Broadcast displays in IP workflows

Bart Meeus

Director Business Development APAC & MEA

sonoVTS

IP SHOWCASE THEATRE AT IBC – SEPT. 14-18, 2018

Overview

- Introduction
- General requirements
- Why IP is different
- IP&4K
- Conclusion

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- Created out of a merger between Sono, VTS and Penta
- Long established Displays manufacturer
- New hard- and software platform for HDQline

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Requirements

- Integration in complex broadcast workflows
  - seamless integration with Ember+
  - Low latency (< 10ms)
- Picture quality (price-quality)
- Configuring & Calibration
  - Via in-house developed software platform
- Future proof
  - 3G/UHD/4K
  - HDR
  - 12G
  - IP, uncompressed SMPTE2022 or SMPTE2110
  - IP, compressed TICO, VC2,….
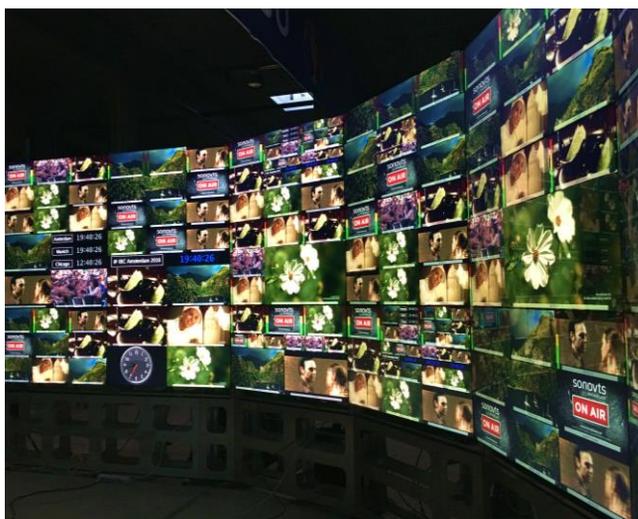
Why IP is different?

1. IP is so far an environment full of conversions, encodings and compression
2. What do you really monitor on your display?
3. SDI inputs vs. multicast streams
4. Why latency gets an issue?
5. Why we are doing native IP video monitoring?

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Why IP is different?

1. IP is so far an environment full of conversions, encodings and compression

- Manufacturers are catching up slowly with native IP devices
- Edge devices needs to be converted from SDI into IP
- Need for I/O's or gateways
- Different compression formats in the same environment
- Frame accurate switching became an issue again

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Why IP is different?

2. What do you really monitor on your display in an IP environment?

- Quality control: camera chain diagram
    - SDI out, convert into IP, convert back to SDI, SDI into the display
    - TICO compressed out of the basestation, convert back to SDI, SDI to the display
- Confidence monitoring: replay position
    - SDI out the replay machine, I/O from SDI to IP, I/O from IP to SDI, SDI into the display
- Multi viewer
    - Compressed or uncompressed out of different devices
    - Conversion needed from any compression format to SDI and/or to HDMI

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SDI Scenario with SDI monitoring

Multi Viewer

Cameras

SDI Router

Replays

Confidence

Video Mixer

Externals

Quality Control

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	IP
	SDI
	HDMI

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IP Scenario with SDI monitoring

