**3GPP TSG-SA5 Meeting #158 *S5-246366***

**, United States, 18th Nov 2024 - 22nd Nov 2024**

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| *CR-Form-v12.3* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
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|  | **28.312** | **CR** | **0255** | **rev** | **1** | **Current version:** | **18.5.0** |  |
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| *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)*.* | | | | | | | | |
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| ***Proposed change affects:*** | UICC apps |  | ME |  | Radio Access Network | **X** | Core Network |  |

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| ***Title:*** | Rel-19 CR TS 28.312 Enhance the use case and solution to support radio network traffic assurance for scheduled events scenario | | | | | | | | | |
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| ***Source to WG:*** | Huawei, Deutsche Telekom | | | | | | | | | |
| ***Source to TSG:*** | S5 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | DUMMY | | | | |  | ***Date:*** | | | 2024-11-04 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | **B** |  | | | | | ***Release:*** | | | Rel-19 |
|  | *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-17 (Release 17) Rel-18 (Release 18) Rel-19 (Release 19)  Rel-20 (Release 20)* | |
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| ***Reason for change:*** | | The use case, requirements and solutions for radio network traffic assurance for scheduled events was studied in TR 28.914 and recommended for normative work. So, it proposes to enhance the use case and solution for Radio Network expectation to support radio network traffic assurance for scheduled events. | | | | | | | | |
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| ***Summary of change:*** | | 1. Enhance the use case for Intent containing an expectation on radio network performance to be assured to support radio network traffic assurance for scheduled events  2. Enhance the RadioNetworkExpectation to support the above use case enhancement. | | | | | | | | |
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| ***Consequences if not approved:*** | |  | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 5.1.5.1, 6.2.2.1.1.2, 6.2.2.1.1.3, 6.2.2.1.1.4, 6.2.2.2, D.X (new), | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **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:*** | | Forge MR link: <https://forge.3gpp.org/rep/sa5/MnS/-/merge_requests/1443> at commit 8d1edaf59a522c2b7586e6a04a9f82ec77c6bfa1 | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | | S5-247172 is the revision of S5-246366 | | | | | | | | |

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| **1st Change** |

### 5.1.5 Intent containing an expectation on radio network performance to be assured

#### 5.1.5.1 Introduction

In this scenario, MnS consumer expresses its intent containing an intent expectation on radio network performance (including RAN UE throughput performance, radio network capacity performance) to be assured to MnS producer, which may include area information (e.g. geographical area, a list of cells), RATs (e.g. NR only, EUTRAN only, or all RATs), frequency information (e.g. nRFrequencyBand), radio network performance targets, optional performance scope (e.g. specific service type, specific UE groups).

The radio network performance targets include the targets in the following target categories based on what radio network performance MnS consumer expects to be assured.

- RAN UE throughput targets, for example, target average UL/DL RAN UE throughput, target percentage of UE with low UL/DL RAN UE throughput (e.g. < 5 Mbps), target percentage of UE with high UL/DL RAN UE throughput (e.g. > 50 Mbps).

- Radio network capacity targets, for example, target percentage of high UL/DL PRB Load (e.g. < 70%), target average UL/DL PRB load (e.g. <85%).

- User number related targets, for example, target maximum user numbers (e.g. 500 UEs).

MnS consumer can express radio network expectations on radio network traffic assurance for the scheduled times for specific events. For example, specified RAN UE throughput targets or user number requirements during a sporting event or concert.  The schedule times can be one-time interval, daily periodicity, weekly periodicity or monthly periodicity.

Based on the intent containing expectation on radio network performance for the specified area to be assured received, MnS producer collects and analyses corresponding radio network performance related data (e.g. RAN UE throughput data, number of PRBs used for UL/DL traffic transmission) in the specified areas, identifies the potential radio network performance issues (e.g. low RAN UE throughput for certain areas, high load for certain areas, high UL/DL PRB Load issue), which will impact radio network performance intent satisfaction, analyses the cause, evaluates, decides and adjusts the radio feature configuration parameters for impacted RAN NEs/Cells to address the radio network performance issues in the specified areas. The artificial intelligence or machine learning technologies may be used to select the optimal radio feature configuration parameters to satisfy radio network performance targets.

MnS producer continuously monitors the radio network performance (e.g. average UL/DL RAN UE throughput, percentage of UE with low UL/DL RAN UE throughput (e.g. < 5 Mbps), percentage of UE with high UL/DL RAN UE throughput (e.g. > 50 Mbps), percentage of high UL/DL PRB Load (e.g. < 70%)) for the specified area, and decides whether radio network performance targets are satisfied.

MnS producer may notify MnS consumer about the intent fulfilment information and achieved value for radio network targets, including the radio network performance (e.g. average UL/DL RAN UE throughput, percentage of UE with low UL/DL RAN UE throughput, percentage of high UL/DL PRB Load) for the specified area which enables MnS consumer to monitor the intent containing an expectation on radio network performance to be assured.

#### 5.1.5.2 Requirements

**REQ-IDMS\_RadioNetworkIntent-CON-5** The intent driven MnS producer for radio network shall have capability enabling MnS consumer to express intent containing an expectation on RAN UE throughput performance to be assured for specified area.

**REQ-IDMS\_RadioNetworkIntent-CON-6** The intent driven MnS producer for radio network shall have capability enabling MnS consumer to obtain intent report information (including fulfilment information) for the intent containing an expectation on RAN UE throughput performance to be assured.

**REQ-IDMS\_RadioNetworkIntent-CON-7**: The intent driven MnS producer for radio network shall have capabilities enabling the MnS consumer to express intent containing an expectation on radio network capacity performance to be assured for the specified area.

**REQ-IDMS\_RadioNetworkIntent -CON-8:** The intent driven MnS producer for radio network shall have capabilities enabling the MnS consumer to obtain intent report information (including fulfilment information and achieved value) for intent containing an expectation on radio network capacity performance to be assured.

NOTE: the example of radio network capacity performance is target percentage of high UL/DL PRB Load for a specified Geographical area.

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| **2nd Change** |

##### 6.2.2.1.1 Radio Network Expectation

6.2.2.1.1.1 Definition

Radio Network Expectation is an IntentExpectation which can be used to represent MnS consumer's expectations for radio network (RAN SubNetwork) delivering and performance assurance.

The Radio Network Expectation is defined by utilizing the construct of the generic IntentExpectation <<dataType>> with set of allowed values and concrete dataTypes specified.

Following are the specific allowed values when implemented the IntentExpectation for Radio Network Expectation.

Table 6.2.2.1.1.1-1

|  |  |
| --- | --- |
| Attribute Name | Allowed Values |
| objectType (CM) | RAN SubNetwork |
| objectInstance (CM) | DN of the RAN SubNetwork |

NOTE: Following are the qualifier description for attribute "objectType" and "objectInstance":

- In case of the intent expectation is not for a specific RAN SubNetwork instance or/and MnS consumer have no knowledge of the DN of this RAN SubNetwork instance, the attribute "objectType" needs to be specified.

- In case of the intent expectation is for a specific RAN SubNetwork instance and MnS consumer have the knowledge of the DN of this RAN SubNetwork instance, the attribute "objectInstance" needs to specified.

6.2.2.1.1.2 ObjectContexts

Following provides the concrete ObjectContexts for Radio Network Expectation based on the common structure of ObjectContext. The properties of the attributes in the following table should be same with properties of ObjectContexts defined in clause 6.2.1.3. The usage of following contexts for corresponding use cases see Table 8.1 Guidelines for using scenario specific intent expectation for intent driven use cases.

Table 6.2.2.1.1.2-1

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute Name | Support Qualifier | isReadable | isWritable | isInvariant | isNotifyable |
| coverageAreaPolygonContext | O | T | T | F | F |
| coverageTACContext | O | T | T | F | F |
| cellContext | O | T | T | F | F |
| pLMNContext | O | T | T | F | F |
| dlFrequencyContext | O | T | T | F | F |
| ulFrequencyContext | O | T | T | F | F |
| rATContext | O | T | T | F | F |
| uEGroupContext | O | T | T | F | F |

6.2.2.1.1.3 ExpectationTargets

Following provides the concrete ExpectationTargets for Radio Network Expectation based on the common structure of ExpectationTarget. The properties of the attributes in the following table should be the same with properties of ExpectationTargets defined in clause 6.2.1.3. The usage of following targets for corresponding use cases see Table 8.1 Guidelines for using scenario specific intent expectation for intent driven use cases.

Table 6.2.2.1.1.3-1

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute Name | Support Qualifier | isReadable | isWritable | isInvariant | isNotifyable |
| weakRSRPRatioTarget | O | T | T | F | F |
| lowSINRRatioTarget | O | T | T | F | F |
| aveULRANUEThptTarget | O | T | T | F | F |
| aveDLRANUEthptTarget | O | T | T | F | F |
| lowULRANUEThptRatioTarget | O | T | T | F | F |
| lowDLRANUEThptRatioTarget | O | T | T | F | F |
| highUlPrbLoadRatioTarget | O | T | T | F | F |
| highDlPrbLoadRatioTarget | O | T | T | F | F |
| aveUlPrbLoadTarget | O | T | T | F | F |
| aveDlPrbLoadTarget | O | T | T | F | F |
| rANEnergyConsumptionTarget | O | T | T | F | F |
| rANEnergyEfficiencyTarget | O | T | T | F | F |
| activeUEsNumTarget | O | T | T | F | F |

6.2.2.1.1.4 ExpectationContexts

Following provides the concrete ExpectationContexts for Radio Network Expectation based on the common structure of ExpectationContext. The attribute properties defined in the table below should be the same as the properties defined for ExpectationContexts in clause 6.2.1.3.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute Name | Support Qualifier | isReadable | isWritable | isInvariant | isNotifyable |
| targetAssuranceTimeContext | O | T | F | F | F |
| schedulingTimeContext | O | T | T | F | F |

