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Abstract: This is the baseline text of new draft Recommendation Q.PMEE “Protocol for managing energy efficiency with AI-assisted analysis in IMT-2020 networks and beyond”, developed at Q6/11 meeting (10-19 May 2023).

This draft Recommendation is based on C151-R1 reviewed at Q6/11 meeting (10-19 May 2023).

Input	Title	Source	Result and action
C151-R1	Proposal for initiating a new work item on protocol for managing energy efficiency with AI-assisted analysis in IMT-2020 networks and beyond	China Telecom	Accepted with Modifications

Draft new Recommendation ITU-T Q.PMEE

Protocol for managing energy efficiency with AI-assisted analysis in IMT-2020 networks and beyond

Summary

This Recommendation is to provide protocol for managing energy efficiency with AI-assisted analysis in IMT-2020 networks and beyond, including signaling flows and message format of energy saving management for IMT-2020 network.

Keywords

Energy efficiency; AI-assisted; IMT-2020 networks and beyond;

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Draft new Recommendation ITU-T Q.PMEE

Protocol for managing energy efficiency with AI-assisted analysis in IMT-2020 networks and beyond

1 Scope

This Recommendation aims to specify protocol for managing energy efficiency with AI-assisted analysis in IMT-2020 networks and beyond. This recommendation covers the following issues:

- Overview of energy efficiency orchestrator in IMT-2020 networks and beyond;
- Signaling flow of energy efficiency management in IMT-2020 networks and beyond.
- Message format of energy efficiency management in IMT-2020 networks and beyond.

2 References

The following ITU-T Recommendations and other references contain provisions which, through reference in this text, constitute provisions of this Recommendation. At the time of publication, the editions indicated were valid. All Recommendations and other references are subject to revision; users of this Recommendation are therefore encouraged to investigate the possibility of applying the most recent edition of the Recommendations and other references listed below. A list of the currently valid ITU-T Recommendations is regularly published.

The reference to a document within this Recommendation does not give it, as a stand-alone document, the status of a Recommendation.

[TBD]

[ITU-T Y.3100] Recommendation ITU-T Y.3100 (2017), *Terms and definitions for IMT-2020 network*.

[ITU-T Y.3321] Recommendation ITU-T Y.3321 (2015), *Requirements and capability*

[Y.IMT2020-REEM] Recommendation ITU-TY.IMT2020-REEM, *Energy efficiency management of virtual resources in IMT-2020 networks and beyond*.

3 Definitions

3.1 Terms defined elsewhere

This Recommendation uses the following terms defined elsewhere:

3.1.1 network function [ITU-T Y.3100]: In the context of IMT-2020, a processing function in a network.

NOTE 1 - Network functions include but are not limited to network node functionalities, e.g., session management, mobility management and transport functions, whose functional behaviour and interfaces are defined.

NOTE 2 - Network functions can be implemented on a dedicated hardware or as virtualized software functions.

NOTE 3 - Network functions are not regarded as resources, but rather any network functions can be instantiated using the resources.

3.1.2 virtualized network function [ITU-T Y.3321]: A network function whose functional software is decoupled from hardware, and runs on virtual machine(s).
within one operator's Infrastructure Domain (e.g., NFVI-PoP).

3.2 Terms defined in this Recommendation

This Recommendation defines the following terms:

[TBD]

4 Abbreviations and acronyms

This Recommendation uses the following abbreviations and acronyms:

[TBD]

5 Conventions

In this Recommendation:

The keywords "is required to" indicate a requirement which must be strictly followed and from which no deviation is permitted, if conformance to this Recommendation is to be claimed.

The keywords "is recommended" indicate a requirement which is recommended but which is not absolutely required. Thus, this requirement need not be present to claim conformance.

The keywords "can optionally" indicate an optional requirement which is permissible, without implying any sense of being recommended. This term is not intended to imply that the vendor's implementation must provide the option, and the feature can be optionally enabled by the network operator/service provider. Rather, it means the vendor may optionally provide the feature and still claim conformance with this Recommendation.

6 Overview

With the deployment and application of IMT-2020 networks, the continuous increase of new services has brought the complexity of resource management and control. It is estimated that by 2025, the monthly data volume in IMT-2020 networks will reach 17.75 ZB. To meet the continuous increase of service and data, the number of wireless base station sites has increased sharply, as well as the data centers have been developed on a larger scale, the problem of energy consumption has becoming increasingly prominent.

Energy efficient technologies become a urgent direction. AI-based intelligent energy-saving solutions can improve energy efficiency by providing energy efficiency management services which are specified in[Y.IMT2020-REEM]. Figure 6.1 illustrates the architectural model of energy efficiency management service.

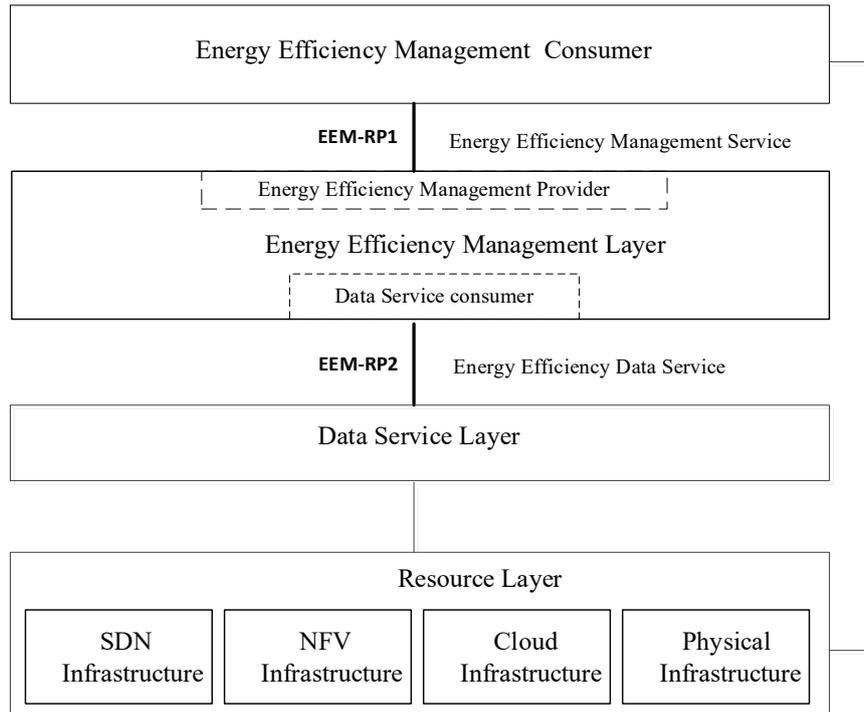


Figure 6.1- Architectural model of energy efficiency management service

7 Signaling flow of energy efficiency management

[Editor's Note] This clause will describe the signaling flow of energy efficiency management in IMT-2020 networks.

8 Message format of energy efficiency management

[Editor's Note] This clause will describe message format of energy efficiency management in IMT-2020 networks.
