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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 contains the specification for the lifecycle management of the user applications over the UE application interface. This interface is over the Mx2 reference point between the UE application in the UE and the user application lifecycle management proxy in the mobile edge system.

The present document covers the following lifecycle management operations: user application look-up, request for the user application instantiation, and the request for the user application termination. In addition, a mechanism is specified for the exchange of lifecycle management related information between the mobile edge system and the UE application.

The intended key audience of the present document are the application developers for the mobile edge system.

NOTE: User application mobility related lifecycle management operations are not covered by the present document.

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 010-2: "Mobile Edge Computing (MEC); Mobile Edge Management; Part 2: Application lifecycle, rules and requirements management".

[2] IETF RFC 2818: "HTTP Over TLS".

NOTE: Available at <https://tools.ietf.org/html/rfc2818>.

[3] IETF RFC 5246: "The Transport Layer Security (TLS) Protocol Version 1.2".

NOTE: Available at <https://tools.ietf.org/html/rfc5246>.

[4] ETSI GS MEC 009: "Mobile Edge Computing (MEC); General principles for Mobile Edge Service APIs".

[5] IETF RFC 6749: "The OAuth 2.0 Authorization Framework".

NOTE: Available at <https://tools.ietf.org/html/rfc6749>.

[6] IETF RFC 6750: "The OAuth 2.0 Authorization Framework: Bearer Token Usage".

NOTE: Available at <https://tools.ietf.org/html/rfc6750>.

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 MEC 002: "Mobile Edge Computing (MEC); Technical Requirements".
- [i.3] OpenAPI Specification.

NOTE 1: Available at <https://github.com/OAI/OpenAPI-Specification>.

NOTE 2: OpenAPI Specification version 2.0 is recommended as it is the official release at the time of publication.

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] and the following apply:

user application lifecycle management proxy: system level functional element that allows specific and authorized requests from the UE application for the user application lifecycle management

3.2 Abbreviations

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

4 Overview

The present document specifies the API for the UE application interface to support the corresponding requirements defined for the Mobile Edge Computing in ETSI GS MEC 002 [i.2].

Clause 5 describes how the UE application interface can be used by the UE application and by the mobile edge system. It describes the information flows for the procedures over the UE application interface.

The information that is exchanged over the UE application interface is described in clause 6, providing detailed description of all information elements available on that interface.

Clause 7 describes the actual API of the UE application interface, providing detailed information how the information elements map into the RESTful API design of the interface.

Clause 8 describes the authentication, authorization and access control for the UE application interface.

5 Description of the service (informative)

5.1 Sequence diagrams

5.1.1 Introduction

The following clauses describe how the UE application interacts with the user application lifecycle management proxy over the UE application interface. The sequence diagrams that are relevant for the UE application interface are presented.

5.1.2 User application look-up

The user application look-up is the procedure for requesting the list of available user applications in the mobile edge system to the requesting UE application. The user application look-up procedure is illustrated in figure 5.1.2-1.

