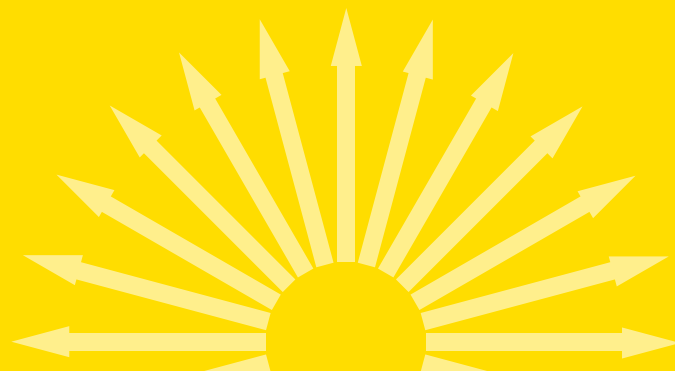


Network Media Processor

Envivio Halo



Optimizing for Multi-screen Services

The Envivio Halo™ Network Media Processor is a powerful distributed content processing and delivery solution designed specifically for TV Everywhere and TV Anytime - enabling operators to take advantage of new revenue opportunities, while minimizing the technology challenges.

Distributed in the network or collocated with the video headend, Halo combines an efficient HTTP video server and a format processor engine, reducing the bandwidth the storage or the equipment footprint usually required to distribute TV Everywhere services. Halo can further support advanced scenarios, such as ad insertion, time-shifted TV and live-to-file applications, while complementing the existing infrastructure.

Multi-screen Video Processing at the Edge

Operators can maximize efficiency in an architecture where a central headend produces content in a single multi-bitrate multicast transport stream (TS) in the core network, with Halo deployed at the edge. Halo transforms the multicast streams into unicast formats delivered to the broad range of consumer devices operators need to support.

Since Halo delivers content directly to managed and unmanaged networks, it acts as a bridge between the headend and the local delivery networks.

Product Highlights

- Efficient processing and delivery of content for multi-screen services
- Real-time formatting for adaptive bitrate services for Apple HTTP Live Streaming (HLS), Microsoft Smooth Streaming, Adobe Flash RTMP and Flash HDS
- Multi-DRM content protection and key exchange interfaces
- Support for DRM key rotation and notably of Microsoft Playready Premium
- Built-in origin server for direct CDN interface
- Live, VOD and near-live workflows (timeshifting, start-over, catch-up TV, highlights) from a single platform
- Dynamic processing and parallel creation of multiple catch-up TV assets
- Playlist management compatible CableLabs ESAM for ad insertion and blackout
- 1+1 redundancy with seamless live switching via Envivio's synchronization technology
- Subtitles, closed captions, DVB-Txt and multi-audio support for multiple devices
- Real-time metadata insertion for applications such as Emergency Alert System (EAS) and Nielsen audience measurement

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Compared to conventional file-based content delivery network (CDN) architectures, this streamlined approach offers several benefits, including:

- Considerable bandwidth savings in the core network
- Simpler and more flexible operations, as the multi-bitrate TS is compatible with traditional broadcast distribution formats and workflows
- Better control and monitoring of network distribution.

Halo uniquely offers a broad range of processing capabilities needed in a multi-screen environment:

- Content adaptation and packaging into a format appropriate for the end-user device
- Encryption and content protection with digital rights managements (DRM) systems
- Advanced stream processing and content workflow management for live and on-demand
- Built-in origin server
- Interface to external storage.

Content Protection

Halo supports existing requirements as well as new content protection schemes for new devices and formats, and can protect content in multiple DRM formats simultaneously. This capability ensures that content remains secure in as many devices as possible.

Envivio's open API enables rapid delivery of updates that plug into the existing software architecture. Halo interfaces with leading DRM servers and provides support for key rotation—essential for meeting content providers' requirements.

TV Anytime for Multi-screen

Halo allows viewers to control what, where and when they watch by combining live multi-screen services with start-over, time-shifted and catch-up TV applications. Operators can schedule recordings of multiple ABR outputs and manage the catch-up TV library, with simple integration of Halo in the content management workflow.

Halo also supports a multi-day circular buffer that operators can leverage to deliver content from any point within the buffered live stream. Assets can be accessed from a customized URL or exported to a VOD repository for archiving and later consumption.

Origin Server

Halo provides an embedded origin server function that reduces infrastructure and operational costs. This function can directly interface with servers or caches located at the edge of the network or with mainstream content delivery networks.



