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Contents

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This Technical Specification has been produced by the 3rd Generation Partnership Project (3GPP).

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y the second digit is incremented for all changes of substance, i.e. technical enhancements, corrections, updates, etc.

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In the present document, modal verbs have the following meanings:

shall   indicates a mandatory requirement to do something

shall not   indicates an interdiction (prohibition) to do something

The constructions "shall" and "shall not" are confined to the context of normative provisions, and do not appear in Technical Reports.

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should   indicates a recommendation to do something

should not   indicates a recommendation not to do something

may   indicates permission to do something

need not   indicates permission not to do something

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can   indicates that something is possible

cannot   indicates that something is impossible

The constructions "can" and "cannot" are not substitutes for "may" and "need not".

will   indicates that something is certain or expected to happen as a result of action taken by an agency the behaviour of which is outside the scope of the present document

will not   indicates that something is certain or expected not to happen as a result of action taken by an agency the behaviour of which is outside the scope of the present document

might   indicates a likelihood that something will happen as a result of action taken by some agency the behaviour of which is outside the scope of the present document

might not indicates a likelihood that something will not happen as a result of action taken by some agency the behaviour of which is outside the scope of the present document

In addition:

is (or any other verb in the indicative mood) indicates a statement of fact

is not (or any other negative verb in the indicative mood) indicates a statement of fact

The constructions "is" and "is not" do not indicate requirements.

1 Scope

The present document specifies the protocol aspects of the SEAL service for the network slice capability enablement to support identifying network slices with capabilities for vertical applications in the 3GPP system based on 5GS management system services and 5GS network services. The protocol aspects specify the User Equipment (UE) supporting the client functionality of this SEAL service and the network supporting the server functionality of this SEAL service, where the client functionality and server functionality are specified in 3GPP TS 23.434 [2] and 3GPP TS 23.435 [13].

The present document is applicable to the application servers supporting the Vertical Application Layer server (VAL server) functionality for a specific Vertical Application Layer service (VAL service). The specification for the VAL server for a specific VAL service is out of scope of the present document.

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".

[1A] 3GPP TR 21.900: "Technical Specification Group working methods".

[2] 3GPP TS 23.434: "Service Enabler Architecture Layer for Verticals (SEAL); Functional architecture and information flows".

[2A] 3GPP TS 23.502: "Procedures for the 5G System (5GS); Stage 2".

[3] 3GPP TS 24.526: "User Equipment (UE) policies for 5G System (5GS); Stage 3".

[3A] 3GPP TS 24.546: "Configuration management - Service Enabler Architecture Layer for Verticals (SEAL); Protocol specification".

[4] 3GPP TS 24.547: "Identity management - Service Enabler Architecture Layer for Verticals (SEAL); Protocol specification".

[5] Void.

[6] IETF RFC 4825: "The Extensible Markup Language (XML) Configuration Access Protocol (XCAP)".

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

[8] IETF RFC 9110:"HTTP Semantics".

[8A] IETF RFC 9111: "HTTP Caching".

[8B] IETF RFC 9112: "HTTP/1.1".

[8C] IETF RFC 9113: "HTTP/2".

[9] Void.

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

[11]   Void.

[12]   OMA OMA-TS-XDM_Core-V2_1-20120403-A: "XML Document Management (XDM) Specification".

[13]   3GPP TS 23.435: "Procedures for Network Slice Capability Exposure for Application Layer Enablement Service".

[14]   3GPP TS 29.571: "5G System; Common Data Types for Service Based Interfaces; Stage 3".

[15]   3GPP TS 26.531: "Data Collection and Reporting; General Description and Architecture".

[16]   3GPP TS 26.532: "Data Collection and Reporting; Protocols and Formats".

[17]   3GPP TS 29.122: "T8 reference point for Northbound Application Programming Interfaces (APIs)".

[18]   3GPP TS 29.435: "Service Enabler Architecture Layer for Verticals (SEAL); Network Slice Capability Enablement (NSCE) Server Services; Stage 3".

[19]   3GPP TS 29.501: "5G System; Principles and Guidelines for Services Definition; Stage 3".

[20]   3GPP TS 29.549:" Service Enabler Architecture Layer for Verticals (SEAL); Application Programming Interface (API) specification".

[21]   3GPP TS 33.434: "Service Enabler Architecture Layer for Verticals (SEAL); Security Aspects".

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

3   Definitions of terms, symbols and abbreviations

3.1   Terms

For the purposes of the present document, the terms given in 3GPP TR 21.905 [1] and the following apply. A term defined in the present document takes precedence over the definition of the same term, if any, in 3GPP TR 21.905 [1].

SEAL network slice capability enablement client: An entity that provides the client side functionalities corresponding to the SEAL network slice capability enablement service.

SEAL network slice capability enablement server: An entity that provides the server side functionalities corresponding to the SEAL network slice capability enablement service.

For the purposes of the present document, the following terms and definitions given in 3GPP TS 23.434 [2] apply:

   SEAL client
   SEAL server
   SEAL service
   VAL server
   VAL service
   VAL user
   Vertical
   Vertical application

For the purposes of the present document, the following terms and definitions given in 3GPP TS 26.532 [16] apply:

   Data Collection Client
   Data Collection AF

3.2 Abbreviations

For the purposes of the present document, the abbreviations given in 3GPP TR 21.905 [1] and the following apply. An abbreviation defined in the present document takes precedence over the definition of the same abbreviation, if any, in 3GPP TR 21.905 [1].

5GCN	5G Core Network
AF	Application Function
DNN	Data Network Name
EDN	Edge Data Network
ETN	Event Triggered Network
HTTP	Hypertext Transfer Protocol
KQI	Key Quality Indicator
NSCE	Network Slice Capability Enablement
PCF	Policy Control Function
QoE	Quality of Experience
SEAL	Service Enabler Architecture Layer
SNSCE-C	SEAL Network Slice Capability Enablement Client
SNSCE-S	SEAL Network Slice Capability Enablement Server
S-NSSAI	Single Network Slice Selection Assistance Information
UE	User Equipment
URSP	UE Route Selection Policy
VAL	Vertical Application Layer
XCAP	XML Configuration Access Protocol
XDMS	XML Document Management Server
XDMC	XML Document Management Server
XML	Extensible Markup Language

4 General description

The present document enables a SEAL Network Slice Capability Enablement Client (SNSCE-C) and a Vertical Application Layer server (VAL server) that communicate with a SEAL Network Slice Capability Enablement Server (SNSCE-S). The network slice capability enablement is a SEAL service that provides the network slice capability enablement related capabilities to one or more vertical applications.

In a trusted network, the network slice capability enablement can be used to re-map a vertical application to different slices based on the configuration of the SNSCE-S for updating the application traffic. Therefore, the SNSCE-S acts as an Application Function (AF) and influences the UE's URSP rules for the application traffic by providing guidance on the route selection descriptors S-NSSAI and DNN.

NOTE: In this release, S-NSSAI and DNN are only used as the route selection descriptor.

5 Functional entities

5.1 SEAL network slice capability enablement client (SNSCE-C)

The SNSCE-C functional entity acts as the application client for managing network slice capabilities.

To be compliant with the HTTP procedures in the present document the SNSCE-C:

a) shall support the role of XCAP client as specified in IETF RFC 4825 [6];

b) shall support the role of XDMC as specified in OMAOMA-TS-XDM_Core-V2_1 [12]; and

c) shall support route selection descriptors configuration e.g. S-NSSAI and DNN adaptation due to new requirements or change of requirements for one or more application.

5.2 SEAL network slice capability enablement server (SNSCE-S)

The SNSCE-S is a functional entity which provides slice capability enablement to administer the network slice for one or more vertical applications.

