

GLITCH-FREE OTT VIEWING STARTS IN THE ORIGIN!

Glitch-free OTT viewing starts with an origin that segments content with frame-accurate precision, repackages it into any format and scales in any dimension!

GLITCH-FREE OTT VIEWING STARTS IN THE ORIGIN!

"...frame-accurate segmentation across all video standards - including MPEG-DASH..."

"...scale selected functions independently..."

"...multiple deployment options

...own and run the system for you as a cloud-hosted service..."

Implementing the right origin solution for your OTT TV service will ensure that you have:

1. A glitch-free viewing experience that can surpass broadcast TV
2. Flexibility to adapt your service and its reach on demand
3. Ability to maximize your advertising revenue

Processing your content - live or VOD - for onward distribution through the CDN includes an important step in the origin - segmentation. For example, **frame-accurate segmentation across all video standards - including MPEG-DASH and HLS** - is essential to ensure glitch-free personalized ad insertion. With accurate segmentation you can also stitch in other content into the channel and create theme-based virtual channels.

Fine granular scalability lets you scale your origin independently in different dimensions as your business grows. For example, you may want to add temporary channels over a specific time period, or add more quality options or device types to your existing service portfolio – affecting ingest and egress capacity differently. So, the ability to **scale selected functions independently** is imperative.

And finally, with multiple deployment options you can always select the best option matching your business needs. You can even get all this functionality, but let us own and run the system for you as a cloud-hosted service.

Edgware's origin solution brings you a unique combination of benefits:

- ✓ Segmentation optimized for synchronization – including frame-accurate segmentation, which is critical for glitch-free personalized ad insertion and channel stitching.
- ✓ Multi-dimensional scalability that lets you grow ingest capacity independently from egress.
- ✓ Multiple deployment options, including the possibility to let Edgware run and operate the system for you as a cloud-hosted service

WHY IS SEGMENTATION SO CRITICAL?

Segmentation is crucial to enable glitch-free viewing. One of the problems that segmentation needs to solve is un-synchronized incoming streams. Some examples of synchronization issues include:

- ✓ Different mixes of audio and video codecs in the incoming stream
- ✓ Streams arriving from encoders that are not synchronized with each other
- ✓ IP-transport network delays

In these cases, if the segmentation cannot compensate, the end viewer will experience glitches or even miss sections of content. This is especially true in fail-over scenarios. Another problem is that it is hard to deliver glitch-free personalized ad insertion, which in turn reduces the value to ad buyers.

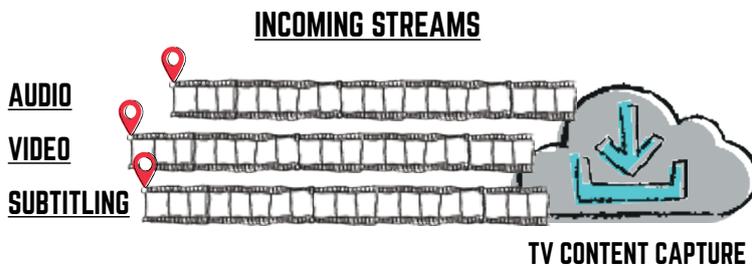
Edgware's origin solution is designed to solve all these problems - to perform segmentation in such a way that it takes care of synchronization problems and that it cuts the segments with such high precision that glitch-free ad insertion and theme-based channels can be offered. More of that to follow.

SEGMENTATION OPTIMIZED FOR SYNCHRONIZATION

The factors that can cause synchronization issues in the incoming stream are many. Let's discuss them one-by-one:

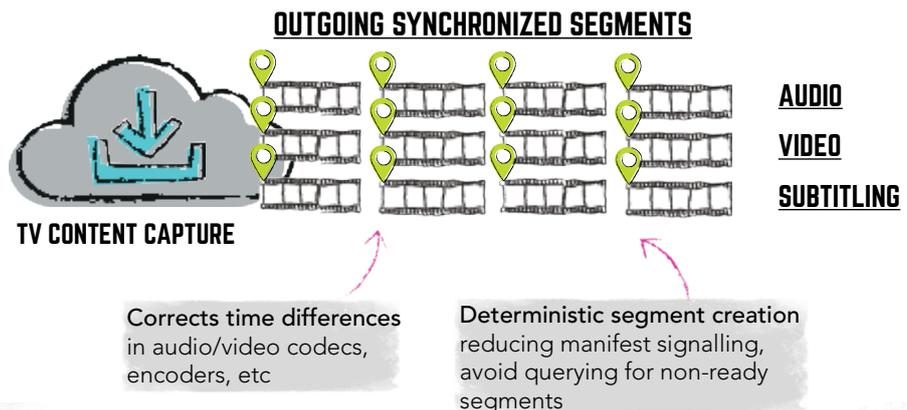
SEGMENTED AND SYNCHRONIZED MEDIA COMPONENTS

A TV stream consists of a number of separate streams, one for each media component such as audio, video and subtitles.



