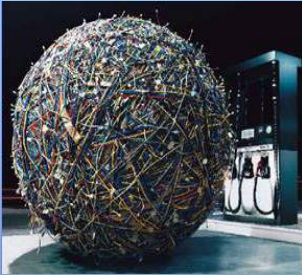
➤ Network Management

- ✓ Ethernet & FC Switches



Summary

Virtualization



- Heterogeneous Storage Consolidation
- Storage Tiering
- Thin-provisioning

Reliability



- RAID 6 protection
- Pre-copy technology
- Cache mirroring
- Integrated UPS
- Data Coffer

Green



- Green Architecture
- Disk Spin-down Technology
- SSD

Management



- Unified management platform
- Quick operation response
- Easy to use

Help customers reduce TCO!

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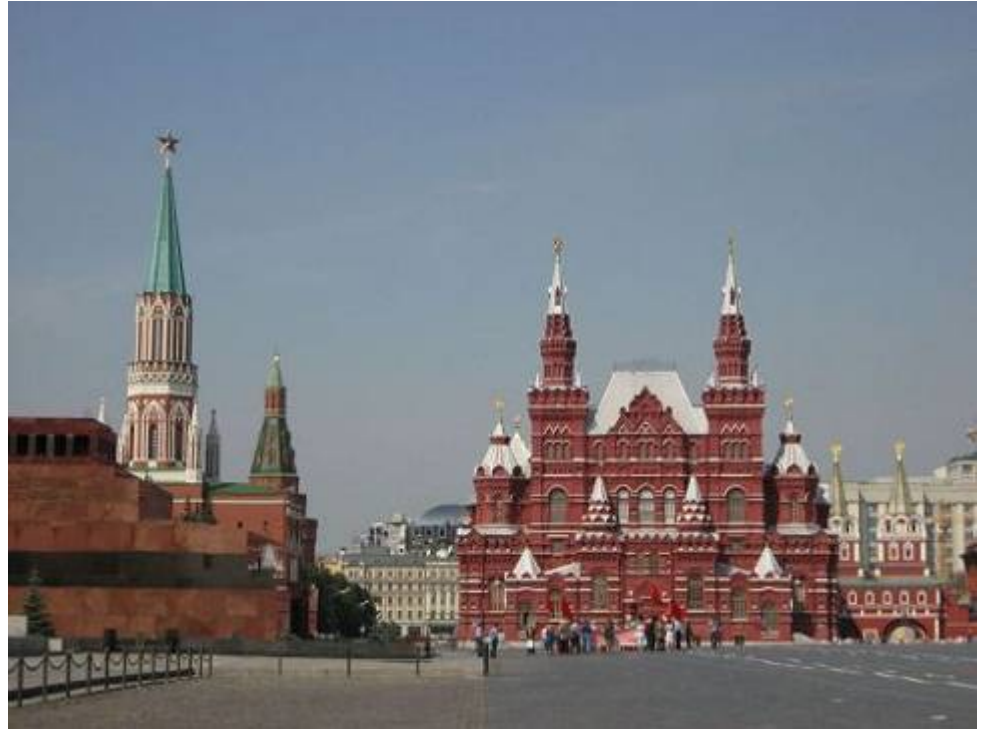
Speaker Background

He fei (Fei He)

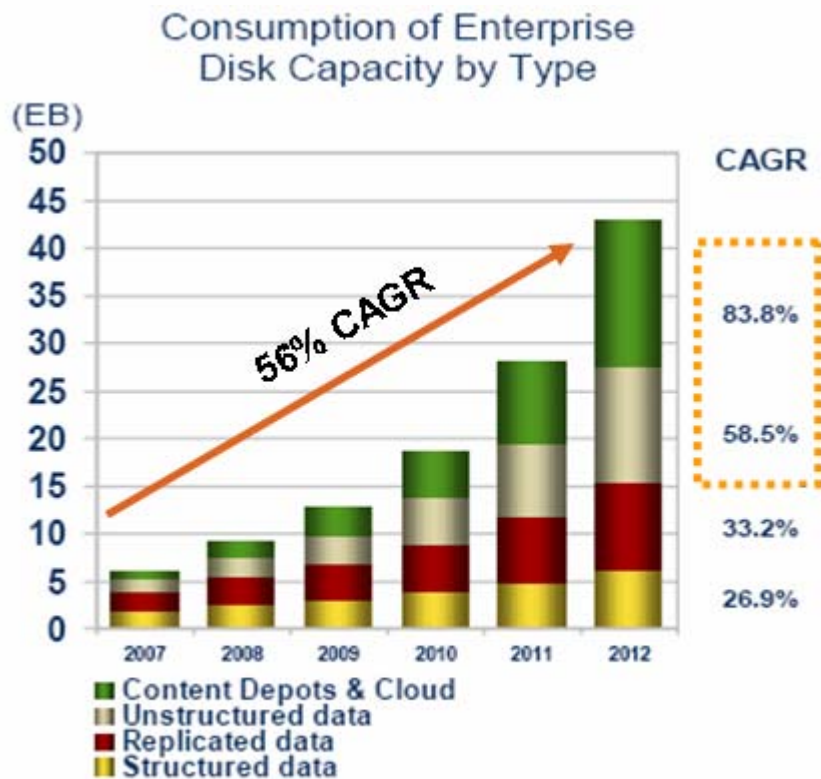
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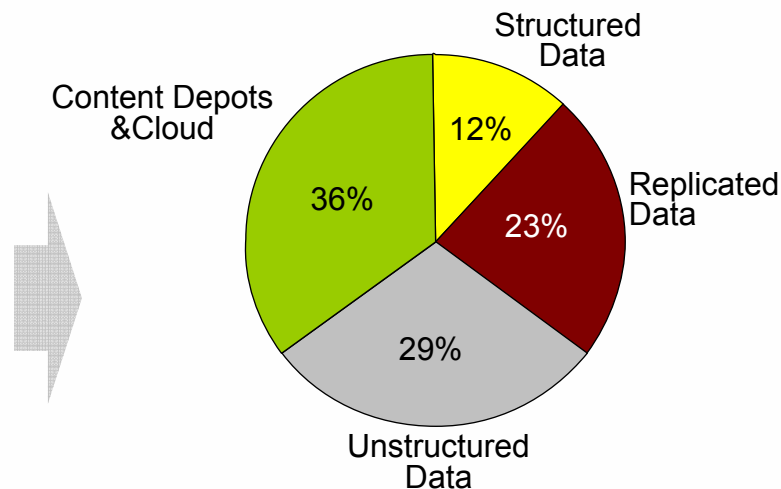
Why Clustered NAS?



