**3GPP TSG-SA1 Meeting #95-e *S1-213023r3***

**Online, , 23rd Aug 2021 - 2nd Sep 2021**

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| *CR-Form-v12.1* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
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|  | **22.261** | **CR** | **0539** | **rev** | **-** | **Current version:** | **18.3.0** |  |
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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 | **X** | Radio Access Network | **X** | Core Network | **X** |

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| ***Title:*** | Pirates requirements | | | | | | | | | |
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| ***Source to WG:*** | KPN, vivo Mobile Communications Co. LTD | | | | | | | | | |
| ***Source to TSG:*** | SA1 | | | | | | | | | |
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| ***Work item code:*** | Pirates | | | | |  | ***Date:*** | | | 2021-08-11 |
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| ***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)* | |
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| ***Reason for change:*** | | The FS\_Resident and FS\_PIN study resulted in consolidated requirements for CPN and PIN. The Pirates WID has been agreed to add these requirements to TS22.261. This CR adds a section with a combination of CPN and PIN requirements | | | | | | | | |
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| ***Summary of change:*** | | Adding requirements on Personal IoT Networks and Customer Premises Networks | | | | | | | | |
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| ***Consequences if not approved:*** | | Results from FS\_Resident and FS\_PIN study not included in normative rquirements | | | | | | | | |
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| ***Clauses affected:*** | | 6.38.4 | | | | | | | | |
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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 ... | | |
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| ***Other comments:*** | | This CR is dependent on CR0535 for definitions and CR0536, CR0537, and CR0538 for introduction and overview | | | | | | | | |
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| ***This CR's revision history:*** | |  | | | | | | | | |

### 6.38.4 Requirements

#### 6.38.4.1 General

The 5G system shall support mechanisms to identify a PIN, a PIN Element, an eRG and a PRAS.

Subject to local regulations, the 5G system shall support regulatory requirements for emergency calls, PWS and eCall for UEs connected via a CPN or PIN.The 5G system shall support LI for data traffic to/from individual UEs in a CPN or PIN (i.e., UEs behind the PIN Element with Gateway Capability or eRG and/or PRAS).

The 5G system shall support applications on an Application Server connected to a CPN or PIN.

The 5G system shall be able to support PINs with PIN Elements subscribed to more than one network operator.

Subject to regulatory requirements and operator policy, the 5G system shall support an efficient data path for intra-CPN or intra-PIN communications.

NOTE 1: For services an operator deploys in the 5G network (i.e. not in the CPN), local data routed via eRG does not apply.

The 5G system shall enable the network operator to provide any 5G services to any UE via a PRAS connected via an eRG.

NOTE 2: Whether the PRAS can be used by UEs from other PLMNs in the same country as the PLMN associated with the PRAS is subject to regulatory policy on national roaming.

The 5G system shall minimize service disruption for a UE that is moving between CPN access and operator provided mobile access.

NOTE 3: CPN access can imply access via a PRAS or can imply access directly via an eRG. Operator provided mobile access implies access via an operator owned base station.

The 5G system shall minimize service disruption when a CPN communication path changes between two PRASes.

The 5G system shall be able to minimize service disruption when a PIN Element changes the communication path from one PIN Element to another PIN Element. The communication path between PIN Elements may include licensed and unlicensed spectrum as well as 3GPP and non-3GPP access.

The 5G system shall be able to support PRAS sharing between multiple PLMNs.

The 5G system shall support mechanisms to aggregate, switch or split the service between non-3GPP RAT and PIN direct connections using licensed spectrum.

#### 6.38.4.2 Gateways

The 5G system shall be able to support access to the 5G network and its services via at least one gateway (i.e. PIN Element with Gateway Capabilities or eRG) for authorised UEs and authorised non-3GPP devices.

The 5G system shall be able to support IP traffic offload within a CPN.

NOTE 1: The priority of offload can be from default configuration, network or user.

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.

NOTE 2: The multicast service(s) that each of the authorized UEs and/or non-3GPP devices is allowed to receive may be different.

#### 6.38.4.3 Operation without 5G core network connectivity

The 5G system shall allow PIN Elements to communicate when there is no connectivity between a PIN Element with Gateway Capability and a 5G network. For a Public Safety PIN licensed spectrum may be used for PIN direct communications otherwise unlicensed spectrum shall be used.

When a CPN has lost connectivity with the 5G network, the 5G system shall provide an operator-controlled mechanism to enable:

- in the default configuration, or under certain conditions configured by the operator, the PRAS radio interface shall be deactivated; and

- under certain other conditions configured by the operator, the CPN shall continue existing intra-CPN communication, as long as no interaction with the 5G network is needed (e.g. refreshing security keys).

NOTE 1: The requirement above relates to intra-CPN operations and is subject to operator policy and control, under certain situations.

NOTE 2: Setting up new intra-CPN or intra-PIN communication sessions without connection to the 5G network is only possible with non-3GPP provided credentials.

#### 6.38.4.4 Discovery

The 5G system shall enable a UE or non-3GPP device in a CPN or PIN to discover other UEs or non-3GPP devices within the same CPN or PIN subject to acess rights.

