12/09/2019

Portland, OR

Qualcomm

Ingest Technologies

Imed Bouazizi

Media Delivery in 4G

Content Provider

Content Preparation

CDN

Devices

4G/LTE

MNO

Control Functions

S-GW

S-GW

P-GW

xMB Interface

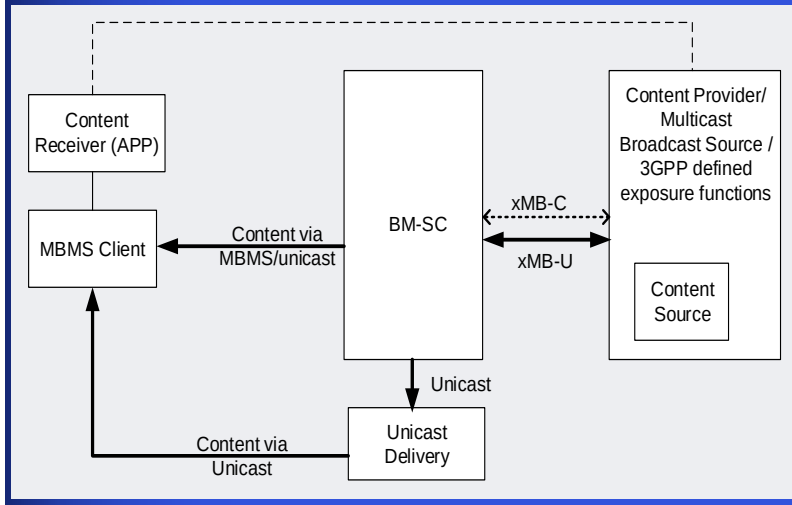
3GPP defined xMB interface in 26.348 and 29.116

First attempt to ingest content into MNO's network for distribution

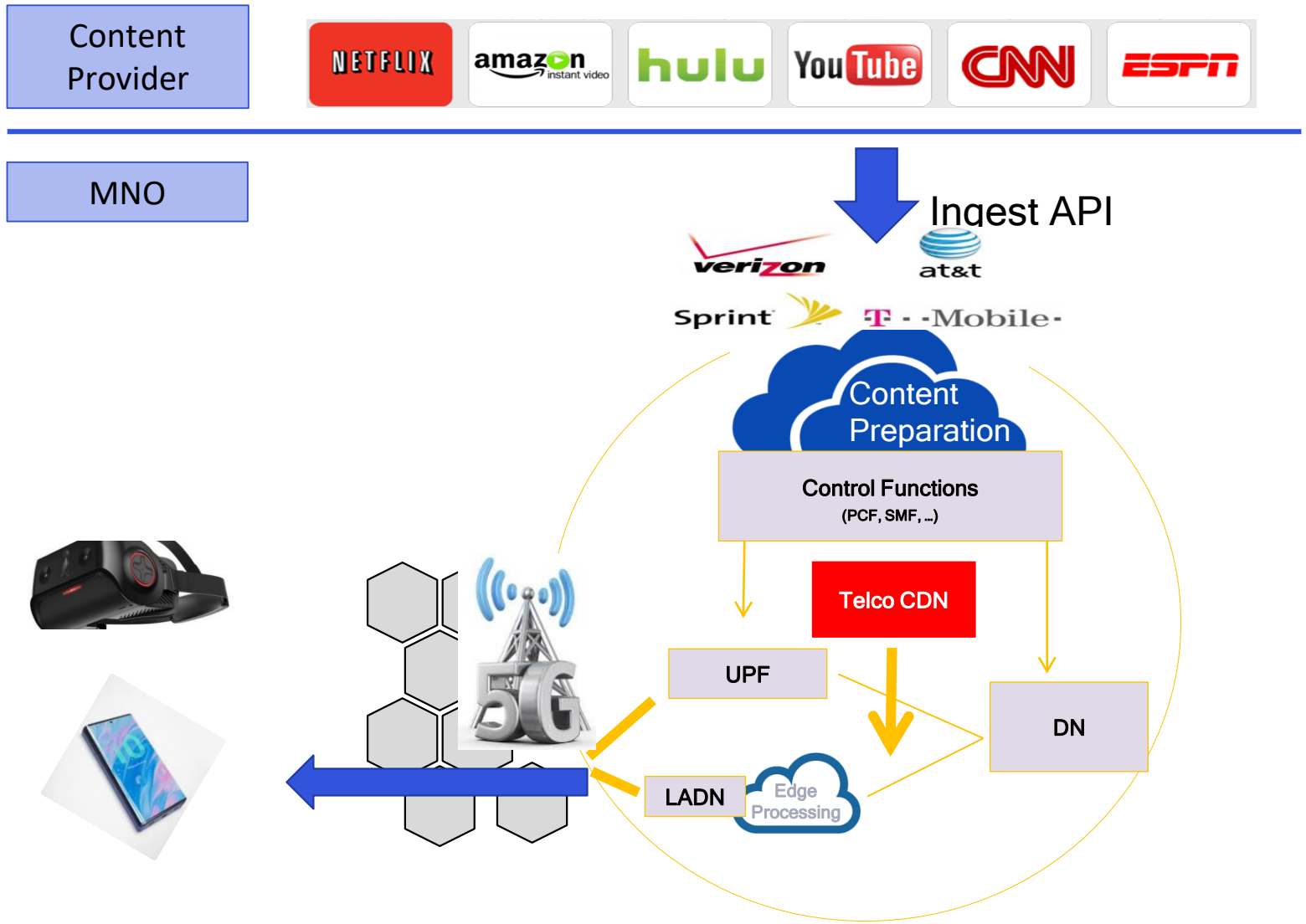
Primarily targets Broadcast distribution
- BM-SC acts as end point of the Ingest, controls the broadcast session, and streams the media
- With MooD, content may also be delivered over unicast