Fast Booming of Unstructured Data

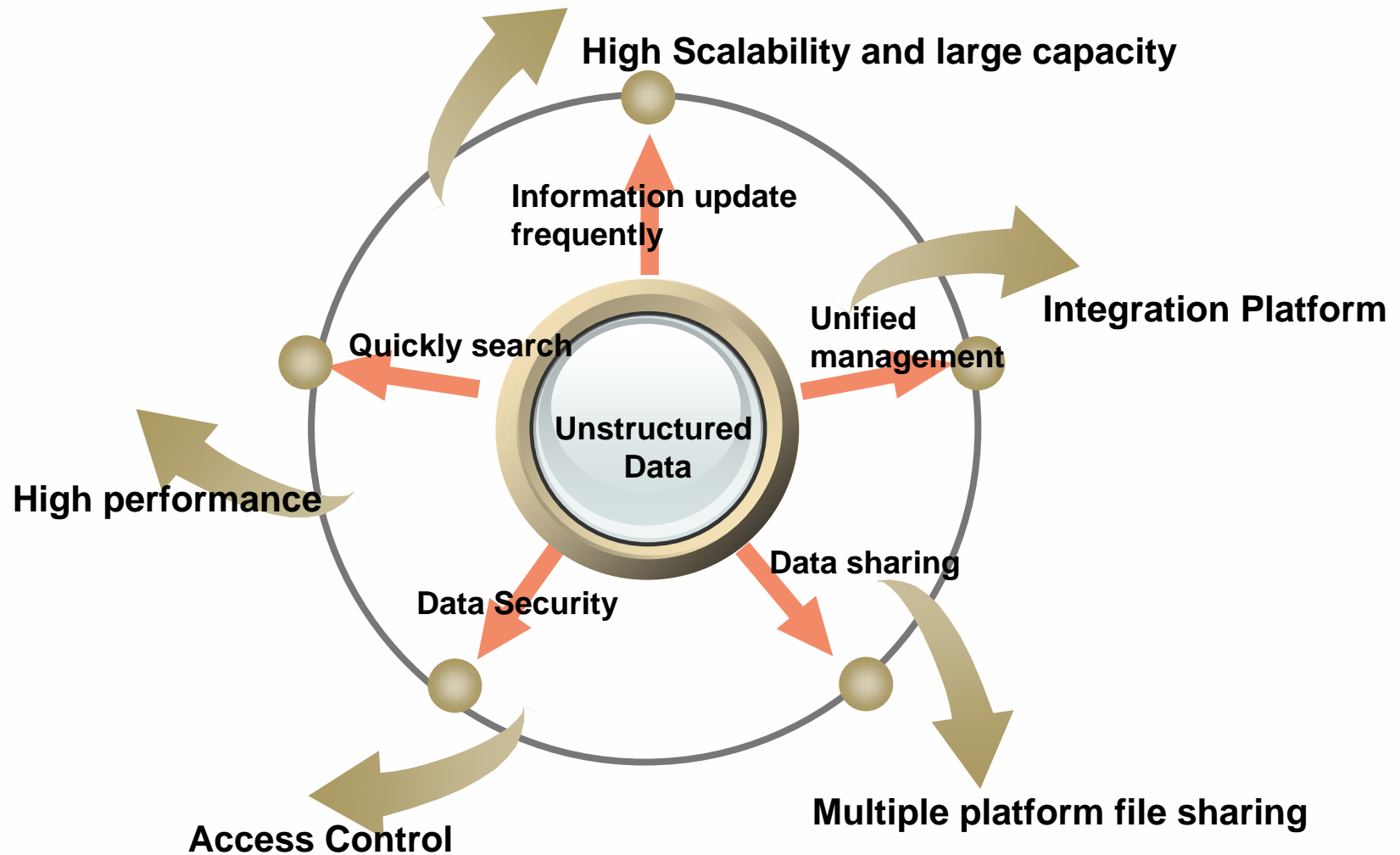


Source: IDC, 2008



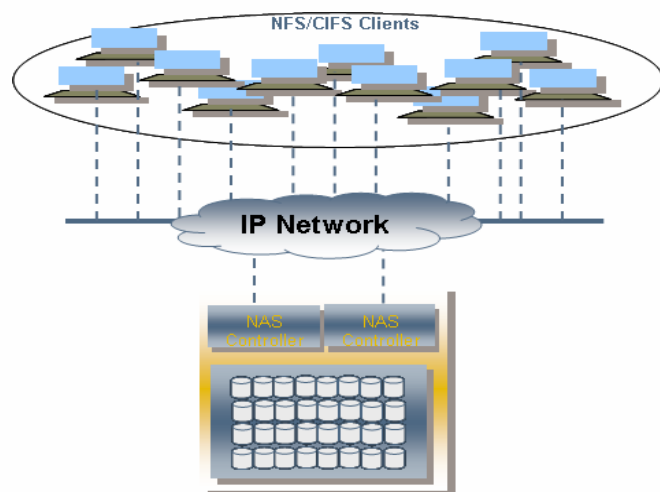
The growth rate of structured data is 26.9%; the growth rate of unstructured data is 58.5%; The unstructured data is occupied about 65% in the whole data storage.

The Relationship of Unstructured Data and clustered NAS

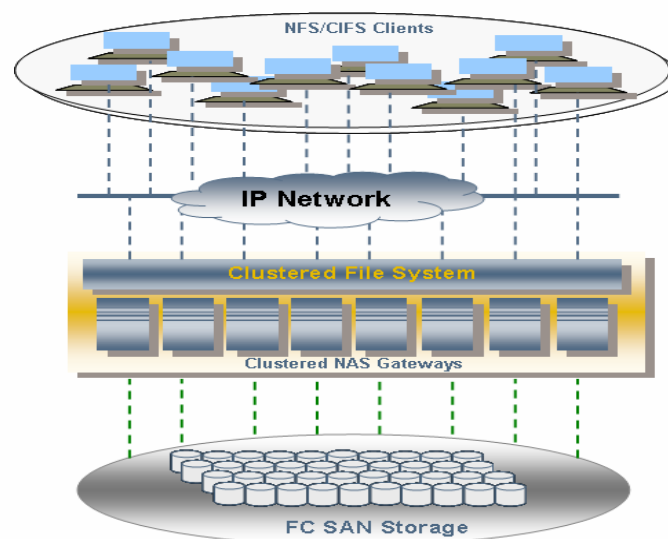


Clustered NAS Benefits

- Traditional NAS is to connect storage devices via a standard network topology, connect directly with the network without server .
- Clustered NAS technology is the technology expansion of traditional NAS
- With high-performance, low latency and clustered computing technology, to achieve the storage performance, capacity, and on-line expansion and make maximum return on investment



Traditional NAS



Clustered NAS

I5 龚春平
I00102797; 14.12.2009

N8000 Overview



N8000 Overview

Feature Highlights

- High performance with up to 170,000 OPS
- Dynamically scalable storage up to 15 PB for a single namespace
- Unified FC SAN, IP SAN and NAS
- Dynamic tiered storage across SSD, FC, SAS and SATA
- High efficiently data protection and disaster recovery (snapshot, backup, replication)

Item	N8300	N8500
Num of NAS engine	2-6	4-16
Clustering mode	Active-Active	
Cache(Max.)	48GB	256GB
Interface of network	36 GbE	96 GbE
Max. capacity	7.68PB	15PB
Disk type	SSD,SAS, FC, SATA	
RAID	RAID 0, 10, 5, 6	

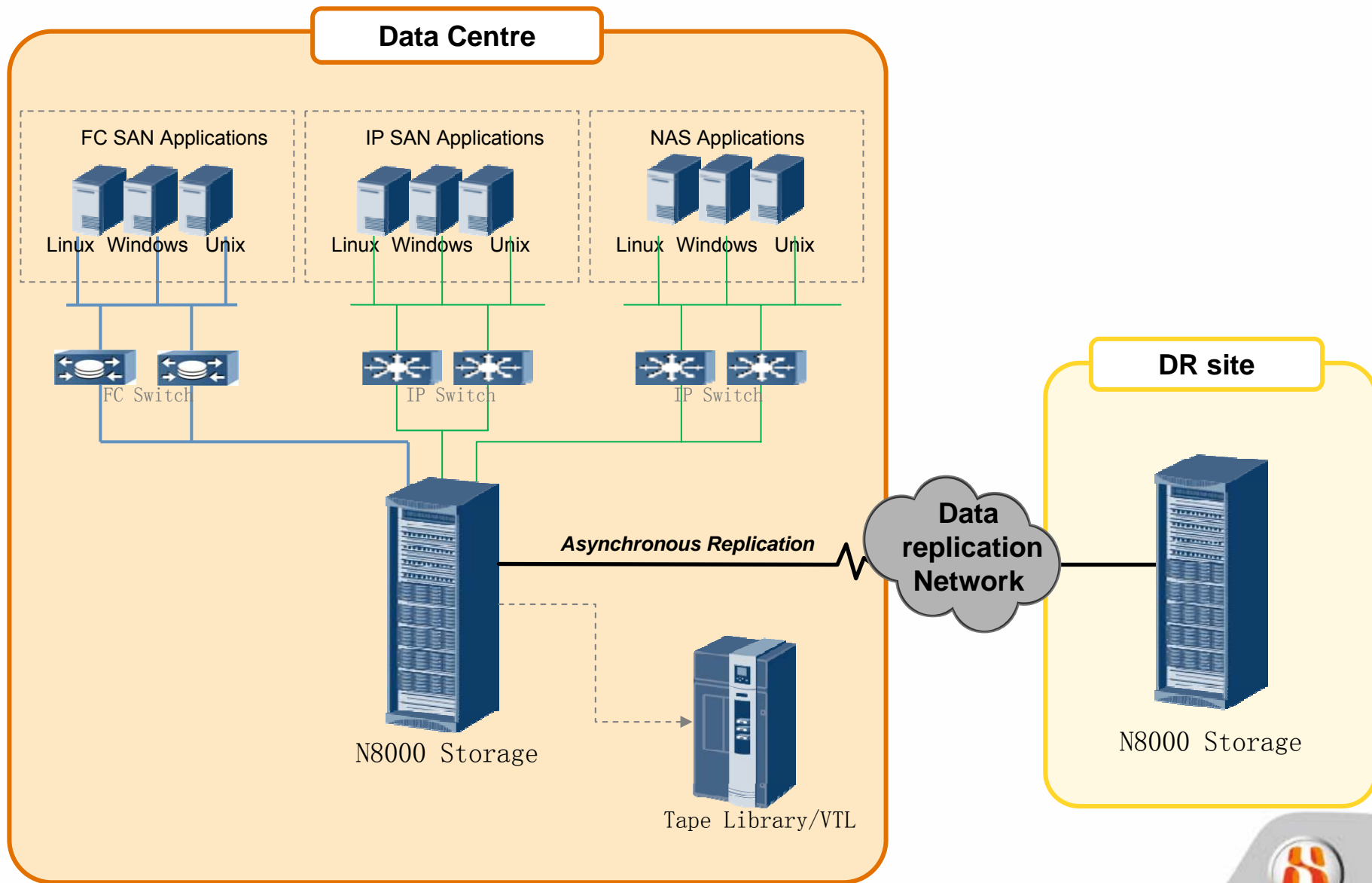


Oceanspace N8300 clustered NAS storage



Oceanspace N8500 clustered NAS storage

Typical Network Topology diagram Overview

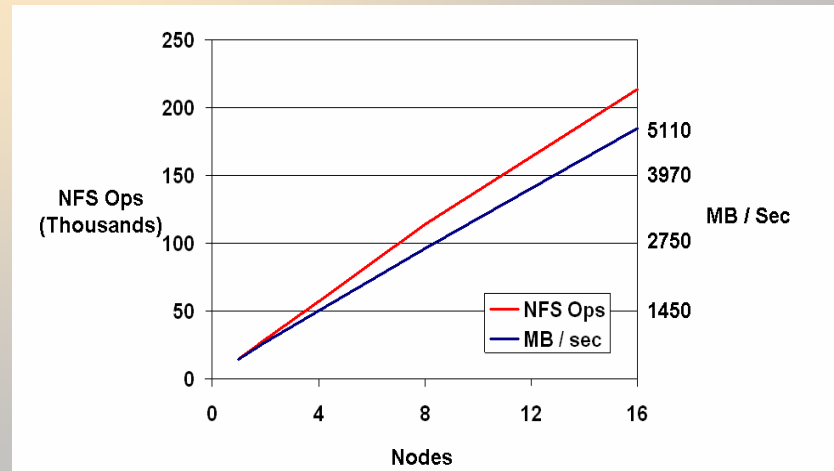


High Performance

Indicating:

