Problem Statement and Requirements of Accessing Cloud via Optical Network

CCAMP, IETF 113, virtual

draft-liu-ccamp-optical2cloud-problem-statement-00

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Motivation

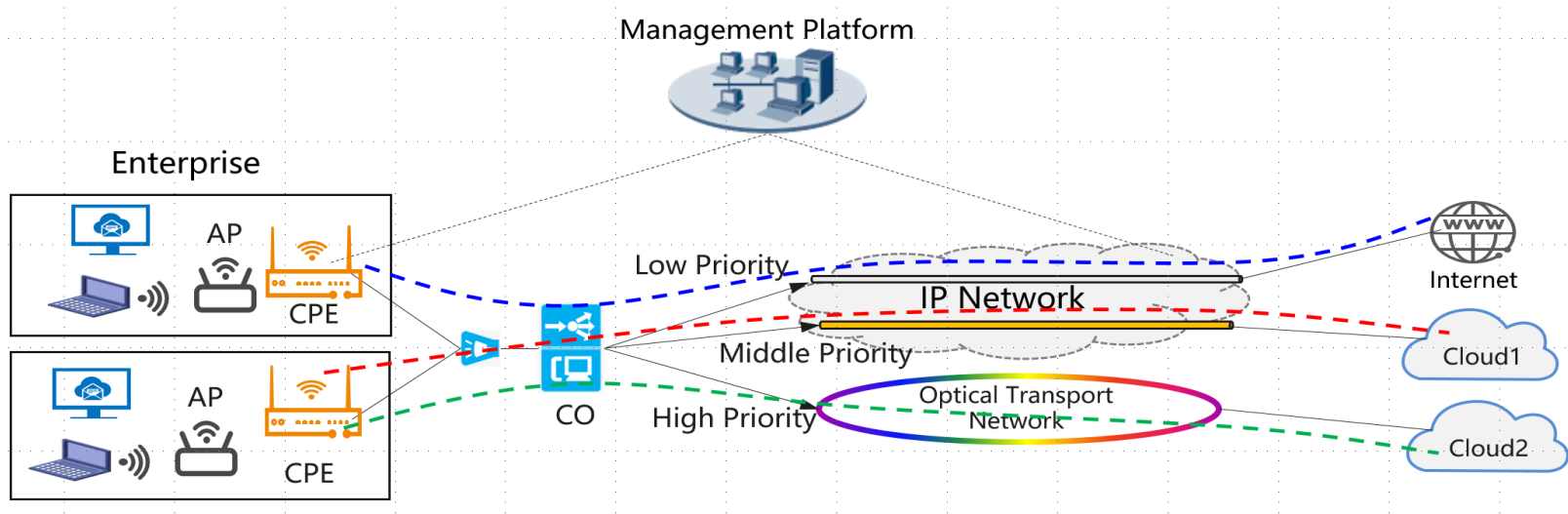Provide high-quality connections to high-quality demands

Finance

Medicine

OTT

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Management Platform

Enterprise

AP

CPE

AP

CPE

CO

Low Priority

Middle Priority

High Priority

IP Network

Optical Transport Network

Internet

Cloud1

Cloud2

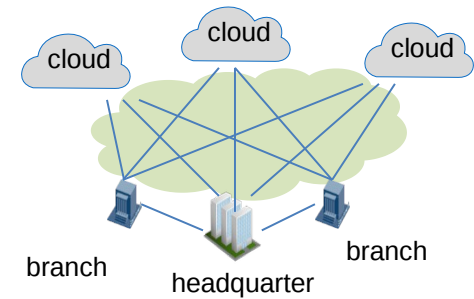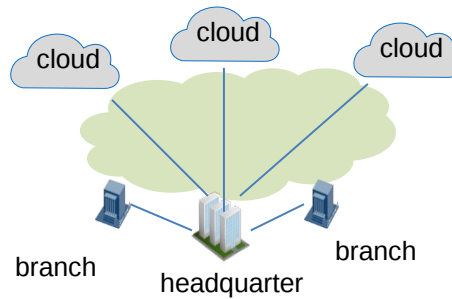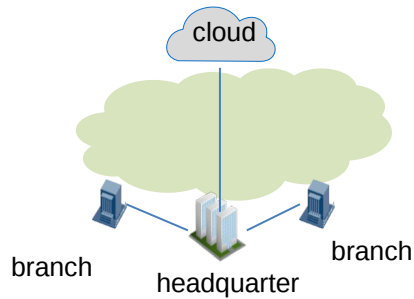**Unified flows** ◻ **Low/Middle/High Priorities;**

