**3GPP TSG-CT WG1 Meeting #141eC1-232560**

**Online 17– 21 April 2023**

**Source: vivo**

**Title: PIN discovery procedure**

**Spec: 3GPP TS 24.583 v0.0.0**

**Agenda item: 18.2.26**

**Document for: Agreement**

**1. Reason for Change**

Before the PINE triggers the PINE join into the PIN, the PINE should discover the available PIN.

For a certain PIN element, the PIN should be discovered and the PIN element can decide whether to join in the PIN. There are two situations that the PIN elements can discover the PIN as following:

- If the PIN elements can have an application layer communication with the PEMC which manages a PIN, the PIN elements can receive the PIN ID, PIN description and the PIN service that a PIN can provide, and decides whether to join the PIN;

- The PEGC can be set as open access and the PIN element can communicate with PIN server to receive the PIN ID, PIN description and the PIN service that a PIN can provide from PIN server via the PEGC.

The PIN discovery procedure is specified in clause 8.5.7 of TS 23.542 v0.2.0

**2. Proposal**

It is proposed to agree the following changes to 3GPP TS 24.583 v0.0.0.

\* \* \* First Change \* \* \* \*

#### 5.4.4.1 General

This clause describes the procedures for PIN discovery procedure.

The purpose of PIN discovery procedure is to discover a specific PIN for a PINE. The PINE can discover and decide whether to join in a PIN. The PINE can discover the PIN by:

a) if the PINE have an application layer connection with the PEMC of a PIN (e.g. via WiFi, Bluetooth, etc.), the PIN elements can receive the necessary information of a PIN from the application layer connection; or

b) if the PEGC can be set as open access (e.g. with no user name or password), the PIN element can communicate with PIN server to receive the necessary information of a PIN from PIN server via the PEGC.

The following procedures are defined for PIN discovery procedure:

a) PIN discovery with assistance of PEMC as specified in clause 5.4.4.2; and

b) PIN discovery with assistance of PIN server via PEGC as specified in clause 5.4.4.3.

#### 5.4.4.2 PIN discovery with assistance of PEMC

##### 5.4.4.2.1 PIN discovery with assistance of PEMC initiation by PINE

The PINE is authorized to initiate a PIN discovery with assistance of PEMC initiation if:

a) the UE identifier or the PIN client ID is available in the PINE;

b) the PINE has application layer connection with a PEMC of a PIN (e.g. via WiFi, Bluetooth, etc.); and

c) PINE has been authorized to communicate with the PEMC;

otherwise, the PINE is not authorized to perform the PIN discovery with assistance of PEMC initiation.

NOTE: PINE is allowed to receive the PIN ID, PIN description information, and IP address of PEMC via the application layer connection and directly decides whether to join the PIN without initiating the PIN discovery with assistance of PEMC.

When the PINE is on demand to discover a PIN, if the PINE is authorized to initiate a PIN discovery with assistance of PEMC initiation, then the PINE shall generate an HTTP POST request according to procedures as specified in IETF RFC 7231 [X]. In the HTTP POST request, the PEAE-C:

a) shall set the Request-URI to the URI of the PEMC;

b) shall include a Content-Type header field set to "application/vnd.3gpp.pinapp-info+xml"; and

c) shall include an application/vnd.3gpp.pinapp-info+xml MIME body with a <pin-discovery-request> element in the <pinapp-info> root element:

1) shall include a <ue-id> element set to the PIN client ID of the PINE;

2) shall include a <security-credentials> element set to the security credentials resulting from a successful authorization for the PIN service;

3) may include a <pin-client-profile> element set to the PIN client profile available in the PINE;

4) may include a <ue-location> element set to the location of the PINE; and

5) may include a <requested-pin-service> element set to the service information of the request PIN service(s).

The PEAE-C shall send the generated HTTP POST request towards the PMAE-C according to IETF RFC 7231 [X].

Upon reception of an HTTP POST request message containing:

a) a Content-Type header field set to "application/vnd.3gpp.pinapp-info+xml"; and

b) an application/vnd.3gpp.pinapp-info+xml MIME body with a <pin-discovery-request> element in the <pinapp-info> root element,

the PMAE-C shall check whether the PINE is allowed to discover the PIN that the PEMC manages.

