**3GPP TSG-SA1 Meeting #94-bis-e *S1-21xxxx***

**Electronic Meeting, 4 – 12 July 2021** *(revision of S1-21xxxx)*

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| *CR-Form-v12.1* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  | **22.858** | **CR** | **<CR#>** | **rev** | **-** | **Current version:** | **18.0.0** |  |
|  | | | | | | | | |
| *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 | **X** | Radio Access Network | **X** | Core Network | **X** |

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|  | | | | | | | | | | |
| ***Title:*** | Consolidation of Resident requirements | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | KPN | | | | | | | | | |
| ***Source to TSG:*** | S1 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | FS\_Resident | | | | |  | ***Date:*** | | | <Res\_date> |
|  |  | | | |  | |  | | |  |
| ***Category:*** | B |  | | | | | ***Release:*** | | | Rel-18 |
|  | *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)* | |
|  |  | | | | | | | | | |
| ***Reason for change:*** | | Potential requirements in use case sections need to be consolidated | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | Consolidation of potential requirements from use cases in a number of consolidated potential requirements | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | Potential requirements not consolidated before start of normative work. This would imply more normative work. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 7.2, 7.3, 7.4, 7.5, 7.6, 7.7, 7.8, 7.9, 7.10, 7.11, 7.21(new) | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **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:*** | |  | | | | | | | | |

# 7 Consolidated requirements

## 7.1 Introduction

This section provides Consolidated Potential Requirements for consideration to include in the normative specifications. The CPRs have been grouped into different functional categories, each category contains a table that lists the original PR.

## 7.2 General

Table 7.2-1 – RESIDENT General Consolidated Requirements

|  | Potential Requirement | |  |
| --- | --- | --- | --- |
| CPR No. | Original Potential Requirement No. | Potential Requirement text | Comments |
| CPR.7.2-1 |  | Subject to local regulations, the 5G system shall support regulatory requirements for emergency calls, PWS and eCall for UEs connected to a CPN. |  |

## 7.3 Gateway

Table 7.3-1 – RESIDENT Gateway Consolidated Requirements

|  | Potential Requirement | |  |
| --- | --- | --- | --- |
| CPR No. | Original Potential Requirement No. | Potential Requirement text | Comments |
| CPR.7.3-1 | PR 5.13.6-001 | The 5G system shall be able to support IP traffic offload in CPN.  NOTE: The priority of offload can be from default configuration, network or user. |  |
| CPR.7.3-2 | PR 5.19.6-001 | The 5G system shall support use of an eRG that is connected to the 5G Core Network over wireless access, fixed broadband access or hybrid access.  Editors Note: The terms hybrid access need to be added to the definitions section.  Editor’s Note: When related to 5G-RG [PR 5.19.6-001] is fullfilled and [PR 5.19.6-002] does not apply. |  |
| CPR.7.3-3 | PR 5.19.6-002 | The 5G system shall support a mechanism for the network operator to provide policies to the eRG on which transport (e.g. wireless, cable, etc.) is best suited for different services. |  |
| CPR.7.3-4 | PR 5.17.6-001 | The PRAS and eRG shall be able to detect a loss of connection with the 5GC. |  |
| CPR.7.3-5 | PR. 5.17.6-002 | When the eRG detects a loss of connection with the 5GC, the eRG shall allow communication using non-3GPP access within the CPN to continue. |  |
| CPR.7.3-6 | PR. 5.17.6-003 | When the CPN detects a loss of connection with the 5GC and the PRAS is serving UEs under its coverage using:  - licensed spectrum, the CPN may allow the PRAS to continue transmission using the licensed spectrum for an operator-defined time period.  - During this time period, if the PRAS continues transmission using licensed spectrum, the CPN shall allow communication using licensed spectrum within the CPN to continue.  NOTE1: The time period could be set to "indefinite".  - At the end of this time period, the CPN shall deactivate the PRAS air interface.  - If the time period is undefined, the CPN shall deactivate the PRAS air interface.  - unlicensed spectrum, the CPN shall allow communication using unlicensed spectrum within the CPN to continue.  NOTE2: In the requirement above, only data traffic exchange within the CPN is allowed to continue.  Editor’s Note: It is FFS to add more descriptions to clarify in which assumptions this use case and requirements [PR. 5.17.6-002] and [PR. 5.17.6-003] apply. |  |

