

ETSI GS MEC 014 V3.1.1 (2023-07)



Multi-access Edge Computing (MEC); UE Identity API

(standards.iteh.ai)

[ETSI GS MEC 014 V3.1.1 \(2023-07\)](https://standards.iteh.ai/catalog/standards/sist/34959ace-c717-435c-b018-02245ffdd4e4/etsi-gs-mec-014-v3-1-1-2023-07)

<https://standards.iteh.ai/catalog/standards/sist/34959ace-c717-435c-b018-02245ffdd4e4/etsi-gs-mec-014-v3-1-1-2023-07>

Disclaimer

The present document has been produced and approved by the Multi-access Edge Computing (MEC) ETSI Industry Specification Group (ISG) and represents the views of those members who participated in this ISG. It does not necessarily represent the views of the entire ETSI membership.

ReferenceRGS/MEC-0014v311UEidentityAPI

KeywordsAPI, MEC, UE identity

ETSI

650 Route des Lucioles
F-06921 Sophia Antipolis Cedex - FRANCE

Tel.: +33 4 92 94 42 00 Fax: +33 4 93 65 47 16

Siret N° 348 623 562 00017 - APE 7112B
Association à but non lucratif enregistrée à la
Sous-Préfecture de Grasse (06) N° w061004871

Important notice

The present document can be downloaded from:

<https://www.etsi.org/standards-search>

The present document may be made available in electronic versions and/or in print. The content of any electronic and/or print versions of the present document shall not be modified without the prior written authorization of ETSI. In case of any existing or perceived difference in contents between such versions and/or in print, the prevailing version of an ETSI deliverable is the one made publicly available in PDF format at www.etsi.org/deliver.

Users of the present document should be aware that the document may be subject to revision or change of status.

Information on the current status of this and other ETSI documents is available at

<https://portal.etsi.org/TB/ETSIDeliverableStatus.aspx>

If you find errors in the present document, please send your comment to one of the following services:

<https://standards-portal.etsi.org/People/CommitteeSupportStaff.aspx> 435c-b018-

If you find a security vulnerability in the present document, please report it through our

Coordinated Vulnerability Disclosure Program:

<https://www.etsi.org/standards/coordinated-vulnerability-disclosure>

Notice of disclaimer & limitation of liability

The information provided in the present deliverable is directed solely to professionals who have the appropriate degree of experience to understand and interpret its content in accordance with generally accepted engineering or other professional standard and applicable regulations.

No recommendation as to products and services or vendors is made or should be implied.

No representation or warranty is made that this deliverable is technically accurate or sufficient or conforms to any law and/or governmental rule and/or regulation and further, no representation or warranty is made of merchantability or fitness for any particular purpose or against infringement of intellectual property rights.

In no event shall ETSI be held liable for loss of profits or any other incidental or consequential damages.

Any software contained in this deliverable is provided "AS IS" with no warranties, express or implied, including but not limited to, the warranties of merchantability, fitness for a particular purpose and non-infringement of intellectual property rights and ETSI shall not be held liable in any event for any damages whatsoever (including, without limitation, damages for loss of profits, business interruption, loss of information, or any other pecuniary loss) arising out of or related to the use of or inability to use the software.

Copyright Notification

No part may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm except as authorized by written permission of ETSI.

The content of the PDF version shall not be modified without the written authorization of ETSI.

The copyright and the foregoing restriction extend to reproduction in all media.

© ETSI 2023.
All rights reserved.

Contents

Intellectual Property Rights	4
Foreword.....	4
Modal verbs terminology.....	4
1 Scope	5
2 References	5
2.1 Normative references	5
2.2 Informative references.....	5
3 Definition of terms, symbols and abbreviations.....	6
3.1 Terms.....	6
3.2 Symbols.....	6
3.3 Abbreviations	6
4 Overview	6
5 Description of the features (informative)	7
5.1 UE Identity tag registration/de-registration.....	7
5.1.1 Introduction.....	7
5.1.2 Sequence diagrams	7
5.1.2.1 General	7
5.1.2.2 UE Identity tag registration.....	7
5.1.2.3 UE Identity tag de-registration.....	8
5.2 UE Identity tag acquisition.....	8
5.2.1 Introduction.....	8
6 Data model & Data format (normative)	9
6.1 Introduction	9
6.2 Resource data types	9
6.2.1 Introduction.....	9
6.2.2 Type: UeIdentityTagInfo	9
6.3 Subscription types	9
6.4 Notification types	10
6.5 Referenced structured data types.....	10
6.6 Referenced simple data types	10
7 API definition (normative)	10
7.1 Introduction	10
7.2 Global definitions and resource structure.....	10
7.3 Resource: individual UeIdentityTagInfo	11
7.3.1 Description.....	11
7.3.2 Resource definition	11
7.3.3 Resource Methods	11
7.3.3.1 GET.....	11
7.3.3.2 PUT	12
7.3.3.3 PATCH	13
7.3.3.4 POST.....	13
7.3.3.5 DELETE	13
Annex A (informative): Complementary material for API utilization	14
Annex B (informative): Change history	15
History	16

