

IEEE 1914 NGFI

P1914.1 TF Bi-weekly Meeting

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September 7, 2017



Ground rules

- No audio recording, No video recording, and No photography
 - No job recruiting
 - No product pitches
 - No corporate pitches
 - No prices
 - No restrictive notices
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- Attendance of the press should be announced

Participants, Patents, and Duty to Inform

All participants in this meeting have certain obligations under the IEEE-SA Patent Policy.

- Participants [Note: Quoted text excerpted from IEEE-SA Standards Board Bylaws subclause 6.2]:
 - “Shall inform the IEEE (or cause the IEEE to be informed)” of the identity of each “holder of any potential Essential Patent Claims of which they are personally aware” if the claims are owned or controlled by the participant or the entity the participant is from, employed by, or otherwise represents
 - “Should inform the IEEE (or cause the IEEE to be informed)” of the identity of “any other holders of potential Essential Patent Claims” (that is, third parties that are not affiliated with the participant, with the participant’s employer, or with anyone else that the participant is from or otherwise represents)
- The above does not apply if the patent claim is already the subject of an Accepted Letter of Assurance that applies to the proposed standard(s) under consideration by this group
- Early identification of holders of potential Essential Patent Claims is strongly encouraged
- No duty to perform a patent search

Patent Related Links

All participants should be familiar with their obligations under the IEEE-SA Policies & Procedures for standards development.

Patent Policy is stated in these sources:

IEEE-SA Standards Boards Bylaws

<http://standards.ieee.org/develop/policies/bylaws/sect6-7.html#6>

IEEE-SA Standards Board Operations Manual

<http://standards.ieee.org/develop/policies/opman/sect6.html#6.3>

Material about the patent policy is available at

<http://standards.ieee.org/about/sasb/patcom/materials.html>

If you have questions, contact the IEEE-SA Standards Board Patent Committee Administrator at patcom@ieee.org or visit <http://standards.ieee.org/about/sasb/patcom/index.html>

This slide set is available at
<https://development.standards.ieee.org/myproject/Public/mytools/mob/slideset.ppt>

Call for Potentially Essential Patents

- If anyone in this meeting is personally aware of the holder of any patent claims that are potentially essential to implementation of the proposed standard(s) under consideration by this group and that are not already the subject of an Accepted Letter of Assurance:
 - Either speak up now or
 - Provide the chair of this group with the identity of the holder(s) of any and all such claims as soon as possible or
 - Cause an LOA to be submitted

Other Guidelines for IEEE WG Meetings

- All IEEE-SA standards meetings shall be conducted in compliance with all applicable laws, including antitrust and competition laws.
 - Don't discuss the interpretation, validity, or essentiality of patents/patent claims.
 - Don't discuss specific license rates, terms, or conditions.
 - Relative costs, including licensing costs of essential patent claims, of different technical approaches may be discussed in standards development meetings.
 - Technical considerations remain primary focus
 - Don't discuss or engage in the fixing of product prices, allocation of customers, or division of sales markets.
 - Don't discuss the status or substance of ongoing or threatened litigation.
 - Don't be silent if inappropriate topics are discussed ... do formally object.

See *IEEE-SA Standards Board Operations Manual*, clause 5.3.10 and "Promoting Competition and Innovation: What You Need to Know about the IEEE Standards Association's Antitrust and Competition Policy" for more details.

Agenda

- September meeting registration/call for contribution
- RAN node definition for NGFI
- eCPRI impact
- Feedback on presentation for BackNets
- Status update on different topics
- Others

password

.1 draft specification
XXXXXX

.1 ongoing draft update
XXXXXX

September meeting

- ❑ New timeline (was aiming for WG review after September meeting)
- ❑ Early registration due September 8
- ❑ call for contribution, take into the consideration how to fit into the draft

