RAP Backwards Compatibility

A ProAV requirement

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RELIABLE SYNCHRONIZED NETWORKING
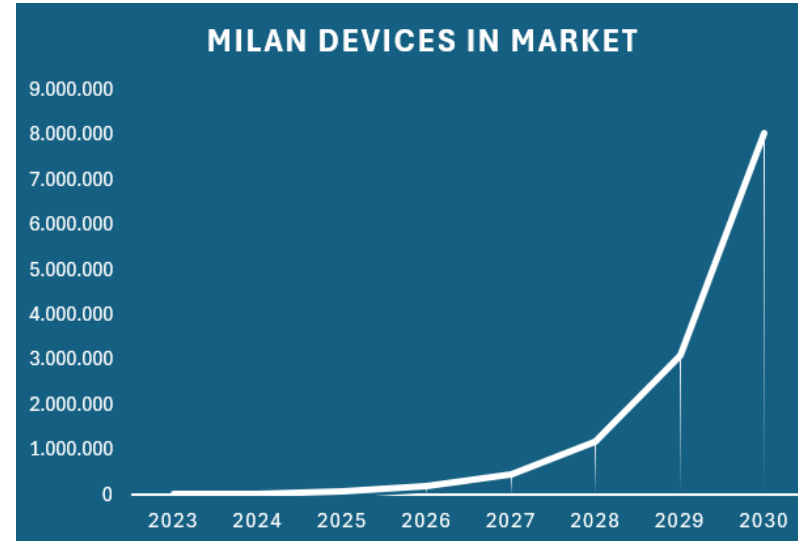
ProAV context

Large install base of devices using MSRP

- A new protocol incompatible with MSRP would be disruptive

Networked ProAV devices will be present in all kind of buildings and industrial context

- Touring is often seen as core ProAV market, but it is just 'visible tip of the iceberg'
- Strong need for convergence with other protocols in installations

Existing misconception: "AVB is for ProAV, TSN is not"

- Making RAP not backwards compatible would only feed it
- ProAV will make use of TSN for scalability reasons, e.g. backbones connecting MSRP regions.

MILAN DEVICES IN MARKET

9.000.000	
8.000.000	
7.000.000	
6.000.000	
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2023 2024 2025 2026 2027 2028 2029 2030

*POSSIBLE DEVELOPMENT / PROJECTION

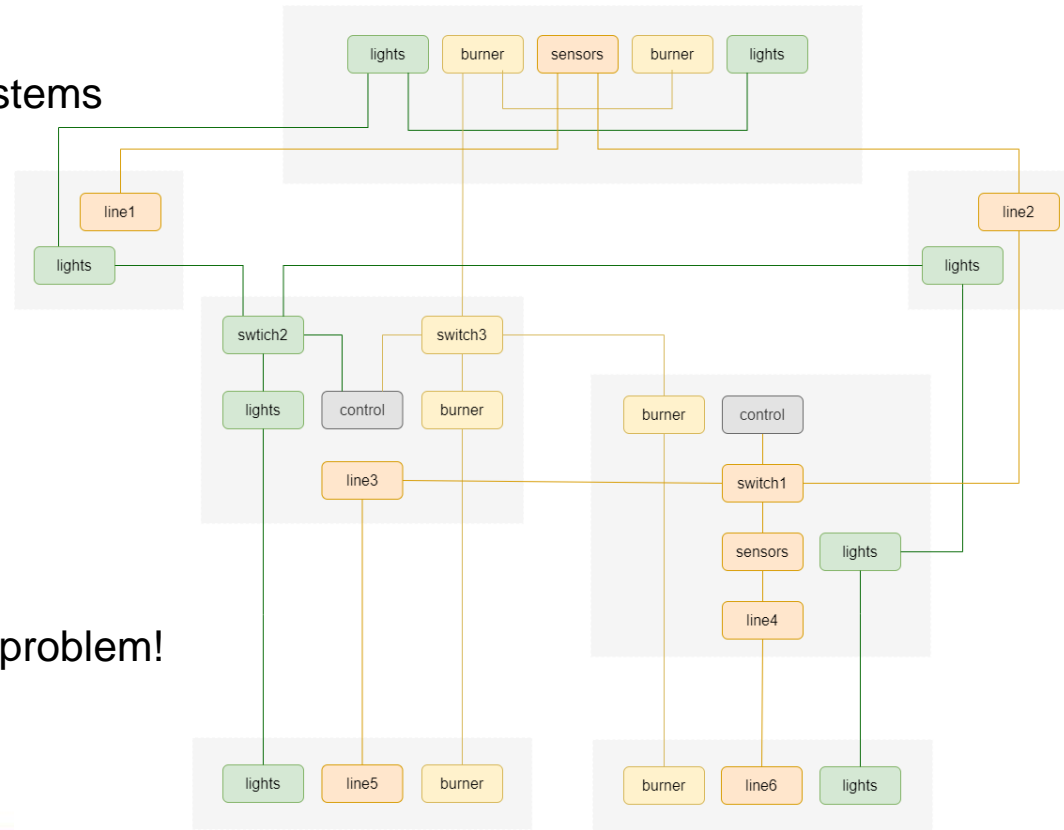# MSRP in ProAV networks

MSRP is extensively used in ProAV systems

ProAV network size*:

- 8-10k End-stations
- 4-5000 Audio Streams
- 100 Video Streams
- 8-10k Control Streams
- Systems structured in sub-nets

→ MSRP lack of scalability is a known problem!

