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IBC Accelerator

IP Networks: Finding a needle in a haystack

Proving the utility of the NMOS labelling specification

September 2024

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BBC

techex.

"To accelerate the implementation of up-to-date specifications that will allow quick and efficient resource updates in an IP infrastructure"

EBU
OPERATING EUROVISION AND EURORADIO

SOLENT UNIVERSITY SOUTHAMPTON

ITN

dB BROADCAST
INNOVATE | COLLABORATE | DELIVER

WG

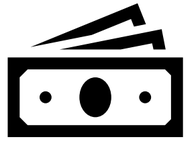
EVIDEN

Introduction of IP systems

Increased system complexity

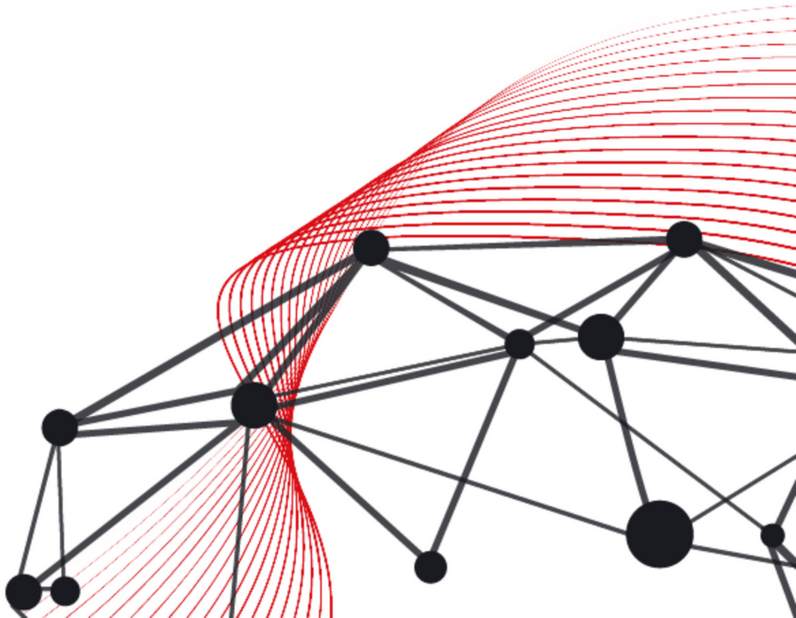
Implications for broadcasters

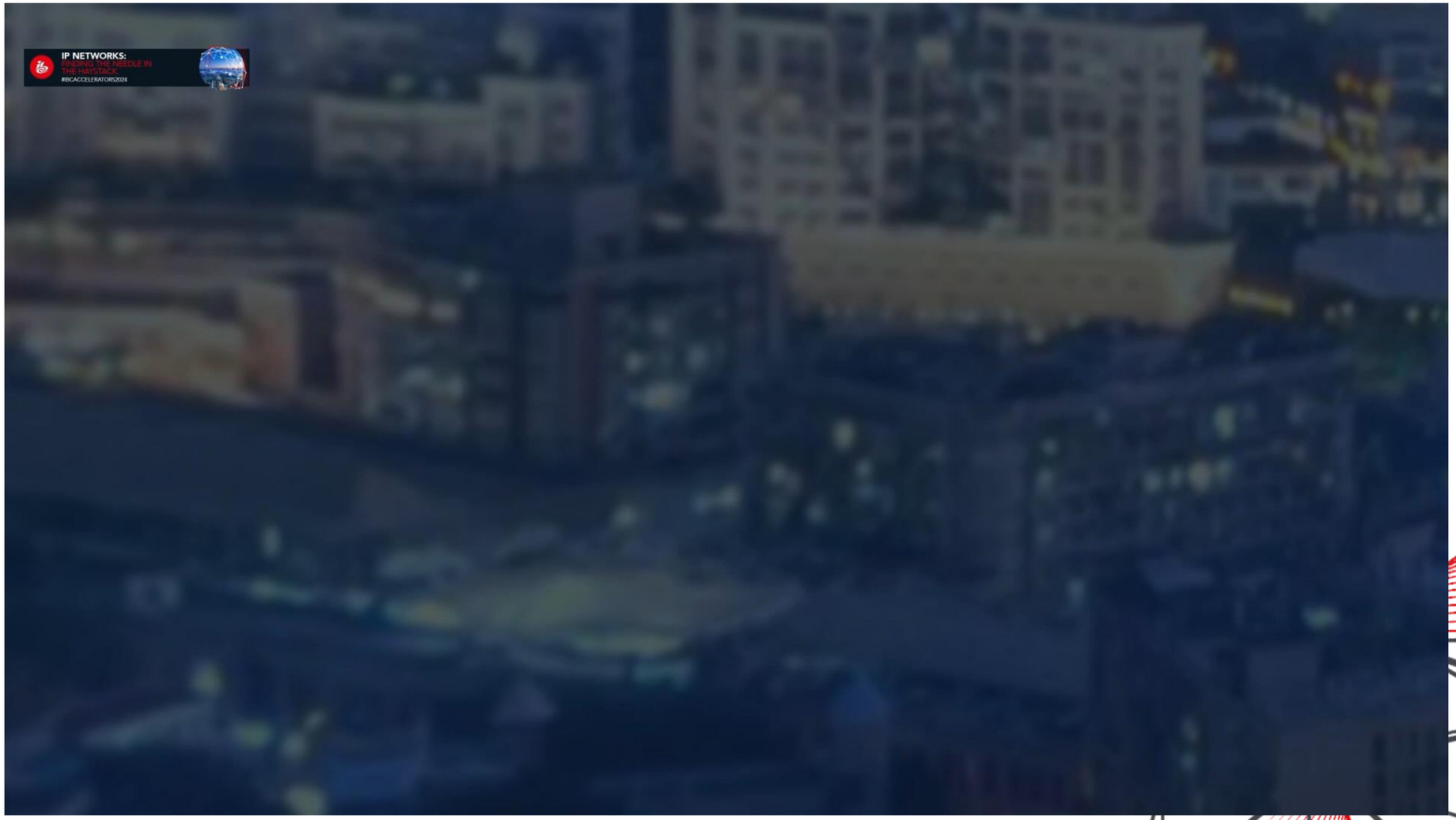
Time restrictions



Financial implications

Sustainability Factor




IP NETWORKS:
FINDING THE NEEDLE IN THE HAYSTACK
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Advanced Media Workflow Association (AMWA)

AMWA is an industry group of manufacturers, developers and end users, that is trying to advance a software-focussed approach to support future professional media operations through development of specifications, tools and best practices.

Networked Media Open Specifications (NMOS)

NMOS is a family of open, free of charge specifications for control-plane interoperability between media devices on an IP infrastructure.

