



The new CDN network architecture of China Unicom



Ultra HD videos are growing explosively

Layout of big video services as the basis business has become a consensus among the global operators



Monthly average data traffic will surge to 49EB in 2021

Video traffic accounted for 80%



Cisco Visual Network Index (VNI) forecast

Demand for high-definition video services is booming, bandwidth consumption is exponentially increasing.

Video, games, sociality, 4K, 8K, VR and AR flourished



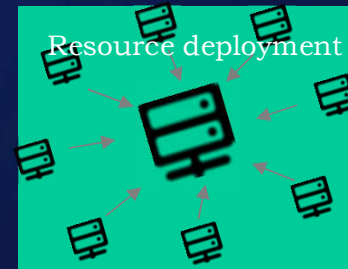
New technologies accelerate CDN development

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

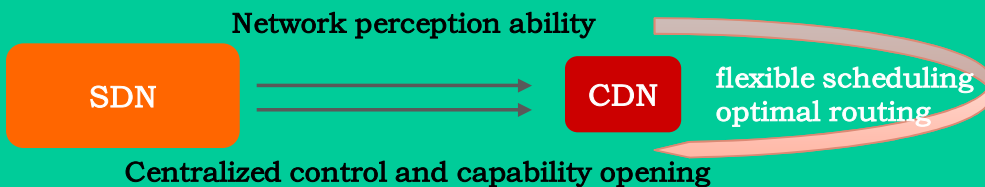
Resource deployment and capacity allocation are more flexible **NFV**



NFV CDN

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

SDN Scheduling and routing control is more flexible



Distribution service to users is closer and better **ICT**

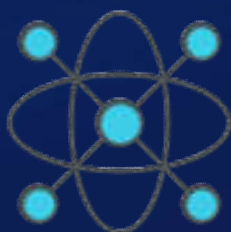
Considering the ability of intelligent terminals' long-term online and idle computing resources and storage resources, CDN can be further sunk to the user's home terminal.