xMB is implemented as a RESTful API together with a security framework:
- TLS for authentication of both sides
- HTTP Digest for Authorization
- DTLS for all RTP and UDP traffic

Drawbacks:
- Too Broadcast-centric
- Due to the monolithic design of the BM-SC, does not align with 5G architecture concepts

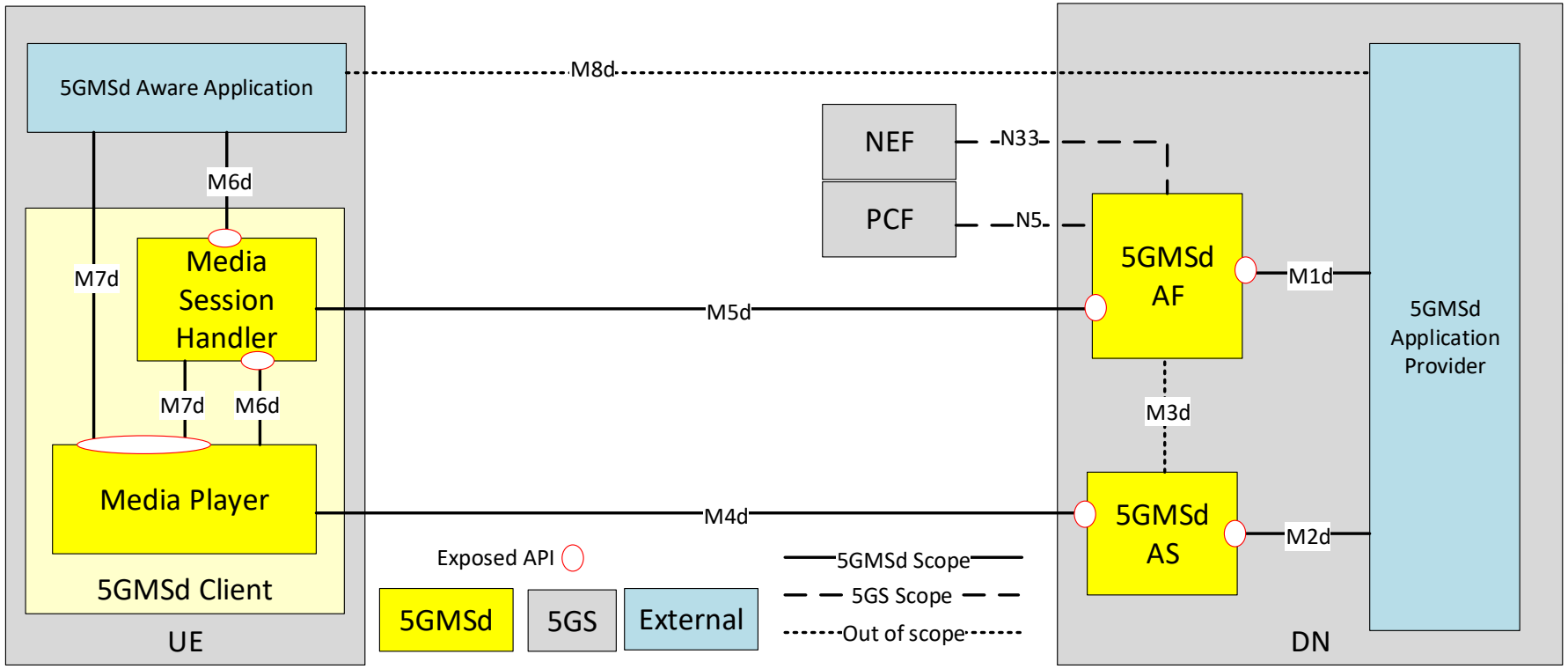