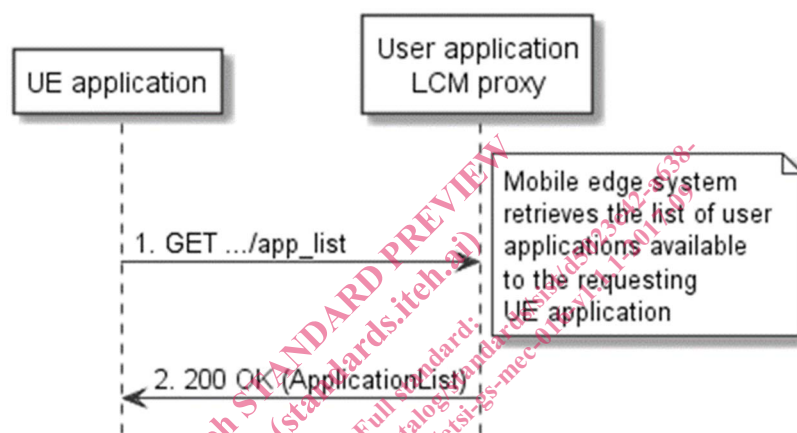


Figure 5.1.2-1: User application look-up

- 1) The UE application submits the GET request to the user application lifecycle management proxy. The user application lifecycle management proxy authorizes the request from UE application. The mobile edge system retrieves the list of user applications available to the requesting UE application.
- 2) The user application lifecycle management proxy returns the 200 OK response to the UE application, with the message body containing the data structure for the list of available user applications.

5.1.3 Application context create

The application context create is the procedure to request either to join with an available user application or to instantiate a new user application. The application context create procedure is illustrated in figure 5.1.3-1.

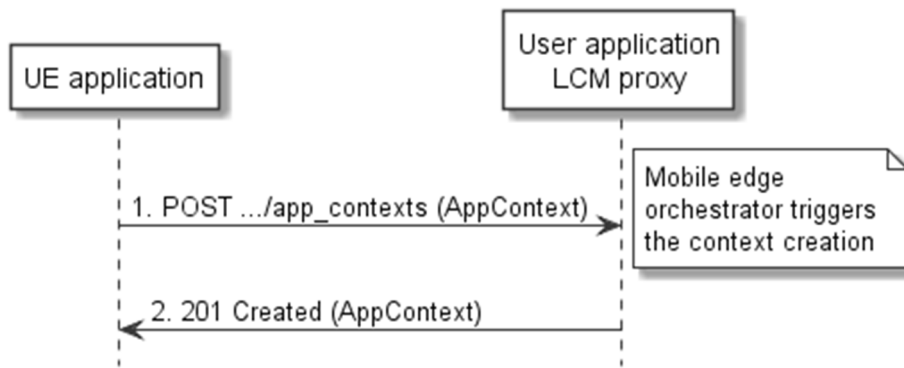


Figure 5.1.3-1: Application context create

- 1) The UE application submits the POST request to the user application lifecycle management proxy. The message body contains the data structure for the application context to be created.

The user application lifecycle management proxy authorizes the request from the UE application. The request is forwarded to the OSS. The OSS makes the decision on granting the context creation request. The mobile edge orchestrator triggers the creation of the application context in the mobile edge system.

- 2) The user application lifecycle management proxy returns the 201 Created response to the UE application with the message body containing the data structure of the created application context.

5.1.4 Application context delete

The application context delete is a procedure in which the UE application requests the deletion of the application context. The application context delete procedure is illustrated in figure 5.1.4-1.

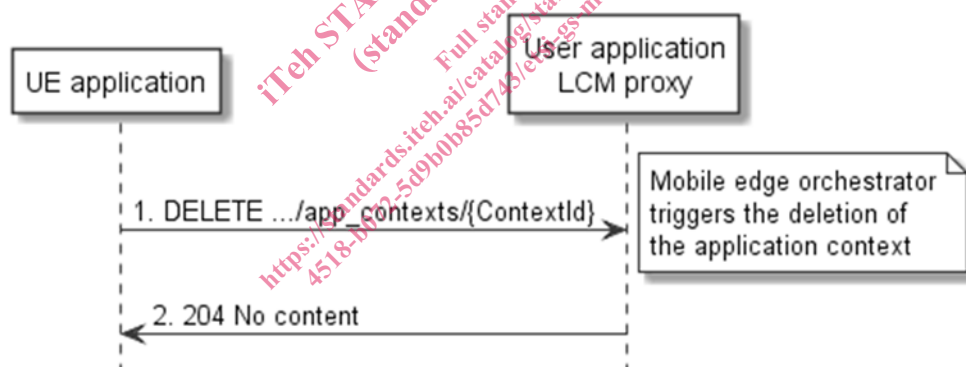


Figure 5.1.4-1: Application context delete

- 1) The UE application submits the DELETE request to the user application lifecycle management proxy for the resource to be deleted.

