[Team name] Series

SBC

Session Border Controller

May Release

Technical Specification Version 1.0

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# Introduction

## Purpose

## 1.2 Scope

## 1.3 Context

## 1.4 Prerequisites / Dependencies

# 2. Impact / Risk

# 3. Architecture

## 3.1 Main Flows

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### Picture-02: SBC Call Flow (Re-INVITE)

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### Picture-03: SBC Update Quota (CCR-U)

### Reach the delay time

### Picture-04: SBC Terminate (CCR-T)

No Network

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UV BYE

### Picture-0X: SBC Terminate (CCR-T)

Out of Credit

## 3.2 State Diagram

# 4. Requirement

## 4.1 Introduction

The requirement s use the words "shall" "should" and "may" to indicate "mandatory", "recommended" and "optional" Respectively as defined in RCF2119.

Requirement Numbering System

[Product-00-000-0]

The version of this particular requirement.

This number is incremented whenever the wording, but not the meaning of the requirement is changed.

An ‘X’ here, indicates that the requirement has been delete

The number of this requirement within the requirement group.

The number of this requirement group.

The product identifier.

Requirement Group Number

|  |  |
| --- | --- |
| Functionality | Group number |
| SBC Main Call Flow Handling Function |  |
| P-SSF Main Subsequent Handling Function |  |
| P-SSF Main OPTIONS Handling Function |  |
| P-SSF Main Keep Alive Session Handling Function |  |
| P-SSF Main Termination Handling Function |  |
| P-SSF Control Call Flow Handling Function |  |
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| P-SSF Control Termination Handling Function |  |
| Application to Application Handling Function |  |
| P-SSF Account Handling Function |  |
| E01 Handling Function |  |
| Retry Message Handling Function |  |
|  |  |

## 4.2 Fucntional Requirements

### 4.2.1 SBC Resource Allocate Flow Handling Function

#### [SBC-01-00x-1] SBC Receives Unknown Message

Upon receipt of a HTTP message from P-WRTC ; in case of ‘Command’ in ‘URL’ is Unknown

**URL Format** : /AppName/version/${SubNode}/**${command}**/${x-session-id}?

If the **${command}** is not neither “ResourceAllocate” nor “ResourceUnAllocate” then application will see it as the Unknown Message

The application shall increment a statistic value named “….. Receive Unknown Message Request”

The application shall output the requester and result in event detail record.

The application will wait for correct message.

#### [SBC-01-00x-1] SBC Receives Bad Resource Allocate Request from P-WRTC

Upon receipt of a HTTP message from P-WRTC ; in case of ‘Command’ in ‘URL’ is shown as **“ResourceAllocate”** then application will extract the following mandatory fields unless being specified as Optional Mandatory (Om) or Optional Condition (Oc) from the received message as follow:

|  |  |
| --- | --- |
| **Protocol** | HTTP |
| **Method** | POST |
| **url (Request-URI)** | **Example:** /P-WRTC/1.0.0/SBC/**ResourceAllocate**/668100100001? |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Element** | | **Type** | **M/O** | **Description / Example** |
| Protocol | |  |  | HTTP |
| url | | String | M | url for request message to SBC  **Format url:** "/AppName/version/${SubNode}/${command}/${x-session-id}?"  **SubNode:**   * SBC   **Command:**   * ResourceAllocate * ResourceUnAllocate |
| Host | | String | M | Destination of SBC  Get value from EC02 configuration named **“SBC-HTTP-Address”** |
| Content-Type | | String | M | application/json |
| Body | |  |  |  |
|  | x-session | String | M | x-sesion-id of UA   * **INVITE**   Originator side: get valule from “From” in SIP-Header  Terminator side: get value from “To” in SIP-Heder   * **200 INVITE, BYE**   Get value from instance |
|  | SDP | String | M | Session description protocol  Get value “SDP” from SIP-Body.  If a value of SIP-Body doesn’t encode, the application is encoding with “Base64” |
|  | Callback-Address | String | M | Get from EC02 configuration named **“P-WRTC-HTTP-Address”** |
|  | Callback-Session | String | M | Get value“Mobile-Type:Call-ID” from instance. |

**Example:**

url="/P-WRTC/1.0.0/SBC/ResourceAllocate/668100100001?"

<ERDHeader>

<Header name="Host" value="192.168.88.102:9091"/>

<Header name="Content-Type" value="application/json"/>

</ERDHeader>

<ERDData value="{

&quot;x-session&quot;: &quot;668100100001&quot;,

&quot;SDP&quot;: &quot;&quot;,

&quot;Callback-Address&quot;: &quot;192.168.88.101:7870&quot;,

&quot;Callback-URL&quot;: &quot;/${AppName}/${version}/${SubNode}/${command}/MO:MZwDhjp9NO?&quot;

}"/>

If any of mandatory parameter is **missing** or the value of any parameters is **incorrect** format, the application shall return Resource Allocate Response Message back to the requester, with ‘resultcode’ **"400 "** as follows:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Element** | | **Type** | **M/O** | **Description / Example** |
| Body | |  |  |  |
|  | resultcode | String | M | The Code that explaining status of each process’ result  **Example:**  200 – OK  400 – Bad Request  411 –Invalid URL |
|  | developermessage | String | M | The words that explaining status of each process’ result  ( \*That can be any word but should be agreeable with the resultcode)  **Example:**  OK  Bad Request  Invalid URL |

The application shall increment a statistic value named "SBC Receive Resource Allocate Bad Request".

