IEEE P802.21.1
Media Independent Services

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| Proposed Remedy and Response for Comments #22-25 of the WG LB11 on IEEE P802.21.1/D02 draft |
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Abstract

This document contains proposed remedy and response for comments #22-25 of the WG LB11 on IEEE P802.21.1/D02 draft based on the LB11 comments file (DCN: 21-16-0062-00-SAUC).

**Proposed Remedy and Response for Comments #22-25 of the WG LB11 on IEEE P802.21.1/D02 draft**

**Comment #22** (Clause 6). The texts is not clear to differentiate the use case. Need to add an explaination of the innovation of the use case related to 21.1.

* Remedy: We accept this comment, and agree to revise Sub-clause “6.1 Introduction” to add an explaination of the innovation of the use case related to SDN.
	+ Add the sentence involving SDN operation in this use case (Lines 13-14 in Page 98).

The revised text is as follows:

“This clause explains a general overview of the MIS use case for software-defined radio access networks (SDRANs) in a centralized way. In this use case, media independent service framework (MIS) of IEEE802.21 specification is applied to the interface over the SDRAN and it is just a combination of mobility and radio resource management use cases working on top of a SDRANs without modification.

The SDRAN is the RAN including fronthaul and backhaul, where the centralized controller enables both seamless handover and dynamic resource allocation by a clear separation from data forwarding plane in heterogeneous RAN environment. Here, software defined networking (SDN) is reposnsible for providing an abstraction of network resources through well-defined application programming interfaces. This abstraction enables SDRAN to simplify network operation (e.g., mobility management entity) across heterogeneous technologies. The centralized controller enabled by SDN allows for achieving flexible resource management of RAN under homogeneous and heterogeneous environment. This trend also introduces new challenges in seamless mobility because RANs require the shared nature of radio spectrum for mobile users in small cell environment.”

* + Add the sentence for the innovation of this use case (Lines 15-18 in Page 98).

The revised text is as follows:

“The SDRAN enables radio resource management (RRM) in a centralized controller, in which the SDRAN separates RRM from the data forwarding functions to evolve independently. This functional split introduces more degrees of flexibility in the actual execution of RRM. The centralized control and management framework enables a flexible and software-defined coordination of all radio resource. The centralized controller allows for an efficient software solution for radio resource management on commodity servers.”

* + Add the sentence for the innovation of this use case (Lines 19-20 in Page 98).

The revised text is as follows:

“This use case is radio resource coordination of MIS framework for handover in SDRAN environment where MNs from a cell are re-assigned to neighboring cells with available resources. MIS primitives and messages can be used to transfer radio configuration information for handover and mobility management, and they can be used to provide radio resource configuration for seamless handover. The SDN provides interfaces for exchange of primitives between network entity (e.g., Point of attachment) and the centralized controller (e.g., PoA controller) where it needs to be handled.”

**Comment #23** (Clause 6.1, Page 98, Line 7). It is not clear whether RAN include backhaul or not. Backhaul does not need to be part of RAN.

* + Response: Not accept. The reason is as follows:

“A radio access network (RAN) is part of a mobile telecommunication system. Conceptually, RAN resides between mobile devices and core network (CN). Mobile Backhaul (MBH) refers to the network between the base station sites (NodeB, eNodeB, BTS) and the network controller site (Radio Network Controller = RNC, S-GW). This network is called the Radio Access Network (RAN) by the 3GPP. ”

**Comment #24** (Clause 6.1, Page 98, Line 22). Change the phrase “clearly separating SDN control” to “clearly separated SDN".

* + Remedy: We accept this comment, and agree to revise the sentences (Lines 22 in page 98) as follows:

“by a clearly separated SDN control ”

**Comment #25** (Clause 6.2.1, Page 101, Line 5). The texts is not clear to describe the handover procedure in SDRAN environment.

* + Remedy: We accept this comment, and agree to revise the sentence “The MIS protocol message can be forwarded to SDN switches or indirectly forwarded by the SDN controller” as follows:

 “The MIS protocol message can be forwarded to PoA controller via SDN switches.”

Revised full text of Sub-clause 6.1 is as follows:

* 1. Introduction

A radio access network (RAN) is part of a mobile network that is implemented with a radio access technology. Conceptually, it resides between mobile devices and core network (CN). RANs differ from CNs in that they mostly deal with L1/L2 functions, such as interference, cell ID, neighbor lists, and handover threshold. RAN can be divided into two parts: one is the fronthaul and the other is backhaul. The fronthaul is the connection between a baseband controller and remote standalone radio heads at cell sites. The backhaul is the connection between the baseband controller and the mobile network back to the wired CN.

This clause explains a general overview of the MIS use case for software-defined radio access networks (SDRANs) in a centralized way. In this use case, media independent service framework (MIS) of IEEE802.21 specification is applied to the interface over the SDRAN and it is just a combination of mobility and radio resource management use cases working on top of a SDRANs without modification.

The SDRAN is the RAN including fronthaul and backhaul, where the centralized controller enables both seamless handover and dynamic resource allocation by a clear separation from data forwarding plane in heterogeneous RAN environment. Here, software defined networking (SDN) is reposnsible for providing an abstraction of network resources through well-defined application programming interfaces. This abstraction enables SDRAN to simplify network operation (e.g., mobility management entity) across heterogeneous technologies. The centralized controller enabled by SDN allows for achieving flexible resource management of RAN under homogeneous and heterogeneous environment. This trend also introduces new challenges in seamless mobility because RANs require the shared nature of radio spectrum for mobile users in small cell environment.

The SDRAN enables radio resource management (RRM) in a centralized controller, in which the SDRAN separates RRM from the data forwarding functions to evolve independently. This functional split introduces more degrees of flexibility in the actual execution of RRM. The centralized control and management framework enables a flexible and software-defined coordination of all radio resource. The centralized controller allows for an efficient software solution for radio resource management on commodity servers. The SDRAN paradigm also improves adaptability to the diversity of service scenarios that will arise from the deployment of a centralized controller in small-cell or multi-radio access technologies.

This use case is radio resource coordination of MIS framework for handover in SDRAN environment where MNs from a cell are re-assigned to neighboring cells with available resources. MIS primitives and messages can be used to transfer radio configuration information for handover and mobility management, and they can be used to provide radio resource configuration for seamless handover. The SDN provides interfaces for exchange of primitives between network entity (e.g., Point of attachment) and the centralized controller (e.g., PoA controller) where it needs to be handled. Thus, MIS framework is appropriate for handover resource allocation and mobility management in SDRANs that use various heterogeneous switching provided by a clearly separated SDN control.