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| **3rd Change** |

#### 6.2.2.2 Attribute definition

Table 6.2.2.2-1

| Attribute Name | Documentation and Allowed Values | Properties |
| --- | --- | --- |
| coverageAreaPolygonContext | It describes the coverage areas for the RAN SubNetwork that the intent expectation is applied in the form of polygon.  CoverageAreaPolygonContext is a Context including attributes: contextAttribute, contextCondition and contextValueRange.  Following are the allowed values:  - contextAttribute: "coverageAreaPolygon"  - contextCondition: "IS\_ALL\_OF"  - contextValueRange: a list of GeoArea defined in 3GPP TS 28. 622 [6] | type: Context  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: True |
| coverageTACContext | It describes the coverage areas for the RAN SubNetwork that the intent expectation is applied in the form of TAC.  CoverageTACContext is a Context including attributes: contextAttribute, contextCondition and contextValueRange.  Following are the allowed values:  - contextAttribute: "coverageTAC"  - contextCondition: "IS\_ALL\_OF"  - contextValueRange: a list of TAC defined in 3GPP TS 28. 622 [6] | type: Context  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: True |
| cellContext | It describes the coverage areas for the RAN SubNetwork that the intent expectation is applied in the form of a list of cells (including E-UTRAN cells identified by E-UTRAN-CGI and NR cells identified by NG-RAN CGI).  CellContext is a Context including attributes: contextAttribute, contextCondition and contextValueRange.  Following are the allowed values:  - contextAttribute: "cell"  - contextCondition: "IS\_ALL\_OF"  - contextValueRange: a list of EutraCellId or NrCellId defined in 3GPP TS 28. 622 [6] | type: Context  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: True |
| dlFrequencyContext | It describes the downlink frequency information (RF reference frequencies and/or the frequency operating band) supported by the RAN SubNetwork that the intent expectation is applied.  dLFrequencyContext is a Context including attributes: contextAtrribute, contextCondition and contextValueRange.  Following are the allowed values:  - contextAttribute: "dLFrequency"  - contextCondition: "IS\_ALL\_OF"  - contextValueRange: a list of Frequency defined in clause 6.2.1.3.13 | type: Context  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: True |
| ulFrequencyContext | It describes the uplink frequency information (RF reference frequencies and/ or the frequency operating band) supported by the RAN SubNetwork that the intent expectation is applied.  uLFrequencyContext is a Context including attributes: contextAtrribute, contextCondition and contextValueRange.  Following are the allowed values:  - contextAttribute: uLFrequency"  - contextCondition: "IS\_ALL\_OF"  - contextValueRange: a list of Frequency defined in clause 6.2.1.3.13 | type: Context  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: True |
| rATContext | It describes the RAT supported by the RAN SubNetwork that the intent expectation is applied.  RATContext is a Context including attributes: contextAttribute, contextCondition and contextValueRange.  Following are the allowed values:  - contextAttribute: "rAT"  - contextCondition: "IS\_ALL\_OF"  - contextValueRange: a list of ENUM with allowed value: UTRAN, EUTRAN and NR | type: Context  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: True |
| uEGroupContext | It describes the UE Groups (represented by specific 5QI, specific S-NSSAI, or specific combination of S-NSSAI and 5QI) that the intent expectation is applied.  UEGroupContext is a Context including attributes: contextAttribute, contextCondition and contextValueRange.  Following are the allowed values:  - contextAttribute: "UEGroup"  - contextCondition: "IS\_ALL\_OF"  - contextValueRange: a list of UEGroup <<dataType>> | type: Context  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: True |
| targetAssuranceTimeContext | It describes the timeWindows (including startTime, endTime) when the targets in the Intent Expectation need to be assured.  - contextAttribute: "targetAssuranceTime"  - contextCondition: "IS\_EQUAL\_TO"  - contextValueRange: a list of TimeWindow(s) defined in TS 28.622 [6]. | type: Context  multiplicity: \*  isOrdered: False  isUnique: True  defaultValue: None  isNullable: True |
| weakRSRPRatioTarget | It describes the downlink weak coverage ratio target for the RAN SubNetwork that the intent expectation is applied. The numerator is the number of the cells with downlink weak RSRP, and the denominator is the total number of cells of the RAN Subnetwork in the specified area.  WeakRSRPRatioTarget is an ExpectationTarget including attributes: targetName, targetCondition, targetValueRange and targetContext.  Following are the allowed values:  - targetName: "weakRSRPRatio"  - targetCondition: "IS\_LESS\_THAN"  - targetValueRange: integer with allowed value [0,100] %  - targetContext: WeakRSRPContext | type: ExpectationTarget  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: True |
| weakRSRPRatioTarget.weakRSRPContext | It describes the threshold for downlink weak RSRP of the cells (see RSRP measurements in TS 28.552 [6]) of the RAN SubNetwork that the intent expectation is applied.  WeakRSRPContext is a Context including attributes: contextAtrribute, contextCondition and contextValueRange.  Following are the allowed values:  - contextAttribute: "weakRSRPThreshold"  - contextCondition: "IS\_LESS\_THAN"  - contextValueRange: Float | type: Context  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: True |
| lowSINRRatioTarget | It describes the low SINR ratio target for the RAN SubNetwork that the intent expectation is applied. The numerator is the number of the cells with low SINR, and the denominator is the total number of cells of the RAN Subnetwork in the specified area.  LowSINRRatioTarget is an ExpectationTarget including attributes: targetName, targetCondition, targetValueRange and targetContxt.  Following are the allowed values:  - targetName: "lowSINRRatio"  - targetCondition: "IS\_LESS\_THAN"  - targetValueRange: integer with allowed value [0,100]  - targetContext: LowSINRContext | type:ExpectationTarget  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: True |
| lowSINRRatioTarget.lowSINRContext | It describes the threshold for low SINR of the cells (see SINR measurements in TS 28.552 [6]) of the RAN SubNetwork that the intent expectation is applied.  LowSINRContext is a Context including attributes: contextAttribute, contextCondition and contextValueRange.  Following are the allowed values:  - contextAttribute: "lowSINRThreshold"  - contextCondition: "IS\_LESS\_THAN"  - contextValueRange: integer | type: Context  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: True |
| aveULRANUEThptTarget | It describes the average UL RAN UE throughput target for RAN SubNetwork (see UL RAN UE throughput for a sub-network in TS 28.554[11]) that the intent expectation is applied.  AveULRANUEThptTarget is an ExpectationTarget including attributes: targetName, targetCondition and targetValueRange.  Following are the allowed values:  - targetName: "aveULRANUEThpt"  - targetCondition: "IS\_GREATER\_THAN"  - targetValueRange: integer | type: ExpectationTarget  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: True |
| aveDLRANUEThptTarget | It describes the average DL RAN UE throughput target for RAN SubNetwork (see DL RAN UE throughput for a sub-network in TS 28.554[11]) that the intent expectation is applied.  AveDLRANUEThptTarget is an ExpectationTarget including attributes: targetName, targetCondition and targetValueRange.  Following are the allowed values:  - targetName: "aveDLRANUEThpt"  - targetCondition: "IS\_GREATER\_THAN"  - targetValueRange: integer | type: ExpectationTarget  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: True |
| lowULRANUEThptRatioTarget | It describes the low UL RAN UE throughput ratio target for the RAN SubNetwork that the intent expectation is applied. The numerator is the number of the cells with low UL RAN UE throughput, and the denominator is the total number of cells of the RAN Subnetwork in the specified area.  LowULRANUEThptRatioTarget is an ExpectationTarget including attributes: targetName, targetCondition, targetValueRange and targetContext.  Following are the allowed values:  - targetName: "lowULRANUEThptRatio"  - targetCondition: "IS\_LESS\_THAN"  - targetValueRange: integer with allowed value [0,100] %  - targetContext: LowULRANUEThptContext | type: ExpectationTarget  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: True |
| lowULRANUEThptRatioTarget.lowULRANUEThptContext | It describes the threshold for the low UL RAN UE throughput cells (see average UL RAN UE throughput in gNB and distribution of UL UE throughput in gNB in TS 28.552[6]) of the RAN SubNetwork that the intent expectation is applied  LowULRANUEThptContext is a Context including attributes: contextAttribute, contextCondition and contextValueRange.  Following are the allowed values:  - contextAttribute: "lowULRANUEThptThreshold"  - contextCondition: "IS\_LESS\_THAN"  - contextValueRange: Float | type: Context  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: True |
| lowDLRANUEThptRatioTarget | It describes the low DL RAN UE throughput ratio target for the RAN SubNetwork that the intent expectation is applied. The numerator is the number of the cells with low DL RAN UE throughput, and the denominator is the total number of cells of the RAN Subnetwork in the specified area.  LowDLRANUEThptRatioTarget is an ExpectationTarget including attributes: targetName, targetCondition, targetValueRange and targetContext.  Following are the allowed values:  - targetName: "lowDLRANUEThptRatio"  - targetCondition: "IS\_LESS\_THAN "  - targetValueRange: integer with allowed value [0,100]  - targetContext: LowDLRANUEThptContext | type: ExpectationTarget  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: True |
| lowDLRANUEThptRatioTarget.lowDLRANUEThptContext | It describes the threshold for the low DL RAN UE throughput cells (see average DL RAN UE throughput in gNB and distribution of DL UE throughput in gNB in TS 28.552[6]) of the RAN SubNetwork that the intent expectation is applied.  LowDLRANUEThptContext is a Context including attributes: contextAttribute, contextCondition and contextValueRange.  Following are the allowed values:  - contextAttribute: "lowDLRANUEThptThreshold"  - contextCondition: "IS\_LESS\_THAN"  - contextValueRange: Float | type: Context  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: True |
| RadioNetworkExpectation.activeUEsNumTarget | It describes the number of active UEs for the specified areas. This target is related to mean number of active UEs in the DL per cell and mean number of active UEs in the UL per cell defined in 3GPP TS 28.552 [6].  ActiveUEsNumTarget is an ExpectationTarget including attributes: targetName, targetCondition and targetValueRange.  Following are the allowed values:  - targetName: " activeUEsNum"  - targetCondition: " IS\_WITHIN\_RANGE "  - targetValueRange: a pair of integer values to represent minimum number of active UEs and maximum number of active UEs. | type: ExpectationTarget  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: True |