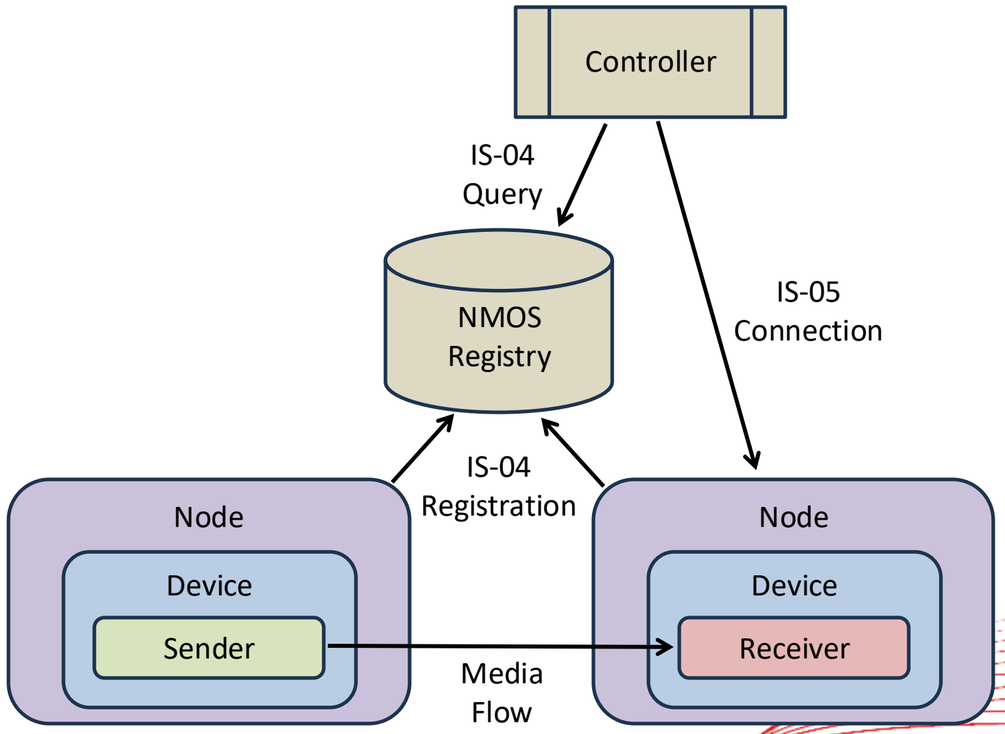
Best known for:

- **IS-04** Discovery & Registration
- **IS-05** Device Connection Management

Supported by most SMPTE ST 2110 capable devices

- Tested for 87% of devices at 2022 JT-NM Tested Event, ...with 90% of tests passed.

But NMOS goes further...

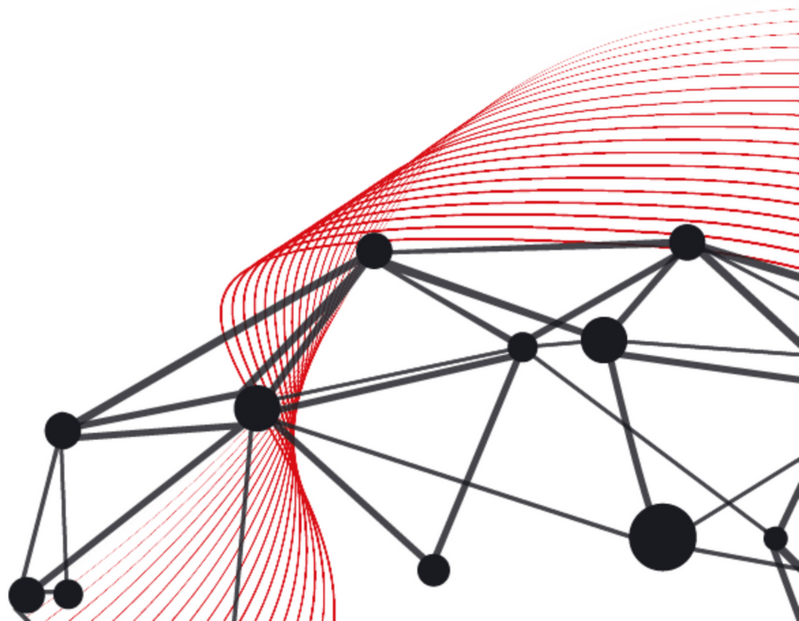


AMWA NMOS

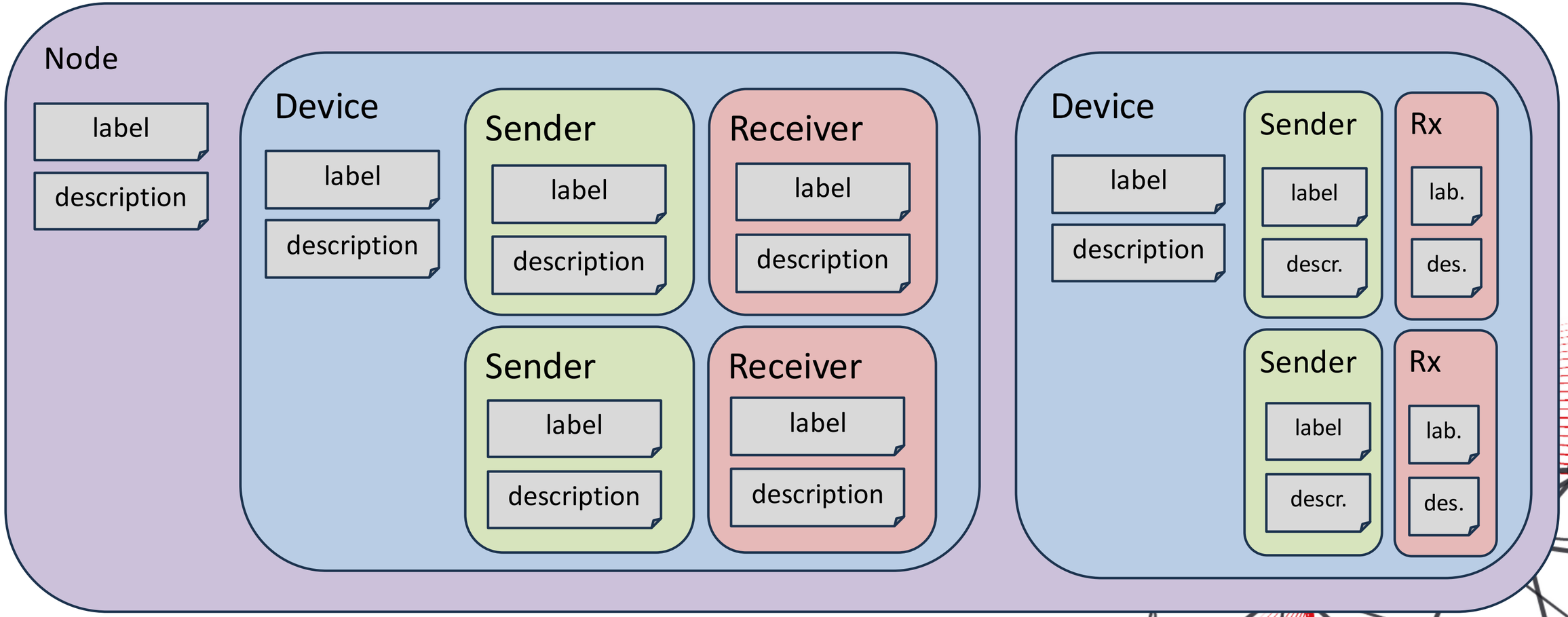
Resource Management	Connection Management	Device Control & Monitoring	Device Configuration	Security
IS-04 Discovery & Registration	IS-05 Device Connection Mgt	IS-07 Event & Tally	IS-11 Stream Compatibility Mgt	IS-10 Auth. API
BCP-002-01 Natural Grouping	IS-08 Channel Mapping	IS-12 Control Protocol	IS-14 Device Configuration	BCP-003-01 Secure Communications
BCP-002-02 Asset Distinguishing Info	BCP-006-01 JPEG-XS	MS-05-01 Control Architecture		BCP-003-02 Authorisation
IS-13 Annotation	BCP-006-02 H.264	MS-05-02 Control Framework		BCP-003-03 Certificate Provisioning
	BCP-006-03 H.265	BCP-008-01 Receiver Status		
	BCP-007-01 NDI			