The application shall increment a statistic value named "SBC Return Resource Allocate Error Response".

The application shall output the requester and result in event detail record.

The application will perform no further process.

#### [SBC-01-00x-1] SBC Receives Valid Resource Allocate Request from P-WRTC

Upon receipt of a HTTP message from P-WRTC ; in case of ‘Command’ in ‘URL’ is shown as **“ResourceAllocate”** then application will extract the following mandatory fields unless being specified as Optional Mandatory (Om) or Optional Condition (Oc) from the received message as follow:

|  |  |
| --- | --- |
| **Protocol** | HTTP |
| **Method** | POST |
| **url (Request-URI)** | **Example:** /P-WRTC/1.0.0/SBC/**ResourceAllocate**/668100100001? |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Element** | | **Type** | **M/O** | **Description / Example** |
| Protocol | |  |  | HTTP |
| url | | String | M | url for request message to SBC  **Format url:** "/AppName/version/${SubNode}/${command}/${x-session-id}?"  **SubNode:**   * SBC   **Command:**   * ResourceAllocate * ResourceUnAllocate |
| Host | | String | M | Destination of SBC  Get value from EC02 configuration named **“SBC-HTTP-Address”** |
| Content-Type | | String | M | application/json |
| Body | |  |  |  |
|  | x-session | String | M | x-sesion-id of UA   * **INVITE**   Originator side: get valule from “From” in SIP-Header  Terminator side: get value from “To” in SIP-Heder   * **200 INVITE, BYE**   Get value from instance |
|  | SDP | String | M | Session description protocol  Get value “SDP” from SIP-Body.  If a value of SIP-Body doesn’t encode, the application is encoding with “Base64” |
|  | Callback-Address | String | M | Get from EC02 configuration named **“P-WRTC-HTTP-Address”** |
|  | Callback-Session | String | M | Get value“Mobile-Type:Call-ID” from instance. |

**Example:**

url="/P-WRTC/1.0.0/SBC/ResourceAllocate/668100100001?"

<ERDHeader>

<Header name="Host" value="192.168.88.102:9091"/>

<Header name="Content-Type" value="application/json"/>

</ERDHeader>

<ERDData value="{

&quot;x-session&quot;: &quot;668100100001&quot;,

&quot;SDP&quot;: &quot;&quot;,

&quot;Callback-Address&quot;: &quot;192.168.88.101:7870&quot;,

&quot;Callback-URL&quot;: &quot;/${AppName}/${version}/${SubNode}/${command}/MO:MZwDhjp9NO?&quot;

}"/>

If application extracts the Resource Allocate Request Message SUCCESS then will perform the next step by constructing the **CCR-I** Request as described in section [4.2.X Credit Control Request Initiate](#_4.2.9_P-SSF_Control)

And the application also provides the resource for the operative Port Number shown in the received message which be binded as described in section [4.2.X Reserve the Resource for Tunnelling & Cancel the Reserved Resource](#_4.2.X_Allocate_the)

The application shall increment a statistic value named "SBC Receive Resource Allocate Request".

The application shall output the requester and result in event detail record.

#### [SBC-01-00x-1] SBC Receives Bad CCA-I Response

From the return result of **section 4.X** , application will construct the message to send as Resource Allocate Response Error to P-WRTC with parameter as following :

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Element** | | **Type** | **M/O** | **Description / Example** |
| Body | |  |  |  |
|  | resultcode | String | M | The Code that explaining status of each process’ result  **Example:**  200 – OK  400 – Bad Request  411 – Invalid URL  408 – Request Timeout  500 – Internal Server Error  Etc. |
|  | developermessage | String | M | The words that explaining status of each process’ result  ( \*That can be any word but should be agreeable with the resultcode)  **Example:**  OK  Bad Request  Invalid URL  Etc. |

**Example :**

{ “resultcode” : “XXX”,

“developermessage” : “Error”

}

The application shall increment a statistic value named "SBC ส่ง Error response กลับ P-WRTC ".

#### [SBC-01-00x-1] SBC Receives Valid CCA-I Response with ResultCode Error

Upon receipt of the valid CCA-I Response and ResultCode is Not 2001 ( Error ) , application will construct the message to send as Resource Allocate Response Success to P-WRTC with parameter as following :

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Element** | | **Type** | **M/O** | **Description / Example** |
| Body | |  |  |  |
|  | resultcode | String | M | The Code that explaining status of each process’ result  **Example:**  200 – OK  400 – Bad Request  411 – Invalid URL  408 – Request Timeout  500 – Internal Server Error  Etc. |
|  | developermessage | String | M | The words that explaining status of each process’ result  ( \*That can be any word but should be agreeable with the resultcode)  **Example:**  OK  Bad Request  Invalid URL  Error  Etc. |

**Example :**

{ “resultcode” : “500”,

“developermessage” : “Error”

}

The application shall increment a statistic value named "SBC ส่ง Error response กลับ P-WRTC ".

The application will Cancle all the reserved resource as decribed in section [4.2.X ……………………….](#_4.2.X_Reserve_the)

The application will perform no further process.

