

IEEE P802.1CM Time-Sensitive Networking (TSN) for Fronthaul

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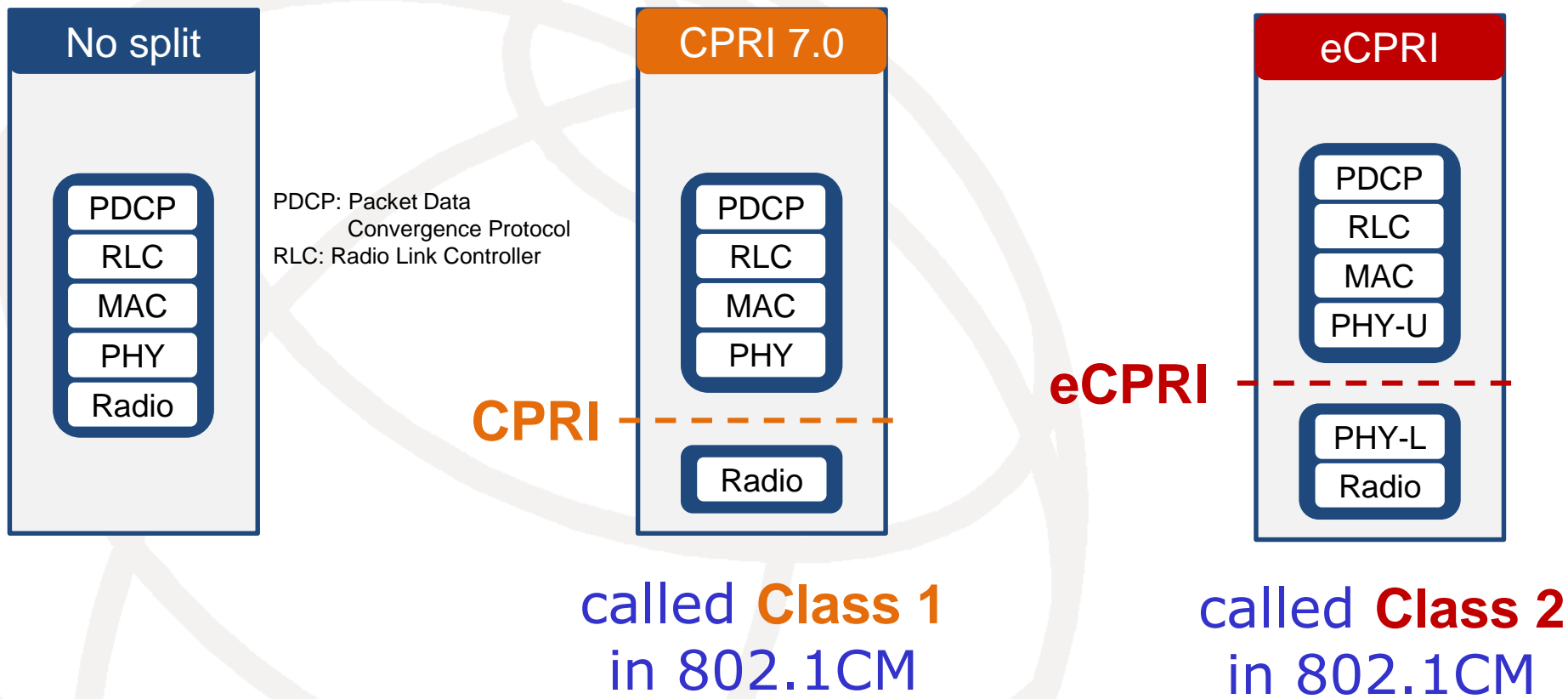