Supported by

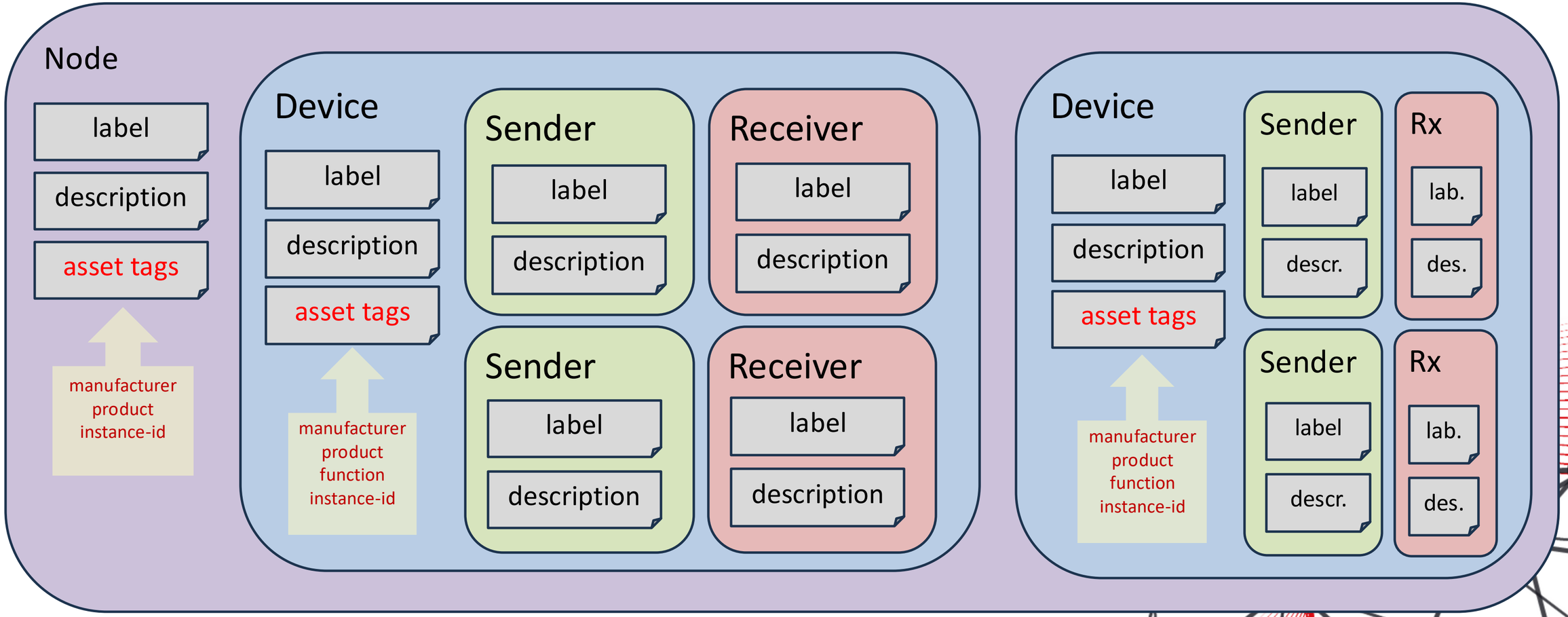
INFO-xxx Informative Documents
NMOS Testing Framework and Cloud Testbed
Open Source Node and Controllers and "Easy-NMOS"



IS-04 allows vendors to set resource labels and descriptions.
But it does not or specify what they should contain nor how to change them.

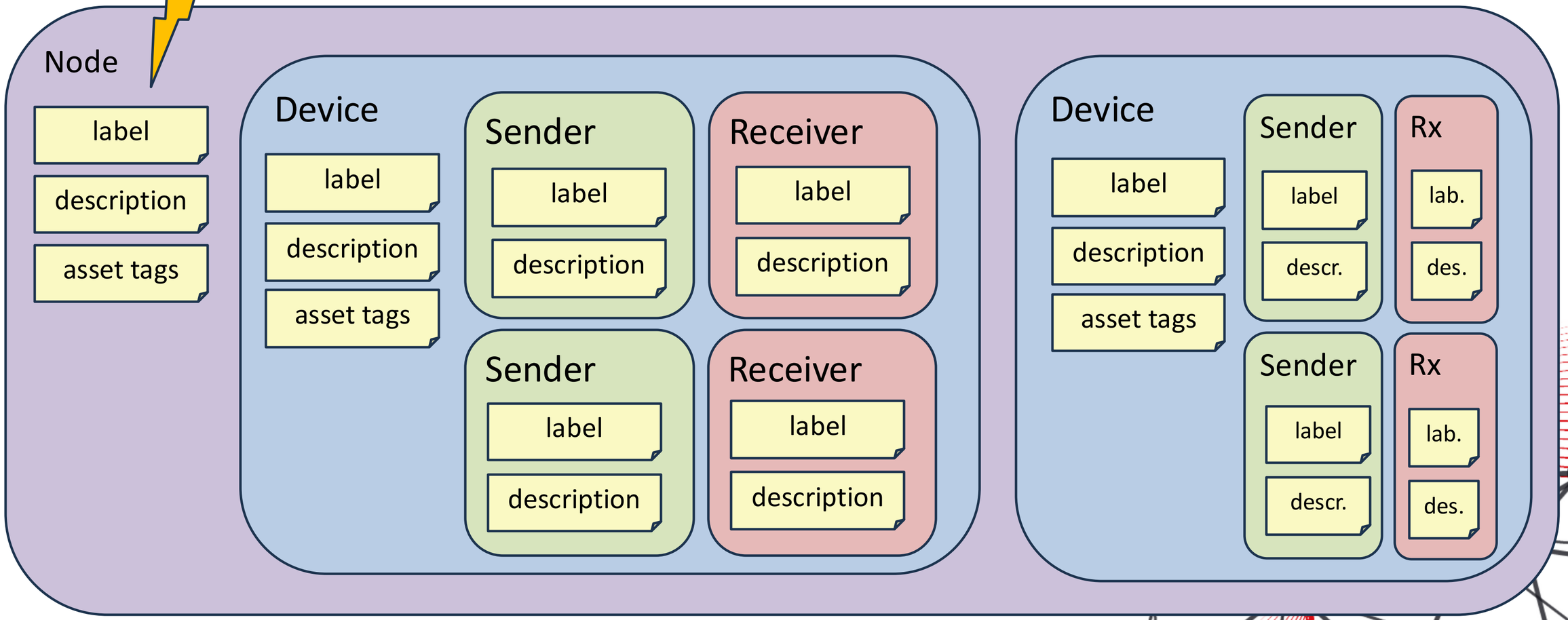


BCP-002-02 NMOS Asset Distinguishing Information specifies a small number of common asset tags for vendors to set for Nodes and Devices

