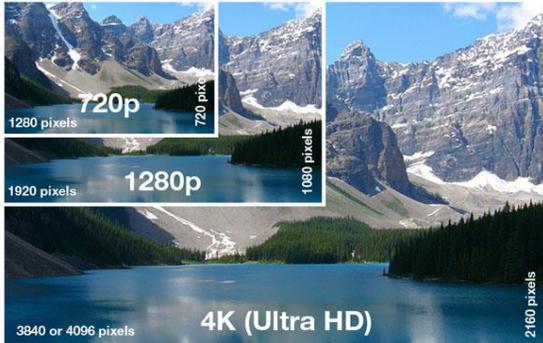


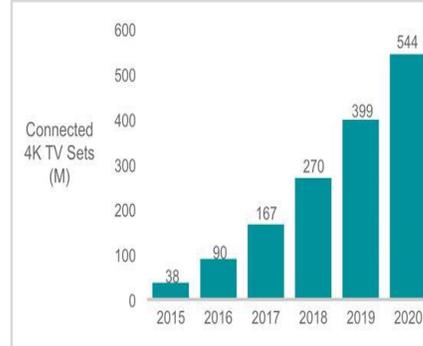
An idea on CDN Access Network

Video Requirement Driving CDN Downward

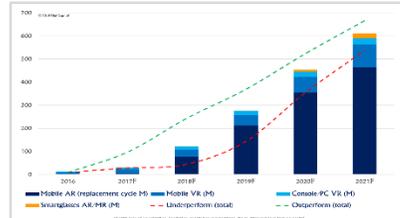
Video Requiring Larger Throughput & Lower Latency



Video type	Bandwidth
SD	1.5Mbps
HD,1080p30	5Mbps
UHD,4Kp24/30	15Mbps
UHD,4Kp60	25Mbps
UHD,4Kp150	60Mbps
UHD,8Kp60	100Mbps

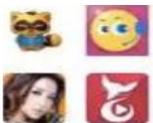


- By 2020, 500M families using 4k TV, HD/UHD requires larger bandwidth



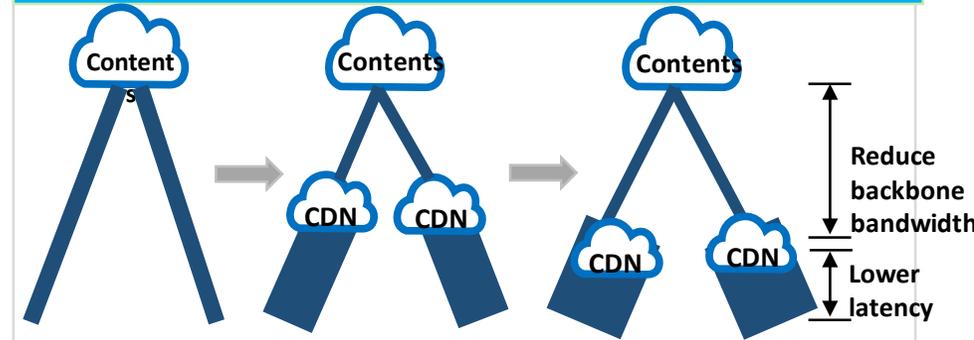
Each re-generate ROI (Range of Interest), latency <20ms. Contents can't download wholly with limited access bandwidth, Terminal requires dynamically ROI zone content delivery.

- Optimal VR NW performance: bandwidth 0.5-3.6Gbps, latency <8ms
- Live video higher demand on concurrency, continuity, latency

