AT&T U-verse Overview

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General Overview of U-verse and History

- In 2004 SBC/AT&T participated in the Microsoft IPTV Early Adopters Program (EAP)
- The IPTV Mediaroom system was designed as an application platform to support the IPTV service and evolution of service features. The platform is now owned and maintained by Ericsson
- AT&T offers this service over both copper (VDSL) and Fiber (FTTP) networks
- The service is based on an all Internet Protocol (IP) delivery for Linear/Live and VOD
- The service encompasses a large number proprietary features and value-added services such as Instant Channel Change (ICC), Multiview, and a large number of interactive applications
- The Microsoft Mediaroom DRM is used for content protection on AT&T U-verse STBs with an embedded secure SOC
- U-verse is offered to third party devices such as smart phones (iOS, Android), tablets, PCs and laptops through AT&T U-verse applications. PlayReady DRM is used for content protection on these devices

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Network Overview and Content Flows

U-verse content is acquired and gathered at a central location, the Super Hub Office (SHO), for national linear channels and VOD assets

- Linear content is encoded to AT&T's unique specifications and distributed via multicast from the SHO to Video Hub Offices (VHOs). The content is then multicast to the end user, when requested. Local channels are acquired locally and encoded to AT&T's unique specifications at the VHOs

- VOD assets are encoded to AT&T's unique specifications and transported to the SHO. From there they are distributed to the VHOs via multicast, and stored locally at the VHOs. The assets are then streamed from the VHOs to the end user via unicast, when requested

- U-verse provides a unique customer-friendly EPG, Search Engine, Recommendations, Integrated service features such a caller-ID on the TV, etc…

(Note that AT&T does not use the CableLabs encoding specifications to encode content.)

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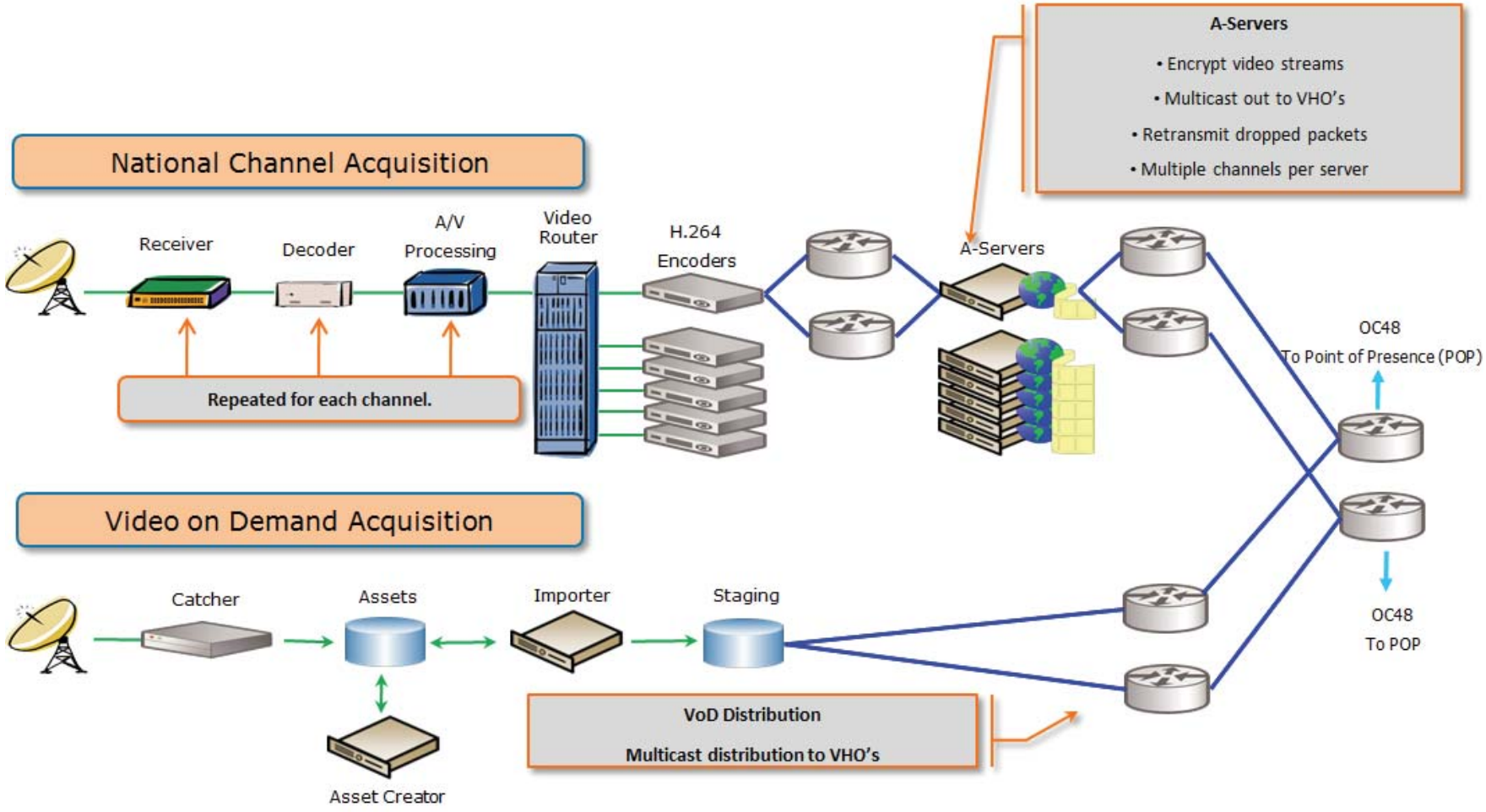
Linear Network Overview and Content Flows