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

Large Granularity ◻ **Small Granularity;**

Limited Connection ◻ **Massive Connection;**
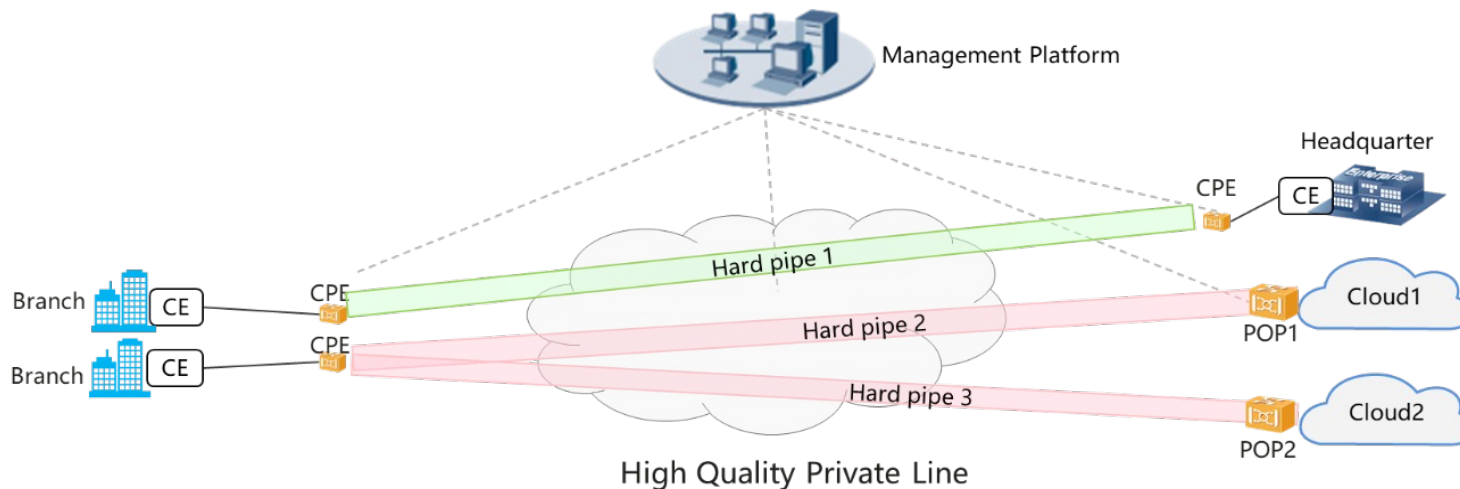
Static ◻ **Dynamic;**

