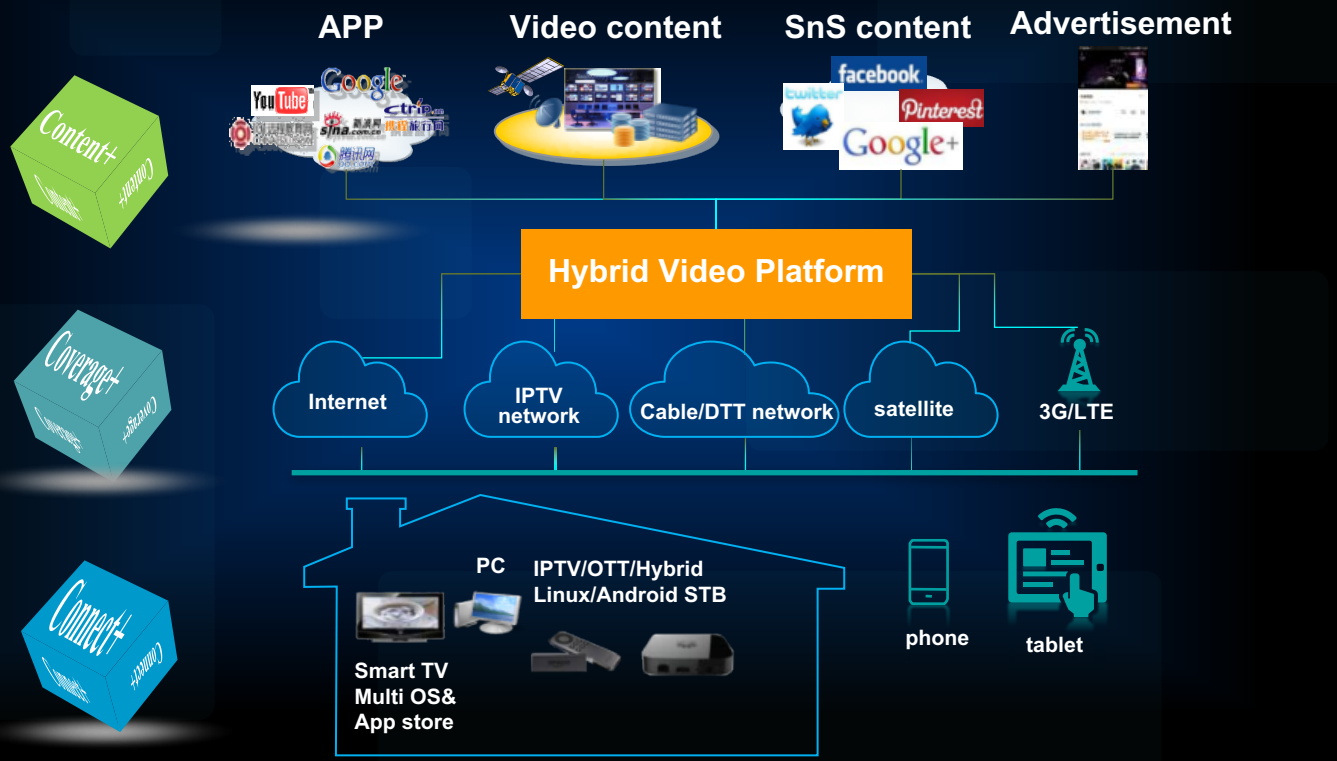
A TV platform jelen kihívásai és a fejlődés iránya.

Horváth Ede

2017 October 05.

Huawei Hybrid Video platfom



Innovate at “Internet” speed

HUAWEI

Enabling innovation and rapid delivery of new services & features.

Microservices

Loosely coupled services that can be developed, tested and deployed independently

SPEED

Operatability

Comprehensive metrics, monitoring & alerting enable automatic fault isolation and recovery