When these streams are ingested into the Edgware origin (using Edgware's TV Content Capture) they can enter at slightly different time stamps, see illustration to the left.

Edgware's TV Content Capture corrects this through its ability to segment the incoming streams with media-accurate time stamps and exact segment intervals. The result is synchronized audio, video and subtitle streams, see below.



Virtual Channel Creation is a solution taking advantage of the accurate segmentation capabilities in Edgware's origin.

An additional key benefit of segmenting the streams this way is that the segments are created and published in a deterministic manner. This means querying for segments that are not ready yet can be avoided which reduces manifest signalling. For live streaming this is especially important as the client can quickly determine the latest segment, providing immediate streaming and minimize latency. Deterministic segmentation is also providing a more robust glitch-free failover.

The TV Content Capture's strict segmentation is also a pre-requisite for scenarios when different content is stitched together by Edgware's TV Repackager to form a theme-based channel. This Virtual Channel Creation solution is using the so called 'channel stitching' technology. For example, this could be combining regional content into a nation-wide channel, creating a localized channel.

FRAME-ACCURATE SEGMENTATION

The Edgware's Ad Enabler uses the segmentation capabilities in the TV Content Capture to perform frame-accurate segmentation. This fine granular ability to cut the incoming stream into segments on a frame level – or more correctly on GOP (Group of Pictures) level – is crucial in order to offer glitch-free personalized ad insertion.

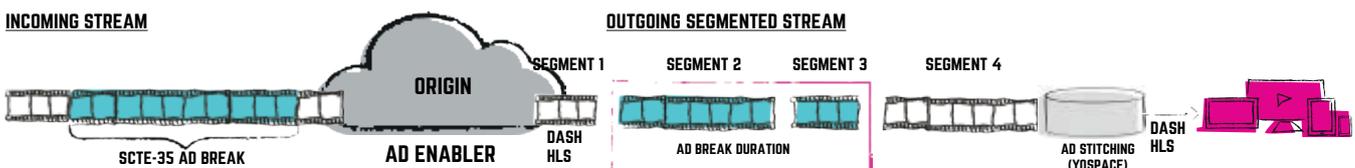
Thanks to Edgware's support for a wide range of formats – and especially being in the forefront of MPEG-DASH support, the Ad Enabler is one of the few systems to provide **frame-accurate segmentation on MPEG-DASH**.

The segments are cut exactly to match the length of the ad break according to the SCTE35 markers in the incoming stream. Depending on the length of the ad break, variations in segment length can occur, but the number of segments will not be changed.

Frame-accurate segmentation is vital for the ad stitching function. Ad stitching is when the segments containing the old original ad are being replaced with segments containing the personalized ad. Ad stitching systems can only replace whole segments, not parts of segments. Consequently, if the segments aren't cut exactly to match the start and end of the ad, then the exchange of segments will not be accurate, and the viewer will experience glitches. In summary, frame-accurate segmentation means:

- ✓ No glitches when the new personalized ad is accurately replacing the old ad
- ✓ No content is overwritten and lost for the viewer
- ✓ No original content is inadvertently shown. This is especially important for live streaming.

The illustration below shows how frame-accurate segmentation works:



The Edgware Ad Enabler features frame-accurate segmentation which is crucial to offer glitch-free personalized ad insertion. Edgware is one of the few vendors to offer this on MPEG-DASH.

SCALABILITY - IN ANY DIMENSION!

Scalability can mean many different things to different people. Depending on which area your specific business is growing or shrinking in, it is important that the origin system can scale to match your requirement. For example, your service portfolio might be characterized by many channels, but few different types of client devices supported, or vice versa it may have few channels and support for numerous different client devices (which impacts the capability to repackage into various bitrate options). The scalability of your origin should be able to adapt to either scenario.