P2P CDN

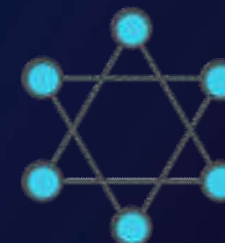


New CDN network architecture covers the cloud, network edge and fog

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



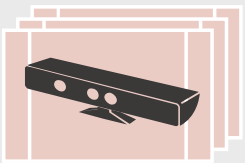
① Cloud based CDN

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

CONTROL



Improving control and expansion capability



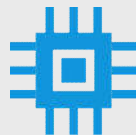
STORAGE



Enhance storage and carrying capacity
Virtual resource pool



CALCULATION



PB level data calculation
Quick response Internet service



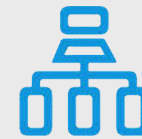
SCHEDULING



Providing quality routing for multi tenant
Avoid hot bottlenecks



LOAD BALANCING



Dynamic resource balancing
Accurate fault control



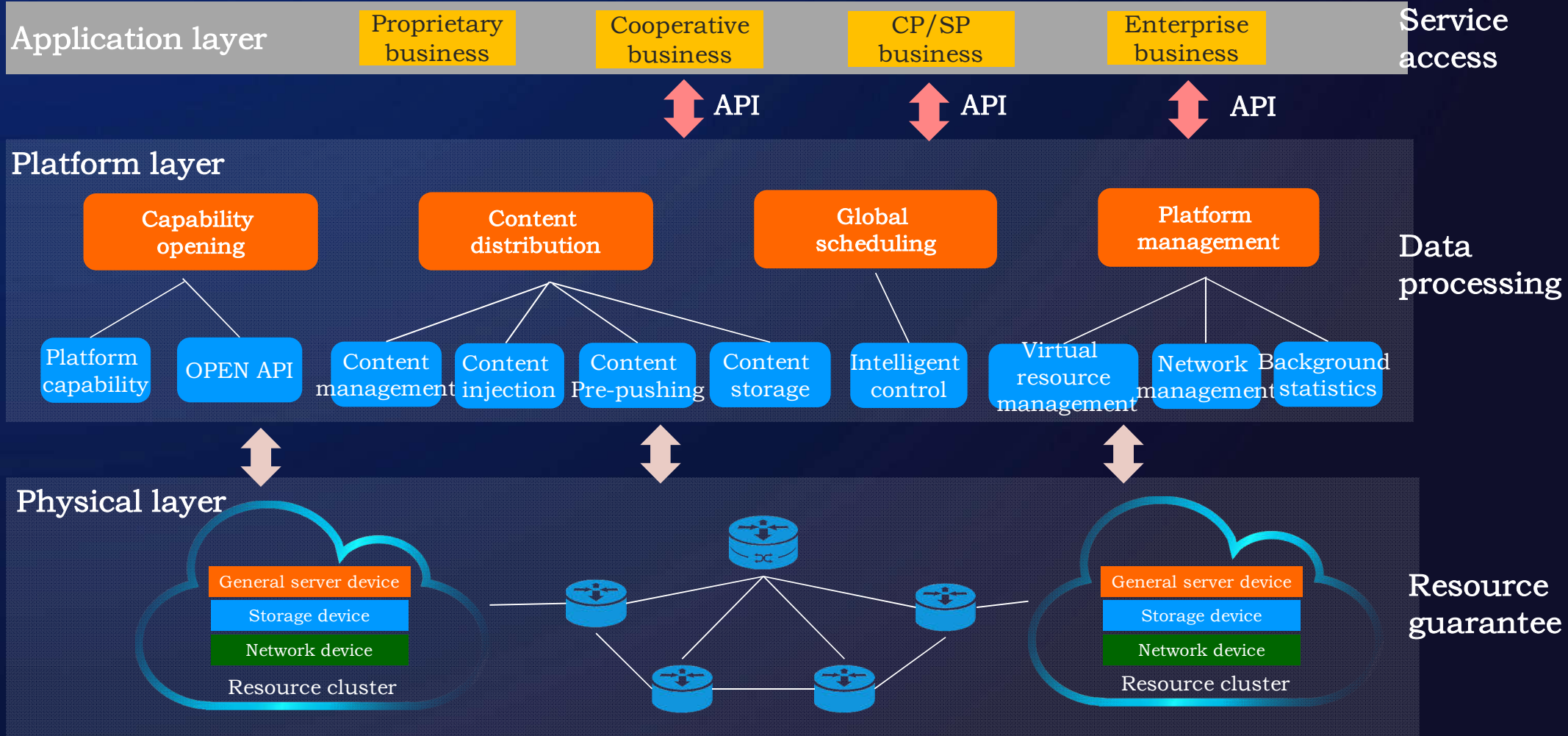
MANAGEMENT



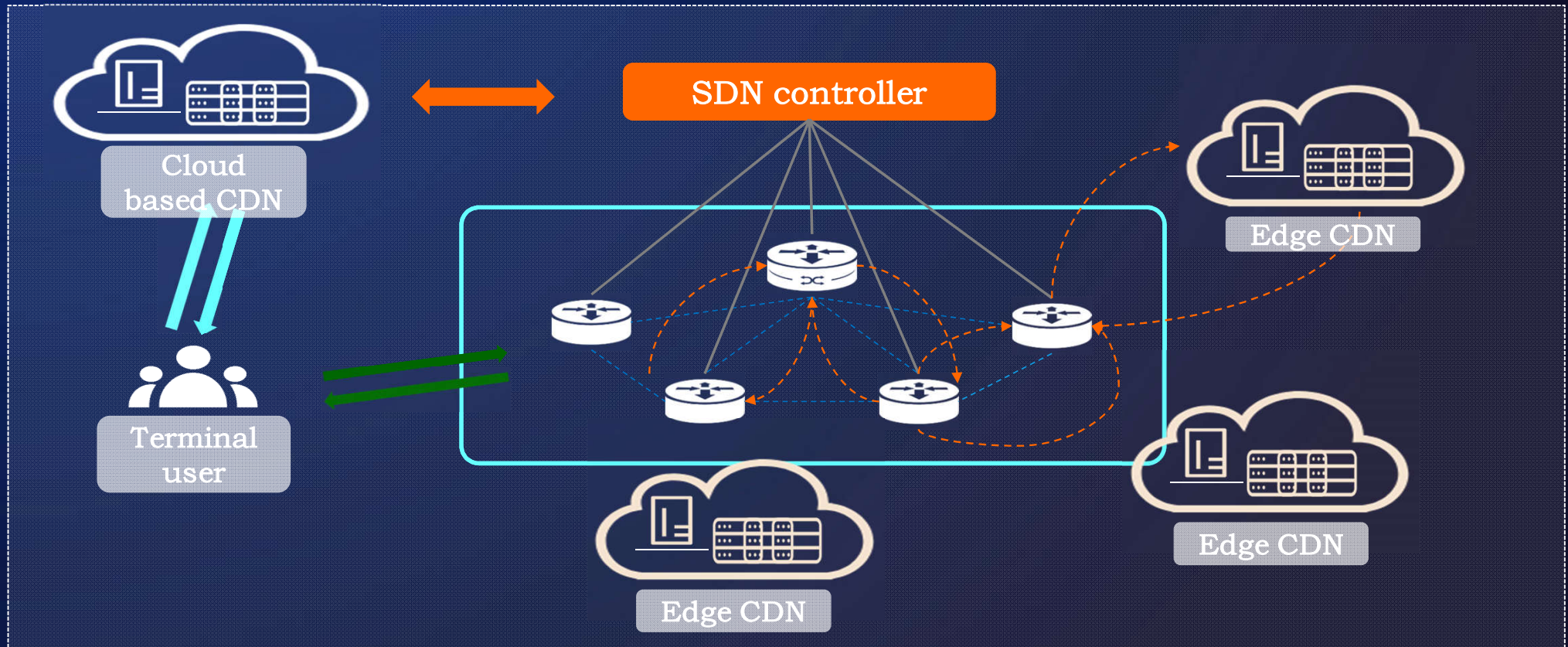
Promotion settings management function
Save operating cost



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



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

② Fixed and mobile converged edge CDN

Fixed network

CDN node sink to the BNG or OLT network device

Mobile network

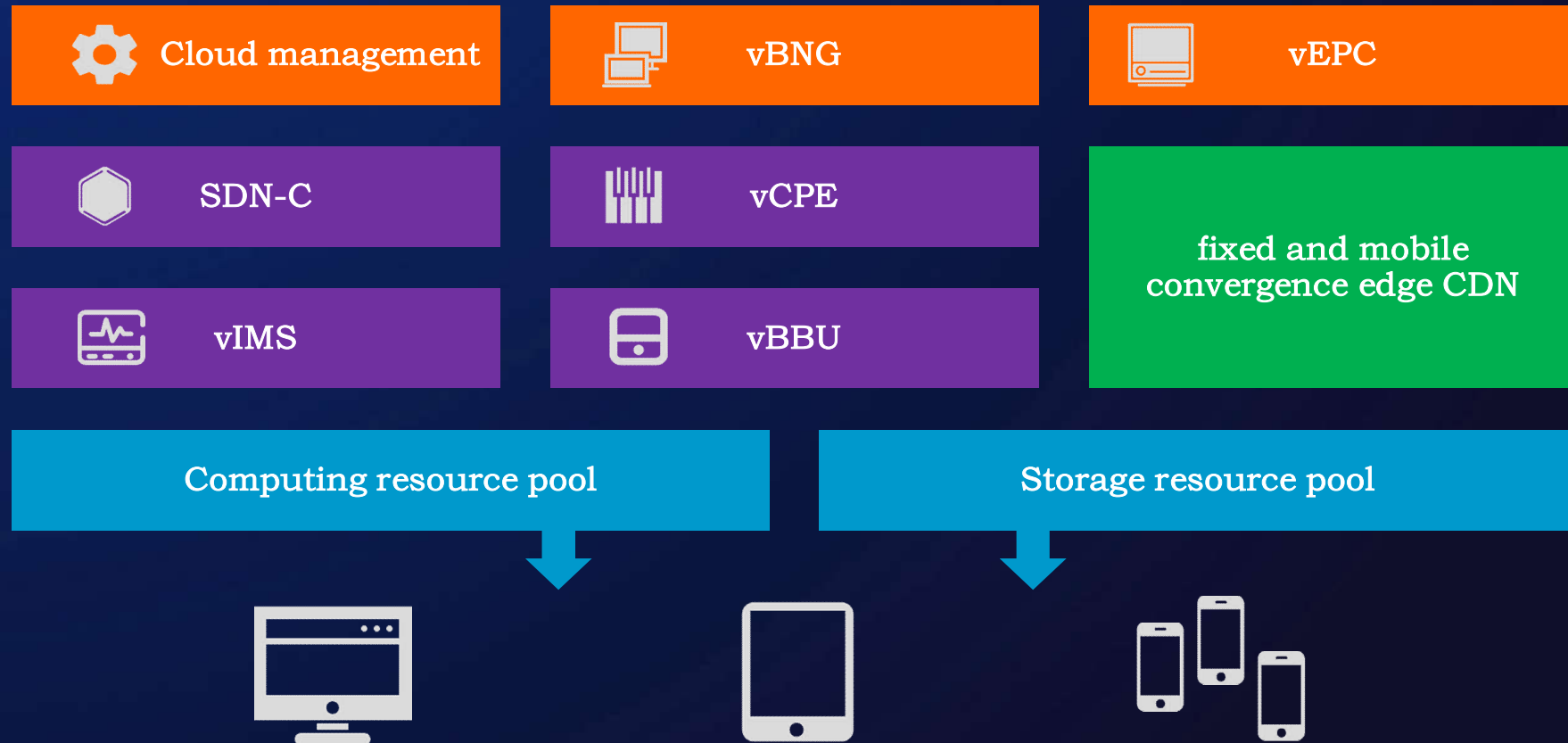
CDN node sink to the UTN device or the base device