#### [SBC-01-00x-1] SBC Receives Valid CCA-I Response with ResultCode Success

Upon receipt of the valid CCA-I Response and ResultCode is 2001( Success ) , the application will modify message as described in section [4.2.X Modifying Message to Provide Port and IP](#_4.2.X_Modifying_Message) and construct the message to send as Resource Allocate Response Success to P-WRTC with parameter as following :

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Element** | | **Type** | **M/O** | **Description / Example** |
| Body | |  |  |  |
|  | resultcode | String | M | The Code that explaining status of each process’ result  **Example:**  200 – OK  400 – Bad Request  411 – Invalid URL  408 – Request Timeout  500 – Internal Server Error  Etc. |
|  | developermessage | String | M | The words that explaining status of each process’ result  ( \*That can be any word but should be agreeable with the resultcode)  **Example:**  OK  Bad Request  Invalid URL  Etc. |
|  | SDP | String | M | Session description protocol  Get value “SDP” from Resource Allocate Request and application will modify message as following:  v=0  o=8888888888 978 2342 IN IP4 192.168.0.153  s=Talk  **c=IN IP4 192.168.0.153 -----** change this to **Current IP**  t=0 0  a=rtcp-xr:rcvr-rtt=all:10000 stat-summary=loss,dup,jitt,TTL voip-metrics  **m=audio 7078 RTP/AVP 96 97 98 0 8 101 99 100** --- provide communicational **Port**  a=rtpmap:96 opus/48000/2 |

**Example :**

{ “resultcode” : “200”,

“developermessage” : “OK”,

“SDP”:

“”

}

The application shall increment a statistic value named "SBC ส่ง Success response กลับ P-WRTC ".

The application will be waiting for all the process in IMS Home in the both sites get Done then start tunneling.

The application will be also in the Quota Tracking in each proper condition.

#### [SBC-01-00x-1] SBC Receives Bad CCA-U Response

From the return result of **section 4.X** , application will construct the message to send as Terminate Request to P-WRTC for Terminate Session in case **‘Insufficient Balance’** with parameter as following :

After the application sends Terminate Request to P-WRTC then P-WRTC will send Resource Allocate Request as described in section [4.2.X SBC Resource Unallocate Flow Handling Function](#_4.2.2_SBC_Resource)

The application will continue follow the step in the another main function.

#### [SBC-01-00x-1] SBC Receives Valid CCA-U Response with ResultCode Error

From the return result of **section 4.X** , application will construct the message to send as Terminate Request to P-WRTC for Terminate Session in case **‘Insufficient Balance’** with parameter as following :

After the application sends Terminate Request to P-WRTC then P-WRTC will send Resource Allocate Request as described in section [4.2.X SBC Resource Unallocate Flow Handling Function](#_4.2.2_SBC_Resource)

The application will continue follow the step in the another main function.

#### [SBC-01-00x-1] SBC Receives Valid CCA-U Response with ResultCode Success

Upon receipt of the valid CCA-U Response and ResultCode is 2001( Success ) , the application will construct the message to send as Resource Allocate Response Success to P-WRTC with parameter as following :

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Element** | | **Type** | **M/O** | **Description / Example** |
| Body | |  |  |  |
|  | resultcode | String | M | The Code that explaining status of each process’ result  **Example:**  200 – OK  400 – Bad Request  411 – Invalid URL  408 – Request Timeout  500 – Internal Server Error  Etc. |
|  | developermessage | String | M | The words that explaining status of each process’ result  ( \*That can be any word but should be agreeable with the resultcode)  **Example:**  OK  Bad Request  Invalid URL  Etc. |
|  | SDP | String | M | Session description protocol  Get value “SDP” from Resource Allocate Request and application will modify message as following:  v=0  o=8888888888 978 2342 IN IP4 192.168.0.153  s=Talk  **c=IN IP4 192.168.0.153 -----** change this to **Current IP**  t=0 0  a=rtcp-xr:rcvr-rtt=all:10000 stat-summary=loss,dup,jitt,TTL voip-metrics  **m=audio 7078 RTP/AVP 96 97 98 0 8 101 99 100** --- provide communicational **Port**  a=rtpmap:96 opus/48000/2 |

**Example :**

{ “resultcode” : “200”,

“developermessage” : “OK”,

“SDP”:

“”

}

The application shall increment a statistic value named "SBC ส่ง Success response กลับ P-WRTC ".

The application will be waiting for all the process in IMS Home in the both sites get Done then start tunneling.

The application will be also in the Quota Tracking in each proper condition.

### **4.2.2 SBC Resource Unallocate Flow Handling Function**

#### **4.2.2.1 In case UA BYE**

In case User Agent has finished (BYE) calling then P-WRTC will send the Resource Allocate Request Request to SBC

#### [SBC-01-00x-1] SBC Receives Unknown Message

Upon receipt of a HTTP message from P-WRTC ; in case of ‘Command’ in ‘URL’ is Unknown

**URL Format** : /AppName/version/${SubNode}/**${command}**/${x-session-id}?

If the **${command}** is not neither “ResourceUnAllocate” nor “ResourceUnAllocate” then application will see it as the Unknown Message

The application shall increment a statistic value named “….. Receive Unknown Message Request”

The application shall output the requester and result in event detail record.

The application will wait for correct message.

