**3GPP TSG-SA5 Meeting #141-e *S5-221756***

**e-meeting, 17 - 26 January 2022**

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| *CR-Form-v12.1* |
| **CHANGE REQUEST** |
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|  |  | **CR** | **0047** | **rev** |  | **Current version:** |  |  |
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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:***  | MRO additions for CHO and DAPS handover |
|  |  |
| ***Source to WG:*** | Ericsson |
| ***Source to TSG:*** | S5 |
|  |  |
| ***Work item code:*** |  |  | ***Date:*** | 2022-01-07 |
|  |  |  |  |  |
| ***Category:*** |  |  | ***Release:*** |  |
|  | *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 canbe found in 3GPP [TR 21.900](http://www.3gpp.org/ftp/Specs/html-info/21900.htm). | *Use one of the following releases:Rel-8 (Release 8)Rel-9 (Release 9)Rel-10 (Release 10)Rel-11 (Release 11)…Rel-15 (Release 15)Rel-16 (Release 16)Rel-17 (Release 17)Rel-18 (Release 18)* |
|  |  |
| ***Reason for change:*** | Make sure Stage 1, Stage 2 and Stage 3 are in sync. |
|  |  |
| ***Summary of change:*** | Remove parts of Stage 1 that is not implemented in Stage 2 and 3. |
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| ***Consequences if not approved:*** | Discrepancy between Stagen 1 and Stage 2,3 may lead to confusion. |
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| ***Clauses affected:*** | 6.1.1.X, 6.1.1.X (first occurrance), 6.1.1.X (second occurrence), 6.4.1.X, (first occurrance), 6.4.1.X (second occurrence). |
|  |  |
|  | **Y** | **N** |  |  |
| ***Other specs*** |  | **X** |  Other core specifications  |  |
| ***affected:*** |  | **X** |  Test specifications |  |
| ***(show related CRs)*** |  | **X** |  O&M Specifications |  |
|  |  |
| ***Other comments:*** |  |
|  |  |
| ***This CR's revision history:*** |  |

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| **First change** |

## 3.3 Abbreviations

For the purposes of the present document, the abbreviations given in 3GPP TR 21.905 [1] and the following apply. An abbreviation defined in the present document takes precedence over the definition of the same abbreviation, if any, in 3GPP TR 21.905 [1].

ANR Automatic Neighbour Relation

CHO Conditional Handover

DAPS Dual Active Protocol Stack

NCR Neighbour Cell Relation

NG-RAN Next Generation Radio Access Network

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| **Next change** |

#### 6.1.1.X CHO management

**REQ-DCHO-FUN-1** The producer of NF provisioning MnS should have the capability allowing an authorized consumer to enable or disable Conditional Handover for a gNB.

**REQ-DCHO-FUN-2** The producer of NF performance assurance MnS should have the capability to produce measurements related to CHO.

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| **Next change** |

#### 6.1.1.X DAPS handover management

**REQ-DDAPSHO-FUN-1** The producer of NF provisioning MnS should have the capability allowing an authorized consumer to enable or disable DAPS handover for a gNB.

**REQ-DDAPSHO-FUN-2** The producer of NF performance assurance MnS should have the capability to produce measurements related to DAPS handover.

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| **Next change** |

#### 6.4.1.X CHO (Conditional Handover)

| Use case stage | Evolution/Specification | <<Uses>>Related use |
| --- | --- | --- |
| **Goal**  | To enable CHO. |  |
| **Actors and Roles** | D-SON management function to support the CHO function. |  |
| **Telecom resources** | * gNB;
* The producer of provisioning MnS.
 |  |
| **Assumptions** | N/A |  |
| **Pre-conditions** | * 5G NR cells are in operation.
* CHO is not in operation for a gNB.
 |  |
| **Begins when**  | The D-SON management function intends to enable CHO for a gNB. |  |
| **Step 1 (M)** | The D-SON management function requests the producer of provisioning MnS to enable CHO for a gNB. |  |
| **Step 2 (M)** | The D-SON management function collects CHO related measurements and analyses them to evaluate the CHO performance. |  |
| **Ends when**  | All the steps identified above are successfully completed. |  |
| **Exceptions** | One of the steps identified above fails. |  |
| **Post-conditions** | CHO is in operation from for a gNB. |  |
| **Traceability**  | **REQ-DCHO-FUN-1, REQ-DCHO-FUN-2** |  |

