**3GPP TSG-SA5 Meeting #162 *S5-253874***

**Goteborg, Sweden, 25 - 29 Aug 2025**

**Source: Samsung, Huawei**

**Title: Rel-19 CR 28.561 Updates regarding Network Issue Inducement**

**Document for: Agreement**

**Agenda Item: 6.19.4.1**

# 1 Decision/action requested.

***The group is asked to endorse the proposal.***

# 2 References

None

# 3 Rationale

This contribution provides necessary updates for inducement solution

\* \* \* First Change \* \* \* \*

##### 6.2.1.3.4 NDTInputDescription<<dataType>>

###### 6.2.1.3.4.1 Definition

This dataType represents a description of the specific network scenario represented by the attribute ndtJobScenario. It may be used to describe any of the following:

- aspects of the network that should be modelled in the NDT,

- configurations that should be applied or have been applied by the NDT

The attribute simulationDataDescriptor describes the simulation details for the NDT.

###### 6.2.1.3.4.2 Attributes

The NDTInputDescription <<datatype>> includes attributes inherited fromTop IOC (defined in 3GPP TS 28.622 [7]) and the following attributes.

Table 6.2.1.3.4.2-1

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute Name | Support Qualifier | isReadable | isWritable | isInvariant | isNotifyable |
| NDTInputDescriptionId | M | T | T | F | T |
| simulationDataDescriptor | O | T | T | F | T |
| networkEventInfo | O | T | T | F | T |
|  |  |  |  |  |  |

###### 6.2.1.3.4.3 Attribute constraints

None

###### 6.2.1.3.4.4 Notifications

The common notifications defined in clauses 6.1 are valid for this dataType.

\* \* \* Next Change \* \* \* \*

##### 6.2.1.3.9 SimulationDataDescriptor <<dataType>>

###### 6.2.1.3.9.1 Definition

This dataType represents the simulation details for the NDT

###### 6.2.1.3.9.2 Attributes

The attribute simulationData defines the management data is to be updated artificially in order to induce a particular network issue. It also defines the network management data that aims to be simulated/emulated by the NDT. The behaviour can be configurations for verification. The simulationData can be network configurations or automation functionality configurations, such as RAN ES functionality provided by SON.

The attribute Condition defines the condition that has to be satisfied in order to update the simulation data. This can be defined in terms of location and time.

Table 6.2.1.3.9.2-1

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute Name | Support Qualifier | isReadable | isWritable | isInvariant | isNotifyable |
| simulationData | M | T | F | T | T |
|  |  |  |  |  |  |
| condition | M | T | F | T | T |

###### 6.2.1.3.9.3 Attribute constraints

None.

###### 6.2.1.3.9.4 Notifications

The common notifications defined in clauses 6.1 are valid for this dataType .

\* \* \* Next Change \* \* \* \*

##### 6.2.1.3.9 SimulationData <<dataType>>

###### 6.2.1.3.9.1 Definition

This dataType defines the management data that is to be updated artificially in order to induce a particular network issue.

###### 6.2.1.3.9.2 Attributes

The attribute performanceData defines the performance measurement or KPI name that is to be updated and with what value.

The attribute mDTData is defined as attribute/value pair representing the MDT data name that is to be updated and with what value.

The attribute configurationData defines the configuration updates for the network.

Table 6.2.1.3.9.2-1

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute Name | Support Qualifier | isReadable | isWritable | isInvariant | isNotifyable |
| performanceData | M | T | F | T | T |
| mDTData | M | T | F | T | T |
| configurationData | M | T | F | T | T |

###### 6.2.1.3.9.3 Attribute constraints

None.

###### 6.2.1.3.9.4 Notifications

The common notifications defined in clauses 6.1 are valid for this dataType .

\* \* \* Next Change \* \* \* \*

##### 6.2.1.3.Y PerformanceData <<dataType>>

###### 6.2.1.3.Y.1 Definition

This dataType describes the performance data injected in NDT to represent network events.

The attribute performanceDataName identifies a performance measurement or KPI.

The attribute performanceDataValue is used to overwrite values which are synchronized from the real network. Alternatively, performanceDataScalingFactor is used to apply a multiplication factor to values which are synchronized from the real network. For example, in the scenario of using NDT to verify the network response to a signalling storm event, the consumer can request to inject the number of UE requests with multiplication factor of 300% in NDT, which represents three times of the number of UE requests in the real network.

###### 6.2.1.3.Y.2 Attributes

The PerformanceData <<datatype>> includes the following attributes.