Intellectual Property Rights

Essential patents

IPRs essential or potentially essential to normative deliverables may have been declared to ETSI. The declarations pertaining to these essential IPRs, if any, are publicly available for **ETSI members and non-members**, and can be found in ETSI SR 000 314: "*Intellectual Property Rights (IPRs); Essential, or potentially Essential, IPRs notified to ETSI in respect of ETSI standards*", which is available from the ETSI Secretariat. Latest updates are available on the ETSI Web server (<https://ipr.etsi.org/>).

Pursuant to the ETSI Directives including the ETSI IPR Policy, no investigation regarding the essentiality of IPRs, including IPR searches, has been carried out by ETSI. No guarantee can be given as to the existence of other IPRs not referenced in ETSI SR 000 314 (or the updates on the ETSI Web server) which are, or may be, or may become, essential to the present document.

Trademarks

The present document may include trademarks and/or tradenames which are asserted and/or registered by their owners. ETSI claims no ownership of these except for any which are indicated as being the property of ETSI, and conveys no right to use or reproduce any trademark and/or tradename. Mention of those trademarks in the present document does not constitute an endorsement by ETSI of products, services or organizations associated with those trademarks.

DECT™, **PLUGTESTS™**, **UMTS™** and the ETSI logo are trademarks of ETSI registered for the benefit of its Members. **3GPP™** and **LTE™** are trademarks of ETSI registered for the benefit of its Members and of the 3GPP Organizational Partners. **oneM2M™** logo is a trademark of ETSI registered for the benefit of its Members and of the oneM2M Partners. **GSM®** and the GSM logo are trademarks registered and owned by the GSM Association.

Foreword

This Group Specification (GS) has been produced by ETSI Industry Specification Group (ISG) Multi-access 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).

"**must**" and "**must not**" are **NOT** allowed in ETSI deliverables except when used in direct citation.

1 Scope

The present document focuses on the UE Identity functionality. It describes the related application policy information (including authorization, access control and traffic rule pattern format), information flows, required information and service aggregation patterns. The present document specifies the necessary API, data model and data format, considering existing API(s) if applicable.

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 <https://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] Void.
- [2] [ETSI GS MEC 002](#): "Multi-access Edge Computing (MEC); Use Cases and Requirements".
- [3] [ETSI GS MEC 009](#): "Multi-access Edge Computing (MEC); General principles, patterns and common aspects of MEC Service APIs".
- [4] [ETSI GS MEC 011](#): "Multi-access Edge Computing (MEC); Edge Platform Application Enablement".
- [5] [IETF RFC 5246](#): "The Transport Layer Security (TLS) Protocol Version 1.2".

NOTE: Obsoleted by IETF RFC 8446.

- [6] [IETF RFC 8446](#): "The Transport Layer Security (TLS) Protocol Version 1.3".
- [7] [IETF RFC 6749](#): "The OAuth 2.0 Authorization Framework".
- [8] [IETF RFC 6750](#): "The OAuth 2.0 Authorization Framework: Bearer Token Usage".
- [9] [ETSI GS MEC 010-2](#): "Multi-access Edge Computing (MEC); MEC Management; Part 2: Application lifecycle, rules and requirements management".

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] [OpenAPI™ Specification](#).

