Problem Statement and Requirements of Accessing Cloud via Optical Network

CCAMP, IETF 113, virtual
draft-liu-ccamp-optical2cloud-problem-statement-00

Authors:
Sheng Liu (liushengwl@chinamobile.com)
Haomian Zheng (zhenghaomian@huawei.com)
Aihua Guo (aihuaguo.ietf@gmail.com)
Yang Zhao (zhaoyang@chinamobile.com)
Provide high-quality connections to high-quality demands

Finance

Medicine

OTT

......

Unified flows ▶ Low/Middle/High Priorities;

Carry aggregated IP/ETH flows ▶ Carry Services (for high priority);

Large Granularity ▶ Small Granularity;

Limited Connection ▶ Massive Connection;

Static ▶ Dynamic;
Use case 1: Multi-cloud accessing

Cloud-Accessing Connectivity types:

- Point-to-point
- Point-to-multi-point
- Multi-point-to-multi-point
Use case 2: High-quality leased line

- High quality private lines provide
  - Large bandwidth
  - Low latency
  - High security
  - High reliability

- Efficient Control & Management request
  - SLA / Service Differentiation;
  - Adaptive to dynamic performance changes;
  - Aware of Traffic demand (Dest/BW);
  - Faster deployment to customized event;
Use case 3: Cloud virtual reality

- Higher-quality is also demanded at home & access, cloud VR is requiring:
  - Higher available and guaranteed bandwidth (e.g. > 1 Gbps);
  - Lower latency (e.g. < 10 ms) and lower jitter (e.g. < 5 ms);
- Control & Management needs to support:
  - Awareness of service start/end;
  - Dynamically expanding/shrinking bandwidth (when user comes/leaves);
Requirement of Ctrl & Mgmt

• Any Service:
  • Services can directly request optical network to access (multi-)cloud
• Awareness:
  • Start/end of the services; - to create/remove connections
  • Real-time SLA changes; - to adjust bandwidth etc.
• Reliability:
  • Adaptive to network changes with fast recovery
• Scalability:
  • To support massive Access
Draft Status & Plan

- Updated draft-liu-rtgwg-optical2cloud-problem-statement-00 based on IETF 112 comments
- The document is now more focused on:
  - Optical-specific characteristics;
  - Control and Management requirements;
- Confirm the usefulness;
- Add the gap analysis & problem statement;
- Call for interest & joint contribution;