Appear TV

MULTISCREEN
DELIVERY SOLUTION

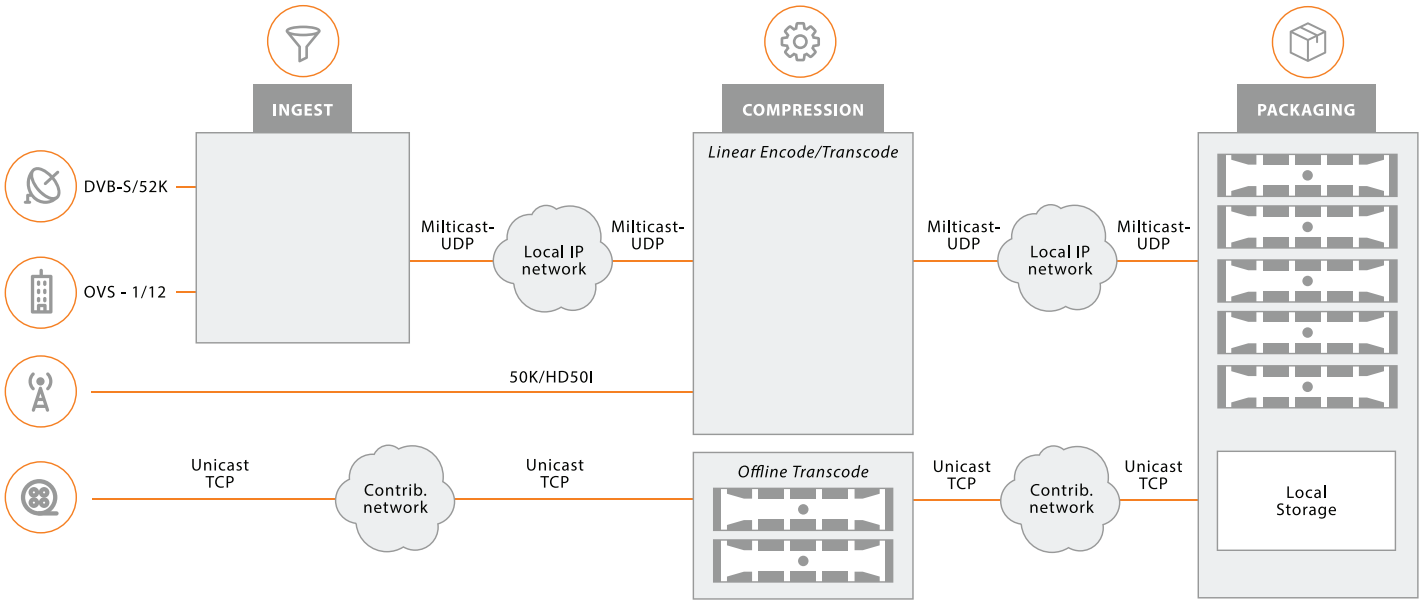
appeartv.com

THE APPEAR TV LINEAR PACKAGING SOLUTION FOR OTT

Traditional TV delivery is no longer enough for broadcasters, customers want access to content everywhere. Over-the-top (OTT) delivery provides a solution to this by allowing content to be distributed over unmanaged IP networks to all kinds of viewing devices. This type of delivery presents new challenges as unmanaged networks are not necessarily capable of predictably transmitting high quality video. Typical users on a shared network can do any task from watching videos, video conferencing, reading mails, downloading files to playing games. Available bandwidth in shared network environments will therefore vary with time as it is driven by user behaviour.

Adaptive bitrate (ABR) streaming solves this issue by adapting to changing network conditions dynamically. In essence, ABR provides variable video quality depending on available bandwidth. If bandwidth is reduced, video quality is reduced without the customer experiencing constant buffering issues and interrupted transmissions.

Appear TV offers an extensive portfolio of OTT solutions, with the ability to support hybrid broadcast delivery from the same equipment. The OTT product portfolio can be divided into three stages with each stage using industry standard interfaces to maintain multi-vendor interoperability throughout. The three stages are Ingest, Compression and Packaging.



System overview of live delivery chain.