#### [SBC-01-00x-1] SBC Receives Bad Resource UnAllocate Request from P-WRTC

Upon receipt of a HTTP message from P-WRTC ; in case of ‘Command’ in ‘URL’ is shown as **“ResourceUnAllocate”** then application will extract the following mandatory fields unless being specified as Optional Mandatory (Om) or Optional Condition (Oc) from the received message as follow:

|  |  |
| --- | --- |
| **Protocol** | HTTP |
| **Method** | POST |
| **url (Request-URI)** | **Example:** /P-WRTC/1.0.0/SBC/**ResourceUnAllocate**/668100100001? |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Parameter** | | **Type** | **M/O** | **Description** | **Example** |
| Body | |  |  |  |  |
|  | x-session | String | M |  |  |

**Example:**

url**=** “/P-WRTC/1.0.0/SBC/**ResourceUnAllocate**/668100100001?”

<ERDData value="{

&quot;x-session&quot;: &quot;668100100001&quot;

}"/>

If any of mandatory parameter is **missing** or the value of any parameters is **incorrect** format, the application shall return Resource UnAllocate Response Message back to the requester, with ‘resultcode’ **"400 "** as follows:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Element** | | **Type** | **M/O** | **Description / Example** |
| Body | |  |  |  |
|  | resultcode | String | M | The Code that explaining status of each process’ result  **Example:**  200 – OK  400 – Bad Request  411 –Invalid URL |
|  | developermessage | String | M | The words that explaining status of each process’ result  ( \*That can be any word but should be agreeable with the resultcode)  **Example:**  OK  Bad Request  Invalid URL |

The application shall increment a statistic value named "SBC Receive Resource UnAllocate Bad Request".

The application shall increment a statistic value named "SBC Return Resource UnAllocate Error Response".

The application shall output the requester and result in event detail record.

The application will perform no further process.

The application จะรอ New Request ไหม ?

#### [SBC-01-00x-1] SBC Receives Valid Resource UnAllocate Request from P-WRTC

Upon receipt of a HTTP message from P-WRTC ; in case of ‘Command’ in ‘URL’ is shown as **“ResourceUnAllocate”** then application will extract the following mandatory fields unless being specified as Optional Mandatory (Om) or Optional Condition (Oc) from the received message as follow:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Element** | | **Type** | **M/O** | **Description / Example** |
| Protocol | |  |  | HTTP |
| url | | String | M | url for request message to SBC  **Format url:** "/AppName/version/${SubNode}/${command}/${x-session-id}?"  **SubNode:**   * SBC   **Command:**   * ResourceAllocate * ResourceUnAllocate |
| Host | | String | M | Destination of SBC  Get value from EC02 configuration named **“SBC-HTTP-Address”** |
| Content-Type | | String | M | application/json |
| Body | |  |  |  |
|  | x-session | String | M | x-sesion-id of UA   * **INVITE**   Originator side: get valule from “From” in SIP-Header  Terminator side: get value from “To” in SIP-Heder   * **200 INVITE, BYE**   Get value from instance |
|  | SDP | String | M | Session description protocol  Get value “SDP” from SIP-Body.  If a value of SIP-Body doesn’t encode, the application is encoding with “Base64” |
|  | Callback-Address | String | M | Get from EC02 configuration named **“P-WRTC-HTTP-Address”** |
|  | Callback-Session | String | M | Get value“Mobile-Type:Call-ID” from instance. |

**Example:**

url="/P-WRTC/1.0.0/SBC/ResourceAllocate/668100100001?"

<ERDHeader>

<Header name="Host" value="192.168.88.102:9091"/>

<Header name="Content-Type" value="application/json"/>

</ERDHeader>

<ERDData value="{

&quot;x-session&quot;: &quot;668100100001&quot;,

&quot;SDP&quot;: &quot;&quot;,

&quot;Callback-Address&quot;: &quot;192.168.88.101:7870&quot;,

&quot;Callback-URL&quot;: &quot;/${AppName}/${version}/${SubNode}/${command}/MO:MZwDhjp9NO?&quot;

}"/>

If application extracts the Resource UnAllocate Request Message SUCCESS then will perform the next step by constructing the **CCR-T** Request as described in section [4.2.X Credit Control Request Terminate](#_4.2.9_P-SSF_Control)

The application shall increment a statistic value named "SBC Receive Resource UnAllocate Request".

The application shall output the requester and result in event detail record.

#### [SBC-01-00x-1] SBC Receives Bad CCA-T Response

From the return result of **section 4.2.T** , application will construct the message to send as Resource UnAllocate Response Error to P-WRTC with parameter as following :

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Element** | | **Type** | **M/O** | **Description / Example** |
| Body | |  |  |  |
|  | resultcode | String | M | The Code that explaining status of each process’ result  **Example:**  200 – OK  400 – Bad Request  411 – Invalid URL  408 – Request Timeout  500 – Internal Server Error  Etc. |
|  | developermessage | String | M | The words that explaining status of each process’ result  ( \*That can be any word but should be agreeable with the resultcode)  **Example:**  OK  Bad Request  Invalid URL  Etc. |

**Example :**

{ “resultcode” : “XXX”,

“developermessage” : “Error”

}

The application shall increment a statistic value named "SBC ส่ง Error response กลับ P-WRTC ".