- [i.2] ETSI GR MEC 001: "Multi-access Edge Computing (MEC); Terminology".
- [i.3] ETSI TS 123 558: "5G; Architecture for enabling Edge Applications (3GPP TS 23.558 Release 17)".
- [i.4] ETSI GR MEC 038: "Multi-access Edge Computing (MEC); MEC in Park enterprises deployment scenario".
- [i.5] ETSI TS 123 502: "5G; Procedures for the 5G System (5GS) (3GPP TS 23.502 Release 17)".

3 Definition of terms, symbols and abbreviations

3.1 Terms

For the purposes of the present document, the terms given in ETSI GR MEC 001 [i.2] apply.

3.2 Symbols

Void.

3.3 Abbreviations

For the purposes of the present document, the abbreviations given in ETSI GR MEC 001 [i.2] and the following apply:

API	Application Programming Interface
HTTP	Hypertext Transfer Protocol
IETF	Internet Engineering Task Force
JSON	JavaScript Object Notation
TLS	Transport Layer Security
UE	User Equipment
URI	Uniform Resource Indicator or Uniform Resource Identifier or Universal Resource Identifier

4 Overview

The present document specifies the API for the UE Identity feature to support the corresponding requirements defined for the Multi-access Edge Computing in ETSI GS MEC 002 [2].

Clause 5 contains the description of the feature and the information flows of the procedures. Clause 6 describes the data model and data format applied in the UE Identity API. Clause 7 is the actual API definition of the UE Identity feature.

5 Description of the features (informative)

5.1 UE Identity tag registration/de-registration

5.1.1 Introduction

The purpose of the UE Identity feature is to allow UE specific traffic rules in the MEC system.

When the MEC system supports the UE Identity feature, the MEC platform provides the functionality for an MEC application instance to register a tag (representing a UE) or a list of tags. These tags can be included in a traffic rule descriptor for tag-based traffic rules; these tags can be included in the application's application descriptor (AppD), ETSI GS MEC 010-2 [9], as part of the application package. Traffic rules, with their traffic filters, associated with an application instance are also accessible via Mp1, as described in ETSI GS MEC 011 [4]. Each tag has been mapped into a specific UE in the mobile network operator's system. The MEC platform is provided with the mapping information. How the mapping is realized is outside the scope of the present document. The UE Identity tag registration triggers the MEC platform to activate the corresponding traffic rule(s) linked to the tag. Later, if the application instance does not wish to use the traffic rule for that user, it may de-register the UE Identity tag by invoking the de-registration procedure.

5.1.2 Sequence diagrams

5.1.2.1 General

The following clauses describe how MEC applications can register and de-register tags as part of UE Identity feature. The related sequence diagrams are presented.

5.1.2.2 UE Identity tag registration

Figure 5.1.2.2-1 illustrates the message flow for the UE Identity tag registration procedure. The tag is used in UE Identity feature.

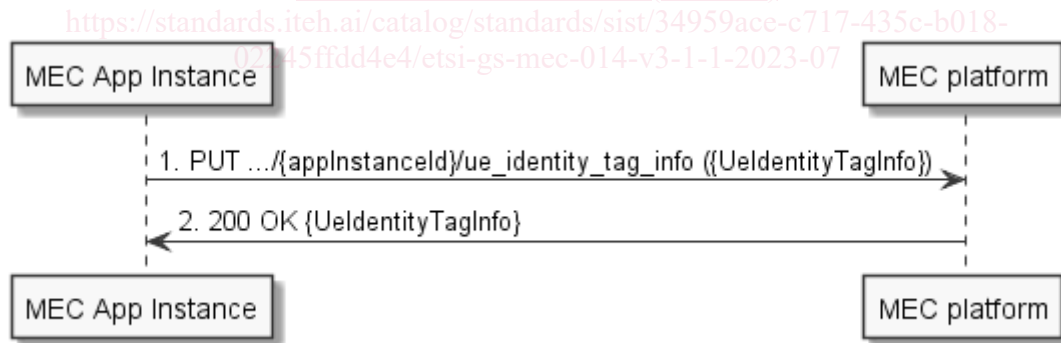


Figure 5.1.2.2-1: UE Identity tag registration

The UE Identity tag registration procedure consists of the following steps:

1. The MEC application instance sends a PUT request with the message body containing the UeIdentityTagInfo data structure with the state set to REGISTERED to the MEC platform. The variable {appInstanceId} is set to the application instance identifier assigned to the MEC application instance.
2. The MEC platform sends "200 OK" response with the message body containing the UeIdentityTagInfo data structure with the state set to REGISTERED.