## 7.4 Service Discovery

Table 7.4-1– RESIDENT Service Discovery Consolidated Requirements

|  | Potential Requirement | |  |
| --- | --- | --- | --- |
| CPR No. | Original Potential Requirement No. | Potential Requirement text | Comments |
| CPR.7.4-1 | PR 5.2.6-008 | The 5G system shall provide a mechanism to prevent or allow a (guest) UE to discover and/or use the services provided by the devices on the CPN. |  |
| CPR.7.4-2 |  | The 5G system shall support a service discovery mechanism for a UE or device in a CPN to discover capabilities of other UEs or authenticated/authorized devices in the CPN, for example:   * Capabilities and status (e.g., relay, eRG) * Whether an eRG has external data network connectivity * Expected availability of power (e.g., how long is remaining battery life) * Supported applications/services (e.g. similar to what is provided by UPNP) * Device manufacturer * Security/encryption mechanisms available * Connection types support by other UEs or devices (e.g. licensed spectrum direct connection, non-licensed spectrum direct connection) | Potential requirement from TR22.859 |

## 7.5 Service Hosting

Table 7.5-1 – RESIDENT Service Hosting Consolidated Requirements

|  | Potential Requirement | |  |
| --- | --- | --- | --- |
| CPR No. | Original Potential Requirement No. | Potential Requirement text | Comments |
| CPR.7.5-1 | PR 5.11.6-001 | The 5G system shall support support applications on an Application Server connected to the Customer Premises Network. |  |
| CPR.7.5-2 | PR 5.11.6-002 | Based on operator policy, application needs, or both, the 5G system shall support an efficient user plane path, modifying the path as needed when the UE moves or application changes location, between a UE in an active communication and:  - an application in a Service Hosting Environment; or  - an application server located in a customer premises network. |  |
| CPR.7.5-3 | PR 5.11.6-002 | The 5G network shall maintain user experience (e.g. QoS, QoE) when a UE in an active communication moves from a location served by a Service Hosting Environment to:  - another location served by a different Service Hosting Environment; or  - another location served by an application server located in a customer premises network, and vice versa. |  |
| CPR.7.5-4 | PR 5.11.6-002 | The 5G network shall maintain user experience (e.g. QoS, QoE) when an application for a UE moves as follows:  - from a Service Hosting Environment to an application server located in a customer premises network, and vice versa |  |

## 7.6 Identification, Privacy, and security

Table 7.6-1 – RESIDENT Identification, Privacy, and security Consolidated Requirements

