**3GPP TSG-SA5 Meeting #145-e *S5-225141***

e-meeting, 15 - 24 August 2022

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *CR-Form-v12.1* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  | **28.541** | **CR** | **0757** | **rev** | **1** | **Current version:** | **17.7.0** |  |
|  | | | | | | | | |
| *For* [***HE******LP***](http://www.3gpp.org/3G_Specs/CRs.htm#_blank)*on using this form: comprehensive instructions can be found at* [*http://www.3gpp.org/Change-Requests*](http://www.3gpp.org/Change-Requests)*.* | | | | | | | | |
|  | | | | | | | | |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| ***Proposed change affects:*** | UICC apps |  | ME |  | Radio Access Network | **X** | Core Network | **X** |

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | | | | | | | | | | |
| ***Title:*** | Update stage2 and stage3 definition for FeasibilityCheckAndReservationJob | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | Huawei, Nokia, Nokia Shangai Bell | | | | | | | | | |
| ***Source to TSG:*** | S5 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | adNRM | | | | |  | ***Date:*** | | | 2022-07-21 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | **F** |  | | | | | ***Release:*** | | | Rel-17 |
|  | *Use one of the following categories:* ***F*** *(correction)* ***A*** *(mirror corresponding to a change in an earlier release)* ***B*** *(addition of feature),* ***C*** *(functional modification of feature)* ***D*** *(editorial modification)*  Detailed explanations of the above categories can be found in 3GPP [TR 21.900](http://www.3gpp.org/ftp/Specs/html-info/21900.htm). | | | | | | | | *Use one of the following releases: Rel-8 (Release 8) Rel-9 (Release 9) Rel-10 (Release 10) Rel-11 (Release 11) … Rel-15 (Release 15) Rel-16 (Release 16) Rel-17 (Release 17) Rel-18 (Release 18)* | |
|  |  | | | | | | | | | |
| ***Reason for change:*** | | 1. In Cluase 6.3.37 the term "FeasibilityCheckAndReservationJob" is used, however, in J.4.3 OpenAPI part, the term "FeasibilityCheckJob" is used. 2. In J.4.3, the "->" is used for the description for several attributes (e.g. FeasibilityResult), which should be updated to ">-". 3. Attribute "recommendedRequirements" is defined as optional attribute, it is confuse for MnS producer whether needs to provide the recommendedRequirements when receives a feasibility check request. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | 1. Update the term "FeasibilityCheckJob" with "FeasibilityCheckAndReservationJob" in openAPI part. 2. Update the "->" with ">-" 3. Introduce the attribute "requirementsRecommendation" in FeasibilityCheckAndReservationJob to represent MnS consumer's request for requirements recommendation. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | Some errors exists in stage 2 and stage 3 definition for FeasibilityCheckAndReservationJob. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 6.3.37.1, 6.3.37.2,6.4.1,J.4.3 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **Y** | **N** |  | | | |  | | |
| ***Other specs*** | |  | **X** | Other core specifications | | | | TS/TR ... CR ... | | |
| ***affected:*** | |  | **X** | Test specifications | | | | TS/TR ... CR ... | | |
| ***(show related CRs)*** | |  | **X** | O&M Specifications | | | | TS/TR ... CR ... | | |
|  | |  | | | | | | | | |
| ***Other comments:*** | | ForgeLink: <https://forge.3gpp.org/rep/sa5/MnS/-/tree/TS28.541_Rel17_CR0757_Update_stage2_and_stage3_definition_for_FeasibilityCheckAndReservationJob> | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | | S5-225XXX is the merge version of S5-225141 and S5-225067 | | | | | | | | |

|  |
| --- |
| **1st Change** |

### 6.3.37 FeasibilityCheckAndReservationJob

#### 6.3.37.1 Definition

This IOC represents a feasibility check and reservation job for network slicing related requirements (i.e. ServiceProfile for network slice related requirements, SliceProfile for network slice subnet related requirements) to determine whether the network slicing related requirements can be satisfied. It can be name-contained by SubNetwork.

When the MnS Consumer derives the network slicing related requirements (i.e. ServiceProfile, SliceProfile), before request the MnS producer to allocate or modify an NSI or NSSI, MnS consumer may express a feasibility check and reservation job requirement for the specified network slicing related requirements to MnS producer.

To express a feasibility check and reservation job requirement for specific network slicing related requirements (i.e. ServiceProfile, SliceProfile), MnS consumer needs to request MnS producer to create a FeasibilityCheckAndReservationJob instance on the MnS producer side with the network slicing related requirements specified, and to execute the feasibility check and resource reservation process.