1. **N8500 storage with 12 nodes ranked first for ops / sec.**
2. **Support 16 NAS engines.**
Furthermore, adding more NAS engines online , the performance is also smoothly expanded.
3. **N8500's performance has reached world leading level**

<http://www.spec.org/sfs2008/results/sfs2008.html>



SPECsfs 2008 NFS Ops Ranking

Number	Tested By	Product Name	Throughput (ops/sec)	ORT (msec)	Memory (GB)	Disks	Exported Capacity
1	Huawei Symantec	N8500 Clustered NAS Storage System	176,728	1.67	272	960	233.8 TB
2	Hewlett-Packard Company	BL860c 4-node HA-NFS Cluster	134,689	2.53	204	584	19.1 TB
3	Avere Systems, Inc.	FXT 2500 (6 Node Cluster)	131,591	1.38	423.5	79	21.4 TB
4	NetApp, Inc.	FAS6080 (FCAL Disks)	120,011	1.95	68	324	64.64 TB
5	Exanet Inc.	ExaStore Eight Nodes Clustered NAS System	119,550	2.07	224	592	64.5 TB
6	NetApp, Inc.	FAS3160 (FCAL Disks with Performance Acceleration Module)	60,507	1.58	532	56	10.34 TB

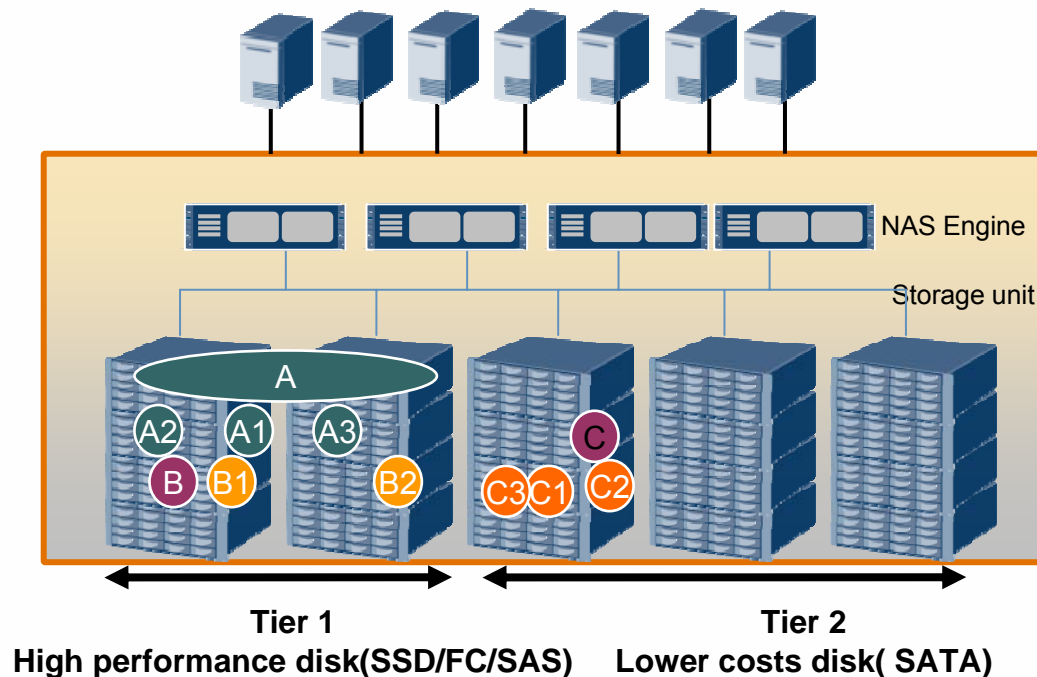
Dynamic Storage Tiering-TCO Reduced

- **Robust policy engine**

- Automate migrate the not-hot data to lower costs storage media and deliver higher service levels ,by file access frequency
- Automate migrate the hot data which on lower storage media to high performance disk,by file access frequency

- **Transparent mobility**

- Access data without changes to users and applications.



Business Benefits of N8000

High Reliability

- Active-Active architecture
- Hot swappable components
- All components redundancy
- All operations online

Linear Scalability

- Capacity scales to 15PB online
- Performance scales thru 16 nodes
- File System scales thru 256TB
- Performance expanded with capacity and nodes numbers

N8000

Competitive Feature

- Unified Storage
 - Clustered NAS, FC& iSCSI SAN
- High performance
 - OPS rank No.1 in the world
- Dynamic Storage Tiering
 - SSD* /FC/SAS/SATA
- Integrated Veritas NetBackup client

Unified Management

- Pre-installed System
- Remote Management
- Supports GUI/CLI
- Integrated Alert Management
 - Email, System Log, SNMP

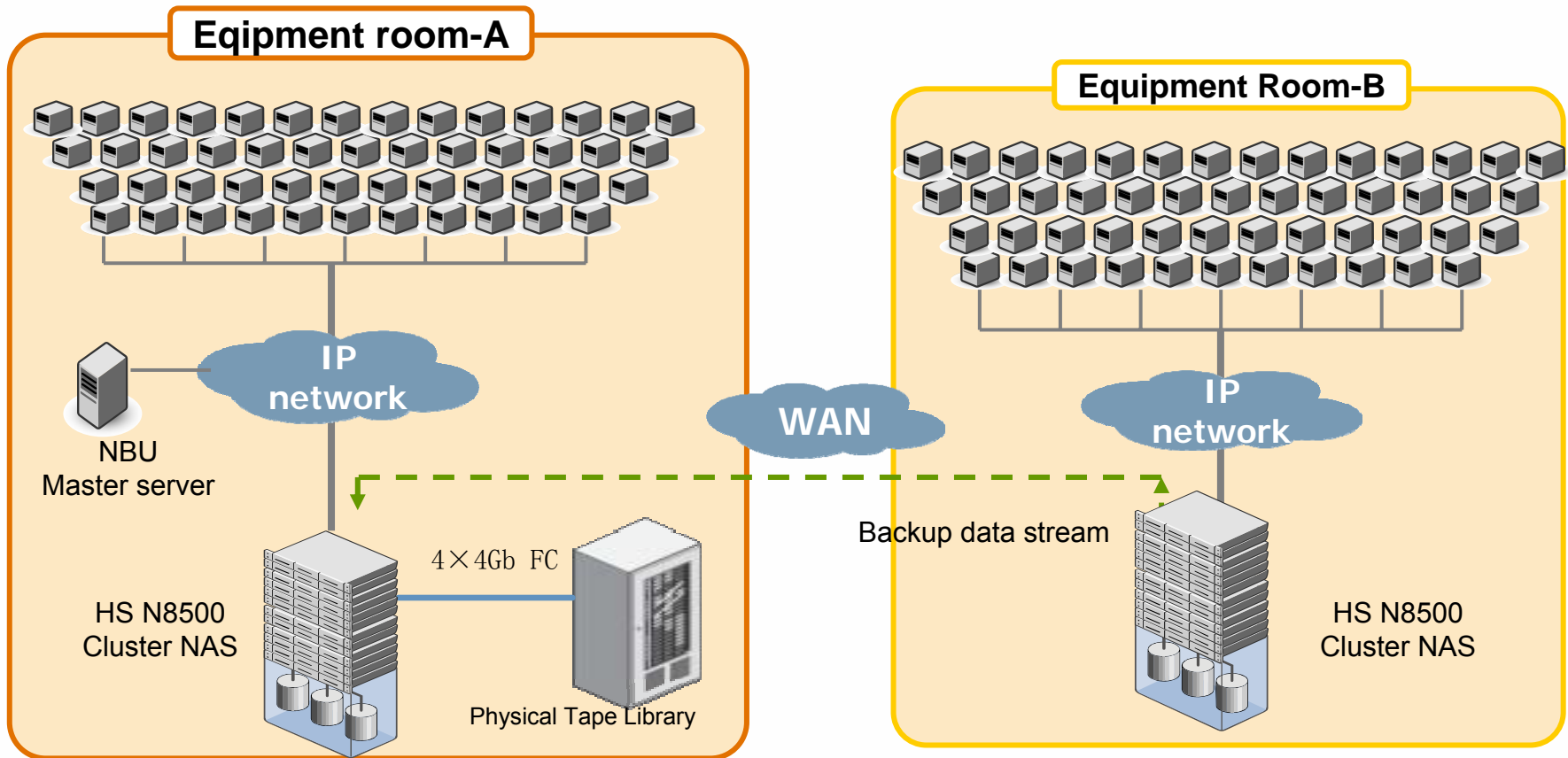
Case Study



N8000 Account List

Industry	Major Project Name	Application Business
NSP	ShengDa network	Web application storage
	Taobao network	NSP data backup
	Shenzhen News network	Web application storage
	Beijing Tianji network	Web application storage
Operators	IPTV (Guangdong province, ZheJiang province, JiangShu province, ShangHai)	IPTV Media Centre, and edge nodes storage
	HeiLong jiang province China Unicom	OA system
	China Mobile Communication Company South IDC base	Hosting servers data backup
	CCTV	Media edit
Government	Ministry of Education of China	School safety monitor project
	State Administration of Radio Film and Television	Media file storage
	Shenzhen Land and Resources Bureau	Map pictures storage
	ZhengZhou province Geo-spatial storage system	High performance compute
Finance	People's Bank of China	Scanned documents storage
	People's Bank of China in ChongQing city	Scanned documents storage
Education	Chinese Academy of Sciences	Mail storage
	WSU (South Africa walter sisulu university)	Digital library data storage

