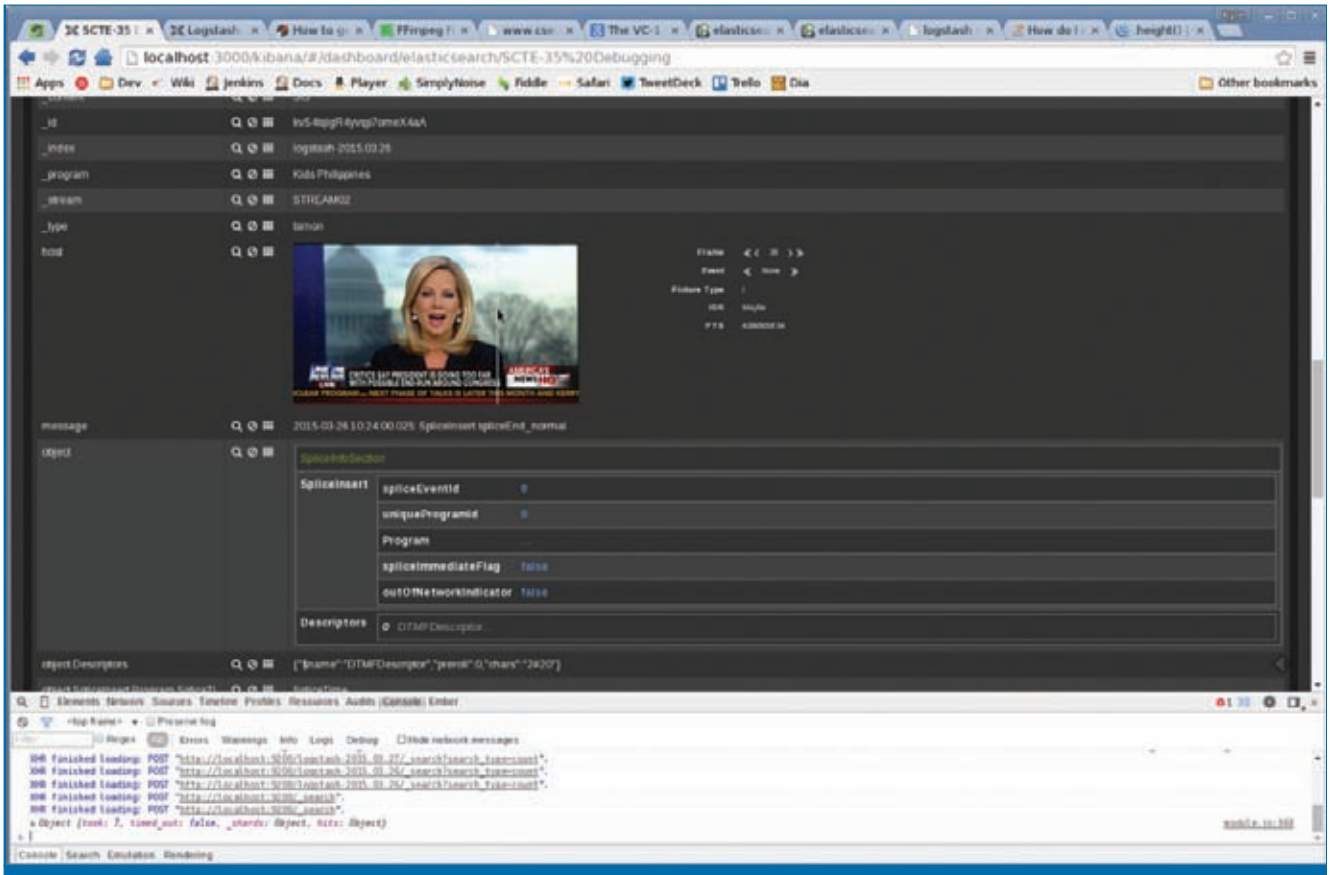

Screenshot-SCTE-35 Debugging

Metadata for OTT and DTH

Over the top (OTT) services are becoming the viewing option of choice among many, particularly the young, who enjoy watching non-linear TV across a host of devices, including laptops, tablets and phones. While OTT was originally expected to challenge the linear TV market, this has not been the case, since traditional broadcasters have moved to launch their own OTT services. However, this is not as straight forward as we might imagine. Roger Franklin, CEO of Crystal, outlines how delivery to the OTT and DTH markets differ, and why metadata matters.

Unless you live under a rock or bridge somewhere, it is not huge news that the television landscape is changing. Consumers have more choice now than ever before, with a flood of over-the-top services (OTT), providing a vast range of content available anytime, anywhere, and across multiple devices. Ever greater numbers of consumers are opting out of watching linear content, a trend causing widespread disruption to the traditional TV landscapes, and broadcasters are appropriately evaluating their approach to content distribution.

The OTT trend

Traditional broadcasters have had considerable concern regarding the evolution to OTT distribution, however today all the research seems to suggest this angst is unfounded. Faced with stiff competition from media companies, traditional broadcasters feared they would see a dramatic fall in subscriber numbers. In fact, that has not happened to the extent expected, as many consumers are keeping their pay TV subscriptions, as well as signing up to multiple OTT services. This means there is room in the market for different players offering something different, but the price point for TV offerings will more than likely remain low; otherwise consumers will shed the more expensive services.

Most broadcasters recognise the value of going OTT to complement linear offerings and remain attractive and competitive.

The majority are looking to stream both the linear TV feed, as well as on demand content. The big value add is that broadcasters have something unique to provide that the pure

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Roger Franklin, CEO of Crystal

OTT services cannot deliver in the same way, with linear and regional content.