Improve network quality

- ✓ Save traffic flow path, reduce time delay
- ✓ Ease load on converged networks and core networks
- ✓ Node virtualization by SDN/NFV



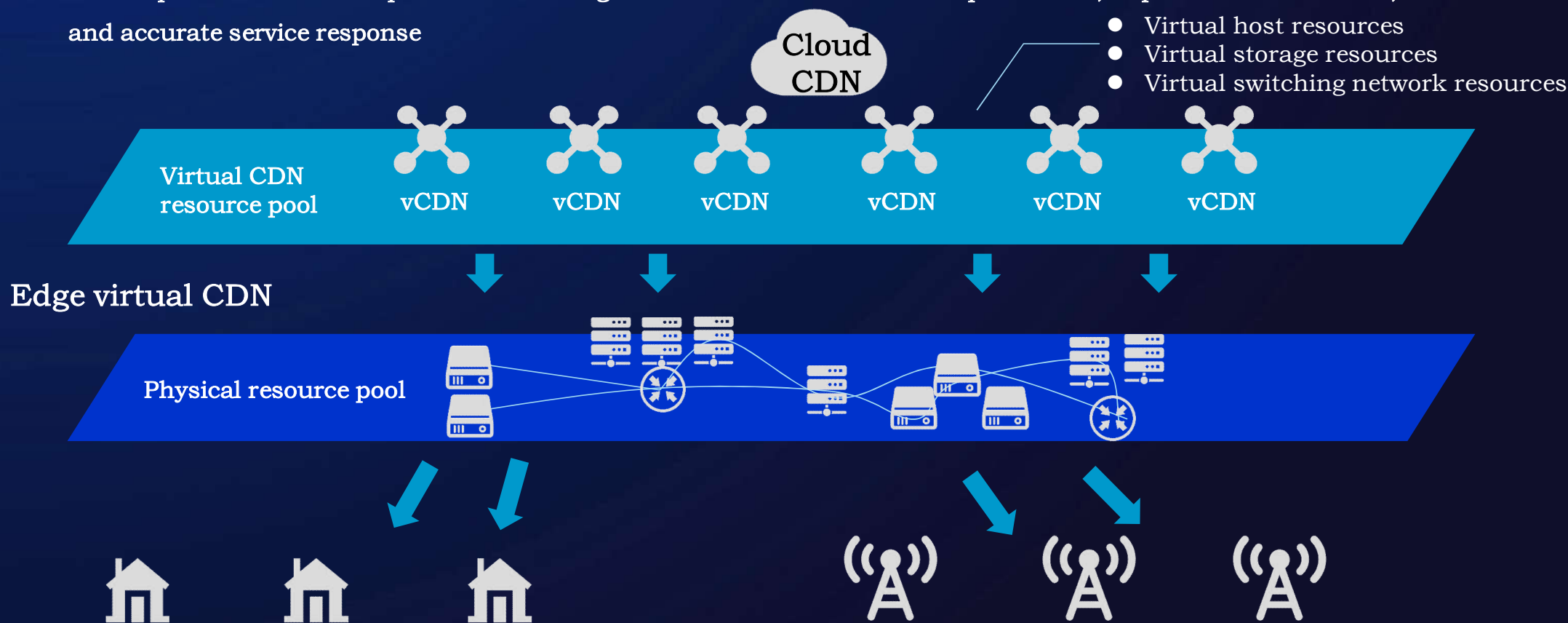
Fixed and mobile convergence architecture



- 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



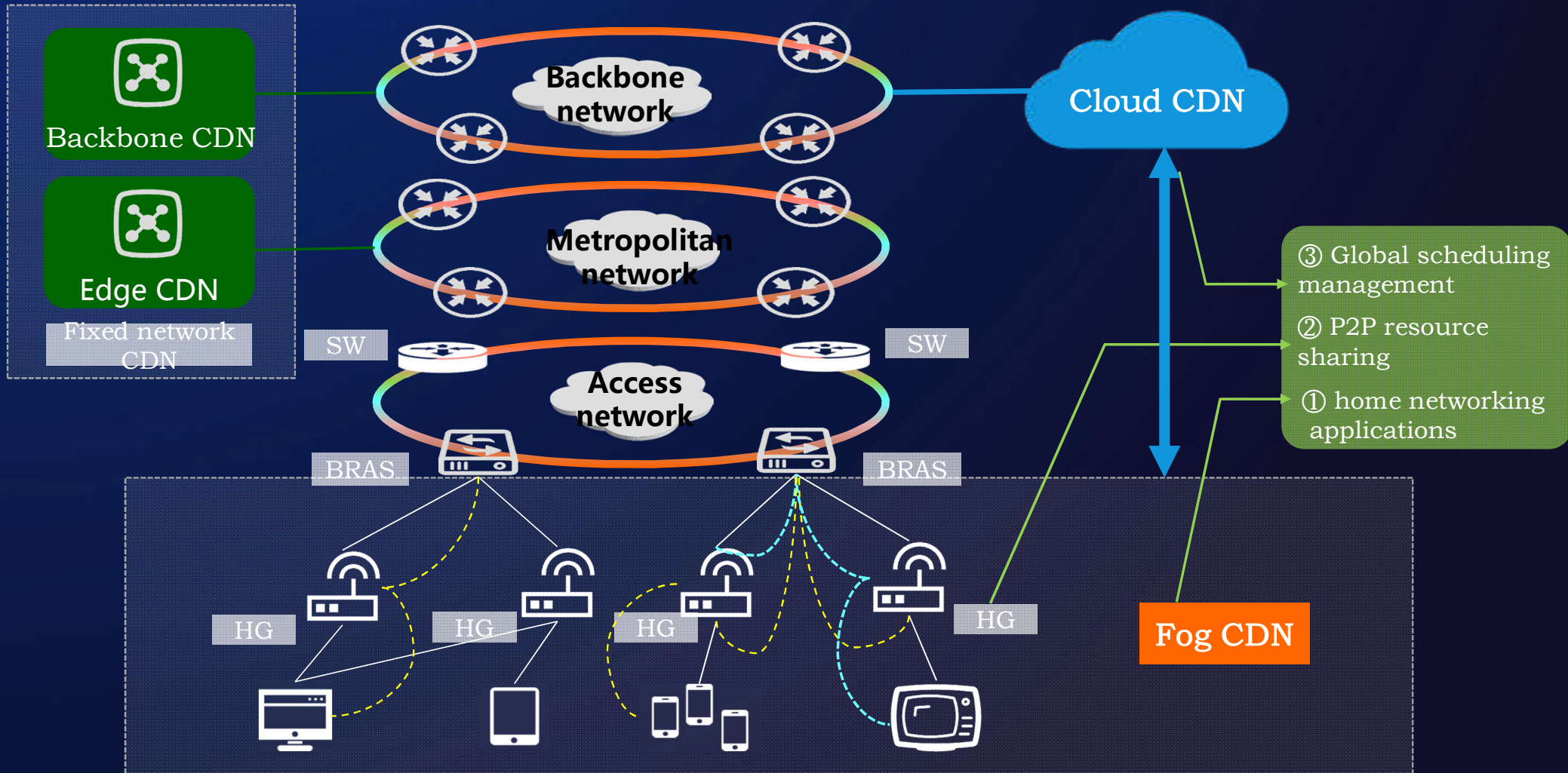
- P2P technology is applied to CDN nodes
- Greatly release network pressure