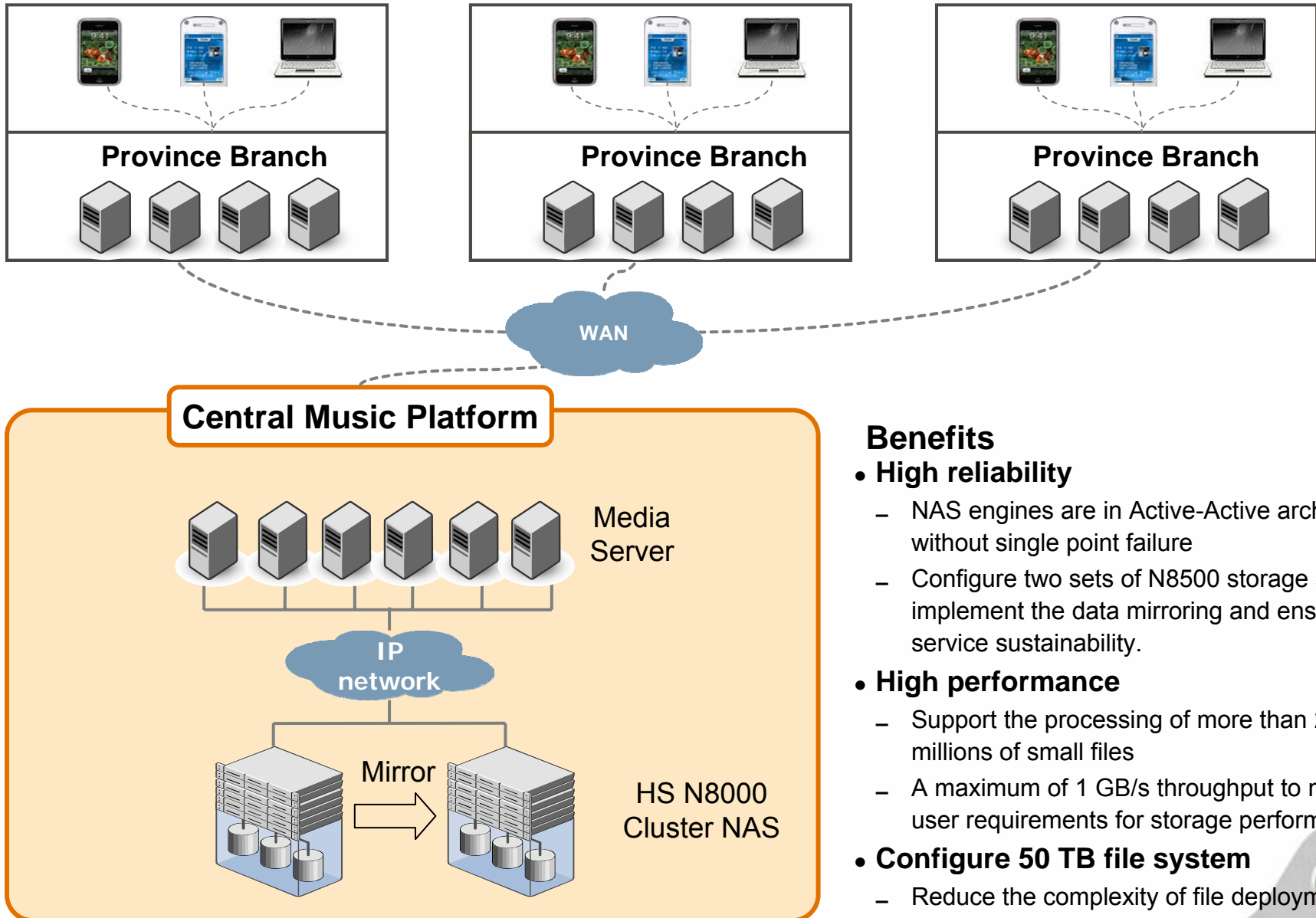
Mass File Storage System on Taobao



Benefits

- High Reliability
- High Performance
- High Scalability
- Effective data backup system, four Build-in veritas NetBackup backup client on four NAS engines, implement the parallel data backup.

High-Performance Storage System on China Mobile Music Platform



Benefits

• High reliability

- NAS engines are in Active-Active architecture, without single point failure
- Configure two sets of N8500 storage systems to implement the data mirroring and ensure the service sustainability.

• High performance

- Support the processing of more than 200 millions of small files
- A maximum of 1 GB/s throughput to meet the user requirements for storage performance.

• Configure 50 TB file system

- Reduce the complexity of file deployment

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Zhou yu (Joey Zhou)

- Over 10 years in storage field, PDT Manager
- 6 years working experience in Huawei. Joined Huawei Symantec in 2008
- Specialized at Cloud Storage
- E-mail: xxxx@huaweisyntec.com,



Business Driven of Cloud Storage

Business driven

Digital Information process



- ◆ In 5 years, Data will be 10 times, to **1600EB**
- ◆ CAGR **57%** :

◆ (All human written history data : **5EB**)

Extra Large scale

+

Extra low cost

Cloud storage

Energy Saving

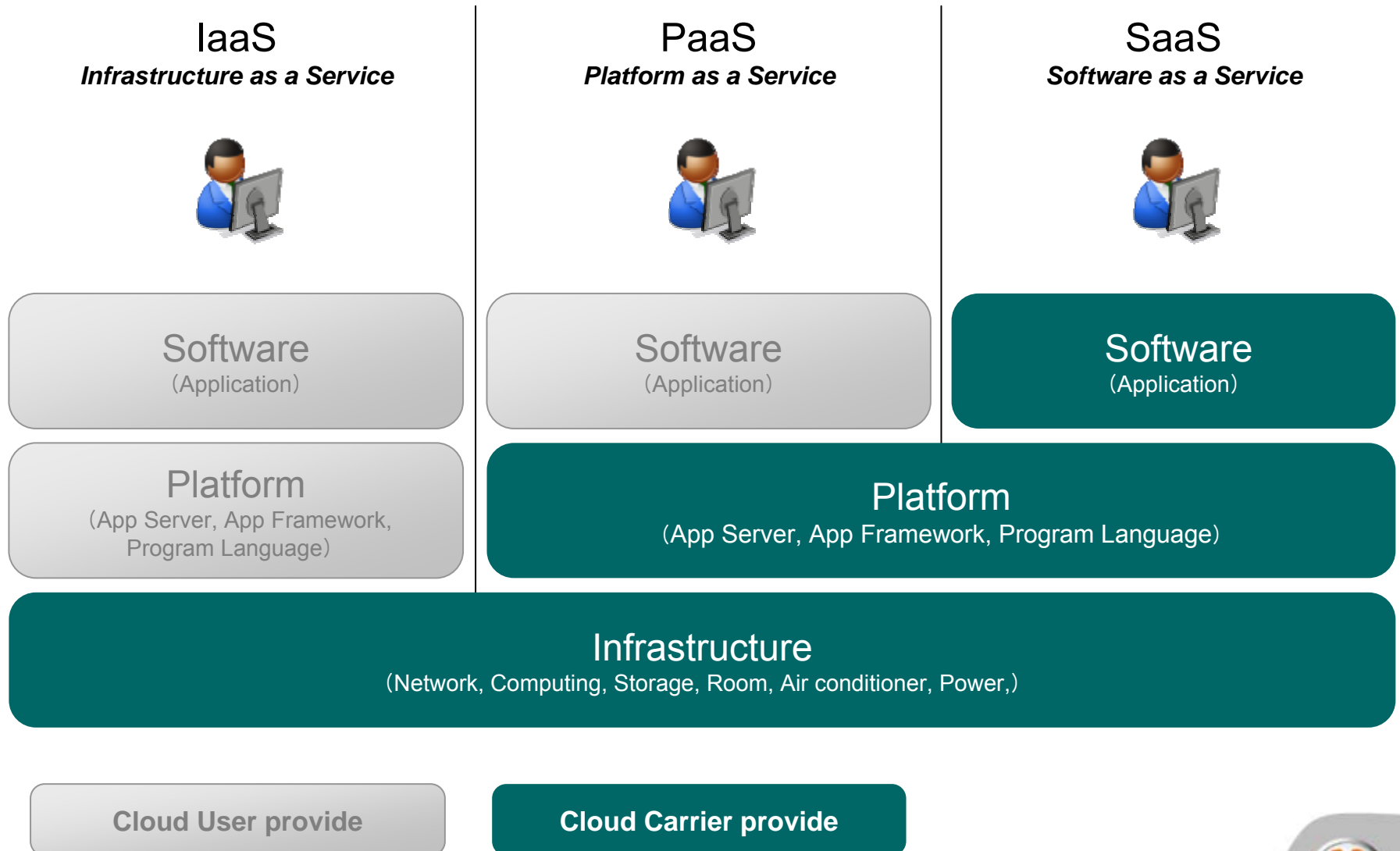
Global data center cost of energy over **7 billion**

Application System

Data explosion
Distributed data storage

The rapid growth of enterprise data explosion drive the evolution of cloud computing and cloud storage.