Committed to connecting the world

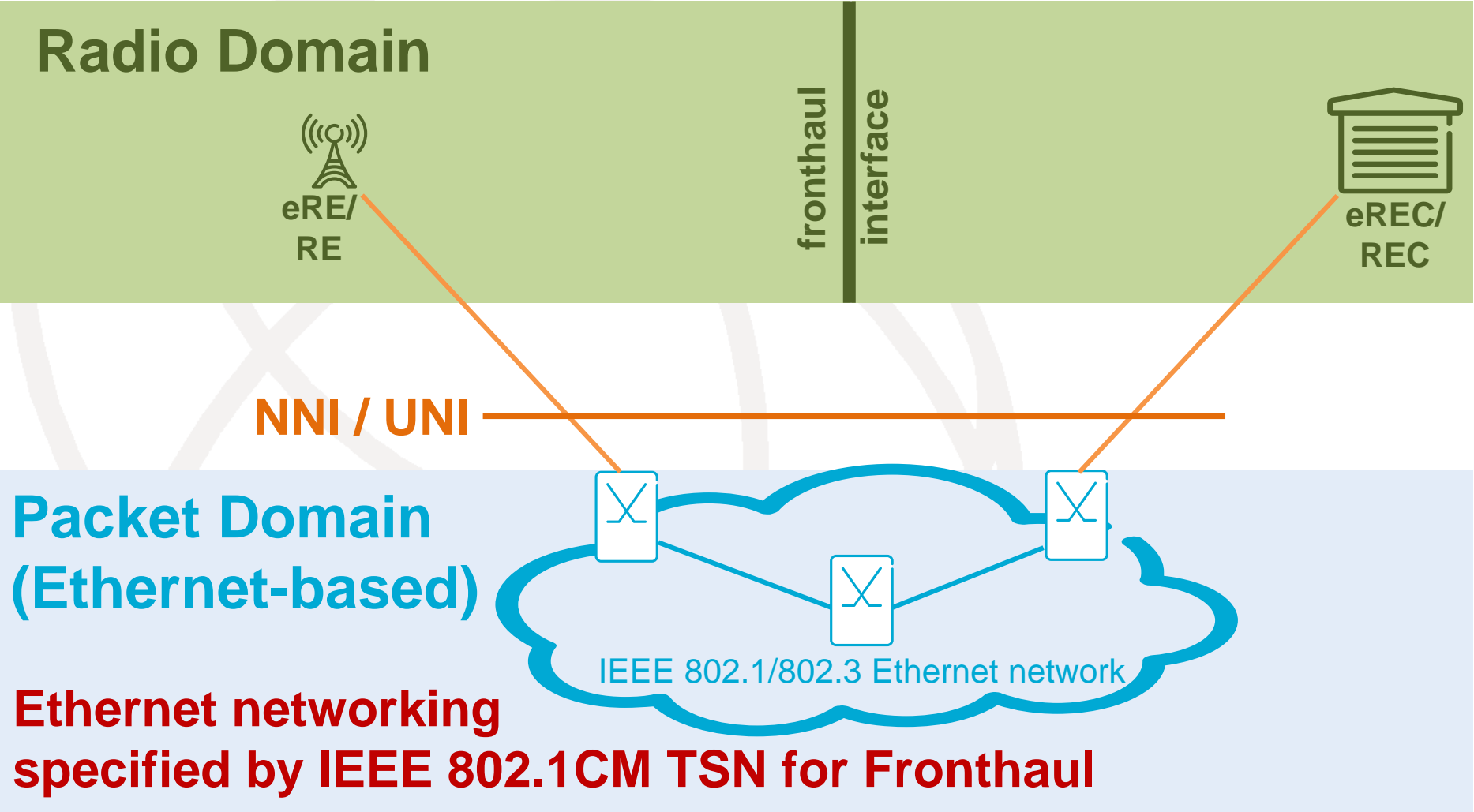
Outline

- Introduction
- Approach to Ethernet-based fronthaul
- Goals and objectives of IEEE 802.1CM
- Collaborative effort of CPRI Cooperation and IEEE 802.1
- Fronthaul Profiles
- Summary

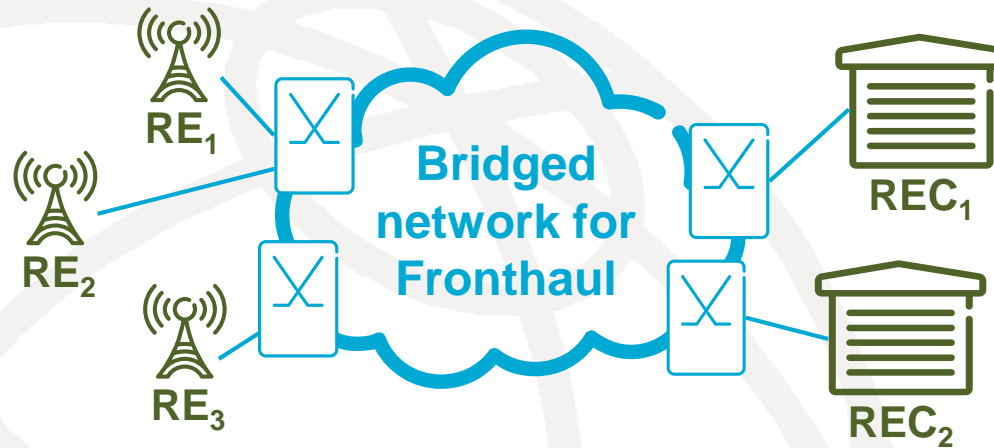
Standard Radio Base Station Splits



Ethernet-based Fronthaul Approach



Goals & Objectives of 802.1CM



- Standard TSN Profiles for fronthaul
 - Enable the transport of fronthaul streams in a bridged network
- A TSN Profile
 - Specifies aspects of bridge operation
 - Set of feature and option selections
 - Configuration guideline