#### [SBC-01-00x-1] SBC Receives Valid CCA-T Response with ResultCode Error

Upon receipt of the valid CCA-I Response and ResultCode is Not 2001 ( Error ) , application will construct the message to send as Resource UnAllocate Response Success to P-WRTC with parameter as following :

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Element** | | **Type** | **M/O** | **Description / Example** |
| Body | |  |  |  |
|  | resultcode | String | M | The Code that explaining status of each process’ result  **Example:**  200 – OK  400 – Bad Request  411 – Invalid URL  408 – Request Timeout  500 – Internal Server Error  Etc. |
|  | developermessage | String | M | The words that explaining status of each process’ result  ( \*That can be any word but should be agreeable with the resultcode)  **Example:**  OK  Bad Request  Invalid URL  Error  Etc. |

**Example :**

{ “resultcode” : “500”,

“developermessage” : “Error”

}

The application shall increment a statistic value named "SBC ส่ง Error response กลับ P-WRTC ".

The application will perform no further process.

#### [SBC-01-00x-1] SBC Receives Valid CCA-T Response with ResultCode Success

Upon receipt of the valid CCA-T Response and ResultCode is 2001( Success ) , the application will construct the message to send as Resource UnAllocate Response Success to P-WRTC with parameter as following :

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Element** | | **Type** | **M/O** | **Description / Example** |
| Body | |  |  |  |
|  | resultcode | String | M | The Code that explaining status of each process’ result  **Example:**  200 – OK  400 – Bad Request  411 – Invalid URL  408 – Request Timeout  500 – Internal Server Error  Etc. |
|  | developermessage | String | M | The words that explaining status of each process’ result  ( \*That can be any word but should be agreeable with the resultcode)  **Example:**  OK  Bad Request  Invalid URL  Etc. |
|  | SDP | String | M | Session description protocol  Get value “SDP” from Resource Allocate Request and application will modify message as following:  v=0  o=8888888888 978 2342 IN IP4 192.168.0.153  s=Talk  **c=IN IP4 192.168.0.153**  t=0 0  a=rtcp-xr:rcvr-rtt=all:10000 stat-summary=loss,dup,jitt,TTL voip-metrics  **m=audio 7078 RTP/AVP 96 97 98 0 8 101 99 100**  a=rtpmap:96 opus/48000/2 |

**Example :**

{ “resultcode” : “200”,

“developermessage” : “OK”,

“SDP”:

“”

}

The application will Unbind the tunelling as described in section [4.X.X Reservation the Resource for Tunnelling & Cancelation the Reserved Resource](#_4.2.X_Reservation_the)

The application shall increment a statistic value named "SBC ส่ง Success response กลับ P-WRTC ".

The application will perform no further process.

#### 4.2.2.2 In case No Network

#### [SBC-01-00x-1] SBC send Terminate Request to P-WRTC

In case network is unreachable ( No network ) , the application will send the Terminate Request to P-WRTC with the parameter shown below :

|  |  |
| --- | --- |
| **Protocol** | HTTP |
| **Method** | POST |
| **url (Request-URI)** | **Example:** /SBC/1.0/P-WRTC/**TerminateUnreachable**/MO:123456… |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Parameter** | | **Type** | **M/O** | **Description** | **Example** |
| Body | |  |  |  |  |
|  | x-session | String | M |  |  |

**Example :**

{

“x-session” : “668100100001”

}

The application shall raise a statistic value named “SBC send Terminate Request to P-WRTC”

The application will be waiting for the Resource UnAllocate Request from P-WRTC.

#### [SBC-01-00x-1] SBC Receives Unknown Message

Upon receipt of a HTTP message from P-WRTC ; in case of ‘Command’ in ‘URL’ is Unknown

**URL Format** : /AppName/version/${SubNode}/**${command}**/${x-session-id}?

If the **${command}** is not neither “ResourceUnAllocate” nor “ResourceUnAllocate” then application will see it as the Unknown Message

The application shall increment a statistic value named “….. Receive Unknown Message Request”

The application shall output the requester and result in event detail record.

The application will wait for correct message.

#### [SBC-01-00x-1] SBC Receives Bad Resource UnAllocate Request from P-WRTC

Upon receipt of a HTTP message from P-WRTC ; in case of ‘Command’ in ‘URL’ is shown as **“ResourceUnAllocate”** then application will extract the following mandatory fields unless being specified as Optional Mandatory (Om) or Optional Condition (Oc) from the received message as follow:

|  |  |
| --- | --- |
| **Protocol** | HTTP |
| **Method** | POST |
| **url (Request-URI)** | **Example:** /P-WRTC/1.0.0/SBC/**ResourceUnAllocate**/668100100001? |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Parameter** | | **Type** | **M/O** | **Description** | **Example** |
| Body | |  |  |  |  |
|  | x-session | String | M |  |  |

**Example:**

url**=** “/P-WRTC/1.0.0/SBC/**ResourceUnAllocate**/668100100001?”

<ERDData value="{

&quot;x-session&quot;: &quot;668100100001&quot;

}"/>

If any of mandatory parameter is **missing** or the value of any parameters is **incorrect** format, the application shall return Resource UnAllocate Response Message back to the requester, with ‘resultcode’ **"400 "** as follows:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Element** | | **Type** | **M/O** | **Description / Example** |
| Body | |  |  |  |
|  | resultcode | String | M | The Code that explaining status of each process’ result  **Example:**  200 – OK  400 – Bad Request  411 –Invalid URL |
|  | developermessage | String | M | The words that explaining status of each process’ result  ( \*That can be any word but should be agreeable with the resultcode)  **Example:**  OK  Bad Request  Invalid URL |

The application shall increment a statistic value named "SBC Receive Resource UnAllocate Bad Request".