Cloud: Business Oriented Service



Cloud Storage: Storage As a Service

From the purchase of power generating equipment to the purchase of electricity services



power station

Generators

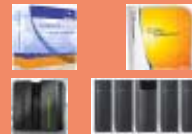


From the purchase of hardware and software to the purchase of Information Services



Information Service Provider

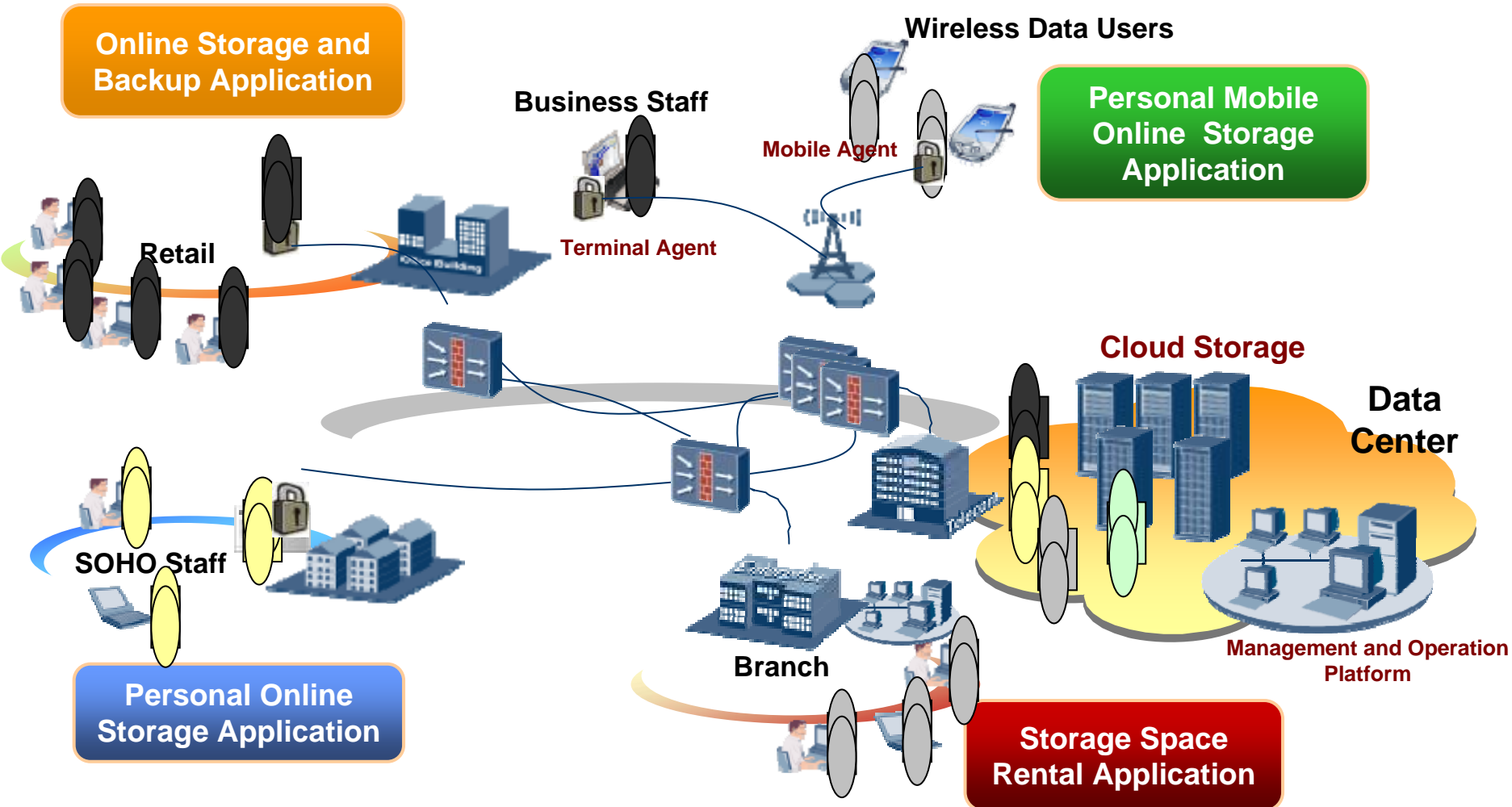
Software



Hardware

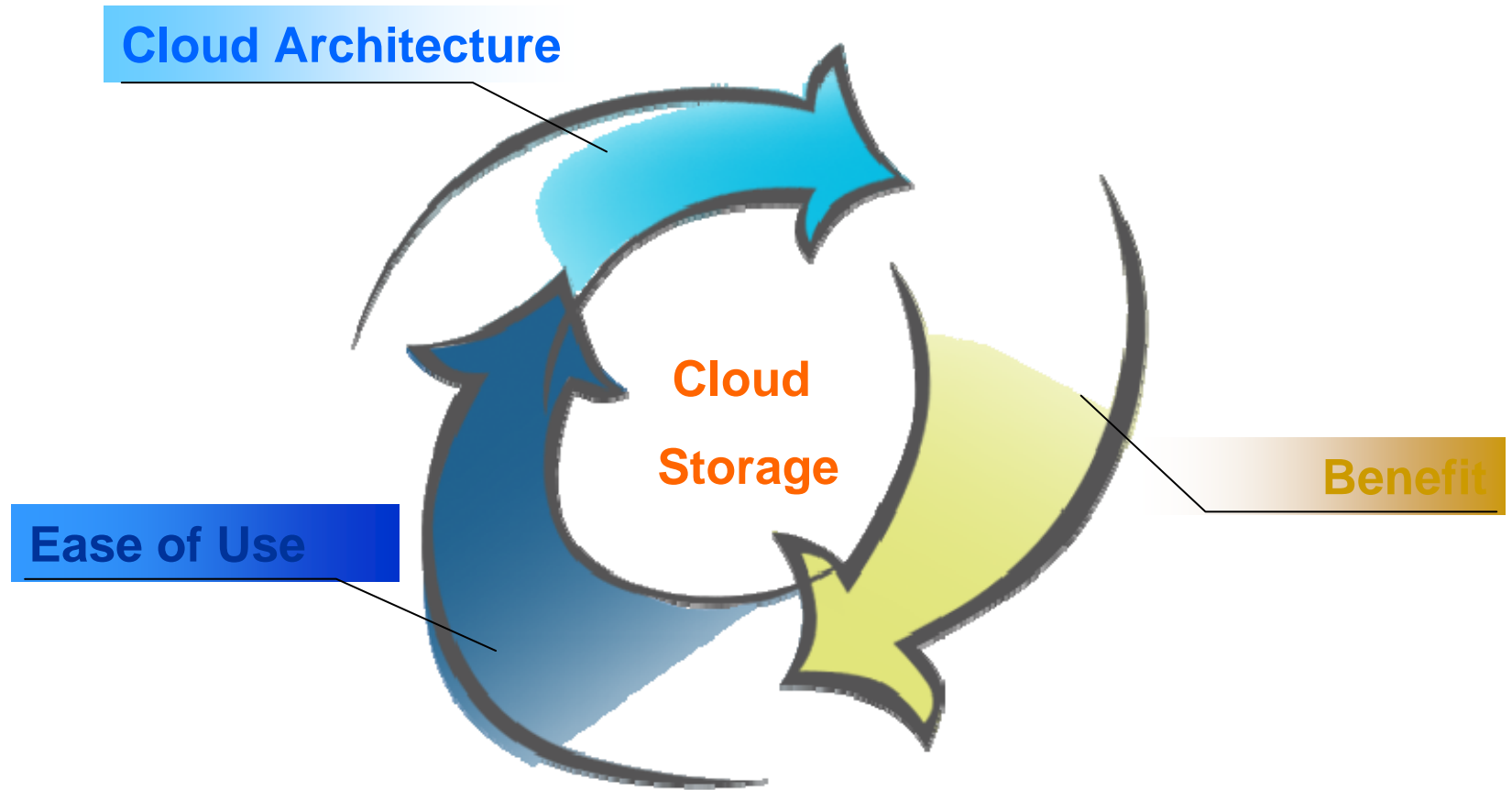
- **Technical changes:** an almost unlimited scalability, intelligent management, green energy-saving
- **Business model changes:** from "buy hardware and software products" to "purchase information services"
- **Ways of thinking changes:** Data Center from the "building" to "rent" and "production"