IP Scenario with IP monitoring
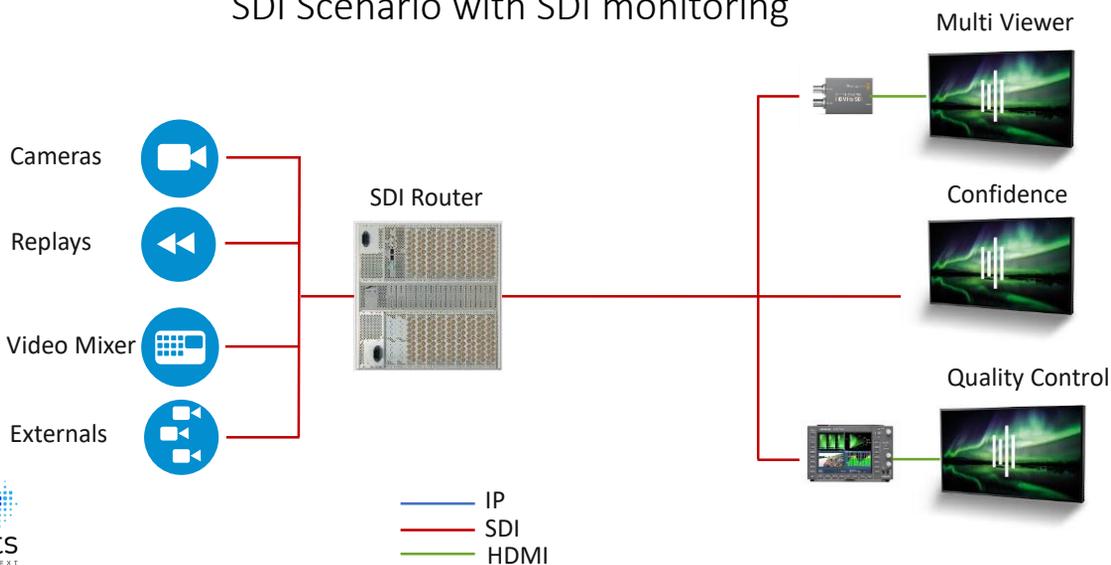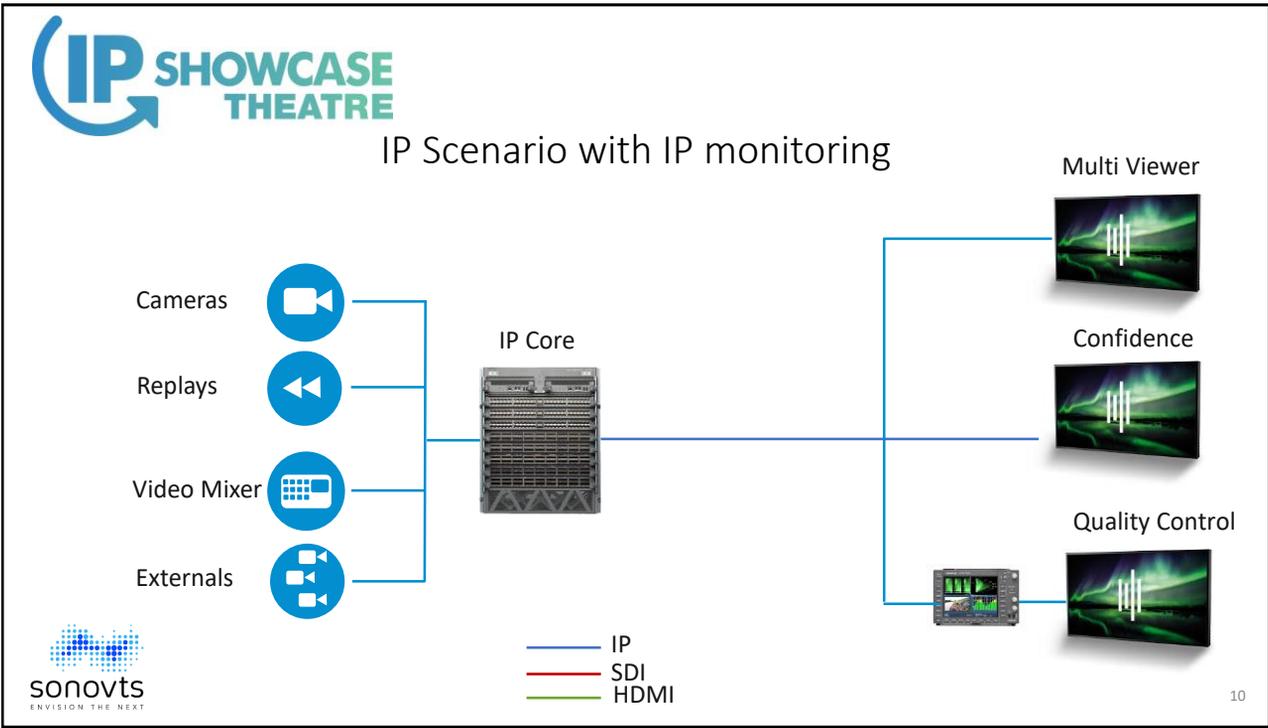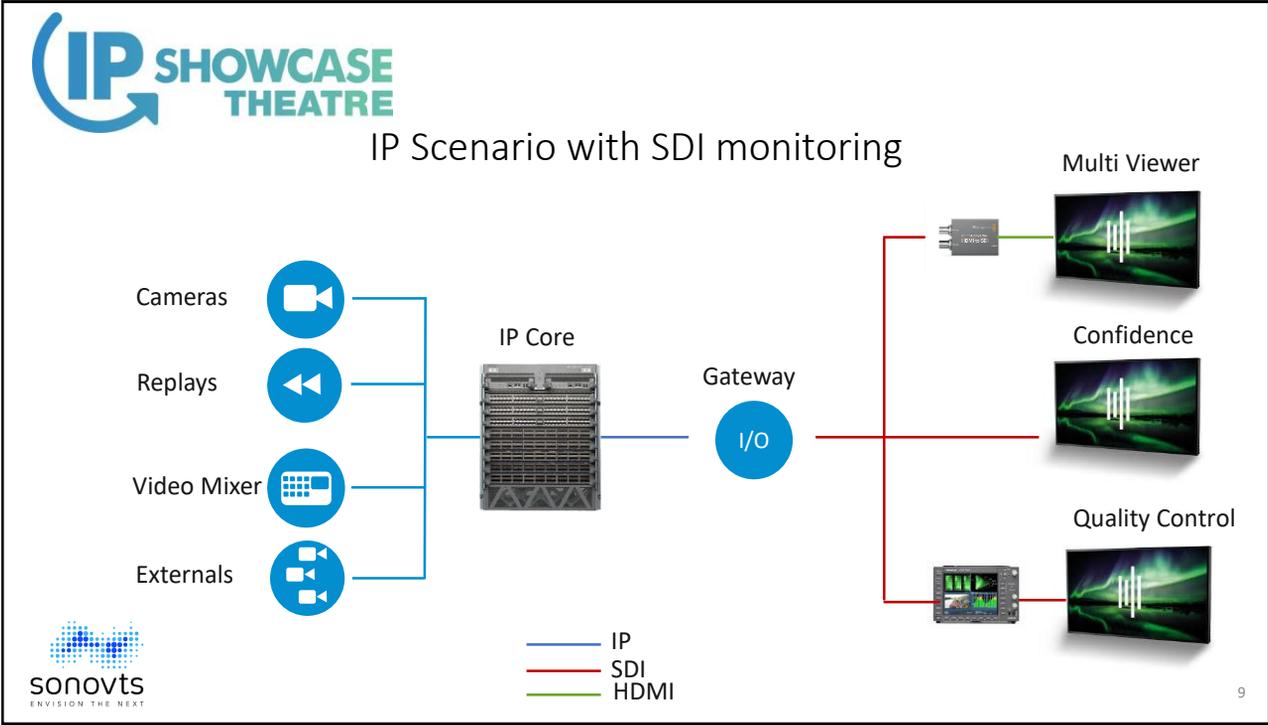
Why IP is different?

