



IP Interoperability for Public Service Broadcasters

Judy Parnall, EBU Technical Committee Chair

BBC



IP SHOWCASE THEATRE AT IBC2019 : 13-17 SEPT 2019



The promise

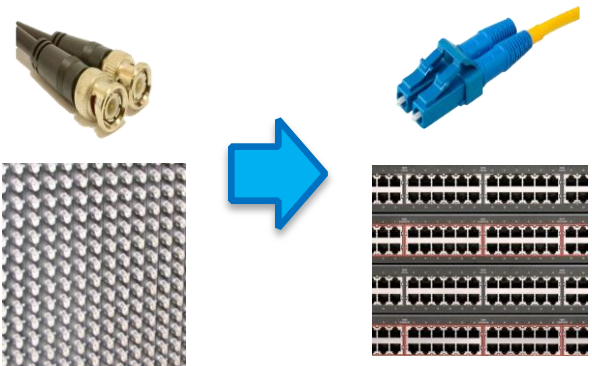
Move to IP brings the promise of up to date facilities
and future-proof facilities



IP SHOWCASE THEATRE AT IBC2019 : 13-17 SEPT 2019 2



Reasons to go IP



Reasons to go IP





Reasons to go IP

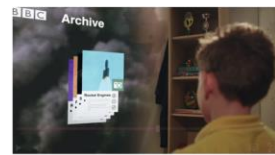


EBU BBC Design + Engineering
OPERATING EUROVISION AND EUROARAD

IP SHOWCASE THEATRE AT IBC2019 : 13-17 SEPT 2019 5



Reasons to go IP





EBU BBC Design + Engineering
OPERATING EUROVISION AND EUROARAD

IP SHOWCASE THEATRE AT IBC2019 : 13-17 SEPT 2019 6



Challenges for the traditional broadcast industry

Identity		Dynamic Provisioning		Automation	
Timing & Sync		Discovery		Security	
Media Transport		Connection		Resilience	
Control		Monitoring			



IP SHOWCASE THEATRE AT IBC2019 : 13-17 SEPT 2019 7



Media Transport

- Expectation based on SDI
 - Uncompressed
 - Low-latency
 - Very few errors
 - “Specialist”



IP SHOWCASE THEATRE AT IBC2019 : 13-17 SEPT 2019 8



What do broadcasters want from infrastructure?

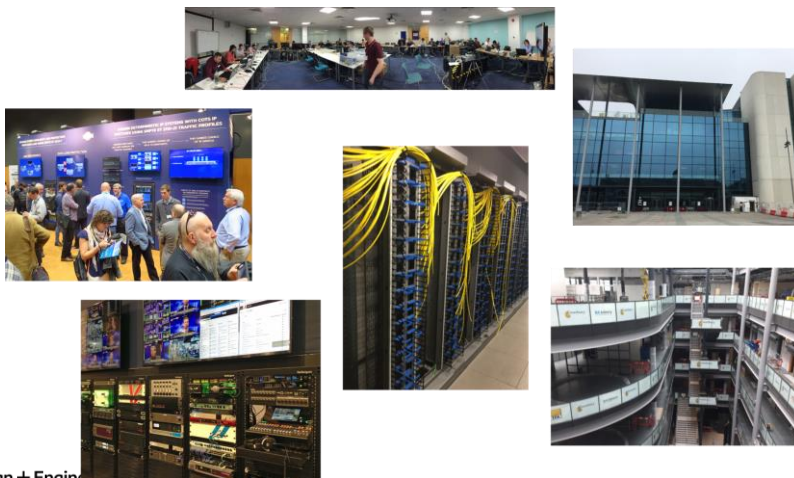
- Cost effective
- Flexible
- Reliable
- Secure
- Easy to configure
- Interoperable



IP SHOWCASE THEATRE AT IBC2019 : 13-17 SEPT 2019 9



What broadcasters have found



IP SHOWCASE THEATRE AT IBC2019 : 13-17 SEPT 2019 10



BBC Cardiff – Mark Patrick, EBU NTS June 2019

LIVE IP Top Benefits



- Future proofing, in particular the ability to adopt new formats
- Flexibility, supports new ways of working with more dynamic assignment of resources. Allows facilities to be scaled up more easily
- Will be the industry standard in roughly the same timescale as Central Square
- Will eventually be the lowest cost model due to adoption of COTS hardware and ability to move broadcast functions onto a more generic platform with a distributed routing core



