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| Project | **IEEE 802.21.1 Media Independent Services** **<**[**http://www.ieee802.org/21/**](http://www.ieee802.org/21/)**>** |
| Title | **Proposed Remedy for LB8 Comment**  |
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| Re: | IEEE 802.21.1 BRC Teleconference |
| Abstract | This document provides remedy for LB8 comments (#183)  |
| Purpose | Proposed resolution for LB8 Comments  |
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Cmt #183:

The standard aims at providing a set of features that can be used for different use cases, which are included in .21.1. One of them is mobility but it is not said anywhere that this is the most relevant case. Along .21m basically all introductory texts are t in such a way that they only relate to mobility service.

**Proposed Remedy:**

In particular, the use case is not mobility but handover. However, the comment is accept in principle and following revision is suggested:

1.3 General

This standard provides link-layer intelligence and other related network information to upper layers of a mobile device or a network element to supporting several use cases such as handovers between heterogeneous networks, radio resource management, home energy management, software defined radio access networks and device to device (D2D) communication as described in Draft IEEE P802.21.1/D02 In this standard, unless otherwise noted, media refers to the method/mode of accessing a telecommunication system (e.g., cable, radio, satellite), as opposed to sensory aspects of communication (e.g., audio, video).

The following items are not within the scope of this standard:

* Enhancements specific to particular link-layer technologies that are required to support this standard (they will be carried out by those respective link-layer technology standards)
* Media specific protection mechanisms
* Higher layer (layer 3 and above) enhancements that are required to support this standard

The purpose of this standard is to provide a framework with several knobs so that they can be utilized to enhance the experience of mobile users while they are performing functions such as, handovers between heterogeneous networks when mobile, managing link layer radio resources with or without presence of software defined networking, and obtaining group keys for home energy management systems via multicast group management.

This standard supports another important aspect of optimized performance enhancement through link adaptation. For example, a user can choose an application that requires a higher data rate than available on the current link, necessitating a link adaptation to provide the higher rate, or necessitating an action if the higher rate is unavailable on the current link. In all such cases, service continuity and/or user experience should be maintained to the extent possible during this action. As an example, when making a network transition during a phone call, the handover procedures should be executed in such a way that any perceptible interruption to the conversation will be minimized.

This standard supports cooperative use of information available at the mobile node and within the network infrastructure. The mobile node is well-placed to detect available network resources based on the use cases that they are performing. The network infrastructure is well-suited to store the necessary information that are required to provide either a better user experience or managing the mobile devices better. The information could be handover and radio resource management related such as neighborhood cell lists, location of mobile nodes, available link layer radio resources and higher layer service availability, home energy management system such as, multicast group information with their keys, and certificates.

The overall network can include a mixture of cells of drastically different sizes, such as those from IEEE 802.15™, IEEE 802.11™, IEEE 802.16™, 3GPP, and 3GPP2, with overlapping coverage. The specific use case can be initiated either by the mobile node or by a network node. They could be specific measurement reports, triggers supplied by the link layers, unavailability of a key or a certificate. Specifically the standard consists of the following elements:

a) A framework that enables the optimization of handover and other services supporting several use cases described in Draft IEEE P802.21.1/D02. The framework relies on the presence of a higher layer applications such as mobility management protocol stack within the network elements that supports the handover, and a group manager function that manages groups of mobile nodes and distributes the keys and certificates. The framework presents media independent service (MIS) reference models for different link-layer technologies so that all actions from the higher layer can be performed with minimum or no modifications of link layer technologies.

b) A set of media independent functions within the protocol stacks of the network elements and a new entity created therein called the MIS Function (MISF).

c) A media independent service access point (called the MIS\_SAP) and associated primitives are defined to provide MIS users with access to the services of the MISF. The MISF provides the following services:

 1) The media independent event service that detects changes in link-layer properties and initiates appropriate events (triggers) from both local and remote interfaces.

2) The media independent command service provides a set of commands for the MIS users to control link properties that are relevant to handover and other services.

3) The media independent information service provides the information about different networks and their services thus enabling more effective handover and other management decision to be made across heterogeneous networks.

d) Media independent protocol messages and their protection mechanisms using both unicast and multicast modes of transmission.

e) The definition of new link-layer service access points (SAPs) and associated primitives for each link-layer technology as applicable to handover and other use cases described in Draft IEEE P802.21.1/D02. The new primitives help the MISF collect link information and control link behavior during handovers.