

ETSI GS MEC 003 V1.1.1 (2016-03)



Mobile Edge Computing (MEC); Framework and Reference Architecture

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Foreword

This Group Specification (GS) has been produced by ETSI Industry Specification Group (ISG) Mobile Edge Computing (MEC).

Modal verbs terminology

In the present document "**shall**", "**shall not**", "**should**", "**should not**", "**may**", "**need not**", "**will**", "**will not**", "**can**" and "**cannot**" are to be interpreted as described in clause 3.2 of the [ETSI Drafting Rules](#) (Verbal forms for the expression of provisions).

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1 Scope

The present document provides a framework and reference architecture for Mobile Edge Computing that describes a mobile edge system that enables mobile edge applications to run efficiently and seamlessly in a mobile network. The present document also describes the functional elements and the reference points between them, and a number of mobile edge services that comprise the solution. It finally presents a number of key concepts related to the mobile edge architecture.

2 References

2.1 Normative references

References are either specific (identified by date of publication and/or edition number or version number) or non-specific. For specific references, only the cited version applies. For non-specific references, the latest version of the referenced document (including any amendments) applies.

Referenced documents which are not found to be publicly available in the expected location might be found at <http://docbox.etsi.org/Reference>.

NOTE: While any hyperlinks included in this clause were valid at the time of publication, ETSI cannot guarantee their long term validity.

The following referenced documents are necessary for the application of the present document.

- [1] ETSI GS MEC 002: "Mobile Edge Computing (MEC); Technical Requirements".

2.2 Informative references

References are either specific (identified by date of publication and/or edition number or version number) or non-specific. For specific references, only the cited version applies. For non-specific references, the latest version of the referenced document (including any amendments) applies.

NOTE: While any hyperlinks included in this clause were valid at the time of publication, ETSI cannot guarantee their long term validity.

The following referenced documents are not necessary for the application of the present document but they assist the user with regard to a particular subject area.

- [i.1] ETSI GS MEC 001: "Mobile-Edge Computing (MEC); Terminology".
[i.2] ETSI GS NFV 002: "Network Functions Virtualisation (NFV); Architectural Framework".
[i.3] "OpenStack++ for Cloudlet Deployment".

NOTE: Available at <http://reports-archive.adm.cs.cmu.edu/anon/2015/CMU-CS-15-123.pdf>.

- [i.4] "Adaptive VM Handoff Across Cloudlets".

NOTE: Available at <http://reports-archive.adm.cs.cmu.edu/anon/2015/CMU-CS-15-113.pdf>.

- [i.5] ETSI GS MEC 017: "Mobile-Edge Computing (MEC); Deployment of Mobile Edge Computing in an NFV environment".
-

3 Definitions and abbreviations

3.1 Definitions

For the purposes of the present document, the terms and definitions given in ETSI GS MEC 001 [i.1] apply.

3.2 Abbreviations

For the purposes of the present document, the abbreviations given in ETSI GS MEC 001 [i.1] and the following apply:

CFS	Customer Facing Service
NFVI-PoP	Network Functions Virtualisation Infrastructure Point of Presence
OSS	Operations Support System

4 Overview

The present document presents a framework and a reference architecture to support the requirements defined for Mobile Edge Computing in ETSI GS MEC 002 [1].

The framework described in clause 5 shows the structure of the Mobile Edge Computing environment.

The reference architecture described in clause 6 shows the functional elements that compose the mobile edge system, including the mobile edge platform and the mobile edge management, as well as the reference points between them.

The functional elements and reference points listed in clause 7 describe the high-level functionality of the different functional elements and reference points.

Clause 8 describes the high-level functionality of a number of mobile edge services, comprising the solution for Mobile Edge Computing.

Annex A describes at a high-level a number of key concepts that underlie the principles used to develop the framework and reference architecture described in the present document.

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5 Mobile Edge Computing framework

Mobile Edge Computing enables the implementation of mobile edge applications as software-only entities that run on top of a virtualisation infrastructure, which is located in or close to the network edge. The Mobile Edge Computing framework shows the general entities involved. These can be grouped into system level, host level and network level entities.