|  | Potential Requirement | |  |
| --- | --- | --- | --- |
| CPR No. | Original Potential Requirement No. | Potential Requirement text | Comments |
| CPR.7.6-1 | PR 5.2.6-009 | The 5G system shall ensure that communications associated with individual UEs in a CPN be identifiable (e.g., subscriber identifier) in the 5G network. |  |
| CPR.7.6-2 | PR 5.22.6-001 | The 5G system should support “User Identity” requirements (as defined in 22.101 clause 26.a [22.101]) for a user (human) using a CPN authorized UE to access external non-3GPP applications/services hosted in a CPN (behind a eRG).  Editor’s Note: In the following requirements, it needs to be clarified the relationship between CPN authorization and User Identity authentication. |  |
| CPR.7.6-3 | PR 5.22.6-002 | The 5G system shall support to allow a CPN authorized UE or non-3GPP device accessing to a CPN based on successful User Identity authentication.  Editor’s Note: In the following requirements, it needs to be clarified the relationship between CPN authorization and User Identity authentication. |  |
| CPR.7.6-4 | PR 5.5.6-006 | The 5G system shall ensure an Evolved Residential Gateway provides user privacy protection for UEs that are using the Evolved Residential Gateway, including communication confidentiality, location privacy and identity protection.  NOTE: Privacy protection should not block differentiated routing and QoS at the eRG for different destinations and services for the UE(s). |  |
| CPR.7.6-5 | PR 5.2.6-006 | The 5G system shall ensure the Premises Radio Access Station (PRAS) does not compromise user privacy for UEs that are using the PRAS, including communication confidentiality, location privacy and identity protection.  NOTE: Privacy protection should not block differentiated routing, QoS, and services for the UE(s). |  |
| CPR.7.6-6 | PR 5.5.6-003 | The 5G system shall support a mechanism to minimize the security impact on any PLMN or broadband access network when using an Evolved Residential Gateway. |  |
| CPR.7.6-7 | PR 5.5.6-004 | The 5G system shall support a mechanism to minimize the security impact on the UE when using an Evolved Residential Gateway. |  |
| CPR.7.6-8 | PR 5.5.6-005 | The 5G system shall enable the network operator associated with an Evolved Residential Gateway to control the security policy of an Evolved Residential Gateway. |  |
| CPR.7.6-9 | PR 5.2.6-003 | The 5G system shall ensure the use of a Premises Radio Access Station (PRAS) does not compromise the security of any PLMN or broadband access network. |  |
| CPR.7.6-10 | PR 5.2.6-004 | The 5G system shall ensure the use of a Premises Radio Access Station (PRAS) does not compromise the security of the UE. The PRAS (and its associated backhaul connectivity) shall provide a level of security equivalent to regular 5G base stations. |  |
| CPR.7.6-11 | PR 5.2.6-005 | The 5G system shall enable the network operator associated with the Premises Radio Access Station (PRAS) to control the security policy of the PRAS. |  |

## 7.7 Direct Communications

Table 7.7-1 – RESIDENT Direct Communications Consolidated Requirements

|  | Potential Requirement | |  |
| --- | --- | --- | --- |
| CPR No. | Original Potential Requirement No. | Potential Requirement text |  |
| CPR.7.7-1 | PR 5.10.6-001 | The 5G system shall be able to minimize service disruption when a direct communication path between UEs is switched to an indirect communication path going through a PRAS and an eRG that are connected to the 5G network. |  |

## 7.8 Connectivity - QoS - charging

Table 7.8-1 – RESIDENT Connectivity, QoS and Charging Consolidated Requirements

|  | Potential Requirement | |  |
| --- | --- | --- | --- |
| CPR No. | Original Potential Requirement No. | Potential Requirement text | Comments |
| CPR.7.8-1 | PR 5.5.6-002 | The 5G system shall support routing efficiency for data traffic between two UEs through an Evolved Residential Gateway.  Editor’s Note: This requirement can be merged during potential requirement consolidation. |  |
| CPR.7.8-2 | PR 5.4.6-001 | The 5G system shall support routing efficiency for data traffic between a UE and a non-3GPP device through an Evolved Residential Gateway.  Editor’s Note: This requirement can be merged during potential requirement consolidation. |  |
| CPR.7.8-3 | PR 5.6.6-001  PR 5.1.6-002 | The 5G system shall support end-to-end QoS for UEs connected to the eRG via a PRAS. NOTE3: End-to-end QoS includes the customer premises network between PRAS and eRG and the (fixed) access network between the eRG and the 5G core network. |  |
| CPR.7.8-4 | PR 5.3.6-002  PR 5.10.6-002 | The 5G system shall support end-to-end QoS for UEs directly connected to the eRG via either 3GPP RAT or non-3GPP (R)AT. NOTE: End-to-end QoS includes the customer premises network between UE and eRG and the (fixed) access network between the eRG and the 5G core network. |  |
| CPR.7.8-5 | PR 5.5.6-001 | The 5G system shall be able to provide QoS control for the communication path between a UE and an Evolved Residential Gateway via a Premises Radio Access Station. |  |
| CPR.7.8-6 | PR 5.2.6-007 | The 5G system shall be able to generate charging information that can differentiate between UEs connected to the Premises Radio Access Station (PRAS) and between backhaul for the PRAS and other data traffic over the same access. |  |