##### 5.4.4.2.2 PIN discovery with assistance of PEMC accepted by PEMC

If the PINE is allowed to discover the PIN that the PEMC manages, PMAE-C shall:

a) generate an HTTP 200 (OK) response according to IETF RFC 7231 [X]. In the HTTP 200 (OK) response message, the PMAE-C:

1) shall include a Content-Type header field set to "application/vnd.3gpp.pinapp-info+xml"; and

2) shall include an application/vnd.3gpp.pinapp-info+xml MIME body with a <pin-discovery-accept> element in the <pinapp-info> root element:

i) shall include a <pin-id> element set to the PIN ID of the PIN;

ii) may include a <pin-description> element set to the description of the PIN (e.g., the vendor's name, location, the type of PIN, etc.);

iii) may include a <pin-service-list> element set to the list of services that the PIN can provide (e.g. PIN service provider identifier, PIN service type, PIN service feature, etc.); and

iv) may include a <pemc-info> element set to the identifier and IP address of PEMC; and

b) send the HTTP 200 (OK) response towards the PEAE-C.

##### 5.4.4.2.3 PIN discovery with assistance of PEMC completion by PINE

Upon reception of an HTTP 200 (OK) response message containing:

a) a Content-Type header field set to "application/vnd.3gpp.pinapp-info+xml"; and

b) an application/vnd.3gpp.pinapp-info+xml MIME body with a <pin-discovery-accept> element in the <pinapp-info> root element,

the PEAE-C shall consider the PIN discovery procedure with assistance of PEMC is accepted by the PEMC and decides whether to join the PIN according to the <pin-discovery-accept> element.

##### 5.4.4.2.4 PIN discovery with assistance of PEMC not accepted by PEMC

If the PINE is not allowed to discover the PIN that the PEMC manages, PMAE-C shall:

a) generate an HTTP 200 (OK) response according to IETF RFC 7231 [X]. In the HTTP 200 (OK) response message, the PMAE-C:

1) shall include a Content-Type header field set to "application/vnd.3gpp.pinapp-info+xml"; and

2) shall include an application/vnd.3gpp.pinapp-info+xml MIME body with a <pin-discovery-reject> element in the <pinapp-info> root element:

i) shall include a <cause> element set to an appropriate cause for PIN discovery failure; and

b) send the HTTP 200 (OK) response towards the PEAE-C.

Upon reception of an HTTP 200 (OK) response message containing:

a) a Content-Type header field set to "application/vnd.3gpp.pinapp-info+xml"; and

b) an application/vnd.3gpp.pinapp-info+xml MIME body with a <pin-discovery-reject> element in the <pinapp-info> root element,

#### the PEAE-C shall consider the PIN discovery procedure with assistance of PEMC is rejected by the PEMC.5.4.4.3 PIN discovery with assistance of PIN server via PEGC

##### 5.4.4.3.1 PIN discovery with assistance of PIN server via PEGC initiation by PINE

The PINE is authorized to initiate a PIN discovery with assistance of PIN server via PEGC initiation if:

a) the UE identifier or the PIN client ID is available in the PINE;

b) the PINE has an application layer connection with a PEGC of a PIN (e.g. via WiFi, Bluetooth, etc.);

c) the endpoint information of PIN server is available in the PINE; and

d) the PINE has been authorized to communicate with the PIN server,

otherwise, the PINE is not authorized to perform the PIN discovery with assistance of PIN server via PEGC initiation.

When the PINE is on demand to discover a PIN, if the PINE is authorized to initiate a PIN discovery with assistance of PIN server via PEGC initiation, then the PINE shall generate an HTTP POST request according to procedures as specified in IETF RFC 7231 [X]. In the HTTP POST request, the PEAE-C:

a) shall set the Request-URI to the URI of the PIN server;

b) shall include a Content-Type header field set to "application/vnd.3gpp.pinapp-info+xml"; and

c) shall include an application/vnd.3gpp.pinapp-info+xml MIME body with a <pin-discovery-request> element in the <pinapp-info> root element:

1) shall include a <ue-id> element set to the PIN client ID of the PINE;

2) shall include a <security-credentials> element set to the security credentials resulting from a successful authorization for the PIN service;

3) may include a <filter-info> element set to the filter information (e.g. the interesting area, the interesting type of PIN, etc);

4) may include a <ue-location> element set to the location of the PINE; and

5) may include a <requested-pin-service> element set to the service information of the request PIN service(s).

