

Point to Multipoint Streaming Media Delivery in the Edge Network Problem Statement

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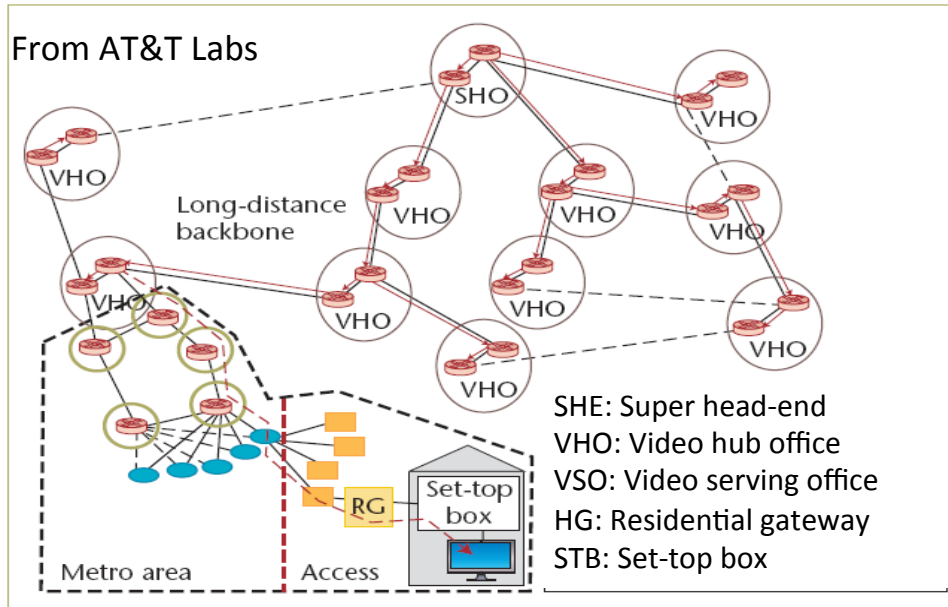
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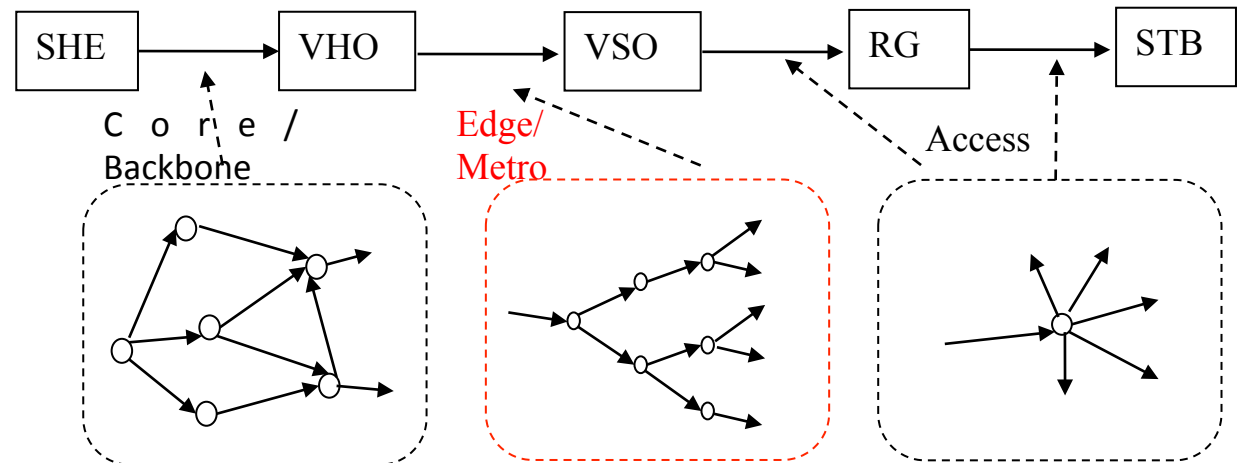
Objective

- Discuss the problems and requirements for point to multipoint (P2MP) streaming media delivery in the edge networks.