## 7.9 Provisioning

Table 7.9-1 – RESIDENT Provisioning Consolidated Requirements

|  | Potential Requirement | |  |
| --- | --- | --- | --- |
| CPR No. | Original Potential Requirement No. | Potential Requirement text | Comments |
| CPR.7.9-1 | PR 5.18.6-001 | The 5G system shall enable configuration and management of an eRG by both the operator of the public (mobile) network the eRG is connected to and, within the boundaries defined by the operator, by an Authorised Administrator. |  |
| CPR.7.9-2 | PR 5.18.6-003 | The 5G system shall enable configuration and management of a PRAS by a PLMN and, within the boundaries defined by the operator, by an Authorised Administrator. Specifically the PLMN shall be able to configure: radio settings pertaining to licensed spectrum shall be configured by the PLMN that owns the spectrum. Specifically the Authorised Administrator shall be able to configure:Whether visitor access network via the PRAS is allowed (allowing all or no visitors, or allowing specific visitors only)  Editor’s Note: it is FFS whether we need to specify other aspects that can be managed and whether we need to specify how the Authorised Administrator can do secure configuration and management. |  |
| CPR.7.9-3 | PR 5.7.6-001 | The 5G system shall provide mechanisms for the network operator or an Authorised Administrator (e.g. a homeowner) to trigger remote provisioning of evolved residential gateways and for the network operator to perform remote provisioning of eRGs, which includes verification and configuration of evolved residential gateway identity and initial OA&M provisioning. |  |
| CPR.7.9-4 | PR 5.7.6-002 | The 5G system shall provide mechanisms for the network operator or an Authorised Administrator (e.g. a homeowner) to trigger remote provisioning of Premises Radio Access Stations and for the network operator to perform remote provisioning of PRASs, which includes verification and configuration of Premises Radio Access Station identity and initial OA&M provisioning. |  |
| CPR.7.9-5 | PR 5.12.6-002 | The 5G system shall provide means for an authorized user to prioritize access for a certain UE in a PRAS and CPN, within the limits given by the operator policy. |  |

## 7.10 Premises Radio Access Station

Table 7.10-1 – RESIDENT Premises Radio Access Station Consolidated Requirements

|  | Potential Requirement | |  |
| --- | --- | --- | --- |
| CPR No. | Original Potential Requirement No. | Potential Requirement text | Comments |
| CPR.7.10-1 | PR 5.1.6-001 | The 5G system shall enable the network operator to provide any 5G services to any 5G UE via a Premises Radio Access Station (PRAS) connected via an evolved Residential Gateway (eRG).  NOTE1: The eRG may be connected via fixed access, via 5G Fixed Wireless Access, or hybrid access.  NOTE2: The PRAS may also be co-located with the eRG |  |
| CPR.7.10-2 | PR 5.2.6-001 | The 5G system shall enable the network operator to provide any 5G services via a Premises Radio Access Station (PRAS) to any 5G UE with a valid subscription to the HPLMN associated with the PRAS. |  |
| CPR.7.10-3 | PR 5.2.6-002 | The 5G system shall enable the network operator to provide any 5G services via a Premises Radio Access Station (PRAS) to any 5G UE with a valid subscription to any VPLMN that has a roaming agreement with the HPLMN.  NOTE: Whether 5G UEs from VPLMNs in the same country as the HPLMN can use the PRAS is subject to regulatory policy on national roaming. |  |
| CPR.7.10-4 | PR 5.12.6-001 | The 5G system shall provide means to enable/disable a UE to connect to a Customer Premises Network device via a particular Premises Radio Access Station.  NOTE: Enabling/disabling a UE to a particular PRAS in the CPN does not prevent the UE to connect to other PRASs in the CPN. |  |
| CPR.7.10-5 | PR 5.12.6-003 | The 5G system shall minimize service disruption when a CPN communication path changes between two PRASes. |  |
| CPR.7.10-6 | PR 5.14.6-001 | The 5G system shall be able to support PRAS sharing between multiple PLMNs. |  |
| CPR.7.10-7 | PR 5.18.6-002 | The 5G System shall support PRAS that use licensed spectrum, use unlicensed spectrum, or can use both unlicensed and licensed spectrum. |  |
| CPR.7.10-8 | PR 5.21.6-001 | The 5G system shall provide support for a network operator to authenticate a PRAS.  Editor’s Note: Authentication and authorization in these requirements need to be clarified. |  |
| CPR.7.10-9 | PR 5.21.6-002 | The 5G system shall provide support for a network operator to authorize a PRAS for its use in a CPN.  Editor’s Note: Authentication and authorization in these requirements need to be clarified. |  |
| CPR.7.10-10 | PR 5.21.6-003 | The 5G system shall support a secure mechanism to provide credentials to a PRAS.  Editor’s Note: Authentication and authorization in these requirements need to be clarified. |  |
| CPR.7.10-11 | PR 5.21.6-004 | The 5G system shall provide mechanisms for the network operator to provision an authenticated PRAS with operation settings, e.g. carrier frequencies.  Editor’s Note: Authentication and authorization in these requirements need to be clarified. |  |

