Content Protection, beyond VoD on unicast

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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 decorelate 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 additonal 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

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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

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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

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