| RadioNetworkExpectation. schedulingTimeContext | It describes the scheduled times (including one-time interval, daily periodicity, weekly periodicity or monthly periodicity) for the Radio Network that the intent expectation is applied. For details see SchedulingTime <<choice>> defined in clause 4.3.63 of TS 28.622 [6].  schedulingTimeContext is a Context including attributes: contextAttribute, contextCondition and contextValueRange.  Following are the allowed values:  - contextAttribute: "schedulingTime"  - contextCondition: " IS\_ALL\_OF "  - contextValueRange: a list of SchedulingTime <<choice>> defined in TS 28.622 [6] | type: Context  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: True |
| nfTypeContext | It identifies the types of NF supported by the 5GC SubNetwork that the intent expectation is applied.  nfTypeContext is a Context including attributes: contextAtrribute, contextCondition and contextValueRange.  Following are the allowed values:  - contextAttribute: " nfType "  - contextCondition:" IS\_ALL\_OF "  - contextValueRange: a list of ENUM with allowed value:  Enumeration NFType in 3GPP TS 29.510[13] | type: Context  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: True |
| nfInstanceLocationContext | It describes the location of NF instance supported by the 5GC SubNetwork that the intent expectation is applied.  nfInstancelocationContext is a Context including attributes: contextAtrribute, contextCondition and contextValueRange.  Following are the allowed values:  - contextAttribute: " nfInstanceLocation "  - contextCondition:” IS\_ALL\_OF "  - contextValueRange: a list of string.  See Locality in TS 29.510 [13] | type: Context  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: True |
| taiContext | It describes the tracking area Identifiers supported by the 5GC SubNetwork that the intent expectation is applied.  taiContext is a Context including attributes: contextAtrribute, contextCondition and contextValueRange.  Following are the allowed values:  - contextAttribute: "tai"  - contextCondition:" IS\_ALL\_OF "  - contextValueRange: a list of tai defined in TS 28.622 [6] | type: Context  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: True |
| maxNumberofPDUsessionsTarget | It describes the maximum number of PDU sessions for 5GC SubNetwork supporting that the intent expectation is applied. For details, see maxNumberofPDUsessions in clause 5.3.1.2 in TS 28.552 [12]  maxNumberofPDUsessionsTarget is an ExpectationTarget including attributes: targetName, targetCondition and targetValueRange.  Following are the allowed values:  - targetName: "maxNumberofPDUsessions"  - targetCondition: " IS\_LESS\_THAN"  - targetValueRange: integer  - targetContext: 5GSessionContext. | type: ExpectationTarget  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: True |
| maxNumberofPDUsessionsTarget.5GSessionContext | It describes the maximum supported 5G PDU session of the 5GC SubNetwork related to the intent expectation.  5GSessionContext is a Context including attributes: contextAttribute, contextCondition and contextValueRange.  Following are the allowed values:  - contextAttribute: "5GSession"  - contextCondition: "IS\_ LESS\_THAN"  - contextValueRange: integer | type: Context  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: True |
| maxNumberofRegisteredsubscribersTarget | It describes the maximum number of Registered subscribers for 5GC SubNetwork supporting that the intent expectation is applied. For details, see maxNumberofRegisteredsubscribers in clause 5.6.2 in TS 28.552 [12]  maxNumberofRegisteredsubscribersTarget is an ExpectationTarget including attributes: targetName, targetCondition and targetValueRange.  Following are the allowed values:  - targetName: "maxNumberofRegisteredsubscribers"  - targetCondition: " IS\_LESS\_THAN"  - targetValueRange: Integer | type: ExpectationTarget  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: True |
| highUlPrbLoadRatioTarget | It describes the high UL PRB load ratio target (as percentage) for the RAN SubNetwork that the intent expectation is applied. The numerator is the number of the cells with high UL PRB load, and the denominator is the total number of cells of the RAN Subnetwork in the specified area.  HighUlPrbLoadRatioTarget is an ExpectationTarget including attributes: targetName, targetCondition,targetValueRange and targetContext.  Following are the allowed values:  - targetName: "highUlPrbLoadRatio"  - targetCondition: "IS\_LESS\_THAN "  - targetValueRange: integer with allowed value [0,100] %  - targetContext: HighUlPrbLoadContext | type: ExpectationTarget  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: True |
| highUlPrbLoadRatioTarget.HighUlPrbLoadContext | It describes the threshold for high uplink PRB load (i.e. UL Total PRB Usage in TS 28.552 [12] to represent the percentage of UL PRBs used) of the cells of the RAN SubNetwork in the specified area that the intent expectation is applied.  HighUlPrbLoadContext is a Context including attributes: contextAttribute, contextCondition and contextValueRange.  Following are the allowed values:  - contextAttribute: "HighUlPrbLoad"  - contextCondition: "IS\_GREATER\_THAN"  - contextValueRange: integer with allowed value [0,100] % | type: Context  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: True |
| highDlPrbLoadRatioTarget | It describes the high DL PRB load ratio target (as percentage) for the RAN SubNetwork that the intent expectation is applied. The numerator is the number of the cells with high DL PRB load, and the denominator is the total number of cells of the RAN Subnetwork in the specified area.  HighDlPrbLoadRatioTarget is an ExpectationTarget including attributes: targetName, targetCondition, targetValueRange and targetContext.  Following are the allowed values:  - targetName: "highDlPrbLoadRatio"  - targetCondition: "IS\_LESS\_THAN "  - targetValueRange: integer with allowed value [0,100] %  - targetContext: HighDlPrbLoadContext | type: ExpectationTarget  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: True |
| highDlPrbLoadRatioTarget.HighDlPrbLoadContext | It describes the threshold for high downlink PRB load (i.e. DL Total PRB Usage in TS 28.552 [12] to represent the percentage of DL PRBs used) of the cells of the RAN SubNetwork in the specified area that the intent expectation is applied.    HighDlPrbLoadContext is a Context including attributes: contextAttribute, contextCondition and contextValueRange.  Following are the allowed values:  - contextAttribute: "HighDlPrbLoad"  - contextCondition: "IS\_GREATER\_THAN"  - contextValueRange: integer with allowed value [0,100] % | type: Context  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: True |
| aveUlPrbLoadTarget | It describes the average uplink PRB load target (i.e. UL Total PRB Usage in TS 28.552 [12] to represent the percentage of UL PRBs used) of the cells of the RAN SubNetwork that the intent expectation is applied.  AveULPrbLoadTarget is an ExpectationTarget including attributes: targetName, targetCondition and targetValueRange.  Following are the allowed values:  - targetName: "aveULPrbLoad"  - targetCondition: "IS\_LESS\_THAN"  - targetValueRange: integer with allowed value [0,100] % | type: ExpectationTarget  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: True |
| aveDlPrbLoadTarget | It describes the average dowlink PRB load (i.e. DL Total PRB Usage in TS 28.552 [12] to represent the percentage of DL PRBs used) target for RAN SubNetwork that the intent expectation is applied.  AveDLPrbLoadTarget is an ExpectationTarget including attributes: targetName, targetCondition and targetValueRange.  Following are the allowed values:  - targetName: "aveDLPrbLoad"  - targetCondition: "IS\_LESS\_THAN"  - targetValueRange: integer with allowed value [0,100] % | type: ExpectationTarget  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: True |
| rANEnergyConsumptionTarget | It describes the RAN energy consumption target for RAN SubNetwork that the intent expectation is applied. The definition for RAN energy consumption see ECNG-RAN in clause 6.7.3.4.1 in TS 28.554 [11].  RANEnergyConsumptionTarget is an ExpectationTarget including attributes: targetName, targetCondition and targetValueRange.  Following are the allowed values:  - targetName: "rANEnergyConsumption"  - targetCondition: "IS\_LESS\_THAN"  - targetValueRange: Integer | type: ExpectationTarget  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: True |
| rANEnergyEfficiencyTarget | It describes the RAN energy efficiency target for RAN SubNetwork that the intent expectation is applied. The unit of this target is bit/J. The definition for RAN energy efficiency target for RAN SubNetwork see EEMN,DV in clause 6.7.1.1 in TS 28.554 [11]  RANEnergyEfficiencyTarget is an ExpectationTarget including attributes: targetName, targetCondition and targetValueRange.  Following are the allowed values:  - targetName: " rANEnergyEfficiency "  - targetCondition: " IS\_GREATER\_THAN"  - targetValueRange: Integer | type: ExpectationTarget  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: True |
| serviceStartTimeContext | This describes the start time at which the service shall be available. This contributes to the selection of the appropriate edge data network to be used for service deployment.  Following are the allowed values:  - contextAttribute: "serviceStartTime"  - contextCondition: "IS\_EQUAL\_TO"  - contextValueRange: DateTime | type: Context  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: True |
| serviceEndTimeContext | This describes the end time after which the service shall not be available. This contributes to the selection of the appropriate edge data network to be used for service deployment.  Following are the allowed values:  - contextAttribute: "serviceEndTime"  - contextCondition: "IS\_EQUAL\_TO"  - contextValueRange: DateTime | type:Context  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: True |
| edgeIdentificationIdContext | This identifies the edge network where the service needs to be deployed. For details see EDNidentifier defined in TS 28.538 [9]. This should be used when the edge identification is known to the consumer  Following are the allowed values:  - contextAttribute: "edgeIdentificationId"  - contextCondition: "IS\_EQUAL\_TO"  - contextValueRange: String | type: Context  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: True |
| edgeIdentificationLocContext | This identifies the location where the service needs to be deployed. This should be used when the edge identification is not known to the consumer  Following are the allowed values:  - contextAttribute: "edgeIdentificationLoc"  - contextCondition: "IS\_EQUAL\_TO"  - contextValueRange: GeoCoordinate dfined in TS 28.622 [6]. | type: Context  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: True |
