LNI 4.0 Testbed
MSRP enhancements introduction

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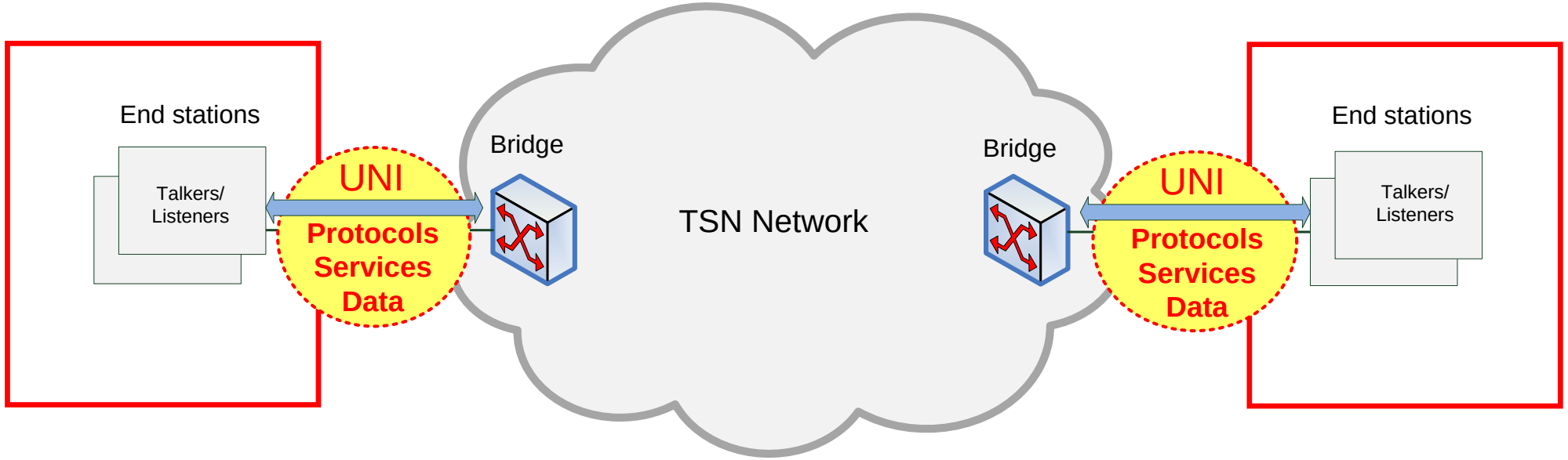
MSRP: Introduction

- MSRP is defined in IEEE 802.1Q-2018, Clause 35
- The MSRP is an UNI protocol
- End stations can act as Talker and/or Listener
- MSRP focus is to make the reservation between Talker and Listener(s)



MSRP: Limitations

- Fixed set of Stream classes (A and B)
- Fixed SR class properties (e.g., class measurement interval)
- Only support of Credit Based Shaper (CBSA)

-> not applicable for most industrial use cases

MSRP: Enhancement

- Stream classes C and D

- MSRP support of enhancments for scheduled traffic (.1Qbv)
  - Change of latency calculation in bridges
  - Bridge connections in the domain run the same data rate
  - End station connections at different data rates possible

- Stream class properties included in enhanced domain attribute
  - Stream class properties manageable
  - max frame size per Stream Class
  - max network hop count per Stream Class

What was done in LNI4.0

- Find an agreement how to enhance MSRP for scheduled traffic

- Create a white paper and sample source code
- Provide a test suite for MSRP enhancement
- Test MSRP during several plug fests by multiple vendors

- Draft a specification contribution of required MSRP enhancements
- Conclusion to send it to Standards Development Organization
  - http://www.ieee802.org/1/files/public/docs2019/new-Dorr-LNI40-MSRP-enhancement-whitepaper-0919-v01.pdf

MSRP enhancement: Draft Specification Contribution

- Layout is IEC
- Internal structure and terms as of IEEE 802.1

- Like Clause 35 of IEEE 802.1Q (MSRP)
- Subclause structure is identical
- Stream establishment not changed

- New parameters in the definition of Domain attribute
- Additional definitions regarding connection of end devices

Further steps to use TSN in Industry 4.0

- Apply LNI proven solution in customer applications – planed in 2020
- This requires a stable platform = a vendor independent specification

- MSRP is an IEEE specification
  ➔ enhancement requires some kind of approval

- Enhancement should be covered by RAP and IEC/IEEE 60802