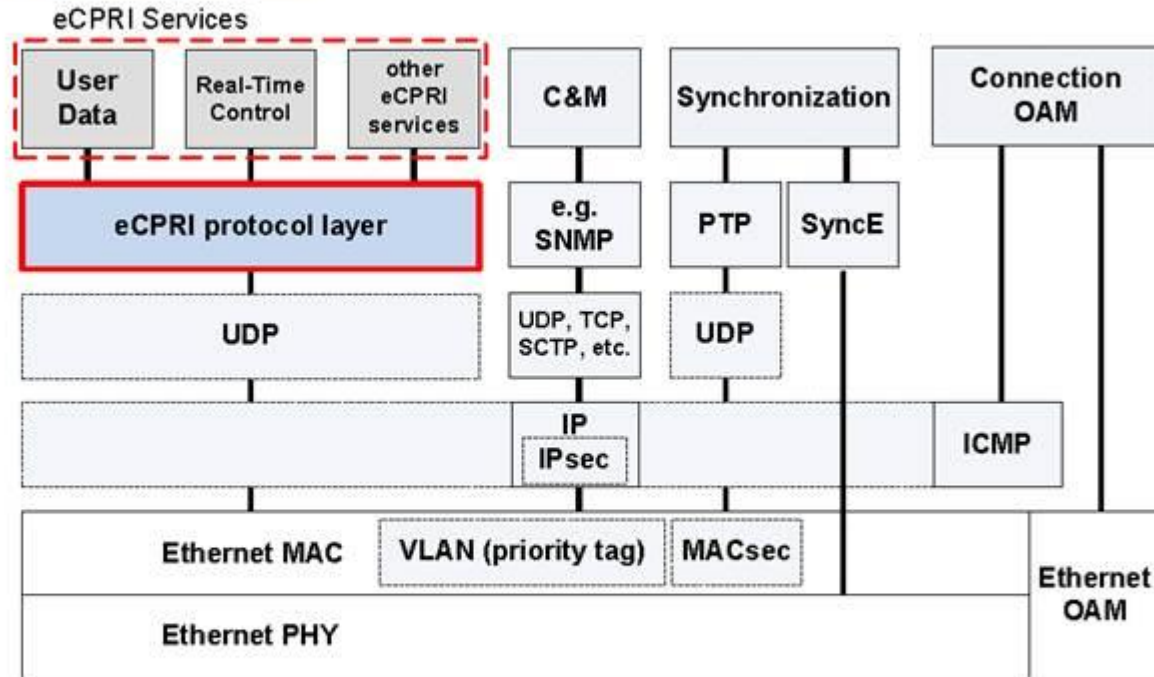
RAN node definition for NGFI

- ❑ RAN node definition for NGFI

eCPRI

eCPRI introduction

eCPRI protocol stack over IP / Ethernet



- eCPRI does not restrict the Transport Network to be Ethernet or IP based

CPRI
Common Public Radio Interface

eCPRI impact

1 4. Requirements

2 Please note that in this document all quantitative figures are preliminary.

3 4.1. Per flow requirements

4 4.1.1. Split E and splits ID, IID, IU when running E-UTRA

5 Table 1 is applicable for the functional decompositions splits E and I_D, I_{IID}, I_{IU} as defined in [1].

6 Table 1 Split E and splits I_D, I_{IID}, I_{IU} requirements

CoS Name	Example use	One way maximum packet delay	One-way Packet Loss Ratio
High	User Plane	100 μ s	10 ⁻⁷
Medium	User Plane (slow), C&M Plane (fast)	1 ms	10 ⁻⁷
Low	C&M Plane	100 ms	10 ⁻⁶

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eCPRI impact

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Figure 4 Timing accuracy definitions

2 Transport network synchronization may be implemented via standard mechanisms e.g. IEEE1588 with or
 3 without SyncE, such that the timing accuracy at the UNI is fulfilled. The maximum timing errors at the UNI for
 4 different categories are shown in Table 2.

5 The figures for $|TE|$ in Table 2 are the maximum timing error provided by the transport network relative to an
 6 absolute time reference (e.g. GNSS engine). For categories A+, A and B the underlying 3GPP requirements
 7 are defined as timing error between transmitter antenna ports (relative).

8

Table 2 Timing accuracy requirement

Category (note 3)	Time error requirements at UNI, $ TE $		Typical applications and time alignment error (TAE) requirements at antenna ports of eREs (for information)	
	Case 1 (note 1)	Case 2 (note 2)	Typical applications	TAE
A+	TBD ns (relative)	TBD ns (relative)	MIMO or TX diversity transmissions, at each carrier frequency	65 ns (note 4)
A	TBD ns (relative)	TBD ns (relative)	Intra-band contiguous carrier aggregation, with or without MIMO or TX diversity	130 ns (note 4)
B	TBD ns (relative)	TBD ns (relative)	Intra-band non-contiguous carrier aggregation, with or without MIMO or TX diversity, and Inter-band carrier aggregation, with or without MIMO or TX diversity	260 ns (note 4)
C (note 5)	1100 ns (absolute) (note 6)	1100 ns (absolute) (note 6)	3GPP LTE TDD	3 us (note 7)

eCPRI impact

6.4. Network Connection Maintenance

Network connection maintenance and network connection control is out of scope of the eCPRI specification. There are a number of different methods and standards that can be used.