| coverageAreaTAContext | It describes Tracking Coverage Areas for service supporting that the intent expectation is applied.  coverageAreaTAContext is a Context including attributes: contextAttribute, contextCondition and contextValueRange.  Following are the allowed values:  - contextAttribute: "coverageAreaTA"  - contextCondition: "IS\_ALL\_OF"  - contextValueRange: a list of TAC defined in 3GPP TS 28.622 [6] | type: Context  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: True |
| EdgeServiceSupport Expectation. dlThptPerUETarget | It describes the DL throughput target by the per UE for the edge service Supporting that the intent expectation is applied. For details see dlThptPerUE defined in clause 6.3.1 of TS 28.541 [5].  DLThptperUETarget is an ExpectationTarget including attributes: targetName, targetCondition and targetValueRange:  - targetName: "DLThptperUE"  - targetCondition: "IS\_GREATER\_THAN"  - targetValueRange: Integer. | type: ExpectationTarget  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: True |
| EdgeServiceSupport Expectation. ulThptPerUETarget | It describes the UL throughput target by the per UE for the edge service Supporting that the intent expectation is applied. For details see ulThptPerUE defined in clause 6.3.1 of TS 28.541 [5].  ULThptperUETarget is an ExpectationTarget including attributes: targetName, targetCondition and targetValueRange.  - targetName: "ulThptperUE"  - targetCondition: "IS\_GREATER\_THAN"  - targetValueRange: Integer. | type: ExpectationTarget  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: True |
| EdgeServiceSupport Expectation. dLLatencyTarget | It describes the DL latency target for the edge service Supporting that the intent expectation is applied.  DLLatencyTarget is an ExpectationTarget including attributes: targetName, targetCondition and targetValueRange. For details see attribute dlLatency defined in clause 6.3.1 of TS 28.541 [5].  - targetName: "dLLatency"  - targetCondition: "IS\_LESS\_THAN"  - targetValueRange: Integer. | type: ExpectationTarget  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: True |
| EdgeServiceSupport Expectation. uLLatencyTarget | It describes the UL latency target for the edge service Supporting that the intent expectation is applied. For details see attribute ulLatency defined in clause 6.3.1 of TS 28.541 [5].  uLLatencyTarget is an ExpectationTarget including attributes: targetName, targetCondition and targetValueRange.  - targetName: "uLLatency"  - targetCondition: "IS\_LESS\_THAN"  - targetValueRange: Integer. | type: ExpectationTarget  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: True |
| EdgeServiceSupport Expectation. maxNumberofUEsTarget | It describes the the number of UEs for edge service supporting that the intent expectation is applied. For details see attribute maxNumberofUE defined in clause 6.3.1 of of TS 28.541 [5].  maxNumberofUEsContext is an ExpectationTarget including attributes: targetName, targetCondition and targetValueRange.  Following are the allowed values:  - targetName: "maxNumberofUEs"  - targetCondition: " IS\_LESS\_THAN"  - targetValueRange: Integer. | type: ExpectationTarget  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: True |
| EdgeServiceSupport Expectation. activityFactorTarget | It describes the percentage value of the amount of simultaneous active UEs to the total number of UEs where active means the UEs are exchanging data with the network for service supporting that the intent expectation is applied. For details see activityFactor in clause 6.3.1 in TS 28.541 [5.]  activityFactorTarget is an ExpectationTarget including attributes: targetName, targetCondition and targetValueRange.  Following are the allowed values:  - targetName: " activityFactor "  - targetCondition: " IS\_EQUAL\_TO"  - targetValueRange: Integer | type: ExpectationTarget  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: True |
| EdgeServiceSupport Expectation. uESpeedTarget | It describes the speed (in km/hour) supported  for edge service supporting that the intent expectation is applied. For details see uESpeed in clause 6.3.1 in TS 28.541[5].  uESpeedTarget is an ExpectationTarget including attributes: targetName, targetCondition and targetValueRange.  Following are the allowed values:  - targetName: "uESpeed"  - targetCondition: " IS\_LESS\_THAN"  - targetValueRange: Integer | type: ExpectationTarget  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: True |
| EdgeServiceSupport Expectation. uEMobilityLevelContext | It describes the mobility level of UE for edge service supporting that the intent expectation is applied. For details see uEMobilityLevel in clause 6.3.1 in TS 28.541 [5.]  uEMobilityLevelContext is a Context including attributes: contextAttribute, contextCondition and contextValueRange.  Following are the allowed values:  - contextAttribute: " uEMobilityLevel "  - contextCondition: "IS\_EQUAL\_TO"  - contextValueRange: ENUM. | type: Context  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: True |
| EdgeServiceSupport Expectation. resourceSharingLevelContext | It describes the resource sharing level for which the intent expectation is applied. For details see resourceSharinglevel in clause 6.3.1 in TS 28.541 [5].  resourceSharingLevelContext is a Context including attributes: contextAttribute, contextCondition and contextValueRange.  Following are the allowed values:  - contextAttribute: "resourceSharingLevel"  - contextCondition: "IS\_EQUAL\_TO"  - contextValueRange: ENUM | type: Context  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: True |
| RadioServiceExpectation.coverageAreaPolygonContext | It describes the coverage areas for the Radio Service that the intent expectation is applied in the form of polygon.  CoverageAreaPolygonContext is a Context including attributes: contextAttribute, contextCondition and contextValueRange.  Following are the allowed values:  - contextAttribute: "coverageAreaPolygon"  - contextCondition: "IS\_ALL\_OF"  - contextValueRange: a list of CoverageArea defined in 3GPP TS 28.541 [5]. | type: Context  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: True |
| RadioServiceExpectation.serviceTypeContext | It describes the service type for the Radio Service that the intent expectation is applied. For details see sST in clause 6.4.1 in TS 28.541 [5].  ServiceTypeContext is a Context including attributes: contextAttribute, contextCondition and contextValueRange.  Following are the allowed values:  - contextAttribute: "serviceType"  - contextCondition: "IS\_EQUAL\_TO"  - contextValueRange: string | type: Context  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: True |
| RadioServiceExpectation.dlThptPerUETarget | It describes the DL throughput target per UE for the Radio Service that the intent expectation is applied. For details see dlThptPerUE defined in clause 6.3.1 of TS 28.541 [5].  DLThptperUETarget is an ExpectationTarget including attributes: targetName, targetCondition and targetValueRange:  - targetName: "DLThptperUE"  - targetCondition: "IS\_GREATER\_THAN"  - targetValueRange: Integer. | type: ExpectationTarget  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: True |
| RadioServiceExpectation.ulThptPerUETarget | It describes the UL throughput target per UE for the Radio Service that the intent expectation is applied. For details see ulThptPerUE defined in clause 6.3.1 of TS 28.541 [5].  ULThptperUETarget is an ExpectationTarget including attributes: targetName, targetCondition and targetValueRange.  - targetName: "ulThptperUE"  - targetCondition: "IS\_GREATER\_THAN"  - targetValueRange: Integer. | type: ExpectationTarget  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: True |
| RadioServiceExpectation.dLLatencyTarget | It describes the DL latency target for the Radio Service that the intent expectation is applied.  DLLatencyTarget is an ExpectationTarget including attributes: targetName, targetCondition and targetValueRange. For details see attribute dlLatency defined in clause 6.3.1 of TS 28.541 [5].  - targetName: "dLLatency"  - targetCondition: "IS\_LESS\_THAN"  - targetValueRange: Integer. | type: ExpectationTarget  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: True |
| RadioService. ExpectationuLLatencyTarget | It describes the UL latency target for the Radio Service that the intent expectation is applied. For details see attribute ulLatency defined in clause 6.3.1 of TS 28.541 [5].  uLLatencyTarget is an ExpectationTarget including attributes: targetName, targetCondition and targetValueRange.  - targetName: "uLLatency"  - targetCondition: "IS\_LESS\_THAN"  - targetValueRange: Integer. | type: ExpectationTarget  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: True |
| servingScopeContext | It describes the served area(s) of the 5GC NF instance supported by the 5GC SubNetwork that the intent expectation is applied. For detail, see servingScope in TS 29.510[13].  servingScopeContext is a Context including attributes: contextAtrribute, contextCondition and contextValueRange.  Following are the allowed values:  - contextAttribute: " servingScope "  - contextCondition:” IS\_ALL\_OF "  - contextValueRange: a list of string. | type: Context  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: True |
| dnnContext | It describes the DNN of the 5GC NF instance supported by the 5GC SubNetwork that the intent expectation is applied.  dnnContext is a Context including attributes: contextAtrribute, contextCondition and contextValueRange.  Following are the allowed values:  - contextAttribute: " dnn "  - contextCondition:” IS\_ALL\_OF "  - contextValueRange: a list of string as specified in 3GPP TS 23.003 [15] | type: Context  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: True |
| incomingDataTarget | It describes the maximum incoming data packets for 5GC SubNetwork related to the intent expectation. For details, see N6 incoming link usage measurement in clause 5.4.2.1 in TS 28.552 [12]  incomingDataTarget is an ExpectationTarget including attributes: targetName, targetCondition and targetValueRange.  Following are the allowed values:  - targetName: "incomingData"  - targetCondition: " IS\_LESS\_THAN"  - targetValueRange: integer | type: ExpectationTarget  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: True |
| outgoingDataTarget | It describes the maximum outgoing data packets for 5GC SubNetwork related to the intent expectation. For details, see N6 outgoing link usage measurement in clause 5.4.2.2 in TS 28.552 [12]  outgoingDataTarget is an ExpectationTarget including attributes: targetName, targetCondition and targetValueRange.  Following are the allowed values:  - targetName: "outgoingData"  - targetCondition: " IS\_LESS\_THAN"  - targetValueRange: integer | type: ExpectationTarget  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: True |
| startTimeContext | This describes the start time at which the expected result of the expectation shall be available.  Following are the allowed values:  - contextAttribute: "startTime"  - contextCondition: "IS\_EQUAL\_TO"  - contextValueRange: DateTime | type: Context  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: True |