NEWS

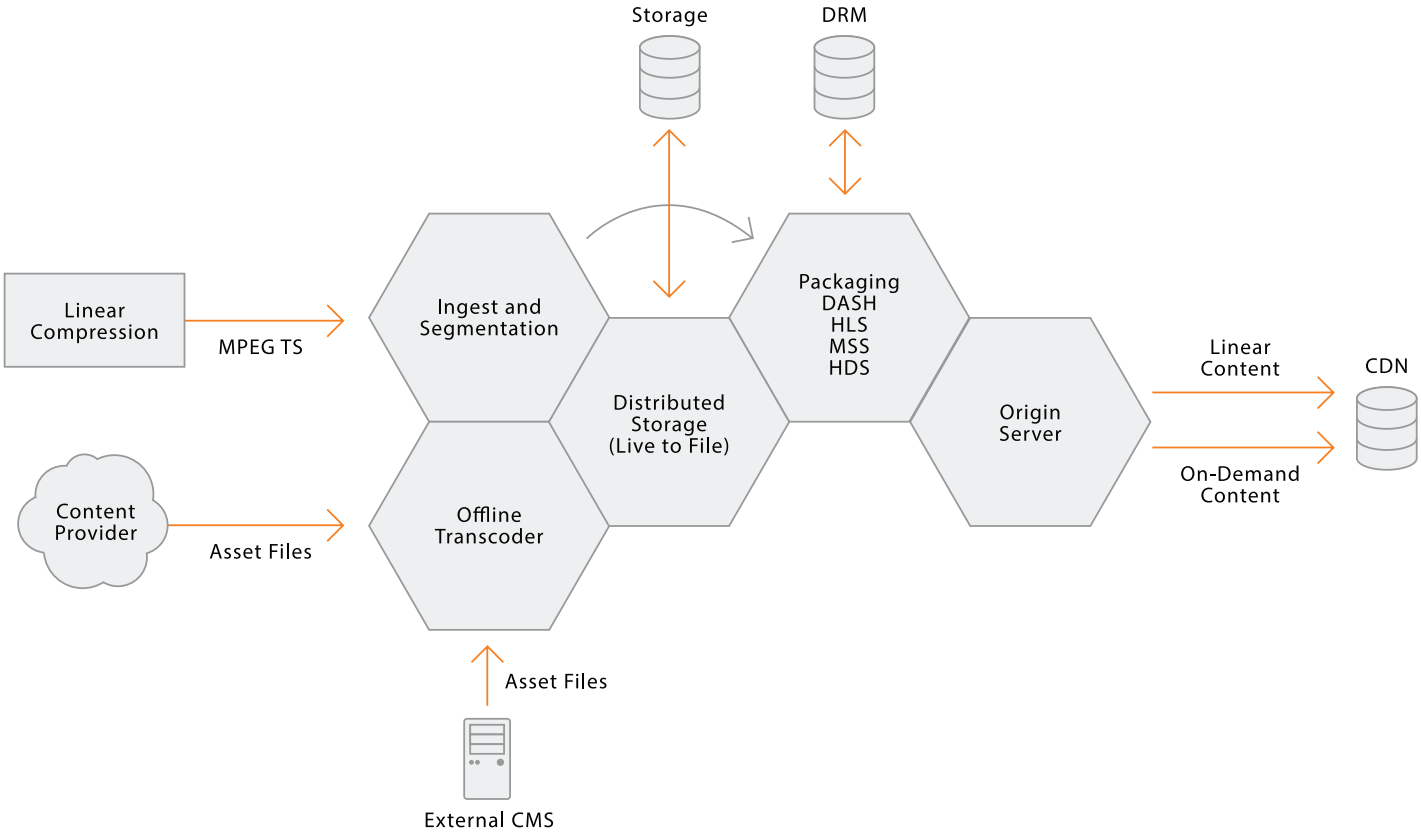
> The ABR packaging server supports a variety of different deployment architectures.

APPEAR TV'S EXTENSIVE PORTFOLIO OFFERS EVERYTHING NEEDED TO DELIVER OTT (AND HYBRID BROADCAST) TV

Appear TV implements the **Ingest** (content acquisition from multiple sources, descrambling, stream processing) and ***linear compression*** stages in hardware as a fully modular appliance. This delivers highly space and power efficient solutions offering full redundancy, the highest standards of performance and exceptionally high reliability. For more information on ingest and compression, please refer to the XC5000/ XC5100 datasheet.