The application shall increment a statistic value named "SBC Return Resource UnAllocate Error Response".

The application shall output the requester and result in event detail record.

The application will perform no further process.

The application จะรอ New Request ไหม ?

#### [SBC-01-00x-1] SBC Receives Valid Resource UnAllocate Request from P-WRTC

Upon receipt of a HTTP message from P-WRTC ; in case of ‘Command’ in ‘URL’ is shown as **“ResourceUnAllocate”** then application will extract the following mandatory fields unless being specified as Optional Mandatory (Om) or Optional Condition (Oc) from the received message as follow:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Element** | | **Type** | **M/O** | **Description / Example** |
| Protocol | |  |  | HTTP |
| url | | String | M | url for request message to SBC  **Format url:** "/AppName/version/${SubNode}/${command}/${x-session-id}?"  **SubNode:**   * SBC   **Command:**   * ResourceAllocate * ResourceUnAllocate |
| Host | | String | M | Destination of SBC  Get value from EC02 configuration named **“SBC-HTTP-Address”** |
| Content-Type | | String | M | application/json |
| Body | |  |  |  |
|  | x-session | String | M | x-sesion-id of UA   * **INVITE**   Originator side: get valule from “From” in SIP-Header  Terminator side: get value from “To” in SIP-Heder   * **200 INVITE, BYE**   Get value from instance |
|  | SDP | String | M | Session description protocol  Get value “SDP” from SIP-Body.  If a value of SIP-Body doesn’t encode, the application is encoding with “Base64” |
|  | Callback-Address | String | M | Get from EC02 configuration named **“P-WRTC-HTTP-Address”** |
|  | Callback-Session | String | M | Get value“Mobile-Type:Call-ID” from instance. |

**Example:**

url="/P-WRTC/1.0.0/SBC/ResourceAllocate/668100100001?"

<ERDHeader>

<Header name="Host" value="192.168.88.102:9091"/>

<Header name="Content-Type" value="application/json"/>

</ERDHeader>

<ERDData value="{

&quot;x-session&quot;: &quot;668100100001&quot;,

&quot;SDP&quot;: &quot;&quot;,

&quot;Callback-Address&quot;: &quot;192.168.88.101:7870&quot;,

&quot;Callback-URL&quot;: &quot;/${AppName}/${version}/${SubNode}/${command}/MO:MZwDhjp9NO?&quot;

}"/>

If application extracts the Resource UnAllocate Request Message SUCCESS then will perform the next step by constructing the **CCR-T** Request as described in section [4.2.X Credit Control Request Terminate](#_4.2.9_P-SSF_Control)

The application shall increment a statistic value named "SBC Receive Resource UnAllocate Request".

The application shall output the requester and result in event detail record.

#### [SBC-01-00x-1] SBC Receives Bad CCA-T Response

From the return result of **section 4.2.T** , application will construct the message to send as Resource UnAllocate Response Error to P-WRTC with parameter as following :

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Element** | | **Type** | **M/O** | **Description / Example** |
| Body | |  |  |  |
|  | resultcode | String | M | The Code that explaining status of each process’ result  **Example:**  200 – OK  400 – Bad Request  411 – Invalid URL  408 – Request Timeout  500 – Internal Server Error  Etc. |
|  | developermessage | String | M | The words that explaining status of each process’ result  ( \*That can be any word but should be agreeable with the resultcode)  **Example:**  OK  Bad Request  Invalid URL  Etc. |

**Example :**

{ “resultcode” : “XXX”,

“developermessage” : “Error”

}

The application shall increment a statistic value named "SBC ส่ง Error response กลับ P-WRTC ".

#### [SBC-01-00x-1] SBC Receives Valid CCA-T Response with ResultCode Error

Upon receipt of the valid CCA-I Response and ResultCode is Not 2001 ( Error ) , application will construct the message to send as Resource UnAllocate Response Success to P-WRTC with parameter as following :

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Element** | | **Type** | **M/O** | **Description / Example** |
| Body | |  |  |  |
|  | resultcode | String | M | The Code that explaining status of each process’ result  **Example:**  200 – OK  400 – Bad Request  411 – Invalid URL  408 – Request Timeout  500 – Internal Server Error  Etc. |
|  | developermessage | String | M | The words that explaining status of each process’ result  ( \*That can be any word but should be agreeable with the resultcode)  **Example:**  OK  Bad Request  Invalid URL  Error  Etc. |

**Example :**

{ “resultcode” : “500”,

“developermessage” : “Error”

}

The application shall increment a statistic value named "SBC ส่ง Error response กลับ P-WRTC ".

The application will perform no further process.