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| **4th Change** |

# 8 Guidelines for using scenario specific intent expectation for intent driven use cases

This clause describes guidelines for using scenario specific intent expectation defined in clause 6.2.2 to satisfy the intent driven use cases defined in clause 5.1. Following table provides the information on which ObjectContexts and ExpectationTargets defined in clause 6.2.2 are used for the corresponding use case.

Table 8-1: Guidelines for using scenario specific intent expectation for intent driven use cases

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Use case | Scenario specific IntentExpectation | ExpectationObject.  ObjectContext | ExpectationTarget | ExpectationContext |
| Intent containing an expectation for delivering radio network (clause 5.1.1) | Radio Network Expectation | - coverageAreaPolygonContext  - coverageTACContext  - pLMNContext  - dlFrequencyContext  - ulFrequencyContext  - rATContext | -weakRSRPRatioTarget  - lowSINRRatioTarget  - aveULRANUEThptTarget  - aveDLRANUEthptTarget |  |
| Intent containing an expectation for delivering a service at the edge (clause 5.1.3) | Edge Service Support Expectation | - edgeIdentificationIdContext  - edgeIdentificationLocContext  - coverageAreaTAContext | - dlThptPerUETarget  - ulThptPerUETarget  - dLLatencyTarget  - uLLatencyTarget  - maxNumberofUEsTarget  - activityFactorTarget  - uESpeedTarget |  |
| Intent containing an expectation on coverage performance to be assured (clause 5.1.4) | Radio Network Expectation | - coverageAreaPolygonContext  - dlFrequencyContext  - ulFrequencyContext  - rATContext | -weakRSRPRatioTarget  -lowSINRRatioTarget |  |
| Intent containing an expectation on RAN UE throughput performance to be assured (clause 5.1.5) | Radio Network Expectation | - coverageAreaPolygonContext  - dlFrequencyContext  - ulFrequencyContext  - rATContext  - uEGroupContext | - aveULRANUEThptTarget  - aveDLRANUEthptTarget  - lowULRANUEThptRatioTarget  - lowDLRANUEThptRatioTarget |  |
| Intent containing an expectation for delivering 5GC network (clause 5.1.8) | 5GC Network Expectation | - nfTypeContext  - nfInstanceLocationContext  - pLMNContext  - taiContext  - servingScopeContext  - dnnContext | - maxNumberofPDUsessionsTarget  - maxNumberofRegisteredsubscribersTarget  - incomingDataTarget  - outgogingDataTarget |  |
| Intent containing an expectation on RAN capacity performance to be assured (clause 5.1.5) | Radio Network Expectation | - coverageAreaPolygonContext  - dlFrequencyContext  - ulFrequencyContext  - rATContext | - highUlPrbLoadRatioTarget  - highDlPrbLoadRatioTarget  - aveUlPrbLoadTarget  - aveDlPrbLoadTarget |  |
| Intent containing an expectation on RAN energy saving (clause 5.1.7) | Radio Network Expectation | - coverageAreaPolygonContext  - pLMNContext  - dlFrequencyContext  - ulFrequencyContext  - rATContext | - rANEnergyConsumptionTarget  -rANEnergyEfficiencyTarget  - aveULRANUEThptTarget  - aveDLRANUEThptTarget |  |
| Intent containing an expectation for delivering radio service (clause 5.1.2) | Radio Service Expectation | - coverageAreaPolygonContext  - serviceType | - dLLatencyTarget  - uLLatencyTarget  - dLThptPerUETarget  - uLThptPerUETarget |  |
| Intent containing an expectation on radio network traffic assurance (clause 5.1.5) | Radio Network Expectation | - cellContext  - uEGroupContext | - weakRSRPRatioTarget  - aveULRANUEThptTarget  - aveDLRANUEThptTarget  - activeUEsNumTarget | schedulingTimeContext |

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| --- |
| **5th Change** |

# D.X YAML document example for Intent containing an expectation on radio network traffic assurance

Intent:

Id: 'Intent\_9'

userLabel: 'Radio\_Network\_Traffic\_Assurance'

intentExpectation:

- expectationId: '1'

expectationVerb: 'Ensure'

expectationObjects:

- objectInstance: 'SubNetwork\_1'

- objectContexts:

contextAttribute: 'Cell'

contextCondition: 'IS\_ALL\_OF'

contextValueRange:

- 'NRCell\_1'

- 'NRCell\_2'

- 'NRCell\_3'

- 'NRCell\_4'

- 'NRCell\_5'

- contextAttribute: 'UEGroup'

contextCondition: 'IS\_ALL\_OF'

contextValueRange:

- sNSSAI: '1'

- fiveQIValue: '5'

- sNSSAI: '2'

fiveQIValue: '6'

expectationTargets:

- targetName: 'WeakRSRPRatio'

targetCondition: 'IS\_LESS\_THAN'

targetValueRange: '10'

targetContexts:

- contextAttribute: 'WeakRSRPThreshold'

contextCondition: 'IS\_LESS\_THAN'

contextValueRange: '-130.00'

- targetName: 'AveULRANUEThpt'

targetCondition: 'IS\_GREATER\_THAN'

targetValueRange: '100'

- targetName: 'AveDLRANUEThpt'

targetCondition: 'IS\_GREATER\_THAN'

targetValueRange: '300'

- targetName: 'ActiveUEsNumTarget'

targetCondition: 'IS\_WITHIN\_RANGE'

targetValueRange:

- '1000'

- '5000'

expectationContexts:

- contextAttribute: 'schedulingTime'

targetCondition: 'IS\_ALL\_OFF'

targetValueRange:

- timeWindow :

- startTime: '2024-11-01-16-00-00'

- endTime: '2024-11-01-20-00-00'

intentPriority: '1'

observationPeriod: '60'

intentReportRefernece: 'IntentReport\_4'

|  |
| --- |
| **6th Change** |

Forge MR link: <https://forge.3gpp.org/rep/sa5/MnS/-/merge_requests/1443> at commit 8d1edaf59a522c2b7586e6a04a9f82ec77c6bfa1

\*\*\* START OF CHANGE 1 \*\*\*

\*\*\* OpenAPI/TS28312\_IntentExpectations.yaml \*\*\*

<CODE BEGINS>

openapi: 3.0.1

info:

title: Scenario specific Intent Expectations

version: 18.4.0

description: >-

OAS 3.0.1 definition of scenario specific Intent Expectations

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externalDocs:

description: 3GPP TS 28.312; Intent driven management services for mobile networks

url: http://www.3gpp.org/ftp/Specs/archive/28\_series/28.312/

paths: {}

components:

schemas:

#-------Definition of the Scenario specific IntentExpectation dataType ----------#

RadioNetworkExpectation:

description: >-

This data type is the "IntentExpectation" data type with specialisations to represent MnS consumer's expectations for radio network delivering and performance assurance

type: object

properties:

expectationId:

type: string

expectationVerb:

$ref: "TS28312\_IntentNrm.yaml#/components/schemas/ExpectationVerb"

expectationObject:

$ref: "#/components/schemas/RadioNetworkExpectationObject"

expectationTargets:

type: array

uniqueItems: true

items:

type: object

oneOf:

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

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

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

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

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

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

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

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

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

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

- $ref: "#/components/schemas/RANEnergyConsumptionTarget"

- $ref: "#/components/schemas/RANEnergyEfficiencyTarget"

- $ref: "#/components/schemas/ActiveUEsNumTarget"

- $ref: 'TS28312\_IntentNrm.yaml#/components/schemas/ExpectationTarget'

expectationContexts:

type: array

uniqueItems: true

items:

type: object

oneOf:

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

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

- $ref: 'TS28312\_IntentNrm.yaml#/components/schemas/Context'

required:

- expectationId

RadioServiceExpectation:

description: >-

This data type is the "IntentExpectation" data type with specialisations to represent MnS consumer's expectations for radio service delivering

type: object

properties:

expectationId:

type: string

expectationVerb:

$ref: "TS28312\_IntentNrm.yaml#/components/schemas/ExpectationVerb"

expectationObject:

$ref: "#/components/schemas/RadioServiceExpectationObject"

expectationTargets:

type: array

uniqueItems: true

items:

type: object

oneOf:

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

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

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

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

- $ref: 'TS28312\_IntentNrm.yaml#/components/schemas/ExpectationTarget'

expectationContexts:

type: array

uniqueItems: true

items:

$ref: 'TS28312\_IntentNrm.yaml#/components/schemas/Context'

required:

- expectationId

EdgeServiceSupportExpectation:

description: >-

This data type is the "IntentExpectation" data type with specialisations to represent MnS consumer's expectations for service deployment

type: object

properties:

expectationId:

type: string

expectationVerb:

$ref: 'TS28312\_IntentNrm.yaml#/components/schemas/ExpectationVerb'

expectationObject:

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

expectationTargets:

type: array

uniqueItems: true

items:

type: object

oneOf:

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

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

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

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

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

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

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

- $ref: 'TS28312\_IntentNrm.yaml#/components/schemas/ExpectationTarget'

expectationContexts:

type: array

uniqueItems: true

items:

type: object

oneOf:

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

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

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

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

- $ref: 'TS28312\_IntentNrm.yaml#/components/schemas/Context'

required:

- expectationId

5GCNetworkExpectation:

description: >-

This data type is the "IntentExpectation" data type with specialisations to represent MnS consumer's expectations for 5GC network delivering

type: object

properties:

expectationId:

type: string

expectationVerb:

$ref: "TS28312\_IntentNrm.yaml#/components/schemas/ExpectationVerb"

expectationObjects:

type: array

uniqueItems: true

items:

$ref: "#/components/schemas/5GCNetworkExpectationObject"

expectationTargets:

type: array

uniqueItems: true

items:

type: object

oneOf:

- $ref: "#/components/schemas/MaxNumberofPDUsessionsTarget"

- $ref: "#/components/schemas/MaxNumberofRegisteredsubscribersTarget"

