**3GPP TSG-RAN WG2 Meeting #117 electronic**

21 February– 3 March 2022 *R2-2203589*

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| *CR-Form-v12.2* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
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|  |  | **CR** |  | **rev** | **2** | **Current version:** |  |  |
|  | | | | | | | | |
| *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 | **X** | Radio Access Network | **X** | Core Network |  |

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| ***Title:*** | Introducing NPN enhancements: Credential Holders, Onboarding, IMS emergency, and PWS support in SNPNs | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | Nokia, Nokia Shanghai Bell | | | | | | | | | |
| ***Source to TSG:*** | RAN2 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** |  | | | | |  | ***Date:*** | | |  |
|  |  | | | |  | |  | | |  |
| ***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 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-16 (Release 16) Rel-17 (Release 17) Rel-18 (Release 18) Rel-19 (Release 19)* | |
|  |  | | | | | | | | | |
| ***Reason for change:*** | | Introduce the necessary changes for Non-Public Network enhancements, see [RP-212585](https://www.3gpp.org/ftp/tsg_ran/TSG_RAN/TSGR_93e/Docs/RP-212585.zip) | | | | | | | | |
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| ***Summary of change:*** | | This CR introduces the following new features in 38.300:  1) Support SNPN along with subscription/credentials owned by a Credetials Holder separate from the SNPN:   * Broadcast of information to enable SNPN selection for UEs with subscription/credentials owned by a Credetials Holder * The associated cell selection/reselection and connected mode mobility support   2) Support UE onboarding and provisioning for NPN   * Broadcast the relevant parameters   3) Support of PWS, and IMS emergency services for SNPN   * Removing of stage 2 restrictions * Broadcast of relevant parameters   (Changes before RAN2#117:  1) Minor editorial corrections  2) use of "*imsEmergencySupportForSNPN*"  No changes (except cover page) after RAN2##117) | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | NPN enhancements are not supported | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 3.1, 7.3.1, 16.6.1, new clauses 16.6.X, and 16.6.Y | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **Y** | **N** |  | | | |  | | |
| ***Other specs*** | | **X** |  | Other core specifications | | | | TS 38.304 CR 0230  TS 28.306 CR 0684  TS 38.331 CR 2925 | | |
| ***affected:*** | |  | **X** | Test specifications | | | | TS/TR ... CR ... | | |
| ***(show related CRs)*** | |  | **X** | O&M Specifications | | | | TS/TR ... CR ... | | |
|  | |  | | | | | | | | |
| ***Other comments:*** | | This CR also covers the changes of CR0425 (R2-2204151/R3-221620) | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | | The changes of CR0428 (R2-2204162/ R3-221542) are merged in this CR | | | | | | | | |

*First Modified Subclause*

## 3.1 Abbreviations

For the purposes of the present document, the abbreviations given in TR 21.905 [1], in TS 36.300 [2] and the following apply. An abbreviation defined in the present document takes precedence over the definition of the same abbreviation, if any, in TR 21.905 [1] and TS 36.300 [2].

<Text omitted>

GFBR Guaranteed Flow Bit Rate

GIN Group ID for Network selection

HRNN Human-Readable Network Name

<Text omitted>

*Next Modified Subclause*

### 7.3.1 Overview

System Information (SI) consists of a MIB and a number of SIBs, which are divided into Minimum SI and Other SI:

- **Minimum SI** comprises basic information required for initial access and information for acquiring any other SI. Minimum SI consists of:

- *MIB* contains cell barred status information and essential physical layer information of the cell required to receive further system information, e.g. CORESET#0 configuration. *MIB* is periodically broadcast on BCH.

- *SIB1* defines the scheduling of other system information blocks and contains information required for initial access. SIB1 is also referred to as Remaining Minimum SI (RMSI) and is periodically broadcast on DL-SCH or sent in a dedicated manner on DL-SCH to UEs in RRC\_CONNECTED.

- **Other SI** encompasses all SIBs not broadcast in the Minimum SI. Those SIBs can either be periodically broadcast on DL-SCH, broadcast on-demand on DL-SCH (i.e. upon request from UEs in RRC\_IDLE, RRC\_INACTIVE, or RRC\_CONNECTED), or sent in a dedicated manner on DL-SCH to UEs in RRC\_CONNECTED (i.e., upon request, if configured by the network, from UEs in RRC\_CONNECTED or when the UE has an active BWP with no common search space configured). Other SI consists of:

- *SIB2* contains cell re-selection information, mainly related to the serving cell;

- *SIB3* contains information about the serving frequency and intra-frequency neighbouring cells relevant for cell re-selection (including cell re-selection parameters common for a frequency as well as cell specific re-selection parameters);

- *SIB4* contains information about other NR frequencies and inter-frequency neighbouring cells relevant for cell re-selection (including cell re-selection parameters common for a frequency as well as cell specific re-selection parameters), which can also be used for NR idle/inactive measurements;

