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

**Electronic Meeting, 5 – xx July 2021** *(revision of S1-21xxxx)*

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *CR-Form-v12.1* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  | **22.859** | **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)*.* | | | | | | | | |
|  | | | | | | | | |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| ***Proposed change affects:*** | UICC apps |  | ME |  | Radio Access Network |  | Core Network |  |

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | | | | | | | | | | |
| ***Title:*** | Consolidated Requirements | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | vivo | | | | | | | | | |
| ***Source to TSG:*** | 3GPP SA1 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | FS\_PIN | | | | |  | ***Date:*** | | | Rel-18 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | B |  | | | | | ***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-15 (Release 15) Rel-16 (Release 16) Rel-17 (Release 17) Rel-18 (Release 18)* | |
|  |  | | | | | | | | | |
| ***Reason for change:*** | | Add consolidated requirements that are missing. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | Add consolidated requirements. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | No consolidated requirements | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 7.0 (new), 7.1, 7.2, 7.3, 7.4, 7.5, 7.6, 7.7, 7.8, 7.8A (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:*** | |  | | | | | | | | |

\*\*\*\*Start changes\*\*\*\*

# 7 Potential Consolidated Requirements

This section provides Consolidated Potential Requirements for consideration to include in the normative specifications. The CPR’s have been grouped into different functional categories, each category contains a table that lists the original PR and any relationship to 3GPP TR 22.858 [6].

## 7.0 PIN Element Requirements

Table 7.0-1 – PIN Element Consolidated Requirements

| CPR No. | Potential Requirement | |
| --- | --- | --- |
|  | Original Potential requirement  No. | Potential requirement text |
| 7.0-1 | PR.5.1.5-7 | 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.  NOTE: In this case, PIN Elements can only use non licensed spectrum for communications and authentication mechanisms that do not require 5CN and or internet connectivity i.e. PIN Elements that are managed locally. |
| 7.0-2 | PR 5.2.6-1, PR 5.7.6-1 | The 5G system shall be able to support a device to be the PIN element for more than 1 PIN. |
| 7.0-3 | PR 5.3.6-1 | The 5G system shall support a PIN Element to simultaneous transmit same content to multiple PIN Elements when a PIN Element is in the same PIN or another PIN. |
|  |  |  |
| 7.0-5 | PR 5.1.5-3 | The 5G system shall enable a PIN Element to support fault tolerant operations. (Open for more clarification, suggest to remove as already covered) |

## 7.1 Gateway

Table 7.1-1 – PIN Gateway Consolidated Requirements

| CPR No. | Potential Requirement | |
| --- | --- | --- |
|  | Original Potential requirement  No. | Potential requirement text |
| 7.1-1 | PR 5.3.6-3 | The 5G system shall support A PIN includes one or more PIN Elements with Gateway Capability |
|  |  |  |
| 7.1-3 | PR 5.9.6-1, PR 5.13.6-3 | The 5G system shall support access to the 5G network and its services for an authorized PIN Element (linked to a 3GPP subscription and provisioned with credentials) via one or more PIN Elements with gateway capability or directly. |
| 7.1-4 | PR 5.8.6-2 | The 5G system shall support mechanism to reduce the amount and frequency of control messages being used in the network for discovering other PIM elements including via a PIN element with Gateway capability in a PIM. (e.g. mitigate a malicious flood of messages related to PIN element discovery). |

## 7.2 PIN Element and Service Discovery

Table 7.2-1– PIN Service Discovery Consolidated Requirements

| CPR No. | Potential Requirement | |
| --- | --- | --- |
|  | Original Potential requirement  No. | Potential requirement text |
| 7.2-1 | PR.5.1.5-10, PR 5.6.6-1, PR 5.8.6-1, PR 5.10.6-2, PR-5.10.6-6, PR 5.11.6-2, PR 5.13.6-1 | The 5G system shall support a service discovery mechanism for a PIN element to discover other authenticated/authorized PIN Elements, for example:   * PIN Element capabilities and status (e.g., relay, PEMC, PEGC) * Whether a PEGC has external data network connectivity   NOTE 1: External connectivity could be local break out or via the 5G core network.   * Expected availability of Power (e.g., how long is remaining battery life) * Supported applications/service (e.g., UPNP) * Device manufacturer * Security/encryption mechanisms available * PIN Network topology * connection types support by other PIN Elements (e.g. licensed spectrum PIN direct connection, non-licensed spectrum PIN direct connection)   NOTE 2: Any of the above may be done directly (depending on the discovery capabilities of the PIN elements) or via a PIN element with gateway capability or via a PIN with management capability e.g. when a PIN Element acting as a UE in the 5GS needs to discover a PIN Element or service behind a PEGC. |

## 7.3 Service Hosting

Table 7.3-1 – PIN Service Hosting Consolidated Requirements

| CPR No. | Potential Requirement | |
| --- | --- | --- |
|  | Original Potential requirement  No. | Potential requirement text |
| None | None | NOTE: The PRs 5.6.6-1, 5.6.6-2, 5.6.6-3, 5.6.6-4 are integrated with other potential requirements, on aspects related to discovery of, and connectivity to, application/services on PIN elements. Whether service hosting within PIN requires additional requirements will be determined during the normative work. |