The Appear TV ABR system is a modular software solution providing a powerful video segmentation engine, high-performance storage solution, just-in-time packager/DRM engine, origin server and optional offline encoding/transcoding in one complete suite. The ABR system runs on industry standard off-the-shelf server hardware and can be customised to meet the operators´ specific streaming requirements. With its innovative architecture, our ABR Server allows for seamless growth and scalable redundancy – both through vertical brick-by-brick scaling and horizontal functional separation.

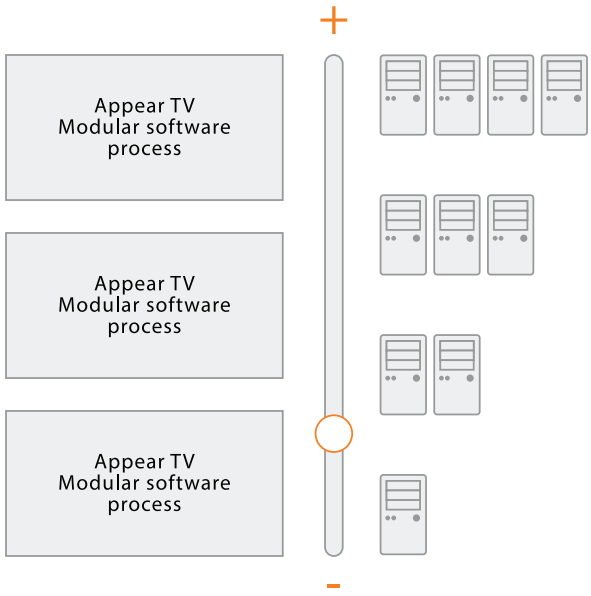
The ABR ***packaging*** server supports a variety of different deployment architectures, including edge deployments without CDN support. It is encoding vendor agnostic and its strict standards compliance allows for easy integration with third-party encoders.



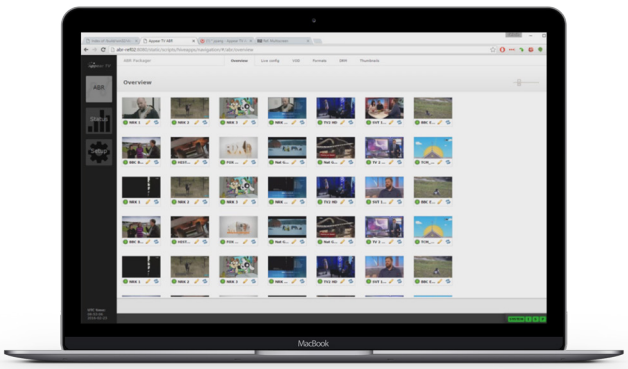
Components that make up the Appear TV delivery solution.

THE ABR PACKAGING SOLUTION FOR DELIVERING LIVE, CATCH-UP AND ON-DEMAND TV

The modular software elements forming the ABR software suite are designed to work together and scale precisely as required. The ingest and segmentation module accepts DVB compliant MPEG transport streams for splicing into chunks of pre-determined duration around IDR or alternative markers. The chunked files are passed to the linear packaging stage, and can be stored internally or externally for catch-up or time-shift using the 'live to file' module. The linear packager module will adapt the generic chunks generated by the ingest and segmentation module to the requested output format (MPEG DASH, HLS, Microsoft MSS and Adobe HDS) including applying DRM to protect the content. The ABR software suite is integrated with major DRM solutions. The packaged content is temporarily stored in the origin and copied to users requesting the same content within the stored timeframe, thus eliminating the need for packaging the same content repeatedly to the same format within a set timeframe.



The Appear TV solution scales to meet all needs.



Thumbnails gives accurate overview of system state.

APPEAR TV PACKAGER COMPONENTS ARE SEAMLESSLY SCALED BY ADDING HARDWARE AS REQUIRED

The ABR system is flexible and easily scaled to remove bottlenecks. This is possible because Appear TV has implemented the packager using high performance clustering technology, using a common hardware pool to achieve system redundancy and scalability. This design also makes the solution perfect for implementation within a cloud or virtualized environment.