Once the tag or the list of tags, is successfully registered in the MEC platform the related traffic rules can then be activated.

5.1.2.3 UE Identity tag de-registration

Figure 5.1.2.3-1 illustrates the message flow for the UE Identity tag deregistration procedure.

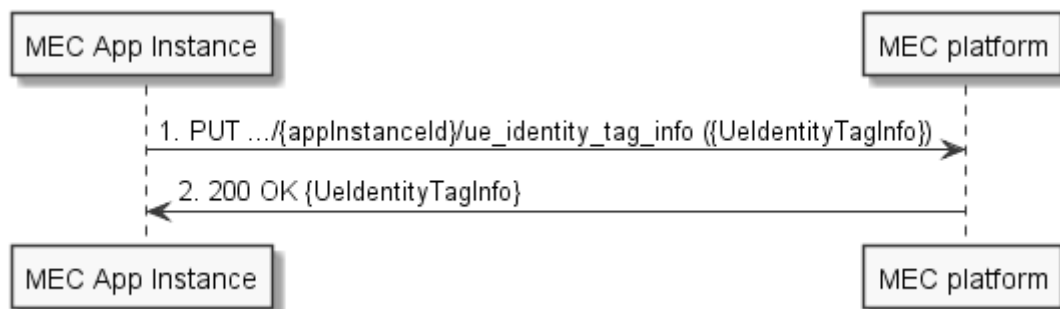


Figure 5.1.2.3-1: UE Identity tag de-registration

The UE Identity tag deregistration procedure consists of the following steps:

1. The MEC application instance sends a PUT request with the message body containing the UeIdentityTagInfo data structure with the state set to UNREGISTERED to the MEC platform. The variable {appInstanceId} is set to the application instance identifier assigned to the MEC application instance.
2. The MEC platform sends "200 OK" response with the message body containing the UeIdentityTagInfo data structure with the state set to UNREGISTERED.

Once the tag or the list of tags is successfully deregistered in the MEC platform the related traffic rules are then deactivated.

5.2 UE Identity tag acquisition

5.2.1 Introduction

If an MEC application instance provides Application Server (AS) capability to a UE hosted Application Client (AC), it may not know the mapping between the connection information associated with the AC (e.g. IP address of the UE hosting the AC) and a UE specific identifier.

In ETSI TS 123 558 [i.3], clause 8.6.5, there is a procedure whereby an EES (Edge Enabler Server) is able to expose a UE Identifier API to an EAS (Edge Application Server) to provide it with an identifier uniquely identifying a UE. This identifier is called the UE ID and can be the 3GPP Core Network assigned UE ID (also known as AF-specific UE ID; see ETSI TS 123 502, clause 4.15.10 [i.5]) or the EES-generated Edge UE ID as defined in clause 7.2.9 of ETSI TS 123 558 [i.3]. This approach to obtaining the UE ID was also discussed in clause 5.2.2 of ETSI GR MEC 038 [i.4].

The message flow sequence on how the ETSI TS 123 558 [i.3] UE Identifier API can be used by an MEC application instance to determine the AC connection information (e.g. IP address) to UE ID mapping is described in the following subclauses. An MEC application instance may also wish to obtain the UE ID for other purposes, such as UE access authentication where IP address may be insufficient.

5.2.2 Sequence diagrams

5.2.2.1 General

The following clauses describe how an MEC application instance can obtain an 3GPP Network UE ID, ETSI TS 123 558 [i.3].

5.2.2.2 UE Identifier acquisition

Figure 5.2.2.2-1 illustrates the message flow for the UE Identifier acquisition procedure.

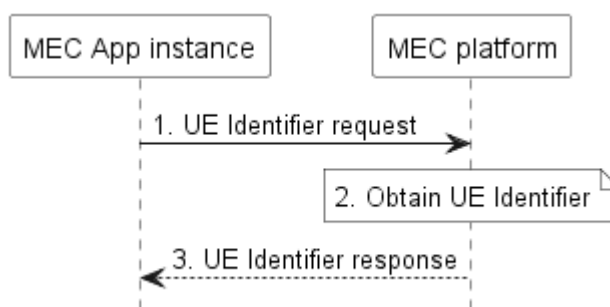


Figure 5.2.2.2-1: UE Identifier acquisition

1. The MEC App instance invokes the UE Identifier feature by making a request to the MEP.
2. The MEP uses the received AC connection information in the step 1 (e.g. IP address) and obtains the UE Identifier by interacting with NEF as specified in clause 4.15.10 of ETSI TS 123 502 [i.5].
3. The MEP provides the obtained UE identifier as UE ID to the MEC App instance. The UE ID is specific to the given MEC App instance.

