Content Protection, beyond VoD on unicast
AGENDA

Digital Right Management – DRM
When content is not under the DRM regime anymore
Watermarking
Content protection and 5G
Digital Rights Management - DRM

- Well supported in virtually all devices
  - Three main DRMs license servers required at the head-end
  - One or more pre-installed in devices (native) or browsers (EME)
- Convergence towards one content encryption mechanism (cbcs) on CMAF
  - Less on-the-fly packager
  - Less storage in CDNs
- Experience for users becomes more and more seamless
  - DRM is not always the issue even it is the first one to be pointed out
  - (An end-to-end system supporting many many devices is most of the time the issue)
Unicast use cases - DRM perspective

- Video on Demand
  - Works very well
- Subscription of Transactional VoD
  - No real issue of peak traffic on license servers
- Live services
  - Can be done but could be better (benchmark is payTV on STB)
    - Need for efficient license delivery mechanism
      - Quick bootstrap, quick channel change
      - Problem for popular events (soccer games for example)
  - More than subscription use cases?
    - Support for free-preview? Premium PPV?
    - Support for key hierarchy to decouple business use case support (root license) and content protection (leaf licenses)
Multicast use cases - DRM perspective

- Live services
  - Licenses to be delivered over a unicast connection
    - Need for an additional delivery mechanism
      - Not always a given (TVs are not all connected)
    - Licenses could be multicast
      - Impact bandwidth, need DRMs evolution (compression of licenses, group addressing..)
      - More than subscription use cases as in unicast
  - Content encryption convergence
    - Minimize the number of streams in multicast
      - One stream only CMAF in cbcs encryption
When content is not under the DRM protection anymore

- Examples
  - Camcording (digital to analog to digital), HDMI grabber
  - Implementation bug or integration issue
- Need for forensic tools for closing the gap: Forensic Watermarking
  - Embeds a unique session identifier in the stream
  - The Id can be recovered in almost all situations
    - Cropping, resizing, digital to analog…
    - Once known: Do not deliver license anymore to compromised devices, update the DRM client
- Watermarking is becoming required for premium Sport
Watermarking in the end-to-end system

- Integration at the head-end side
  - Creation of A/B versions per segment
    - Double storage needs, detection time in minutes
  - A or B choice done in the CDN Edge using authorization tokens
    - No impact on the player other than token management
- Integration in the device
  - Unique stream created after decryption
  - Need robust integration
- Head-end integration preferred for Internet TV
Watermarking and multicast

- All devices get the same stream
  - Cannot integrate in the head-end
  - Required to have the watermarking agent in the device
- Robust integration
  - Can leverage the DRM compliance and robustness rules
  - Can leverage hardware (Secure Media Path, TEE)
  - Can leverage the DRM
    - Secure the start and stop of the watermarking engine as not all content to be watermarked
Content Protection and 5G

- Need to consider Live use cases and multicast
  - Live means
    - Support for advanced features
      - Key hierarchy for new business models
      - Efficient head-end integration for scaling
  - Multicast means
    - Integration of watermarking in devices
    - Strong DRM-watermarking collaboration in the device
    - Possibly license delivery over multicast
THANK YOU