Why we focus on the edge network?



IPTV Network Architecture



Why we focus on the edge network?

- **Critical position:** connects the access network (end users) to the core network
- **End-to-end principle:** keep the simplicity in core network, putting intelligence towards the end points
- **Deployment of storage servers:** such as CDN, separate the P2MP streaming media delivery into 2 phases
- **Manageability:** number of nodes, bandwidth and throughput

Feasible solutions here?!

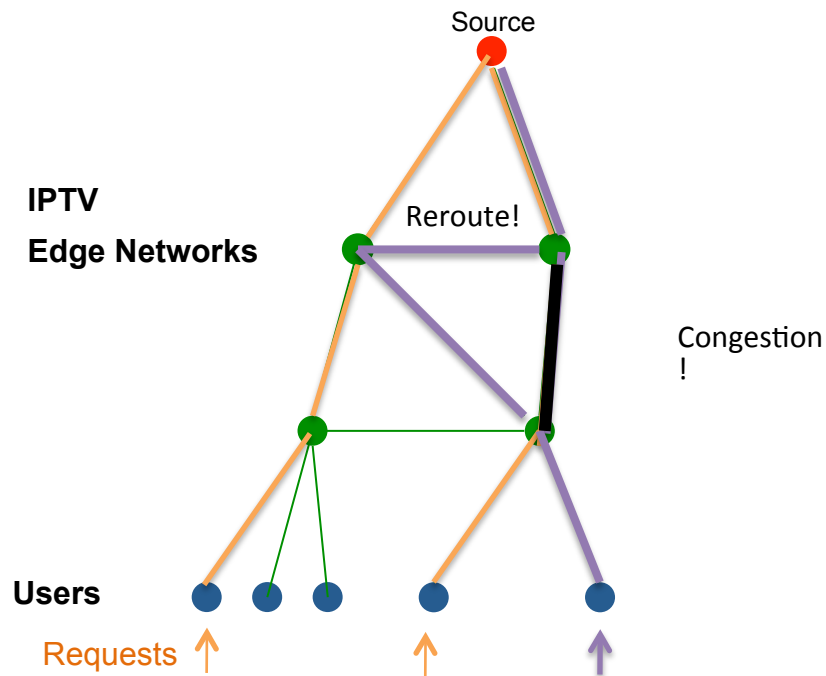
Current Situation

- **ISP:** minimize the amount of the required network resources (such as bandwidth)
- **End-users:** improve QoE (Low delay & jitter, packet loss)
- **CP/SP:** efficient and low-cost deployment, maintenance and management of the service network
- ***Lack of solutions for fulfilling all the requirements...***

The weakness of the existing solutions

- Delivery strategies is only driven by the downstream users' requests
 - No accuracy (Lack of awareness of **network states**)
 - No flexibility (No separation between mechanism and **policy**)

IPTV Use Case



P2MP Streaming media delivery
= User Requests
+ Network state awareness
+ Policy-based Control

Problem Description

- Weakness of Network state information (NSI) acquisition
 - Collect the timely NSI in the edge network, while minimizing interference and maximizing inference accuracy
- Lack of integration of policy-based control
 - Support multiple policies to control the delivery process, while minimizing the modifications of the underlay infrastructure

Architectural Requirements

- Network-aware OAM support to CP/SP
 - timely and accurate information for adaptive decisions
 - Incremental deployment
- Continuity and quality
 - fast failure recovery
 - traffic engineering
 - quality adaption

Next Step

- Discuss the utilization of in-network storage
- Modify according to the suggestions and comments

Comments and questions?

Thank you 謝謝

The 3 areas of the Internet

- **Core** – transit traffic
- **Edge** – access traffic and transit traffic.
- **Access** -end users & end equipment

