# RoE mappers

This clause defines mappers to/from existing radio framing formats to/from RoE native transport encapsulation format.

## Overview

[///Editor’s note: Introduction here

## Simple tunneling mapper

[///Editor’s note: A simple tunneling mapper shall only generate one flow from one CPRI link.

### (de) Mapper Parameters

[///Editor’s note: Mapper is told how many octets to packetize. Mapper does not (de)interleave the IQ samples.

#### Use of sequence number

[///Editor’s note: Since all frame timing, including K28.5, HFN and BFN are preserved within the fully encapsulated CPRI stream in the payload, the sequence number is only useful to detect dropped packets.

### Use of RoE control packets

[///Editor’s note: The simple tunneling mapper does not have any effect on the CPRI control plane or user plane content and as such it does not use or require any RoE control packets.

### Simple tunneling CPRI data packet (00 0001b)

This packet type is associated with a simple tunneling mapper.

#### Version (ver) field

See subclause 4.4.1.

#### Packet type (pktType) field

The **pktType** field for a simple tunneling data packet shall be set to value 00 0001b (see Table 2).

#### Flow identifier (flowID) field

For packets being sent from the RoE node, the flowID field is populated with the mapperID defined in the by mapper[].flowID=mapper[].mapperID. For packets being received by the RoE node, the flowID field is populated with the deMapper[].flowID defined in the mappers parameter list .

#### Ordering information (orderInfo) field

[///Editor’s note: TEXT HERE]

#### Length field

See subclause 4.4.4.

#### Payload field

[///Editor’s note: TEXT HERE]

## Structure agnostic mapper

A structure agnostic mapper can only generate one flow from one CPRI link.

###  (de) Mapper Parameters

[///Editor’s note: The mapper extracts/stores .lenPack octets from/to the CPRI stream i.e. a number of individual CPRI Basic Frames (BF). The mapper does not (de)interleave the IQ samples.

#### Use of sequence number

The sequence number is incremented by 1 for each sent RoE data packet and so the sequence number p-counter for **deMapperID**=**mapperID**=x and would wrap around every 256\*150/**mapperID[x].lenPack** sent packets (e.g., if there are 8 BFs per RoE packet the **seqNumPMax** is 4799). When the p-counter wraps the sequence number q-counter gets incremented by 1. The q-counter will wrap after 4096 increments i.e., being able to cover 12 bit CPRI BFN.

### Use of RoE control packets

Since the structure agnostic mapper encapsulates all the C-plane information, there are no associated control packets for the structure agnostic mapper.

### Structure agnostic CPRI data packet (00 0010b)

#### Version (ver) field

See subclause 4.4.1.

#### Packet type (pktType) field

The **pktType** field for a structure agnostic data packet shall be set to value 00 0010b (see Table 2).

#### Flow identifier (flowID) field

[///Editor’s note: For packets being sent from the RoE node, the flowID field is populated with the mapperID which sources this packet (flowID=mapperID). For packets being received by the RoE node, the flowID field is populated based on the link parameter settings (mapperID[x].flowID=y). defined in the mapper.

#### Ordering information (orderInfo) field

[///Editor’s note: TEXT HERE]

#### Length field

See subclause 4.4.4.

#### Payload field

[///Editor’s note: TEXT HERE]

### Structure agnostic CPRI data packet with a timestamp extension (xx xxxxb)

Figure 11 illustrates an extended RoE header format for a structure agnostic CPRI data packet. The extended RoE header contains both a sequence number (the original orderInfo field) and a timestamp (the extension field). Other than the extension and the predefined content of the orderInfo, the rest of the packet handling is exactly the same as with the structure agnostic CPRI data packet described in sub-clause 8.3.3.

The RoE header orderInfo field shall carry only a sequence number as described in sub-clause 4.2.5.2. The extended timeStamp field shall carry a timestamp (presentation time) as described in sub-clause 4.2.5.1. Ultimately the combination of the sequence number and the timestamp allows synchronizing a specific sequence number to a presentation time.



Figure 11 - RoE header with both a Sequence Number and a Timestamp

If both packet types (pktType=000010b and pktType=xxxxxxb) are used in the same flow the expectation is that pktType=xxxxxxb packet do not need to be used for every sent packet. For example, the pktType=xxxxxxb RoE packets could be sent for every CPRI hyperframe.

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