**3GPP TSG-CT3 Meeting #132eC3-240049**

**e-meeting, 22nd** **– 24th November 2023**

**Source: Nokia, Nokia Shanghai Bell**

**Title: Pseudo-CR on defining the resources and data model clauses of the NSCE**\_**NSAllocation API**

**Spec: 3GPP TS 29.435 V 0.1.1**

**Agenda item: 18.49 (NSCALE)**

**Document for: Agreement**

**1. Introduction**

As specified in clause 9.14 of TS 23.435, the NSCE\_NSAllocation\_Request Service API was defined in order to support the functionality of Network slice allocation in a NSaaS framework by the NSCE server based on the VAL server provided Network slice service profile.

The stage 3 definition of this API in this specification needs hence to be started.

**2. Reason for Change**

Update the definition of the new NSCE\_NSAllocation\_Request API resources and data model in the new TS 29.435.

**3. Conclusions**

N/A

**4. Proposal**

It is proposed to agree the following changes to 3GPP TS 29.435 V 0.1.1.

\* \* \* \* Start of changes \* \* \* \*

# 2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non‑specific.

- For a specific reference, subsequent revisions do not apply.

- For a non-specific reference, the latest version applies. In the case of a reference to a 3GPP document (including a GSM document), a non-specific reference implicitly refers to the latest version of that document *in the same Release as the present document*.

[1] 3GPP TR 21.905: "Vocabulary for 3GPP Specifications".

[2] 3GPP TS 29.122: "T8 reference point for Northbound Application Programming Interfaces (APIs)".

[3] 3GPP TS 29.501: "5G System; Principles and Guidelines for Services Definition; Stage 3".

[4] OpenAPI: "OpenAPI Specification Version 3.0.0", <https://spec.openapis.org/oas/v3.0.0>.

[5] 3GPP TR 21.900: "Technical Specification Group working methods".

[6] 3GPP TS 23.222: "Common API Framework for 3GPP Northbound APIs; Stage 2".

[7] 3GPP TS 29.222: "Common API Framework for 3GPP Northbound APIs; Stage 3".

[8] 3GPP TS 33.122: "Security aspects of Common API Framework (CAPIF) for 3GPP northbound APIs".

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

[10] IETF RFC 9113: "HTTP/2".

[11] IETF RFC 8259: "The JavaScript Object Notation (JSON) Data Interchange Format".

[12] IETF RFC 9457: "Problem Details for HTTP APIs".

[13] 3GPP TS 23.434: "Service Enabler Architecture Layer for Verticals (SEAL); Functional architecture and information flows".

[14] 3GPP TS 23.435: "Procedures for Network Slice Capability Exposure for Application Layer Enablement Service".

[15] 3GPP TS 29.549: "Service Enabler Architecture Layer for Verticals (SEAL); Application Programming Interface (API) specification".

[17] 3GPP TS 28.541: "Management and orchestration; 5G Network Resource Model (NRM); Stage 2 and stage 3".

\* \* \* \* Next changes \* \* \* \*

## 6.18 NSCE\_NSAllocation API

### 6.18.1 Introduction

The request URI used in each HTTP request from the VAL server towards the NSCE server shall have the structure as defined in clause 6.5 of 3GPP TS 29.549 [15] with the following clarifications:

- The <apiName>shall be "nsce-nsa".

- The <apiVersion> shall be "v1".

- The <custOpName> shall be set as described in clause 6.18.1.3.

### 6.18.2 Usage of HTTP

The provisions of clause 6.3 of 3GPP TS 29.549 [15] shall apply for the NSCE\_NSAllocation API.

### 6.18.3 Resources

There are no resources defined for this API in this release of the specification.

### 6.18.4 Custom Operations without associated resources

#### 6.18.4.1 Overview

This clause describes the structure for the Resource URIs and the resources and methods used for the service.

Figure 6.18.4.1-1 depicts the resource URIs structure for the NSCE\_NSAllocation API.



Figure 6.18.4.1-1: Custom operation URI structure of the NSCE\_NSAllocation API

Table 6.18.4.1-1 provides an overview of the custom operation and applicable HTTP methods.

Table 6.18.4.1-1: Custom operations without associated resources

|  |  |  |  |
| --- | --- | --- | --- |
| Operation name | Custom operation URI | Mapped HTTP method | Description |
| Request | /request | POST | Request the network slice allocation. |

#### 6.18.4.2 Operation: Request

##### 6.18.4.2.1 Description

The custom operation allows a VAL server to request network slice allocation from the NSCE server.

##### 6.18.4.2.2 Operation Definition

This operation shall support the request and response data structures and response code specified in table 6.18.4.2.2-1 and table 6.18.4.2.2-2.