3. SDI inputs vs. multicast streams

- Monitoring in SDI workflows
    - Very straightforward workflow
    - No intelligence on the display input

- Monitoring in IP workflows
    - Multicast streams
    - Intelligence needed on the display side
    - Need for flow management and SDN's

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Why IP is different?

4. Latency

- Latency of the display was normally never an issue
- Encoding, compression, etc. takes time
- IP Multi Viewers have a significant higher latency than conventional Multi Viewers
- Adding the latency of the MV, the display latency gets an issue
- Our goal was to stay below 10ms IP in to signal on the screen for uncompressed video streams

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Why IP is different?

5. Why native IP displays?

- no one else does!
- Extreme low latency with our IP displays receiving uncompressed streams, < 10ms
- Excluding extra conversions
- Offering not only uncompressed but also compressed formats eg VC2, TICO and J2K
- Simplifying the new IP workflows

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IP & 4K

- IP is more or less the only sensible way to do 4K
- Even in IP 4K is a challenge in terms of bandwith
- With SMPTE2110 we save bandwith compared to SMPTE2022 and SDI
    - 2160p50 with 2022-6: 12282,2 Gb/s   <>   2160p50 with 2110-20: 8754,9 Gb/s
    - -30,3%
- Will everything need a 25GBit interface and will customers pay for this
- Compression a way to go? New SMPTE2110-22 integrates compressed codecs into SMPTE2110
- And if yes, what type of compression?

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Conclusion

- IP technology is there
- IP technology is flexible, scalable and is the way to do 4K
- But IP technology and their respective workflows are not straightforward
- Simplify where you can, at the end of the chain
- Reference projects around the globe:
  - Proximus MCR– Belgium
  - TPC OB Truck - Switzerland
  - Plazamedia Playout center – Germany
  - European Parliament

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Thank You

Bart Meeus

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bart.meeus@sonovts.com

0049 1776897144

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