## 7.4 Privacy & Security

Table 7.4-1 – PIN Privacy Consolidated Requirements

| CPR No. | Potential Requirement | |
| --- | --- | --- |
|  | Original Potential requirement  No. | Potential requirement text |
|  |  |  |
| 7.4-1 | PR 5.6.6-4, PR 5.7.6-7,  5.11.6-4 | The 5G system shall be able to provide secure communications between PIN Elements in a PIN, and the communications between different PIN elements within the PIN can be secured differently.  NOTE: Secure communications between PIN Elements can be provided via a PIN with management capability when a PIN Element is acting as a UE in the 5GS. |
| 7.4-2 | PR 5.8.6-3, PR 5.8.6-4 | 5G system shall support a mechanism to mitigate repeated and unauthorized attempts to access PIN Elements (e.g. mitigate a malicious flood of messages). |
| 7.4-3 | PR 5.1.5.-6 | 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. |
| 7.4-4 |  | The 5G system shall support A PIN to use credentials that are created in the PIN to allow for the PIN to operate when the PIN has no external connectivity.  NOTE: External connectivity could be local break out or via the 5G core network. |
| 7.4-5 | PR 5.10.6-3 | The 5G system shall support a PIN Element to be configured with credentials of multiple user identities. |
| 7.4-6 | PR-5.11.6-3 | 5G system shall be able to support authentication and authorization of PIN elements whose subscriptions can belong to different operators to access the PIN. |

## 7.5 Direct Communications

Table 7.5-1 – PIN Direct Communications Consolidated Requirements

| CPR No. | Potential Requirement | |
| --- | --- | --- |
|  | Original Potential requirement  No. | Potential requirement text |
|  |  |  |
| 7.5-1 | PR 5.2.6-3, PR 5.7.6-3 | The 5G system shall support mechanisms to provision a PIN Element to use either licensed or unlicensed spectrum (e.g., when it has no connectivity to the 5G system). |
| 7.5-2 | PR 5.4.6-1 | The 5G system shall support A PIN Element to act upon user and operator preferences to aggregate, switch or split the service between non-3GPP RAT and PIN direct connections that use licensed spectrum. |
| 7.5-3 | PR 5.7.6-5 | The 5G system shall be able to support a PIN Element shall be able to concurrently use both licenced spectrum and non-licensed spectrum PIN direct connectivity with another PIN Element. |
| 7.5-4 | PR 5.3.6-2 | The 5G system shall support service continuity when a PIN Element changes the communication path from one PIN Element to another PIN Element. The communication path between PIN devices may include both 3GPP and non-3GPP access. |

## 7.6 Connectivity - QoS

Table 7.6-1 – PIN Connectivity - QoS Consolidated Requirements

| CPR No. | Potential Requirement | |
| --- | --- | --- |
|  | Original Potential requirement  No. | Potential requirement text |
|  |  |  |
| 7.6-1 | PR 5.6.6-2,  PR 5.6.6-3 | The 5G system shall support a mechanism to manage QoS for communications between PIN Elements when supported by the access technology.  NOTE: The above mechanism to manage QoS can be used via a PIN with management capability when a PIN Element is acting as a UE in the 5GS. |

## 7.7 PIN Management

Table 7.7-1 – PIN Provisioning Consolidated Requirements

| CPR No. | Potential Requirement | |
| --- | --- | --- |
|  | Original Potential requirement  No. | Potential requirement text |
| 7.7-1 | PR.5.1.5-8 | The 5G system shall support a PIN to contain one or more PIN Elements with Management Capability |
| 7.7-2 | PR 5.1.5-1, PR 5.8.6-1a, PR 5.10.6-1, 5.11.6-1  PR 5.11.6-7  PR 5.x.6-1 | The 5G system shall support mechanisms for a 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 * Termination / modification of the PIN * Configure PIN Elements to enable service discovery of other PIN Elements * Authorize/deauthorise if a PIN Element can use a PEGC to communicate with the 5GS. * Authorize/deauthorise which PIN Element another PIN Element may communicate with or use as relay PIN Element. * Authorize/deauthorise which PIN Element when using the 5GS can perform service discovery of other PIN Elements in the PIN. * Connectivity type a PIN Element shall use. * If a PIN Element is allowed external connectivity and if that is Local Break Out (LBO) or via 5GS.   NOTEte: The authorization may include the consideration of the location and time of the PIN and its PIN elements. |
| 7.7-3 | PR.5.1.5-9 | The 5G network shall be able to provide backup of management data for a PEMC based on operator’s policy and local regulations. |
| 7.7-4 | PR 5.10.6-5 | The 5G system shall support A PIN Element with Management Capability to assist a PIN Element that lost its connection to the 5G network in establishing a connection to another PIN Element with Gateway Capability. |
| 7.7-5 | PR-5.11.6-5 | 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 |

## 7.8 Positioning

Table 7.8-1 – PIN Positioning Consolidated Requirements

| CPR No. | Potential Requirement | |
| --- | --- | --- |
|  | Original Potential requirement  No. | Potential requirement text |
| TBD | TBD | TBD |

## 7.8A Charging

Table 7.8A-1 – Charging Consolidated Requirements

| CPR No. | Potential Requirement | |
| --- | --- | --- |
|  | Original Potential requirement  No. | Potential requirement text |
| 7.8A-1 | PR.5.1.5-5 | The 5G system shall support mechanisms to collect charging information on PIN Element communications (e.g., start and stop of communications, amount of data transmitted, radio resources used) when 3GPP access is used. |