

ETSI GS MEC 048 V3.1.1 (2024-04)



Multi-access Edge Computing (MEC); Enablement API for Customer Self-Service

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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).

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1 Scope

The present document specifies the enablement APIs produced by MEO over Mm1 reference point to support customer self-service portal. This includes the related aspects on tenant management, per tenant application management, per tenant resource management, basic monitoring per tenant, per tenant accounting capabilities. It describes the information flows, required information, and specifies the necessary operations, data models and API definitions with example codes.

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] [ETSI GS MEC 009](https://standards.iteh.ai/): "Multi-access Edge Computing (MEC); General principles, patterns and common aspects of MEC Service APIs".

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.

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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 GR MEC 001: "Multi-access Edge Computing (MEC); Terminology".
- [i.2] [IETF RFC 4122](https://standards.iteh.ai/): "A Universally Unique Identifier (UUID) URN Namespace".
- [i.3] OpenAPI™ Specification.
- [i.4] [IETF RFC 7807](https://standards.iteh.ai/): "Problem Details for HTTP APIs".
- [i.5] [IETF RFC 3986](https://standards.iteh.ai/): "Uniform Resource Identifier (URI): Generic Syntax".

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.1] and the following apply:

tenant: user who shares the access to the resources (e.g. a set of physical, virtual or service resources) in a private or public environment that is isolated from other users

NOTE: A tenant in MEC can be associated with an enterprise customer who has an account with the MEC system provider. Such enterprise customer may be associated with one or multiple tenants in a MEC system.

3.2 Symbols

Void.

3.3 Abbreviations

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

CSE Customer Self-service Enablement

4 Overview

The present document specifies the Customer Self-service Enablement (CSE) APIs over Mm1 reference point in order to support customer self-service portal.

Clause 5 introduces the functionalities enabled by CSE APIs and how the CSE services may be used by a service consumer. It provides the high-level information flows and describes the necessary operations.

The information that can be exchanged over the CSE APIs is described in clause 6 which defines detailed data models with description on all information elements.

Clause 7 specifies the CSE APIs providing detailed information how information elements are mapped into a RESTful API design.

The informative OpenAPI definitions are provided in clause 8 to illustrate the usage of the defined data model.

5 Description of the services (informative)

5.1 Introduction

A self-service portal is the customer facing part of the IT service management tool. In the context of MEC, self-service portals provide customers quick and easy access to the various services and resources offered by the MEC system. The CSE services are intended to support customer self-service portal, enabling simple application management and basic tenant, resource management capabilities.

Via Mm1 reference point the CSE APIs enable the basic functions, including:

- Tenant management:
 - creation of tenant resource;
 - deletion of tenant resource;

- updating tenant resource; and
- querying tenant resource.
- Computing resource management:
 - per tenant resource request in an edge site or in a MEC system;
 - per tenant resource request update in an edge site or in a MEC system; and
 - per tenant resource quota query in an edge site or in a MEC system.
- REST based subscribe-notify model:
 - subscribing to CSE event notifications;
 - receiving notifications on subscribed CSE events;
 - updating subscription for CSE event notifications; and
 - unsubscribing from CSE event notifications.

5.2 Sequence diagrams

5.2.1 General

The following clauses describe how the CSE services can be used by a service consumer via Mm1 reference point. The related sequence diagrams are presented.

5.2.2 Tenant management

5.2.2.1 Introduction

In the context of the present document, a tenant typically is associated with an enterprise customer who has an account with the MEC system provider. The basic functionalities for tenant management include:

- tenant resource creation;
- tenant resource deletion;
- tenant resource update; and
- tenant resource query.

5.2.2.2 Tenant resource creation

Figure 5.2.2.2-1 shows a scenario where a service consumer requests to create a tenant resource.

