

Accessing Cloud via Optical Network Problem Statement

CCAMP, IETF 112, virtual

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

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Motivation of this work



Finance
Low latency,
High reliability



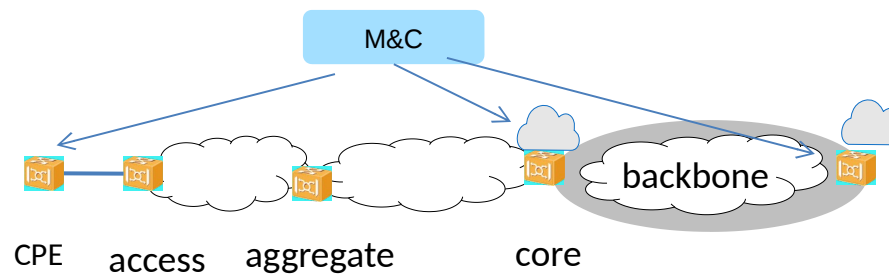
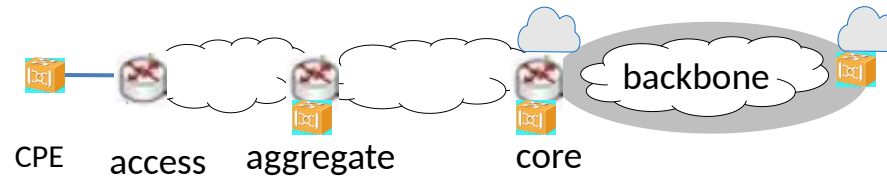
Government
Large bandwidth,
high security