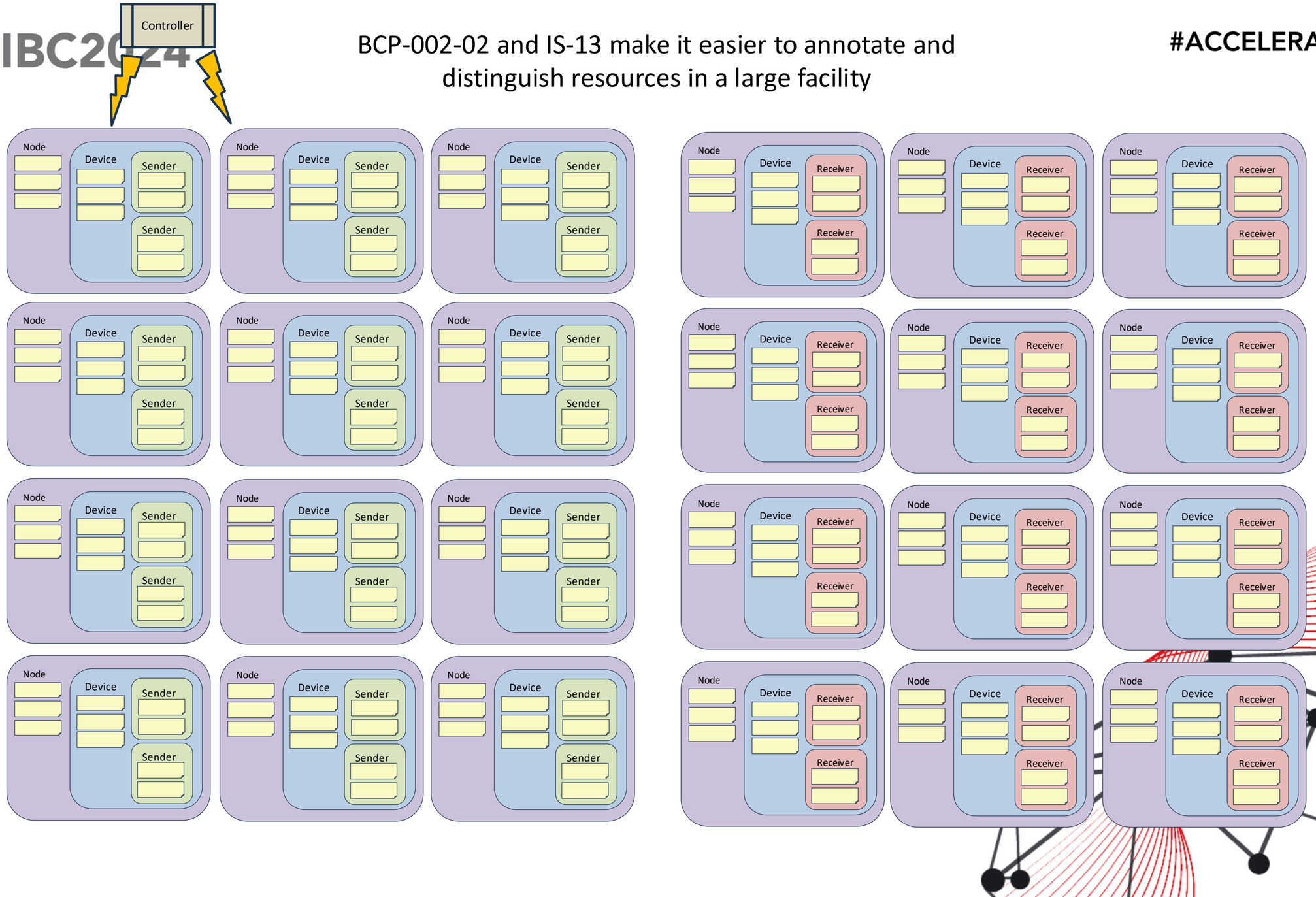


Controller

IS-13 NMOS Annotation API allows control & monitoring applications to update labels descriptions and tags



BCP-002-02 and IS-13 make it easier to annotate and distinguish resources in a large facility