#### [SBC-01-00x-1] SBC Receives Valid CCA-T Response with ResultCode Success

Upon receipt of the valid CCA-T Response and ResultCode is 2001( Success ) , the application will construct the message to send as Resource UnAllocate Response Success to P-WRTC with parameter as following :

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Element** | | **Type** | **M/O** | **Description / Example** |
| Body | |  |  |  |
|  | resultcode | String | M | The Code that explaining status of each process’ result  **Example:**  200 – OK  400 – Bad Request  411 – Invalid URL  408 – Request Timeout  500 – Internal Server Error  Etc. |
|  | developermessage | String | M | The words that explaining status of each process’ result  ( \*That can be any word but should be agreeable with the resultcode)  **Example:**  OK  Bad Request  Invalid URL  Etc. |
|  | SDP | String | M | Session description protocol  Get value “SDP” from Resource Allocate Request and application will modify message as following:  v=0  o=8888888888 978 2342 IN IP4 192.168.0.153  s=Talk  **c=IN IP4 192.168.0.153**  t=0 0  a=rtcp-xr:rcvr-rtt=all:10000 stat-summary=loss,dup,jitt,TTL voip-metrics  **m=audio 7078 RTP/AVP 96 97 98 0 8 101 99 100**  a=rtpmap:96 opus/48000/2 |

**Example :**

{ “resultcode” : “200”,

“developermessage” : “OK”,

“SDP”:

“”

}

The application will Unbind the tunelling as described in section [4.X.X Reservation the Resource for Tunnelling & Cancelation the Reserved Resource](#_4.2.X_Reservation_the)

The application shall increment a statistic value named "SBC ส่ง Success response กลับ P-WRTC ".

The application will perform no further process.

#### 4.2.2.3 In case Out of Credit & CCR-U Failed

#### [SBC-01-00x-1] SBC send Terminate Request to P-WRTC

In case either Out of Credit or CCR-U Request hasn’t got Success then application will send **Terminate Request** to P-WRTC with the following parameters;

|  |  |
| --- | --- |
| **Protocol** | HTTP |
| **Method** | POST |
| **url (Request-URI)** | **Example:** /SBC/1.0/P-WRTC/**TerminateInsufficeint**/MO:123456… |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Parameter** | | **Type** | **M/O** | **Description/Example** |
| URL | | String | M | url for request message to P-WRTC  **Format url:** "/AppName/version/${SubNode}/${command}/${x-session-id}?"  **SubNode:**   * P-WRTC   **Command:**   * CCR-I * CCR-U * CCR-T * TerminateUnreachable * TerminateInsufficeint |
| Body | |  |  |  |
|  | x-session | String | M |  |

**Example :**

{

“x-session” : “668100100001”

}

The application shall increment a statistic value named "SBC send Terminate …. Request to P-WRTC".

The application will be waiting for the Resource UnAllocate Request from P-WRTC.

#### [SBC-01-00x-1] SBC Receives Unknown Message

Upon receipt of a HTTP message from P-WRTC ; in case of ‘Command’ in ‘URL’ is Unknown

**URL Format** : /AppName/version/${SubNode}/**${command}**/${x-session-id}?

If the **${command}** is not neither “ResourceUnAllocate” nor “ResourceUnAllocate” then application will see it as the Unknown Message

The application shall increment a statistic value named “….. Receive Unknown Message Request”

The application shall output the requester and result in event detail record.

The application will wait for correct message.

#### [SBC-01-00x-1] SBC Receives Bad Resource UnAllocate Request from P-WRTC

Upon receipt of a HTTP message from P-WRTC ; in case of ‘Command’ in ‘URL’ is shown as **“ResourceUnAllocate”** then application will extract the following mandatory fields unless being specified as Optional Mandatory (Om) or Optional Condition (Oc) from the received message as follow:

|  |  |
| --- | --- |
| **Protocol** | HTTP |
| **Method** | POST |
| **url (Request-URI)** | **Example:** /P-WRTC/1.0.0/SBC/**ResourceUnAllocate**/668100100001? |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Parameter** | | **Type** | **M/O** | **Description** | **Example** |
| Body | |  |  |  |  |
|  | x-session | String | M |  |  |

**Example:**

url**=** “/P-WRTC/1.0.0/SBC/**ResourceUnAllocate**/668100100001?”

<ERDData value="{

&quot;x-session&quot;: &quot;668100100001&quot;

}"/>

If any of mandatory parameter is **missing** or the value of any parameters is **incorrect** format, the application shall return Resource UnAllocate Response Message back to the requester, with ‘resultcode’ **"400 "** as follows:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Element** | | **Type** | **M/O** | **Description / Example** |
| Body | |  |  |  |
|  | resultcode | String | M | The Code that explaining status of each process’ result  **Example:**  200 – OK  400 – Bad Request  411 –Invalid URL |
|  | developermessage | String | M | The words that explaining status of each process’ result  ( \*That can be any word but should be agreeable with the resultcode)  **Example:**  OK  Bad Request  Invalid URL |

The application shall increment a statistic value named "SBC Receive Resource UnAllocate Bad Request".

The application shall increment a statistic value named "SBC Return Resource UnAllocate Error Response".

The application shall output the requester and result in event detail record.

The application will perform no further process.

The application จะรอ New Request ไหม ?