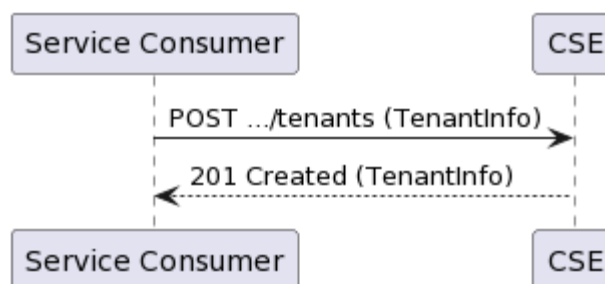


Figure 5.2.2.2-1: Flow of tenant resource creation

Tenant resource creation, as illustrated in Figure 5.2.2.2-1, consists of the following steps:

- 1) Service consumer sends a request to the CSE to create a tenant resource with the associated information.
- 2) CSE returns "201 Created" with the message body including the accepted TenantInfo structure.

5.2.2.3 Tenant resource deletion

Figure 5.2.2.3-1 shows a scenario where a service consumer requests to delete a tenant resource.

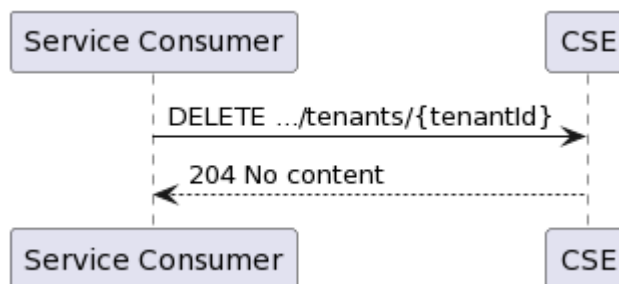


Figure 5.2.2.3-1: Flow of tenant resource deletion

Tenant resource deletion, as illustrated in Figure 5.2.2.3-1, consists of the following steps:

- 1) Service consumer sends a request to the CSE to delete a tenant resource.
- 2) CSE responds with "204 No content".

5.2.2.4 Tenant resource update

Figure 5.2.2.4-1 shows a scenario where a service consumer requests to update the information of a tenant resource.

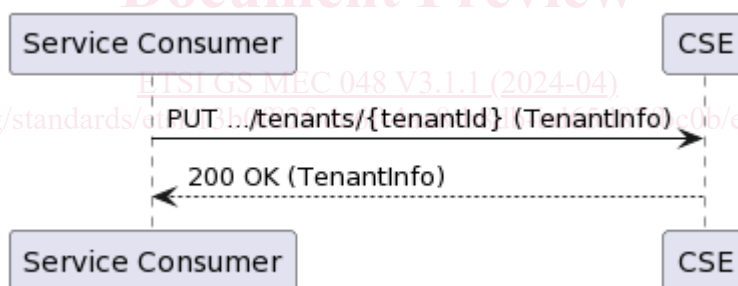


Figure 5.2.2.4-1: Flow of tenant resource update

Tenant resource update, as illustrated in Figure 5.2.2.4-1, consists of the following steps:

- 1) Service consumer requests the CSE to update the information of a tenant resource by sending a PUT request with the modified data structure specific to that tenant resource.
- 2) CSE responds with "200 OK" with the message body containing the accepted data structure specific to that tenant resource.

5.2.2.5 Tenant resource query

Figure 5.2.2.5-1 shows a scenario where a service consumer requests to query the information of a specific tenant resource.

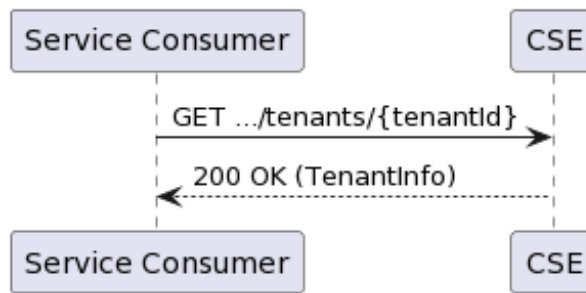


Figure 5.2.2.5-1: Flow of querying a specific tenant resource

Querying a specific tenant resource, as illustrated in Figure 5.2.2.5-1, consists of the following steps:

- 1) Service consumer requests the CSE to query the information of a specific tenant resource.
- 2) CSE responds with "200 OK" with the message body containing the information of that tenant resource.