Ease of use always features as a key priority in Appear TV solutions, and the packager is no exception. Intuitive and clear interfaces with individual service monitoring to keep you informed of status makes it easy to operate. The packager even features a 'Stream auto-interrogation' function enabling it to interrogate any Appear TV compression equipment that might be present to learn the streaming status directly, saving time and effort during configuration.

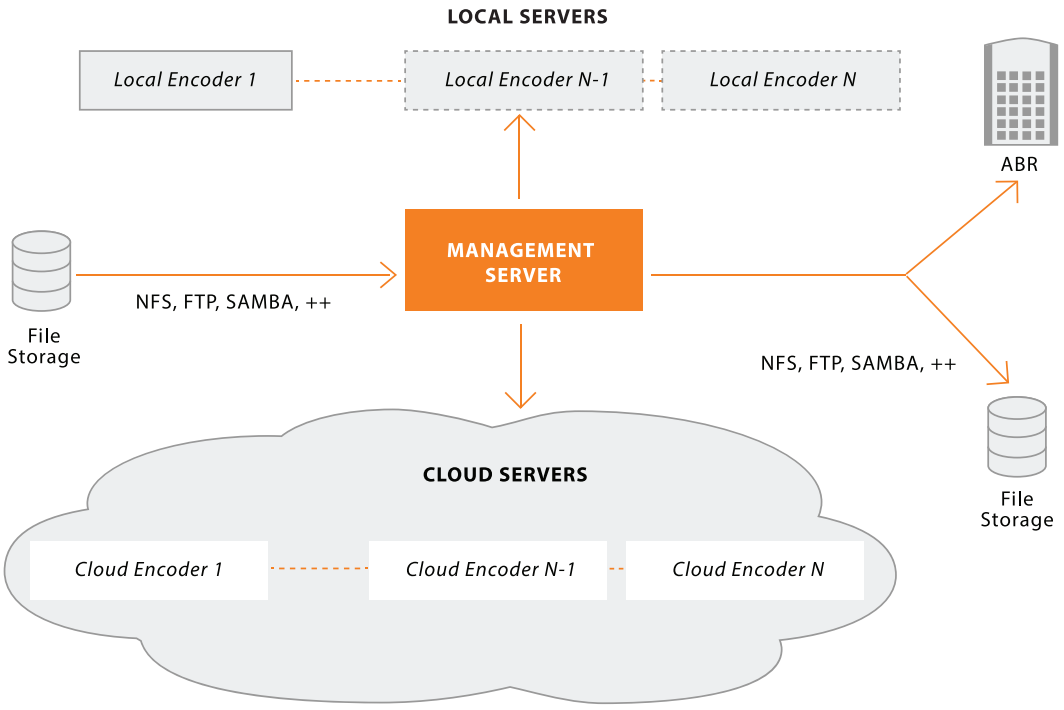
OTT delivery technology is rapidly changing and Appear TV is fully committed to follow changes in requirements. This 'new from the ground up' approach provides a scalable solution customers can grow with as their OTT streaming demands change. OTT is the future of television and via advertising or subscription models it is capable of delivering the most feature rich and monetised services in television today. The growing penetration of consumer devices with large-screen, high-resolution displays (including connected TV sets), the consumer preference to download rather than purchase content on disc media and the need to offer true broadcast grade services to all devices are driving a step change in OTT opportunities and the technology required to deliver it successfully. Investing in Appear TV packaging will place state of the art technology at the heart of your system and will provide the ideal platform to secure your position in this next chapter of OTT.

OFFLINE MANAGEMENT SYSTEM

The Offline Management System (OMS) software optimizes file-to-file compression resources and enables simple ingest of assets into the Appear TV ABR system. It is a comprehensive tool which allows users to leverage cutting edge encoding technology using our flexible plug-in architecture. Its initial release supports x264 and x265, but it can easily be integrated with any third party vendor or technology such as VP9 and VC1.

The product offers a user-friendly web interface that enables quick and intuitive setup of even complex tasks. The system has a strong operational focus with re-usable profiles for delivery destinations, resource allocation and settings. Compression jobs can be one-offs, recurring using folder watches or completely automated using our extensive and powerful APIs. These APIs are tailored to be easily integrated into any workflow system. The system can perform quality checks before and after a task has been run to ensure that the asset conforms to the original source, dispatching notifications when anomalies are detected.