Table 6.2.1.3.Y.2-1

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Attribute Name** | **Support Qualifier** | **isReadable** | **isWritable** | **isInvariant** | **isNotifyable** |
| performanceDataName | M | T | T | F | F |
| performanceDataValue | O | T | T | F | F |
| performanceDataScalingFactor | O | T | T | F | F |

\* \* \* Last Change \* \* \* \*

## 6.3 Attribute definitions

6.3.1 Attribute properties

Table 6.3.1-1

| Attribute Name | Documentation and Allowed Values | Properties |
| --- | --- | --- |
| ndtJobRef | It indicates an DN of a NDTJob Instance.  allowedValues: N/A | type: DN  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| ndtFunctionRef | It indicates an DN of a NDTFunction Instance.  allowedValues: N/A | type: DN  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| ndtReportRefList | It indicates a list of DN for NDTReport Instances.  allowedValues: N/A | type: DN  multiplicity: \*  isOrdered: False  isUnique: True  defaultValue: None  isNullable: False |
| supportedNDTCapabilities | It indicates the different types of NDT application use cases which the NDT is capable of undertaking.  allowedValues:  "RISKY-ACTIONS\_PREDICTION",  "EVENTS-IMPACTS\_VERIFICATION",  "NETWORK\_ISSUE\_INDUCEMENT",  "NETWORK\_EVENTS\_VERIFICATION"  "NETWORK\_CONFIGURATIONS\_VERIFICATION",  "AUTOMATION\_CONFIGURATION\_VERIFICATION"  "ML-TRAINING\_DATA\_GENERATION",  "USER\_EXPERIENCE\_DATA\_GENERATION"  New values can be added to this list in future releases to support new use cases.  The meaning of these values is as follows:  "RISKY-ACTIONS\_PREDICTION" means NDTFunction supports the use case described in 5.2.2.2.  "EVENTS-IMPACTS\_VERIFICATION" means NDTFunction supports the use case described in 5.2.2.3.  "NETWORK\_ISSUE\_INDUCEMENT" means NDTFunction supports the use case described in 5.2.2.4.  "NETWORK\_EVENTS\_VERIFICATION" means NDTFunction supports the use case described in 5.3.2.2.  "NETWORK\_CONFIGURATIONS\_VERIFICATION" means NDTFunction supports the use case described in 5.3.2.3.  "AUTOMATION\_CONFIGURATION\_VERIFICATION" means NDTFunction supports the use case described in 5.3.2.4.  "ML-TRAINING\_DATA\_GENERATION" means NDTFunction supports the use case described in 5.4.2.2.  "USER\_EXPERIENCE\_DATA\_GENERATION" means NDTFunction supports the use case described in 5.4.2.3. | type: ENUM  multiplicity:1..\*  isOrdered: False  isUnique: True  defaultValue: None  isNullable: False |
| nDTCapability | It indicates the type of application use cases that is desired to be executed.  allowedValues:  "RISKY-ACTIONS\_PREDICTION",  "EVENTS-IMPACTS\_VERIFICATION",  "FAULT\_INJECTION",  "NETWORK\_EVENTS\_VERIFICATION"  "NETWORK\_CONFIGURATIONS\_VERIFICATION",  "AUTOMATION\_CONFIGURATION\_VERIFICATION"  "ML-TRAINING\_DATA\_GENERATION",  "USER\_EXPERIENCE\_DATA\_GENERATION"  New values can be added to this list in future releases to support new use cases.  The meaning of these values is as follows:  "RISKY-ACTIONS\_PREDICTION" means NDTFunction supports the use case described in 5.2.2.2.  "EVENTS-IMPACTS\_VERIFICATION" means NDTFunction supports the use case described in 5.2.2.3.  "FAULT\_INJECTION" means NDTFunction supports the use case described in 5.2.2.4.  "NETWORK\_EVENTS\_VERIFICATION" means NDTFunction supports the use case described in 5.3.2.2.  "NETWORK\_CONFIGURATIONS\_VERIFICATION" means NDTFunction supports the use case described in 5.3.2.3.  "AUTOMATION\_CONFIGURATION\_VERIFICATION" means NDTFunction supports the use case described in 5.3.2.4.  "ML-TRAINING\_DATA\_GENERATION" means NDTFunction supports the use case described in 5.4.2.2.  "USER\_EXPERIENCE\_DATA\_GENERATION" means NDTFunction supports the use case described in 5.4.2.3. | type: ENUM  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| nDTRANScope | It indicates the scope of the RAN that can be modelled by the NDT function. | type: ScopeDefinition  multiplicity: \*  isOrdered: False  isUnique: True  defaultValue: None  isNullable: False |
| nDTCNScope | It indicates the scope of the CN that can be modelled by the NDT function. | type: ScopeDefinition  multiplicity: \*  isOrdered: False  isUnique: True  defaultValue: None  isNullable: False |
| nDTJobSynchScope | It indicates the scope of the network that should be synchronized into and modelled by the NDT for the specific NDT job. | type: ScopeDefinition  multiplicity: \*  isOrdered: False  isUnique: True  defaultValue: None  isNullable: False |
| ndtJobScenario | It indicates a network scenario that should be modelled in the NDTJob as an extra beyond what is synchronized from the network. The ndtJobScenario can be used for  - Verification of network response to one or more events  - evaluation of the impact of one or more failure events, e.g. a signalling storm  - Evaluating one or more network issues, e.g. a coverage issue. The network issues involve one or more network events.  - Evaluation of high-risk network operations which are listed within the planned configuration  - Verification of network configurations which are listed within the planned configuration  - Using NDT to generate ML training data  - Using NDT to generate user experience data  - Inducing particular issue in the network | type: NDTInputDescription  multiplicity: \*  isOrdered: False  isUnique: True  defaultValue: None  isNullable: False |