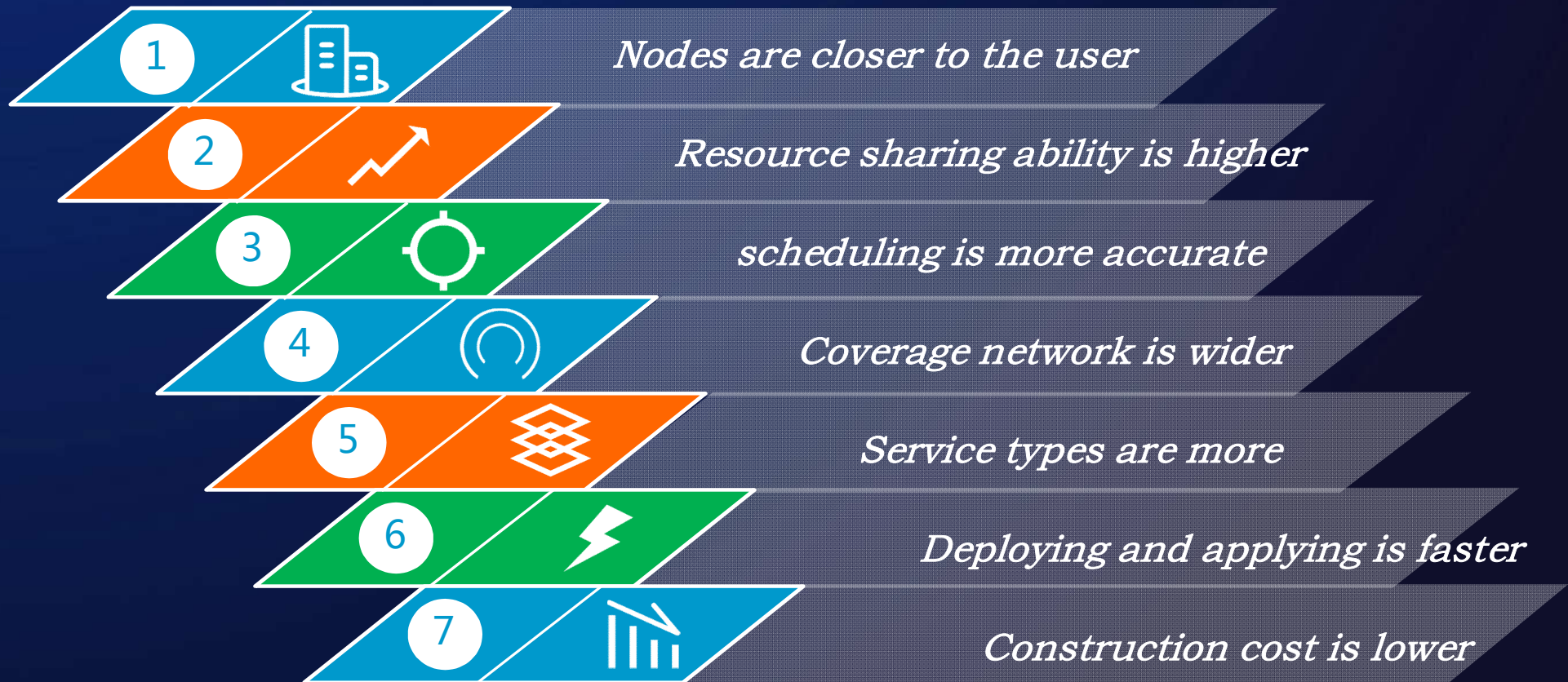
- Rental idle upstream bandwidth and fog resources
- Create new business income



Fog based CDN architecture



CDN developing vision





Thank you!