

P1914.3a

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Type of Project: Amendment to IEEE Standard 1914.3-2018

PAR Request Date: 12-Oct-2018

PAR Approval Date: 05-Dec-2018

PAR Expiration Date: 31-Dec-2022

Status: PAR for an Amendment to an existing IEEE Standard

Root Project: 1914.3-2018

1.1 Project Number: P1914.3a

1.2 Type of Document: Standard

1.3 Life Cycle: Full Use

2.1 Title: Standard for Radio over Ethernet Encapsulations and Mappings

Amendment 1: Encapsulation Enhancements and Elaborations, Additional Operation, Administration, and Maintenance (OAM) Functions, Management Model, Clarification on Relationships between Parameters

3.1 Working Group: Next Generation Fronthaul Interface (COM/MobiNet-SC/NGFI)

Contact Information for Working Group Chair

Name: Jinri Huang

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Contact Information for Working Group Vice-Chair

None

3.2 Sponsoring Society and Committee: IEEE Communications Society/Mobile Communication Networks Standards Committee (COM/MobiNet-SC)

Contact Information for Sponsor Chair

Name: Oliver Holland

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Contact Information for Standards Representative

None

4.1 Type of Ballot: Individual

4.2 Expected Date of submission of draft to the IEEE-SA for Initial Sponsor Ballot: 12/2019

4.3 Projected Completion Date for Submittal to RevCom

Note: Usual minimum time between initial sponsor ballot and submission to Revcom is 6 months.: 08/2020

5.1 Approximate number of people expected to be actively involved in the development of this project: 20

5.2.a. Scope of the complete standard: This standard defines the encapsulation and mapping of radio protocols transported over Ethernet frames and Internet Protocol (IP) packets and the operation of the mappers and demappers. Structure-agnostic definitions are provided for any digitized radio data. Structure-aware definitions are provided for the Common Public Radio Interface (CPRI). Native mode definitions are provided for normal and compressed digitized radio in-phase and quadrature (I/Q) payload. Specifications are provided for parameters, control messages, and mechanisms that help operate, administrate, and maintain the mapping and demapping functions. A management model for this protocol is defined.

Changes in scope: This standard defines the encapsulation and mapping of radio protocols ~~for transported transport~~ over Ethernet frames; ~~using and radio~~ ~~Internet over Protocol Ethernet (RoEIP)~~ ~~packets and the operation of the mappers and demappers~~. Structure-agnostic definitions are provided for any digitized radio data. Structure-aware definitions are provided for the Common Public Radio Interface (CPRI~~(TM)~~). Native mode definitions are provided for **normal and compressed** digitized radio in-phase and quadrature (I/Q) payload. ~~and~~ ~~Specifications are provided for parameters, control data messages, channels~~ ~~and mechanisms that help operate, administrate, and maintain the mapping and demapping functions. A management model for this protocol is defined.~~

5.2.b. Scope of the project: This amendment adds the following to the base standard:

1. Specifications for mapping with UDP/IPv4 and UDP/IPv6 encapsulation layers.
2. Specification of more parameters, control messages, and mechanisms to improve OAM functions.
3. Specification of a management model.
4. Specification of a mechanism for segmenting big messages.

5. Extension of CPRI structure-aware mapping to the frequency domain.
6. Elaboration on how the rbMap function can be used to send data with different priorities.
7. Clarification on the relationships between all parameters of the standard.

5.3 Is the completion of this standard dependent upon the completion of another standard: No

5.4 Purpose: This standard enables the transfer of radio information across an Ethernet and/or IP-based packet network. The standard fosters interoperability among implementations by defining common information formats, information encapsulation, operation, administration, and maintenance processes and mechanisms, and a common management model.

Changes in purpose: This standard enables the transfer of ~~IQ~~radio user plane data, vendor specific data, and control and management (C&M) information ~~channels~~ across an Ethernet and/or IP-based packet-switched network. The standard fosters interoperability among implementations by defining the common framing information formats, the information encapsulation, ~~of~~operation, the information administration, and a maintenance common processes Ethernet and Type mechanisms, for and RoEa purposes common management model.

5.5 Need for the Project: The requirements and standardization for transport networking of next generation cellular services have evolved quickly during the time that the base IEEE 1914.3 standard was developed. These evolutions should be addressed by amending collaborative new functions to the base standard and extending or elaborating on existing functions from the base standard.

5.6 Stakeholders for the Standard: Stakeholders include cellular operators, telecommunication carriers, cellular and telecommunication system vendors, and component vendors.

Intellectual Property

6.1.a. Is the Sponsor aware of any copyright permissions needed for this project?: No

6.1.b. Is the Sponsor aware of possible registration activity related to this project?: Yes

If yes please explain: For the Amendment, we might request a dedicated UDP port number from IANA.

The existing base standard has already received an EtherType assignment from the IEEE-SA Registration Authority.

7.1 Are there other standards or projects with a similar scope?: Yes

If Yes please explain: 1. The eCPRI Interface specification gives a template packet format for transporting radio data. This template is subject to proprietary definitions by the different members of the CPRI organization. While the eCPRI standard offers flexible support for transporting different types of radio data, details are not provided on how each of the functions to be defined in P1914.3a could be implemented with the eCPRI standard.

2. The X-RAN specifications defines several of the same functions in this PAR (e.g., OAM and required parameters, Yang models, frequency domain payload, IP encapsulation) and also allows usage of the IEEE 1914.3 transport header optionally for some of its messages. However, X-RAN usage of IEEE 1914.3 transport header is limited to xRAN-specific OUI/CID-based 1914.3 subTypes.

and answer the following

Sponsor Organization: 1. CPRI; 2. xRAN

Project/Standard Number: 1. eCPRI Specification V1.2; 2. 2018.07.20-XRAN-FH.CUS.0-v02.00

Project/Standard Date: 25-Jun-2018

Project/Standard Title: 1. Common Public Radio Interface: eCPRI Interface Specification.

2. xRAN Fronthaul Working Group: Control, User and Synchronization Plane Specification.

7.2 Joint Development

Is it the intent to develop this document jointly with another organization?: No

8.1 Additional Explanatory Notes: For section 5.2.a, this Amendment changes the scope of the completed document. The changes are summarized below:

1. Specification of more parameters, control messages, and mechanisms to improve OAM functions.
2. Specification of a management model.
3. Specifications for mapping with UDP/IPv4 and UDP/IPv6 encapsulation layers.

The other changes of this Amendment enhance or elaborate items already in the original Scope of the document.

For section 5.4, this Amendment changes the Purpose clause of the completed document. It adds the new functions identified in the new Scope, which enhances this standard's interoperability purpose. The items added are:

1. Common OAM processes and mechanisms.

2. A common management model.
3. IP as a networking option.

For Section 7.1, the release date of the xRAN standard is July 20, 2018.