For the Ethernet parts of eCPRI (if applicable for the User plane data and for IP over Ethernet), the Ethernet OAM can be used. Ethernet OAM is a common name for the IEEE 802.1Q [14] and ITU-T Recommendation G.8013/Y.1731 [16]. The IEEE 802.1Q Ethernet CFM (Connectivity Fault Management) defines three protocols, Continuity Check Protocol (CC), Link Trace (LT) and Loop-back (LB). ITU-T defines the same functions and tools in Y.1731 by the Ethernet continuity check (ETH-CC), Ethernet remote defect indication (ETH-RDI), Ethernet link trace (ETH-LT) and Ethernet loopback (ETH-LB), and also adds more OAM functions like Ethernet alarm indication signal (ETH-AIS), Ethernet loss measurement (ETH-LM) or synthetic loss measurement (ETH-SLM), and Ethernet delay measurement (ETH-DM).

For the IP parts of the eCPRI (e.g. the C&M flow), the Internet Control Message Protocol (ICMP) can be used. ICMP for IPv4 is defined in RFC 792 [17] and for IPv6 it is defined in RFC 4443 [18].

An eCPRI node needs to have either a unique MAC address or a unique IP address. How to do or get these addresses is out of scope of the eCPRI specification.

Source: eCPRI_v_1_0_2017_8_22.pdf

eCPRI impact

1 6.8. Security

2 This section covers security considerations related to eCPRI traffic. If the transport network is not safe for a
3 particular flow then an eCPRI network end-to-end security system should be implemented in the eREC node
4 and eRE node for that flow.

5 6.8.1. eCPRI Network Security Protocol

6 eCPRI Network Security Protocol suites include IPsec in IP traffic and MACsec in Ethernet traffic, IPsec and
7 MACsec are designed to provide interoperable, high quality, cryptography-based security for IP and Ethernet
8 traffic. The set of security services offered includes access control, connectionless integrity, data origin
9 authentication, protection against replays (a form of partial sequence integrity), confidentiality (encryption),
10 and limited traffic flow confidentiality. These services are provided at the IP or Ethernet layer, offering
11 protection for Ethernet or IP and/or upper layer protocols.

12 The details of IPsec and MACsec usage is vendor specific.

13 6.8.2. eCPRI Network Security Specification

14 Vendors can choose e.g. IPsec or MACsec to ensure the security of transmission.

15 6.8.2.1. User plane

16 User plane over IP

- 17 • IPsec or MACsec are both optional solutions to provide transmission security.

18 User plane over Ethernet

- 19 • MACsec is an optional solution to provide transmission security

Feedback on presentation for BackNets

Future work on the draft update

1. D0.3 5.1 and 5.2 deployment scenarios – Vincenzo Sestito – under review
2. D0.3 6.2 network slicing – Lujing Cai, Tony Tam and Remus Tan
3. D0.3 6.3 and 6.4 delay requirements – Vincenzo Sestito, Jinri Huang, Richard Tse and Philippos Assimakopoulos
4. D0.3 6.5 TAE/jitter –Richard Tse, Philippos Assimakopoulos, Aleksandra Checko and Bomin Li – waiting for response from ITU-T
5. D0.3 6.6 – survival time - Remus Tan and Jinri Huang – after network slicing
6. D0.3 6.7 – reliability - Remus Tan and Jinri Huang – after network slicing
7. D0.3 6.8 Converged network – Lujing Cai and Bomin Li
8. D0.3 6.9 OAM - Leon Bruckman and Bomin Li
9. D0.3 6.10 security - Wei Cheng
10. D0.3 7.2 and 7.3 node – Aleksandra Checko, Philippos Assimakopoulos, Vincenzo Sestito, Richard Tse, Lars Ellegaard and Bomin Li
11. D0.3 7.4 – 7.8 – waiting for feedback from the above items

AIs

1. Add throughput calculation formula in information reference – Aleksandra – due September meeting
2. Terminology: use throughput in definitions saying it is a transport throughput unless otherwise specified in IEEE 1914.1 standard – Aleksandra – due September meeting
3. To produce d0.4 for the next f2f meeting – Aleksandra – due September meeting

Q&A