For deletion of feasibility check and reservation job, the MnS consumer needs to request the MnS producer to delete the FeasibilityCheckAndReservationJob instance on the MnS producer side.

Attribute "resourceReservation" is used to represent MnS consumer's requirements for resource reservation for corresponding network slicing related requirements (i.e. ServiceProfile, SliceProfile). In case the value is "True", which means MnS producer needs to reserve corresponding resources when the feasibility check result is feasible. In this case, attribute "requestedReservationExpiration" is used to represent MnS's requirements for the validity period of the resource reservation, which is specified by MnS consumer. While "reservationExpiration" is used to represent the actual validity period of the resource reservation, which is specified by MnS producer based on requested reservation expiration from MnS consumer and its own reservation capabilities. After the period expires, no guarantees are given for the resources associated to the corresponding network slicing related requirements (i.e. ServiceProfile, SliceProfile). In case the value by is "False" which means MnS producer only check the feasibility for corresponding network slicing related requirements, no guarantee for the corresponding resources.

Attribute "recommendationRequest" is used to represent MnS consumer's request for recommended requirements when the feasibility check result for corresponding network slicing related requirements (i.e. ServiceProfile and SliceProfile information) is infeasible. In case the value is "True", which means MnS producer needs to derive the value of "recommendedRequirements" as recommended network slicing related requirements (i.e. ServiceProfile and SliceProfile information) which can be supported by the MnS producer when the feasibility check result is infeasible and provide these recommendations to MnS consumer. The value of "recommendedRequirements" is a list of [attributeName of network slicing related requirements (i.e. ServiceProfile, SliceProfile), recommendedValueRange].To obtain the progress information of a feasibility check job, MnS consumer needs to request MnS producer to query the values of attribute "processMonitor".

To obtain the feasibility check result of a feasibility check job, MnS consumer needs to request MnS producer to query the values of attribute “feasibilityResult” and “inFeasibleReason” when the feasibility check job is finished. If the feasibility check result indicated as feasible, MnS consumer can request MnS producer to allocate a network slice or network slice subnet with the checked network slicing related requirements (i.e. ServiceProfile or SliceProfile). In case the feasibility check result is unfeasible, MnS consumer may update the network slicing related requirements, and may trigger the feasibility check job again.

To obtain the resource reservation status, MnS consumer need to request MnS producer to query the value of the attribute "resourceReservationStatus ".

MnS producer will use the reserved resources to satisfy the corresponding network slicing related requirements in the allocation request. In case to use the reserved resources, MnS consumer will use the same ServiceProfileId or SliceProfileId value (which is obtained/queried from the FeasibilityCheckAndReservationJob) as input parameters for allocation request. .

Editor's Note: the association mechanism for reserved resource and allocation may need to be updated based on further investigation.

#### 6.3.37.2 Attributes

The FeasibilityCheckAndReservationJob IOC includes attributes inherited from Top IOC (defined in TS 28.622[30]) and the following attributes:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | S | isReadable | isWritable | isInvariant | isNotifyable |
| sliceProfile | CM | T | T | F | T |
| serviceProfile | CM | T | T | F | T |
| resourceReservation | O | T | T | F | T |
| recommendationRequest | CO | T | T | F | T |
| requestedReservationExpiration | O | T | T | F | T |
| processMonitor | M | T | F | F | T |
| feasibilityResult | M | T | F | F | T |
| inFeasibleReason | O | T | F | F | T |
| resourceReservationStatus | O | T | F | F | T |
| reservationFailureReason | O | T | F | F | T |
| reservationExpiration | O | T | F | F | T |
| recommendedRequirements | O | T | F | F | T |

Editor's Note: how to model the EP\_Transport information in the FeasibilityCheckAndReservationJob IOC is FFS, which can be used to support/enable TN part feasibility check.