BBC Cardiff – Mark Patrick, EBU NTS June 2019

LIVE IP Top Risks

- Interoperability still not proven standards are very new
- There is an obvious Cybersecurity risk
- New skills are required to deliver and support Live IP. There is a possibility of change saturation and also an overspend on training
- More resources may be required to support delivery of Live IP than planned (this includes resources and capabilities of Systems Integrators)
- Refresh cycles are much faster and don't align well with traditional capital plans



BBC Cardiff – Mark Patrick, EBU NTS June 2019

Other Challenges

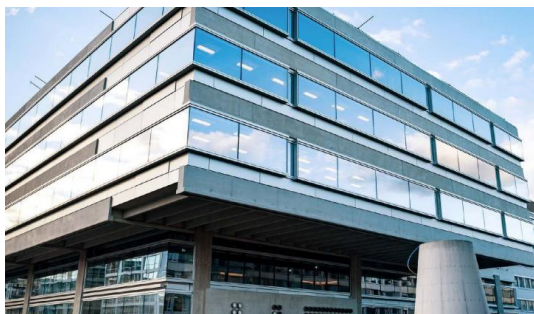
- Audio: ST2110-30 and AES67 are almost compatible but there are subtle differences
 - MAD1 is an effective bridge between eco-systems
 - We need to consider latency between systems
- PTP is complicated and expensive to implement
- NMOS control was highly desired but useful interop has not been delivered by the wider industry in time for the project, despite a lot of continuing hard work



SRG Zurich – Sandro Furter TPC, EBU NTS June 2019

There are still challenges around:

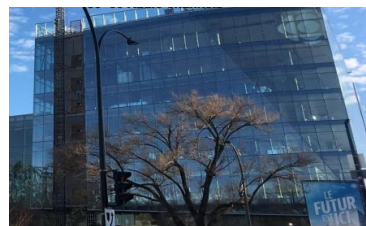
- Dynamic Audio Configuration
- PTP
- Security
- NMOS
- Network Architecture





CBC Montreal, Louis Lamarre EBU NTS June 2019

- Focus on Resilience and edundancy
- Key learnings are:
 - Build your PTP architecture to be simple, reliable and predictable.
 - Extended redundancy may not be as protective as you think...
 - PTP monitoring is more important than PTP redundancy.
 - Don't expect devices to report errors, problems, degradation.
 - You can't test everything, but at least test GMC failover scenarios.



How do we change these complaints into positive contributions?

"We are thinking about using SDI as a firewall"

Jan. 2019: "Hey can you plug our truck? We just need 2x63 Ampère"

"As a user, I need those gaps be filled into shipping products in 2018 so that I can build my new HQ facility."

Jan. 2019: "Thank you for your email with the SDP file." Email are you serious?"

Dec. 2018: "We just received some equipment, no sign of automatic configuration?!"

Sep. 2017 "We just had a meeting with vendor X and they said: IS-04, IS-05 is not available. We need to go with their implementation."

News flash!!
Vendors created their own proprietary control layer. Looks nice, but it's a major vendor lock in ...

"Hey, we need to configure all 500.000 multicast addresses manually."



This was the landscape a year ago

- There were many specifications and standards
- They had been developed by multiple groups
- There have been many plugfests and demos
- They leave lots of options to the implementer
- They miss out some parts entirely
- This tended to lead to non-interoperability

