**3GPP TSG-CT3 Meeting #132eC3-240046**

**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**\_**NSDiagnostics 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\_NSDiagnostics Service API was defined in order to support the functionality of receiving Network Slice Diagnostics for specified events by the VAL server.

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

**2. Reason for Change**

Update the definition of the resources and data model clauses of the new NSCE\_NSDiagnostics Service API 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 \* \* \* \*

## 6.14 NSCE\_NSDiagnostics API

### 6.14.1 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-nsd".

- The <apiVersion> shall be "v1".

- The <custOpName> shall be set as described in clause 6.14.1.3.

### 6.14.2 Usage of HTTP

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

### 6.14.3 Resources

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

### 6.14.4 Custom Operations without associated resources

#### 6.14.4.1 Overview

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

Figure 6.14.4.1-1 depicts the resource URIs structure for the NSCE\_NSDiagnostics API.



Figure 6.14.4.1-1: Custom operation URI structure of the NSCE\_NSDiagnostics API

Table 6.14.4.1-1 provides an overview of the custom operation and applicable HTTP methods.

Table 6.14.4.1-1: Custom operations without associated resources

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

#### 6.14.4.2 Operation: Request

##### 6.14.4.2.1 Description

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

##### 6.14.4.2.2 Operation Definition

This operation shall support the request and response data structures and response code specified in table 6.14.4.2.2-1 and table 6.14.4.2.2-2.

Table 6.14.4.2.2-1: Data structures supported by the POST Request Body for this operation

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | P | Cardinality | Description |
| NwSliceDiagReq | M | 1 | Parameters to request network slice diagnostics. |

Table 6.14.4.2.2-2: Data structures supported by the POST Response Body for this operation

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Data type | P | Cardinality | Response codes | Description |
| NwSliceDiagRep | M | 1 | 200 OK | The successful response to the request, including the network slice diagnostics report |
| 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 6.14.4.2.2-3: 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 6.14.4.2.2-4: 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. |

### 6.14.5 Notifications

None.

### 6.14.6 Data Model

#### 6.14.6.1 General

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

Table 6.14.6.1-1 specifies the data types defined specifically for the NSCE\_NSDiagnostics API service.

Table 6.14.6.1-1: NSCE\_NSDiagnostics API specific Data Types

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | Section defined | Description | Applicability |
| NwSliceDiagReq | 6.14.6.2.2 | Represents the information associated with requested network slice diagnostics. |  |
| NwSliceDiagRep | 6.14.6.2.3 | Represents the network slice diagnostics report. |  |
| ServDgradInfo | 6.14.6.2.4 | Represents the service degraded information. |  |
| DataReport | 6.14.6.2.5 | Represents the reported data. |  |

Table 6.14.6.1.2-2 specifies data types re-used by the NSCE\_NSDiagnostics API service.

Table 6.14.6.1-2: Re-used Data Types

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | Reference | Comments | Applicability |
| DateTime | 3GPP TS 29.122 [2] | Represents a date and a time. |  |
| LocationArea5G | 3GPP TS 29.122 [2] | Represents a location area. |  |
| NetSliceId | 6.3.6.2.15 | Represents the identification information of a network slice. |  |
| 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. | | | |

#### 6.14.6.2 Structured Data Types

##### 6.14.6.2.1 Introduction

##### 6.14.6.2.2 Type: NwSliceDiagReq

Table 6.14.6.2.2-1: Definition of type NwSliceDiagReq

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| servDgradInfos | array(ServDgradInfo) | M | 1..N | Represents the service degraded information. |  |
| suppFeat | SupportedFeatures | C | 0..1 | Contains the list of supported features among the ones defined in clause 6.14.8.  This attribute shall be present only when feature negotiation needs to take place. |  |