To be compliant with the HTTP procedures in the present document the SNSCE-S shall:

    a) shall support the role of XCAP server as specified in IETF RFC 4825 [6];

    b) shall support the role of XDMS as specified in OMA OMA-TS-XDM_Core-V2_1 [12]; and

    c) shall provide the 5GC network a guidance for route selection descriptors to assign new S-NSSAI and DNN.

6 Void

7 Network slice capability enablement services

7.1 General

The clause describes the procedures of the network slice capability enablement services.

Table 7.1-1 summarizes the SBI services produced by the SNSCE-S APIs defined for this specification.

Table 7.1-1: API Descriptions

Service Name	Clause	Description	OpenAPI Specification File	apiName	Annex
ETN_Configuration	8.1.1	Event triggered network slice configuration	TS24549_ETC_Configuration.yaml	su_nsc	C.2
NSCE_SliceInfo	8.3.1	Notification of slice information	TS24549_NSCE_SliceInfo.yaml	nsce_sliceinfo	C.3

7.2 Network slice adaptation service

7.2.1 Service description

7.2.1.1 Overview

The network slice adaptation procedure is a SEAL service of providing network slice capability enablement capabilities for network slice re-mapping from one VAL service to one or more other VAL services, according to 3GPP TS 23.434 [2] and 3GPP TS 23.435 [13]. The network server entity, providing the functionality for the network slice re-mapping, acts as an AF communicating with 5GCN to provide guidance to update and modify the S-NSSAIs and the DNNs of the route selection descriptors of the URSP rules, 3GPP TS 24.526 [3], for one or more application traffics per UE.

    NOTE: In this release, S-NSSAI and DNN are only used as the route selection descriptor.

7.2.2 Service operations

7.2.2.1 Introduction

The service operation, defined for ETN_Configuration API for network capability configuration, is shown in table 7.2.2.1-1.

Table 7.2.2.1-1: Operations for network capability configuration

Service operation name	Description	Initiated by
Event_Triggered_Network_Slice_Adaptation	This service operation is used by SNSCE-C to trigger the event of the network slice configuration.	SNSCE-C

7.2.2.2   Event_Triggered_Network_Slice_Adaptation

7.2.2.2.1   General

These clauses describe the procedures on the SNSCE-C and SNSCE-S side when an event triggered request for network slice configuration is sent by the SNSCE-C to the SNSCE-S. The event triggered network slice configuration request causes a network slice adaptation and sent by the SNSCE-C acting as application client requesting a new or a change in network slice configuration.

7.2.2.2.2   Network slice adaptation using Event_Triggered_Network_Slice_Adaptation service operation

To request for the network slice adaptation, the SNSCE-C shall send an HTTP PUT request message according to procedures specified in IETF RFC 9110 [8]. In the HTTP PUT request message, the SNSCE-C:

   NOTE 1: How the requested network slice is known by the SNSCE-C is out of scope of this release.

   a) shall set the Request-URI to the URI identifying the SNSCE-S according to the pattern"{apiRoot}/su_nsc/val-services/{valServiceId}/configurations/{configurationId}", where:

      1) {valServiceId} set to the identity of the VAL application; and

      2) {configurationId}set to the identity of slice adaptation configuration,

   b) shall set the "Host" header field to the URI identifying of SNSCE-S and the port information;

   c) shall include an Authorization header field with the "Bearer" authentication scheme set to an access token of the "bearer" token type as specified in IETF RFC 6750 [7]; and

   d) shall include a body containing the data type NwSliceAdptEvent as defined in clause 8.1.1.6.2.2,

Upon receipt an HTTP PUT request:

   a) with a Request-URI according to "{apiRoot}/su_nsc/val-services/{valServiceId}/configurations/{configurationId} identifying:

      1) "valServiceId" identifying the VAL application; and

      2) "configurationId" identifying the slice adaptation configuration; and

   b) with a body containing the data type NwSliceAdptEvent as defined in clause 8.1.1.6.2.2, the SNSCE-S shall determine the sender identity of the sender is authorized or not as specified in 3GPP TS 24.547 [4].

If:

   a) the sender is not an authorized user, the SNSCE-S shall respond with an HTTP 403 (Forbidden) response message and avoid the rest of steps; or

   b) the sender is an authorized user, the SNSCE-S:

      1) shall attempt to update the network S-NSSAI for one or more VAL UEs with the identities listed in the VAL UE list for the VAL service, identified by VAL service ID by using the parameters for requested S-NSSAI, requested DNN, and requested application requirements from the HTTP PUT request message;

   NOTE 2: To update the application traffic, the SNSCE-S can act as an AF and use the reference point N33 as shown in 3GPP TS 23.434 [2] to influence a VAL UE's URSP rules for the application traffic by providing a guidance on the route selection parameters S-NSSAI and DNN as described in clause 4.15.6.10 of 3GPP TS 23.502 [2A].

NOTE 3: Whether and how the SNSCE-S can update the network S-NSSAI for all VAL UEs for the VAL service, is out of the scope of this release.

2) shall send the updated network S-NSSAI and any DNN to the PCF, if the update is successful, 3GPP TS 23.434 [2]; and

3) shall send:

i) if the request is successfully processed, an HTTP 204 No Content response message indicating the successful status; or

ii) if errors occur when processing the request, request, an appropriate error response as specified in clause 8.1.1.7.

7.3 Retrieval of data and information

7.3.1 Service description

7.3.1.1 Overview

The network slice capability enablement procedures is a SEAL service of providing slice capabilities based on 5GS management system services and 5GS network services, according to 3GPP TS 23.435 [13] e.g., retrieving the KQI data of services, the QoE data, the end user information and fault reports from NSCE client, notifying the slice modification and delivering slice information to NSCE client.

The procedures on how the NSCE server retrieves network and service related KQI or performance data, QoE data, and fault information from the NSCE client apply for the following NSCE procedures:

a) network slice related performance and analytics monitoring job creation request procedure specified in 3GPP TS 23.435 [13] clause 9.7.2.1;

b) information collection from NSCE server(s) subscribe request and response procedure specified in 3GPP TS 23.435 [13] clause 9.8.2.1;

c) network slice fault management capability exposure procedure specified in 3GPP TS 23.435 [13] clause 9.15.2.1; and

d) slice requirements verification and alignment capability exposure procedure specified in 3GPP TS 23.435 [13] clause 9.16.2.1.

The procedures at the SNSCE-Cand SNSCE-S side follow the mechanism specified in clause 5.5 of 3GPP TS 26.531 [15] and HTTP procedures specified in clause 4.3 and clause 7 of 3GPP TS 26.532 [16]. In the procedures, the SNSCE-C acts as the data collection client, and the SNSCE-S acts as data collection AF.

7.3.2 Service operations

7.3.2.1 Introduction

The service operations, defined for the APIs of data collection and reporting service specified in 3GPP TS 26.532 [16], for retrieval of data and information, is shown in table 7.3.2.1-1.

Table 7.3.2.1-1: Operations for retrieval of data and information

Service operation name	Description	Initiated by
Ndcaf_DataReporting_CreateSession	This service operation is used by SNSCE-C to obtain the configuration the requested data and information for retrieval.	SNSCE-C
Ndcaf_DataReporting_RetrieveSession	This service operation is used by SNSCE-C to update the configuration of the requested data and information for retrieval.	SNSCE-C
Ndcaf_DataReporting_Report	This service operation is used by SNSCE-C to report the requested data and information for retrieval.	SNSCE-C

7.3.2.2 Ndcaf_DataReporting_CreateSession

7.3.2.2.1 General

These clauses describe the procedures on the SNSCE-C and SNSCE-S side when a request for obtaining the configuration of the requested data and information for retrieval, is sent by the SNSCE-C to the SNSCE-S.