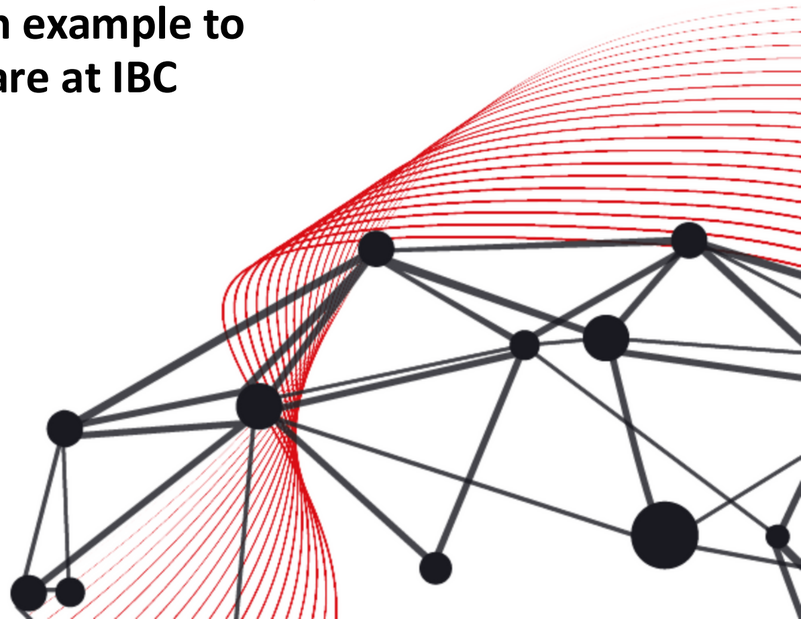


Workshops and webinars to gain insight on challenges faced by industry

Research vendor status for NMOS implementation

Hands on workshop with all parties

Outcome: Working system example to share at IBC



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Ian Benjamin

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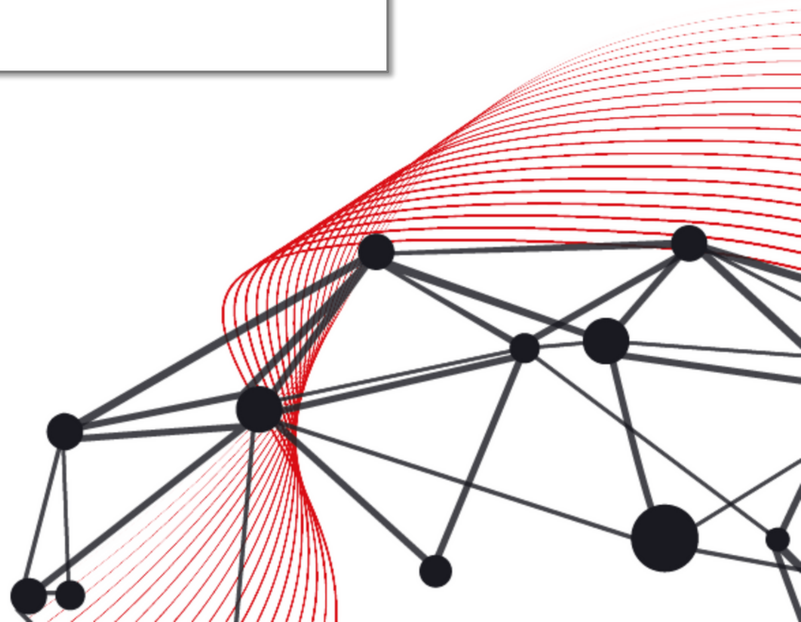
EBU WEBINAR

Over 50 attendees from across industry both EBU members and beyond

Purpose of the webinar- working with the EBU community to discuss the current challenges of IP systems, explain the progress of NMOS and collate their experiences and feedback

The workshop outlined the current IP transition for industry and the work of AMWA

Feedback was clear that the more IP devices they were managing, the more challenges they were facing, as a daily struggle



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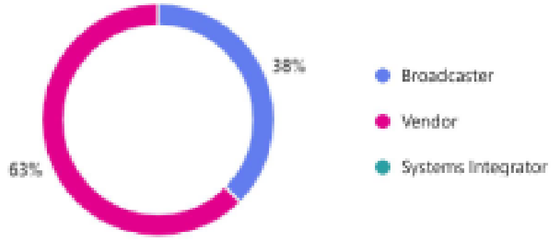
1. Are you a...



6. Please summarise your NMOS support

5 responses submitted

today nmos-cpp cpp contributor
fully developed IS-04 & IS-05 progress
contributor and user integration with IS-04
house

8. Do you support or plan to support BCP-002-01 "natural groupin g" group hints?

5 responses submitted

destination names Yes use today
grouphint tags
natural group default source

9. Do you support or plan to support the new BCP-002-02 Asset Di stinguishing Information recommendations and/or do you provi de other means of telling control systems such information?

5 responses submitted

no sense UUID BCP-002 instance roadmap
software environment
MAC address
use
Not in use difficult
software products
persistent identifier
Yes impossible

10. Do you support or plan to support the new IS-13 Annotation S pecification and/or do you provide other means of letting cont rol systems set information?

5 responses submitted

Plan to in the future
label/description WebSocket API
API and WebUI user end-users
nmos-cpp REST API
row_names are user user definable
destinations and devices Likely we will allow

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AMWA

AMWA Accelerator Workshop

Purpose: In depth look at the requirements and the roots to implementation BCP 202 and 13
Identify demonstratable implementation to show at IBC

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Workshops and webinars to gain insight on challenges faced by industry

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Working system example to share at IBC

AMWA Accelerator Workshop

- 1st-5th July
- Attended by AMWA members as well as those involved in the Accelerator project

- In depth look at BCP-002-02 and IS 13
- Create a demo for implementation at IBC

Workshops and webinars to gain insight on challenges faced by industry

Research vendor status for NMOS implementation

Hands on workshop with all parties

Working system example to share at IBC

Concluded that BCP- 002-02 is a low cost way to get on board with what is required- provides part of the functionality