##### 6.14.6.2.3 Type: NwSliceDiagRep

Table 6.14.6.2.3-1: Definition of type NwSliceDiagRep

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| startTime | DateTime | M | 0..1 | Represents the start time of the network slice diagnostics data availability. |  |
| stopTime | DateTime | M | 0..1 | Represents the end time of the network slice diagnostics data availability. |  |
| dataReport | array(DataReport) | M | 1..N | Represents the reported data related to network slice diagnostics |  |
| suppFeat | SupportedFeatures | C | 0..1 | Contains the list of supported features among the ones defined in clause 6.14.8.  This attribute shall be present only when feature negotiation needs to take place. |  |

##### 6.14.6.2.4 Type: ServDgradInfo

Table 6.14.6.2.4-1: Definition of type ServDgradInfo

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| valServiceId | string | M | 1 | Represents the VAL service identifier corresponding to the service which is degraded. |  |
| errors | array(Error) | M | 1..N | List of errors causing service degradation. |  |
| sliceId | NetSliceId | M | 1 | Represents the S-NSSAI corresponding to the service which is degraded. |  |
| ueIds | array(string) | O | 1..N | List of the VAL UE IDs within the VAL service for which the service degradation may corresponds to. |  |
| locArea | LocationArea5G | O | 0..1 | Identification of location area to which the request applies. (NOTE) |  |
| startTime | DateTime | M | 1 | Represents the start time of the service degradation. |  |
| stopTime | DateTime | M | 1 | Represents the end time of the service degradation. |  |
| NOTE: The network area information within the “locaArea” attribute shall not be included. | | | | | |

##### 6.14.6.2.5 Type: DataReport

Table 6.14.6.2.5-1: Definition of type DataReport

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| error | Error | M | 0..1 | Represents the error indicated in the request. |  |
| dataType | string | O | 0..1 | Represents the data type of the reported dataOutput attribute. |  |
| dataOutput | array(string) | O | 1..N | Represents the diagnostics data based on the error indicated in the request. |  |

#### 6.14.6.3 Simple data types and enumerations

##### 6.14.6.3.1 Introduction

This clause defines simple data types and enumerations that can be referenced from data structures defined in the previous clauses.

##### 6.14.6.3.2 Simple data types

The simple data types defined in table 6.14.6.3.2-1 shall be supported.

Table 6.14.6.3.2-1: Simple data types

|  |  |  |  |
| --- | --- | --- | --- |
| Type Name | Type Definition | Description | Applicability |
|  |  |  |  |

#### 6.14.6.3.3 Enumeration: Error

The enumeration Error represents the errors causing the service degradation as defined in table 6.14.6.3.3-1.

Table 6.14.6.3.3-1: Enumeration Error

|  |  |
| --- | --- |
| Enumeration value | Description |
| COMMUNICATION\_ERROR | Indicates that the service degradation is due to detected communication error. |
| RTT\_ABOVE\_LIMIT | Indicates that the service degradation is due to packet round trip time exceeding an upper threshold limit. |
| QOS\_DOWNGRADE | Indicates that the service degradation is due to Quality of Service being downgraded. |

#### 6.14.6.4 Data types describing alternative data types or combinations of data types

There are no data types describing alternative data types or combinations of data types defined for this API in this release of the specification.

#### 6.14.6.5 Binary data

##### 6.14.6.5.1 Binary Data Types

Table 6.14.6.5.1-1: Binary Data Types

|  |  |  |
| --- | --- | --- |
| Name | Clause defined | Content type |
|  |  |  |

### 6.14.7 Error Handling

#### 6.14.7.1 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.

#### 6.14.7.2 Protocol Errors

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

#### 6.14.7.3 Application Errors

The application errors defined for NSCE\_NSDiagnostics API are listed in table 6.14.7.3-1.

Table 6.14.7.3-1: Application errors

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

### 6.14.8 Feature Negotiation

The optional features listed in table 6.14.8-1 are defined for the NSCE\_NSDiagnostics 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\_NSDiagnostics API.

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