7.3.2.2.2 Configuration of the requested data and information retrieval using Ndcaf_DataReporting_CreateSession service operation

In order to obtain the configuration of requested data and information for retrieval, the SNSCE-C shall send an HTTP POST request message to invoke Ndcaf_DataReporting_CreateSession service operation as described in clause 3.3.2.2 and clause 7.2.2.3.1 of 3GPP TS 26.532 [16].

Upon receipt an HTTP POST request message on Ndcaf_DataReporting_CreateSession service operation, the SNSCE-S shall send HTTP "201 Created" status code and provide the configuration of requested data and information for retrieval as described in clause 4.3.2.2 and clause 7.2.2.3.1 of 3GPP TS 26.532 [16].

7.3.2.3 Ndcaf_DataReporting_RetrieveSession

7.3.2.3.1 General

These clauses describe the procedures on the SNSCE-C and SNSCE-S side when a request for updating the configuration of the requested data and information for retrieval, is sent by the SNSCE-C to the SNSCE-S.

7.3.2.3.2 Updated configuration of the requested data and information retrieval using Ndcaf_DataReporting_RetrieveSession service operation

In order to update the configuration of requested data and information for retrieval, the SNSCE-C may send an HTTP GET request message to invoke Ndcaf_DataReporting_RetrieveSession service operation as described in clause 4.3.2.3 and clause 7.2.3.3.1 of 3GPP TS 26.532 [16].

Upon receipt an HTTP GET request message on Ndcaf_DataReporting_RetrieveSession service operation, the SNSCE-S shall send HTTP "201 Created" status code and provide the updated configuration, if available, as described in clause 4.3.2.3 and clause 7.2.3.3.1 of 3GPP TS 26.532 [16].

7.3.2.4 Ndcaf_DataReporting_Report

7.3.2.4.1 General

These clauses describe the procedures on the SNSCE-C and SNSCE-S side when a request for reporting the configuration of the requested data and information for retrieval, is sent by the SNSCE-C to the SNSCE-S.

7.3.2.4.2   Reporting the requested data and information retrieval using
                 Ndcaf_DataReporting_Report service operation

After the configuration, the SNSCE-C shall send an HTTP POST request message in accordance with this configuration to invoke Ndcaf_DataReporting_Report service operation as described in clause 4.3.3 and clause 7.2.3.4.1 of 3GPP TS 26.532 [16].

Upon receipt an HTTP POST request message on Ndcaf_DataReporting_Report service operation, the SNSCE-S shall send HTTP "204 No Content" status code and may provide the updated configuration as described in clause 4.3.3 and clause 7.2.3.4.1 of 3GPP TS 26.532 [16].

7.4   Notification of slice information service

7.4.1   Service description

Notification of slice information service allows the SNSCE-S to notify the SNSCE-C of the network slice information to extend the slice availability for the VAL service continuity.

7.4.2   Service operations

7.4.2.1   Introduction

The service operations defined for the notification of slice information service, are shown in table 7.4.2.1-1.

Table 7.4.2.1-1: Operations of slice information service

Service Operation Name	Description	Initiated by
EDN_Slice_Information	This service operation is used by SNSCE-S to notify SNSCE-C the information for the required network slice for the VAL service continuity in the target EDN service area if the SNSCE-C is expected to leave the source EDN service area.	e.g. SNSCE-S
InterPLMN_Slice_Information	This service operation is used by SNSCE-S to notify SNSCE-C the information for the required network slice for the VAL service continuity in the target PLMN at the time of inter-PLMN mobility.	e.g. SNSCE-S

7.4.2.2   EDN_Slice_Information

7.4.2.2.1   General

This service operation is used by the SNSCE-S to notify the SNSCE-C the slice network information to extend the VAL service continuity in the target EDN service area if the SNSCE-C is expected to leave the source EDN service area due to its mobility.

7.4.2.2.2   Subscribe

This is a pseudo operation, the SNSCE-C does not actually provide Subscribe service operation through the service. The notification URI is provided during the configuration update event subscription message specified in 3GPP TS 24.546 [3A] clause 6.2.2.1.2 and clause A.1.2.

7.4.2.2.3   Notification of slice information using EDN_Slice_Information service operation

To notify the SNSCE-C of the network slice information, which is to be used to extend the VAL service continuity in the target EDN service area if the SNSCE-C is expected or predicted to leave the source EDN service area due to its mobility, the SNSCE-S shall send an HTTP POST request to {callbackUri}, with the request body containing the EdgeSCRequirementNotif data structure, defined in 3GPP TS 29.435 [18].

Upon receipt of the HTTP POST request, the SNSCE-C shall return to the SNSCE-S:

a) if success, an HTTP 204 No Content status code; or

b) if failure, an appropriate HTTP status code indicating the error.

7.4.2.3   InterPLMN_Slice_Information

7.4.2.3.1   General

This service operation is used by the SNSCE-S to notify the SNSCE-C the slice network information to extend the VAL service continuity in the target PLMN at the time of inter-PLMN mobility.

7.4.2.3.2   Subscribe

This is a pseudo operation, the SNSCE-C does not actually provide Subscribe service operation through the service. The notification URI is provided during the configuration update event subscription message specified in 3GPP TS 24.546 [3A] clause 6.2.2.1.2 and clause A.1.2.

7.4.2.3.3   Notification of slice information using InterPLMN_Slice_Information service operation

To notify the SNSCE-C of the network slice information, which is to be used to extend the VAL service continuity in the target PLMN during the inter PLMN mobility, the SNSCE-S shall an HTTP POST request to {callbackUri}, with the request body containing the InterPlmnServContNotif data structure, defined in 3GPP TS 29.435 [18].

Upon receipt of the HTTP POST request, the SNSCE-C shall return to the SNSCE-S:

a) if success, an HTTP 204 No Content status code; or

b) if failure, an appropriate HTTP status code indicating the error.

7.5   Network slice information delivery

7.5.1   Service description

Network slice information delivery is a SEAL service reusing the notification procedure to send the allocated network slice information to a VAL UE. The notification of the allocated network slice information is sent by the SNSCE-S to the SNSCE-C and is then forwarded to the VAL client by the SNSCE-C.

7.5.2   Service operations

7.5.2.1   Introduction

The service operations, defined for SliceInfoDelivery API for notification of the allocated network slice information, is shown in table 7.5.2.1-1.

Table 7.5.2.1-1: Operations for slice information delivery

Service operation name	Description	Initiated by
Slice_Info_Delivery	This service operation is used by SNSCE-S to notify the SNSCE-C of the slice the allocated network slice information.	SNSCE-S

7.5.2.2 Slice_Info_Delivery

7.5.2.2.1 General

These clauses describe the procedures after network slice allocation in NSaaS model, a notification of the allocated network slice information, is sent by the SNSCE-S to the SNSCE-C. The notification helps the VAL UE to obtain the allocated network slice information for the VAL application identified by VAL service ID.

7.5.2.2.2 Network slice information delivery using Slice_Info_Delivery service operation

To send the allocated network slice information to the SNSCE-C, the SNSCE-S shall send an HTTP POST request message according to procedures specified in IETF RFC 9110 [8] and according to pattern Callback-URI, defined in clause A.1.2 of 3GPP TS 24.546 [3A] with a body containing the data type SliceInfoDelivery as defined in clause TBD, serialized into a JavaScript Object Notation (JSON) structure as specified in IETF RFC 8259 [10].