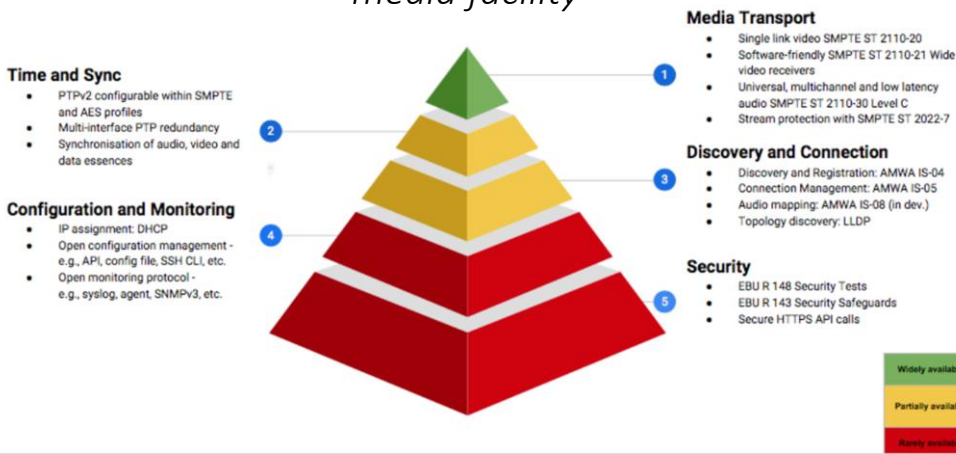


IP SHOWCASE THEATRE AT IBC2019 : 13-17 SEPT 2019 17



Technology Pyramid for Media Nodes

Minimum user requirements to build and manage an IP-based media facility



IP SHOWCASE THEATRE AT IBC2019 : 13-17 SEPT 2019 18



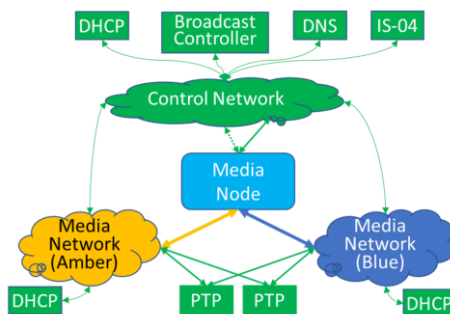
JT-NM recommendation TR-1001-1

Joint Task Force on Networked Media

Technical Recommendation
TR-1001-1:2018 v1.0

System Environment and Device Behaviors For SMPTE
ST 2110 Media Nodes in Engineered Networks -

- What the network needs to provide (DHCP, DNS, PTP...)
- What Media Nodes need to do (2110, 2059, IS-04, IS-05, DHCP, DNS...)
- Assumes an “engineered network”
- Rules for multicast
- Rules for disconnect, recovery...



IP SHOWCASE THEATRE AT IBC2019 : 13-17 SEPT 2019 19



The challenge

- ST2110 promises to be the ‘go to’ IP standard for broadcast signals but it has still got some way to go before it is a simple and universal proposition
- ST2110 as a media transport standard works well, albeit with too many options, and it’s only the tip of the pyramid
- Vendors need to work on configuration and management tools to provide ‘plug and play’ functionality that is needed by broadcasters
- NMOS integration is key to enabling systems to function together but further adoption is needed
- There still needs to be a confident leap from the R&D labs to mature and reliable products
- The more projects that specify and install IP equipment the sooner all this will happen, but the issues with NMOS support and multiple options within standards are holding broadcasters back
- In effect TR-1001 has deprecated mDNS for installations anyway, improving the situation



IP SHOWCASE THEATRE AT IBC2019 : 13-17 SEPT 2019 20



Keep Testing



- Interoperability testing is key
- Really use it to solve problems, not just to get a tick in the box
- JT-NM tested programme and badges is proving useful .
- Very successful JT-NM tested event held in August 2019 in Wuppertal
- Make use of automated tools – EBU LIST and NMOS test tool



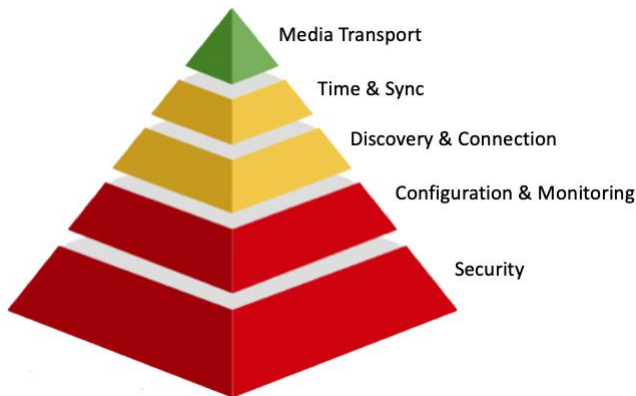
Don't forget security

- Design it in
- Make it easy to use and be secure
- Strengthens the long term usability



Public Service Broadcasters need IP Interoperability

Let us work together to make sure that it happens



IP SHOWCASE THEATRE AT IBC2019 : 13-17 SEPT 2019 ²³



Thank you

Judy Parnall, BBC & EBU Technical Committee
judy.parnall@bbc.co.uk

Thank you to our Media Partners



IP SHOWCASE THEATRE AT IBC2019 : 13-17 SEPT 2019 ²⁴