RESILIENCE

Cloud native

Attain agility & granular scalability by moving on the cloud

SCALE

agile

E2E Video Solution

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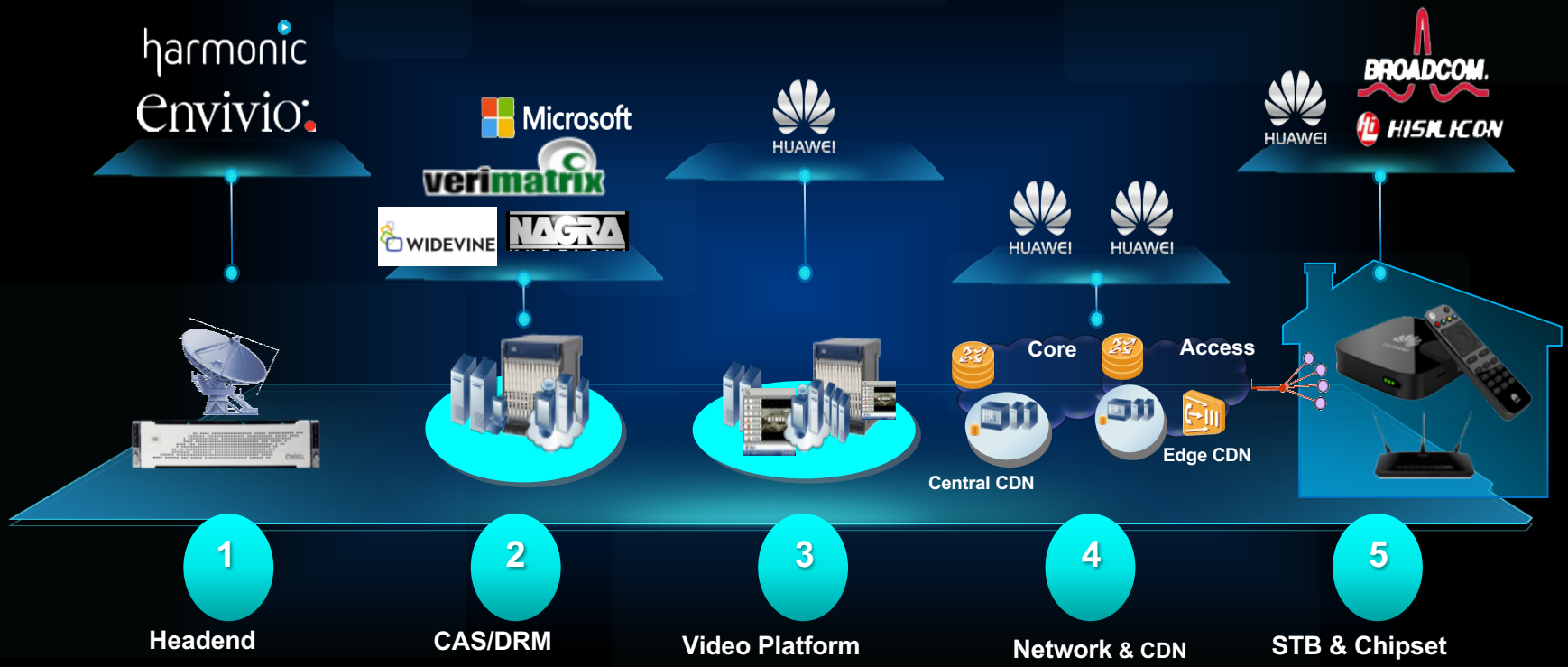
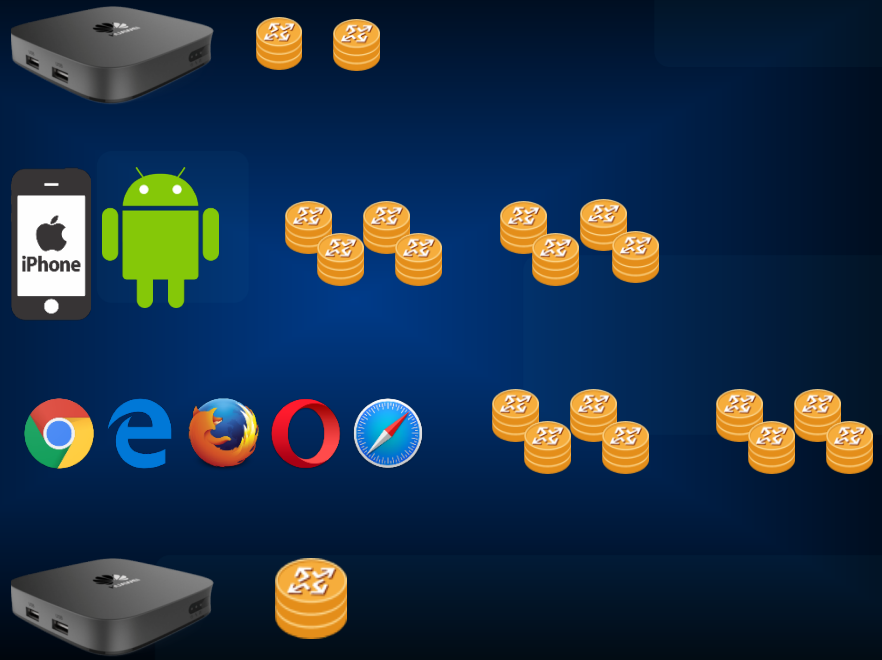


What is the bottleneck?

