RVU Alliance Update: DTCP-IP protection for 4K / Ultra HD services

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FCC Downloadable Security Technical Advisory Committee
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DTCP+ not in MovieLabs enhanced content protection specification
   - Possible reasons include: robustness rules not adequate, minimal enforcement of compliance, revocation not adequate, and renewalability not considered

DTCP+ has important benefits, however
   - DTCP+ encryption and authentication protocols are vetted and considered strong
   - DTLA, which manages licenses and issues DTCP certificates, is a trusted entity. Sony Pictures, WB and Disney are all “content participants” in DTLA.
   - Approved by DLNA, RVU Alliance, CableLabs, FCC…

“Alternative DTCP-IP Digital Output” addresses all requirements
   - Client devices authenticated by RVU server
   - Only those clients listed on the RVU server Whitelist receive high value services
   - Upgradability using clients’ own broadband-based mechanisms, and/or using an optional RVU mechanism via LAN from RVU server, to ensure continued high value services
   - Whitelist management (device approval, revocation and renewal) follows content agreements between RVU server provider and programmers
New Elements

- **Enhanced device robustness requirements**
  - Equivalent or greater than that required of HDCP 2.2
  - State-of-the-art security tools including secure media pipeline, secure processing environment, protected memory, and chain of trust for code

- **Client device compliance requirements**
  - Outputs only via HDCP2.2 protected output
  - Method for delivery of software update packages

- **Approved Cryptographically Secure Mechanism**
  - Client device information protected in integrity and passed to RVU server
  - Information includes DTCP device ID, Manufacturer ID, Model ID & Software version

- **Whitelist**
  - Client device information validated against whitelist of devices authorized by content licensors for reception of their high value content
  - Addition / removal / reinstatement of devices on whitelist managed by RVU server provider
Whitelist Management

1. Client info securely passed to server
2. Server validates against whitelist of devices
3. Whitelist managed by server provider per agreements with content owners
   - Addition = device approval
   - Removal = device revocation
   - Reinstatement = device renewal (e.g. SW upgrade)

“Approved Cryptographically Secure Mechanism”
(0102030405, TV Manu B, Model B1, SW Y)
Implementation Timeline

● RVU Alliance updates
  ● Guideline modifications added “RVU 4K UHD Client Authentication Protocol”
  ● Certification program additions

● Device upgrades
  ● DIRECTV Genie server upgraded via secure software download mechanism
  ● Whitelist client device info provided by TV manufacturers
Thank You!
**DIRECTV Genie Architecture (since 2013)**

- **RVU Remote User Interface** allows full HD-DVR experience on every TV
- **IP-based** = works with both Wireless and Coax networks

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RVU Remote User Interface (RUI)

- Full DIRECTV experience without a STB at every TV
  - Reduces costs, saves energy
- Industry standards increase adoption by TV manufacturers
  - "DIRECTV Ready" logo allows co-marketing programs
- Since TV decodes video, can deliver new 4K services
  - Streamed from Genie
First MVPD to Deliver 4K Ultra HD VOD to Customers’ Homes

- Launched November 2014
- 4K Ultra HD titles are delivered via satellite, recorded to the Genie HD DVR and streamed via home LAN to ensure the best playback experience
- 8 Million homes require no DIRECTV upgrade (growing by ~1M each 3-4 months)
- First compatible TV models from Samsung with others expected in 2015

http://www.directv.com/technology/4k
Capacity expansion underway to support future 4K linear services
- Dozens of channels

DIRECTV-14 (December 2014) and DIRECTV-15 (May 2015) satellites launched
- Use new FCC allocated frequency bands known as “reverse band”

New channel-bonding receiver front end tuners required to support linear 4K data rates
- New DIRECTV Genie servers beginning 2015 have this ability