Cloud Service Overview

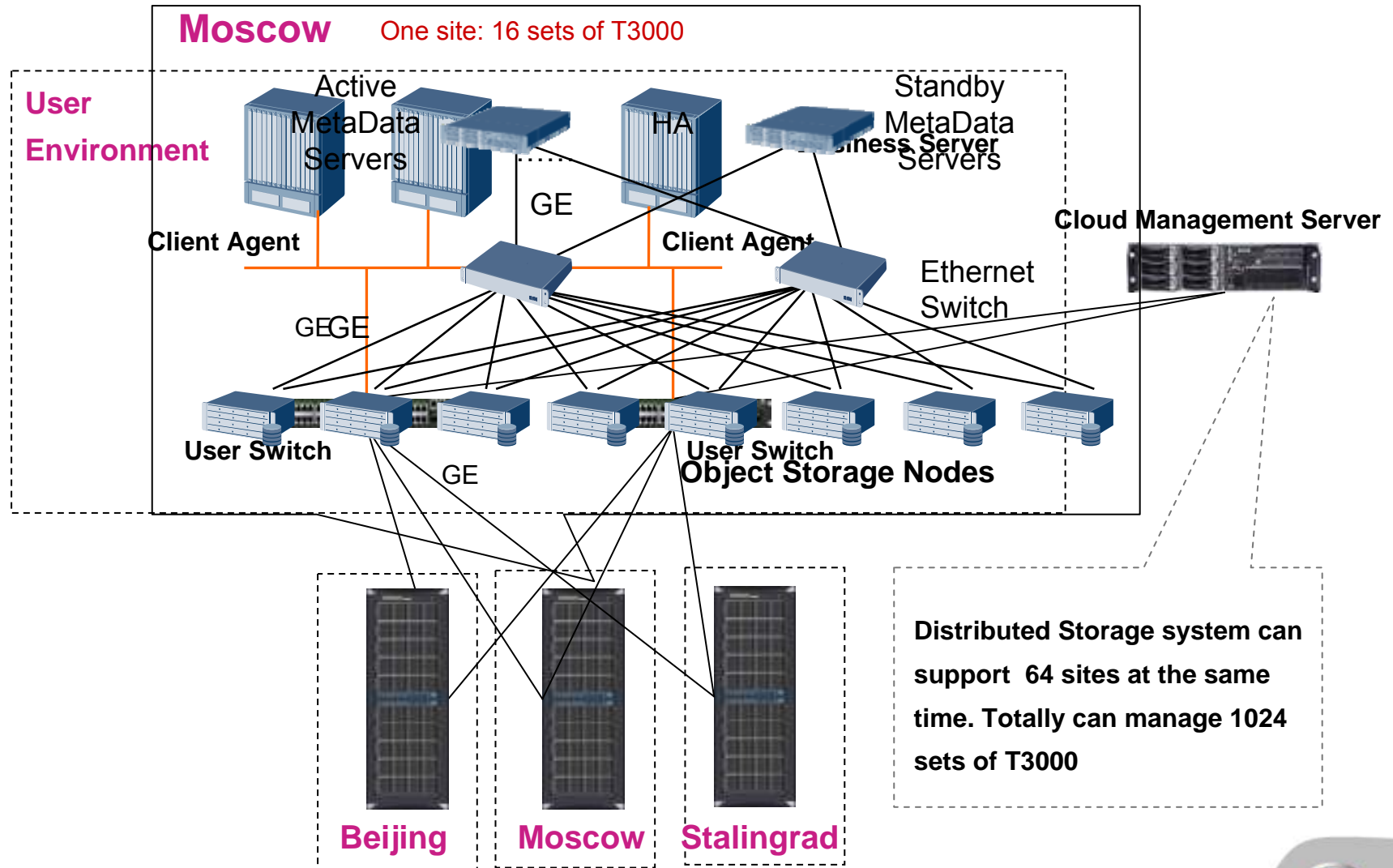


Huawei Symantec provide end-to-end storage operation solution for IDC, government, enterprises and NSP.

Solution Features



Technologies: Distributed Storage with load balance



Technology: Rapid Deployment with Container DC

- **Van modular Data Center**

- Overall PUE <1.5
Savings of **40%** of cooling energy consumption.
- Construction cost savings of **50%**,
The deployment of construction time, compared with the traditional methods is only **1 / 20** .
- Factory pre-installation of refrigeration equipment and other infrastructure, free on-site commissioning , power ready.
- Excellent mobility and rapid deployment, can deploy to anywhere.



Technologies: Security Interface

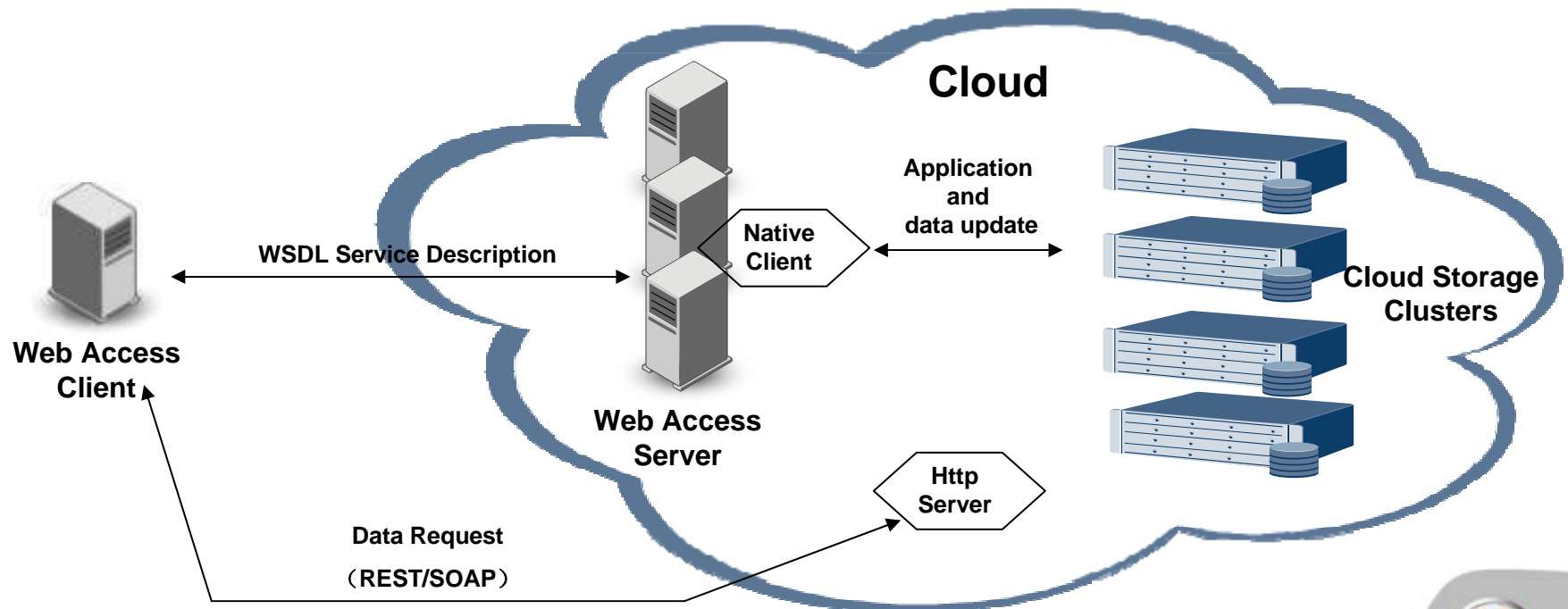
■ User security verification:

Username, password and IP should be verified.

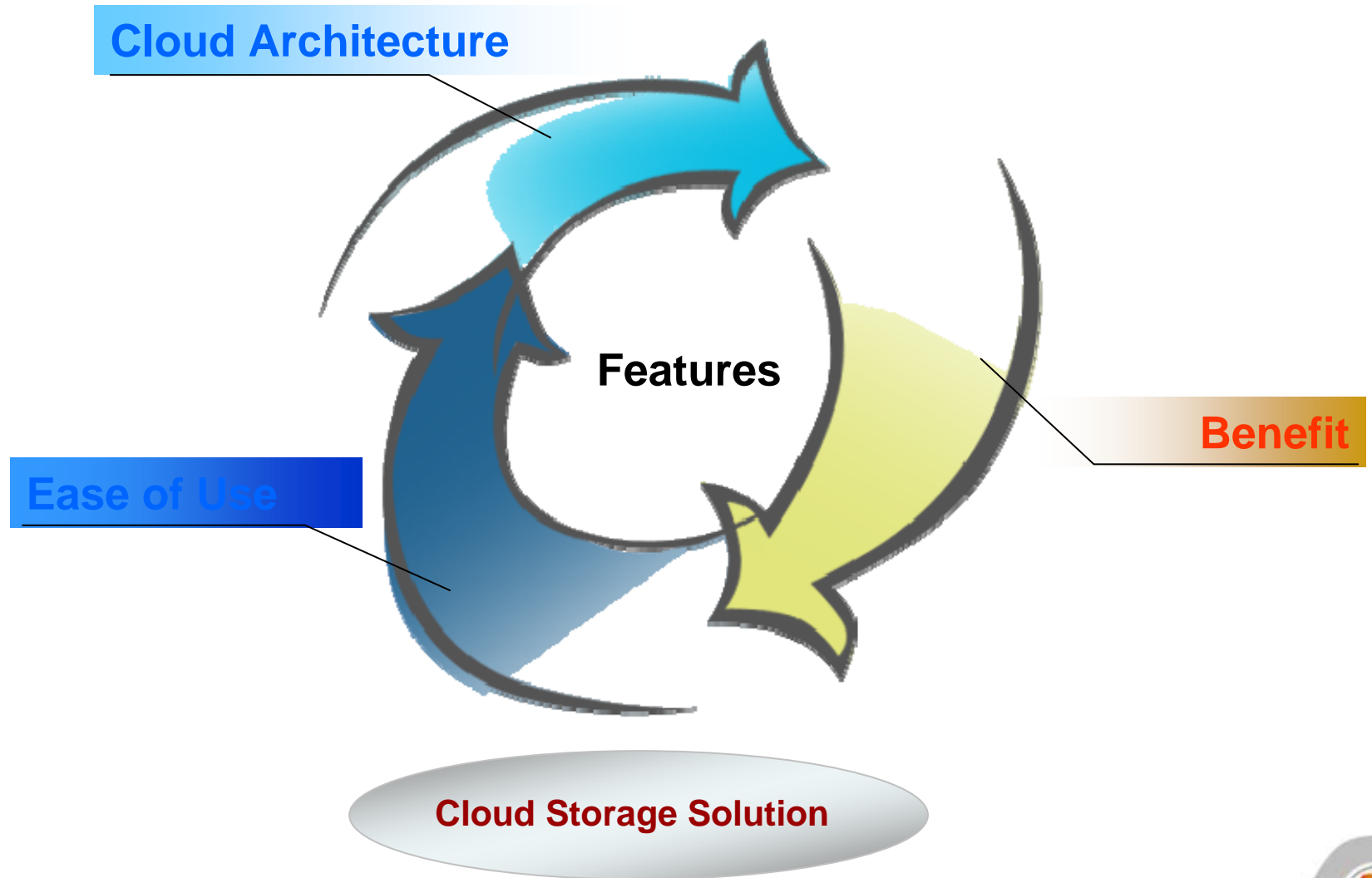
Security verification can be run locally and remotely.

