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IEEE 802.21 Overview
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Abstract

Some of the messages defined by a potential MIF API may rely on functionalities provided by lower layers. The IEEE 802.21 specification defines an abstraction of lower layer functions that can be useful for a MIF API. This document provides an overview of the IEEE 802.21 specification and enumerates a subset of functions that can be used in the context of the MIF API to interact with lower layers.

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[1.](#) Introduction

There is currently a need to present a coherent connection management behaviour for different terminal platforms (e.g. mobile smart phones, PCs, tablets, etc.), as users often experience a very different behaviour when connecting with various platforms to the same networks and for the same purposes (e.g. web browsing, email access, VPN, dedicated applications, etc.).

The IEEE 802.21 specification [[IEEE802.21](#)] defines several media independent services that can be used by higher layers (e.g., L3 and above) to interact with lower layers (e.g., L2 and below). This document provides an overview of the IEEE 802.21 specification, focusing on the most relevant functions from a MIF API point of view.

[2.](#) IEEE 802.21 Framework

Some of the connection management services described in [[I-D.seite-mif-cm](#)] may rely on standardized abstraction layers such as the IEEE 802.21 framework [[IEEE802.21](#)].

The IEEE 802.21-2008 Media Independent Handover (MIH) Services baseline specification defines three types of services: Information Services (IS), Event Services (ES) and Command Services (CS). Each one of these services has a different purpose. The IS provides information about existing networks and services in a potential target network. The ES provides triggers, measurements and events from lower layers (e.g. network access layers) that can be used for instance to proactively trigger actions like a handing over or

establishing a new connection to a different access network. The CS allows configuring lower layer interfaces and events. Both ES and CS provide an abstraction layer to upper layers that allows configuring and interacting with different types of network link interfaces in a coherent manner.

In 802.21 terminology, the main functionalities are performed by the MIH Function. This MIH Function is in charge of providing services to the MIH User, which is a higher layer entity (e.g., L3 and above). Functions are applied to specific Link Layers, which are lower layer entities (e.g., L2 and below). The basics of the 802.21 ES/CS flow are depicted in Figure 1.

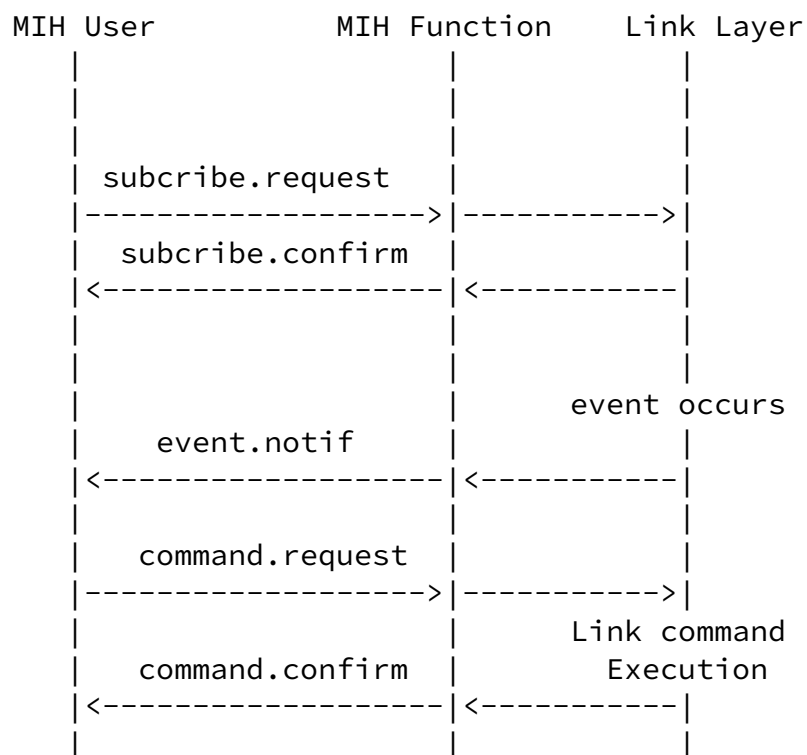


Figure 1: IEEE 802.21 event and command services flow

An MIH user may use the following IEEE 802.21 events and commands to complete connection management operations:

Link_Event_Subscribe

Category: command

Description: Subscribe to one or more events from a link.

Link_Event_Unsubscribe

Category: command

Description: Unsubscribe from a set of link-layer events.

Link_Parameters_Report

Category: Event

Description: Link parameters have crossed a specified threshold and need to be reported.

Link_Get_Parameters

Category: command

Description: Get parameters measured by the active link, such as signal-to-noise ratio (SNR), BER, received signal strength indication (RSSI).

Link_Detected

Category: Event

Description: Link of a new access network has been detected.

Link_Up

Category: Event

Description: L2 connection is established and link is available for use.

Link_Down

Category: Event

Description: L2 connection is broken and link is not available for use.

Link_Going_Down

Category: Event

Description: Radio link conditions are degrading and connection loss is very likely.

Link_Handover_Imminent

Category: Event

Description: L2 handover is imminent based on either the changes in the link conditions or additional information available at layer 2.

Link_Handover_Complete

Category: Event

Description: L2 handover has been completed.

Link_PDU_Transmit_Status

Category: Event

Description: indicate transmission status of a PDU.

Link_Capability_Discover

Category: command

Description: Query and discover the list of supported link-layer events and link-layer commands.

Link_Configuration_Thresholds

Category: command

Description: Configure thresholds for future Link Parameters Report events.

Link_Action

Category: command

Description: request an action on a link-layer connection, e.g. perform a scan, shut down an interface, etc.

Handover_Query

Category: command

Description: query and obtain handover related information about possible candidate target networks.

Handover_Commit

Category: command

Description: notify the MIH function of the decided target network.

Handover_Complete

Category: command

Description: indicate the status of the handover completion to the MIH function.

[3.](#) Security Considerations

TBD.

[4.](#) IANA Considerations

This document has no actions for IANA.

5. Acknowledgements

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