



Flash Memory Summit



Tencent Cloud Storage 腾讯云存储

Optimized and Powered by Flash

Allen Liu

Tencent Cloud



Flash Memory Summit

Contents



- Tencent Cloud Introduction
- Tencent Cloud Storage
- Solution Examples
- Summary



Flash Memory Summit

Tencent Cloud Introduction



25 Regions

53 Availability Zones

1200+ PoP *

* Point of Presence





Tencent Cloud product portfolio



Flash Memory Summit

Security



Host



Network



Platform



Application



Data



Professional Service

Solution for WeChat



Mini-program



Payment gateway

Collaboration



Enterprise WeChat

Industry-specific solutions



Smart City



FIV



Surveillance



Education



IOT

...

SaaS

AI & Big Data



Big Data Platform



RayData



LBS Services



Face recognition



Intelligent CS

Video



VOD



LVB



IVLB



H5 VLB

Messaging



IM



SMS

Monitoring



BK



Cloud Monitor



Cloud Ping



Cloud API

PaaS

Compute



CVM



CPM



CCS



AS

Network



CLB



VPC



VPN



ENI

Storage



CBS



COS



CFS



CSG

Database



TDSQL



PGXZ



SQL Server



MySQL



Oracle

IaaS

Cross-region IDC deployment
Modular-designed PUE <1.4 Tier 3+ IDC Standard

Ultra-large Network resources
BGP network, CDN bandwidth 70T+

Ultra-large
Infrastructure



Tencent Cloud Storage

10+ year experience of hundreds PB data

2008

Support storage need of QQ

2012

Mature 3-copy duplication strategy, strong consistency

2015

Provide mature products on cloud

2018

Enrich matrix of product series, supporting a million customers all around world



Tencent Cloud Storage

- Cloud Storage Categories

Cloud Block Storage

Cloud File Storage

Cloud Object Storage

Cloud Virtual Machine

Cloud Virtual Machine

Application/
CDN/GAAP
/CLB ...



Block



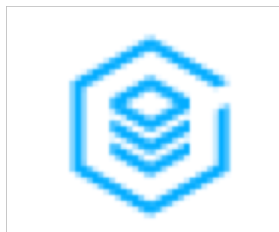
NAS



REST/API



CBS



CFS



COS



Tencent Cloud Storage

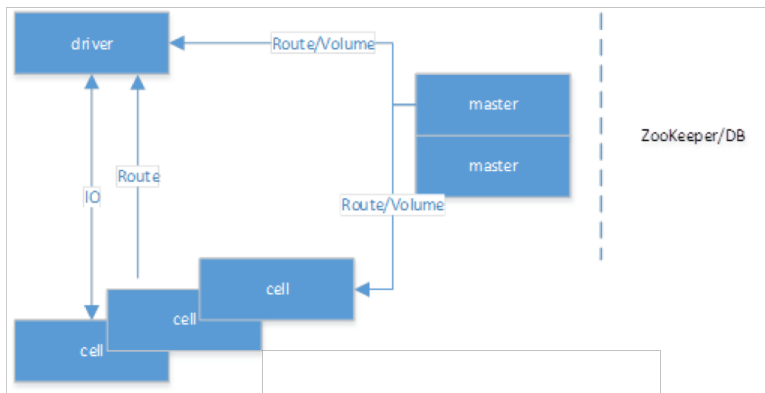
- Cloud Block Storage (CBS)

Specs	Description
Types	HDD、Hybrid Flash Storage、NVMe SSD
Flexible size	Single unit 1GB - 16TB, Single server support 320TB
Reliability	99.9999999%, Replication factor: 3
Backup	CBS Snapshot. Cross-region DR



Tencent Cloud Storage

- CBS – Distributed storage system



Routing Table

HashKey range	router
[0-1000]	Tablet0
[1001-2000]	Tablet1
[start-end]
.....
[9989999-9999999]	TabletN