Open source software available to help vendors

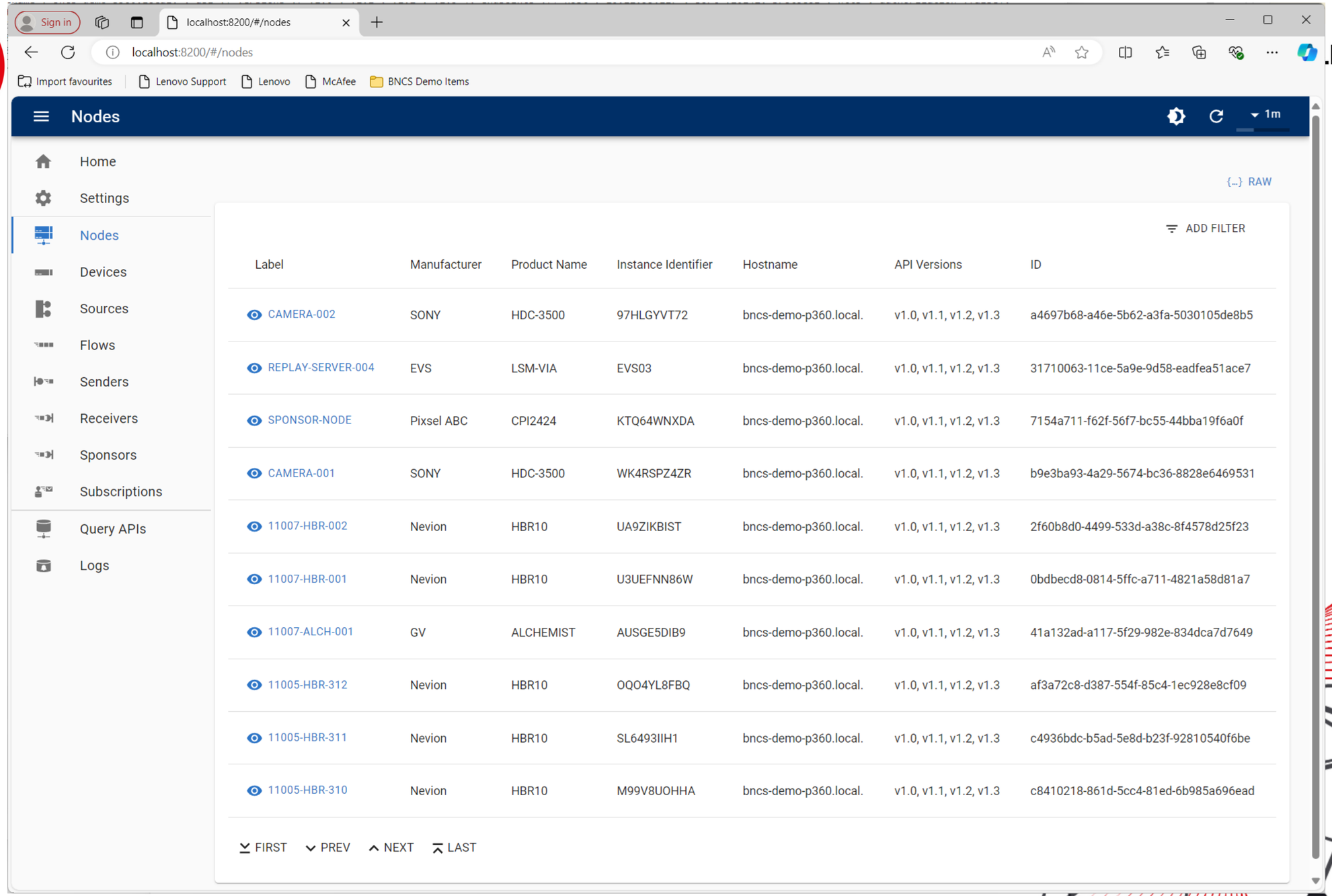
AMWA

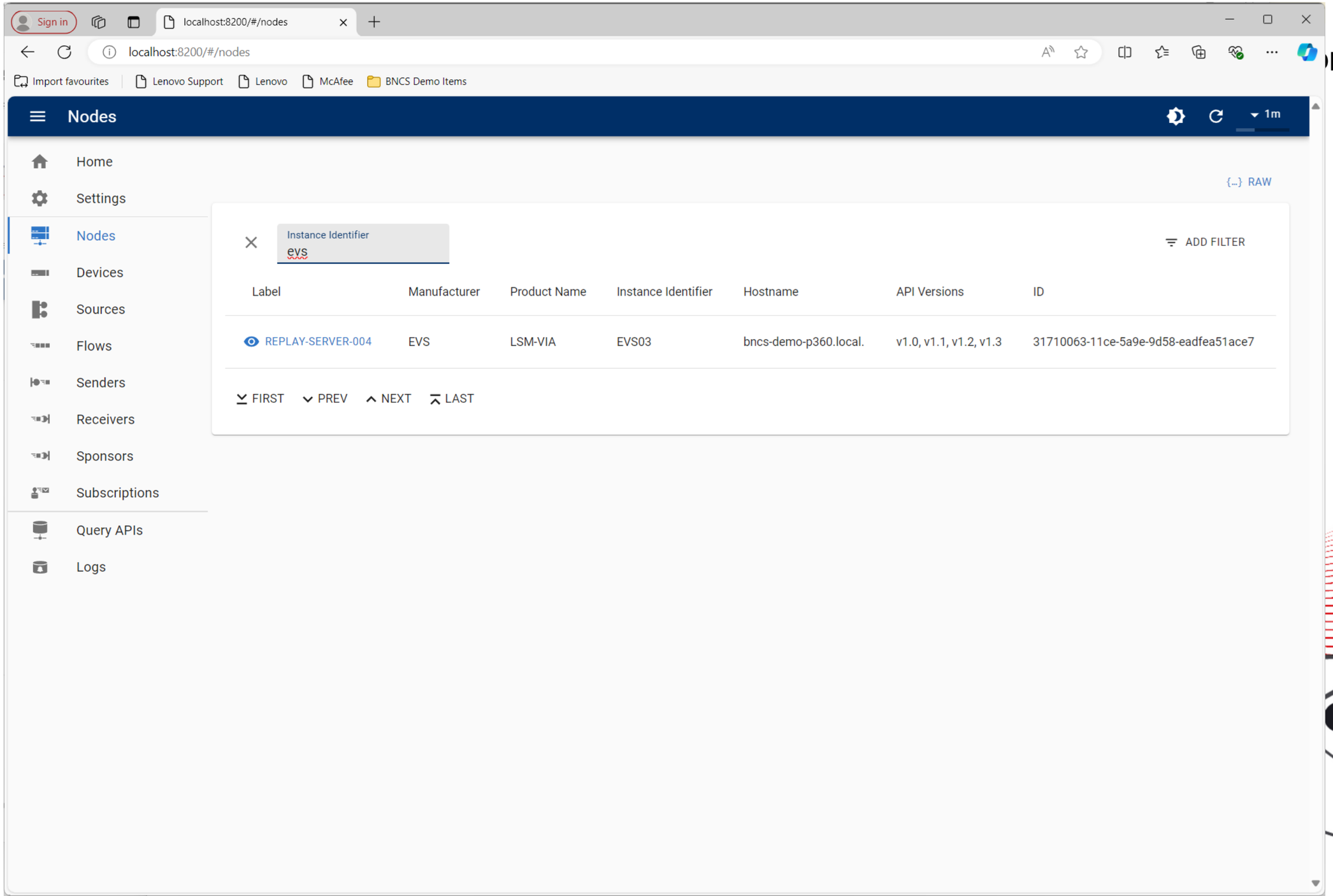
AMWA Accelerator Workshop

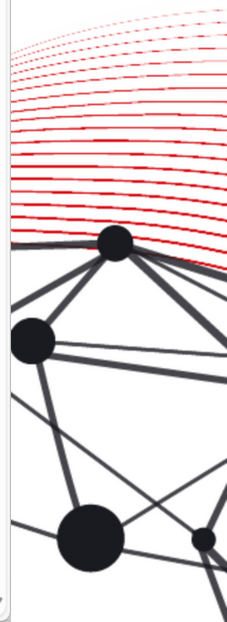
Outcome- Need support and engagement for progress hence these available options making this more accessible- this is something that is easy to implement so no need for any fear around this