- *SIB5* contains information about E-UTRA frequencies and E-UTRA neighbouring cells relevant for cell re-selection (including cell re-selection parameters common for a frequency as well as cell specific re-selection parameters);

- *SIB6* contains an ETWS primary notification;

- *SIB7* contains an ETWS secondary notification;

- *SIB8* contains a CMAS warning notification;

- *SIB9* contains information related to GPS time and Coordinated Universal Time (UTC);

- *SIB10* contains the Human-Readable Network Names (HRNN) of the NPNs listed in SIB1;

- *SIB11* contains information related to idle/inactive measurements;

- *SIBpos* contains positioning assistance data as defined in TS 37.355 [43] and TS 38.331 [12];

- *SIBXY* contains information related to the the Group IDs for Network selection (GINs) associated with SNPNs listed in SIB1.

For sidelink, Other SI also includes:

- *SIB12* contains information related to NR sidelink communication;

- *SIB13* contains information related to *SystemInformationBlockType21* for V2X sidelink communication as specified in TS 36.331 clause 5.2.2.28 [29];

- *SIB14* contains information related to *SystemInformationBlockType26* for V2X sidelink communication as specified in TS 36.331 clause 5.2.2.33 [29].

Figure 7.3-1 below summarises System Information provisioning.



Figure 7.3-1: System Information Provisioning

For a cell/frequency that is considered for camping by the UE, the UE is not required to acquire the contents of the minimum SI of that cell/frequency from another cell/frequency layer. This does not preclude the case that the UE applies stored SI from previously visited cell(s).

If the UE cannot determine the full contents of the minimum SI of a cell by receiving from that cell, the UE shall consider that cell as barred.

In case of BA, the UE only acquires SI on the active BWP.

*Next Modified Subclause*

## 16.6 Stand-Alone NPN

### 16.6.1 General

An SNPN is a network deployed for non-public use which does not rely on network functions provided by a PLMN (see clause 4.8). An SNPN is identified by a PLMN ID and NID (see clause 8.2) broadcast in SIB1.

An SNPN-capable UE supports the SNPN access mode. When the UE is set to operate in SNPN access mode, the UE only selects and registers with SNPNs. When the UE is not set to operate in SNPN access mode, the UE performs normal PLMN selection procedures.

Emergency services and ETWS /CMAS can be supported by SNPNs. An IMS Emergency call support indication is provided per SNPN to inform the UE which SNPN(s) support emergency bearer. In normal service state the indication is provided in the same way as in case of PLMNs (see clause 16.5.2). In limited service state and for emergency services other than eCall over IMS, a UE is informed whether an SNPN of the cell supports emergency services over NG-RAN from a per SNPN broadcast indication (*imsEmergencySupportForSNPN*). The broadcast indicator for an SNPN may be set to "support" if any AMF of the SNPN supports IMS emergency bearer services.

NR-NR Dual Connectivity within a single SNPN is supported.

### 16.6.2 Mobility

#### 16.6.2.1 General

The same principles as described in 9.2 apply to SNPN except for what is described below.

UEs operating in SNPN access mode only (re)select cells within the selected/registered SNPN and a cell can only be considered as suitable if the PLMN and NID broadcast by the cell matches the selected/registered SNPN.

In addition, manual selection of SNPN(s) is supported, for which HRNN(s) can be optionally provided.

The roaming and access restrictions applicable to SNPN are described in clause 9.4.

*New Subclause*

16.6.x Access with subscription/credentials owned by a Credentials Holder

An SNPN may allow access to UEs being authorized using credentials or subscription owned by a separate Credentials Holder (CH). The support of this feature is uniform across the SNPN as specified in TS 23.501 [3].

The following information is broadcast to support SNPN access with subscription of a Credentials Holder:

- an indication per SNPN in SIB1 that access using credentials from a Credentials Holder is supported;

- optionally a list of supported GINs in SIBXY (each GIN may be assigned to one or more SNPNs);

- an optional indication per SNPN in SIB1 that the SNPN allows registration attempts from UEs that are not explicitly configured to select the SNPN.

The above listed items are forwarded to the UE NAS layer that uses them for SNPN selection.

16.6.y Support of UE onboarding and remote provisioning

An SNPN may offer support for restricted 3GPP connectivity for remote provisioning of credentials. The feature is enabled/disabled per cell.

The following information is broadcast to support UE onboarding and remote provisioning:

- an indication per onboarding SNPN in SIB1 that UE onboarding is enabled;

- optionally a list of supported GINs in SIBXY (each GIN may be assigned to one or more onboarding SNPNs).

The above listed items are forwarded to the UE NAS layer that uses them for onboarding SNPN selection. When a UE intends to perform onboarding, it sends the onboarding request indication to the gNB during RRC connection establishment.

The NG-RAN nodes receive information about onboarding support capabilities of the AMF(s). This information is used by the NG-RAN node to select a suitable AMF when receiving the onboarding request indication from the UE.

*End of Changes*