The PEAE-C shall send the generated HTTP POST request towards the PAE-S according to IETF RFC 7231 [X].

NOTE: The HTTP POST request message is routed to PIN server with the assistance of the PEGC.

Upon reception of an HTTP POST request message containing:

a) a Content-Type header field set to "application/vnd.3gpp.pinapp-info+xml"; and

b) an application/vnd.3gpp.pinapp-info+xml MIME body with a <pin-discovery-request> element in the <pinapp-info> root element,

the PAE-S shall check whether the PINE is allowed to discover the PIN that the PINE is interested in.

##### 5.4.4.3.2 PIN discovery with assistance of PIN server via PEGC accepted by PIN server

If the PINE is allowed to discover the PIN that the PINE is interested in, PAE-S shall:

a) generate an HTTP 200 (OK) response according to IETF RFC 7231 [X]. In the HTTP 200 (OK) response message, the PAE-S:

1) shall include a Content-Type header field set to "application/vnd.3gpp.pinapp-info+xml"; and

2) shall include an application/vnd.3gpp.pinapp-info+xml MIME body with a <pin-discovery-accept> element in the <pinapp-info> root element:

i) shall include a <pin-id> element set to the PIN ID of the PIN;

ii) may include a <pin-description> element set to the description of the PIN (e.g., the vendor's name, location, the type of PIN, etc.);

iii) may include a <pin-service-list> element set to the list of services that the PIN can provide (e.g. PIN service provider identifier, PIN service type, PIN service feature, etc.); and

iv) may include a <pemc-info> element set to the identifier and IP address of PEMC; and

b) send the HTTP 200 (OK) response towards the PEAE-C.

NOTE: The HTTP 200 (OK) response message is routed to PINE with the assistance of the PEGC.

##### 5.4.4.3.3 PIN discovery with assistance of PIN server via PEGC completion by PINE

Upon reception of an HTTP 200 (OK) response message containing:

a) a Content-Type header field set to "application/vnd.3gpp.pinapp-info+xml"; and

b) an application/vnd.3gpp.pinapp-info+xml MIME body with a <pin-discovery-accept> element in the <pinapp-info> root element,

the PEAE-C shall consider the PIN discovery procedure with assistance of PIN server via PEGC is accepted by the PIN server and decides whether to join the PIN according to the <pin-discovery-accept> element.

##### 5.4.4.3.4 PIN discovery with assistance of PIN server via PEGC not accepted by PIN server

If the PINE is not allowed to discover the PIN that the PINE is interested in, PAE-S shall:

a) generate an HTTP 200 (OK) response according to IETF RFC 7231 [X]. In the HTTP 200 (OK) response message, the PAE-S:

1) shall include a Content-Type header field set to "application/vnd.3gpp.pinapp-info+xml"; and

2) shall include an application/vnd.3gpp.pinapp-info+xml MIME body with a <pin-discovery-reject> element in the <pinapp-info> root element:

i) shall include a <cause> element set to an appropriate cause for PIN discovery failure; and

b) send the HTTP 200 (OK) response towards the PEAE-C.

NOTE: The HTTP 200 (OK) response message is routed to PINE with the assistance of the PEGC.

Upon reception of an HTTP 200 (OK) response message containing:

a) a Content-Type header field set to "application/vnd.3gpp.pinapp-info+xml"; and

b) an application/vnd.3gpp.pinapp-info+xml MIME body with a <pin-discovery-reject> element in the <pinapp-info> root element,

the PEAE-C shall consider the PIN discovery procedure with assistance of PIN server via PEGC is rejected by the PIN server.

\* \* \* End of Changes \* \* \* \*