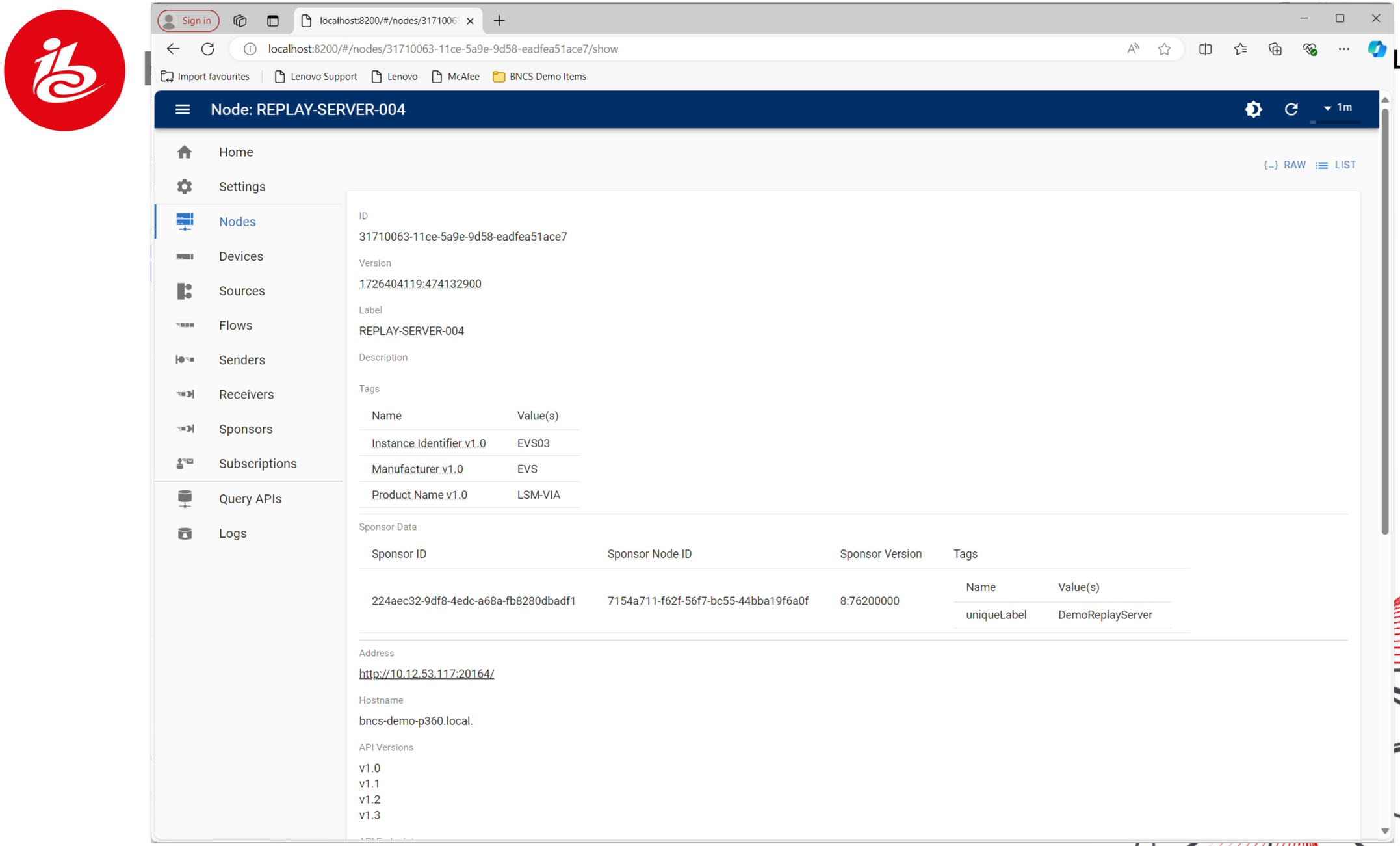
Make more accessible

Easy slip road for newcomers


Sign in
localhost:8200/#/nodes
localhost:8200/#/nodes
Import favourites
Lenovo Support
Lenovo
McAfee
BNCS Demo Items
Nodes
1m
Home
Settings
Nodes
Devices
Sources
Flows
Senders
Receivers
Sponsors
Subscriptions
Query APIs
Logs
{...} RAW
ADD FILTER
Label
Manufacturer
Product Name
Instance Identifier
Hostname
API Versions
ID
CAMERA-002 SONY HDC-3500 97HLGYVT72 bncs-demo-p360.local. v1.0, v1.1, v1.2, v1.3 a4697b68-a46e-5b62-a3fa-5030105de8b5
REPLAY-SERVER-004 EVS LSM-VIA EVS03 bncs-demo-p360.local. v1.0, v1.1, v1.2, v1.3 31710063-11ce-5a9e-9d58-eadfea51ace7
SPONSOR-NODE Pixsel ABC CPI2424 KTQ64WNXDA bncs-demo-p360.local. v1.0, v1.1, v1.2, v1.3 7154a711-f62f-56f7-bc55-44bba19f6a0f
CAMERA-001 SONY HDC-3500 WK4RSPZ4ZR bncs-demo-p360.local. v1.0, v1.1, v1.2, v1.3 b9e3ba93-4a29-5674-bc36-8828e6469531
11007-HBR-002 Nevion HBR10 UA9ZIKBIST bncs-demo-p360.local. v1.0, v1.1, v1.2, v1.3 2f60b8d0-4499-533d-a38c-8f4578d25f23
11007-HBR-001 Nevion HBR10 U3UEFNN86W bncs-demo-p360.local. v1.0, v1.1, v1.2, v1.3 0bdbecd8-0814-5ffc-a711-4821a58d81a7
11007-ALCH-001 GV ALCHEMIST AUSGE5DIB9 bncs-demo-p360.local. v1.0, v1.1, v1.2, v1.3 41a132ad-a117-5f29-982e-834dca7d7649
11005-HBR-312 Nevion HBR10 OQO4YL8FBQ bncs-demo-p360.local. v1.0, v1.1, v1.2, v1.3 af3a72c8-d387-554f-85c4-1ec928e8cf09
11005-HBR-311 Nevion HBR10 SL6493IIH1 bncs-demo-p360.local. v1.0, v1.1, v1.2, v1.3 c4936bdc-b5ad-5e8d-b23f-92810540f6be
11005-HBR-310 Nevion HBR10 M99V8UOHHA bncs-demo-p360.local. v1.0, v1.1, v1.2, v1.3 c8410218-861d-5cc4-81ed-6b985a696ead
FIRST
PREV
NEXT
LAST


Sign in
localhost:8200/#/nodes
localhost:8200/#/nodes
Import favourites
Lenovo Support
Lenovo
McAfee
BNCS Demo Items
Nodes
1m
Home
Settings
Nodes
Devices
Sources
Flows
Senders
Receivers
Sponsors
Subscriptions
Query APIs
Logs
{...} RAW
Instance Identifier
evs
ADD FILTER
Label
Manufacturer
Product Name
Instance Identifier
Hostname
API Versions
ID
REPLAY-SERVER-004
EVS
LSM-VIA
EVS03
bncs-demo-p360.local.
v1.0, v1.1, v1.2, v1.3
31710063-11ce-5a9e-9d58-eadfea51ace7
FIRST
PREV
NEXT
LAST




Sign in
localhost:8200/#/nodes/3171006
localhost:8200/#/nodes/31710063-11ce-5a9e-9d58-eadfea51ace7/show
Import favourites
Lenovo Support
Lenovo
McAfee
BNCS Demo Items
Node: REPLAY-SERVER-004
1m
Home
Settings
Nodes
Devices
Sources
Flows
Senders
Receivers
Sponsors
Subscriptions
Query APIs
Logs
{...} RAW
LIST
ID
31710063-11ce-5a9e-9d58-eadfea51ace7
Version
1726404119:474132900
Label
REPLAY-SERVER-004
Description
Tags
Name
Value(s)
Instance Identifier v1.0
EVS03
Manufacturer v1.0
EVS
Product Name v1.0
LSM-VIA
Sponsor Data
Sponsor ID
Sponsor Node ID
Sponsor Version
Tags
224aec32-9df8-4edc-a68a-fb8280dbadf1
7154a711-f62f-56f7-bc55-44bba19f6a0f
8:76200000
Name
Value(s)
uniqueLabel
DemoReplayServer
Address
http://10.12.53.117:20164/
Hostname
bncs-demo-p360.local.
API Versions
v1.0
v1.1
v1.2
v1.3

Sign in

localhost:8200/#/sponsors/224ae

localhost:8200/#/sponsors/224aec32-9df8-4edc-a68a-fb8280dbadf1/show

Import favourites | Lenovo Support | Lenovo | McAfee | BNCS Demo Items

Sponsor: ReplayServer4 Sponsor

1m

- Home
- Settings
- Nodes
- Devices
- Sources
- Flows
- Senders
- Receivers
- Sponsors
- Subscriptions
- Query APIs
- Logs

