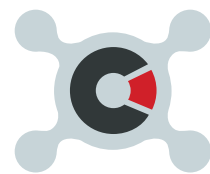


# CRYSTAL VMA



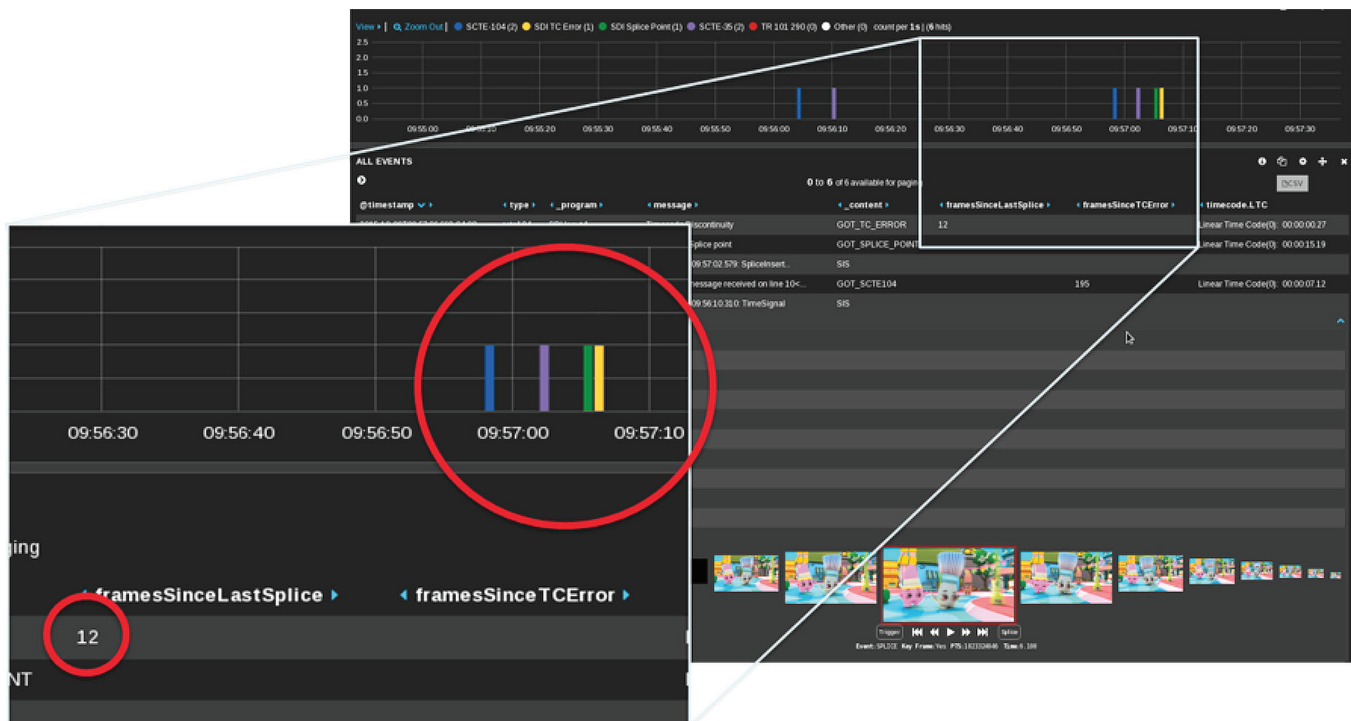
**CRYSTAL**™  
Wherever Content Flows...<sup>SM</sup>

