Accessing Cloud via Optical Network Problem Statement

RTGWG, IETF 112, virtual

draft-liu-rtgwg-optical2cloud-problem-statement-01

Authors:

Sheng Liu (liushengwl@chinamobile.com)

Haomian Zheng (zhenghaomian@huawei.com)

Motivation of this work

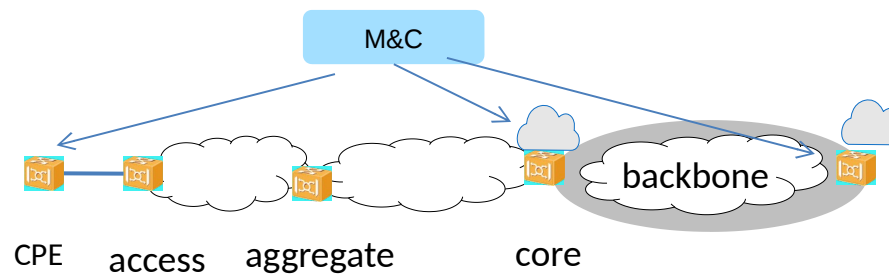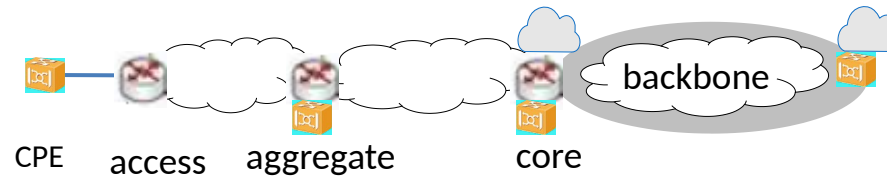Finance
Low latency,
High reliability

Government
Large bandwidth,
high security

Medicine
Large bandwidth,
high reliability

OTT
Large bandwidth
Low latency

backbone

CPE   access   aggregate   core

M&C

backbone

CPE   access   aggregate   core

- The prevalence of cloud services, enterprises services, home services such as AR/VR
- Accessing clouds with optical networks is increasingly attractive and becoming an option for the users.

Use case 1:Multi-cloud accessing
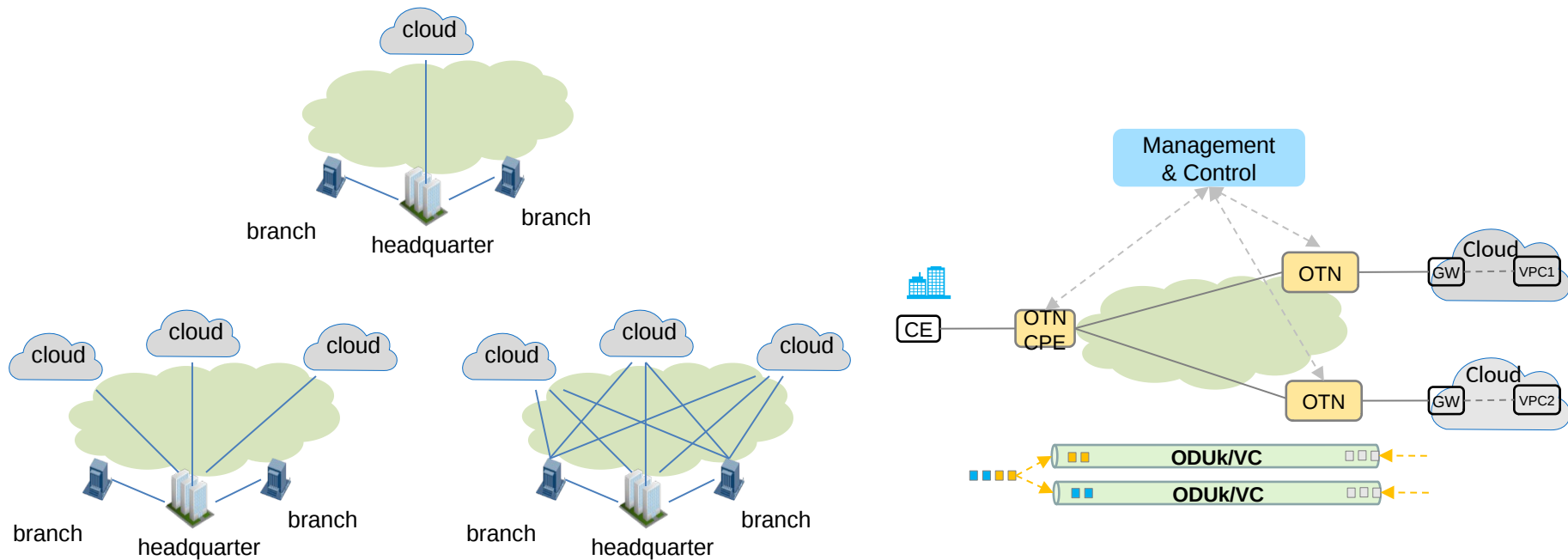
- Cloud services are usually supported by multiple interconnected data centers (DCs).
- Current problem: on-demand, scalable, high available and uses-based billing, etc.
- Data Centre Interconnect (DCI) 's requirements: capacity, latency, reliability and flexible scheduling.
- This use case requires specific capabilities of advanced OTN (Optical Transport Network) for DCIs.

