**3GPP TSG-SA5 Meeting #132e *S5-204262***

**e-meeting 17th 28th August 2020**

**Source: Huawei**

**Title: pCR TS 28.313 Corrections of Management service description**

**Document for: Approval**

**Agenda Item: 6.4.4**

# 1 Decision/action requested

***The group is asked to discuss and approve the proposals.***

# 2 References

[1] 3GPP TS 28.541: "Management and orchestration ; 5G Network Resource Model (NRM); Stage 2 and stage3".

# 3 Rationale

According to the TS 28.541 [1], SON NRM fragment is defined. This contribution proposes to update type B discrption of SON management services.

In addition, the MnS including the MnS component is used to describe the management capability which can be provided by the MnS producer and consumed by MnS consumer. The intention of this contribution to add related operations and notifications for TypeA.

# 4 Detailed proposal

|  |
| --- |
| **1st modified section** |

7 Management services for SON

7.1 Management services for D-SON management

7.1.1 RACH Optimization (Random Access Optimisation)

7.1.1.1 MnS component type A

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| --- | --- |
| **MnS Component Type A** | **Note** |
| Operations and Notification defined in clause 5 of TS 28.532 [3]:  - createMOI operation  - getMOIAttributes operation  - modifyMOIAttributes operation  - deleteMOI operation  - notifyMOIAttributeValueChanges operation  - notifyMOICreation  - notifyMOIDeletion  - notifyMOIChanges | It is supported by Provisioning MnS for NF, as defined in 28.531 [11]. |
| Operations defined in clause 11.3.1.1.1 in TS 28.532 [3] and clause 6.2.3 of TS 28.550 [12]:  - notifyFileReady operation  - reportStreamData operation | It is supported by Performance Assurance MnS for NFs, as defined in 28.550 [12]. |

7.1.2.1 MnS Component Type B definition

7.1.2.1.1 Targets information

The targets of RACH optimization are shown in Table 7.1.2.1.1-1.

**Table 7.1.2.1.1-1. RACH optimization targets**

| **Targets** | **Definition** | **Legal Values** |
| --- | --- | --- |
| UE access delay probability per SSB | The probability distribution of UE access delay that is used to minimize the access delays for the UEs under the SSBs. See attribute ueAccProbilityDistPerSSB in TS 28.541 [13]. | CDF of access delay |
| Number of preambles send per SSB probability | The probability of the number of preambles sent per SSB. See attribute ueAccDelayProbilityDistPerSSB in TS 28.541 [13]. | CDF of access delay |

7.1.2.1.2 Control information

The parameter is used to control the RACH optimization function.

| **Control parameter** | **Definition** | **Legal Values** |
| --- | --- | --- |
| RACH optimization control | This attribute allows authorized consumer to enable/disable the RACH optimization functionality. See attribute drachOptimizationControlin TS 28.541 [13]. | Boolean  On, off |

7.1.2.1.3 Parameters to be updated

7.1.1.3 MnS Component Type C definition

7.1.1.3.1 Performance measurements

Performance measurements related to the RACH optimization are captured in Table 7.1.1.3.1-1:

**Table 7.1.1.3.1-1. RACH optimization related performance measurements**

|  |  |  |
| --- | --- | --- |
| **Performance measurements** | **Description** | **Related targets** |
| Distribution of RACH preambles sent | Distribution of the number of preambles UEs sent to achieve synchronization per SSB, where the number of preambles sent corresponds to PREAMBLE\_TRANSMISSION\_COUNTER (see clause 5.1.1 in TS 38.321 [4]) in UE. | UE access delay probability per SSB |
| Distribution of UEs access delay per SSB | Distribution of the time needed for UEs to successfully attach to the network per SSB. | Number of preambles send per SSB probability |

7.1.2 MRO (Mobility Robustness Optimisation)

7.1.2.1 MnS component type A

|  |  |
| --- | --- |
| **MnS Component Type A** | **Note** |
| Operations and Notification defined in clause 5 of TS 28.532 [3]:  - createMOI operation  - getMOIAttributes operation  - modifyMOIAttributes operation  - notifyMOIAttributeValueChanges operation  - notifyMOICreation  - notifyMOIDeletion  - notifyMOIChanges | It is supported by Provisioning MnS for NF, as defined in 28.531 [11]. |
| Operations defined in clause 11.3.1.1.1 in TS 28.532 [3] and clause 6.2.3 of TS 28.550 [12]:  - notifyFileReady operation  - reportStreamData operation | It is supported by Performance Assurance MnS for NFs, as defined in 28.550 [12]. |

7.1.2.2 MnS Component Type B definition

7.1.2.2.1 Targets information

The targets of MRO are shown in the Table 7.1.2.2.1-1.

