RTL City Luxembourg
Our Journey, 74 Weeks Later

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TV Technology Buzz

- Familiar trend for the last years in our industry
- Since 2011 gains in popularity every year
- Even in 2018 is not number one trend... but 4K (or more?) is emerging
- Not many big projects had been realized so far, now?

- But still...

- BCE had to fulfill a really tight schedule
Preliminary Requirements

- Format Agnostic (1080p, 4K) – Future proof
- Flexibility, Scalability
- Redundancy, Reliability
- Cost savings on cabling, installation
- Reduce TCO
- Reduced complexity
- Multivendor selection
- COTS equipment
- Innovation
Achievement vs expectations

- Format Agnostic (1080p, 4K) – Future proof
- Flexibility, Scalability
- Redundancy, Reliability
- Cost savings on cabling, installation
  - Reduce TCO
  - Reduced complexity, well almost...
- Multivendor selection
  - COTS equipment
- Innovation

Standards applied today @ BCE

November 2017
- SMPTE ST 2022-6/-7 for SDI over IP
- AES67 for audio over IP
- DANTE in use at RTL Radio
- PTPv2 (IEEE1588)
- PTPv1 for Dante
- TR04

- Software upgrades unlock future standardization (e.g. ST2110 family)
• HD SDI exist only intra rack / intra room
• All rooms interconnected via Fiber
Case 1

- Latest Investment in 2014
- IP Used as a backbone
Case 2

- SDI for Legacy equipment with no replace available in Q2 2017

Key Components

- Network Switches and Optics

- IQMIX gateway
- IQMADI audio gw
- Audio Shuffler
- Routing Controller
- Vision Mixer

- Servers
- Encoders

- Cameras

- Audio Mix & Routing for radio

- SPG/PTP Generator
- T&M

- PTP Master Clock
- DHD.audio
Our IP Router size

19/06/2017
• Video Level 964 x 1496

04/12/2017
• Video Level 1024 x 1564

52 x 44
Increase with Software configuration and simple equipment connection

Monitoring and Logging

• DATAMINER (Alarms)

• PRTG, Syslog and sFlow (Logging)

• TIMEKEEPER (Timing Monitoring)
BCE Monitoring Tool example 2
Key Findings

- Design period is the most important, do not underestimate the complexity
- Test, PoC and then test again
- **Skillset of Broadcast Engineer**
  - Needs to be adapted
- Monitoring solutions do not really exist
- Time to react
  - Being proactive

Other Findings

- Two different vendors for the dual central switches
  - Hardware and/or software redundancy
- Monolithic network switches removes complexity
- Clean switching is not mandatory for most of the signals
- Do not underestimate the switch latency behaviour for playout systems
- Third party brands integration is complex and time consuming
Hints

- IP control systems can be single point of failure
- Test Inbound control layer using packet storm or any feasible method
- PTP distribution performance and scalability
  - Originally we had serious limitations
- Fiber connectivity and QSFP’s
  - Absolute clean fiber connectivity, Validate the QSFP quality
- Compliance of the IP edge devices with respect to specifications or recommendations
  - Future proof system

Thank you

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