## 7.11 5G-LAN

Table 7.11-1 – RESIDENT 5G-LAN Consolidated Requirements

|  | Potential Requirement | |  |
| --- | --- | --- | --- |
| CPR No. | Original Potential Requirement No. | Potential Requirement text | Comments |
| CPR.7.11-1 | PR 5.8.6-001 | The 5G system shall be able to support large amounts of small 5G LAN-VNs targeting residential deployments.  NOTE: Targeting residential requirements translate into millions of 5GLAN-VN per operator per country. These 5G LAN-VNs may contain between 10-50 devices per LAN |  |
| CPR.7.11-2 | PR 5.8.6-002 | The 5G system shall support authorized 3rd parties to authorize/deauthorize UEs to be able to access a 5G LAN-VN. |  |
| CPR.7.11-3 | PR 5.9.6-001 | The 5G system shall support the use of an evolved Residential Gateway to connect 5G devices from the 5G LAN VN it belongs to with non-3GPP devices on an in-home LAN. |  |
| CPR.7.11-4 | PR 5.16.6-001 | The 5G system shall support interconnection of a 5G LAN-Virtual Network (5G LAN-VN) with a fixed IP VPN.  Editor’s Note: This requirement may need to be further studied.  Editor’s Note: Further potential new requirements to support the use case may be identified. |  |

## 7.12 Broadcast Multicast

Table 7.12-1 – RESIDENT Broadcast Multicast Consolidated Requirements

|  | Potential Requirement | |  |
| --- | --- | --- | --- |
| CPR No. | Original Potential Requirement No. | Potential Requirement text | Comments |
| CPR.7.12-1 | PR.5.20.6-001 | The 5G system shall provide means to deliver 5G multicast/broadcast services to an eRG. |  |
| CPR.7.12-2 | PR.5.20.6-002 | Under operator control, an eRG shall be able to receive multicast/broadcast services from its access network.  NOTE: The access network can be wireless or wireline. |  |
| CPR.7.12-3 | PR.5.20.6-003 | Under operator control, an eRG, shall be able to efficiently deliver 5G multicast/broadcast services to authorized UEs and non-3GPP devices in the CPN. |  |
| CPR.7.12-4 | PR. 5.15.6-001 | The 5G system shall support multicast service access control based on eRG subscription that enables eRG to forward authorized multicast services to multiple non-3GPP devices behind the eRG.  NOTE: The multicast services that each of multiple non-3GPP devices is allowed to access may be different.  Editor’s Note: this requirement may need to be further clarified or rephrased. |  |