Once the MEC App instance has obtained the UE ID it is able to use that in any additional procedures that require a UE specific identifier to be provided.

6 Data model & Data format (normative)

6.1 Introduction (standards.iteh.ai)

The following clauses specify the data types that are used to implement the UE Identity feature, for which the relevant sequence diagrams are described in clauses 5.1.2.2 and 5.1.2.3. 3.1.1 (2023-07)

<https://standards.iteh.ai/catalog/standards/sist/34959ace-c717-435c-b018-024589d4454/etsi-gs-mec-014-v3-1-1-2023-07>

6.2 Resource data types

6.2.1 Introduction

This clause defines data structures to be used in resource representations.

6.2.2 Type: UeIdentityTagInfo

This type represents the information of UE Identity tag used in the UE Identity feature.

Table 6.2.2-1: Definition of type UeIdentityTagInfo

Attribute name	Data type	Cardinality	Description
ueIdentityTags	Structure (inlined)	1..N	1 to N tags presented by a MEC Application instance to a MEC Platform
>ueIdentityTag	String	1	Specific tag presented by a MEC Application instance to a MEC Platform
>state	Enum (inlined)	1	The following numeric values are defined: 0 = UNREGISTERED 1 = REGISTERED

6.3 Subscription types

In the present document, no subscription data types are defined.

6.4 Notification types

In the present document, no notifications data types are defined.

6.5 Referenced structured data types

In the present document, no referenced structured data types are defined.

6.6 Referenced simple data types

In the present document, no referenced simple data types are defined.

7 API definition (normative)

7.1 Introduction

This clause defines the resources and operations of the UE identity API.

7.2 Global definitions and resource structure

All resource URIs of this API shall have the following root:

{apiRoot}/{apiName}/{apiVersion}/

The "apiRoot" is discovered using the service registry. The "apiName" shall be set to "ui" and the "apiVersion" shall be set to "v1" for the present document. It includes the scheme ("https"), host and optional port, and an optional prefix string. The API shall support HTTP over TLS (also known as HTTPS) using TLS version 1.2 (as defined by IETF RFC 5246 [5]). TLS 1.3 (including the new specific requirements for TLS 1.2 implementation) defined by IETF RFC 8446 [6] should be supported. HTTP without TLS shall not be used. Versions of TLS earlier than 1.2 shall neither be supported nor used. All resource URIs in the clauses below are defined relative to the above root URI.

The content format JSON shall be supported.

The JSON format is signalled by the content type "application/json".

This API shall require the use of the OAuth 2.0 client credentials grant type according to IETF RFC 6749 [7] with bearer tokens according to IETF RFC 6750 [8]. See clause 6.16 of ETSI GS MEC 009 [3] for more information. The token endpoint can be discovered as part of the service availability query procedure defined in ETSI GS MEC 011 [4]. How the client credentials are provisioned into the MEC application is out of scope of the present document.

This API supports additional application-related error information to be provided in the HTTP response when an error occurs. See clause 6.15 of ETSI GS MEC 009 [3] for more information.

Figure 7.2-1 illustrates the resource URI structure of this API.

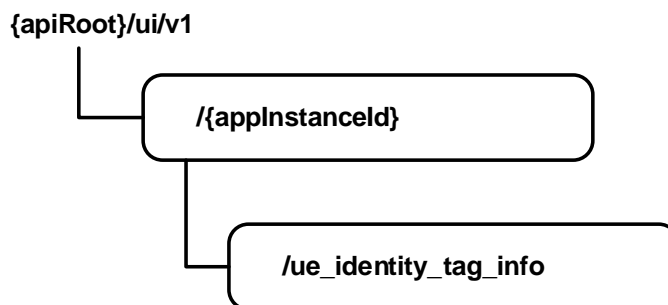


Figure 7.2-1: Resource URI structure of the UE Identity API