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Linear Network Overview and Content Flows

Linear Ingest:

- Linear channels are encoded using H.264 video compression and Dolby Digital Plus (DD+) converted to AC-3 by the STB or AAC audio, and contained within an MPEG-2 transport stream
- When ingested into Mediaroom, the channels are encrypted and encapsulated as RTP streams via the Acquisition Servers (A-servers), and distributed via multicast to the local VHOs
- Linear channels are also acquired by a Distribution Server (D-server), which is at the VHO and used for instant channel change

Linear Streaming:

- When a user switches to a live channel, a proprietary ICC enables a fast channel change implementation

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VOD Network Overview and Content Flows

VOD Creation:

- VOD assets are encoded using H.264 video and AC-3 audio, and contained within an MPEG-2 transport stream
- When ingested into Mediaroom, the assets are encrypted, encapsulated as an RTP stream, then distributed and stored at the local VHOs on VOD Servers (V-servers)

VOD Streaming:

- When initiated by the user, VOD assets are streamed from the VHO V-servers to the user's receiver over HTTP

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DRM and Content Protection

The U-verse Mediaroom DRM is used to enforce license restrictions from content agreements and provides overall content protection

The DRM is based on *128-bit AES and 2048-bit RSA* encryption

- Linear content is encrypted either at the SHO, or at the local VHO (for local channels). The encrypted channels are distributed to the end user's STB where they are decrypted using an embedded secure SOC

- VOD assets are encrypted at the SHO after being acquired from the content provider. The encrypted assets are then distributed through the network and only decrypted once it is streamed to the end user's STB

- Content outputs are also protected via HDCP, CGMS-A, and Macrovision. The output controls are implemented through the client application

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Key Features

AT&T U-verse provides numerous features that are unique to the service:

- Wireless STBs
- Whole-Home DVR
- Interactive Applications (summary on next slide)
- Picture-in-picture Browsing
- Caller ID on TV
- Multiview Channels
- Instant Channel Change
- Remote DVR Programming
- HD/SD/3D VOD
- Uverse.com
- U-verse Apps for smartphones and tablets
- Unified Search
- VoIP

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Interactive Applications

AT&T U-verse offers numerous applications directly on the TV:

- Weather On Demand
- Music Choice
- Film Awards
- The Masters
- Galaxie Music
- BuddyTV
- SEC & PAC 12 Football
- Stingray Music
- American Film Institute

- Olympics
- Santa Tracker
- Tumblebooks
- Multiviews
- TV Feature Guide
- U-verse Help
- CNBC
- Country Deep
- Easy Remote
- Food Network
- Home Media Share
- Twonky beam

- Facebook
- Interactive Workout
- Karaoke TV
- PEG
- NBA Live Stats
- Pix & Flix
- Trivia
- TV Notes
- U-verse Games
- What's Trending
- Jukebox

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U-verse Everywhere

- AT&T U-verse is also available online at uverse.com, and on tablets and smart phones via the U-verse mobile application

- Uverse.com offers a web site where users can login and view content. Some content flows through an internal process and other content is hosted directly through third parties like Hulu, Turner, etc. Content is protected via PlayReady DRM

- The U-verse mobile app for phones and tablets are developed internally and content is encoded and hosted using a third party. Content is protected via PlayReady DRM

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U-verse Software Updates and Technology Evolutions

- New updated U-verse Mediaroom software is pushed to U-verse STBs at least twice a year: offering new features, continuously improving performance and user experience
- Planning to deploy 4K and HEVC, more advanced STBs to provide more value-added services to U-verse customers
- Access Bandwidth improving:
  - Offering more bandwidth over VDSL
  - More deployment over Fiber (GigaPower)
- Will be deploying more advance Wi-Fi technologies (i.e. 802.11ac) for both video and data distribution
- Expanding U-verse applications to reach more and more third party devices
- Offering more interactive applications

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