- **DRM**
  - › IPTV
  - › OTT
    - » 4 profile
    - » Android iOS
  - › PC
    - » 4 Profile
- **4K**
- **CDN**
  - › Central Node & Edge node



The more device type the more content copies.

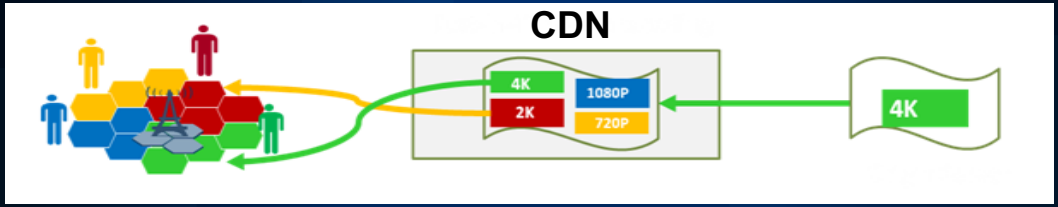
6 – 10 copy for each Content

JITE

Just In Time Transcoding is a feature that enables real time transcoding and streaming to the customer. The Operator can reduce the storage requirements by reducing the

Application scenario and value:

- Personal live TV: The content is transcoded in real time. The E2E delay is less than 1s.
- Catch-up TV, CPVR: At most 80% of storage and bandwidth resources can be saved.



JITT

Just In Time Encoding is a feature that enables real time Encoding and streaming to the customer.

The Origin Server and Multi DRM will deliver different encrypted content to different terminal types.

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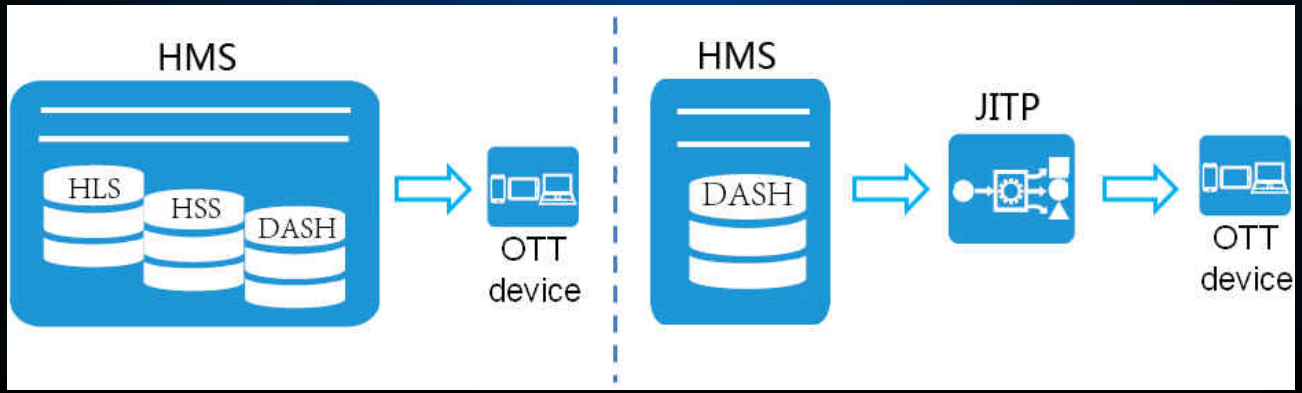
MS SMOOTH STREAMING

HLS

MPEG DASH

JITP The Just In Time Packaging (JITP) feature provides the capability of converting media content from one format to another and packaging the converted content for transmission.