{...} RAW LIST

ID
224aec32-9df8-4edc-a68a-fb8280dbadf1

Version
8:76200000

Label
ReplayServer4 Sponsor

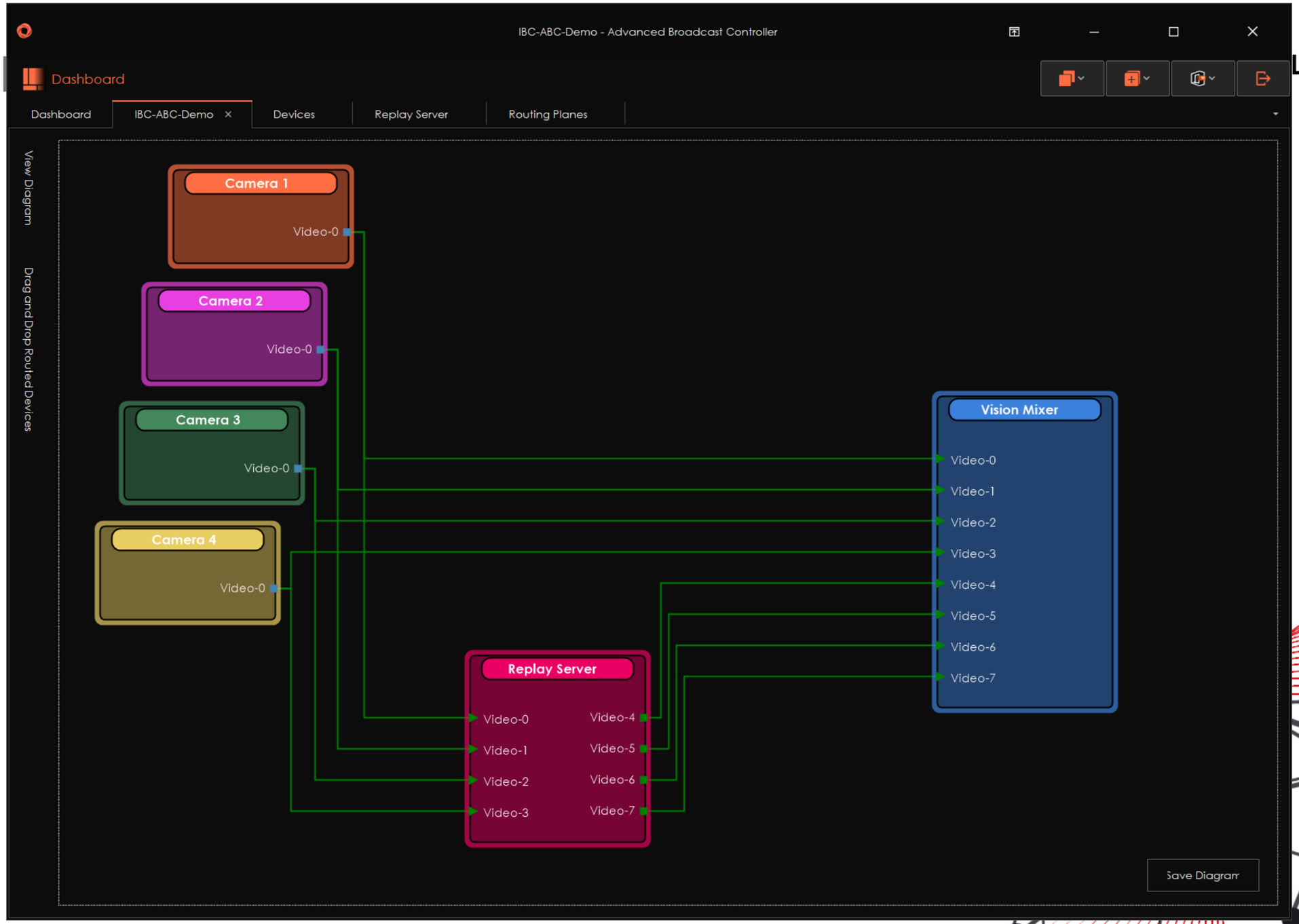
Description
ReplayServer4 Sponsor

Node ID
7154a711-f62f-56f7-bc55-44bba19f6a0f

Sponsored Resource ID
31710063-11ce-5a9e-9d58-eadfea51ace7

Tags

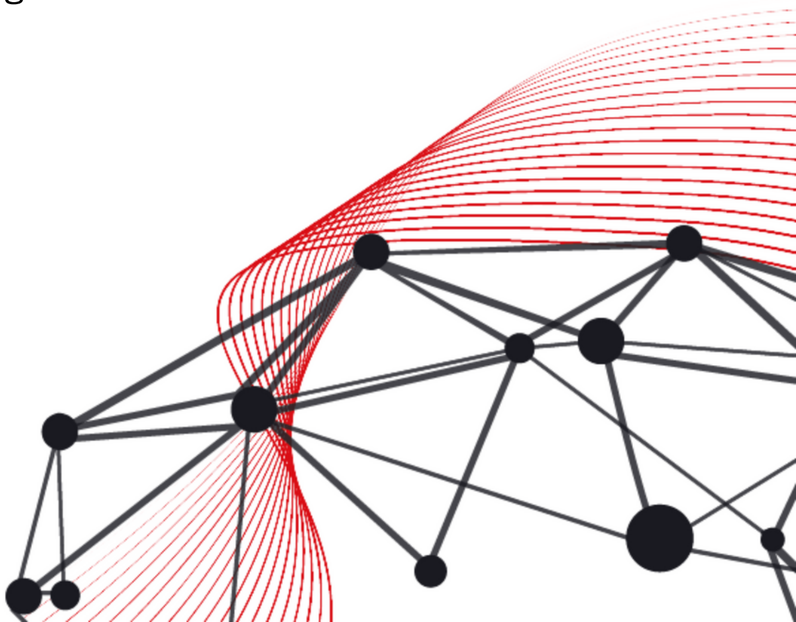
Name	Value(s)
uniqueLabel	DemoReplayServer


IBC-ABC-Demo - Advanced Broadcast Controller
Dashboard
Dashboard
IBC-ABC-Demo
Devices
Replay Server
Routing Planes
View Diagram
Drag and Drop Routed Devices
Camera 1
Video-0
Camera 2
Video-0
Camera 3
Video-0
Camera 4
Video-0
Vision Mixer
Video-0
Video-1
Video-2
Video-3
Video-4
Video-5
Video-6
Video-7
Replay Server
Video-0
Video-1
Video-2
Video-3
Video-4
Video-5
Video-6
Video-7
Save Diagram

"To accelerate the implementation of up-to-date specifications that will allow quick and efficient resource updates in an IP infrastructure"

Conclusions

- BCP-002-02 NMOS Asset Identifying Information provides a significant utility for little additional effort
- This demo shows an implementation without manual and time-consuming processes
- The industry needs to work ***together*** for the benefit of everyone



How do we move forward?

- Users asking for functionality > implementations will then happen

- This will encourage turning things off and stopping dynamic infrastructure- better for the planet!

- Accessible implementation guides