N ↑ Tablet



Ability

Multi-copy across racks

Scale-out

Full redundancy of I/O path

snapshot

QoS

Real-time consistency check

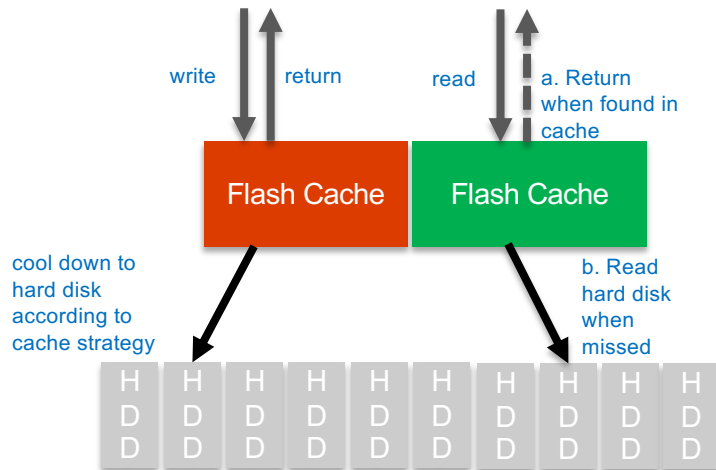
Strength

- Simple and reliable data management by routing
- No data copy unless error



Tencent Cloud Storage

- Flash cache



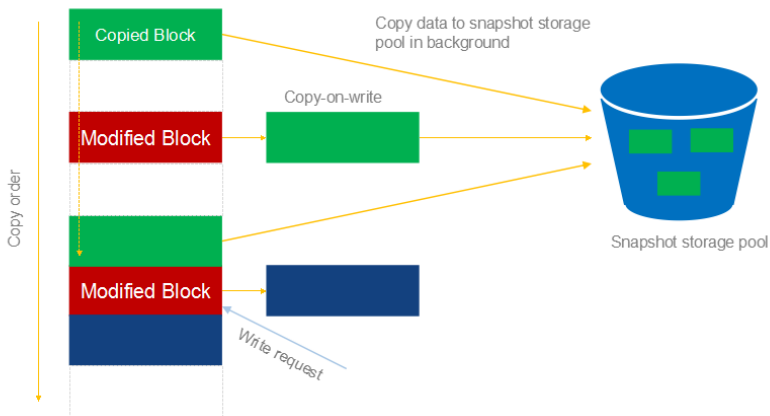
- ❑ Balance cost and performance by dynamic cache strategy
- ❑ Can cover most of customer use cases



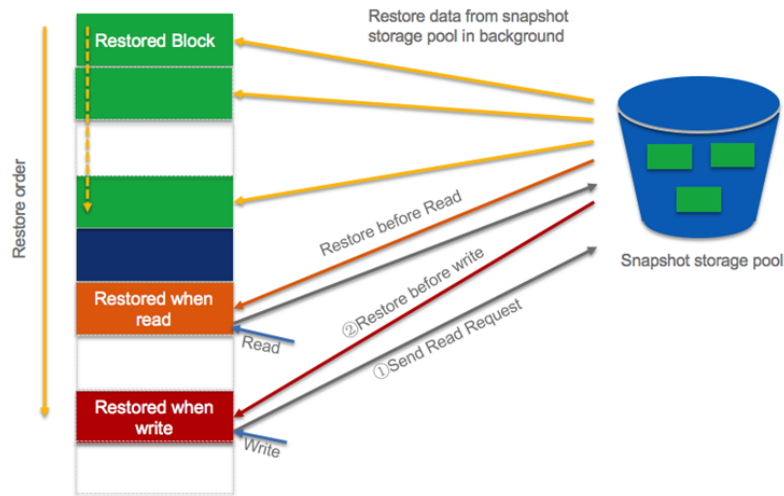
Tencent Cloud Storage

- Snapshot

Copy On Write



Restore



Snapshot is the key feature ensuring data backup. Tencent snapshot storage pool is strictly separated to the data pool.

Tencent cloud accelerate the backup restore process by "trigger" strategy. User data is available when basic metadata is restored, and when some data is requested but not restored yet, the system will block the request and trigger the specific data restore process immediately. When data is restored, the system will continue the request by user.



Tencent Cloud Storage

- COS Use Cases

Website content

- Website static resources
- Enterprise net-disk file
- Unstructured data
- Games, video resources

User Content

- Q-Zone Pictures
- Small video sharing
- Photo sharing App
- CDN Distribution

Mass File Storage

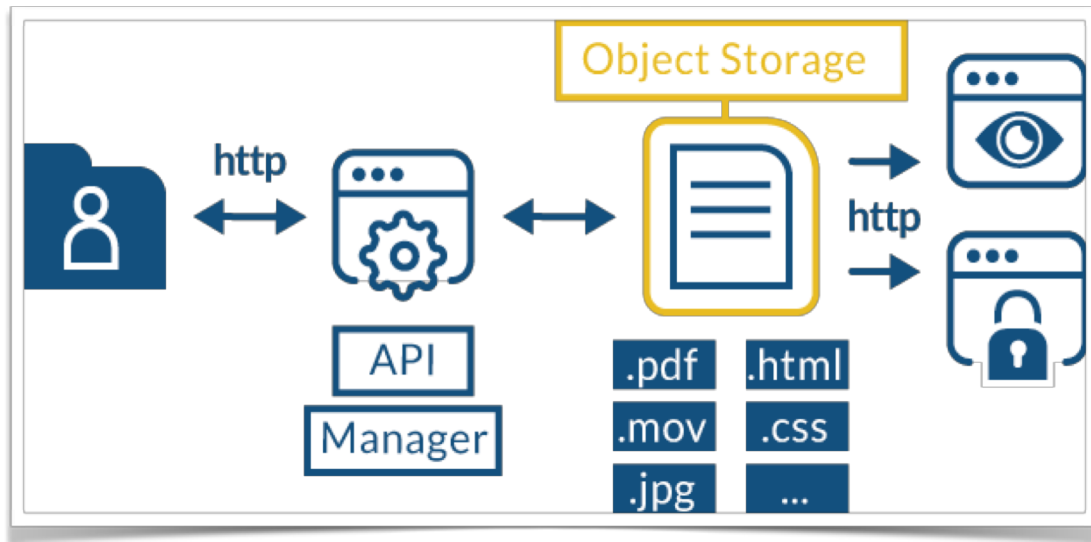
- Journal backup & Archiving
- Monitoring video storage
- Live broadcast/recording storage
- User data backup
- Big data raw files
- Cross-region DR