- $ref: "#/components/schemas/IncomingDataTarget"

- $ref: "#/components/schemas/OutgoingDataTarget"

- $ref: "TS28312\_IntentNrm.yaml#/components/schemas/ExpectationTarget"

expectationContexts:

type: array

uniqueItems: true

items:

type: object

oneOf:

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

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

- $ref: "TS28312\_IntentNrm.yaml#/components/schemas/Context"

required:

- expectationId

#-------Definition of the IntentExpectation dataType ----------#

#-------Definition of the scenario specific ExpectationObject dataType ----------#

RadioNetworkExpectationObject:

description: >-

This data type is the "ExpectationObject" data type with specialisations for RadioNetworkExpectation

type: object

properties:

objectType:

type: string

enum:

- RAN\_SubNetwork

objectInstance:

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

objectContexts:

type: array

uniqueItems: true

items:

type: object

oneOf:

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

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

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

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

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

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

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

- $ref: "#/components/schemas/UEGroupContext"

- $ref: 'TS28312\_IntentNrm.yaml#/components/schemas/Context'

RadioServiceExpectationObject:

description: >-

This data type is the "ExpectationObject" data type with specialisations for RadioServicekExpectation

type: object

properties:

objectType:

type: string

enum:

- Radio\_Service

objectInstance:

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

objectContexts:

type: array

uniqueItems: true

items:

type: object

oneOf:

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

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

- $ref: 'TS28312\_IntentNrm.yaml#/components/schemas/Context'

EdgeServiceSupportExpectationObject:

description: >-

This data type is the "ExpectationObject" data type with specialisations for EdgeServiceSupportExpectation

type: object

properties:

objectType:

type: string

enum:

- EdgeService\_Support #value for Edge Service Support Expectation--#

objectInstance:

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

objectContexts:

type: array

uniqueItems: true

items:

type: object

oneOf:

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

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

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

- $ref: 'TS28312\_IntentNrm.yaml#/components/schemas/Context'

5GCNetworkExpectationObject:

description: >-

This data type is the "ExpectationObject" data type with specialisations for 5GCNetworkExpectation

type: object

properties:

objectType:

type: string

enum:

- 5GC\_SubNetwork #value for 5GC Network Expectation--#

objectInstance:

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

objectContexts:

type: array

uniqueItems: true

items:

type: object

oneOf:

- $ref: "#/components/schemas/NfTypeContext"

- $ref: "#/components/schemas/NfInstanceLocationContext"

- $ref: "#/components/schemas/PLMNContext"

- $ref: "#/components/schemas/TaiContext"

- $ref: "#/components/schemas/ServingScopeContext"

- $ref: "#/components/schemas/DnnContext"

- $ref: "TS28312\_IntentNrm.yaml#/components/schemas/Context"

#-------Definition of the ExpectationObject dataType ----------#

#-------Definition of the Scenario specific ExpectationTarget dataType----------#

WeakRSRPRatioTarget:

description: >-

This data type is the "ExpectationTarget" data type with specialisations for WeakRSRPRatioTarget. It describes

the downlink weak coverage ratio target for the RAN SubNetwork that the intent expectation is applied.

The numerator is the number of the cells with downlink weak RSRP, and the denominator is the total number

of cells of the RAN Subnetwork in the specified area.

type: object

properties:

targetName:

type: string

enum:

- WeakRSRPRatio

targetCondition:

type: string

enum:

- IS\_LESS\_THAN

targetValueRange:

type: integer

minimum: 0

maximum: 100

targetContexts:

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

WeakRSRPContext:

description: >-

This data type is the "TargetContext" data type with specialisations for WeakRSRPContext. It describes the threshold

for downlink weak RSRP of the cells (see RSRP measurements in TS 28.552 [6]) of the RAN SubNetwork that the intent

expectation is applied.

type: object

properties:

contextAttribute:

type: string

enum:

- WeakRSRPThreshold

contextCondition:

type: string

enum:

- IS\_LESS\_THAN

contextValueRange:

type: number

LowSINRRatioTarget:

description: >-

This data type is the "ExpectationTarget" data type with specialisations for LowSINRatioTarget.It describes the low SINR

ratio target for the RAN SubNetwork that the intent expectation is applied. The numerator is the number of the cells with

low SINR, and the denominator is the total number of cells of the RAN Subnetwork in the specified area.

type: object

properties:

targetName:

type: string

enum:

- LowSINRRatio

targetCondition:

type: string

enum:

- IS\_LESS\_THAN

targetValueRange:

type: integer

minimum: 0

maximum: 100

targetContexts:

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

LowSINRContext:

description: >-

This data type is the "TargetContext" data type with specialisations for LowSINRContext.It describes the threshold for

low SINR of the cells (see SINR measurements in TS 28.552 [6]) of the RAN SubNetwork that the intent expectation is applied.

type: object

properties:

contextAttribute:

type: string

enum:

- LowSINRThreshold

contextCondition:

type: string

enum:

- IS\_LESS\_THAN

contextValueRange:

type: integer

AveULRANUEThptTarget:

description: >-

This data type is the "ExpectationTarget" data type with specialisations for AveULRANUEThptTarget.It describes the average

UL RAN UE throughput target for RAN SubNetwork (see UL RAN UE throughput for a sub-network in TS 28.554[11]) that the intent

expectation is applied.

type: object

properties:

targetName:

type: string

enum:

- AveULRANUEThpt

targetCondition:

type: string

enum:

- IS\_GREATER\_THAN

targetValueRange:

type: integer

AveDLRANUEThptTarget:

description: >-

This data type is the "ExpectationTarget" data type with specialisations for AveDLRANUEThptTarget.It describes the average

DL RAN UE throughput target for RAN SubNetwork (see DL RAN UE throughput for a sub-network in TS 28.554[11]) that the intent

expectation is applied.

type: object

properties:

targetName:

type: string

enum:

- AveDLRANUEThpt

targetCondition:

type: string

enum:

- IS\_GREATER\_THAN

targetValueRange:

type: integer

LowULRANUEThptRatioTarget:

description: >-

This data type is the "ExpectationTarget" data type with specialisations for LowULRANUEThptRatioTarget.It describes the low

UL RAN UE throughput ratio target for the RAN SubNetwork that the intent expectation is applied. The numerator is the number

of the cells with low UL RAN UE throughput, and the denominator is the total number of cells of the RAN Subnetwork in the

specified area.

type: object

properties:

targetName:

type: string

enum:

- LowULRANUEThptRatio

targetCondition:

type: string

enum:

- IS\_LESS\_THAN

targetValueRange:

type: integer

minimum: 0

maximum: 100

targetContexts:

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

LowULRANUEThptContext:

description: >-

This data type is the "TargetContext" data type with specialisations for LowULRANUEThptContext.It describes the threshold

for the low UL RAN UE throughput cells (see average UL RAN UE throughput in gNB and distribution of UL UE throughput in gNB

in TS 28.552[6]) of the RAN SubNetwork that the intent expectation is applied.

type: object

properties:

contextAttribute:

type: string

enum:

- LowULRANUEThptThreshold

contextCondition:

type: string

enum:

- Is\_less\_than

contextValueRange:

type: number

LowDLRANUEThptRatioTarget:

description: >-

This data type is the "ExpectationTarget" data type with specialisations for LowDLRANUEThptRatioTarget. It describes

the low DL RAN UE throughput ratio target for the RAN SubNetwork that the intent expectation is applied.The numerator

is the number of the cells with low DL RAN UE throughput, and the denominator is the total number of cells of the

RAN Subnetwork in the specified area.

type: object

properties:

targetName:

type: string

enum:

- LowDLRANUEThptRatio

targetCondition:

type: string

enum:

- IS\_LESS\_THAN

targetValueRange:

type: integer

minimum: 0

maximum: 100

targetContexts:

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

LowDLRANUEThptContext:

description: >-

This data type is the "TargetContext" data type with specialisations for LowDLRANUEThptContext.It describes the threshold

for the low DL RAN UE throughput cells ((see average DL RAN UE throughput in gNB and distribution of DL UE throughput in gNB

in TS 28.552[6]) ) of the RAN SubNetwork that the intent expectation is applied.

type: object

properties:

contextAttribute:

type: string

enum:

- LowDLRANUEThptThreshold

contextCondition:

type: string

enum:

- IS\_LESS\_THAN

contextValueRange:

type: number

HighULPrbLoadRatioTarget:

description: >-

This data type is the "ExpectationTarget" data type with specialisations for HighULPrbLoadRatioTarget. It describes the high UL

PRB load ratio target (as percentage) for the RAN SubNetwork that the intent expectation is applied. The numerator is the number

of the cells with high UL PRB load, and the denominator is the total number of cells of the RAN Subnetwork in the specified area.

type: object

properties:

targetName:

type: string

enum:

- HighULPrbLoadRatio

targetCondition:

type: string

enum:

- IS\_LESS\_THAN

targetValueRange:

type: integer

minimum: 0

maximum: 100

targetContexts:

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

HighULPrbLoadContext:

description: >-

This data type is the "TargetContext" data type with specialisations for HighULPrbLoadContext.It describes the threshold for high

uplink PRB load (i.e. UL Total PRB Usage in TS 28.552 [12] to represent the percentage of UL PRBs used) of the cells of the RAN

SubNetwork in the specified area that the intent expectation is applied.

type: object

properties:

contextAttribute:

type: string

enum:

- HighULPrbLoadThreshold

contextCondition:

type: string

enum:

- IS\_LESS\_THAN

contextValueRange:

type: integer

minimum: 0

maximum: 100

HighDLPrbLoadRatioTarget:

description: >-

This data type is the "ExpectationTarget" data type with specialisations for HighDLPrbLoadRatioTarget.It describes the high DL PRB

load ratio target (as percentage) for the RAN SubNetwork that the intent expectation is applied. The numerator is the number of the

cells with high DL PRB load, and the denominator is the total number of cells of the RAN Subnetwork in the specified area.