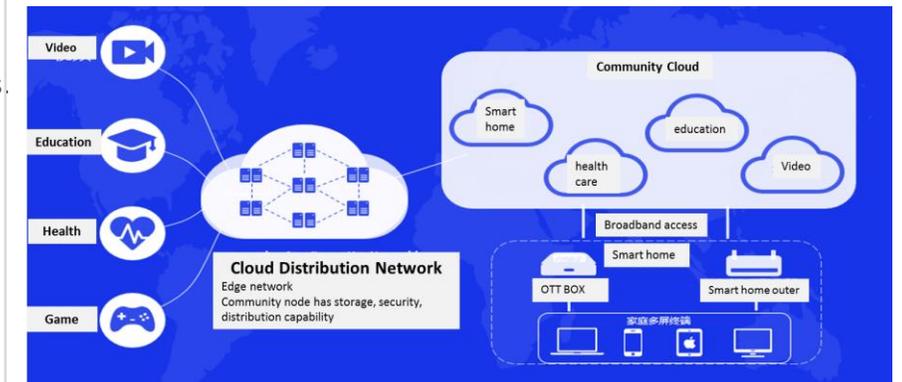


UGC mode, hosts are distributed, traditional CDN cause extra latency, packet loss while uploading. Future live streaming emphasis on liveness & interaction, video lag <2%.

Some Trying CDN Downward deploy



CDN going downward to reduce backbone bandwidth, lower latency



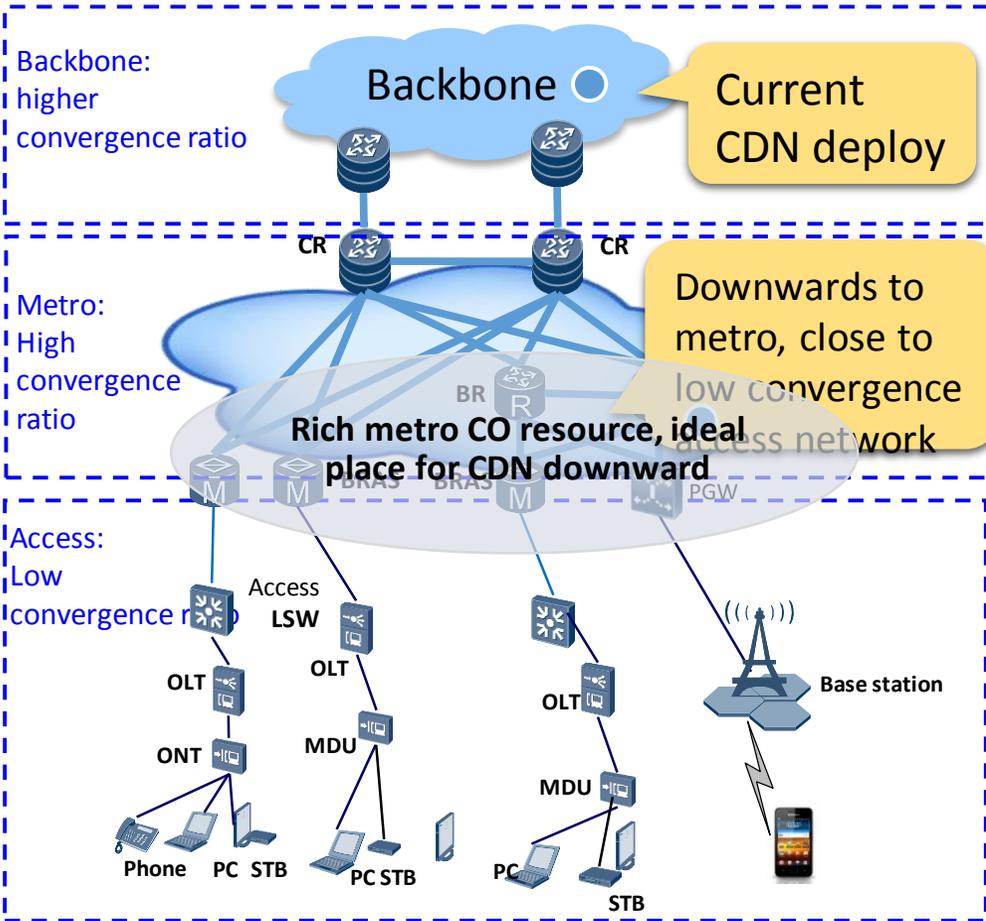
Chinanetcenter* "Community Cloud" concept, downwards CDN nodes into metro even closer to user.