#### 6.3.37.3 Attribute constraints

|  |  |
| --- | --- |
| Name | Definition |
| sliceProfile Support Qualifier | Condition: The feasibilitycheckjob is used to check the feasibility for network slice subnet related requirements. |
| serviceProfile Support Qualifier | Condition: The feasibilitycheckjob is used to check the feasibility for network slice related requirements. |
| recommendationRequest Support Qualifier | Condition: The capability of providing recommendedRequirements is supported by MnS producer |

#### 6.3.37.4 Notifications

The common notifications defined in subclause 6.5 are valid for this IOC, without exceptions or additions.

|  |
| --- |
| **2nd Change** |

### 6.4.1 Attribute properties

| Attribute Name | Documentation and Allowed Values | Properties |
| --- | --- | --- |
| …… |  |  |
| processMonitor | An attribute describes the process monitoring information of the feasibility check job. See correddponding processMonitor definition in TS 28.622[30]. | type: ProcessMonitor  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| feasibilityResult | An attribute which specifies the feasibility check result for the feasibility check job. This attribute is configured by MnS producer and can be read by MnS consumer. The feasibilityResult is configured once the "status" is "FINISHED"  Allowed Value:  FEASIBLE: which means the specified network slicing related requirements (i.e. ServiceProfile, SliceProfile) can be satisfied by the MnS producer.  InFEASIBLE: which means the specified network slicing related requirements (i.e. ServiceProfile, SliceProfile) cannot be satisfied by the MnS producer. | type: Enum  multiplicity: 0..1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| inFeasibleReason | An attribute that specifies the additional reason information if the feasibility check result is infeasible. This attribute can be absent if the feasibility check result is feasibile.  Allowed Value: the detailed content (Enum Value) for the inFeasibleReason is not defined in the present document. | type: Enum  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  allowedValues: N/A  isNullable: True |
| resourceReservation | An attribute represents MnS consumer's requirements for resource reservation.  Allowed Value:  TRUE: MnS producer need to reserve corresponding resources  FALSE (DeaultValue): no guarantee for the corresponding resources. | type: Boolean  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  allowedValues: False |
| recommendationRequest | An attribute represent MnS consumer's request for recommended network slice related requirements  Allowed Value:  TRUE: MnS producer need to derive and provide the recommended network slicing related requirements  FALSE (DeaultValue): no guarantee for derive and provide the recommended network slicing related requirements. | type: Boolean  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  allowedValues: False |
| requestedReservationExpiration | An attribute which specifes MnS consumer's requirememts for the validity period of the resource reservation. The value of requestedReservationExpiration is specified by MnS consumer. | type: Timestamp  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  allowedValues: False |
| reservationExpiration | An attribute which specifes the actual validity period of the resource reservation. After the period expires, no guarantees are given for the resources associated to the corresponding network slicing related requirements (i.e. ServiceProfile, SliceProfile). which is specified by MnS producer based on requested reservation expiration from MnS consumer and its own reservation capabilities. In case MnS produer have the enpugh capability to satisfy MnS consumer's reservation requirememts, the value of reservationExpiration is same as requestedReservationExpiration. | type: Timestamp  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  allowedValues: False |
| resourceReservationStatus | An attribute which specifies the resource reservation result for the feasibility check job. This attribute is configured by MnS producer and can be read by MnS consumer.  Allowed Value:  RESERVED: which means the resources for the specified network slicing related requirements (i.e. ServiceProfile, SliceProfile) is reserved.  UNRESERVED: which means the resources for the specified network slicing related requirements (i.e. ServiceProfile, SliceProfile) is not reserved.  USED: which means the reserved resource for the specified network slicing related requirements is used. | type: Enum  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  allowedValues: False |
| recommendedRequirements | An attribute which specifies the recommended network slicing related requirements (i.e. ServiceProfile and SliceProfile information) which can be supported by the MnS producer.This information is provided when the feasibility check result is infeasible. This information can be used by MnS consumer to adjust the network slicing related requirements. | type: String  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  allowedValues: False |
| reservationFailureReason | An attribute that specifies the additional reason information if the reservation is failed. This attribute can be absent if the reservation is successful.  Allowed Value: the detailed content (Enum Value) for the reservationFailureReason is not defined in the present document. | type: Enum  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  allowedValues: N/A  isNullable: True |

|  |
| --- |
| **3rd Change** |

## J.4.3 OpenAPI document "TS28541\_SliceNrm.yaml"

openapi: 3.0.1

info:

title: Slice NRM

version: 17.7.0

description: >-

OAS 3.0.1 specification of the Slice NRM

@ 2020, 3GPP Organizational Partners (ARIB, ATIS, CCSA, ETSI, TSDSI, TTA, TTC).

