**SA WG2 Meeting #149ES2-2201005r04**

**February 14th – 25th, 2022 ; Elbonia (revision of S2-220xxxx)**

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| *CR-Form-v12.1* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
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|  | **23.502** | **CR** | **3403** | **rev** |  | **Current version:** | **17.3.0** |  |
|  | | | | | | | | |
| *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 | **X** |

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| ***Title:*** | Inter-AMF Xn handover | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | Nokia, Nokia Shanghai Bell | | | | | | | | | |
| ***Source to TSG:*** | S2 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | 5GS\_Ph1, TEI17 | | | | |  | ***Date:*** | | | 2021-01-14 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | **F** |  | | | | | ***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:*** | | Xn based inter NG-RAN handover in clause 4.9.1.2.1 was designed for intra-AMF case, it is clarified that the NG-RAN node may send the N2 path switch message to a different AMF due to the unavailability of the old AMF. | | | | | | | | |
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| ***Summary of change:*** | | This CR does not intend to broaden the scope of the Xn based inter NG-RAN handover to all inter-AMF cases, but in some real-life cases the AMF corresponding to GUAMI is no longer available. In such case, the specified AMF management procedures should be initiated.  Specify it clearly thatfor AMF management reasons, the NG-RAN may send N2 message to a new AMF during Xn based inter-NG-RAN handover. | | | | | | | | |
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| ***Consequences if not approved:*** | | Xn Handover will fail if the original AMF has failed even though the Xn HO failure can be salvaged as long as other AMFs within the same set are available. | | | | | | | | |
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| ***Clauses affected:*** | | 4.9.1.2.1 | | | | | | | | |
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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:*** | |  | | | | | | | | |

*FIRST CHANGE*

#### 4.9.1.2 Xn based inter NG-RAN handover

##### 4.9.1.2.1 General

Clause 4.9.1.2 includes details regarding the Xn based inter NG-RAN handover with and without UPF re-allocation.

Xn handovers are only supported for intra-AMF mobility but the conditions specified in TS 23.501 [2] clause 5.21.2 can lead to N2 handover towards a different AMF.

The handover preparation and execution phases are performed as specified in TS 38.300 [9], in the case of handover to a shared network, source NG-RAN determines a PLMN or an SNPN to be used in the target network as specified by TS 23.501 [2]. If the serving PLMN changes during Xn-based handover, the source NG-RAN node shall indicate to the target NG-RAN node (in the Mobility Restriction List) the selected PLMN ID to be used in the target network. During Xn based handover into a shared NG-RAN node the source NG RAN node shall include the serving NID (if available) in the Mobility Restriction List to be used by the target NG-RAN node.

If the AMF generates the N2 downlink signalling during the ongoing handover and receives a rejection to a N2 interface procedure (e.g. Location Reporting Control; DL NAS message transfer; etc.) from the NG-RAN with an indication that a Xn based handover procedure is in progress, the AMF may reattempt the same N2 interface procedure either when the handover is complete or the handover is deemed to have failed, when possible. The failure is known by expiry of the timer guarding the N2 interface procedure.

Upon reception for an SMF initiated N1 and/or N2 request(s) with an indication that the request has been temporarily rejected due to handover procedure in progress, the SMF starts a locally configured guard timer. Any NF (e.g. the SMF) should hold any signalling messages targeted towards AMF for a given UE during the handover preparation phase unless it detects that the handover execution is completed or handover has failed/cancelled. The NF (e.g. the SMF) may re-attempt, up to a pre-configured number of times, when either it detects that the handover is completed or has failed using message reception or at expiry of the guard timer.