The 5G system shall efficiently support service discovery mechanisms where a UE or non-3GPP device in a CPN or PIN can discover, subject to access rights:

- availability and reachability of other entities (e.g. other UEs or non-3GPP devices) on the CPN or PIN;

- capabilities of other entities on the CPN or PIN (e.g. eRG, relay UE, connection types) and/or;

- services provided by other entities on the CPN or PIN (e.g. the entity is a printer).The 5G system shall support a mechanism for the PIN user to indicate whether a PIN element is discoverable by other PIN elements of the same PIN.

The 5G system shall support a mechanism for the PIN user to indicate whether a PIN element is discoverable by UEs that are not members of the PIN.

#### 6.38.4.5 Relay Selection

In addition to the relay selection requirements in 6.9.2.4, relay selection within a PIN is enabled for both UEs and non-3GPP device and supports the additional selection criteria:

- The 5G system shall support a mechanism for a PIN Element to select a relay for PIN direct connection that enables access to the target PIN Element.

#### 6.38.4.6 Security

The 5G system shall provide user privacy; location privacy, identity protection and communication confidentiallity for non-3GPP devices and UEs that are using the PIN Element with Gateway Capability, eRG or PRAS.

NOTE 1: Privacy protection should not block differentiated routing and QoS for different destinations and services for the UE(s).

The 5G system shall support a mechanism to minimize the security risk of communications using an eRG.

The 5G system shall enable the network operator associated with an eRG to control the security policy of an eRG.

The 5G system shall support a mechanism to minimize the security risk of communications via a PRAS.

The PRAS (and its associated backhaul connectivity) shall provide a level of security equivalent to regular 5G base stations.

The 5G system shall enable the network operator associated with the Premises Radio Access Station (PRAS) to control the security policy of the PRAS.

The 5G system shall support authentication of a UE with 3GPP credentials for communication with entities (UEs, non-3GPP devices) in a CPN or PIN.

NOTE 2: To support this functionality the CPN or PIN needs to be connected with the 5G core network.

The 5G system shall provide support for a network operator to authenticate a PRAS.

The 5G system shall provide support for a network operator to authorize a PRAS for its use in a CPN.

The 5G system shall support a PIN Element using non operator managed credentials (e.g. provided by a third party) for performing communications within the PIN when those communications use PIN direct connections.

The 5G system shall support a mechanism to mitigate repeated and unauthorized attempts to access PIN Elements (e.g. mitigate a malicious flood of messages).

#### 6.38.4.7 QoS

The 5G system shall support real time E2E QoS monitoring and control for any intra-CPN data traffic to or from a UE (i.e. via eRG or via PRAS and eRG)

The 5G system shall support real time E2E QoS monitoring and control for any data traffic between a UE within a CPN and the 5G network (i.e. via eRG or via PRAS and eRG)

#### 6.38.4.8 Charging

The 5G system shall support charging data collection for data traffic to/from individual UEs in a CPN or PIN (i.e., UEs behind the PIN Element with Gateway Capability or eRG and/or PRAS).

The 5G system shall be able to generate charging data that can differentiate between backhaul for the PRAS and other data traffic over the same access.

#### 6.38.4.9 Creation and Management

The 5G system shall support a mechanism for the network operator to provision an eRG with:

- policies on which transport (e.g. wireless, cable, etc.) is best suited for different negotiated QoS levels.

- authentication credentials

- identification,

- initial OA&M information, and

- associated subscription

The 5G system shall enable the network operator to configure a PRAS with:

- radio settings pertaining to licensed spectrum,

- authentication credentials,

- identification,

- initial OA&M information, and

- associated subscription.

Subject to operator policy, the 5G system shall enable the Authorised Administrator to provision a PRAS with UE access considerations (allowing all UEs, or allowing specific UEs only)

The 5G system shall provide a mechanism for the Authorised Administrator to trigger initial provisioning of an eRG.

The 5G system shall provide a mechanism for the Authorised Administrator to trigger initial provisioning of a PRAS.

The 5G system shall support a PIN with at least one PIN Element with Management Capability.

The 5G system shall support mechanisms for a PIN User, network operator or authorized 3rd party to create and manage a PIN, including:

- Authorizing/deauthorizing PIN Elements;

- Authorizing/deauthorizing PIN Elements with Management Capability;

- Authorizing/deauthorizing PIN Elements with Gateway Capability;

- Establishing duration of the PIN;

- Configure PIN Elements to enable service discovery of other PIN Elements;

- Authorize/deauthorise if a PIN Element can use a PIN Element with Gateway Capability to communicate with the 5GS;

- Authorize/deauthorise for a PIN Element(s):

- which other PIN Element it can communicate with,

- which applications/service or service in that PIN it can access’

- which PIN Element it can use as a relay.

- Authorize/deauthorise a UE to perform service discovery of PIN Elements over the 5G network;

- Configure a PIN Element for external connectivity e.g.via 5G system;

NOTE: 1 The authorization can include the consideration of the location and time validity of the PIN and its PIN elements.

The 5G system shall support mechanisms for a network operator to configure the following policies in a PIN:

- Configure the connectivity type (e.g. licensed, unlicensed PIN direct connection) a PIN Element can use.

5G system shall be able to support mechanism to provide life span information of the PIN to the authorized 3rd party or the PIN elements when the PIN is created for limited time span.

The 5G system shall provide means to control which UEs can connect to a PRAS.

The 5G system shall support mechanisms to provision a PIN Element to use either licensed (under control of a MNO) or unlicensed spectrum (may be under the control of the MNO, or not) (e.g., when it has no connectivity to the 5G system).