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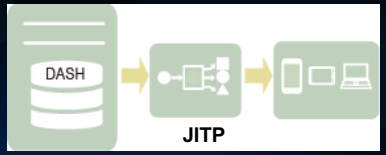
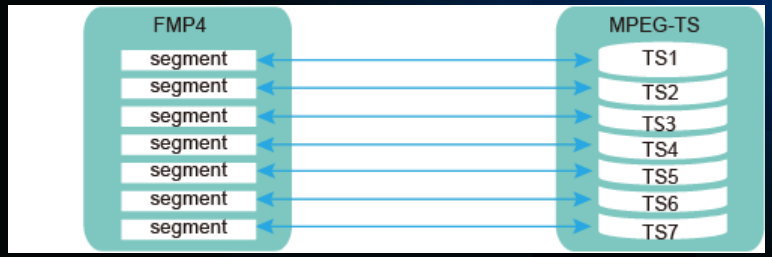


Media File Conversion from fMP4 to TS

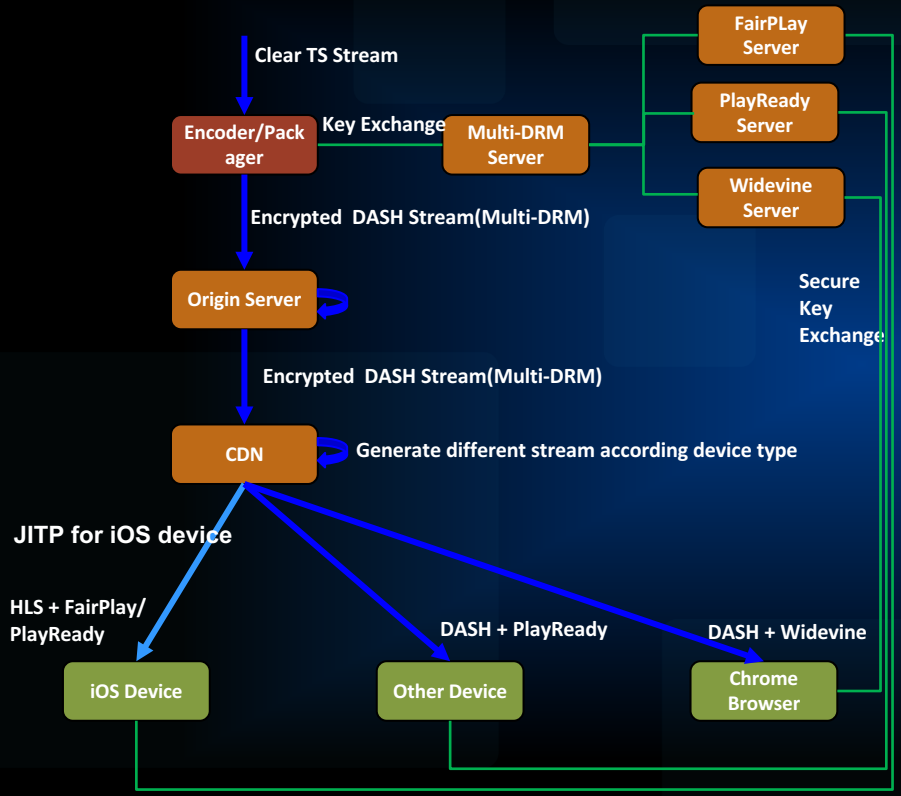
One fMP4 segment lasts 2s, and one TS segment lasts 10s. Five fMP4 segments can be combined into one TS segment. The conversion supports the mapping of one or multiple fMP4 files to one TS file.



Index File Conversion from MPD to M3U8

M3U8 index files include level-1 M3U8 files and level-2 M3U8 files. Level-1 M3U8 files are used for adaptation of multiple bit rates, and level-2 M3U8 files are used for TS file playback. M3U8 index files are generated when content is imported to the HMS.