■ Access control about file and directory:

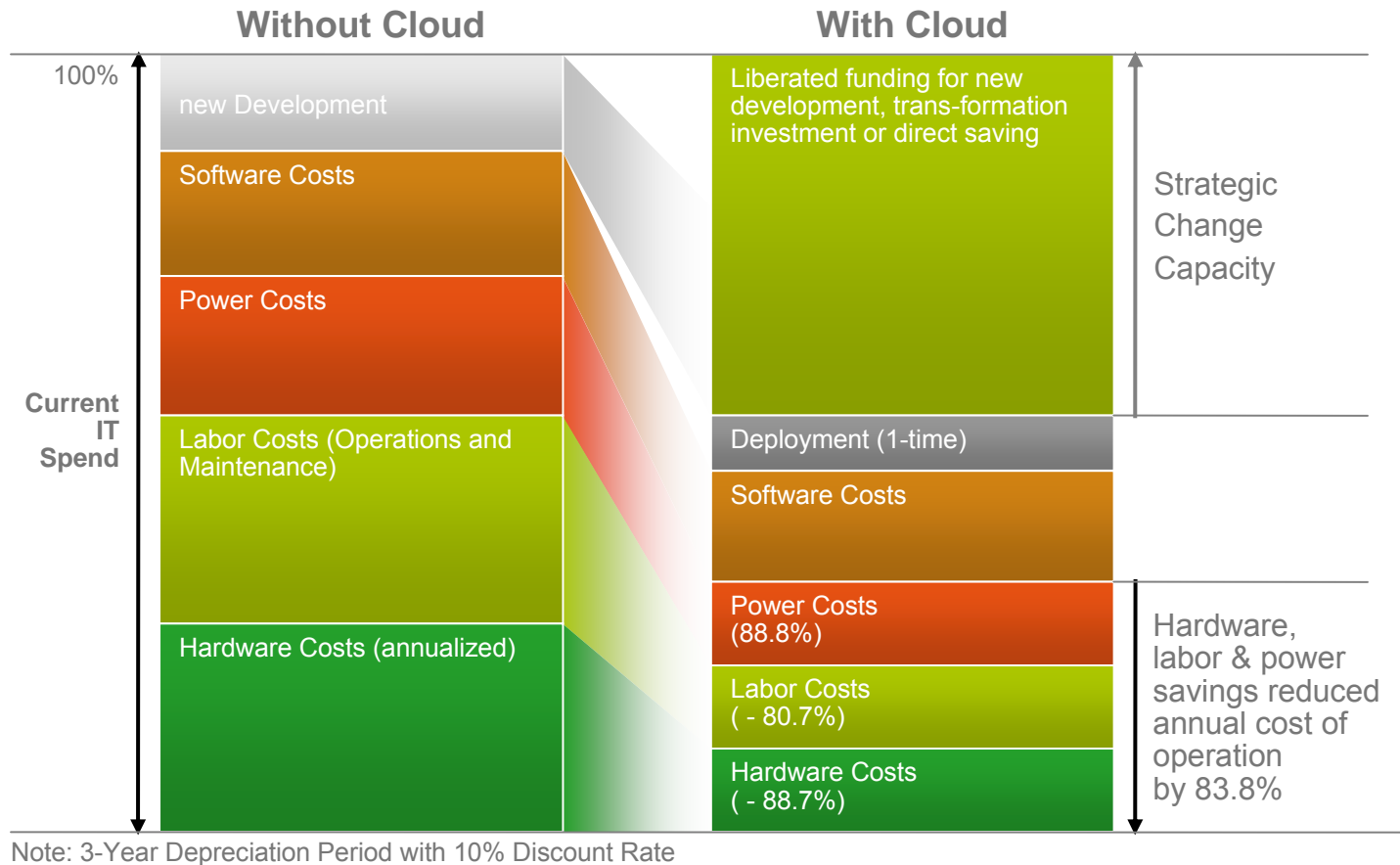
File and directory access is controlled by system.



Solution Features



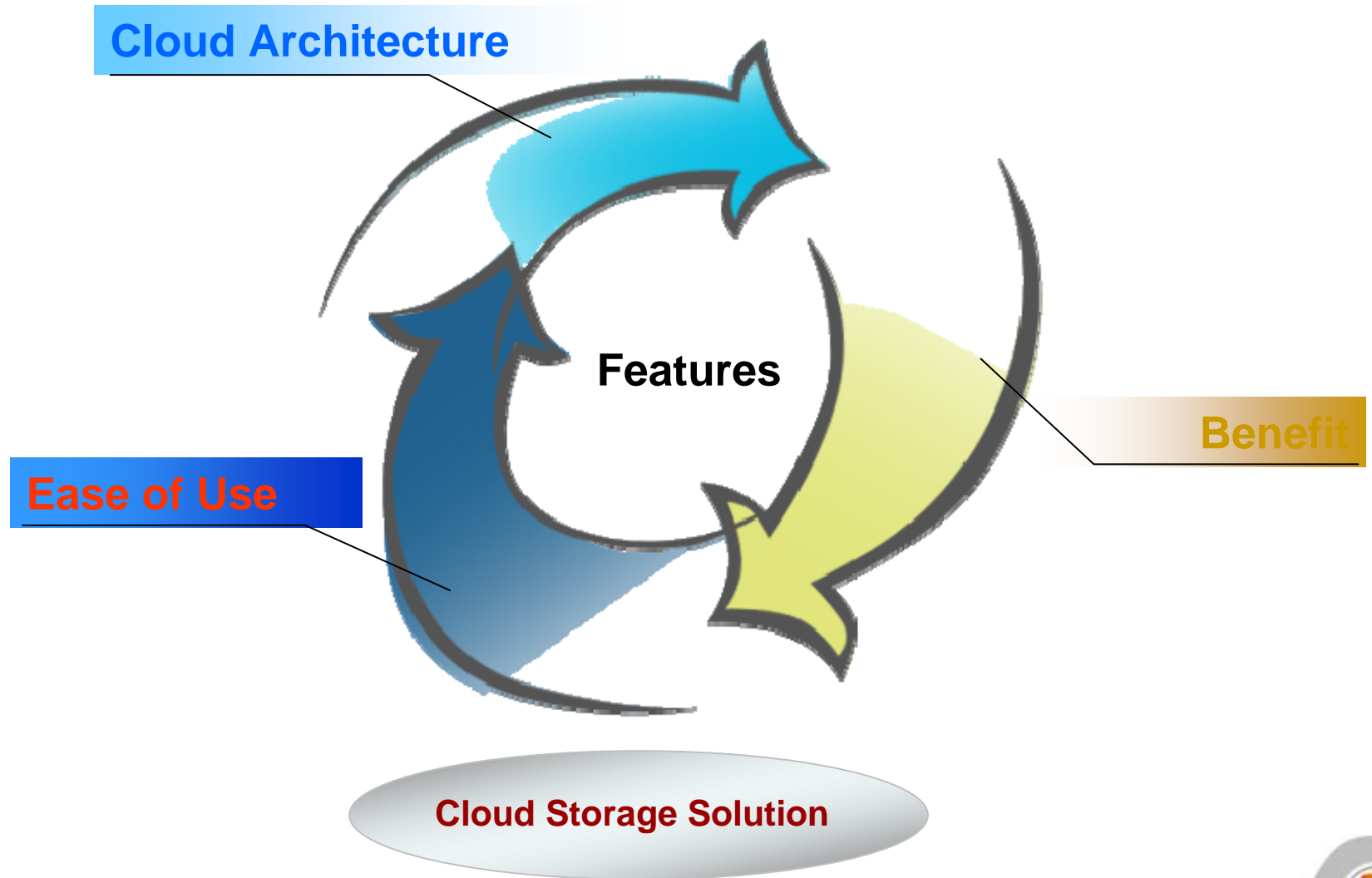
Values of Cloud to The IT System



Huawei Symantec Cloud Storage Benefit:

- Large Capacity with Linear expansion and large access;
- Business Oriented interface with a variety of storage services supported;
- Reduce cost.

Solution Features

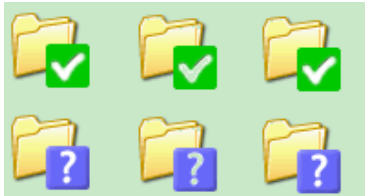


Ease of Use

For end users :



**Web Base: Access
with web browser**



**synchronize client
seamless integrated
with OS**

For cloud service Administrator



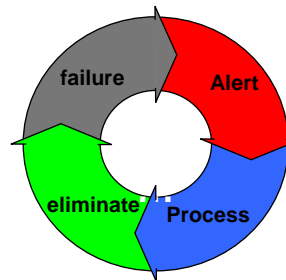
Deployment Unit

Modular design, Plug & Play



Work At Home

Remote management



Automatic recovery

China Mobile Super Mailbox Project

Challenges

- Large data (up to hundreds of PB) and subscribers (up to 10 mil. Mobile users) and are increasing fast;
- Performance, reliability, TCO are key concern.