Upon receipt of the HTTP POST request, the SNSCE-C:

a) if the request is successfully processed, shall send an HTTP 204 No Content message indicating the successful response; or

b) if errors occur when processing the request, an appropriate error response as specified in clause 8.1.1.7.

8 API Definitions

8.1 Event triggered network slice configuration APIs

8.1.1 ETN_Configuration API

8.1.1.1 Introduction

The information in this clause provides a description for the HTTP parameters transmitted by the SNSCE-C to the SNSCE-S to trigger a network slice configuration such as the network slice adaptation for one or more VAL UEs within a VAL service.

The HTTP URIs used in HTTP protocol for the event triggered network (ETN) slice configuration service shall have the resource URI structure as defined in clause 5.2.4 of 3GPP TS 29.122 [17]:

{apiRoot}/<apiName>/<apiVersion>/<apiSpecificSuffixes>

where:

a) {apiRoot} shall be set as described in clause 5.2.4 of 3GPP TS 29.122 [17];

b) <apiName> shall be "su_nsc";

c) <apiVersion> shall be "v1"; and

d) <apiSpecificSuffixes> shall be set as described in clause 8.1.1.3.

8.1.1.2 Usage of HTTP

8.1.1.2.1 General

For SNSCE service configuration API, support of HTTP/1.1 (IETF RFC 9110 [8], IETF RFC 9111 [8A] and IETF RFC 9112 [8B]) over TLS is mandatory and support of HTTP/2 (IETF RFC 9113 [8C]) over TLS is recommended.

A functional entity desiring to use HTTP/2 shall use the HTTP upgrade mechanism to negotiate applicable HTTP version as described in IETF RFC 9113 [8C].

8.1.1.2.2 Content type

The bodies of HTTP request and successful HTTP responses shall be encoded in JSON format (see
IETF RFC 8259 [10]).

The MIME media type that shall be used within the related Content-Type header field is "application/json", as defined
in IETF RFC 8259 [10].

8.1.1.3 Resources

8.1.1.3.1 Overview

The Resource URI structure of the ETN_Configuration API is as shown in Figure 8.1.1.3.1-1:
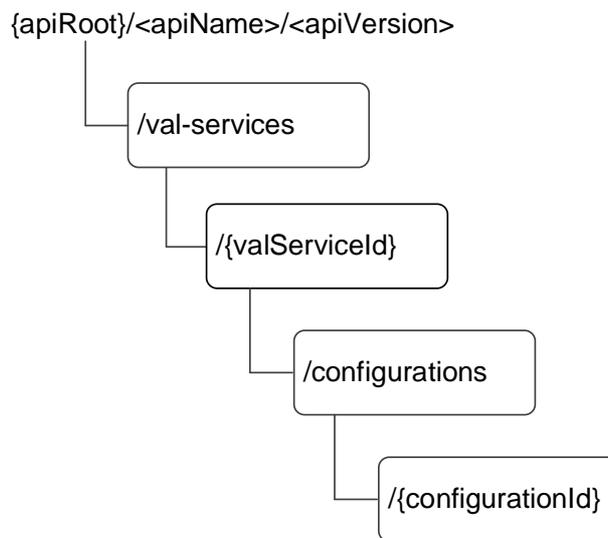
Figure 8.1.1.3.1-1: Resource URI structure of the ETN_Configuration API

Table 8.1.1.3.1-1 provides an overview of the resources and applicable HTTP method.

Table 8.1.1.3.1-1: Resources and method overview

Resource name	Resource URI	HTTP method	Description
Configuration	/val-services/{valServiceId}/configurations/{configurationId}	PUT (NOTE)	Performs configuration.
NOTE: In this release, the only configuration is the slice adaptation as described in 3GPP TS 23.434 [2].			

8.1.1.3.2 Resource: Configuration

8.1.1.3.2.1 Description

The Configuration resource allows an SNSCE-C a specific configuration identified by the identity "configurationId".

8.1.1.3.2.2 Resource definition

Resource URI: **{apiRoot}/su_nsc/<apiVersion>/val-services/{valServiceId}/configurations/{configurationId}**

This resource shall support the resource URI variables defined in the table 8.1.1.3.2.2-1.

Table 8.1.1.3.2.2-1: Resource URI variables for this resource

Name	Data Type	Definition
apiRoot	string	See clause 5.2.4 of 3GPP TS 29.122 [17].
apiVersion	string	See clause 5.2.4 of 3GPP TS 29.122 [17].
valServiceId	string	Identifier of a VAL service.
configurationId	string	Identifier of a configuration

8.1.1.3.2.3   Resource standard methods

8.1.1.3.2.3.1   PUT

This operation is for triggering network slice adaptation event and shall support the URI query parameters specified in table 8.1.1.3.2.3.1-1.

Table 8.1.1.3.2.3.1-1: URI query parameters supported by the PUT method on this resource

Name	Data type	P	Cardinality	Description	Applicability
n/a					

This method shall support the request data structures specified in table 8.1.1.3.2.3.1-2and the response data structures and response codes specified in table 8.1.1.3.2.3.1-3.

Table 8.1.1.3.2.3.1-2: Data structures supported by the PUT Request Body on this resource

Data type	P	Cardinality	Description
NwSliceAdptEvent	M	1	Triggering the network slice adaptation event.

Table 8.1.1.3.2.3.1-3: Data structures supported by the PUT Response Body on this resource

Data type	P	Cardinality	Response codes	Description
n/a	M	1	204 No Content	The configuration of the VAL UEs with VAL UE List within the VAL service identified by the value "valServiceId" and for the network slice configuration identified by the value "configurationId", was successful.
n/a			307 Temporary Redirect	Temporary redirection. The response shall include a Location header field containing an alternative URI representing an alternative SNSCE-S to which the request should be sent. Redirection handling is described in clause 5.2.10 of 3GPP TS 29.122 [17].
n/a			308 Permanent Redirect	Permanent redirection. The response shall include a Location header field containing an alternative URI representing an alternative SNSCE-S to which the request should be sent. Redirection handling is described in clause 5.2.10 of 3GPP TS 29.122 [17].
NOTE: The mandatory HTTP error status codes for the PUT method listed in table 5.2.6-1 of 3GPP TS 29.122 [17] shall also apply.				

Table 8.1.1.3.2.3.1-3: 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 8.1.1.3.2.3.1-4: 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.

8.1.1.3.2.4   Resource Custom Operations

None.

8.1.1.4   Custom Operations without associated resources

There are no custom operations without associated resources defined for this API in this release of the specification.

8.1.1.5   Notifications

None.

8.1.1.6   Data model

8.1.1.6.1   General

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

Table 8.1.1.6.1-1 specifies the data types defined for the ETN_Configuration API.

Table 8.1.1.6.1-1: ETN_Configuration API specific Data Types

Data type	Clause defined	Description	Applicability
NwSliceAdptEvent	8.1.1.6.2.2	Event triggered network slice adaptation	

Table 8.1.1.6.1-2 specifies data types re-used by the ETN_Configuration API service.

Table 8.1.1.6.1-2: Re-used Data Types

Data type	Reference	Comments	Applicability
Dnn	3GPP TS 29.571 [14]	Used to Identify a DNN.	
DurationSec	3GPP TS 29.122 [17]	Represents a period of time in units of seconds.	
LocationArea	3GPP TS 29.122 [17]	Represents location information.	
RatType	3GPP TS 29.571 [14]	Identifies the RAT Type.	
Snssai	3GPP TS 29.571 [14]	Used to Identify the S-NSSAI.	
ValTargetUe	3GPP TS 29.549 [20]	Used to indicate either VAL User ID or VAL UE ID.	