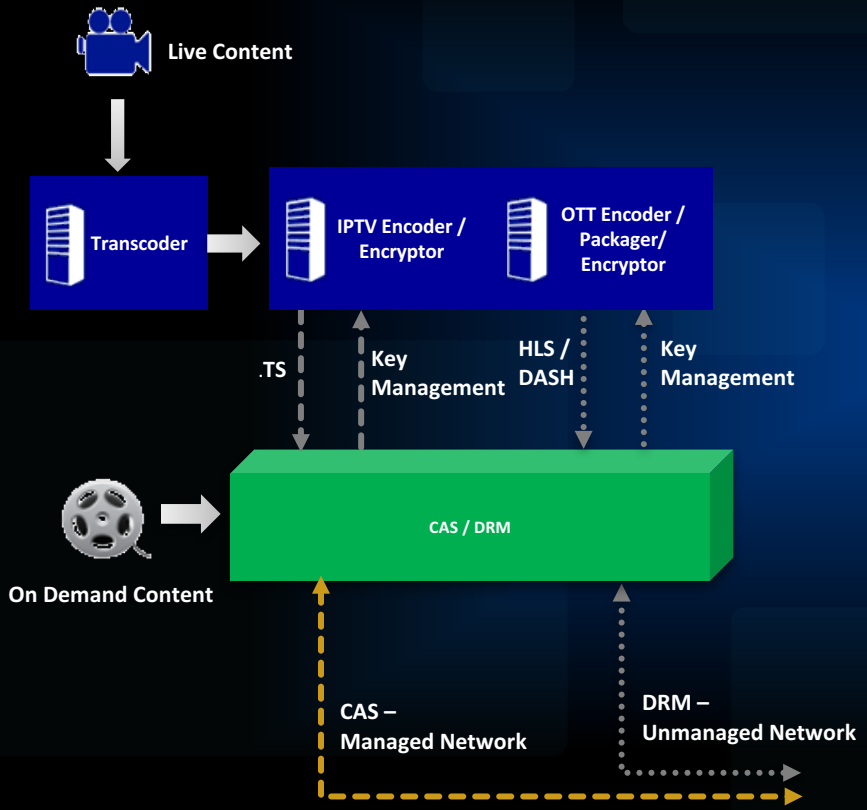
MPEG DASH & Multi DRM



Workflow

- Multi-DRM Server generates shared key among PlayReady, FairPlay and Widevine.
- Encoder/Packager interacts with Multi-DRM Server, output the CENC encrypted DASH Steam.
- CDN Cache provides the streaming service for each type of client. For iOS clients the CDN executes Real-time packaging into HLS + PlayReady or HLS + FairPlay format.
- Clients get the secure key from corresponding DRM server and play the content.

Headend & CAS/DRM with **MultiDRM**



Functionalities

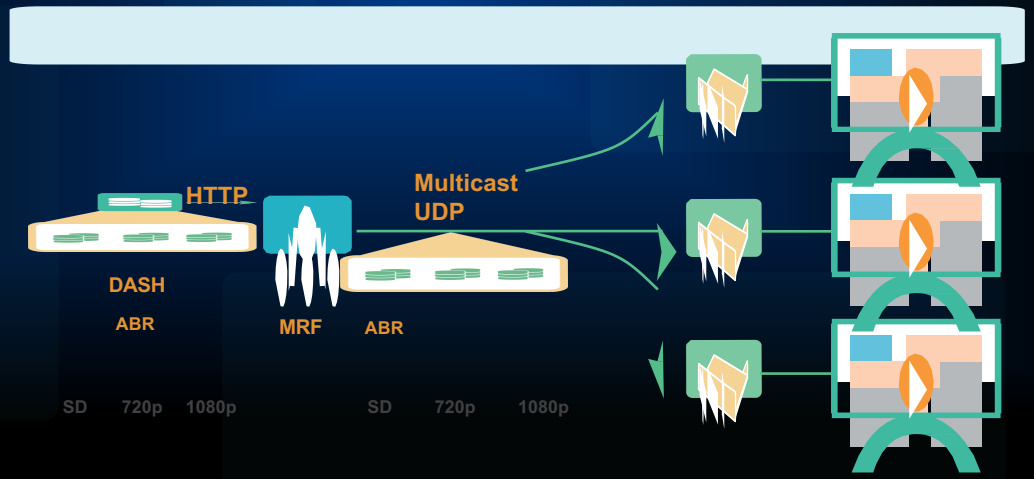
- Scrambles live TV streams
- Pre-encrypts VOD or Catch-up TV content
- Supports download & offline viewing
- Creates, Manages and distributes keys

MultiDRM shields the differences between devices and enables the storage of only one copy of keys for media assets.

Future of Multicast is **ABR Multicast**

The ABR technology does not support multicast for IPTV live TV services.
Solution: RTP data streams running over UDP, the Hybrid Video Solution uses the network multicast technology to provide the Multicast ABR live TV service for IPTV STBs.

Multicast ABR, video streams of different bit rates are provided enabling the user to receive the video streams at most appropriate bit rates based on network conditions.



Future of OTT streaming

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	Past	Present	Future
Streaming	• HTTP Live Streaming (Apple) • SmoothStreaming(Microsoft) • Adobe HTTP Dynamic Streaming (Adobe) • Etc.	• HLS • MPEG-DASH	CMAF
Encryption	• PlayReady • Widevine • Verimatrix • Adobe Flash Media Rights Management • Etc.…	Common enc. BUT two AES methods: • CBC • CTR	AES-CBCS
Codecs	• H264 • VP8 • Etc.	H264, H265, VP9	AV1

OTT is the platform of the future!

THANK YOU

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