3GPP TSG SA WG5 Meeting 140-e S5-216621

electronic meeting, online, 15 - 24 November 2021

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| *CR-Form-v12.1* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
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|  | **28.313** | **CR** | **-** | **rev** | **-** | **Current version:** | **17.2.0** |  |
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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:*** | DraftCR for E-HOO - TS 28.313 | | | | | | | | | |
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| ***Source to WG:*** | Ericsson | | | | | | | | | |
| ***Source to TSG:*** | S5 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | E\_HOO | | | | |  | ***Date:*** | | | 2021-11-05 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | **B** |  | | | | | ***Release:*** | | | Rel-17 |
|  | *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-15 (Release 15) Rel-16 (Release 16) Rel-17 (Release 17) Rel-18 (Release 18)* | |
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| ***Reason for change:*** | | This DraftCR incorporates the following agreed contributions under WI E\_HOO:   * S5-214605 * S5-214606 * S5-216613 * S5-216614   The detailed reasons for change can be found in these contributions. | | | | | | | | |
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| ***Summary of change:*** | | Specification level requrements and use case for CHO management added.  Specification level requrements and use case for DAPS HO management added.  Add services and procedures for CHO.  Add services and procedures for DAPS handover. | | | | | | | | |
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| ***Consequences if not approved:*** | |  | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 3.3, 6.1.1.X (new), 6.4.1.X (new), 6.1.1.X (new), 6.4.1.X (new), 7.1.x (new), 7.1.x.1 (new), 7.1.x.2 (new), 7.1.x.2.1 (new), 7.1.x.2.2 (new), 7.1.x.3 (new), 7.1.x.3.1 (new), 7.1.z (new), 7.1.z.1 (new), 7.1.z.2 (new), 7.1.z.2.1 (new), 7.1.z.2.2 (new), 7.1.z.3 (new), 7.1.z.3.1 (new) | | | | | | | | |
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|  | | **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:*** | |  | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | | S5-214653 | | | | | | | | |

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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 from one cell to another cell.

**REQ-DCHO-FUN-2** The producer of NF provisioning MnS should have the capability allowing an authorized consumer to configure parameters for the CHO function.

**REQ-DCHO-FUN-3** 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 from one cell to another cell.

**REQ-DDAPSHO-FUN-2** The producer of NF provisioning MnS should have the capability allowing an authorized consumer to configure parameters for the DAPS handover function.

**REQ-DDAPSHO-FUN-3** 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 configure CHO parameters in cells in order to improve CHO performance. |  |
| **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 from the source cell to the target cell. |  |
| **Begins when** | The D-SON management function intends to enable CHO from the source cell to the target cell. |  |
| **Step 1 (M)** | The D-SON management function requests the producer of NF provisioning MnS to configure parameters for the management of CHO on the source cell. |  |
| **Step 2 (M)** | The D-SON management function requests the producer of provisioning MnS to enable CHO from a source cell to a target cell. |  |
| **Step 3 (M)** | The CHO function detects handover issues (e.g. too late CHO, too early CHO and CHO to a wrong cell) by analysing reports from UEs and network side information, and acts to mitigate the CHO issues by adjusting CHO related RRC parameters sent from the gNB to the UE. |  |
| **Step 4 (M)** | The D-SON management function collects CHO related measurements and analyses them to evaluate the CHO performance. |  |
| **Step 5 (M)** | If the D-SON management function does not find the CHO performance satisfactory, it updates the configuration parameters for the CHO function. |  |
| **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 the source cell to the target cell. |  |
| **Traceability** | **REQ-DCHO-FUN-1, REQ-DCHO-FUN-2, REQ-DCHO-FUN-3** |  |

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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 configure DAPS HO parameters in cells in order to improve DAPS HO performance. |  |
| **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 from the source cell to the target cell. |  |
| **Begins when** | The D-SON management function intends to enable DAPS HO from the source cell to the target cell. |  |
| **Step 1 (M)** | The D-SON management function requests the producer of NF provisioning MnS to configure parameters for the management of DAPS HO on the source cell. |  |
| **Step 2 (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 3 (M)** | The DAPS HO function detects handover issues (e.g. too late DAPS HO, too early DAPS HO and DAPS HO to a wrong cell) by analysing reports from UEs and network side information, and acts to mitigate the DAPS HO issues by adjusting DAPS HO related RRC parameters sent from the gNB to the UE. |  |
| **Step 4 (M)** | The D-SON management function collects DAPS HO related measurements and analyses them to evaluate the DAPS HO performance. |  |
| **Step 5 (M)** | If the D-SON management function does not find the DAPS HO performance satisfactory, it updates the configuration parameters for the DAPS HO function. |  |
| **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 from the source cell to the target cell. |  |
| **Traceability** | **REQ-DDAPSHO-FUN-1, REQ-DDAPSHO-FUN-2, REQ-DDAPSHO-FUN-3** |  |

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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]. | Boolean  On, 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]. | Boolean  On, 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** |