8.1.1.6.2   Structured data types

8.1.1.6.2.1   Introduction

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

8.1.1.6.2.2   Type: NwSliceAdptEvent

Table 8.1.1.6.2.2-1: Definition of type NwSliceAdptEvent

Attribute name	Data type	P	Cardinality	Description	Applicability
valUeIds	array(ValTargetUe)	M	1..N	One or more VAL UEs, for which a given event triggered network slice configuration applies. The VAL service is identified by the value "valServiceId" and the network slice configuration is identified by the value "configurationId".	
sliceId	Snssai	M	1	The identifier of the slice or slice instance, to which the event triggered network slice adaptation is applied.	
dnn	Dnn	O	0..1	Requested DNN	
appReqs	AppReqs	O	0..1	Requirement related to the requested application	

8.1.1.6.2.3   Type: AppReqs

Table 8.1.1.6.2.3-1: Definition of type AppReqs

Attribute name	Data type	P	Cardinality	Description	Applicability
timeIntervals	array(DurationSec)	O	1..N	The requested time intervals as the start time and end time.	
area	LocationArea	O	0..1	The requested geographical or service area.	
ratType	RatType	O	0..1	The requested access type.	
preservIpAdd	boolean	O	0..1	Indication to preserve the UE IP address. If it is not requested, it is included as set to "false". Otherwise, the UE IP address is preserved.	

Editor's note [CR#0017, WID: NSCALE]:   Whether to contain the UE IP address preservation indicator depends on the clarification from SA6.

8.1.1.6.3   Simple data types and enumerations

None.

8.1.1.6.4   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.

8.1.1.6.5   Binary data

8.1.1.6.5.1   Binary Data Types

Table 8.1.1.6.5.1-1: Binary Data Types

Name	Clause defined	Content type

8.1.1.7   Error Handling

8.1.1.7.1   General

HTTP error handling shall be supported as specified in clause 5.2.6 of 3GPP TS 29.122 [17].

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

8.1.1.7.2 Protocol Errors

In this release of the specification, there are no additional protocol errors applicable for the ETN_Configuration API.

8.1.1.7.3 Application Errors

The application errors defined for ETN_Configuration API are listed in table 8.1.1.7.3-1.

Table 8.1.1.7.3-1: Application errors

Application Error	HTTP status code	Description	Applicability

8.1.1.8 Feature Negotiation

General feature negotiation procedures are defined in clause 5.2.7 of 3GPP TS 29.122 [17]. Table 8.1.1.8-1 lists the supported features for ETN_ServiceConfiguration API.

Table 8.1.1.8-1: Supported Features

Feature number	Feature Name	Description

8.1.1.9 Security

8.1.1.9.1 General

Usage of HTTP over TLS and the TLS profiles shall be as specified in clause 5.1.1.4 of 3GPP TS 33.434 [21].

8.2 Data collection and reporting APIs

8.2.1 Ndcaf_DataReporting API

3GPP TS 26.532 [16] specifies Ndcaf_DataReporting API for Ndcaf_DataReporting service which includes:

- Ndcaf_DataReporting_CreateSession service operation;

- Ndcaf_DataReporting_RetrieveSession service operation; and

- Ndcaf_DataReporting_Report service operation.

8.3 Service continuity notification APIs

8.3.1 NSCE_SliceInfo API

8.3.1.1 Introduction

The NSCE_SliceInfo service shall use the NSCE_SliceInfo API.

The API URI of the NSCE_SliceInfo API shall have the resource URI structure as defined in clause 5.2.4 of 3GPP TS 29.122 [17]:

> **{apiRoot}/<apiName>/<apiVersion>/<apiSpecificSuffixes>**

where:

a) {apiRoot} shall be set as described in clause 5.2.4 of 3GPP TS 29.122 [17];

b) <apiName> shall be "nsce_sliceinfo";

c) <apiVersion> shall be "v1"; and

d) <apiSpecificSuffixes> shall be set as described in clause 8.3.1.3.

8.3.1.2   Usage of HTTP

8.3.1.2.1   General

For NSCE_SliceInfo API, support of HTTP/1.1 (IETF RFC 9110 [8], IETF RFC 9111 [8A] and IETF RFC 9112 [8B]) over TLS is mandatory and support of HTTP/2 (IETF RFC 9113 [8C]) over TLS is recommended.

A functional entity desiring to use HTTP/2 shall use the HTTP upgrade mechanism to negotiate applicable HTTP version as described in IETF RFC 9113 [8C].

8.3.1.2.2   Content type

The bodies of HTTP request and successful HTTP responses shall be encoded in JSON format (see IETF RFC 8259 [10]).

The MIME media type that shall be used within the related Content-Type header field is "application/json", as defined in IETF RFC 8259 [10].

8.3.1.3   Resources

8.3.1.3.1   Overview

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

The structure of the Resource URIs of the NSCE_SliceInfo API is shown in Figure 8.3.1.3.1-1.
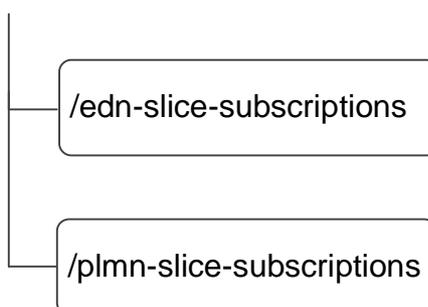
Figure 8.3.1.3.1-1: Resource URIs structure of the NSCE_SliceInfo API

Table 8.3.1.3.1-1 provides an overview of resources and applicable HTTP methods defined for the NSCE_SliceInfo API.

Table 8.3.1.3.1-1: Resources and methods overview

Resource purpose/name	Resource URI (relative path after API URI)	HTTP method or custom operation	Description (service operation)
EDN Slice Subscriptions (Collection)	/edn-slice-subscriptions	POST	This is a pseudo resource.
PLMN Slice Subscriptions (Collection)	/plmn-slice-subscriptions	POST	This is a pseudo resource.

8.3.1.3.2 Resource: EDN Slice Subscriptions

8.3.1.3.2.1 Description

This is a pseudo resource.

8.3.1.3.2.2 Resource Definition

Resource URI: **{apiRoot}/nsce_sliceinfo/<apiVersion>/edn-slice-subscriptions**

This resource shall support the resource URI variables defined in table 8.3.1.3.2.2-1.

Table 8.3.1.3.2.2-1: Resource URI variables for this resource

Name	Data type	Definition
apiRoot	string	See clause 8.3.1.1

8.3.1.3.2.3 Resource Standard Methods

8.3.1.3.2.3.1 POST

This method shall support the URI query parameters specified in table 8.3.1.3.2.3.1-1.

Table 8.3.1.3.2.3.1-1: URI query parameters supported by the POST method on this resource

Name	Data type	P	Cardinality	Description	Applicability
n/a					

This method shall support the request data structures specified in table 8.3.1.3.2.3.1-2 and the response data structures and response codes specified in table 8.3.1.3.2.3.1-3.

Table 8.3.1.3.2.3.1-2: Data structures supported by the POST Request Body on this resource

Data type	P	Cardinality	Description
Any			

Table 8.3.1.3.2.3.1-3: Data structures supported by the POST Response Body on this resource

Data type	P	Cardinality	Response codes	Description
n/a				
NOTE: The mandatory HTTP error status codes for the POST method listed in table 5.2.6-1 of 3GPP TS 29.122 [17] shall also apply.				

8.3.1.3.2.4 Resource Custom Operations

None.

8.3.1.3.3 Resource: PLMN Slice Subscriptions

8.3.1.3.3.1 Description

This is a pseudo resource.