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| **Next change** |

#### 6.4.1.X DAPS HO (Dual Active Protocol Stack Handover)

| Use case stage | Evolution/Specification | <<Uses>>Related use |
| --- | --- | --- |
| **Goal**  | To enable DAPS HO. |  |
| **Actors and Roles** | D-SON management function to support the DAPS HO function. |  |
| **Telecom resources** | * gNB;
* The producer of provisioning MnS.
 |  |
| **Assumptions** | N/A |  |
| **Pre-conditions** | * 5G NR cells are in operation.
* DAPS HO is not in operation for a gNB.
 |  |
| **Begins when**  | The D-SON management function intends to enable DAPS HO for a gNB. |  |
| **Step 1 (M)** | The D-SON management function requests the producer of provisioning MnS to enable DAPS HO from a source cell to a target cell. |  |
| **Step 2 (M)** | The D-SON management function collects DAPS HO related measurements and analyses them to evaluate the DAPS HO performance. |  |
| **Ends when**  | All the steps identified above are successfully completed. |  |
| **Exceptions** | One of the steps identified above fails. |  |
| **Post-conditions** | DAPS HO is in operation for a gNB. |  |
| **Traceability**  | **REQ-DDAPSHO-FUN-1, REQ-DDAPSHO-FUN-2** |  |

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| **Next change** |

### 7.1.x MRO for Conditional Handover (CHO)

#### 7.1.x.1 MnS component type A

MRO for CHO re-uses the component A for MRO, see clause 7.1.2.1.

#### 7.1.x.2 MnS Component Type B definition

##### 7.1.x.2.1 Control information

These parameters are used to control the CHO function.

Table 7.1.x.2.1-1: MRO fro CHO control

| Control parameter | Definition | Legal Values |
| --- | --- | --- |
| CHO function control | This attribute allows the operator to enable/disable the CHO functionality. See attribute choControl in TS 28.541 [13]. | BooleanOn, off |

##### 7.1.x.2.2 Parameters to be updated

MRO for CHO re-uses the same parameters to be updated as MRO, see clause 7.1.2.2.3.

#### 7.1.x.3 MnS Component Type C definition

##### 7.1.x.3.1 Performance measurements

Performance measurements related to MRO for CHO are captured in Table 7.1.x.3.1.-1:

Table 7.1.x.3.1-1. MRO for CHO related performance measurements

| Performance measurements | Description | Note |
| --- | --- | --- |
| Number of requested conditional handover preparations | Counts the number of successful and unsuccessful inter-gNB conditional handover preparations sent (see TS 28.552 clause 5.1.1.6.x.1) |  |
| Number of successful conditional handover preparations | Counts the number of unsuccessful inter-gNB conditional handover preparations sent (see TS 28.552 clause 5.1.1.6.x.2) |  |
| Number of failed conditional handover preparations | Counts the number of unsuccessful inter-gNB conditional handover preparations sent (see TS 28.552 clause 5.1.1.6.x.3) |  |
| Number of requested conditional handover resource allocations | Counts the number of successful and unsuccessful inter-gNB conditional handover preparations (see TS 28.552 clause 5.1.1.6.x.4) |  |
| Number of successful conditional handover resource allocations | Counts the number of successful inter-gNB conditional handover preparations (see TS 28.552 clause 5.1.1.6.x.5) |  |
| Number of failed conditional handover resource allocations | Counts the number of unsuccessful inter-gNB conditional handover preparations (see TS 28.552 clause 5.1.1.6.x.6) |  |
| Number of configured conditional handover candidates | Counts the number of outgoing inter-gNB conditional handover candidates requested (see TS 28.552 clause 5.1.1.6.x.7) |  |
| Number of UEs configured with conditional handover. | Counts the number of UEs that has been configured with inter-gNB conditional handover (see TS 28.552 clause 5.1.1.6.x.8) |  |
| Number of successful conditional handover executions | Counts the number of successful inter-gNB conditional handover executions received (see TS 28.552 clause 5.1.1.6.x.9) |  |
| Number of failed conditional handover executions | Counts the the number of failed inter-gNB conditional handover executions received (see TS 28.552 clause 5.1.1.6.x.10) |  |
| Mean Time of requested conditional handover executions | Counts the mean time of inter-gNB conditional handover executions (see TS 28.552 clause 5.1.1.6.x.11) |  |
| Max Time of requested conditional handover executions | Counts the max time of inter-gNB conditional handover executions (see TS 28.552 clause 5.1.1.6.x.12) |  |
| Number of configured conditional handover candidates | Counts the number of outgoing intra-gNB conditional handover candidates requested (see TS 28.552 clause 5.1.1.6.y.1) |  |
| Number of UEs configured with conditional handover | Countes the the number of UEs that has been configured with conditional handover (see TS 28.552 clause 5.1.1.6.y.2) |  |
| Number of successful conditional handover executions | Counts the number of successful intra-gNB conditional handover executions received (see TS 28.552 clause 5.1.1.6.y.3) |  |
| Number of requested conditional handover preparations | Counts the number of outgoing intra-gNB conditional handover preparations requested, for a split gNB deployment (see TS 28.552 clause 5.1.3.7.1.a) |  |
| Number of successful conditional handover preparations | Countes the number of successful intra-gNB conditional handover preparations, for a split gNB deployment (see TS 28.552 clause 5.1.3.7.1.b) |  |