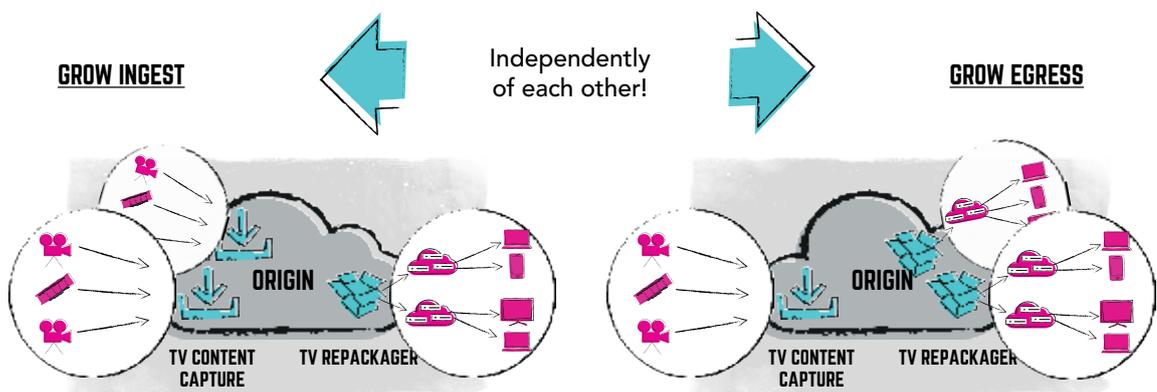
Edgware's origin solution is designed in a highly modular way. The modules for VoD and live ingest are separate from each other, as are the NAS and repackager. Edgware's TV Content Capture provides the VoD ingest, live ingest and NAS-modules while repackaging into ABR formats and digital right management (DRM) is offered by the TV Repackager. This means the scale of your system can be tailor-made to suit your needs.

GROW ONE DIMENSION WITHOUT THE OTHER

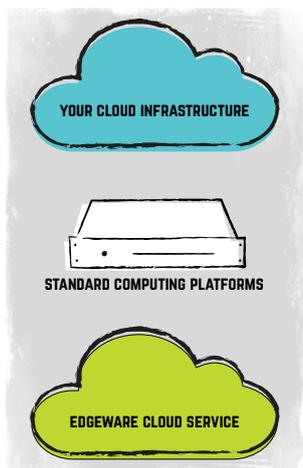
You can easily grow one dimension, without affecting another. Grow the live ingest capacity if you are adding live channels. For example, this can be useful during big live sports events. After the event is finished the capacity can be reduced again and returned to your "normal" state.

Similarly, if you want to increase the egress capacity, you can scale up the TV Repackager.

So, with Edgware's origin solution you can grow ingest and egress independently from each other, letting you scale the dimension that best fits your requirements. The illustration below explains the flexible scalability.



Grow and/or shrink your ingest and egress independently from each other with Edgware's Origin solution.



Edgware's origin solution offers a wide range of deployment options and opens up alternatives for hybrid models.

MULTIPLE DEPLOYMENT OPTIONS INCLUDING A CLOUD SERVICE

The Edgware origin solution offers multiple deployment options. You can deploy the software yourselves in public or private clouds, or you could let Edgware own and operate it for you in Edgware Cloud Service.

With Edgware Cloud Service you will get the benefits that an as-a-service model means, such as the possibility to focus more on developing valuable offerings for your customers instead of owning and running the system. Furthermore, Edgware Cloud Service provides both the product & technology expertise and the cloud hosting all from the same entity. This avoids complex multi-party set ups and offers a smooth and simple one-party approach.

CONCLUSION - WHAT YOU NEED FROM AN ORIGIN SOLUTION TO OFFER GLITCH-FREE VIEWING

Glitch-free OTT viewing requires content to be processed and prepared in a highly accurate and optimized way.

Edgware's origin solution provides segmentation that is optimized for synchronization issues, frame-accurate segmentation enabling glitch-free personalized ad insertion - even on live content and in DASH format - and finally, it repackages into any ABR format required by the client.

With its modular design you can scale in one dimension without affecting the other. TV Content Capture offers scalability of ingest capacity while TV Repackager offers egress scalability.

Edgware's origin solution offers multiple deployment options – deploy in your cloud infrastructure, on standard computing platforms – or let Edgware run the system for you as a cloud-hosted service.

All of these capabilities, in addition to key solutions such as Virtual Channel Creation and OCR-based subtitling from Cavena, provides you with the ultimate origin solution for a glitch-free viewing experience that goes beyond broadcast TV!

FOR FUTURE READING:

- [Virtual Channel Creation - Solution Brief](#)
- [High Quality Subtitling - Solution Brief](#)

Edgware AB

Mäster Samuelsgatan 42 | 12th Floor | SE-111 57 Stockholm | Sweden
+46 736 126 840 | sales@edgware.tv | www.edgware.tv



Solution Brief: Edgware origin
Apr 2019, V.2 ©2019 Edgware AB.
Specifications are subject to change without notice.

Let's make TV amazing again.

edgware