Medicine
Large bandwidth,
high reliability

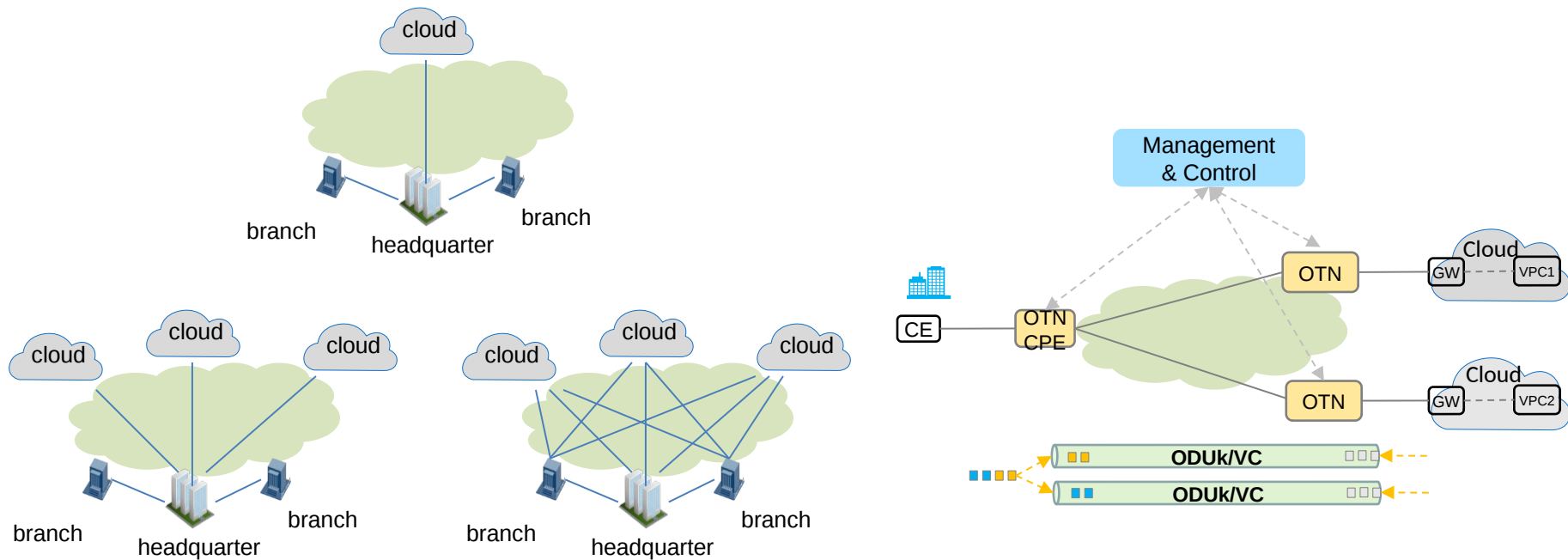


OTT
Large bandwidth
Low latency



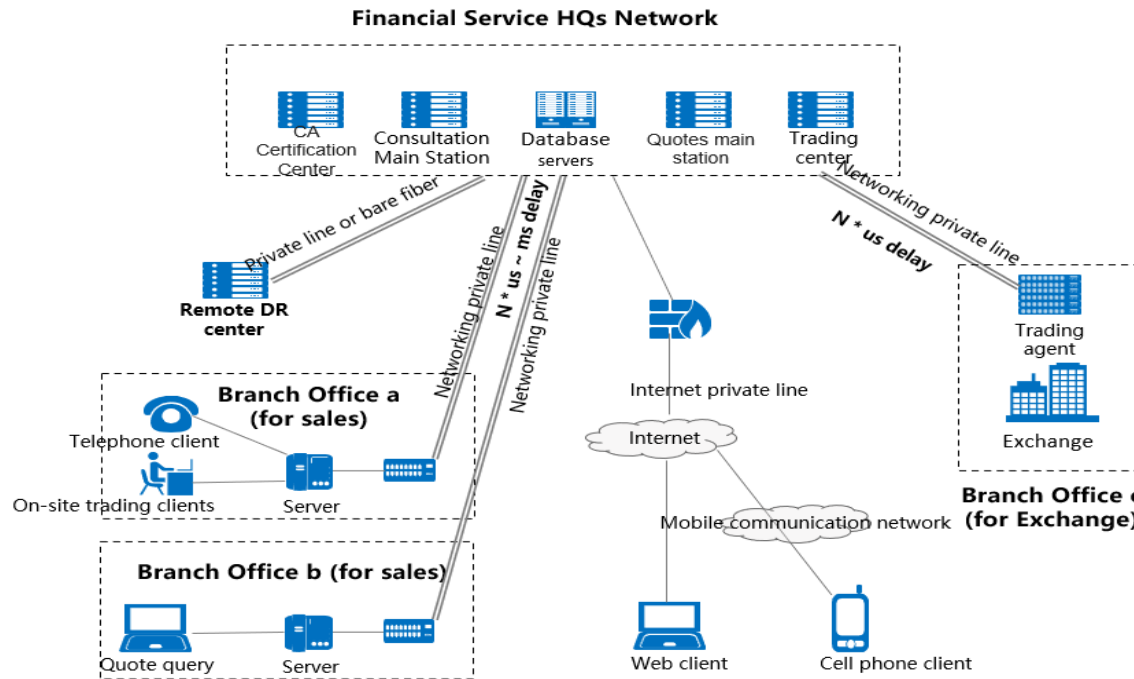
- The prevalence of cloud services, enterprises services, home services such as AR/VR
- Accessing clouds with optical networks is increasingly attractive and becoming an option for the users.

Use case 1: Multi-cloud accessing



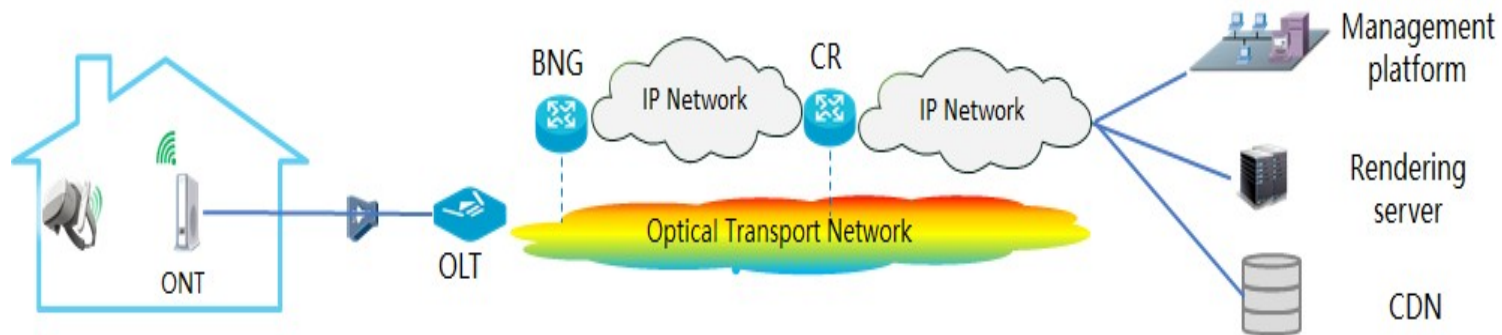
- Cloud services are usually supported by multiple interconnected data centers (DCs).
- Current problem: on-demand, scalable, high available and uses-based billing, etc.
- Data Centre Interconnect (DCI) 's requirements: capacity, latency, reliability and flexible scheduling.
- This use case requires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

Use case 2: High-quality leased line



- 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

- Rtgwg is having useful related works
 - draft-ietf-rtgwg-net2cloud-gap-analysis
 - draft-ietf-rtgwg-net2cloud-problem-statement
 - Presented on Wed with useful feedback
- The content in this draft is complementary to above;
 - It's also optical-specific;
- Call for interest & joint-contribution;