Solution

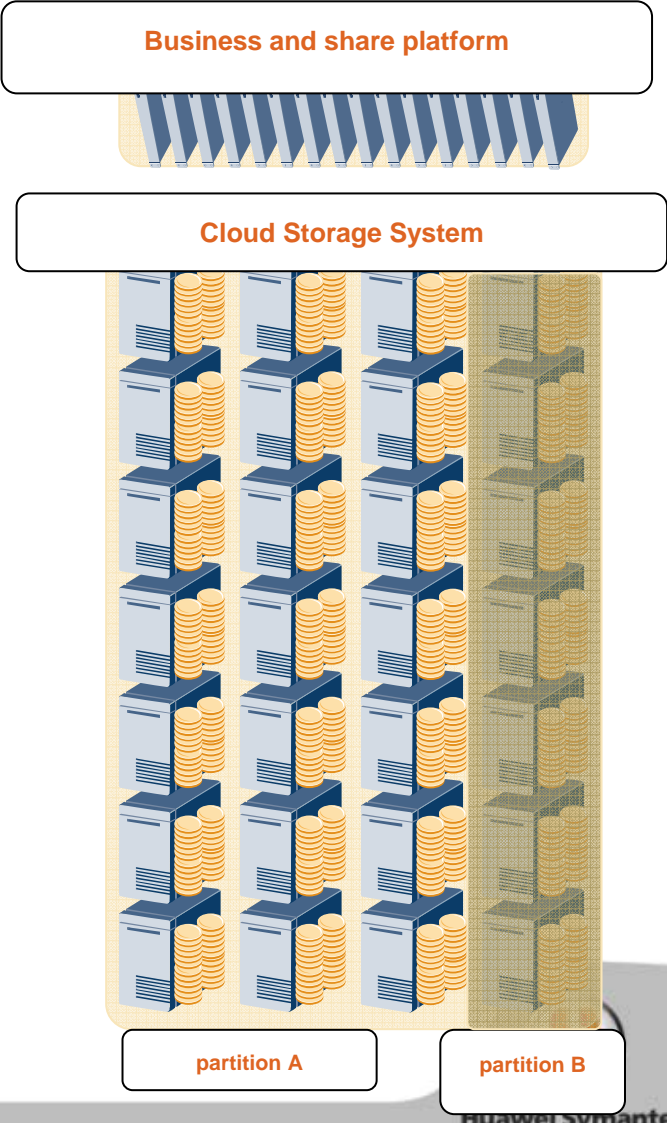
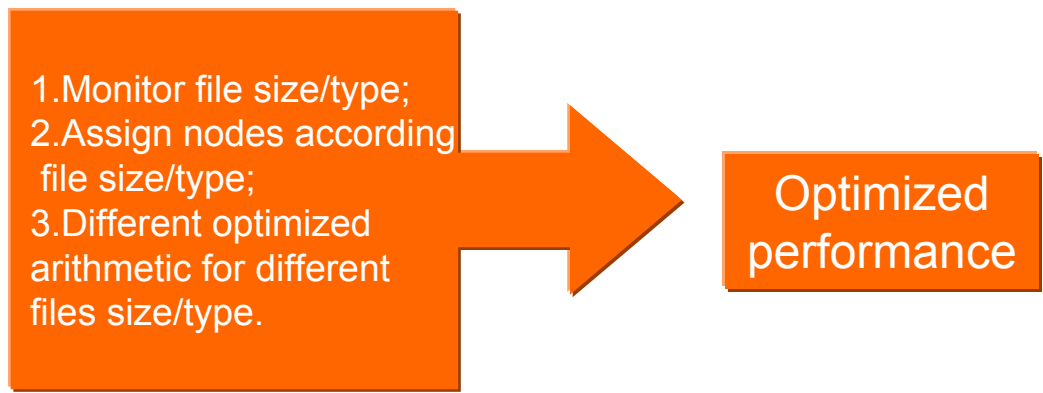
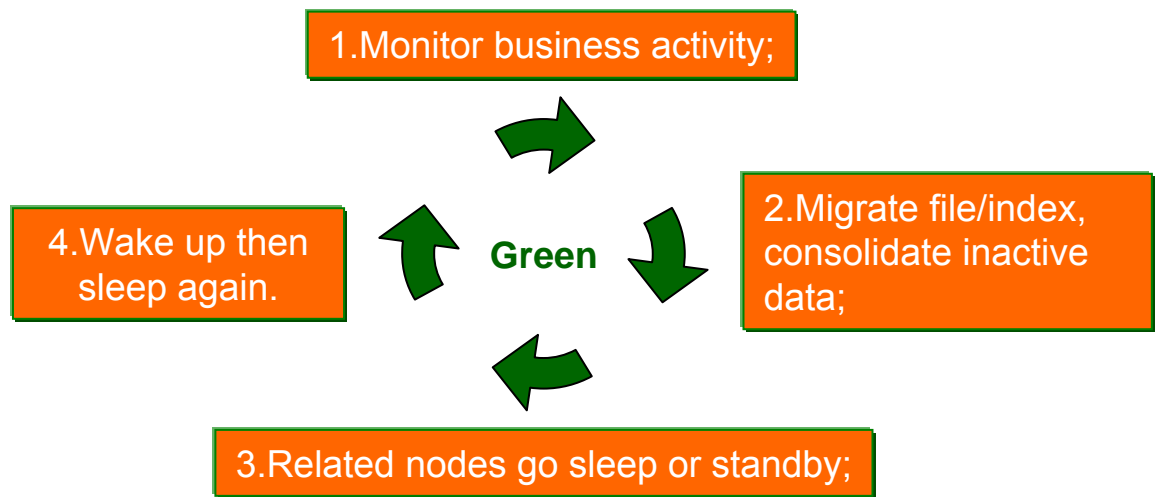
Huawei Symantec Cloud Storage system.

Benefits

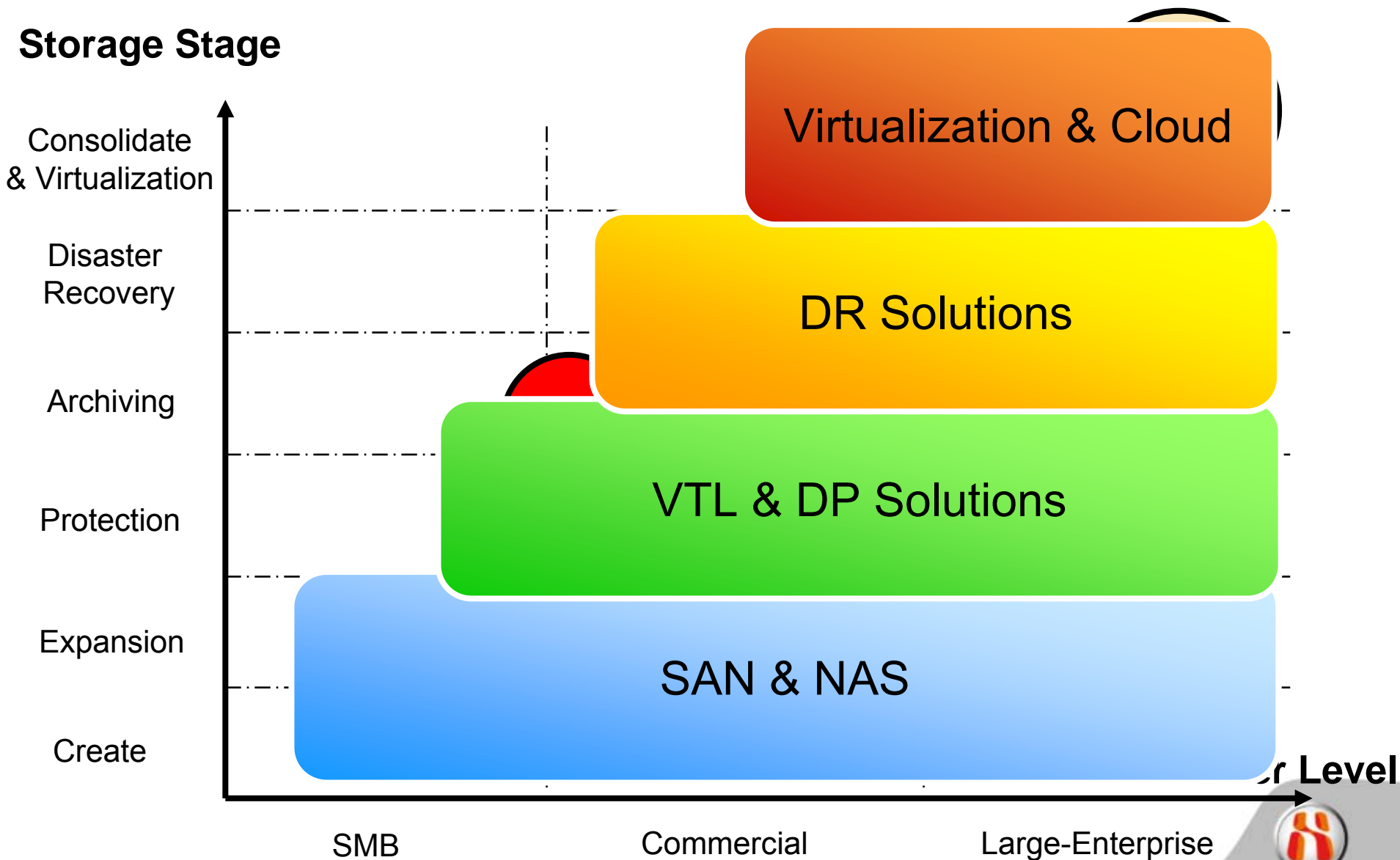
- Scalable Capability and performance architecture can support data increasing requirements;
- Data type can be analyzed to decide store node to optimized access performance;
- Data status can be analyzed to decide store node and cold node can hibernate to save energy.



Cloud Storage Solution: Green DC & Optimized Performance



Storage Solution & Product Matrix



Thank You!