type: object

properties:

targetName:

type: string

enum:

- HighDLPrbLoadRatio

targetCondition:

type: string

enum:

- IS\_LESS\_THAN

targetValueRange:

type: integer

minimum: 0

maximum: 100

targetContexts:

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

HighDLPrbLoadContext:

description: >-

This data type is the "TargetContext" data type with specialisations for HighDLPrbLoadContext.It describes the threshold for high downlink

PRB load (i.e. DL Total PRB Usage in TS 28.552 [12] to represent the percentage of DL PRBs used) of the cells of the RAN SubNetwork in the

specified area that the intent expectation is applied.

type: object

properties:

contextAttribute:

type: string

enum:

- HighDLPrbLoadThreshold

contextCondition:

type: string

enum:

- IS\_LESS\_THAN

contextValueRange:

type: integer

minimum: 0

maximum: 100

AveULPrbLoadTarget:

description: >-

This data type is the "ExpectationTarget" data type with specialisations for AveULPrbLoadTarget.It describes the average uplink PRB load target

(i.e. UL Total PRB Usage in TS 28.552 [12] to represent the percentage of UL PRBs used) of the cells of the RAN SubNetwork that the intent

expectation is applied.

type: object

properties:

targetName:

type: string

enum:

- AveULPrbLoad

targetCondition:

type: string

enum:

- IS\_LESS\_THAN

targetValueRange:

type: integer

minimum: 0

maximum: 100

AveDLPrbLoadTarget:

description: >-

This data type is the "ExpectationTarget" data type with specialisations for AveDLPrbLoadTarget.It describes the average dowlink PRB load

(i.e. DL Total PRB Usage in TS 28.552 [12] to represent the percentage of DL PRBs used) target for RAN SubNetwork that the intent expectation

is applied.

type: object

properties:

targetName:

type: string

enum:

- AveDLPrbLoad

targetCondition:

type: string

enum:

- IS\_LESS\_THAN

targetValueRange:

type: integer

minimum: 0

maximum: 100

RANEnergyConsumptionTarget:

description: >-

This data type is the "ExpectationTarget" data type with specialisations for RANEnergyConsumptionTarget.It describes the RAN energy consumption

target for RAN SubNetwork that the intent expectation is applied. The definition for RAN energy consumption see ECNG-RAN in clause 6.7.3.4.1 in

TS 28.554 [11].

type: object

properties:

targetName:

type: string

enum:

- RANEnergyConsumption

targetCondition:

type: string

enum:

- IS\_LESS\_THAN

targetValueRange:

type: integer

RANEnergyEfficiencyTarget:

description: >-

This data type is the "ExpectationTarget" data type with specialisations for RANEnergyEfficiencyTarget.It describes the RAN energy efficiency target

for RAN SubNetwork that the intent expectation is applied. The unit of this target is bit/J. The definition for RAN energy efficiency target for RAN

SubNetwork see EEMN,DV in clause 6.7.1.1 in TS 28.554 [11].

type: object

properties:

targetName:

type: string

enum:

- RANEnergyEfficiency

targetCondition:

type: string

enum:

- IS\_GREATER\_THAN

targetValueRange:

type: integer

ActiveUEsNumTarget:

description: >-

This data type is the "ExpectationTarget" data type with specialisations for ActiveUEsNumTarget.

It describes the number of Active UEs for the specified areas. This target is related to Mean

number of Active UEs in the DL per cell and Mean number of Active UEs in the UL per cell defined

in 3GPP TS 28.552 [6].

type: object

properties:

targetName:

type: string

enum:

- ActiveUEsNum

targetCondition:

type: string

enum:

- IS\_WITHIN\_RANGE

targetValueRange:

type: array

description: >-

a pair of integer values to represent minimum number of active UEs and maximum number of active UEs.

items:

type: integer

minItems: 1

maxItems: 2

DLThptPerUETarget:

description: >-

This data type is the "ExpectationTarget" data type with specialisations for DLThptPerUETarget. It describes the DL throughput target by the per UE for the

edge service supporting or radio servicde that the intent expectation is applied. For details see dlThptPerUE defined in clause 6.3.1 of TS 28.541 [5].

type: object

properties:

targetName:

type: string

enum:

- DlThptPerUE

targetCondition:

type: string

enum:

- IS\_GREATER\_THAN

targetValueRange:

$ref: 'TS28541\_SliceNrm.yaml#/components/schemas/XLThpt'

ULThptPerUETarget:

description: >-

This data type is the "ExpectationTarget" data type with specialisations for ULThptPerUETarget.It describes the UL throughput target by the per UE for the edge

service supporting or radio service that the intent expectation is applied. For details see ulThptPerUE defined in clause 6.3.1 of TS 28.541 [5].

type: object

properties:

targetName:

type: string

enum:

- UlThptPerUE

targetCondition:

type: string

enum:

- IS\_GREATER\_THAN

targetValueRange:

$ref: 'TS28541\_SliceNrm.yaml#/components/schemas/XLThpt'

DLLatencyTarget:

description: >-

This data type is the "ExpectationTarget" data type with specialisations for DLLatencyTarget.It describes the DL latency target for the edge service supporting or radio service

that the intent expectation is applied

type: object

properties:

targetName:

type: string

enum:

- DlLatency

targetCondition:

type: string

enum:

- IS\_LESS\_THAN

targetValueRange:

type: integer

ULLatencyTarget:

description: >-

This data type is the "ExpectationTarget" data type with specialisations for ULLatencyTarget. It describes the UL latency target for the edge service supporting or radioService

that the intent expectation is applied. For details see attribute ulLatency defined in clause 6.3.1 of TS 28.541 [5]

type: object

properties:

targetName:

type: string

enum:

- UlLatency

targetCondition:

type: string

enum:

- IS\_LESS\_THAN

targetValueRange:

type: integer

MaxNumberofUEsTarget:

description: >-

This data type is the "ExpectationTarget" data type with specialisations for MaxNumberofUEsTarget.It describes the the number of UEs for edge service supporting

that the intent expectation is applied. For details see attribute maxNumberofUE defined in clause 6.3.1 of of TS 28.541 [5]

type: object

properties:

targetName:

type: string

enum:

- maxNumberofUEs

targetCondition:

type: string

enum:

- IS\_LESS\_THAN

targetValueRange:

type: integer

ActivityFactorTarget:

description: >-

This data type is the "ExpectationTarget" data type with specialisations for ActivityFactorTarget.It describes the percentage value of the amount of simultaneous

active UEs to the total number of UEs where active means the UEs are exchanging data with the edge service supporting that the intent expectation is applied.

For details see activityFactor in clause 6.3.1 in TS 28.541 [5].

type: object

properties:

targetName:

type: string

enum:

- activityFactor

targetCondition:

type: string

enum:

- IS\_EQUAL\_TO

targetValueRange:

type: integer

UESpeedTarget:

description: >-

This data type is the "ExpectationTarget" data type with specialisations for UESpeedTarget.It describes the speed (in km/hour) supported for edge service supporting

that the intent expectation is applied. For details see uESpeed in clause 6.3.1 in TS 28.541[5].

type: object

properties:

targetName:

type: string

enum:

- uESpeed

targetCondition:

type: string

enum:

- IS\_LESS\_THAN

targetValueRange:

type: integer

MaxNumberofPDUsessionsTarget:

description: >-

This data type is the "ExpectationTarget" data type with specialisations for MaxNumberofPDUsessionsTarget.It describes the maximum number of PDU sessions for 5GC

SubNetwork supporting that the intent expectation is applied. For details, see maxNumberofPDUsessions in clause 5.3.1.2 in TS 28.552 [12].

type: object

properties:

targetName:

type: string

enum:

- MaxNumberofPDUsessions

targetCondition:

type: string

enum:

- IS\_LESS\_THAN

targetValueRange:

type: integer

targetContexts:

$ref: '#/components/schemas/5GSessionContext'

5GSessionContext:

description: >-

This data type is the "TargetContext" data type with specialisations for 5GSessionContext.It describes the maximum supported 5G PDU session of the 5GC SubNetwork

related to the intent expectation.

type: object

properties:

contextAttribute:

type: string

enum:

- 5GSession

contextCondition:

type: string

enum:

- IS\_less\_THAN

contextValueRange:

type: integer

MaxNumberofRegisteredsubscribersTarget:

description: >-

This data type is the "ExpectationTarget" data type with specialisations for MaxNumberofRegisteredsubscribersTarget.It describes the maximum number of Registered

subscribers for 5GC SubNetwork supporting that the intent expectation is applied. For details, see maxNumberofRegisteredsubscribers in clause 5.6.2 in TS 28.552 [12].

type: object

properties:

targetName:

type: string

enum:

- MaxNumberofRegisteredsubscribers

targetCondition:

type: string

enum:

- IS\_LESS\_THAN

targetValueRange:

type: integer

IncomingDataTarget:

description: >-

This data type is the "ExpectationTarget" data type with specialisations for IncomingDataTarget.It describes the maximum incoming data packets for 5GC SubNetwork

related to the intent expectation. For details, see N6 incoming link usage measurement in clause 5.4.2.1 in TS 28.552 [12].

type: object

properties:

targetName:

type: string

enum:

- IncomingData

targetCondition:

type: string

enum:

- IS\_LESS\_THAN

targetValueRange:

type: integer

OutgoingDataTarget:

description: >-

This data type is the "ExpectationTarget" data type with specialisations for OutgoingDataTarget.It describes the maximum outgoing data packets for 5GC SubNetwork

related to the intent expectation. For details, see N6 outgoing link usage measurement in clause 5.4.2.2 in TS 28.552 [12].

type: object

properties:

targetName:

type: string

enum:

- OutgoingData

targetCondition:

type: string

enum:

- IS\_LESS\_THAN

targetValueRange:

type: integer

#-------Definition of the concrete ExpectationTarget dataType----------#

#-------Definition of the concrete ObjectTarget dataType----------------#

CoverageAreaPolygonContext:

description: >-

This data type is the "ObjectContext" data type with specialisations for CoverageAreaPolygonContext.It describes the coverage areas for the RAN SubNetwork that the

intent expectation is applied in the form of polygon.

type: object

properties:

contextAttribute:

type: string

enum:

- CoverageAreaPolygon

contextCondition:

type: string

enum:

- IS\_ALL\_OF

contextValueRange:

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

CoverageTACContext:

description: >-

This data type is the "ObjectContext" data type with specialisations for CoverageTACContext.It describes the coverage areas for the RAN SubNetwork that the intent

expectation is applied in the form of TAC.

type: object

properties:

contextAttribute:

type: string

enum:

- CoverageAreaTac

contextCondition:

type: string

enum:

- IS\_ALL\_OF

contextValueRange:

type: array

uniqueItems: true

items:

$ref: "TS28623\_ComDefs.yaml#/components/schemas/Tac"

CellContext:

description: >-

This data type is the "ObjectContext" data type with specialisations for CellContext.