Use case 2:High-quality leased line

Financial Service HQs Network
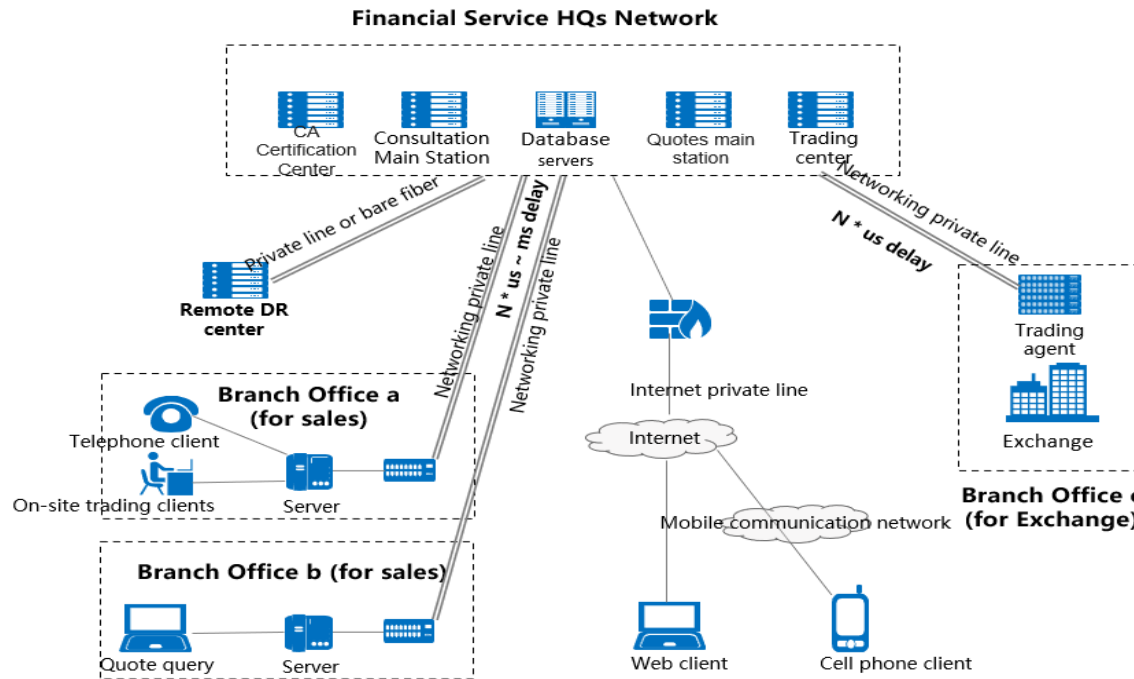
- High quality private lines provide large bandwidth, low latency, high security and reliability.
- Accelerate the deployment of cloud services.
- Reduce operator's CAPEX and OPEX.
- Enable operators to develop value-added services by providing enterprise users with latency maps, availability maps, comprehensive SLA reports, customized latency levels, and dynamic bandwidth adjustment packages.

Use case 3:Cloud virtual reality
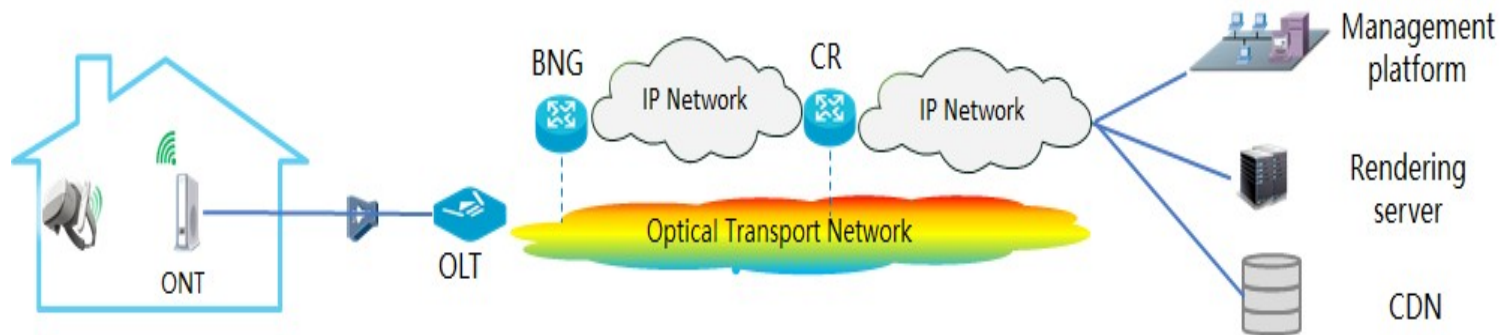
•Early versions of cloud VR (e.g. 4K VR) with limited user experience, and it will get worse for higher demand applications;

•Difficult to meet the requirements for large scale deployment of cloud VR with enhanced experience (e.g. Interactive VR applications, cloud games);

•Much higher available and guaranteed bandwidth (e.g. > 1 Gbps), lower latency (e.g. < 10 ms) and lower jitter (e.g. < 5 ms) will be required.

Requirements Summary

- Lx VPN of optical networks for multiple-to-multiple access

  Some OTN equipments have adopted packet processing functions, such as packet switching, MPLS VPN, etc.

- High-performance and high-reliability

- Small-granularity container, 2M-1Gb/s, is required to improve the efficiency of the networks.

- High bandwidth (e.g. > 1 Gbps), low latency (e.g. < 10 ms) and low jitter (e.g. < 5 ms), are required for specific applications like Cloud VR.

Draft Status & Plan

- We see two useful rtgwg works related with this draft
  - draft-ietf-rtgwg-net2cloud-gap-analysis
  - draft-ietf-rtgwg-net2cloud-problem-statement
- The content in this draft is complementary to above;
- Call for interest & contribution;
- Propose to move forward together;