8.3.1.3.3.2 Resource Definition

Resource URI: **{apiRoot}/nsce_sliceinfo/<apiVersion>/plmn-slice-subscriptions**

This resource shall support the resource URI variables defined in table 8.3.1.3.3.2-1.

Table 8.3.1.3.3.2-1: Resource URI variables for this resource

Name	Data type	Definition
apiRoot	string	See clause 8.3.1.1

8.3.1.3.3.3 Resource Standard Methods

8.3.1.3.3.3.1 POST

This method shall support the URI query parameters specified in table 8.3.1.3.3.3.1-1.

Table 8.3.1.3.3.3.1-1: URI query parameters supported by the POST method on this resource

Name	Data type	P	Cardinality	Description	Applicability
n/a					

This method shall support the request data structures specified in table 8.3.1.3.3.3.1-2 and the response data structures and response codes specified in table 8.3.1.3.3.3.1-3.

Table 8.3.1.3.3.3.1-2: Data structures supported by the POST Request Body on this resource

Data type	P	Cardinality	Description
Any			

Table 8.3.1.3.3.3.1-3: Data structures supported by the POST Response Body on this resource

Data type	P	Cardinality	Response codes	Description
n/a				
NOTE: The mandatory HTTP error status codes for the POST method listed in table 5.2.6-1 of 3GPP TS 29.122 [17] shall also apply.				

8.3.1.3.3.4 Resource Custom Operations

None.

8.3.1.3.4 Custom Operations without associated resources

None in this release of the specification.

8.3.1.3.5 Notifications

8.3.1.3.5.1 General

Table 8.3.1.3.5.1-1: Notifications overview

Notification	Callback URI	HTTP method	Description (service operation)
EDN slice notification	callbackUri (NOTE)	POST	Notification on slice modification information for service continuity of a VAL application in the target EDN service area.
PLMN slice notification	callbackUri (NOTE)	POST	Notification on slice modification information for service continuity of a VAL application in the target PLMN.
NOTE: The callbackURI is not provided by NF service consumer via NSCE_SliceInfo API. The value of the callbackURI is set to the value of the Callback-URI parameter that is provided during the configuration update event subscription message specified in 3GPP TS 24.546 [3A] clause 6.2.2.1.2 and clause A.1.2.			

8.3.1.3.5.2 EDN slice notification

8.3.1.3.5.2.1 Description

EDN slice notification is by the SNSCE-S to notify the SNSCE-C about the modified slice configuration for VAL service continuity in the target EDN service area.

8.3.1.3.5.2.2 Notification definition

The POST method shall be used for the EDN slice notification and the callback URI configured by SNSCE-S.

Callback URI: **{callbackUri}**

This method shall support the URI query parameters specified in table 8.3.1.3.5.2.2-1.

Table 8.3.1.3.5.2.2-1: URI query parameters supported by the POST method on this resource

Name	Data type	P	Cardinality	Description
n/a				

If the notification is for EDN slice modification information, this method shall support the request data structures specified in table 8.3.1.3.5.2.2-2 and the response data structures and response codes specified in table 8.3.1.3.5.2.2-3.

Table 8.3.1.3.5.2.2-2: Data structures supported by the POST Request Body on this resource

Data type	P	Cardinality	Description
EdgeSCRequirementNotif	M	1	Notification on slice modification information for a VAL service continuity in the target EDN service area.

Table 8.3.1.3.5.2.2-3: Data structures supported by the POST Response Body on this resource

Data type	P	Cardinality	Response codes	Description
n/a			204 No Content	Successful case. Notification for the slice modification information was successfully received.
NOTE: The mandatory HTTP error status codes for the POST method listed in table 5.2.6-1 of 3GPP TS 29.122 [17] shall also apply.				

8.3.1.3.5.3   PLMN slice notification

8.3.1.3.5.3.1   Description

EDN slice notification is by the SNSCE-S to notify the SNSCE-C about the modified slice configuration for VAL service continuity during the inter PLMN mobility.

8.3.1.3.5.3.2   Notification definition

The POST method shall be used for the EDN slice notification and the callback URI configured by SNSCE-S.

Callback URI: **{callbackUri}**

This method shall support the URI query parameters specified in table 8.3.1.3.5.3.2-1.

Table 8.3.1.3.5.3.2-1: URI query parameters supported by the POST method on this resource

Name	Data type	P	Cardinality	Description
n/a				

If the notification is for inter-PLMNslice modification information, this method shall support the request data structures specified in table 8.3.1.3.5.3.2-2 and the response data structures and response codes specified in table 8.3.1.3.5.3.2-3.

Table 8.3.1.3.5.3.2-2: Data structures supported by the POST Request Body on this resource

Data type	P	Cardinality	Description
InterPlmnServContNotif	M	1	Notification on slice modification information for a VAL service continuity in the target PLMN.

Table 8.3.1.3.5.3.2-3: Data structures supported by the POST Response Body on this resource

Data type	P	Cardinality	Response codes	Description
n/a			204 No Content	Successful case. Notification for the slice information was successfully received.
NOTE: The mandatory HTTP error status codes for the POST method listed in table 5.2.6-1 of 3GPP TS 29.122 [17] shall also apply.				

8.3.1.3.6   Data Model

8.3.1.3.6.1   General

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

Table 8.3.1.3.6.1-1 specifies the data types defined for the NSCE_SliceInfo API.

Table 8.3.1.3.6.1-1: NSCE_SliceInfo API specific Data Types

Data type	Clause defined	Description	Applicability
n/a			

Table 8.3.1.3.6.1-2 specifies data types re-used by the NSCE_SliceInfo API from other specifications, including a reference to their respective specifications, and when needed, a short description of their use within the NSCE_SliceInfo API.

Table 8.3.1.3.6.1-2: NSCE_SliceInfo API re-used Data Types

Data type	Reference	Comments	Applicability
EdgeSCRequirementNotif	3GPP TS 29.435 [18]	Represents the slice information which is used and/or modified to extend slice availability to the target service area. (NOTE 1)	
InterPlmnServContNotif	3GPP TS 29.435 [18]	Represents the slice information which is used and/or modified to extend slice availability to the target PLMN. (NOTE 2)	
NOTE 1: The slice information is sent to the VAL UEs which are impacted by the modification of the network slice, thus the related optional information element "ueIds" of the EdgeSCRequirementNotif data structure shall not be used when the EdgeSCRequirementNotif data structure is sent to the SNSCE-C by the SNSCE-S.			
NOTE 2: The slice information is sent to the VAL UEs which are impacted by the modification of the network slice, thus the related optional information element "ueIds" of the InterPlmnServContNotif data structure shall not be used when the InterPlmnServContNotif data structure is sent to the SNSCE-C by the SNSCE-S.			

8.3.1.3.6.2 Structured data types

8.3.1.3.6.2.1 Introduction

There are no new structures to be defined in resource representations.

8.3.1.3.7 Error Handling

8.3.1.3.7.1 General

HTTP error handling shall be supported as specified in clause 5.2.6 of 3GPP TS 29.122 [17].

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

8.3.1.3.7.2 Protocol Errors

In this release of the specification, there are no additional protocol errors applicable for the NSCE_SliceInfo API.

8.3.1.3.7.3 Application Errors

The application errors defined for NSCE_EdnSliceInfo API are listed in table 8.3.1.3.7.3-1.

Table 8.3.1.3.7.3-1: Application errors

Application Error	HTTP status code	Description	Applicability

8.3.1.3.8 Feature Negotiation

General feature negotiation procedures are defined in clause 5.2.7 of 3GPP TS 29.122 [17]. Table 8.3.1.3.8-1 lists the supported features for NSCE_SliceInfo API.