It describes the coverage areas for the RAN SubNetwork that the intent expectation is applied

in the form of a list of cells (including E-UTRAN cells identified by E-UTRAN-CGI and NR cells

identified by NG-RAN CGI).

type: object

properties:

contextAttribute:

type: string

enum:

- Cell

contextCondition:

type: string

enum:

- IS\_ALL\_OF

contextValueRange:

type: array

items:

$ref: "#/components/schemas/CellId"

CellId:

oneOf:

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

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

PLMNContext:

description: >-

This data type is the "ObjectContext" data type with specialisations for PLMNContext

type: object

properties:

contextAttribute:

type: string

enum:

- PLMN

contextCondition:

type: string

enum:

- IS\_ALL\_OF

contextValueRange:

type: array

uniqueItems: true

items:

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

DlFrequencyContext:

description: >-

This data type is the "Context" data type with specialisations for Object context "DLFrequencyContext". It describes the downlink frequency information (RF reference

frequencies and/ or the frequency operating band) supported by the RAN SubNetwork that the intent expectation is applied.

type: object

properties:

contextAttribute:

type: string

enum:

- DlFrequency

contextCondition:

type: string

enum:

- IS\_ALL\_OF

contextValueRange:

type: array

uniqueItems: true

items:

$ref: 'TS28312\_IntentNrm.yaml#/components/schemas/Frequency'

UlFrequencyContext:

description: >-

This data type is the "Context" data type with specialisations for Object context "ULFrequencyContext".It describes the uplink frequency information (RF reference

frequencies and/ or the frequency operating band) supported by the RAN SubNetwork that the intent expectation is applied.

type: object

properties:

contextAttribute:

type: string

enum:

- UlFrequency

contextCondition:

type: string

enum:

- IS\_ALL\_OF

contextValueRange:

type: array

uniqueItems: true

items:

$ref: 'TS28312\_IntentNrm.yaml#/components/schemas/Frequency'

RATContext:

description: >-

This data type is the "ObjectContext" data type with specialisations for RATContext.It describes the RAT supported by the RAN SubNetwork that the intent expectation

is applied.

type: object

properties:

contextAttribute:

type: string

enum:

- RAT

contextCondition:

type: string

enum:

- IS\_ALL\_OF

contextValueRange:

type: array

uniqueItems: true

items:

type: string

enum:

- UTRAN

- EUTRAN

- NR

UEGroupContext:

description: >-

This data type is the "ObjectContext" data type with specialisations for UEGroup([5QI, SNSSAI])

type: object

properties:

contextAttribute:

type: string

enum:

- UEGroup

contextCondition:

type: string

enum:

- IS\_ALL\_OF

contextValueRange:

type: array

uniqueItems: true

items:

$ref: "TS28312\_IntentNrm.yaml#/components/schemas/UEGroup"

EdgeIdentificationIdContext:

description: >-

This data type is the "ObjectContext" data type with specialisations for EdgeIdentificationIdContext

type: object

properties:

contextAttribute:

type: string

enum:

- edgeIdentificationId

contextCondition:

type: string

enum:

- IS\_EQUAL\_TO

contextValueRange:

type: string

EdgeIdentificationLocContext:

description: >-

This data type is the "ObjectContext" data type with specialisations for EdgeIdentificationLocContext

type: object

properties:

contextAttribute:

type: string

enum:

- edgeIdentificationTarget

contextCondition:

type: string

enum:

- IS\_EQUAL\_TO

contextValueRange:

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

CoverageAreaTAContext:

description: >-

This data type is the "ObjectContext" data type with specialisations for CoverageAreaTAContext

type: object

properties:

contextAttribute:

type: string

enum:

- coverageAreaTA

contextCondition:

type: string

enum:

- IS\_ALL\_OF

contextValueRange:

type: array

uniqueItems: true

items:

$ref: "TS28623\_ComDefs.yaml#/components/schemas/Tac"

NfTypeContext:

description: >-

This data type is the "ObjectContext" data type with specialisations for NfTypeContext

type: object

properties:

contextAttribute:

type: string

enum:

- NfType

contextCondition:

type: string

enum:

- IS\_ALL\_OF

contextValueRange:

type: array

uniqueItems: true

items:

$ref: "TS28541\_5GcNrm.yaml#/components/schemas/NFType"

NfInstanceLocationContext:

description: >-

This data type is the "ObjectContext" data type with specialisations for NfInstanceLocationContext

type: object

properties:

contextAttribute:

type: string

enum:

- NfInstanceLocation

contextCondition:

type: string

enum:

- IS\_ALL\_OF

contextValueRange:

type: array

uniqueItems: true

items:

type: string

TaiContext:

description: >-

This data type is the "ObjectContext" data type with specialisations for TaiContext

type: object

properties:

contextAttribute:

type: string

enum:

- Tai

contextCondition:

type: string

enum:

- IS\_ALL\_OF

contextValueRange:

type: array

uniqueItems: true

items:

$ref: "TS28623\_GenericNrm.yaml#/components/schemas/Tai"

ServingScopeContext:

description: >-

This data type is the "ObjectContext" data type with specialisations for ServingScopeContext

type: object

properties:

contextAttribute:

type: string

enum:

- ServingScope

contextCondition:

type: string

enum:

- IS\_ALL\_OF

contextValueRange:

type: array

uniqueItems: true

items:

type: string

DnnContext:

description: >-

This data type is the "ObjectContext" data type with specialisations for DnnContext

type: object

properties:

contextAttribute:

type: string

enum:

- Dnn

contextCondition:

type: string

enum:

- IS\_ALL\_OF

contextValueRange:

type: array

uniqueItems: true

items:

type: string

#-------Definition of the scenario specific ObjectTarget dataType----------------#

#-------Definition of the concrete ExpectationContext dataType----------------#

TargetAssuranceTimeContext:

description: >-

This data type is the "Expectation Context" data type with specialisations for TargetAssuranceTimeContext.It describes the timeWindows

(including startTime, endTime) when the targets in the Intent Expectation need to be assured.

type: object

properties:

contextAttribute:

type: string

enum:

- TargetAssuranceTime

contextCondition:

type: string

enum:

- IS\_EQUAL\_TO

contextValueRange:

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

ServiceStartTimeContext:

description: >-

This data type is the "ExpectationContext" data type with specialisations for ServiceStartTimeContext

type: object

properties:

contextAttribute:

type: string

enum:

- ServiceStartTime

contextCondition:

type: string

enum:

- IS\_EQUAL\_TO

contextValueRange:

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

ServiceEndTimeContext:

description: >-

This data type is the "ExpectationContext" data type with specialisations for ServiceEndTimeContext

type: object

properties:

contextAttribute:

type: string

enum:

- ServiceEndTime

contextCondition:

type: string

enum:

- IS\_EQUAL\_TO

contextValueRange:

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

UEMobilityLevelContext:

description: >-

This data type is the "ExpectationContext" data type with specialisations for UEMobilityLevelContext

type: object

properties:

contextAttribute:

type: string

enum:

- UEMobilityLevel

contextCondition:

type: string

enum:

- IS\_EQUAL\_TO

contextValueRange:

$ref: "TS28541\_SliceNrm.yaml#/components/schemas/MobilityLevel"

ResourceSharingLevelContext:

description: >-

This data type is the "ExpectationContext" data type with specialisations for ResourceSharingLevelContext

type: object

properties:

contextAttribute:

type: string

enum:

- ResourceSharingLevel

contextCondition:

type: string

enum:

- IS\_EQUAL\_TO

contextValueRange:

$ref: "TS28541\_SliceNrm.yaml#/components/schemas/SharingLevel"

ServiceTypeContext:

description: >-

This data type is the "ExpectationContext" data type with specialisations for ServiceTypeContext.It describes

the service type for the Radio Service that the intent expectation is applied. For details see sST in clause 6.4.1 in TS 28.541 [5]

type: object

properties:

contextAttribute:

type: string

enum:

- ServiceType

contextCondition:

type: string

enum:

- IS\_EQUAL\_TO

contextValueRange:

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

SchedulingTimeContext:

description: >-

This data type is the "ExpectationContext" data type with specialisations for SchedulingTimeContext.It describes

the scheduled times (including one-time interval, daily periodicity, weekly periodicity or monthly periodicity)

for the IntentObject that the intent expectation is applied.

type: object

properties:

contextAttribute:

type: string

enum:

- schedulingTime

contextCondition:

type: string

enum:

- IS\_ALL\_OF

contextValueRange:

$ref: "TS28623\_GenericNrm.yaml#/components/schemas/SchedulingTime"

StartTimeContext:

description: >-

This data type is the "ExpectationContext" data type with specialisations for StartTimeContext

type: object

properties:

contextAttribute:

type: string

enum:

- StartTime

contextCondition:

type: string

enum:

- IS\_EQUAL\_TO

contextValueRange:

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

#-------Definition of the concrete ExpectionContext dataType----------------#

<CODE ENDS>

\*\*\* END OF CHANGE 1 \*\*\*

|  |
| --- |
| **End of Changes** |