Tencent Cloud Storage

- COS Architecture

- HTTP REST
- Unstructured data
- Highly Available, Highly Reliable
- Highly Expandable
- High concurrency
- Public/private privileges
- Tiering between hot data and cold data





Tencent Cloud Storage

- High Performance COS

Upload speed	COS	Vendor1	Vendor2
Big file 5MB			
Single conn MB/s	31	12	25
Multi-conn MB/s	575	301	465
Mid-size file 5MB			
Single conn MB/s	17	7	
Multi-conn MB/s	379	285	
Small file 100KB			
Conn time ms	69	32	88

Download speed	COS	Vendor1	Vendor1
10 KB	24	15	45
100 KB	25	23	54
200 KB	35	45	49
500 KB	42	89	55
1 MB	74	148	89
5 MB	226	501	132



Solution example

Infrastructure

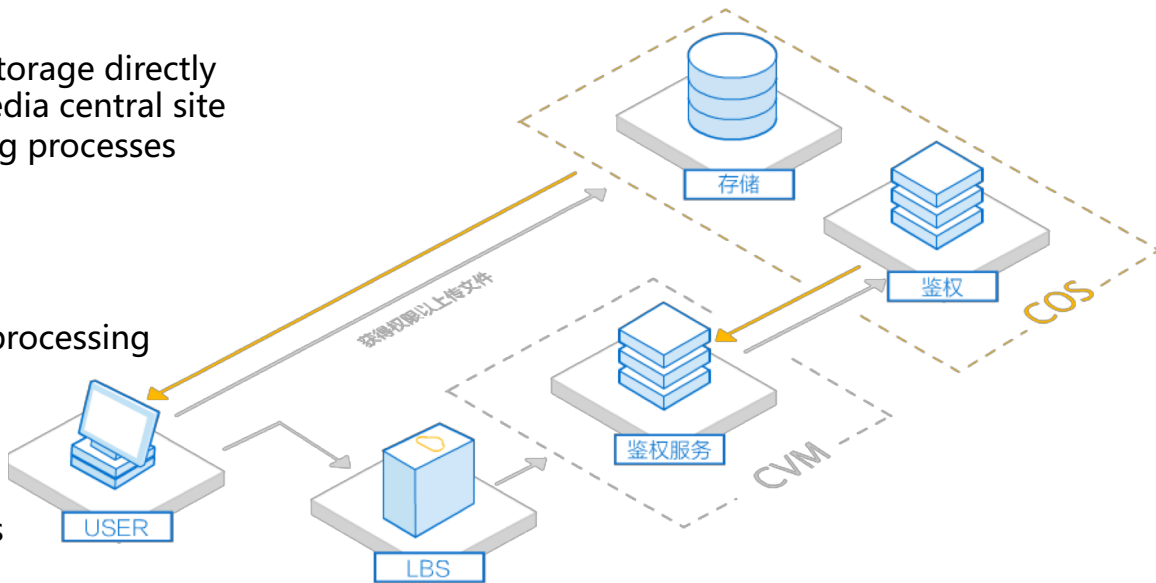
- 10GE Direct connection
- Media center accesses cloud storage directly
- Branch sites direct connect media central site
- CVMs possess dedicated slicing processes

Upload/Download

- Upload from media center
- Distributed to branches after processing
- CDN distributes sliced data

Supports

- Compatible with all FTP clients
- AWS S3 migration tools
- Tools for FUSE mount local storage





Solution example

Acceleration Services

CDN Accelerated upload and download

Access

Picture recognition and processing

Pornography detection

Terrorism detection

Sensitivity

Recognition

Processing

Audio and video processing

Transcoding

Pornography detection

Recognition

Document processing

Preview

Anti-theft

Big data suite

Command line tool

POSIX compatible

Data Interface

S3 compatible API

SDK

HTTP REST

High Reliable Distributed Data Storage



Summary

- Comprehensive cloud service offering
- High performance Cloud Storage
- Flexible and efficient cloud storage solution