Table 6.18.4.2.2-1: Data structures supported by the POST Request Body for this operation

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | P | Cardinality | Description |
| NwSliceAllocReq | M | 1 | Parameters to request network slice allocation |

Table 6.18.4.2.2-2: Data structures supported by the POST Response Body for this operation

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Data type | P | Cardinality | Response codes | Description |
| NwSliceAllocResp | M | 1 | 200 OK | The successful response to the request, including the network slice allocation information. |
| n/a |  |  | 307 Temporary Redirect | Temporary redirection. The response shall include a Location header field containing an alternative URI representing an alternative NSCE server to which the request should be sent.  Redirection handling is described in clause 5.2.10 of 3GPP TS 29.122 [2]. |
| n/a |  |  | 308 Permanent Redirect | Permanent redirection. The response shall include a Location header field containing an alternative URI representing an alternative NSCE server to which the request should be sent.  Redirection handling is described in clause 5.2.10 of 3GPP TS 29.122 [2]. |
| NOTE: The mandatory HTTP error status codes for the POST method listed in table 5.2.6-1 of 3GPP TS 29.122 [2] also apply. | | | | |

Table 6.18.4.2.2-3: Headers supported by 307 Response Code for this operation

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Name | Data type | P | Cardinality | Description |
| Location | string | M | 1 | An alternative URI representing an alternative NSCE server to which the request should be redirected. |

Table 6.18.4.2.2-4: Headers supported by 308 Response Code for this operation

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Name | Data type | P | Cardinality | Description |
| Location | string | M | 1 | An alternative URI representing an alternative NSCE server to which the request should be redirected. |

### 6.18.5 Notifications

None.

### 6.18.6 Data Model

#### 6.18.6.1 General

This clause specifies the application data model supported by the API.

Table 6.18.6.1-1 specifies the data types defined specifically for the NSCE\_NSAllocation API service.

Table 6.18.6.1-1: NSCE\_NSAllocation API specific Data Types

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | Section defined | Description | Applicability |
| NwSliceAllocReq | 6.18.6.2.2 | Represents the information associated with requested network slice allocation. |  |
| NwSliceAllocResp | 6.18.6.2.3 | Represents the network slice allocation information. |  |

Table 6.18.6.1-2 specifies data types re-used by the NSCE\_NSAllocation API service.

Table 6.18.6.1-2: Re-used Data Types

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | Reference | Comments | Applicability |
| LocationArea5G | 3GPP TS 29.122 [2] | Represents a location area. |  |
| NetSliceId | 6.3.6.2.15 | Represents the identification information of a network slice. |  |
| Snssai | 3GPP TS 29.571 [16] | Represents the S-NSSAI. |  |
| ServiceProfile | 3GPP TS 28.541 [17] | Represents the Network slice service profile. |  |
| SupportedFeatures | 3GPP TS 29.571 [16] | Used to negotiate the applicability of the optional features. |  |
| NOTE: Properties marked with a feature as defined in clause 5.14.6 are applicable as described in clause 5.2.7 of 3GPP TS 29.122 [2]. If no feature is indicated, the related property applies for all the features. | | | |

#### 6.18.6.2 Structured Data Types

##### 6.18.6.2.1 Introduction

##### 6.18.6.2.2 Type: NwSliceAllocReq

Table 6.18.6.2.2-1: Definition of type NwSliceAllocReq

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| valServiceId | string | M | 1 | Represents the VAL service identifier. |  |
| valUeIds | array(string) | O | 1..N | Represents the list of VAL UEs ID. |  |
| locArea | LocationArea5G | M | 1 | Identification of location area to which the request applies. (NOTE) |  |
| sliceId | NetSliceId | O | 0..1 | Represents the requested slice identifier. |  |
| nwSliceServProf | ServiceProfile | O | 0..1 | Represents the requested Network slice service requirements. |  |
| suppFeat | SupportedFeatures | C | 0..1 | Contains the list of supported features among the ones defined in clause 6.18.8.  This attribute shall be present only when feature negotiation needs to take place. |  |
| NOTE: The network area information within the “locaArea” attribute shall not be included. | | | | | |

##### 6.18.6.2.3 Type: NwSliceAllocResp

Table 6.18.6.2.3-1: Definition of type NwSliceAllocResp

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| snssai | snssai | M | 1 | Represents the allocated slice identifier |  |
| nwSliceAllocProf | ServiceProfile | M | 1 | Represents the allocated Network slice attributes |  |
| suppFeat | SupportedFeatures | C | 0..1 | Contains the list of supported features among the ones defined in clause 6.18.8.  This attribute shall be present only when feature negotiation needs to take place. |  |

#### 6.18.6.3 Simple data types and enumerations

None.

### 6.18.7 Error Handling

#### 6.18.7.1 General

HTTP error handling shall be supported as specified in clause 6.7 of 3GPP TS 29.549 [15].

In addition, the requirements in the following clauses shall apply.

#### 6.18.7.2 Protocol Errors

In this Release of the specification, there are no additional protocol errors applicable for the NSCE\_NSAllocation API.

#### 6.18.7.3 Application Errors

The application errors defined for NSCE\_NSAllocation API are listed in table 6.18.1.6.3-1.

Table 6.18.7.3-1: Application errors

|  |  |  |  |
| --- | --- | --- | --- |
| Application Error | HTTP status code | Description | Applicability |
|  |  |  |  |

### 6.18.8 Feature Negotiation

The optional features listed in table 6.18.8-1 are defined for the NSCE\_NSAllocation API. They shall be negotiated using the extensibility mechanism defined in clause 6.8 of 3GPP TS 29.549 [15].

Table 6.14.8-1: Supported Features

|  |  |  |
| --- | --- | --- |
| **Feature number** | **Feature Name** | **Description** |
|  |  |  |

### 6.14.9 Security

The provisions of clause 9 of 3GPP TS 29.549 [15] shall apply for the NSCE\_NSAllocation API.

\* \* \* \* End of changes \* \* \* \*