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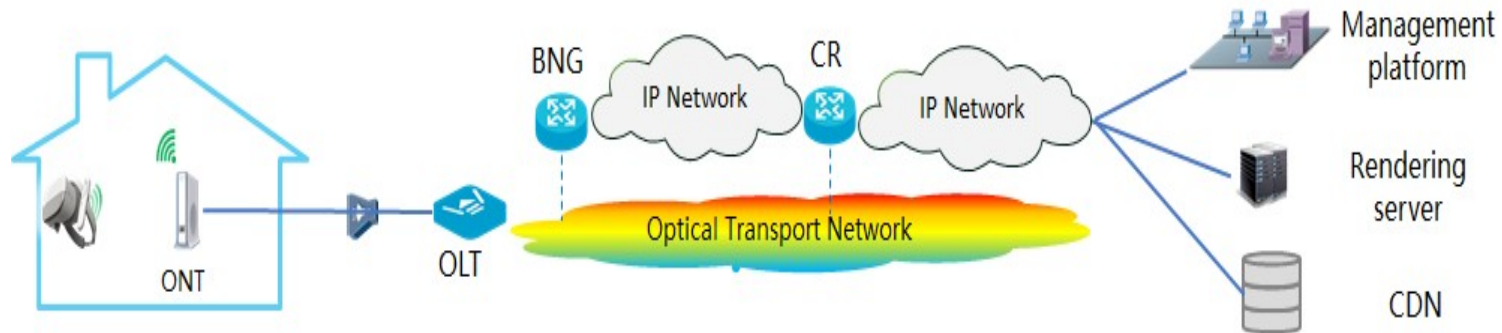
- Higher-quality is also demanded at home & access, cloud VR is requiring:
  - Higher available and guaranteed bandwidth (e.g. > 1 Gbps);
  - Lower latency (e.g. < 10 ms) and lower jitter (e.g. < 5 ms);
- Control & Management needs to support:
  - Awareness of service start/end;
  - Dynamically expanding/shrinking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

Requirement of Ctrl & Mgmt
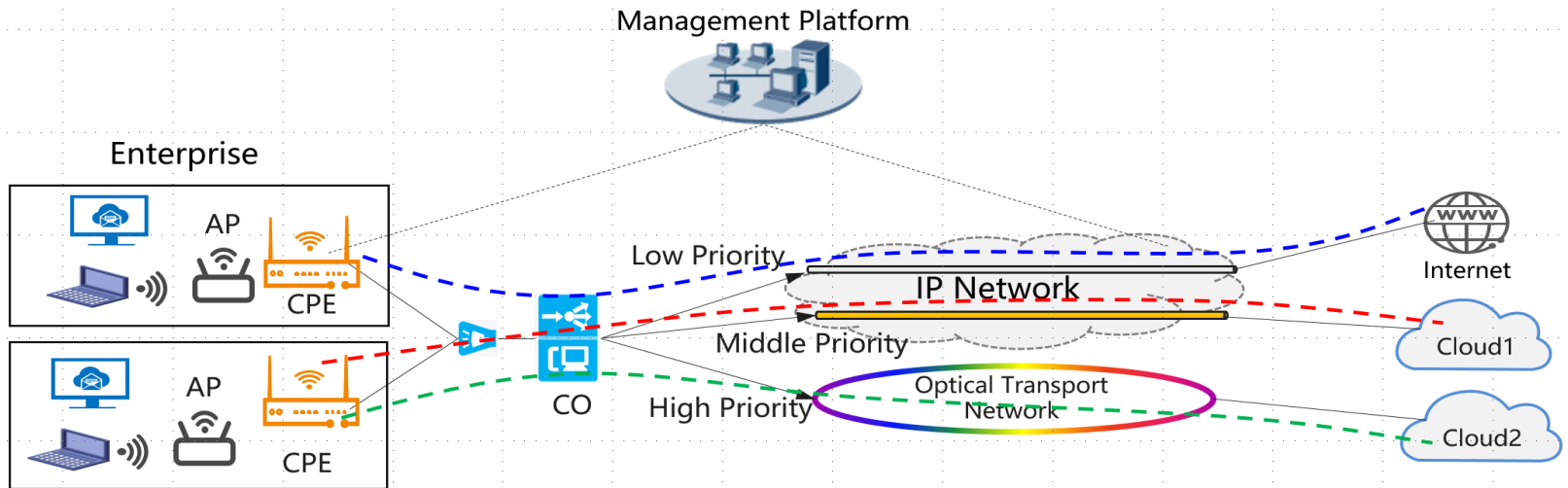
- Any Service:
    - Services can directly request optical network to access (multi-)cloud
- Awareness:
    - Start/end of the services; - to create/remove connections
    - Real-time SLA changes; - to adjust bandwidth etc.
- Reliability:
    - Adaptive to network changes with fast recovery
- Scalability:
    - 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;