*Chinanetcenter (biggest CDN provider in China)

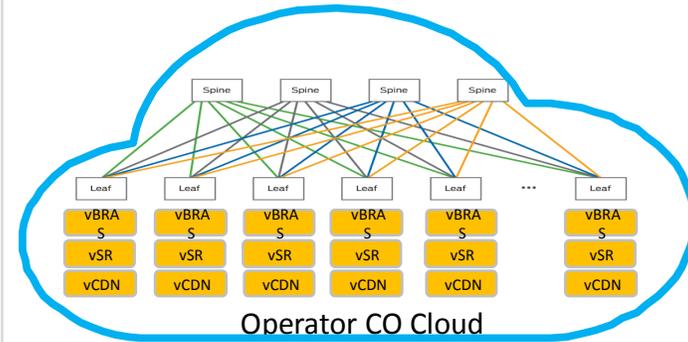
BNG: border network gateway

Utilize CO resource for CDN downward

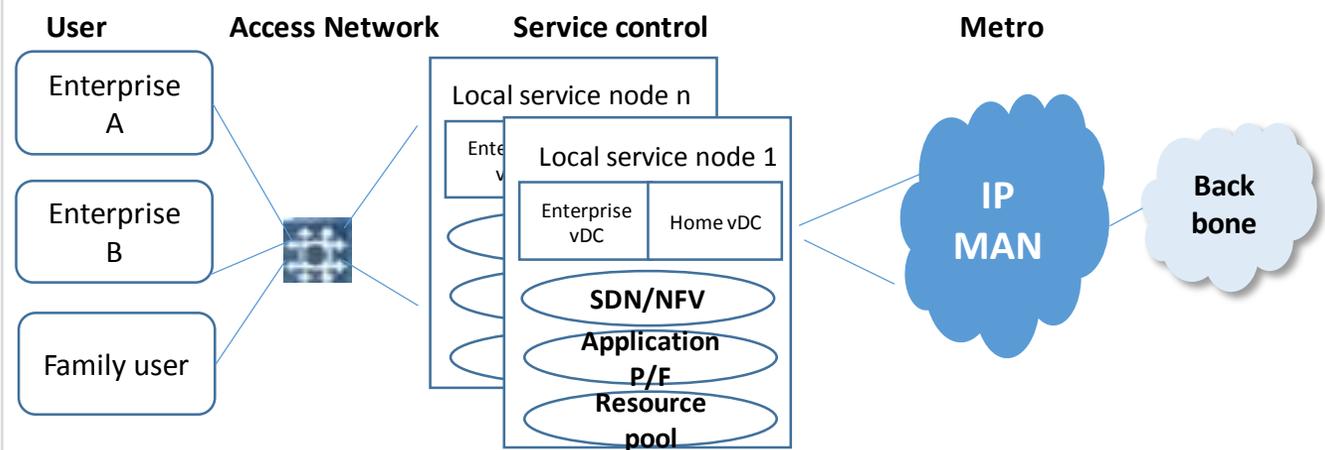
Operators have rich CO resource in metro, can be ideal place of CDN downward