Table 8.3.1.3.8-1: Supported Features

Feature number	Feature Name	Description

8.3.1.3.9 Security

8.3.1.3.9.1 General

Usage of HTTP over TLS and the TLS profiles shall be as specified in clause 5.1.1.4 of 3GPP TS 33.434 [21].

9 Usage of common API framework

9.1 General

Usage of common API framework shall be supported by the event triggered network slice configuration service API as described in clause 8 in 3GPP TS 29.549 [20].

Annex A (normative): Void

Annex B (normative): Void

Annex C (normative): OpenAPI specification

C.1 General

This annex is based on the OpenAPI Specification [22] and provides corresponding representations of all APIs defined in the present specification in YAML format.

This Annex shall take precedence when being discrepant to other parts of the specification with respect to the encoding of information elements and methods within the API.

NOTE: The semantics and procedures, as well as conditions, e.g. for the applicability and allowed combinations of attributes or values, not expressed in the OpenAPI definitions but defined in other parts of the specification also apply.

Informative copies of the OpenAPI specification file contained in this 3GPP Technical Specification are available on a Git-based repository that uses the GitLab software version control system (see clause 5B of the 3GPP TR 21.900 [1A] and clause 5.3.1 of the 3GPP TS 29.501 [19] for further information).

C.2 ETC_Configuration API

```
openapi: 3.0.0

info:
  title: ETC_Configuration
  version: 1.0.0
  description: |
    API for event triggered network slice adaptation configuration.
    © 2024, 3GPP Organizational Partners (ARIB, ATIS, CCSA, ETSI, TSDSI, TTA, TTC).
    All rights reserved.

externalDocs:
  description: >
    3GPP TS 24.549 V18.2.0 Application Data Analytics Enablement Service; Stage 3.
  url: https://www.3gpp.org/ftp/Specs/archive/24_series/24.549/

security:
  - {}
  - oAuth2ClientCredentials: []

servers:
  - url: '{apiRoot}/su_nsc/v1'
    variables:
      apiRoot:
        default: https://example.com
        description: apiRoot as defined in clause 5.2.4 of 3GPP TS 29.122.

paths:
  /configurations/{configurationId}:
    put:
      description: >
        Perfomrs event triggered network slice adaptation.
      operationId: EventTriggeredNetworkAdaptation
      tags:
        - Event triggered network adaptation (Document)
      parameters:
        - name: configurationId
          description: String identifying the resource.
          in: path
          required: true
          schema:
            type: string
      requestBody:
        required: true
        content:
          application/json:
            schema:
```

```
                  $ref: '#/components/schemas/NwSliceAdptEvent'
      responses:
        '204':
          description: >
            No Content. The requested network slice adaptation is successfullyprocessed.
        '307':
          $ref: 'TS29122_CommonData.yaml#/components/responses/307'
        '308':
          $ref: 'TS29122_CommonData.yaml#/components/responses/308'
        '400':
          $ref: 'TS29122_CommonData.yaml#/components/responses/400'
        '401':
          $ref: 'TS29122_CommonData.yaml#/components/responses/401'
        '403':
          $ref: 'TS29122_CommonData.yaml#/components/responses/403'
        '404':
          $ref: 'TS29122_CommonData.yaml#/components/responses/404'
        '411':
          $ref: 'TS29122_CommonData.yaml#/components/responses/411'
        '413':
          $ref: 'TS29122_CommonData.yaml#/components/responses/413'
        '415':
          $ref: 'TS29122_CommonData.yaml#/components/responses/415'
        '429':
          $ref: 'TS29122_CommonData.yaml#/components/responses/429'
        '500':
          $ref: 'TS29122_CommonData.yaml#/components/responses/500'
        '503':
          $ref: 'TS29122_CommonData.yaml#/components/responses/503'
        default:
          $ref: 'TS29122_CommonData.yaml#/components/responses/default'

components:
  securitySchemes:
    oAuth2ClientCredentials:
      type: oauth2
      flows:
        clientCredentials:
          tokenUrl: '{tokenUrl}'
          scopes: {}

  schemas:
    NwSliceAdptEvent:
      description: >
        Represents the event associated with triggered network slice adaptation
        with the underlying network.
      type: object
      properties:
        valUeIds:
          type: array
          minItems: 1
          items:
            $ref: 'TS29549_SS_UserProfileRetrieval.yaml#/components/schemas/ValTargetUe'
        sliceId:
          $ref: 'TS29571_CommonData.yaml#/components/schemas/Snssai'
        dnn:
          $ref: 'TS29571_CommonData.yaml#/components/schemas/Dnn'
        appReqs:
          $ref: '#/components/schemas/AppReqs'
      required:
        - valUeIds
        - sliceId

    AppReqs:
      description: Represents requirements for the requested application.
      type: object
      properties:
        timeIntervals:
          type: array
          minItems: 1
          items:
            $ref: 'TS29122_CommonData.yaml#/components/schemas/DurationSec'
        area:
          $ref: 'TS29122_CommonData.yaml#/components/schemas/LocationArea'
        ratType:
          $ref: 'TS29571_CommonData.yaml#/components/schemas/RatType'
        preservIpAdd:
          description: >
```

ETSI

```
   Indication whether to preserve the UE IP address (true) or not (false).
type: boolean
default: false
```