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| **Next change** |

### 7.1.z MRO for DAPS handover

#### 7.1.z.1 MnS component type A

MRO for DAPS handover re-uses the component A for MRO, see clause 7.1.2.1.

#### 7.1.z.2 MnS Component Type B definition

##### 7.1.z.2.1 Control information

The parameter is used to control the DAPS handover function.

Table 7.1.z.2.1-1: MRO for DAPS handover control

| Control parameter | Definition | Legal Values |
| --- | --- | --- |
| DAPS HO function control | This attribute allows the operator to enable/disable the DAPS HO functionality. See attribute dapsHoControl in TS 28.541 [13]. | BooleanOn, off |

##### 7.1.z.2.2 Parameters to be updated

MRO for DAPS handover re-uses the same parameters to be updated as MRO, see clause 7.1.2.2.3.

#### 7.1.z.3 MnS Component Type C definition

##### 7.1.z.3.1 Performance measurements

Performance measurements related to MRO for DAPS handover are captured in Table 7.1.z.3.1.-1:

Table 7.1.z.3.1-1. MRO for DAPS handover related performance measurements

| Performance measurements | Description | Note |
| --- | --- | --- |
| Number of requested DAPS handover preparations | Counts the number of successful and unsuccessful inter-gNB DAPS handover preparations sent (see TS 28.552 clause 5.1.1.6.x.1) |  |
| Number of successful DAPS handover preparations | Counts the number of unsuccessful inter-gNB DAPS handover preparations sent (see TS 28.552 clause 5.1.1.6.x.2) |  |
| Number of failed DAPS handover preparations | Counts the number of unsuccessful inter-gNB DAPS handover preparations sent (see TS 28.552 clause 5.1.1.6.x.3) |  |
| Number of requested DAPS handover resource allocations | Counts the number of successful and unsuccessful inter-gNB DAPS handover preparations (see TS 28.552 clause 5.1.1.6.x.4) |  |
| Number of successful DAPS handover resource allocations | Counts the number of successful inter-gNB DAPS handover preparations (see TS 28.552 clause 5.1.1.6.x.5) |  |
| Number of failed DAPS handover resource allocations | Counts the number of unsuccessful inter-gNB DAPS handover preparations (see TS 28.552 clause 5.1.1.6.x.6) |  |
| Number of requested DAPS handover executions | Counts the number of outgoing inter-gNB DAPS handover candidates requested (see TS 28.552 clause 5.1.1.6.x.7) |  |
| Number of successful DAPS handover executions | Counts the number of successful inter-gNB DAPS handover executions received (see TS 28.552 clause 5.1.1.6.x.8) |  |
| Number of failed DAPS handover executions | Counts the the number of failed inter-gNB DAPS handover executions received (see TS 28.552 clause 5.1.1.6.x.9) |  |
| Number of DAPS handover requested | Counts the number of outgoing intra-gNB DAPS handovers requested (see TS 28.552 clause 5.1.1.6.y.1) |  |
| Number of successful DAPS handovers | Counts the number of successful intra-gNB DAPS handovers (see TS 28.552 clause 5.1.1.6.y.2) |  |
| Number of requested DAPS handover preparations | Counts the number of outgoing intra-gNB DAPS handover preparations requested, for a split gNB deployment (see TS 28.552 clause 5.1.3.7.1.a) |  |
| Number of successful DAPS handover preparations | Countes the number of successful intra-gNB DAPS handover preparations, for a split gNB deployment (see TS 28.552 clause 5.1.3.7.1.b) |  |

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| **End of changes** |