## VIDEO METADATA ANALYZER

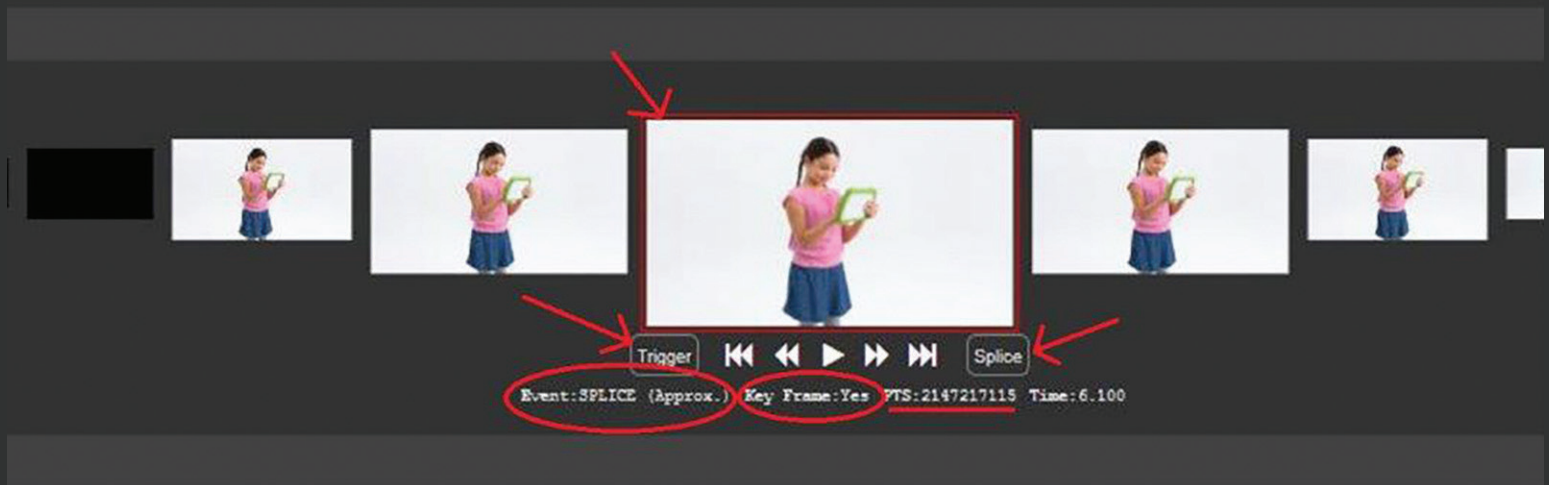
The **Video Metadata Analyzer (VMA)**, a Crystal Connect product, is a diagnostic tool and a monitoring probe used to extract, log, and analyze metadata and ancillary data in video streams. The VMA accepts both uncompressed and compressed video streams. Multiple inputs can be grouped into a service so all metadata collected for a service, regardless of stream source, can be analyzed together.

## VMA - A DIAGNOSTICS TOOL

VMA's intuitive web interface makes it easy to inspect metadata details and splice point timings. For example, the image below shows that the blue SCTE-104 message points to a green splice point in the future. That green splice point should correspond to the yellow shift in the VITC (time code counter that jumps when the content source changes from programming to advertisement), but the splice point occurs 12 frames too soon. This results in a bad splice with the previous program segment being cut too short.



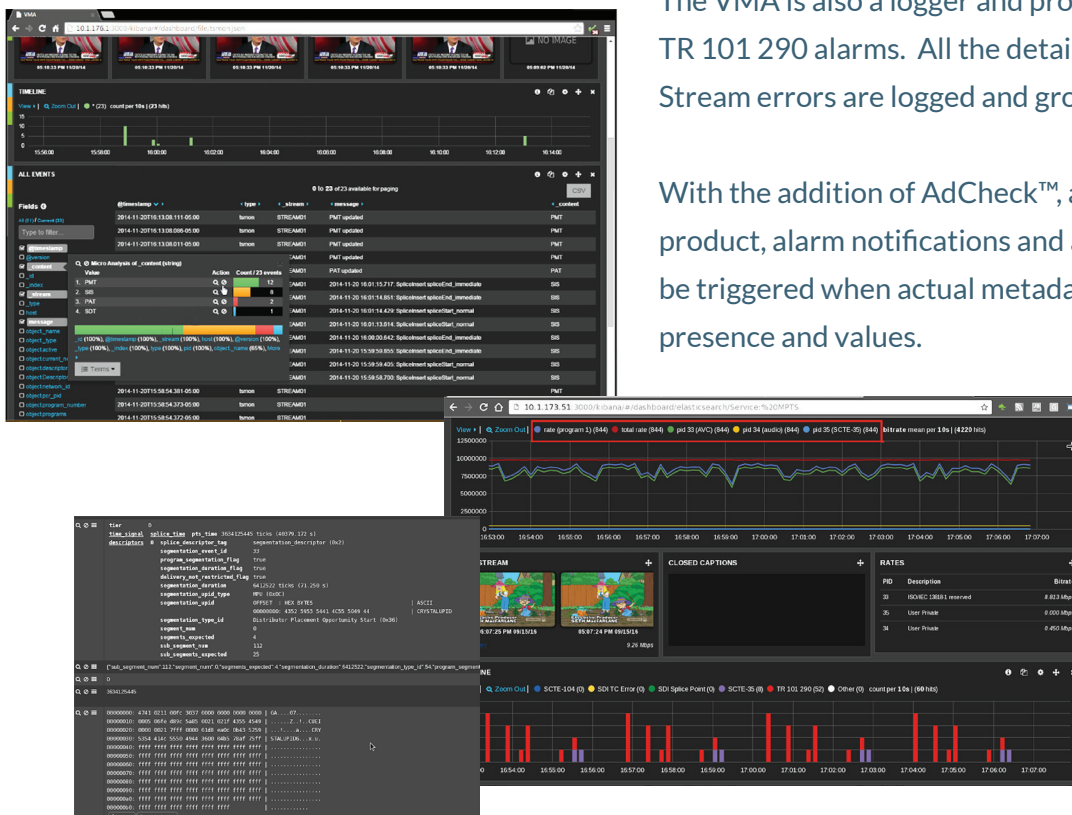
Likewise, this next picture shows the frame with the red border that is at the PTS time where a splice in a compressed transport stream will occur. Although that frame is a key IDR frame, the splice point should reference a PTS at least 3 frames earlier when the picture was black.



## VMA - A METADATA PROBE AND TRANSPORT STREAM ANALYZER

The VMA is also a logger and probe for metadata, as well as TR 101 290 alarms. All the details of messages and Transport Stream errors are logged and grouped by service.

With the addition of AdCheck™, another Crystal Connect product, alarm notifications and automated actions can be triggered when actual metadata differ from expected presence and values.



## SPECIFICATIONS

### Inputs and Formats:

- > SD-SDI/HD-SDI/3G
- > ASI
- > MPEG TSoIP
- > HLS (available in the near future)
- > MPEG-DASH (available in the near future)
- > MPEG-2, MPEG-4, H.264/AVC (available now)
- > H.265/HEVC (available in the near future)
- > SMPTE-2022-6 (available in the near future)
- > SMPTE-2110 (available in the near future)
- > 525i, 625i, 720p, 1080i, 1080p, up to 60fps and 10bit (available now)
- > 2160p, frames rates up to 60fps and 12 bit (available in the near future)

### Metadata Logged:

- > SCTE-104
- > SCTE-35
- > Closed Captions
- > Active Format Descriptor (AFD)
- > SMPTE-291M Packets
- > TR 101 290 Priority 1, 2, & 3 (excluding jitter)
- > Transport Stream Bitrates, PMT, PIDs
- > Hex dump and standard message field interpretation

Crystal makes your content flow more valuable. Let us show you how.  
For more information please visit [crystalcc.com](http://crystalcc.com).

Feel free to write notes here:

For more than 30 years Crystal has been providing software that makes any combination of equipment in the broadcast operation, from practically any manufacturer, operate as a single, seamless system. Today, Crystal automates monitoring, control and metadata management, from traffic, scheduling and playout through OTT/TVE delivery and traditional distribution. For live/linear-to-OTT, Crystal uniquely delivers the necessary metadata (SCTE 104, 35 and 224) – with frame-accurate precision – to enable the automation of digital rights enforcement, contextual dynamic ad insertion (DAI) and live-to-VOD (C3, D4, LookBack, nDVR). From physical to virtual, from your broadcast network to the public internet, Crystal makes content flow.

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