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Monetizing Multi-screen Services

Halo ad insertion functionality enables monetization with targeted ad delivery on any screen. Halo supports standard SCTE-35 messaging, enabling it to act on the embedded triggers used throughout the advertising workflow.

The headend can perform a single, efficient encode of a video asset, and send the same channel to multiple zones where custom ads can be inserted by the Halo system in that location. Halo supports CableLabs ESAM specifications for ads and blackouts, and is tightly integrated with advertising ecosystem partners to facilitate deployment.

Ready for the Cloud

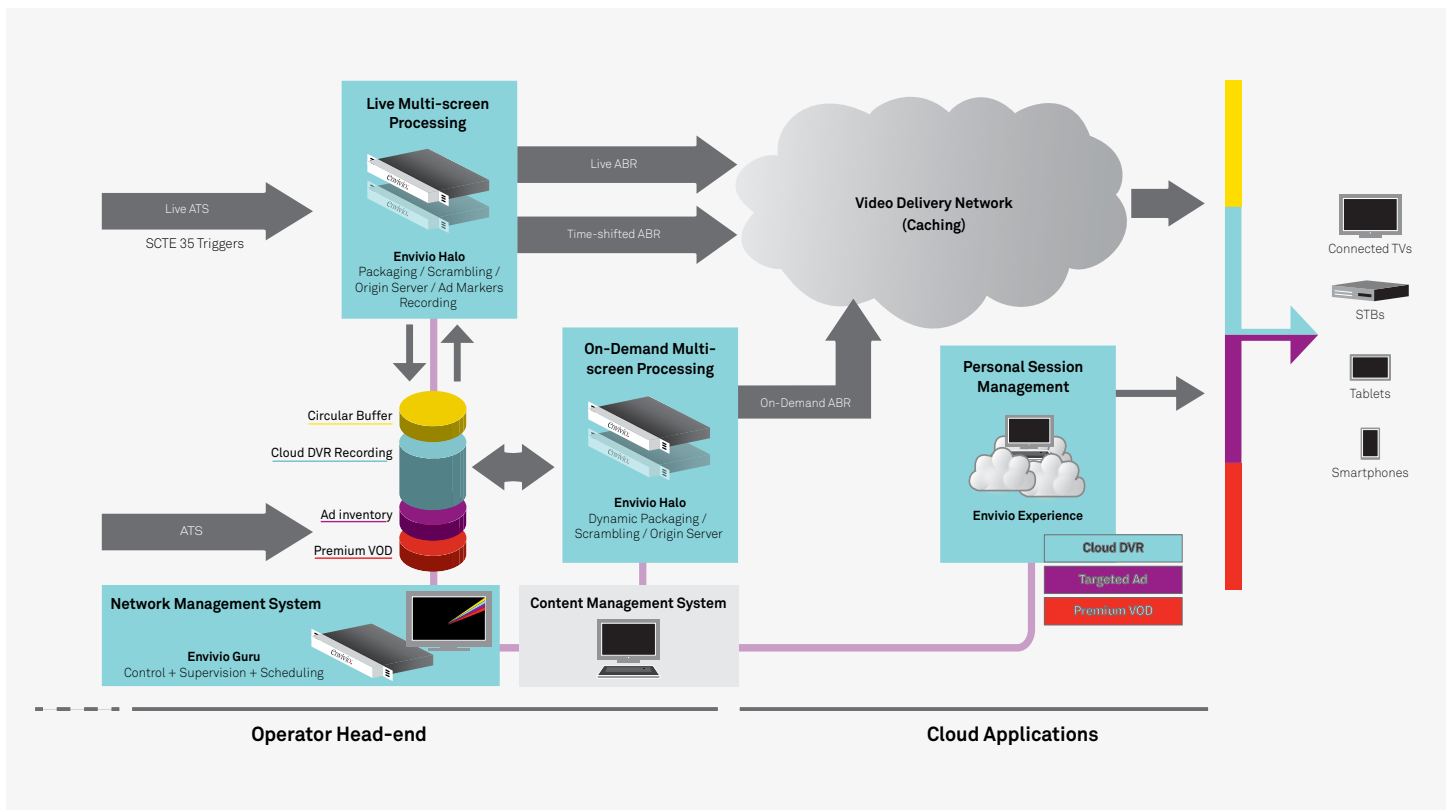
Halo software can be deployed in an IT datacenter environment on bare bone servers or as a virtual instance for Cloud deployments. Envivio also offers Intel-server based appliance configurations to suit various processing and throughput requirements.