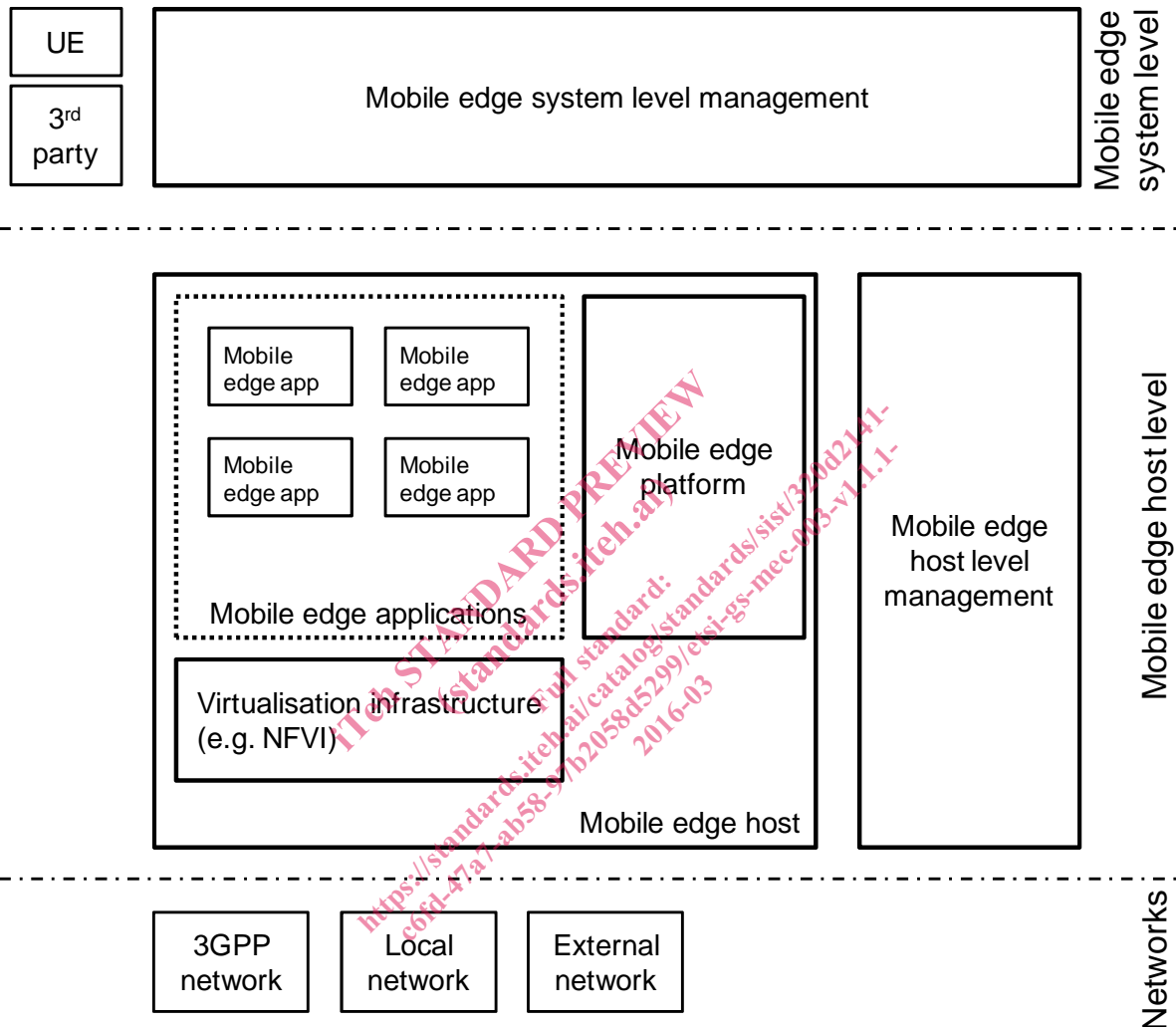


Figure 5-1: Mobile Edge Computing framework

Figure 5-1 illustrates the framework for Mobile Edge Computing consisting of the following entities:

- mobile edge host, including the following:
 - mobile edge platform;
 - mobile edge applications;
 - virtualisation infrastructure;
- mobile edge system level management;
- mobile edge host level management;
- external related entities, i.e. network level entities.

6 Reference architecture

The reference architecture shows the functional elements that comprise the mobile edge system and the reference points between them.

Figure 6-1 depicts the mobile edge system reference architecture. There are three groups of reference points defined between the system entities:

- reference points regarding the mobile edge platform functionality (Mp);
- management reference points (Mm); and
- reference points connecting to external entities (Mx).