CDN downward Conform to cloud trend of CO resources



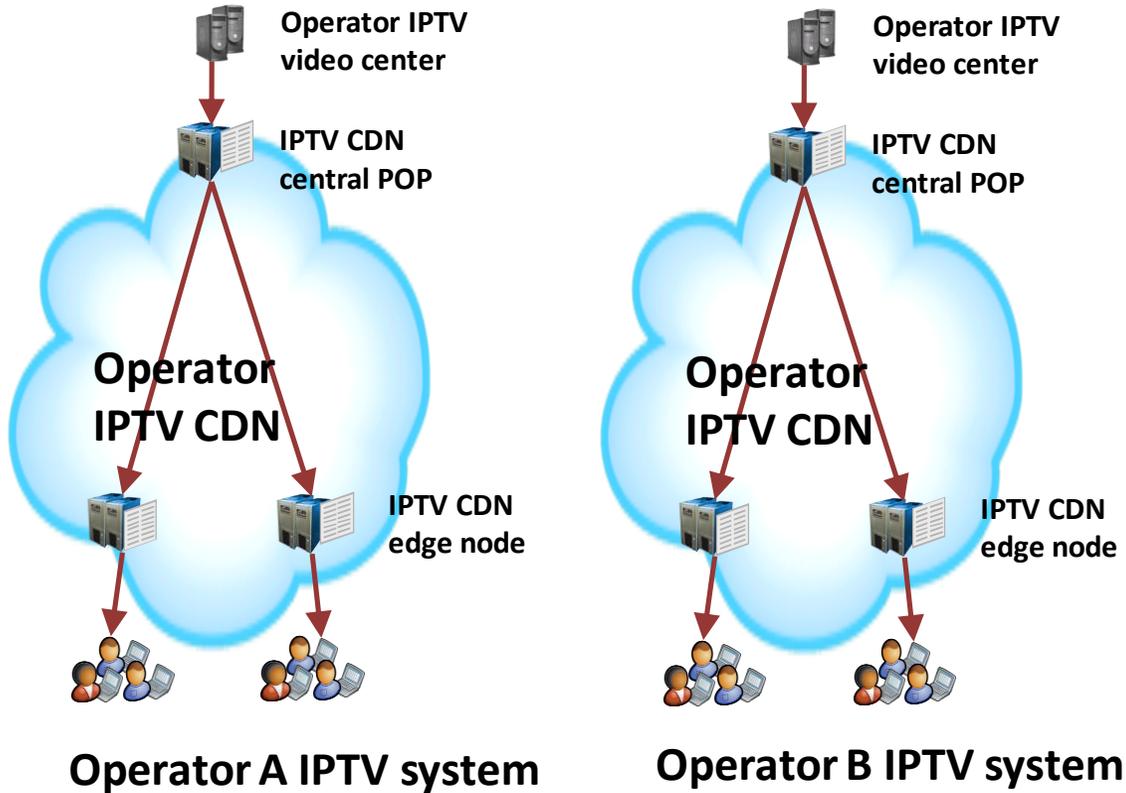
Operator utilize SDN/NFV to reform CO into cloud, for flexible biz dev. and deployment.



Case: Local Service Node, take advantage of edge point, provide virtual DC based service

ACDN: Horizontal decoupling, enlarge industry space

Current Operator's CDN for IPTV market



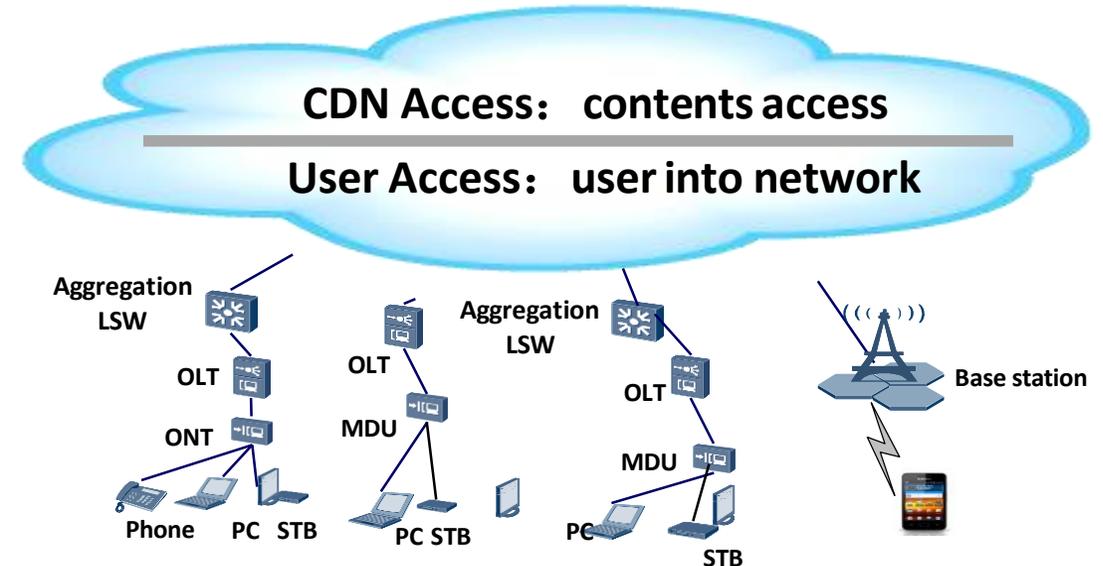
Operator IPTV: closed vertical from video source, to CDN, and STB