| NDTInputDescriptionId | It indicates the identifier for a specific input to be modelled in the NDTJob | type: string  multiplicity: \*  isOrdered: False  isUnique: True  defaultValue: None  isNullable: False |
| NDTInputDescriptionId | It indicates the identifier for a specific output provided as outcomes of the NDTJob | type: string  multiplicity: \*  isOrdered: False  isUnique: True  defaultValue: None  isNullable: False |
| networkEveFntInfo | This defines the information related with a network event (a provisioning, performance measurement, KPI or fault/ alarm event) that can be introduced into the NDT.  The NetworkEventData can be used for  - Verification of network response to one or more events  - evaluation of the impact of one or more failure events, e.g. a signalling storm  - Evaluating one or more network issues, e.g. a coverage issue. The network issues involve one or more network events.  Editor’s note: The definition and modelling of networkEventInfo is to be clarified | Type: TBD  multiplicity: \*  isOrdered: False  isUnique: True  defaultValue: None  isNullable: False |
|  |  |  |
| simulationDataDescriptor | This defines the simulation details for the NDT | type: SimulationDataDescriptor  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
|  |  |  |
| simulationData | This described the management data that need to be updated artificially in order to induce a particular network issue.  It also defines the network management data that aims to be simulated/emulated by the NDT. The behaviour can be configurations for verification. The simulationData can be network configurations or automation functionality configurations, such as RAN ES functionality provided by SON. | type: SimulationData  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| condition | This will define the condition that has to be satisfied in order to update the simulation data for the task that is executed by the NDT. This can be defined in terms of location and time.  This will be the DN of ConditionMonitor[7]. | type: DN  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| performanceData | This defines the performance data injected in NDT to represent network events. | type: PerformanceData  multiplicity: 1 ..\*  isOrdered: False  isUnique: True  defaultValue: None  isNullable: False |
| mDTData | This defines attribute/value pair representing the MDT data name that is to be updated and with what value. | type: AttributeValuePair  multiplicity: 1 ..\*  isOrdered: False  isUnique: True  defaultValue: None  isNullable: False |
| configurationData | This defines the configuration updates for the network | type: AttributeValuePair  multiplicity: 1 ..\*  isOrdered: False  isUnique: True  defaultValue: None  isNullable: False |
| performanceDataName | It indicates the name of performance measurement or the KPI as defined in 3GPP TS 28.552 [2] and 3GPP TS 28.554 [3]. | type: string  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| performanceDataValue | It indicates the value of performance data. | type: Integer  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| performanceDataScalingFactor | It indicates the percentage of scaling for performance data. A scaling factor less than 100% indicates a reduction in the performance data, a scaling factor greater than 100% indicates an increase in the performance data. | type: Integer  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| ndtJobExecustionRequirements | It describes the performance requirements for NDT modelling, e.g., maximum run time for each simulation/emulation job, precision, etc | type: NdtJobExecutionReqts  multiplicity: 1  isOrdered: N/A  isUnique: True  defaultValue: None  isNullable: False |
| NDTJobOutputData | It indicates the list of NDTOutput(s) that are provided by the NDT function as the output for any task executed in an instantiated NDT job. | type: NDTOutputDataPoint  multiplicity: 1 ..\*  isOrdered: False  isUnique: True  defaultValue: None  isNullable: False |
| maxRuntime | Maximum run time for each simulation task executed in NDT  Editor’s note: The unit of this attribute is to be added | type: Integer  multiplicity: 1  isOrdered: N/A  isUnique: True  defaultValue: None  isNullable: False |
| networkState | It indicates a state of the twin network (the modelled network in the NDT) for which a configuration or reconfiguration is applied.  The networkState is the desvription of what exists in the network at the time when the networkConfiguration is made | type: NDTOutputDescription  multiplicity: \*  isOrdered: False  isUnique: True  defaultValue: None  isNullable: False |
| networkConfiguration | It indicates a network configuration that is executed by the NDT and being reported in the NDT report | type: NDTOutputDescription  multiplicity: \*  isOrdered: False  isUnique: True  defaultValue: None  isNullable: False |
| observations | It indicates an impact on the network. It shows the list of network objects that are affected and the effects on the specific objects | type: NDTOutputDescription  multiplicity: \*  isOrdered: False  isUnique: True  defaultValue: None  isNullable: False |
| collaboratingNDT | It indicates the related NDT Job contributing as a collaborator to the executed NDT Job. It describes a relationship to an NDT job, i.e. it indicates the DN of a component NDT which provides input to the NDT job | type: string  multiplicity: \*  isOrdered: False  isUnique: True  defaultValue: None  isNullable: False |

\* \* \* End of Change \* \* \* \*