The user application lifecycle management proxy authorizes the request from UE application. The request is forwarded to the OSS. The OSS makes the decision on granting the deletion. The mobile edge orchestrator triggers the deletion of the application context.

- 2) The user application lifecycle management proxy returns "204 No content" response.

5.1.5 Application context update

The user application lifecycle management proxy receives an update of the ueAppContext. The procedure is illustrated in figure 5.1.5-1.

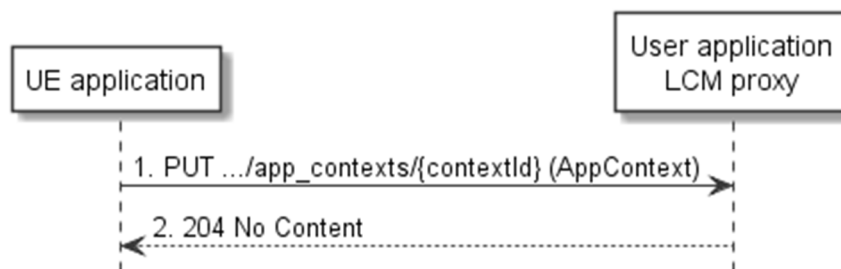


Figure 5.1.5-1: Application context update

- 1) The UE application updates the ueAppContext. The request includes the contextId with the modified data structure of AppContext where only the callback reference is allowed to be updated by the UE application.
- 2) The user application lifecycle management proxy returns a "204 No Content" response.

5.1.6 Receiving notification events

Figure 5.1.6-1 presents the scenario where the user application lifecycle management proxy sends notification events to the UE application.

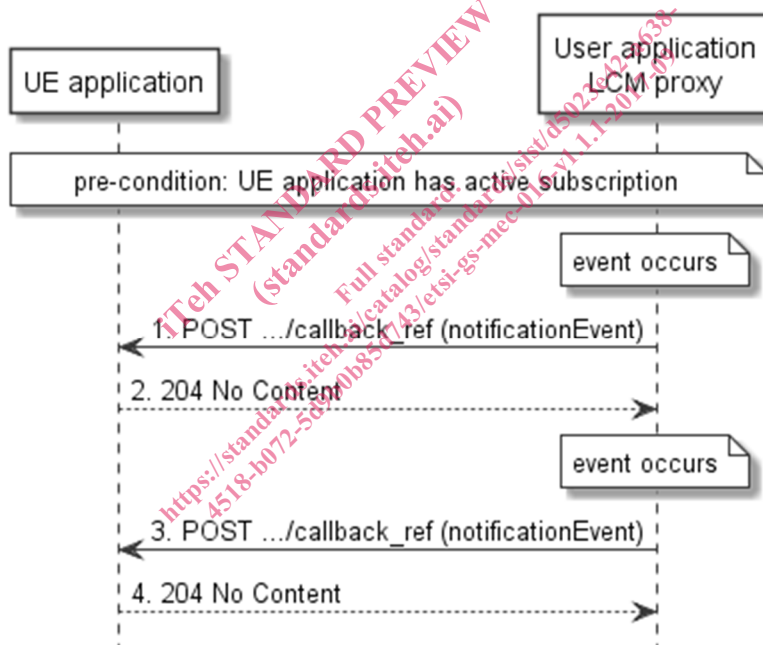


Figure 5.1.6-1: Flow of receiving notification events

Receiving notification events, as illustrated in figure 5.1.6-1, consists of the following steps:

- 1) The user application lifecycle management proxy sends a POST message to the callback reference address provided within the AppContext with the message body containing the notification event.
- 2) The UE application sends a "204 No Content" response to the user application lifecycle management proxy.

6 Data model

6.1 Introduction

The following clauses provide the description of the data model.