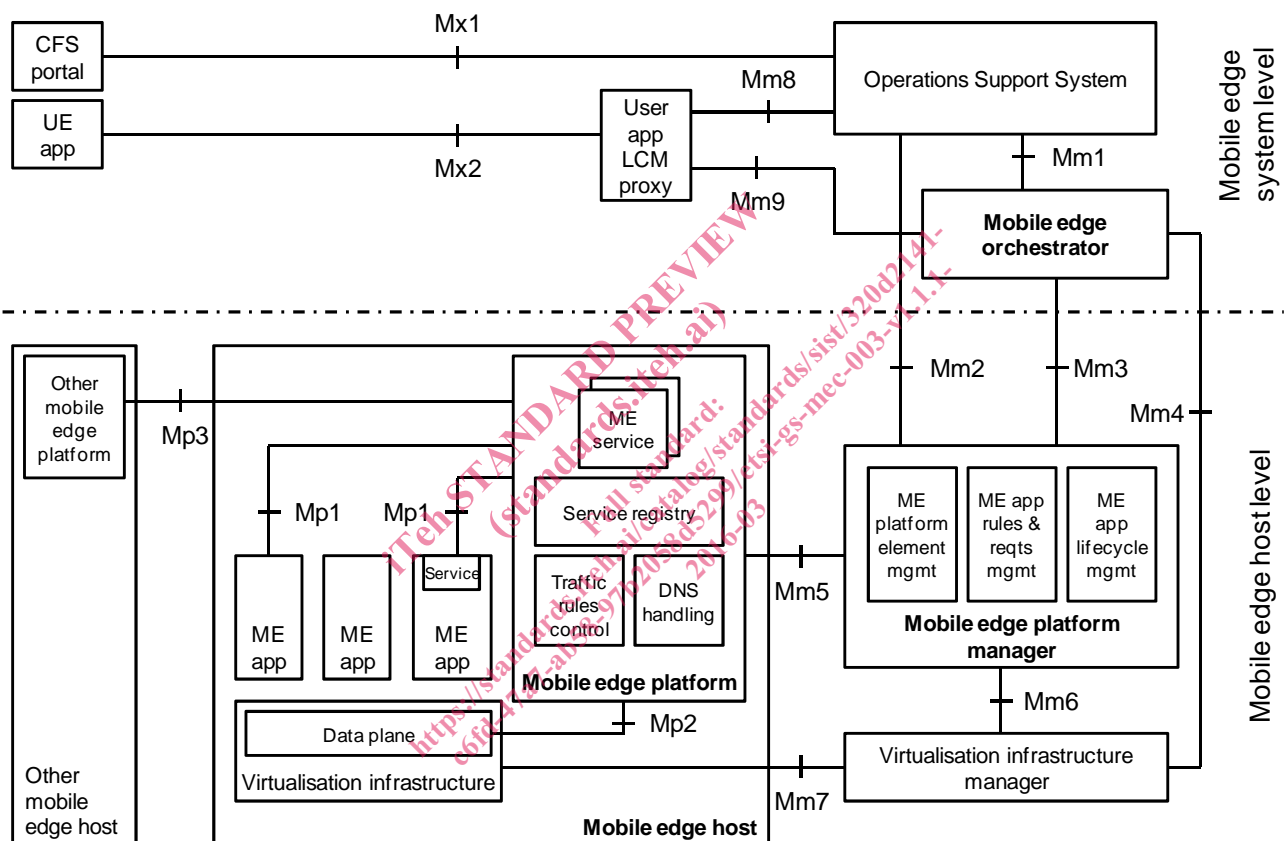


Figure 6-1: Mobile edge system reference architecture

The mobile edge system consists of the mobile edge hosts and the mobile edge management necessary to run mobile edge applications within an operator network or a subset of an operator network.

The **mobile edge host** is an entity that contains a mobile edge platform and a virtualisation infrastructure which provides compute, storage, and network resources, for the purpose of running mobile edge applications. The mobile edge host is further described in clause 7.1.1.

The **mobile edge platform** is the collection of essential functionality required to run mobile edge applications on a particular virtualisation infrastructure and enable them to provide and consume mobile edge services. The mobile edge platform can also provide services. The mobile edge platform is further described in clause 7.1.2.

Mobile edge applications are instantiated on the virtualisation infrastructure of the mobile edge host based on configuration or requests validated by the mobile edge management. Mobile edge applications are further described in clause 7.1.3.

The mobile edge management comprises the mobile edge system level management and the mobile edge host level management.