*More details:
https://www.ieee802.org/1/files/public/docs2021/new-Kaltheuner-et-al-TSN-across-ecosystems-0321-v01.pdf)

RAP (+LRP)

- Designed to improve on scalability and performance
- Enabler for converged networks

- Might end up replacing MSRP (+MRP)…

  … but there are thousands of active MSRP devices
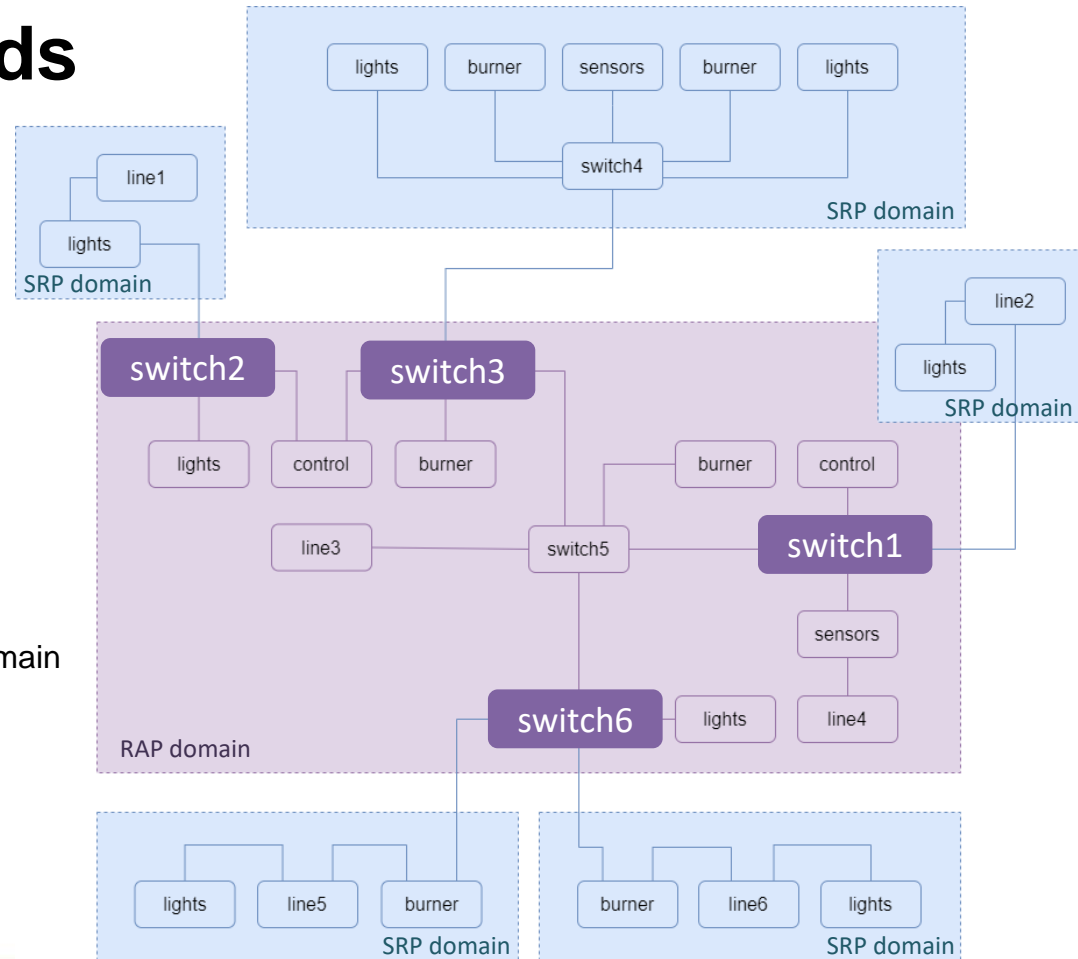   → backwards compatibility is necessary!

RAP-MSRP backwards compatibility

Use case:

- large deployments
- RAP backbone
- SRP domains on the edges

Streams:

- talker and listener on SPR domain
  - traversing RAP domain
  - not traversing RAP domain
- talker on SRP domain and listener on RAP domain
  - and the other way around
- talker and listener on RAP domain

How can it be achieved?

On a first glance:
- MSRP – RAP adapter
- Proxy

From:
https://www.ieee802.org/1/files/public/docs2017/tsn-chen-RAP-whitepaper-1117-v02.pdf

Figure 3 - Bridge in support of both RAP and MSRP for backward-compatibility

→ On-going effort within Avnu to find a technical solution.
  The results of that analysis will be presented in a follow-up TSN meeting.

Conclusions

- RAP (+LRP) is the natural successor of MSRP (+MRP)
- Converged networks will create systems with MSRP and RAP
- RAP backwards compatibility with MSRP is a requirement for ProAV networks

Request

- Add the following sentence to the scope of P802.1DD:

  "This standard makes provisions for backwards compatibility with the Multiple Stream Resource Protocol defined in Clause 35 of IEEE Std 802.1Q-2022."