ACDN: CDN Access

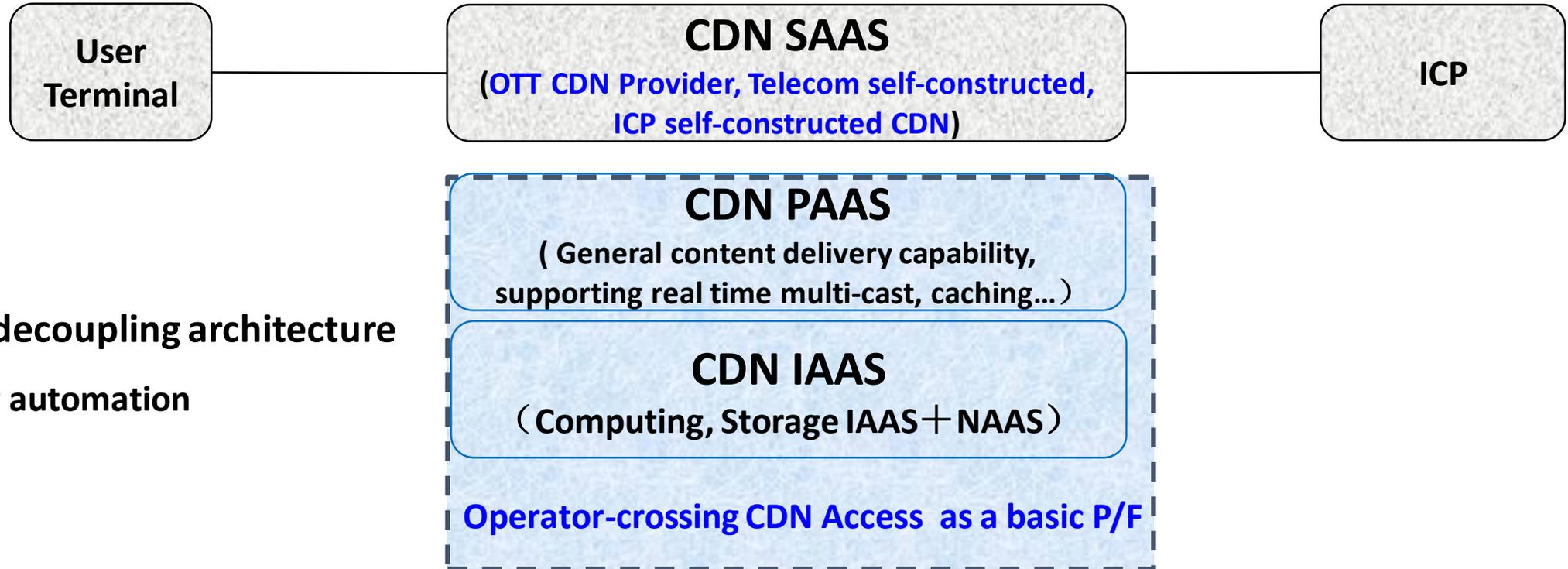
Horizontal decoupling, enlarge industry space

CDN Core: advanced CDN ability strongly related to content, keeping OTT core strength (Hot contents launch, user interest forecast)

CDN Access: basic ability irrelevant to contents, use CO resources (computing, storage, basic function)



CDN Access Biz Model: OpenCDN As A Service



Feature:

- Horizontal decoupling architecture
- Open API for automation

Tech innovation:

- Decoupling app/service virtualization and cloud, supporting large scale CDN virtualization, automation and distribution

Biz model innovation:

- Tight co-work between CDN provider and Telecom, for win-win relationship

Thanks for your Attention.

Any Question & Further Discussion are Welcomed.

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