**Table 7.1.2.2.1-1. MRO targets**

| **Target Name** | **Definition** | **Legal Values** |
| --- | --- | --- |
| Total handover failure rate | (the number of failure events related to handover) / (the total number of handover events) | [0..100] in unit percentage |
| Total intra-RAT handover failure rate | (the number of failure events related to intra-RAT handover) / (the total number of handover events) | [0..100] in unit percentage |
| Total inter-RAT handover failure rate | (the number of failure events related to inter-RAT handover) / (the total number of handover events) | [0..100] in unit percentage |

7.1.2.2.2 Control information

The parameter is used to control the MRO function.

| **Control parameter** | **Definition** | **Legal Values** |
| --- | --- | --- |
| MRO function control | This attribute allows the operator to enable/disable the MRO functionality. See attribute dmroControlin TS 28.541 [13]. | Boolean  On, off |

7.1.2.2.3 Parameters to be updated

**Table 7.1.2.2.3-1. Ranges of handover parameters**

| **Control parameters** | **Definition** | **Legal Values** |
| --- | --- | --- |
| Maximum deviation of Handover Trigger | This parameter defines the maximum allowed absolute deviation of the Handover Trigger, from the default point of operation (see clause 15.5.2.5 in TS 38.300 [7] and clause 9.2.2.60 in TS 38.423 [17]). See attribute maximumDeviationHoTrigger in TS 28.541 [13]. | [-20..20] in unit 0.5 dB |
| Minimum time between Handover Trigger changes | This parameter defines the minimum allowed time interval between two Handover Trigger change performed by MRO. This is used to control the stability and convergence of the algorithm (see clause 15.5.2.5 in TS 38.300 [7]). See attribute minimumTimeBetweenHoTriggerChange in TS 28.541 [13]. | [0.. 604800] in unit Seconds |
| Tstore\_UE\_cntxt | The timer used for detection of too early HO, too late HO and HO to wrong cell. Corresponds to Tstore\_UE\_cntxt timer described in TS clause 15.5.2.5 in 38.300 [7]. See attribute tstoreUEcntxt in TS 28.541 [13]. | [0..1023] in unit 100 milliseconds |

7.1.2.3 MnS Component Type C definition

7.1.2.3.1 Performance measurements

Performance measurements related MRO are captured in Table 7.1.2.3.1.-1:

**Table 7.1.2.3.1-1. MRO related performance measurements**

|  |  |  |
| --- | --- | --- |
| **Performance measurements** | **Description** | **Related targets** |
| Number of handover events | Includes all successful and unsuccessful handover events (see clause 5.1.1.6 in TS 28.552 [5]). | Total handover failure rate |
| Number of handover failures | Includes unsuccessful handover events with failure causes (see clause 5.1.1.6 in TS 28.552 [5]). | Total handover failure rate |
| Number of intra-RAT handover events | Includes all successful and unsuccessful intra-RAT handover eventsl | Total intra-RAT handover failure rate |
| Number of intra-RAT handover failures | Includes unsuccessful intra-RAT handover events with failure causes. | Total intra-RAT handover failure rate |
| Number of inter-RAT handover events | Includes all successful and unsuccessful inter-RAT handover events. | Total inter-RAT handover failure rate |
| Number of inter-RAT handover failures | Includes unsuccessful inter-RAT handover events with failure causes. | Total inter-RAT handover failure rate |
| Number of intra-RAT too early handover failures | Detected when an RLF occurs after the UE has stayed for a long period of time in the cell. |  |
| Number of intra-RAT too late handover failures | Detected when an RLF occurs shortly after a successful handover from a source cell to a target cell or a handover failure occurs during the handover procedure. |  |
| Number of intra-RAT handover failures to wrong cell | Detected when an RLF occurs shortly after a successful handover from a source cell to a target cell or a handover failure occurs during the handover procedure. |  |
| Number of inter-RAT too early handover failures | Detected when an RLF occurs after the UE has stayed in an E-UTRAN cell which connects with 5GC for a long period of time. |  |
| Number of inter-RAT too late handover failures | Deteccted when an RLF occurs shortly after a successful handover from an E-UTRAN cell which connects with EPC to a target cell in a E-UTRAN cell which connects with 5GC. |  |
| Number of unnecessary handover to another RAT | Detected when a UE is handed over from NG-RAN to other system (e.g. UTRAN) even though quality of the NG-RAN coverage was sufficient for the service used by the UE. |  |
| Number of inter-RAT handover ping pong | Detected when an UE is handed over from a cell in a source system (e.g. NG-RAN) to a cell in a target system different from the source system (e.g. E-UTRAN), then within a predefined limited time the UE is handed over back to a cell in the source system, while the coverage of the source system was sufficient for the service used by the UE. |  |