Figure 5.2.2.5-2 shows a scenario where a service consumer requests to query the information of all tenant resources.

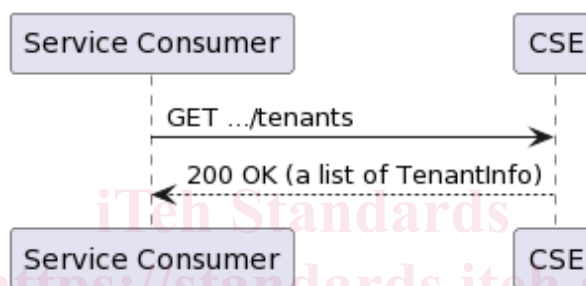


Figure 5.2.2.5-2: Flow of querying all tenant resources

Querying all tenant resources, as illustrated in Figure 5.2.2.5-2, consists of the following steps:

- 1) Service consumer requests the CSE to query the information of all tenant resources.
- 2) CSE responds with "200 OK" with the message body containing the information of a list of tenant resources.

5.2.3 Computing resource management

5.2.3.1 Introduction

The computing resource management is about the resource information in an edge site or a MEC system that is associated with a tenant, and the basic functionalities include:

- per tenant resource request in an edge site;
- per tenant resource request update in an edge site;
- per tenant resource quota query in an edge site;
- per tenant resource request in a MEC system;
- per tenant resource request update in a MEC system; and
- per tenant resource quota query in a MEC system.

5.2.3.2 Computing resource request (per-tenant)

Figure 5.2.3.2-1 shows a scenario where a service consumer requests computing resource for a tenant. It is used to request the computing resource in a MEC system or an edge site that can be used for a tenant.

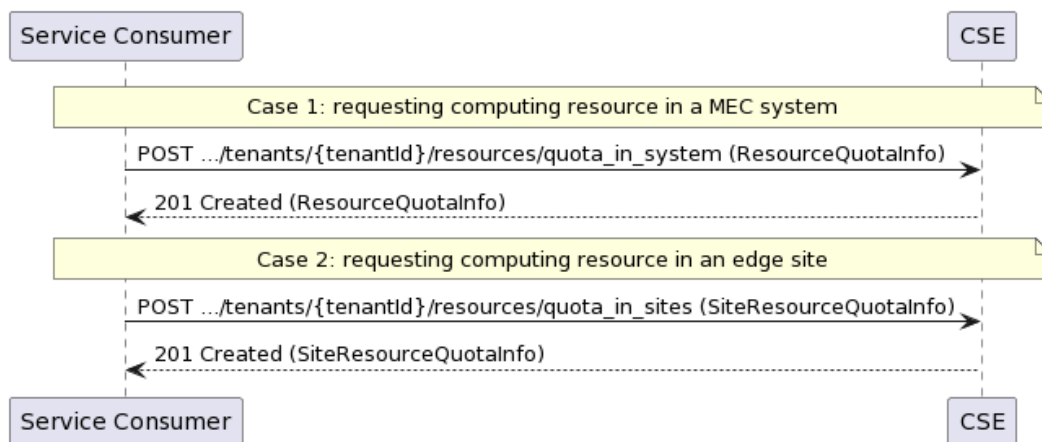


Figure 5.2.3.2-1: Flow of computing resource request

Per-tenant computing resource request, as illustrated in Figure 5.2.3.2-1, consists of the following steps:

- 1) Service consumer sends a message to the CSE requesting the computing resource quota for a tenant:
 - Case 1: requesting computing resource in a MEC system.
 - Case 2: requesting computing resource in an edge site.
- 2) CSE returns "201 Created" with the message body including the granted computing resource quota:
 - Case 1: the data structure resourceQuotaInfo is returned.
 - Case 2: the data structure siteResourceQuotaInfo is returned.