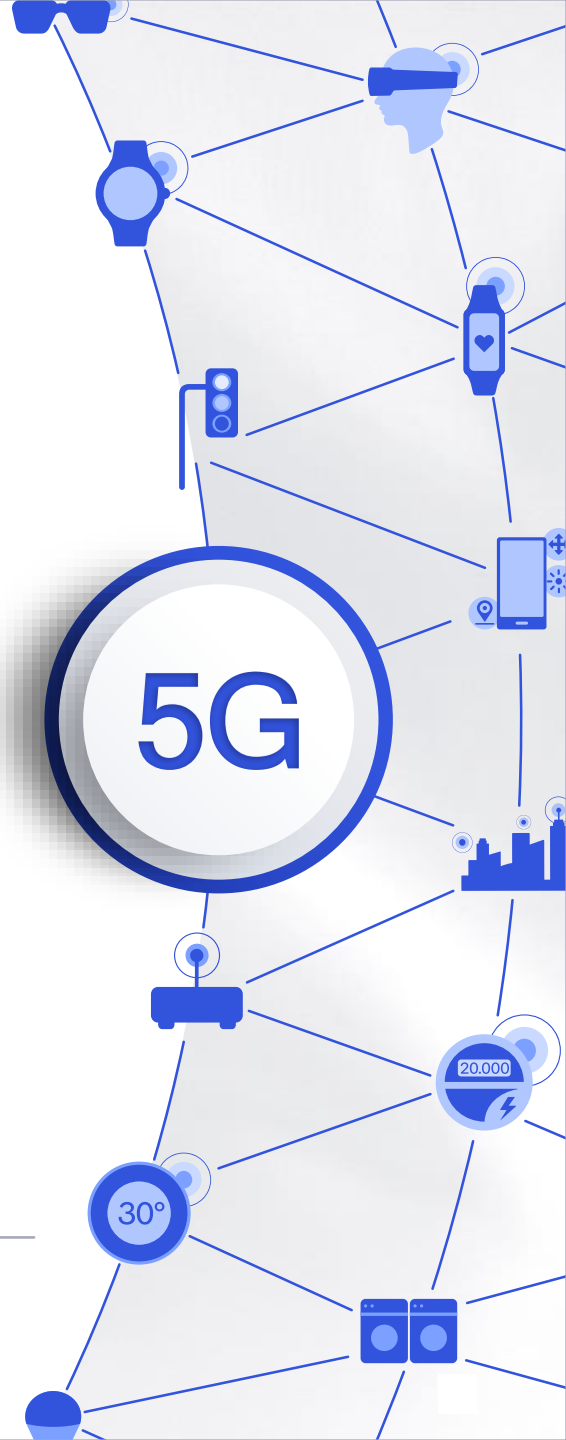
Media Delivery in 5G



- MNO's integrated Media Delivery offering:
  - QoS guarantees for streaming sessions
  - Sponsored data usage through network slicing
  - CDN for optimized network resource usage
  - Media Preparation in MNO's cloud
  - Edge Processing for customized experiences
- Enabler:
  - Standardized Ingest API