All rights reserved.

externalDocs:

description: 3GPP TS 28.541; 5G NRM, Slice NRM

url: http://www.3gpp.org/ftp/Specs/archive/28\_series/28.541/

paths: {}

components:

schemas:

#------------ Type definitions ---------------------------------------------------

Float:

type: number

format: float

MobilityLevel:

type: string

enum:

- STATIONARY

- NOMADIC

- RESTRICTED MOBILITY

- FULLY MOBILITY

SynAvailability:

type: string

enum:

- NOT SUPPORTED

- BETWEEN BS AND UE

- BETWEEN BS AND UE & UE AND UE

PositioningAvailability:

type: array

items:

type: string

enum:

- CIDE-CID

- OTDOA

- RF FINGERPRINTING

- AECID

- HYBRID POSITIONING

- NET-RTK

Predictionfrequency:

type: string

enum:

- PERSEC

- PERMIN

- PERHOUR

SharingLevel:

type: string

enum:

- SHARED

- NON-SHARED

NetworkSliceSharingIndicator:

type: string

enum:

- SHARED

- NON-SHARED

ServiceType:

type: string

enum:

- eMBB

- RLLC

- MIoT

- V2X

SliceSimultaneousUse:

type: string

enum:

- ZERO

- ONE

- TWO

- THREE

- FOUR

Category:

type: string

enum:

- CHARACTER

- SCALABILITY

Tagging:

type: array

items:

type: string

enum:

- PERFORMANCE

- FUNCTION

- OPERATION

Exposure:

type: string

enum:

- API

- KPI

ServAttrCom:

type: object

properties:

category:

$ref: '#/components/schemas/Category'

tagging:

$ref: '#/components/schemas/Tagging'

exposure:

$ref: '#/components/schemas/Exposure'

Support:

type: string

enum:

- NOT SUPPORTED

- SUPPORTED

DelayTolerance:

type: object

properties:

servAttrCom:

$ref: '#/components/schemas/ServAttrCom'

support:

$ref: '#/components/schemas/Support'

DeterministicComm:

type: object

properties:

servAttrCom:

$ref: '#/components/schemas/ServAttrCom'

availability:

$ref: '#/components/schemas/Support'

periodicityList:

type: string

XLThpt:

type: object

properties:

servAttrCom:

$ref: '#/components/schemas/ServAttrCom'

guaThpt:

$ref: '#/components/schemas/Float'

maxThpt:

$ref: '#/components/schemas/Float'

MaxPktSize:

type: object

properties:

servAttrCom:

$ref: '#/components/schemas/ServAttrCom'

maxsize:

type: integer

MaxNumberofPDUSessions:

type: object

properties:

servAttrCom:

$ref: '#/components/schemas/ServAttrCom'

nOofPDUSessions:

type: integer

KPIMonitoring:

type: object

properties:

servAttrCom:

$ref: '#/components/schemas/ServAttrCom'

kPIList:

type: string

NBIoT:

type: object

properties:

servAttrCom:

$ref: '#/components/schemas/ServAttrCom'

support:

$ref: '#/components/schemas/Support'

RadioSpectrum:

type: object

properties:

servAttrCom:

$ref: '#/components/schemas/ServAttrCom'

nROperatingBands:

type: string

Synchronicity:

type: object

properties:

servAttrCom:

$ref: '#/components/schemas/ServAttrCom'

availability:

$ref: '#/components/schemas/SynAvailability'

accuracy:

$ref: '#/components/schemas/Float'

SynchronicityRANSubnet:

type: object

properties:

availability:

$ref: '#/components/schemas/SynAvailability'

accuracy:

$ref: '#/components/schemas/Float'

Positioning:

type: object

properties:

servAttrCom:

$ref: '#/components/schemas/ServAttrCom'

availability:

$ref: '#/components/schemas/PositioningAvailability'

predictionfrequency:

$ref: '#/components/schemas/Predictionfrequency'

accuracy:

$ref: '#/components/schemas/Float'

PositioningRANSubnet:

type: object

properties:

availability:

$ref: '#/components/schemas/PositioningAvailability'

predictionfrequency:

$ref: '#/components/schemas/Predictionfrequency'

accuracy:

$ref: '#/components/schemas/Float'

UserMgmtOpen:

type: object

properties:

servAttrCom:

$ref: '#/components/schemas/ServAttrCom'

support:

$ref: '#/components/schemas/Support'

V2XCommModels:

type: object

properties:

servAttrCom:

$ref: '#/components/schemas/ServAttrCom'

v2XMode:

$ref: '#/components/schemas/Support'

TermDensity:

type: object

properties:

servAttrCom:

$ref: '#/components/schemas/ServAttrCom'

density:

type: integer

NsInfo:

type: object

properties:

nsInstanceId:

type: string

nsName:

type: string

EmbbEEPerfReq:

type: object

properties:

kpiType:

type: string

enum:

- NUMOFBITS

- NUMOFBITS\_RANBASED

req:

type: number

UrllcEEPerfReq:

type: object

properties:

kpiType:

type: string

enum:

- INVOFLATENCY

- NUMOFBITS\_MULTIPLIED\_INVOFLATENCY

req:

type: number

MIoTEEPerfReq:

type: object

properties:

kpiType:

type: string

enum:

- MAXREGSUBS

- MEANACTIVEUES

req:

type: number

EEPerfReq:

oneOf:

- $ref: '#/components/schemas/EmbbEEPerfReq'

- $ref: '#/components/schemas/UrllcEEPerfReq'

- $ref: '#/components/schemas/MIoTEEPerfReq'

EnergyEfficiency:

type: object

properties:

servAttrCom:

$ref: '#/components/schemas/ServAttrCom'

performance:

$ref: '#/components/schemas/EEPerfReq'

NSSAASupport:

type: object

properties:

servAttrCom:

$ref: '#/components/schemas/ServAttrCom'

support:

$ref: '#/components/schemas/Support'

SecFunc:

type: object

properties:

secFunId:

type: string

secFunType:

type: string

secRules:

type: array

items:

type: string

N6Protection:

type: object

properties:

servAttrCom:

$ref: '#/components/schemas/ServAttrCom'

secFuncList:

type: array

items:

$ref: '#/components/schemas/SecFunc'

CNSliceSubnetProfile:

type: object

properties:

maxNumberofUEs:

type: integer

dLLatency:

type: number

uLLatency:

type: number

dLThptPerSliceSubnet:

$ref: '#/components/schemas/XLThpt'

dLThptPerUE:

$ref: '#/components/schemas/XLThpt'

uLThptPerSliceSubnet:

$ref: '#/components/schemas/XLThpt'

uLThptPerUE:

$ref: '#/components/schemas/XLThpt'

maxNumberOfPDUSessions:

type: integer

coverageAreaTAList:

type: integer

resourceSharingLevel:

$ref: '#/components/schemas/SharingLevel'

dLMaxPktSize:

type: integer

uLMaxPktSize:

type: integer

delayTolerance:

$ref: '#/components/schemas/DelayTolerance'

synchronicity:

$ref: '#/components/schemas/SynchronicityRANSubnet'

sliceSimultaneousUse:

$ref: '#/components/schemas/SliceSimultaneousUse'

reliability:

type: number

energyEfficiency:

type: number

dLDeterministicComm:

$ref: '#/components/schemas/DeterministicComm'

uLDeterministicComm:

$ref: '#/components/schemas/DeterministicComm'

survivalTime:

type: number

nssaaSupport:

$ref: '#/components/schemas/NSSAASupport'

n6Protection:

$ref: '#/components/schemas/N6Protection'

RANSliceSubnetProfile:

type: object

properties:

coverageAreaTAList:

type: integer

dLLatency:

type: number

uLLatency:

type: number

uEMobilityLevel:

$ref: '#/components/schemas/MobilityLevel'

resourceSharingLevel:

$ref: '#/components/schemas/SharingLevel'

maxNumberofUEs:

type: integer

activityFactor:

type: integer

dLThptPerSliceSubnet:

$ref: '#/components/schemas/XLThpt'

dLThptPerUE:

$ref: '#/components/schemas/XLThpt'

uLThptPerSliceSubnet:

$ref: '#/components/schemas/XLThpt'

uLThptPerUE:

$ref: '#/components/schemas/XLThpt'

uESpeed:

type: integer

reliability:

type: number

serviceType:

$ref: '#/components/schemas/ServiceType'

dLMaxPktSize:

type: integer

uLMaxPktSize:

type: integer

nROperatingBands:

type: string

delayTolerance:

$ref: '#/components/schemas/DelayTolerance'

positioning:

$ref: '#/components/schemas/PositioningRANSubnet'

sliceSimultaneousUse:

$ref: '#/components/schemas/SliceSimultaneousUse'

energyEfficiency:

type: number

termDensity:

$ref: '#/components/schemas/TermDensity'

survivalTime:

type: number

synchronicity:

$ref: '#/components/schemas/SynchronicityRANSubnet'

dLDeterministicComm:

$ref: '#/components/schemas/DeterministicComm'

uLDeterministicComm:

$ref: '#/components/schemas/DeterministicComm'

TopSliceSubnetProfile:

type: object

properties:

dLLatency:

type: integer

uLLatency:

type: integer

maxNumberofUEs:

type: integer

dLThptPerSliceSubnet:

$ref: '#/components/schemas/XLThpt'

dLThptPerUE:

$ref: '#/components/schemas/XLThpt'

uLThptPerSliceSubnet:

$ref: '#/components/schemas/XLThpt'

uLThptPerUE:

$ref: '#/components/schemas/XLThpt'

dLMaxPktSize:

type: integer

uLMaxPktSize:

type: integer

maxNumberOfPDUSessions:

type: integer

nROperatingBands:

type: string

sliceSimultaneousUse:

$ref: '#/components/schemas/SliceSimultaneousUse'

energyEfficiency:

$ref: '#/components/schemas/EnergyEfficiency'

synchronicity:

$ref: '#/components/schemas/Synchronicity'

delayTolerance:

$ref: '#/components/schemas/DelayTolerance'

positioning:

$ref: '#/components/schemas/Positioning'

termDensity:

$ref: '#/components/schemas/TermDensity'

activityFactor:

type: integer

coverageAreaTAList:

type: integer

resourceSharingLevel:

$ref: '#/components/schemas/SharingLevel'

uEMobilityLevel:

$ref: '#/components/schemas/MobilityLevel'

uESpeed:

type: integer

reliability:

type: number

serviceType:

$ref: '#/components/schemas/ServiceType'

dLDeterministicComm:

$ref: '#/components/schemas/DeterministicComm'

uLDeterministicComm:

$ref: '#/components/schemas/DeterministicComm'

survivalTime:

type: number

ServiceProfile:

type: object

properties:

serviceProfileId:

type: string

plmnInfoList:

$ref: 'TS28541\_NrNrm.yaml#/components/schemas/PlmnInfoList'

maxNumberofUEs:

type: number

dLLatency:

type: number

uLLatency:

type: number

uEMobilityLevel:

$ref: '#/components/schemas/MobilityLevel'

sst:

$ref: 'TS28541\_NrNrm.yaml#/components/schemas/Sst'

networkSliceSharingIndicator:

$ref: '#/components/schemas/NetworkSliceSharingIndicator'

availability:

type: number

delayTolerance:

$ref: '#/components/schemas/DelayTolerance'

dLDeterministicComm:

$ref: '#/components/schemas/DeterministicComm'

uLDeterministicComm:

$ref: '#/components/schemas/DeterministicComm'

dLThptPerSlice:

$ref: '#/components/schemas/XLThpt'

dLThptPerUE:

$ref: '#/components/schemas/XLThpt'

uLThptPerSlice:

$ref: '#/components/schemas/XLThpt'

uLThptPerUE:

$ref: '#/components/schemas/XLThpt'

dLMaxPktSize:

$ref: '#/components/schemas/MaxPktSize'

uLMaxPktSize:

$ref: '#/components/schemas/MaxPktSize'

maxNumberofPDUSessions:

$ref: '#/components/schemas/MaxNumberofPDUSessions'

kPIMonitoring:

$ref: '#/components/schemas/KPIMonitoring'

nBIoT:

$ref: '#/components/schemas/NBIoT'

radioSpectrum:

$ref: '#/components/schemas/RadioSpectrum'

synchronicity:

$ref: '#/components/schemas/Synchronicity'

positioning:

$ref: '#/components/schemas/Positioning'

userMgmtOpen:

$ref: '#/components/schemas/UserMgmtOpen'

v2XModels:

$ref: '#/components/schemas/V2XCommModels'

coverageArea:

type: string

termDensity:

$ref: '#/components/schemas/TermDensity'

activityFactor:

$ref: '#/components/schemas/Float'

uESpeed:

type: integer

jitter:

type: integer

survivalTime:

type: number

reliability:

type: number

maxDLDataVolume:

type: string

maxULDataVolume:

type: string

sliceSimultaneousUse:

$ref: '#/components/schemas/SliceSimultaneousUse'

energyEfficiency:

$ref: '#/components/schemas/EnergyEfficiency'

nssaaSupport:

$ref: '#/components/schemas/NSSAASupport'

n6Protection:

$ref: '#/components/schemas/N6Protection'

SliceProfile:

type: object

properties:

serviceProfileId:

type: string

plmnInfoList:

$ref: 'TS28541\_NrNrm.yaml#/components/schemas/PlmnInfoList'

cNSliceSubnetProfile:

$ref: '#/components/schemas/CNSliceSubnetProfile'

rANSliceSubnetProfile:

$ref: '#/components/schemas/RANSliceSubnetProfile'

topSliceSubnetProfile:

$ref: '#/components/schemas/TopSliceSubnetProfile'

IpAddress:

oneOf:

- $ref: 'TS28623\_ComDefs.yaml#/components/schemas/Ipv4Addr'

- $ref: 'TS28623\_ComDefs.yaml#/components/schemas/Ipv6Addr'

LogicalInterfaceInfo:

type: object

properties:

logicalInterfaceType:

type: string

enum:

- VLAN

- MPLS

- Segment

logicalInterfaceId:

type: string

ServiceProfileList:

type: array

items:

$ref: '#/components/schemas/ServiceProfile'

SliceProfileList:

type: array

items:

$ref: '#/components/schemas/SliceProfile'

FeasibilityResult:

description: >-

An attribute which specifies the feasibility check result for the feasibility check and reservation job.

type: string

enum:

- FEASIBLE

- INFEASIBLE

InFeasibleReason:

description: >-

An attribute that specifies the additional reason information if the feasibility check result is infeasible.The detailed ENUM value is FFS.

type: string

RecommendationRequest:

description: >-

An attribute represents MnS consumer's request for recommended network slice related requirements.

type: boolean

RecommendedRequirements:

description: >-

An attribute that specifies the recommended network slicing related requirements (i.e. ServiceProfile and SliceProfile information) which can be supported by the MnS producer.

type: string

ResourceReservation:

description: >-

An attribute represents MnS consumer's requirements for resource reservation.

type: boolean

RequestedReservationExpiration:

description: >-

An attribute which specifes MnS consuner's requirements for the validity period of the resource reservation.

type: string

ResourceReservationStatus:

description: >-

An attribute which specifies the resource reservation result for the feasibility check job.

type: string

enum:

- RESERVED

- UNRESERVED

- USED

ReservationExpiration:

description: >-

An attribute which specifes the actual validity period of the resource reservation.

type: string

ReservationFailureReason:

description: >-

An attribute that specifies the additional reason information if the reservation is failed.

type: string

#------------ Definition of concrete IOCs ----------------------------------------

MnS:

oneOf:

- type: object

properties:

SubNetwork:

$ref: '#/components/schemas/SubNetwork-Multiple'

# - type: object

# properties:

# ManagedElement:

# $ref: '#/components/schemas/ManagedElement-Multiple'

SubNetwork-Single:

allOf:

- $ref: 'TS28623\_GenericNrm.yaml#/components/schemas/Top'

- type: object

properties:

attributes:

allOf:

- $ref: 'TS28623\_GenericNrm.yaml#/components/schemas/SubNetwork-Attr'

- $ref: 'TS28623\_GenericNrm.yaml#/components/schemas/SubNetwork-ncO'

- type: object

properties:

SubNetwork:

$ref: '#/components/schemas/SubNetwork-Multiple'

NetworkSlice:

$ref: '#/components/schemas/NetworkSlice-Multiple'

NetworkSliceSubnet:

$ref: '#/components/schemas/NetworkSliceSubnet-Multiple'

EP\_Transport:

$ref: '#/components/schemas/EP\_Transport-Multiple'

NetworkSliceSubnetProviderCapabilities:

$ref: '#/components/schemas/NetworkSliceSubnetProviderCapabilities-Multiple'

FeasibilityCheckJob:

$ref: '#/components/schemas/FeasibilityCheckAndReservationJob-Multiple'

NetworkSlice-Single:

allOf:

- $ref: 'TS28623\_GenericNrm.yaml#/components/schemas/Top'

- type: object

properties:

attributes:

allOf:

- type: object

properties:

networkSliceSubnetRef:

$ref: 'TS28623\_ComDefs.yaml#/components/schemas/Dn'

operationalState:

$ref: 'TS28623\_ComDefs.yaml#/components/schemas/OperationalState'

administrativeState:

$ref: 'TS28623\_ComDefs.yaml#/components/schemas/AdministrativeState'

serviceProfileList:

$ref: '#/components/schemas/ServiceProfileList'

NetworkSliceSubnet-Single:

allOf:

- $ref: 'TS28623\_GenericNrm.yaml#/components/schemas/Top'

- type: object

properties:

attributes:

allOf:

- type: object

properties:

managedFunctionRefList:

$ref: 'TS28623\_ComDefs.yaml#/components/schemas/DnList'

networkSliceSubnetRefList:

$ref: 'TS28623\_ComDefs.yaml#/components/schemas/DnList'

operationalState:

$ref: 'TS28623\_ComDefs.yaml#/components/schemas/OperationalState'

administrativeState:

$ref: 'TS28623\_ComDefs.yaml#/components/schemas/AdministrativeState'

nsInfo:

$ref: '#/components/schemas/NsInfo'

sliceProfileList:

$ref: '#/components/schemas/SliceProfileList'

epTransportRefList:

$ref: 'TS28623\_ComDefs.yaml#/components/schemas/DnList'

priorityLabel:

type: integer

networkSliceSubnetType:

type: string

enum:

- TOP\_SLICESUBNET

- RAN\_SLICESUBNET

- CN\_SLICESUBNET

EP\_Transport-Single:

allOf:

- $ref: 'TS28623\_GenericNrm.yaml#/components/schemas/Top'

- type: object

properties:

attributes:

type: object

properties:

ipAddress:

$ref: '#/components/schemas/IpAddress'

logicalInterfaceInfo:

$ref: '#/components/schemas/LogicalInterfaceInfo'

nextHopInfo:

type: string

qosProfile:

type: string

epApplicationRefs:

$ref: 'TS28623\_ComDefs.yaml#/components/schemas/DnList'

NetworkSliceSubnetProviderCapabilities-Single:

allOf:

- $ref: 'TS28623\_GenericNrm.yaml#/components/schemas/Top'

- type: object

properties:

attributes:

type: object

properties:

dLlatency:

type: integer

uLlatency:

type: integer

dLThptPerSliceSubnet:

$ref: '#/components/schemas/XLThpt'

uLThptPerSliceSubnet:

$ref: '#/components/schemas/XLThpt'

coverageAreaTAIList:

type: array

items:

type: string

FeasibilityCheckAndReservationJob-Single:

allOf:

- $ref: 'TS28623\_GenericNrm.yaml#/components/schemas/Top'

- type: object

properties:

attributes:

type: object

properties:

profile:

oneOf:

- $ref: '#/components/schemas/SliceProfile'

- $ref: '#/components/schemas/ServiceProfile'

resourceReservation:

$ref: '#/components/schemas/ResourceReservation'

recommendationRequest:

$ref: '#/components/schemas/RecommendationRequest'

requestedReservationExpiration:

$ref: '#/components/schemas/RequestedReservationExpiration'

processMonitor:

$ref: 'TS28623\_GenericNrm.yaml#/components/schemas/ProcessMonitor'

feasibilityResult:

$ref: '#/components/schemas/FeasibilityResult'

inFeasibleReason:

$ref: '#/components/schemas/InFeasibleReason'

resourceReservationStatus:

$ref: '#/components/schemas/ResourceReservationStatus'

reservationFailureReason:

$ref: '#/components/schemas/ReservationFailureReason'

reservationExpiration:

$ref: '#/components/schemas/ReservationExpiration'

recommendedRequirements:

$ref: '#/components/schemas/RecommendedRequirements'

#-------- Definition of JSON arrays for name-contained IOCs ----------------------

SubNetwork-Multiple:

type: array

items:

$ref: '#/components/schemas/SubNetwork-Single'

NetworkSlice-Multiple:

type: array

items:

$ref: '#/components/schemas/NetworkSlice-Single'

NetworkSliceSubnet-Multiple:

type: array

items:

$ref: '#/components/schemas/NetworkSliceSubnet-Single'

EP\_Transport-Multiple:

type: array

items:

$ref: '#/components/schemas/EP\_Transport-Single'

NetworkSliceSubnetProviderCapabilities-Multiple:

type: array

items:

$ref: '#/components/schemas/NetworkSliceSubnetProviderCapabilities-Single'

FeasibilityCheckAndReservationJob-Multiple:

type: array

items:

$ref: '#/components/schemas/FeasibilityCheckAndReservationJob-Single'

#------------ Definitions in TS 28.541 for TS 28.532 -----------------------------

resources-sliceNrm:

oneOf:

- $ref: '#/components/schemas/MnS'

- $ref: '#/components/schemas/SubNetwork-Single'

- $ref: '#/components/schemas/NetworkSlice-Single'

- $ref: '#/components/schemas/NetworkSliceSubnet-Single'

- $ref: '#/components/schemas/EP\_Transport-Single'

- $ref: '#/components/schemas/NetworkSliceSubnetProviderCapabilities-Single'

- $ref: '#/components/schemas/FeasibilityCheckAndReservationJob-Single'

|  |
| --- |
| **End of Change** |