For non-linear TV Anytime applications, Halo supports internal SSD storage or publishing to external network-attached storage.

User Experience

When a user clicks on the “play” button, fast start times improve the user experience. Halo can adjust fragment sizes for the output delivery streams, providing low-delay playback with excellent quality. The user does not have to wait for tuning because smaller fragments are available more quickly. Operators can also use Halo to easily create highlights or short video clips to further enhance the video experience.

Halo makes the multi-screen experience more like traditional TV by bringing subtitles and multiple audio streams to any screen. Closed captions and DVB-Txt can be passed through or translated into timed-text. Halo also incorporates multi-playlist management for iOS devices, so users can receive the predefined playlists on their iPads, iPods, or iPhones, whether they are on a 3G, 4G, or a Wi-Fi network.



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Input	
	Real time ingest of adaptive MPEG2-TS over IP ingest (GOP-aligned, H264 encoding)
	IGMPv2/v3 support
Processing	
Capacity	Process up to 130 live Adaptive TS channels in multiple formats
Formatting	Apple HTTP Live Streaming (HLS), Microsoft Smooth Streaming, Adobe Flash RTMP and Flash HDS
Subtitling	Closed Captions: Pass-through or conversion into WebVTT for HLS, Conversion into DFXP for Smooth Streaming DVB-Teletext subtitle page 888: Conversion into WebVTT for HLS, DFXP for Smooth Streaming DVB-Subtitles: Pass-through or conversion into ID3 for HLS, Conversion into DFXP for Smooth Streaming
Multi Audio	Multiple audio streams per output for HLS (iOS4 and iOS5-compatible) and Smooth Streaming
Content Protection	Embedded Microsoft PlayReady DRM and AES encryption as specified by Apple Fairplay support for HLS Adobe Access support for HDS Key provisioning: interface to leading CAS & DRM vendors for PlayReady and HLS (external key generation)*
Output	
Content Publishing	Support for pull (using Halo built-in origin server) and push modes, with multiple publishing points to enable external origin server redundancy. Keys, chunks and playlists can be published in different locations.
DVR Publishing	Recording window publishing over external storage for time-shifting, start-over and catch-up TV applications management
Origin Server	Built-in live and VOD origin server for Smooth Streaming and HLS live, start-over and catch-up TV delivery Up to 2000 live simultaneous connections. HTTP headers management for CDN cache servers optimization
CDN	Interfaces to leading CDNs* Optimized delivery of live and non-linear content
Workflow Management	
Scheduled Recording	Asset creation from live for catch-up TV applications; live to file scheduling API for integration with 3rd party scheduler/CMS components
Anytime TV Applications	Combine live with highlights creation, time-shifting, start-over and catch-up TV. Content can be delivered from Halo origin server (recorded DVR window) or directly from the CDN. Control API for integration with 3rd party scheduler/CMS components.
Dynamic Processing	Dynamic processing of TS ABR VOD assets in HLS and Smooth Streaming for multiscreen on-demand applications (catch-up TV, nPVR)*.
Ad Management	Based on SCTE-35 trigger and fully compliant with CableLabs ESAM specifications. Integrated with 3rd party POIS servers.
Metadata Insertion	Control in real-time insertion of metadata in the output streams (HLS and HSS) for applications such as EAS, Nielsen
Supported Devices	
HLS Formatting	Compatible with iOS devices (iPod, iPhone, iPad) and QuickTime X, Android 3.0 (Honeycomb), connected TV, STB and PC player equipped with appropriate players
Smooth Streaming	Compatible with Windows 7 phone, Silverlight player, Mediaroom 2.0, Xbox, STB equipped with appropriate players
Monitoring and Control	
Control Interface	Control and monitoring via Web GUI
Synchronization	Built-in 1+1 Envivio Halo synchronization for seamless switch-over and services' continuity in case of failure
Control API	Status, publishing points and encryption parameters of an output can be controlled via REST API
Compatible Hardware platforms	
Envivio Platform	Envivio G5 1020 Standard (max 750 Mbps ingest, 1 Gbps throughput) Envivio G5 1020 Advanced (max 750 Mbps ingest, 3 Gbps throughput) (For additional feature information, refer to the G5 datasheet)
Software Edition	Guaranteed performance on HP BladeSystem and Cisco UCS blades ⁽¹⁾

(1) For more details, please contact Envivio

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