5G Media Streaming Architecture

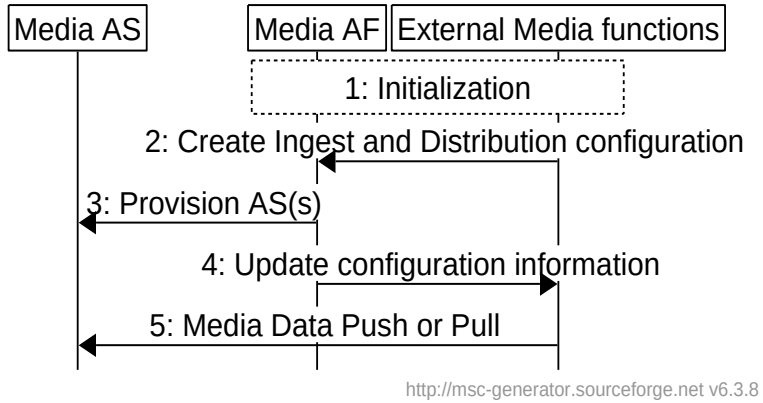


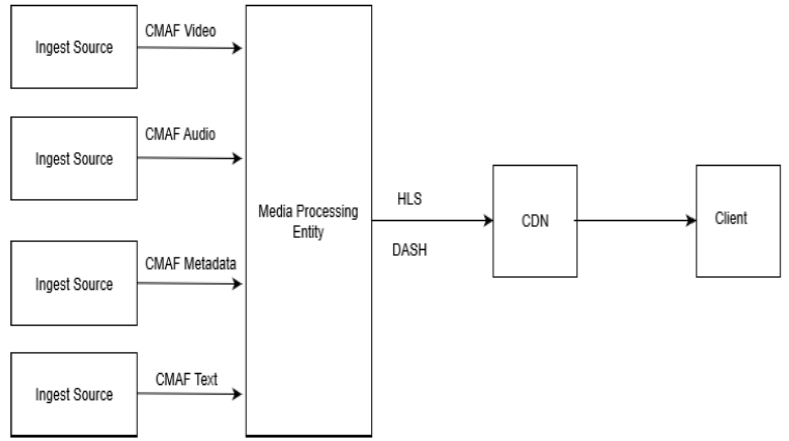


Transforming how media is distributed over mobile networks

Media Ingest in 5G

- More generic compared to xMB
  - Will handle unicast, multicast, and broadcast distribution
  - Service-Based Architecture
  - Functions are scalable, discoverable, configurable
- Media AF ensures full integration with the rest of the 5G system
- M1d interface implements a RESTful API with JSON data formats
- M1d implements CDN-style functionality to provide a familiar experience to content providers
- Media AF can be configured to leverage 5G functionality:
  - QoS configuration, traffic handling, charging
  - Network Slicing
  - Processing in the Core for Media Preparation
  - Processing on the Edge for customization and low latency
- M2d designed to be a flexible user plane
  - Customizable ingest protocol
  - Currently, only DASH-IF Ingest is referenced
    - Push Only, CMAF Format, HTTP POST method





Discussion

1. Will MNOs do this on their own or in cooperation with the key players?
2. How important are 5G features (QoS, Slicing, Edge processing,…) are to content providers and how much control is needed over the Ingest interface?
3. Will a standardized interface be sufficient to avoid fragmentation, with 100s of wireless carriers globally?
4. Will 5G be a challenge or an opportunity for the key players in the media delivery landscape?

Qualcomm

Thank you!

Follow us on:

For more information, visit us at:

www.qualcomm.com & www.qualcomm.com/blog