**3GPP TSG SA WG5 Meeting #142e S5-222090**

**Online, , 04 Apr 2022- 12 Apr 2022**

**Source: Samsung**

**Title: pCR 28.104 Handover Optimization**

**Document for: Approval**

**Agenda Item: 6.6.5**

# 1 Decision/action requested

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

# 2 References

None

# 3 Rationale

This contribution provides solution for handover optimization capability.

# 4 Detailed proposal

|  |
| --- |
| **First modification** |

### 8.4.x Mobility management analytics

#### 8.4.x.1 Handover Optimization analysis

##### 8.4.x.1.1 MDA type

The MDA type for handover optimization is: Mobility.Management.HandoverOptimization.

##### 8.4.x.1.2 Enabling data

The enabling data for handover optimization analysis are provided in table 8.4.x.1.2-1.

For general information about enabling data, see clause 8.2.1.

Table 8.4.x.1.2-1: Enabling data for handover optimization analysis

|  |  |  |
| --- | --- | --- |
| Data category | Description | References |
| Performance Measurements | Consumed virtual resources of target gNB | Virtualised resource usage measurement (clause 6.2 of TS 28.552[4]) |
| The physical radio resource utilization of the target gNB | Physical radio resource utilization of the target gNB, see clause 5.1.1.2 of TS 28.552 [4]; |
| PDCP Data Volume of NR cells | Clause 5.1.2.1 and 5.1.3.6 of TS 28.552 [4]. |
| MDT Data | UE measurements related to RSRP, RSRQ, SINR (serving cell and neighbour cells) and UE location information | RSRPs, RSRQs and UE location of M1 measurements for NR in TS 32.422 [6] and TS 32.423 [7]. |

##### 8.4.x.1.3 Analytics output

The specific information elements of the analytics output for handover optimization analysis, in addition to the common information elements of the analytics outputs (see clause 8.3), are provided in table 8.4.x.1.3-1.

Table 8.4.x.1.3-1: Analytics output for handover optimization analysis

|  |  |  |  |
| --- | --- | --- | --- |
| Information element | Definition | Support qualifier | Properties |
| TargetgNB | This provides analytics report for each target gNB for handover optimization. | M | type: TgtgNB  multiplicity: 1…\*  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
|  |  |  |  |

|  |
| --- |
| **Second modification** |

## 8.5 Data type definitions

### 8.5.x TgtgNB <<dataType>>

#### 8.5.x.1 Definition

This data type specifies the information about the target gNB for handover.

#### 8.5.x.2 Information elements

|  |  |  |  |
| --- | --- | --- | --- |
| Name | Definition | Support qualifier | Properties |
| ProjectedVResCon | This specifies the projected virtual resource consumption | M | type: VirRes  multiplicity: \*  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| ProjectedPResCon | This specifies the projected physical resource consumption | M | type: PhyRes  multiplicity: \*  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| isOptimal | This specifies if the gNB is optimal for handover. The value TRUE indicates that the gNB is optimal at present.  Allowed Values: TRUE and FALSE. | CM | type: Boolean  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: TRUE  isNullable: False |
| futureOptimal | This specifies if the gNB is optimal for handover at a future point of time. | CM | type: FutureOptimal  multiplicity: \*  isOrdered: N/A  isUnique: N/A  defaultValue: TRUE  isNullable: False |
|  |  |  |  |
| CellID | The identifier of the target cell. | M | type: String  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| PredictedQoE | The predicted QoE value of UE (e.g., PDCP Data Volume, MOS value, etc) in the target cell identified by cell ID. | M | type: Integer  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |

### 8.5.y VirRes <<dataType>>

#### 8.5.y.1 Definition

This data type specifies the virtual resource consumption.

#### 8.5.y.2 Information elements

|  |  |  |  |
| --- | --- | --- | --- |
| Name | Definition | Support qualifier | Properties |
| virtualCPU | It indicates the average virtual CPU consumption over the time duration indicated by projectionTime attribute. | M | type: Integer  multiplicity: 1  isOrdered: N/A  isUnique: True  defaultValue: None  isNullable: False |
| virtualMemory | It indicates the average virtual memory consumption over the time duration indicated by projectionTime attribute. | M | type: Integer  multiplicity: 1  isOrdered: N/A  isUnique: True  defaultValue: None  isNullable: False |
| virtualDisk | It indicates the average virtual storage consumption over the time duration indicated by projectionTime attribute. | M | type: Integer  multiplicity: 1  isOrdered: N/A  isUnique: True  defaultValue: None  isNullable: False |
| projectionTime | This specifies the timestamp for which the projections are made | M | type: ProjectionDuration  multiplicity: 1  isOrdered: N/A  isUnique: True  defaultValue: None  isNullable: False |

### 8.5.y PhyRes <<dataType>>

#### 8.5.y.1 Definition

This data type specifies the physical resource consumption.

#### 8.5.y.2 Information elements

|  |  |  |  |
| --- | --- | --- | --- |
| Name | Definition | Support qualifier | Properties |
| DLPRBUsage | This specifies the average total usage (in percentage) of physical resource blocks (PRBs) on the downlink for any purpose, over the time duration indicated by projectionTime attribute. | M | type: Real  multiplicity: 1  isOrdered: N/A  isUnique: True  defaultValue: None  isNullable: False |
| ULPRBUsage | This specifies the average total usage (in percentage) of physical resource blocks (PRBs) on the uplink for any purpose, over the time duration indicated by projectionTime attribute. | M | type: Real  multiplicity: 1  isOrdered: N/A  isUnique: True  defaultValue: None  isNullable: False |
| projectionTime | This specifies the timestamp for which the projections are made | M | type: ProjectionDuration  multiplicity: 1  isOrdered: N/A  isUnique: True  defaultValue: None  isNullable: False |
|  |  |  |  |

### 8.5.y ProjectionDuration <<dataType>>

#### 8.5.y.1 Definition

This data type specifies the time duration for which the projections are made.

#### 8.5.y.2 Information elements

|  |  |  |  |
| --- | --- | --- | --- |
| Name | Definition | Support qualifier | Properties |
| FromTime | This specifies the timestamp from when the projection are made | M | type: DateTime  multiplicity: 1  isOrdered: N/A  isUnique: True  defaultValue: None  isNullable: False |
| ToTime | This specifies the timestamp till when the projection are made |  | type: DateTime  multiplicity: 1  isOrdered: N/A  isUnique: True  defaultValue: None  isNullable: False |

### 8.5.y FutureOptimal <<dataType>>

#### 8.5.y.1 Definition

This data type specifies the time duration for which the gNB is optimal for upgrade.

#### 8.5.y.2 Information elements

|  |  |  |  |
| --- | --- | --- | --- |
| Name | Definition | Support qualifier | Properties |
| FutureOptimal | This specifies if the gNB is optimal for handover at a future point of time. The value TRUE indicates that the gNB is optimal for handover.  Either isOptimal or isFutureOptimal will be present. | M | type: Boolean  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: TRUE  isNullable: False |
| FutureOptimalTime | This specifies the time duration during which the gNB is optimal for handover. | CM | type: ProjectionDuration  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |