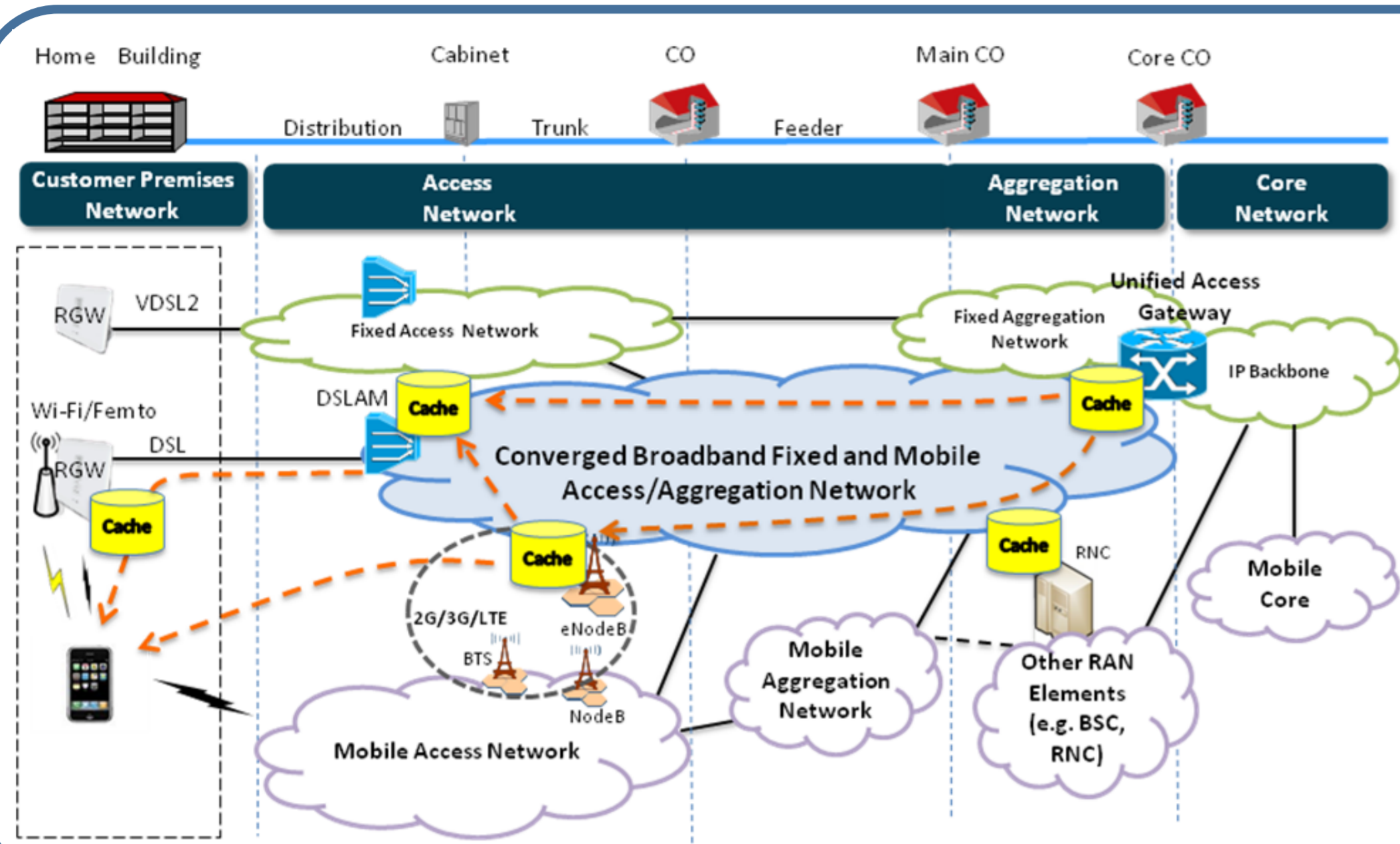


Shared Cache as a Service in Future Converged Fixed and Mobile Network

Zhe Li, Yaning Liu, Jean-Charles Point, JCP-Connect, France

Selami Ciftci, Onur Eker, Argela, Turkey

Marco Savi, Massimo Tornatore, Giacomo Verticale, POLIMI, Italy

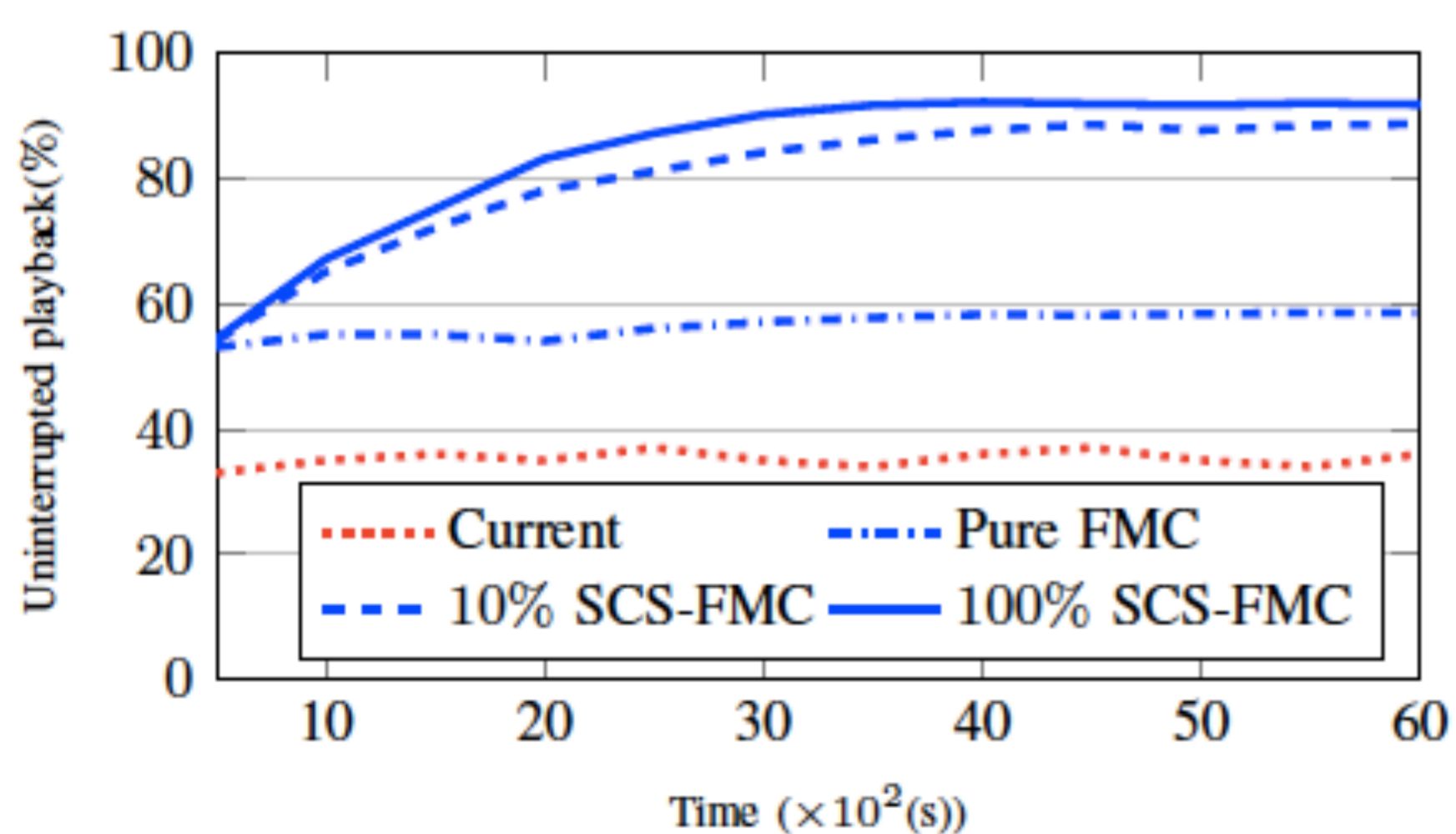
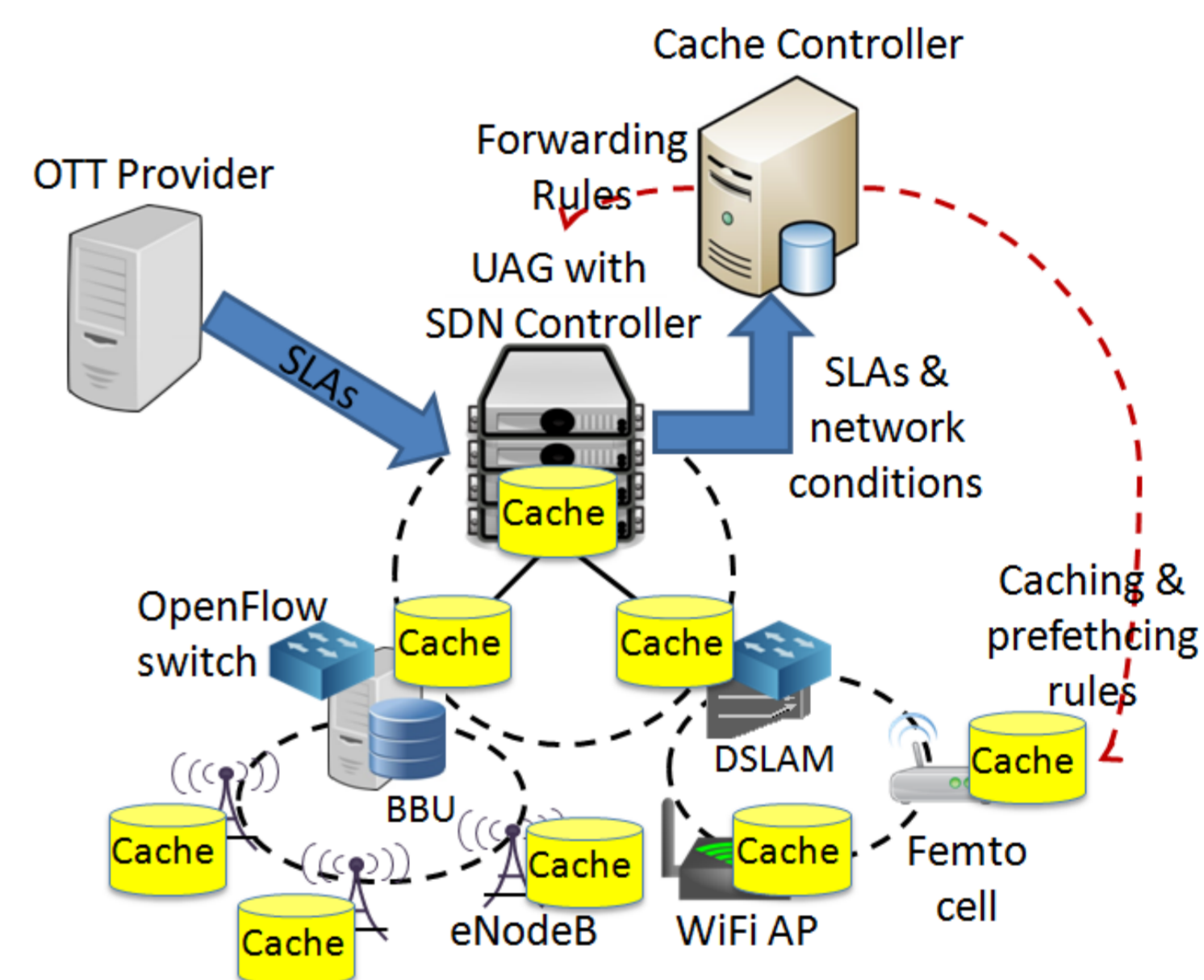


Concept & Business Opportunities:

- Converged fixed and mobile network
- Key enabler:
 - Unified Access Gateway (UAG)
 - Cache Controller (CC)
- content-based bundle services :
 - Provide caching as a service to OTT provider
 - Service quality differentiation at user side

Architecture:

- UAG: network element which logically supports service creation for fixed and mobile users.
- CC: receives inputs from both content providers and network operators, and gives as outputs optimal caching and real-time pre-fetching plans.
- SDN Controller: Install and remove forwarding rules for certain content in OpenFlow switches so that user request and find the current content.
- In-network caching: shares content for efficient use of network resources.



Main results:

- 90% of the video playback session can be finished without interruption.
- Playback rate is significantly improved indicating a better QoS at user side.

Simulation setup:

- 8 APs and 100 users in 2km² area
- 10,000 videos: 5 to 20 mins, 200, 400 kbps, popularity Zipf $\alpha = 0.8$
- In-network cache size: 10% to 100% content
- Shared backhaul link speed: 10 Mbps

