The new CDN network architecture of China Unicom
Ultra HD videos are growing explosively

Monthly average data traffic will surge to 49EB in 2021
Video traffic accounted for 80%

Demand for high-definition video services is booming, bandwidth consumption is exponentially increasing.
Video, games, sociality, 4K, 8K, VR and AR flourished

Cisco Visual Network Index (VNI) forecast
New technologies accelerate CDN development

CDN edge nodes are deployed more flexibly

5G CDN edge nodes are deployed more flexibly

5G MEC can be deployed on the edge of wireless network
Mobile network edge CDN relies on the deployment of MEC

Resource deployment and capacity allocation are more flexible

NFV CDN

NFV realizes the sharing of network resources, flexible expansion
CDN NFV realized the hardware and software decoupling

Scheduling and routing control is more flexible

SDN

Network perception ability

Centralized control and capability opening

flexible scheduling
optimal routing

Distribution service to users is closer and better

CDN

Considering the ability of intelligent terminals’ long-term online and idle computing resources and storage resources, CDN can be further sunk to the user’s home terminal.

P2P CDN

NFV

ICT

P2P CDN
New CDN network architecture covers the cloud, network edge and fog

1. **Cloud based CDN**
   - Control, management and storage
   - Resource balance and allocation
   - Unified and open

2. **Edge CDN in fixed and mobile network**
   - **Fixed network**
     - CDN node sink to the BNG or OLT network device
   - **Mobile network**
     - CDN node sink to the UTN device or the base device

3. **Distributed CDN in fog**
   - CDN nodes penetrate into the home network
   - Home terminal devices: home gateways, set-top boxes
   - P2P based fog computing node
Cloud based CDN with centralized management and control:

1. Cloud based CDN

- Control, management and storage
- Resource balance and allocation
- Unified and opening

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Cloud based CDN: Complementary advantages of cloud computing and CDN Technology

Application layer

- Proprietary business
- Cooperative business
- CP/SP business
- Enterprise business

Platform layer

- Capability opening
- Content distribution
- Global scheduling
- Platform management

Physical layer

- General server device
- Storage device
- Network device
- Resource cluster

Service access

Data processing

Resource guarantee
Intelligent scheduling of CDN based on SDN network

- Load based scheduling mechanism
- The quality of user traffic is not perceived
- SDN controller real-time statistics network traffic + controls the forwarding of user traffic + maximize the use of network resources
- CDN intelligent scheduling strategy based on user experience and network resource allocation, configuring network resources based on business requirements
Edge CDN convergence in fixed and mobile network

A CDN architecture that sinks to the edge of the network, in the convergence network layer to achieve fixed and mobile convergence deployment.

Reduce operating costs
- Convenient third party application integration
- Effective use of the carrier's unique capacity resources
- Easy to open resources to CP/SP

Fixed network
- CDN node sink to the BNG or OLT network device

Mobile network
- CDN node sink to the UTN device or the base device

Improve network quality
- Save traffic flow path, reduce time delay
- Ease load on converged networks and core networks
- Node virtualization by SDN/NFV
Fixed and mobile convergence architecture

Cloud management

vBNG

vEPC

SDN-C

vCPE

fixed and mobile convergence edge CDN

vIMS

vBBU

Computing resource pool

Storage resource pool

- After the fixed network and the mobile network are merged, the edge CDN nodes can be installed on the edge DC.
- With the development of CO reconstruction, the fixed network edge CDN nodes and mobile network CDN edge nodes can be deployed in the same CO
Edge virtual CDN

- Edge node Virtualization Management: resource one point control, one time integration, to achieve the national, local and remote deployment effect.
- CDN capabilities flexible expansion: according to the business needs of enterprise users, to provide differentiated, fast and accurate service response
Distributed CDN in fog

Fog computing concept is introduced into CDN network, which drives home terminal to become CDN node

- Thousands of families fog nodes
- More than the clouds closer to the ground
- P2P technology is applied to CDN nodes
- Greatly release network pressure
- Rental idle upstream bandwidth and fog resources
- Create new business income

Interconnect
Fog based CDN architecture

- **Backbone CDN**
- **Edge CDN**
- **Fixed network CDN**

- **Access network**
- **Metropolitan network**
- **Backbone network**

- **Cloud CDN**

- **Home networking applications**
- **P2P resource sharing**
- **Global scheduling management**

**Backbone CDN**

**Edge CDN**

**Fixed network CDN**

**SW**

**BRAS**

**HG**

**Fog CDN**
CDN developing vision

1. Nodes are closer to the user
2. Resource sharing ability is higher
3. Scheduling is more accurate
4. Coverage network is wider
5. Service types are more
6. Deploying and applying is faster
7. Construction cost is lower
Thank you!