C.3 NSCE_SliceInfo API

```
openapi: 3.0.0

info:
  title: NSCE_SliceInfo
  version: 1.0.0
  description: |
    API for notification of slice information.
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    All rights reserved.

externalDocs:
  description: >
    3GPP TS 24.549 V18.2.0 Network slice capability enablement- Service Enabler;
    Architecture Layer for Verticals (SEAL); Protocol specification; Stage 3.
  url: https://www.3gpp.org/ftp/Specs/archive/24_series/24.549/

security:
  - {}
  - oAuth2ClientCredentials: []

servers:
  - url: '{apiRoot}/nsce_sliceinfo/v1'
    variables:
      apiRoot:
        default: https://example.com
        description: apiRoot as defined in clause 5.2.4 of 3GPP TS 29.122.

paths:
  /edn-slice-subscriptions:
    post:
    # This is a pseudo operation, NF service consumers shall NOT invoke this method!
      requestBody:
        required: true
        content:
          application/json:
            # Unspecified schema for the JSON body, since this is neither used by consumer nor by
the producer.
            schema: {}
      responses:
        default:
          $ref: 'TS29122_CommonData.yaml#/components/responses/default'
      callbacks:
        SliceNotification:
          '{callbackUri}':
          # The URI in {callbackUri} is not provided by SNSCE-C via NSCE_SliceInfo API in this
Release.
            post:
              requestBody:
                required: true
                content:
                  application/json:
                    schema:
                      $ref:
'TS29435_NSCE_ServiceContinuity.yaml#/components/schemas/EdgeSCRequirementNotif'
              responses:
                '204':
                  description: No Content, notification was succesfull.
                '307':
                  $ref: 'TS29122_CommonData.yaml#/components/responses/307'
                '308':
                  $ref: 'TS29122_CommonData.yaml#/components/responses/308'
                '400':
                  $ref: 'TS29122_CommonData.yaml#/components/responses/400'
                '401':
                  $ref: 'TS29122_CommonData.yaml#/components/responses/401'
                '403':
                  $ref: 'TS29122_CommonData.yaml#/components/responses/403'
                '404':
                  $ref: 'TS29122_CommonData.yaml#/components/responses/404'
                '411':
                  $ref: 'TS29122_CommonData.yaml#/components/responses/411'
                '413':
                  $ref: 'TS29122_CommonData.yaml#/components/responses/413'
                '415':
                  $ref: 'TS29122_CommonData.yaml#/components/responses/415'
```

```
                             '429':
                               $ref: 'TS29122_CommonData.yaml#/components/responses/429'
                             '500':
                               $ref: 'TS29122_CommonData.yaml#/components/responses/500'
                             '503':
                               $ref: 'TS29122_CommonData.yaml#/components/responses/503'
                             default:
                               $ref: 'TS29122_CommonData.yaml#/components/responses/default'

  /plmn-slice-subscriptions:
    post:
    # This is a pseudo operation, NF service consumers shall NOT invoke this method!
      requestBody:
        required: true
        content:
          application/json:
            # Unspecified schema for the JSON body, since this is neither used by consumer nor by
the producer.
            schema: {}
      responses:
        default:
          $ref: 'TS29122_CommonData.yaml#/components/responses/default'
      callbacks:
        InterPlmnSliceNotification:
          '{callbackUri}':
          # The URI in {callbackUri} is not provided by SNSCE-C via NSCE_SliceInfo API in this
Release.
            post:
              requestBody:
                required: true
                content:
                  application/json:
                    schema:
                      $ref:
'TS29435_NSCE_InterPLMNContinuity.yaml#/components/schemas/InterPlmnServContNotif'
              responses:
                '204':
                  description: No Content, notification was succesfull.
                '307':
                  $ref: 'TS29122_CommonData.yaml#/components/responses/307'
                '308':
                  $ref: 'TS29122_CommonData.yaml#/components/responses/308'
                '400':
                  $ref: 'TS29122_CommonData.yaml#/components/responses/400'
                '401':
                  $ref: 'TS29122_CommonData.yaml#/components/responses/401'
                '403':
                  $ref: 'TS29122_CommonData.yaml#/components/responses/403'
                '404':
                  $ref: 'TS29122_CommonData.yaml#/components/responses/404'
                '411':
                  $ref: 'TS29122_CommonData.yaml#/components/responses/411'
                '413':
                  $ref: 'TS29122_CommonData.yaml#/components/responses/413'
                '415':
                  $ref: 'TS29122_CommonData.yaml#/components/responses/415'
                '429':
                  $ref: 'TS29122_CommonData.yaml#/components/responses/429'
                '500':
                  $ref: 'TS29122_CommonData.yaml#/components/responses/500'
                '503':
                  $ref: 'TS29122_CommonData.yaml#/components/responses/503'
                default:
                  $ref: 'TS29122_CommonData.yaml#/components/responses/default'

components:
  securitySchemes:
    oAuth2ClientCredentials:
      type: oauth2
      flows:
        clientCredentials:
          tokenUrl: '{tokenUrl}'
          scopes: {}
```

Annex D (informative):
Change history

Change history							
Date	**Meeting**	**TDoc**	**CR**	**Rev**	**Cat**	**Subject/Comment**	**New version**
2021-08	CT1#131-e	C1-214994				TS skeleton for Network slice capability management - Service Enabler Architecture Layer for Verticals (SEAL); Protocol specification	0.0.0
2021-08	CT1#131-e	C1-214983				Network slice capability management procedures	0.1.0
2021-08	CT1#131-e	C1-214993				Requirements for functional entities	0.1.0
2021-10	CT1#132-e	C1-216124				Correction of event triggered network slice adaptation procedure	0.2.0
2021-12	CT#94e					Creation of version 1.0.0 for CT#94 for information	1.0.0
2022-01	CT1#133-bis-e	C1-220187				Definitions of terms and symbols for network slice capability enablement Spec.	1.1.0
2022-01	CT1#133	C1-220578				Network slice adaptation	1.1.0
2022-01	CT1#133	C1-220579				Resolving EN	1.1.0
2022-01	CT1#133	C1-220580				General description for network slice capability enablement Spec	1.1.0
2022-01	CT1#133	C1-220581				Scope for network slice capability enablement Spec	1.1.0
2022-01	CT1#133	C1-220618				Replace management with enablement	1.1.0
2022-02	CT1#134	C1-221253				Clarification on route selection descriptors	1.2.0
2022-03	CT1#95e	CP-220315				Specification presented for approval, v2.0.0	2.0.0
2022-03	CT#95e					TS 24.549 v17.0.0 created after CT#95e by MCC	17.0.0
2022-06	CT#96	CP-221217	0001	2	B	Authenticate of SNSCE-C identity	17.1.0
2022-06	CT#96	CP-221217	0002	3	B	CoAP encoding	17.1.0
2022-06	CT#96	CP-221217	0003	2	B	CoAP requirements for SNSCE-C	17.1.0
2022-06	CT#96	CP-221217	0004	1	B	CoAP requirements for SNSCE-S	17.1.0
2022-06	CT#96	CP-221217	0005	1	F	Re-order the reference	17.1.0
2022-06	CT#96	CP-221217	0006	2	B	SNSCE client CoAP procedure	17.1.0
2022-06	CT#96	CP-221217	0007	3	B	SNSCE server CoAP procedure	17.1.0
2022-06	CT#96	CP-221217	0008	1	F	HTTP parameters	17.1.0
2022-06	CT#96	CP-221217	0009	1	F	Modification of general descriptions	17.1.0
2022-06	CT#96	CP-221217	0010	1	F	SNSCE client HTTP procedure	17.1.0
2022-06	CT#96	CP-221217	0011	1	F	SNSCE server HTTP procedure	17.1.0
2022-09	CT#97e	CP-222150	0012	1	F	Added description and overview	17.2.0
2023-03	CT#99	CP-230233	0013		F	Requirements alignment and miscellaneous corrections	17.3.0
2023-12	CT#102	CP-233190	0015	2	F	Update to the obsoleted IETF HTTP RFCs	18.0.0
2024-03	CT#103	CP-240118	0016	1	B	Update the general description	18.1.0
2024-03	CT#103	CP-240118	0017	1	B	Add parameters to network slice adaptation trigger	18.1.0
2024-03	CT#103	CP-240118	0018	2	B	Update APIs for event triggered network slice configuration	18.1.0
2024-03	CT#103	CP-240118	0019	2	B	Retrieve data and information from NSCE client	18.1.0
2024-03	CT#103	CP-240118	0020	2	B	Notify slice modification in Inter-PLMN based slice service continuity	18.1.0
2024-06	CT#104	CP-241188	0022	1	F	HTTP resource representation and encoding for network slice configuration	18.2.0
2024-06	CT#104	CP-241188	0024	1	F	ETC_Configuration API	18.2.0
2024-06	CT#104	CP-241188	0025	1	B	Notify slice modification in edge based NSCE deployments	18.2.0
2024-06	CT#104	CP-241188	0021	2	F	Network slice capability enablement services	18.2.0
2024-06	CT#104	CP-241188	0023	3	F	CoAP resource representation and encoding for network slice configuration	18.2.0
2024-06	CT#104	CP-241188	0022	2	F	HTTP resource representation and encoding for network slice configuration	18.2.0
2024-06	CT#104	CP-241188	0035	1	F	Scope and General description	18.2.0
2024-06	CT#104	CP-241188	0029	1	B	EDN based service continuity service	18.2.0
2024-06	CT#104	CP-241188	0030	1	B	EDN based service continuity APIs definition	18.2.0
2024-06	CT#104	CP-241188	0031	1	F	NSCE_EdnSliceInfo API (YAML)	18.2.0
2024-06	CT#104					Missing attaching YAML file in previous version	18.2.1

History

Document history		
V18.1.0	May 2024	Publication
V18.2.1	August 2024	Publication