Encoding operations can be performed on local hardware and/or provisioned on cloud computers such as Amazon Web Services. Cloud operations are intelligently managed using an efficient on-demand algorithm to ensure peak demand is handled at the lowest cost. The hybrid approach of local hardware and on-demand cloud resourcing enables the optimal balance of capital and operational expenses to be reached for scenarios with varying workloads.



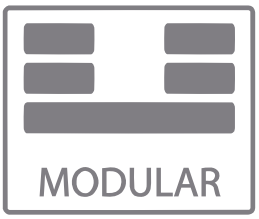
OMS provides a hybrid approach to optimise resources.

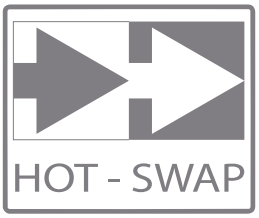
SPECIFICATION

Services	Multiscreen streaming	: Live HTTP streaming Time-shift Start over VOD NPVR Archiving from live to VOD* On-demand content (offline) ingest*
Functionality	Live ingest	: Unicast/multicast TS over UDP, CBR and VBR
	File ingest	: MP4 contained video (H.264 and H.265)
	Storage	: Both internal and external • Distributed internal storage with load distribution and redundancy. • External storage supports NFS3 or 4
	HTTP adaptive bit-rate streaming	: Just-in-time real time packaging • DASH • HLS (version 3 and up) • Smooth Streaming • HDS Each configured service can do multiple formats and content protection schemes
	Content protection	: Media encryption schemes • Fixed key with rotating key support • Common Encryption support • Apple Fairplay • Microsoft Playready • Google Widevine • Conax OTTAccess • Verimatrix ViewRight : DRM systems • Verimatrix • Conax
Formats	Video	: MPEG-4 (H.264) and HEVC (H.265)
	Audio	: AAC-LC, HE-AAC v1/2
	Multiple audio bit-rate support	: Yes. For HLSv3 audio/video bitrate mapping is possible
	Number of audio per video	: Unlimited
	Default audio selection (HLSv3)	: Yes, priority list per service
Processing	Live/Catch-Up buffer	: Configurable per service • Up to 7 days • Continuous timeline • Support for external storage
	Manifest manipulation	: Sophisticated control • Video and audio bitrate filtering • Audio only playlists • Audio multiplexing control (HLSv3) • UTC based manifest clipping
	Archiving from live to VOD	: Triggered by SCTE35* and EPG*
	CDN integration features	: General features: • Origin caching • Access whitelists • Dynamic health check URL • URL prefixing for geo-blocking support
	Thumbnail generation	: WebVTT assisted thumbnail sheets • Configurable resolution
Administration	Operator interface	: Web
	Automation APIs	: HTTP REST based APIs • Service and asset manipulation • NVOD control • EPG • Alarm and system monitoring

Monitoring	Ingest monitoring	: Detailed information about ingest status is available • Thumbnail views • Service timeline • Input bit-rates • RTP and CC errors
	Other statistics	: Common parameters such as • Interface bit-rates • CPU load • Handled requests per service • Request handling times • more
Scaling/Redundancy	Server configuration	: Clustered
	Data protection	: Data replication on different servers. • Configurable replication factor (3+)
Ingest redundancy		: Synchronized ingest on multiple servers
	Load distribution	: All servers provide access to same content
	Cloud support	: Yes
	Upgrades	: 0-downtime rolling upgrades • One server at a time • Full roll-back support
Performance	Throughput per server	: Typically 2.5-3 Gbit/s (no cache) **
	Number of live ingest channels per server ** Values depend on service configuration and hardware	: Typically up to 100 services or 1 Gbit/s **
Server/Storage HW	Server and storage requirements will depend on customer requirements (number of ingest channels, bit-rate per service, number of users, is CDN used or not, duration on time-shift etc.). Please contact Appear TV for recommended server configuration.	

* For availability, please contact Appear TV
** Exact performance will depend on server HW





MULTIPLEXING VERSION 010

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