Collaborative effort of CPRI Cooperation and IEEE 802.1

CPRI Cooperation

- <http://www.cpri.info>
- Fronthaul radio experts
- Continuous development of CPRI specifications for 15 years
- eCPRI released

IEEE 802.1

- <http://www.ieee802.org/1>
- Ethernet networking experts
- Packet networking standards for decades
- Time-Sensitive Networking

- P802.1CM TSN for Fronthaul is a collaborative effort
 - Joint sessions: face-to-face and virtual
 - Common members

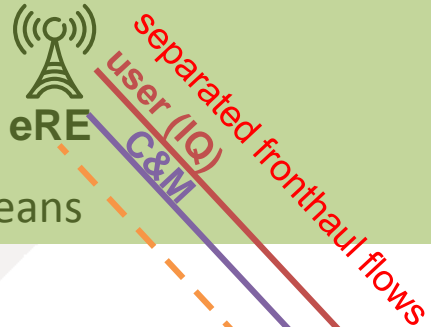
Fronthaul Profiles

- Profiles are engineered taking into account the worst-case
- Two Profiles applicable to both Class 1 (CPRI) and Class 2 (eCPRI)
- Profile A
 - Keep it as simple as possible
 - Based on strict priority
 - User data (IQ data) → high priority traffic class
 - C&M data → lower priority traffic class
 - Max frame size for all traffic: 2000 octets (IEEE 802.3)
- Profile B
 - Leverage simple TSN feature
 - Based on strict priority and frame preemption (802.3br & 802.1Qbu)
 - User data (IQ data) → high priority traffic class; express traffic
 - C&M data → lower priority traffic class; preemptable traffic
 - Frame size maximized for user data (2000 octets)
 - Frame size is flexible for other traffic

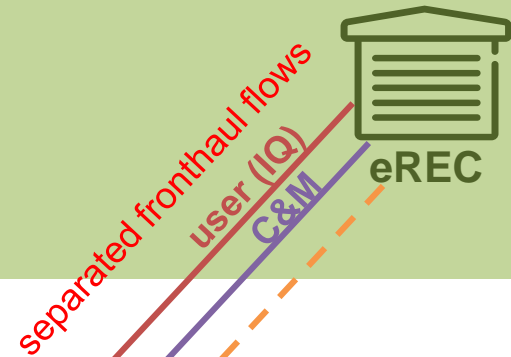
Ethernet-based Fronthaul Details

Radio Domain

- › Separate fronthaul flows
- › separate synch provided other means



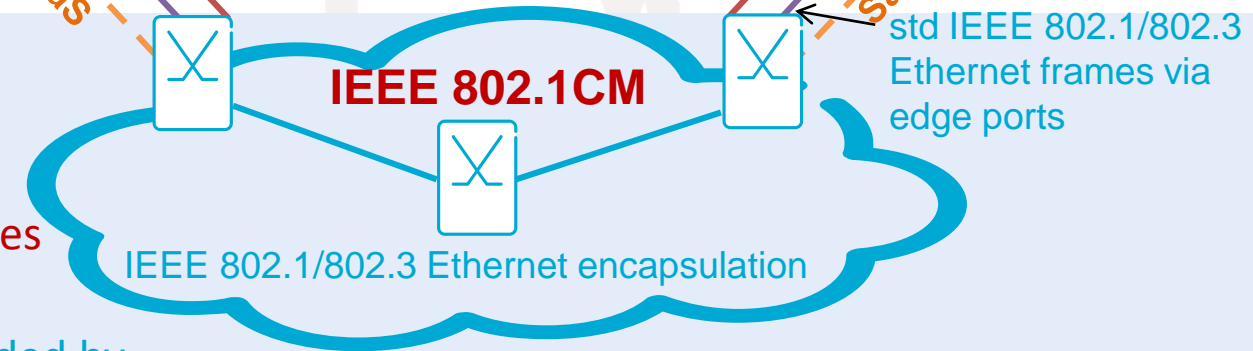
fronthaul interface
eCPRI (CPRI)



NNI / UNI

Packet Domain

- › IEEE 802.1CM Fronthaul Profiles
 - meet fronthaul requirements
- › Synchronization may be provided by packet network, e.g., Sync as a Service (SaaS)



Summary

- IEEE 802.1CM specifies TSN Profiles for Fronthaul
 - see [TD87/G](#) , [TD127/3](#)
- It is a collaborative effort of CPRI Cooperation and IEEE 802.1
- Requirements are provided by CPRI Cooperation
- Two Fronthaul Profiles are specified
- Both eCPRI and CPRI splits are supported