5.2.3.3 Computing resource request update (per-tenant)

Figure 5.2.3.3-1 shows a scenario where a service consumer requests to update the computing resource request for a tenant. It is used to update the request of the computing resource in a MEC system or an edge site that can be used for a tenant.

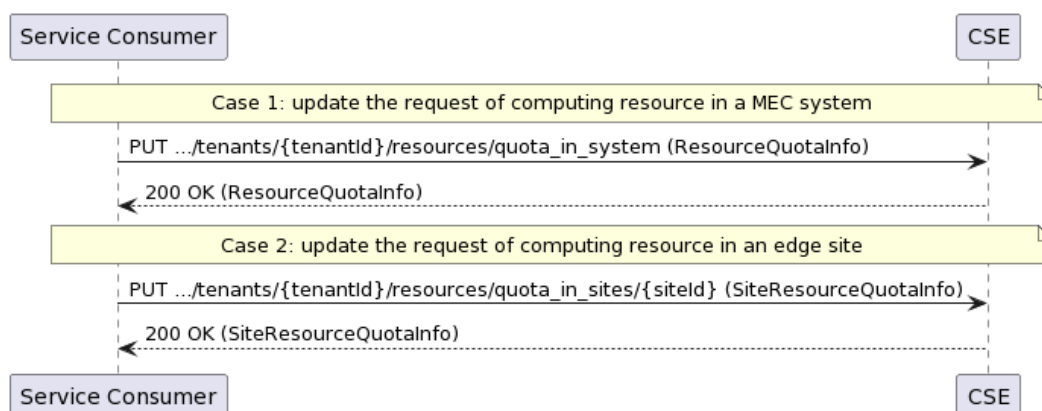


Figure 5.2.3.3-1: Flow of updating the computing resource request

Computing resource request update, as illustrated in Figure 5.2.3.3-1, consists of the following steps:

- 1) Service consumer requests the CSE to update the computing resource request for a tenant by sending a PUT request with the modified data structure specific to that computing resource request for a tenant:
 - Case 1: updating the request of computing resource in a MEC system.
 - Case 2: updating the request of computing resource in an edge site.
- 2) CSE responds with "200 OK" with the message body containing the accepted data structure:
 - Case 1: the data structure resourceQuotaInfo is returned.
 - Case 2: the data structure siteResourceQuotaInfo is returned.

5.2.3.4 Computing resource quota query (per tenant)

Figure 5.2.3.4-1 shows a scenario where a service consumer requests to query the computing resource quota for a specific tenant. It is used to query the per-tenant quota of the computing resource in a MEC system or an edge site.

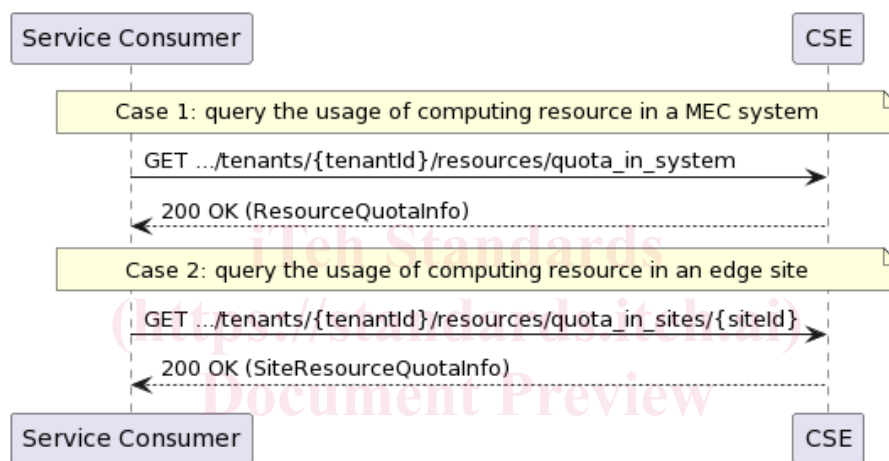


Figure 5.2.3.4-1: Flow of querying the computing resource quota

Querying the per-tenant quota of the computing resource, as illustrated in Figure 5.2.3.4-1, consists of the following steps:

- 1) Service consumer requests the CSE to query the computing resource quota for a specific tenant:
 - Case 1: query the per-tenant quota of the computing resource in a MEC system.
 - Case 2: query the per-tenant quota of the computing resource in an edge site.
- 2) CSE responds with "200 OK" with the message body containing the requested information:
 - Case 1: the data structure resourceQuotaInfo is returned.
 - Case 2: the data structure siteResourceQuotaInfo is returned.

5.2.4 REST based subscribe-notify model

5.2.4.1 Subscribing to CSE event notifications

To receive notifications on selected events, the service consumer creates a subscription to certain specific event that is available. Figure 5.2.4.1-1 shows a scenario where the service consumer uses REST based procedures to create a subscription for CSE event notifications.

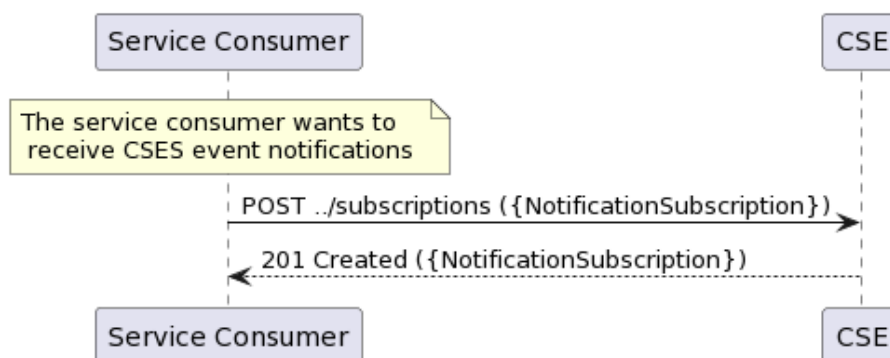


Figure 5.2.4.1-1: Flow of subscribing to CSE event notifications

Subscribing to the CSE event notifications, as illustrated in Figure 5.2.4.1-1, consists of the following steps.

When the service consumer wants to receive CSE event notifications, it creates a subscription:

- 1) The service consumer sends a POST request with the message body containing the {NotificationSubscription} data structure.
- 2) CSE sends "201 Created" response with the message body containing the data structure specific to that CSE event subscription.

5.2.4.2 Receiving notification on expiry of CSE event subscription

CSE may define an expiry time for the CSE event subscription. In case expiry time is used, the time will be included in the {NotificationSubscription} data structure that is included in the response message to the subscription. Prior the expiry, CSE will also send a notification to the service consumer that owns the subscription.

Figure 5.2.4.2-1 shows a scenario where the service consumer receives a subscription expiry notification for the existing subscription.

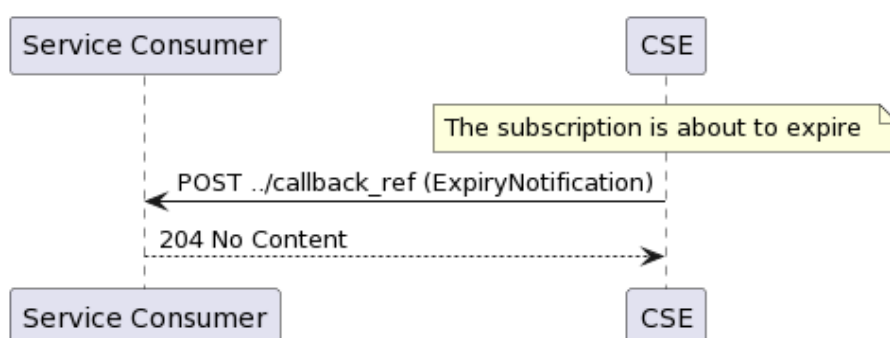


Figure 5.2.4.2-1: Flow of CSE sending a notification on expiry of the subscription