
P1914.3

Submitter Email:**Type of Project:** Revision to IEEE Standard 1914.3-2018**Project Request Type:** Initiation / Revision**PAR Request Date:****PAR Approval Date:****PAR Expiration Date:****PAR Status:** Draft**Root Project:** 1914.3-2018

1.1 Project Number: P1914.3**1.2 Type of Document:** Standard**1.3 Life Cycle:** Full Use

2.1 Project Title: Standard for Radio over Ethernet Encapsulations and Mappings**Change to Title:** ~~IEEE~~ Standard for Radio over Ethernet Encapsulations and Mappings

3.1 Working Group: Next Generation Fronthaul Interface(COM/MobiNet-SC/NGFI)**3.1.1 Contact Information for Working Group Chair:****Name:** Jinri Huang**Email Address:** huangjinri@chinamobile.com**3.1.2 Contact Information for Working Group Vice Chair:**

None

3.2 Society and Committee: IEEE Communications Society/Mobile Communication Networks Standards Committee(COM/MobiNet-SC)**3.2.1 Contact Information for Standards Committee Chair:****Name:** Oliver Holland**Email Address:** oliver.holland@ieee.org**3.2.2 Contact Information for Standards Committee Vice Chair:**

None

3.2.3 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 Standards Committee Ballot:**

Oct 2021

4.3 Projected Completion Date for Submittal to RevCom: Mar 2022

5.1 Approximate number of people expected to be actively involved in the development of this project: 15**5.2 Scope of proposed 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 de-mappers. 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.**Change to scope of proposed standard:** This standard defines the encapsulation and mapping of radio protocols for transport transported over Ethernet frames, using radio and over Internet Ethernet Protocol (RoE IP) packets and the operation of the mappers and de-mappers. 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. Specifications are provided for parameters, control messages, and control mechanisms data that channels help operate, administrate, and maintain the mapping and demapping functions. A management model for this protocol is defined.**5.3 Is the completion of this standard contingent upon the completion of another standard?** No**5.4 Purpose:** This standard enables the transfer of radio data (e.g., user-plane data, vendor-specific data, and control and management 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.

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

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

Change to Need for the Project: ~~It~~ The ~~has~~ requirements ~~been and~~ projected standardization ~~that~~ for transport networking of next generation cellular ~~base stations will~~ services have uplink evolved ~~speeds~~ since around the 10Gbps or more, serving 6 or more sectors with channel bandwidths beyond 200MHz. The anticipated cellular network architectures time that include a very large number (>100) of antennas per sector drive the strong demand for an original ~~increased~~ IEEE uplink channel capacity 1914.

Today's 3 ~~platforms~~ standard cannot was scale to meet these requirements developed. A These ~~networked solution is required to enable:~~ * Load balancing / resource evolutions pooling.* should ~~Cooperative mode~~ be operation (multiple antenna systems, beam-steering)* ~~Dynamic power management*~~ Flexible mapping of the Radio over Ethernet (RoE) traffic between baseband unit (BBU) pools and remote radio unit ~~Ethernet technology has demonstrated steady, cost efficient speed and capacity growth driven~~ addressed by the adding ~~enterprise~~ collaborative connectivity, new access, and data-center markets. The Radio over Ethernet (RoE) project aims functions to take advantage of the Ethernet developments and specify a scalable standard and streamlined extending solution or that elaborating complements, for example, the on existing CPRI functions ~~radio from~~ transport the specification original based on fixed time division multiplexing standard.

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

Change to Stakeholders for the Standard: Stakeholders include cellular operators, telecommunication ~~carries~~ carriers, cellular and telecommunication system vendors, and component vendors.

6.1 Intellectual Property

6.1.1 Is the Standards Committee aware of any copyright permissions needed for this project?

No

6.1.2 Is the Standards Committee aware of possible registration activity related to this project?

Yes

Explanation: A dedicated UDP port number will be requested 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

Change to Are there other standards or projects with a similar scope? ~~No~~ Yes

Explanation: 1. The eCPRI Interface specification gives a template packet format for transporting radio data. This template is subject to proprietary definitions by each member of the CPRI organization. While the eCPRI standard offers flexible support for transporting different types of radio data, it is not specified with enough detail to enable the P1914.3v2 functions to be implemented without access to the proprietary definitions.

2. The O-RAN Alliance 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 use of the IEEE 1914.3 transport header optionally for some of its messages. However, O-RAN Alliance does not support the encapsulation of CPRI streams and its usage of IEEE 1914.3 transport header is limited to O-RAN Alliance-specific OUI/CID-based 1914.3 subTypes.

Change to Explanation: 1. The eCPRI Interface specification gives a template packet format for transporting radio data. This template is subject to proprietary definitions by each member of the CPRI organization. While the eCPRI standard offers flexible support for transporting different types of radio data, it is not specified with enough detail to enable the P1914.3v2 functions to be implemented without access to the proprietary definitions. 2. The O-RAN Alliance 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 use of the IEEE 1914.3 transport header optionally for some of its messages. However, O-RAN Alliance does not support the encapsulation of CPRI streams and its usage of IEEE 1914.3 transport header is limited to O-RAN Alliance-specific OUI/CID-based 1914.3 subTypes.

7.1.1 Standards Committee Organization: O-RAN Alliance

Project/Standard Number: O-RAN.WG4.CUS.0-v05.00

Project/Standard Date: 01 Nov 2020

Project/Standard Title: Control, User and Synchronization Plane Specification

7.1.2 Standards Committee Organization: CPRI

Project/Standard Number: eCPRI_v_2.0

Project/Standard Date: 10 May 2019

Project/Standard Title: eCPRI Interface Specification

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

8.1 Additional Explanatory Notes: This PAR is for a revision to IEEE Std 1914.3-2018 and is meant to replace the PAR for P1914.3a, which was for an amendment to IEEE Std 1914.3-2018 and will be withdrawn. This change is needed because the work that has been accomplished for P1914.3a appears to be too substantial to be classified as just an amendment.