A different workflow

The biggest challenge for TV providers looking to go OTT is the fact that the OTT workflow is uniquely different to that of traditional linear TV. The broadcast model is clear – originate, encode/compress, and distribute. You deliver superior programming with expertly timed and tailored advertisements, while adhering to SCTE standards. The delivery process uses these key systems:

- Playout automation – produces a precise uncompressed TV channel from live feeds and stored video content;
- Encoding – compresses the video stream into a transport stream that may be a multiplex with other channels; and
- Transmission – via satellite to affiliates or Digital To Home (DTH) customers, via Over The Air (OTA) transmitters, or via fibre to Multichannel Video Programming Distributors (MVPDs), for example.

The linear transmission solution will more than likely resemble this diagram:

The OTT process is altogether different. It will begin with small chunks of video content and look like the diagram below:

The challenge for the broadcaster is to economically transition from their current linear transmission workflow to the OTT workflow. Generally, the broadcaster will still be sending its normal transmission, meaning two workflows being run in parallel. The normal distribution additionally must be done while maintaining the continuity of the content, the advertising, digital rights management, and enable monetising the content.

Conceptually, the transition picks up the linear feed, pre or post compression, and will look like this example:

Increasing value

When it comes to OTT, broadcasters should not just be looking for new methods and technology to stream video, but also business and technical models to increase value for themselves, the advertisers and the consumers. They should also be expecting an increase in the amount of content on multiple devices. Consumers are expecting content to be localised and personalised — what they want, when they want it, where they want to consume it. The more content being delivered, the more this becomes pertinent as navigating a sea of irrelevant content can be tiresome and consumers will never have the patience. It all has to be relevant and contextual for the maximum impact and engagement. Targeting specific content recommendations based on region, viewing habits, or other personal preferences, can greatly improve the viewing experience for the consumer.

Targeting advertising in the same way will increase value for advertisers who will get much more click through if the adverts are getting in front of the right demographic. Contextual advertising, where the ads fit the mood and context of the program, will also be a key part of the future to be considered by broadcasters and OTT providers. The possibilities for tailored subscription-based access to unique moments occurring in live sports events, or other live video content, is another new revenue model. Subscribers can, for example, ask for today's sports highlight reels, view a short advert at the beginning, or access via pay per view subscription hybrid. Since OTT providers have more control of the viewing audience, skipping adverts is less of a problem.

Metadata matters

Metadata has a critical role in enabling the delivery systems of the present and future, opening up revenue streams, enabling localised content, and ensuring the correct ad insertions are used depending on region. Metadata ensures that content providers can deliver enriched, relevant, and valued content to customers. Using metadata, content providers can build a comprehensive picture of unique consumer viewing habits, preferences, and even likely shopping habits based on viewing history and a comparison to others with similar viewing habits. This way, relevant content and advertisements can be delivered directly to that consumer in the moment. With ever increasing consumer engagement from mobile and tablet devices, it is even easier to send an individually tailored service to those viewers.

Metadata also has a crucial role to play in the area of digital rights management, which has become even more important now that streaming is the norm. With metadata, content providers can block the distribution of content across unauthorised web streaming channels.

The ability to enable this control and compliance is critical

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in enabling the future distribution models.

Considering how important metadata is to the evolving process it is understandably a requirement, but not so simple to make happen with present infrastructure. The difûculties lie with precise frame-accurate timing of splice points, properly identifying content segments, properly marking those segments with Distribution Rights Management (DRM) data, and ensuring the resulting transport stream has the correct SCTE markers and IDR frames at each splice point.

The playout automation system knows the exact frame boundaries, but may not know the globally unique media identiûer that will be recognized by MVPDs and OTT partners, and it probably doesn't know a lot of other metadata that could be included with the TV channel. The playout automation system can't solve this problem without unique additional capabilities added to ensure that the requirements are met, and in a timely manner.

The other challenge faced by broadcasters is validating that the SCTE-104 markers inserted in the uncompressed video get properly translated to SCTE-35 markers in the compressed transport stream. This is especially important as the SCTE-104 and SCTE-35 standards evolve faster than some encoders manage. So much of the distribution happens within precise time requirements, when something is missed or lags behind there is the probability of service level losses or revenue impact due to missed queues and advertising.

The Crystal solution

Crystal has architected several applications to deal with the problems and manage the risk of missed insertions in the distribution. Crystal Insight's Connect™ ensures downstream systems and equipment receive all commands necessary to deliver high-quality, reliable programming – and does so automatically. Connect unobtrusively receives data from the Playout Automation System to determine content identiûers and boundaries, inserts SCTE-104 messages appropriately, and sets web distribution ûags, based on input from a DRM system. Crystal Connect makes the transition from Linear to OTT and Live to VOD possible without any human intervention.

Crystal Insight's Video Metadata Analyzer™ (VMA) ingests copies of the uncompressed and compressed streams, logs the SCTE-104 and SCTE-35 metadata, assures they are properly formatted, and validates the compressed transport stream complies with standards, like having an IDR frame at each splice point.

Discrepancies between the contents of a SCTE-104 message and its corresponding SCTE-35 message are also identiûed by the VMA. Timing inaccuracies are clearly identiûable with the VMA.

Crystal Insight's AdCheck™ monitors triggers coming out of the playout automation system, the SCTE-104 markers, shifts in timecode in the uncompressed video and the SCTE-35 markers, and raises an alarm when triggers and reality do not match up. AdCheck also alarms when compliance with business rules, such as 120 seconds of local ad breaks per half hour, are not met.

Embracing OTT

The broadcasters embracing OTT today and in the future, will be able to greatly enhance the ultimate value of experience for consumers and reward advertisers. The ultimate goal is to generate more revenue and increase service retention. When going OTT, it is important to fully maximise the potential; the capability and use of metadata is the key to ensuring the potential is realised.

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