7.1.3 PCI configuration

7.1.3.1 MnS component type A

|  |  |
| --- | --- |
| **MnS Component Type A** | **Note** |
| Operations and Notification defined in clause 5 of TS 28.532 [3]:  - createMOI operation  - getMOIAttributes operation  - modifyMOIAttributes operation  - notifyMOIAttributeValueChanges operation  - notifyMOICreation  - notifyMOIDeletion  - notifyMOIChanges | It is supported by Provisioning MnS for NF, as defined in 28.531 [11]. |

7.1.3.2 MnS Component Type B definition

7.1.3.2.1 Control information

The parameter is used to control the D-SON PCI configuration function.

| **Control parameter** | **Definition** | **Legal Values** |
| --- | --- | --- |
| PCI configuration control | This attribute allows authorized consumer to enable/disable the D-SON PCI configuration functionality. See attribute dPciConfigurationControl in TS 28.541 [13]. | enable, disable |

7.1.3.2.2 Parameters to be updated

The table below lists the parameter related to the D-SON PCI configuration function.

| **Parameters** | **Definition** | **Legal Values** |
| --- | --- | --- |
| PCI list | The list of PCI values to be used by D-SON PCI configuration function to assign the PCI for NR cells. See attribute nRPciList in TS 28.541 [13]. | List of integers |

7.1.3.3 MnS Component Type C definition

7.1.3.3.1 Notification information

The table below lists the notifications related to D-SON PCI configuration,

|  |  |  |
| --- | --- | --- |
| **Performance measurements** | **Description** | **Note** |
| PCI collision notification | The collision notificationis used to indicate two neighbouring cells of a serving cell are using the same PCIs. |  |
| PCI Confusion notification | The confusion notificationis used to indicate that a serving cell has 2 neighbouring cells that are using the same PCI value. |  |

7.1.4 ANR management

This management service is used for management of ANR, and ANR is specified in TS 38.300 [7], clauses 15.3.3.

Stage 2 for ANR management is located in TS 28.541 [13], clauses 4.3.2.2, 4.3.2.3, 4.3.32.2 and 4.3.32.3.

Stage 3 for ANR management is located in TS 28.541 [13], clauses C.4.3, D.4.3, and E.5.

7.2 Management services for C-SON

7.2.1 PCI configuration

7.2.1.1 MnS component type A

|  |  |
| --- | --- |
| **MnS Component Type A** | **Note** |
| Operations defined in clause 11.1.1 of TS 28.532 [3]:  - getMOIAttributes operation  - modifyMOIAttributes operation  - notifyMOIAttributeValueChange operation | It is supported by Provisioning MnS for NF, as defined in 28.531 [11]. |
| Operations defined in clause 11.3.1.1.1 in TS 28.532 [3] and clause 6.2.3 of TS 28.550 [12]:  - notifyFileReady operation  - reportStreamData operation | It is supported by Performance Assurance MnS for NFs, as defined in 28.550 [12]. |

7.2.1.2 MnS Component Type B definition

7.2.1.2.1 Control information

The parameter is used to control the C-SON PCI configuration function.

| **Control parameter** | **Definition** | **Legal Values** |
| --- | --- | --- |
| PCI configuration control | This attribute allows authorized consumer to enable/disable the C-SON PCI configuration functionality. See attribute cPciConfigurationControl in TS 28.541 [13]. | disable, enable |

7.2.1.2.2 Parameters to be updated

The table below lists the parameter related to the C-SON PCI configuration function.

| **Updated parameters** | **Definition** | **Legal Values** |
| --- | --- | --- |
| NR PCI | This parameter contains the PCI of the NR cell. See attribute cSonPciList in TS 28.541 [13]. | Integer |

7.2.1.3 MnS Component Type C definition

7.2.1.3.1 Notifications information

The table below lists the notifications related to PCI configuration are generated from the NR cells,

|  |  |  |
| --- | --- | --- |
| **Performance measurements** | **Description** | **Note** |
| PCI collision notification | The collision notification is used to indicate two neighbouring cells of a serving cell are using the same PCIs. |  |
| PCI Confusion notification | The confusion notification is used to indicate that a serving cell has 2 neighbouring cells that are using the same PCI value. |  |

7.2.1.3.2 Performance measurements

Performance measurements related to the PCI configuration are collected from the NR cells.

**Table 7.2.1.3.2-1. PCI related performance measurements**

|  |  |  |
| --- | --- | --- |
| **Performance measurements** | **Description** | **Note** |
| PCI of candidate cells | The measurement contains cumulative counter with subcounters that is identified by the PCI value(s) of the candidate cells, and is derived from *MeasResultListNR* (see clause 6.3.2 in TS 38.331 [9]) where it contains PCI in *PhysCellId*, and RSRP/RSRQ in *MeasQuantityResults* of candidate cells. It is generated when the RSRP received from the candidate cells exceeds certain thresholds. |  |

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| **End of modified section** |