#### [SBC-01-00x-1] SBC Receives Valid Resource UnAllocate Request from P-WRTC

Upon receipt of a HTTP message from P-WRTC ; in case of ‘Command’ in ‘URL’ is shown as **“ResourceUnAllocate”** then application will extract the following mandatory fields unless being specified as Optional Mandatory (Om) or Optional Condition (Oc) from the received message as follow:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Element** | | **Type** | **M/O** | **Description / Example** |
| Protocol | |  |  | HTTP |
| url | | String | M | url for request message to SBC  **Format url:** "/AppName/version/${SubNode}/${command}/${x-session-id}?"  **SubNode:**   * SBC   **Command:**   * ResourceAllocate * ResourceUnAllocate |
| Host | | String | M | Destination of SBC  Get value from EC02 configuration named **“SBC-HTTP-Address”** |
| Content-Type | | String | M | application/json |
| Body | |  |  |  |
|  | x-session | String | M | x-sesion-id of UA   * **INVITE**   Originator side: get valule from “From” in SIP-Header  Terminator side: get value from “To” in SIP-Heder   * **200 INVITE, BYE**   Get value from instance |
|  | SDP | String | M | Session description protocol  Get value “SDP” from SIP-Body.  If a value of SIP-Body doesn’t encode, the application is encoding with “Base64” |
|  | Callback-Address | String | M | Get from EC02 configuration named **“P-WRTC-HTTP-Address”** |
|  | Callback-Session | String | M | Get value“Mobile-Type:Call-ID” from instance. |

**Example:**

url="/P-WRTC/1.0.0/SBC/ResourceAllocate/668100100001?"

<ERDHeader>

<Header name="Host" value="192.168.88.102:9091"/>

<Header name="Content-Type" value="application/json"/>

</ERDHeader>

<ERDData value="{

&quot;x-session&quot;: &quot;668100100001&quot;,

&quot;SDP&quot;: &quot;&quot;,

&quot;Callback-Address&quot;: &quot;192.168.88.101:7870&quot;,

&quot;Callback-URL&quot;: &quot;/${AppName}/${version}/${SubNode}/${command}/MO:MZwDhjp9NO?&quot;

}"/>

If application extracts the Resource UnAllocate Request Message SUCCESS then will perform the next step by constructing the **CCR-T** Request as described in section [4.2.X Credit Control Request Terminate](#_4.2.9_P-SSF_Control)

The application shall increment a statistic value named "SBC Receive Resource UnAllocate Request".

The application shall output the requester and result in event detail record.

#### [SBC-01-00x-1] SBC Receives Bad CCA-T Response

From the return result of **section 4.2.T** , application will construct the message to send as Resource UnAllocate Response Error to P-WRTC with parameter as following :

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Element** | | **Type** | **M/O** | **Description / Example** |
| Body | |  |  |  |
|  | resultcode | String | M | The Code that explaining status of each process’ result  **Example:**  200 – OK  400 – Bad Request  411 – Invalid URL  408 – Request Timeout  500 – Internal Server Error  Etc. |
|  | developermessage | String | M | The words that explaining status of each process’ result  ( \*That can be any word but should be agreeable with the resultcode)  **Example:**  OK  Bad Request  Invalid URL  Etc. |

**Example :**

{ “resultcode” : “XXX”,

“developermessage” : “Error”

}

The application shall increment a statistic value named "SBC ส่ง Error response กลับ P-WRTC ".

#### [SBC-01-00x-1] SBC Receives Valid CCA-T Response with ResultCode Error

Upon receipt of the valid CCA-I Response and ResultCode is Not 2001 ( Error ) , application will construct the message to send as Resource UnAllocate Response Success to P-WRTC with parameter as following :

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Element** | | **Type** | **M/O** | **Description / Example** |
| Body | |  |  |  |
|  | resultcode | String | M | The Code that explaining status of each process’ result  **Example:**  200 – OK  400 – Bad Request  411 – Invalid URL  408 – Request Timeout  500 – Internal Server Error  Etc. |
|  | developermessage | String | M | The words that explaining status of each process’ result  ( \*That can be any word but should be agreeable with the resultcode)  **Example:**  OK  Bad Request  Invalid URL  Error  Etc. |

**Example :**

{ “resultcode” : “500”,

“developermessage” : “Error”

}

The application shall increment a statistic value named "SBC ส่ง Error response กลับ P-WRTC ".

The application will perform no further process.

#### [SBC-01-00x-1] SBC Receives Valid CCA-T Response with ResultCode Success

Upon receipt of the valid CCA-T Response and ResultCode is 2001( Success ) , the application will construct the message to send as Resource UnAllocate Response Success to P-WRTC with parameter as following :

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Element** | | **Type** | **M/O** | **Description / Example** |
| Body | |  |  |  |
|  | resultcode | String | M | The Code that explaining status of each process’ result  **Example:**  200 – OK  400 – Bad Request  411 – Invalid URL  408 – Request Timeout  500 – Internal Server Error  Etc. |
|  | developermessage | String | M | The words that explaining status of each process’ result  ( \*That can be any word but should be agreeable with the resultcode)  **Example:**  OK  Bad Request  Invalid URL  Etc. |
|  | SDP | String | M | Session description protocol  Get value “SDP” from Resource Allocate Request and application will modify message as following:  v=0  o=8888888888 978 2342 IN IP4 192.168.0.153  s=Talk  **c=IN IP4 192.168.0.153**  t=0 0  a=rtcp-xr:rcvr-rtt=all:10000 stat-summary=loss,dup,jitt,TTL voip-metrics  **m=audio 7078 RTP/AVP 96 97 98 0 8 101 99 100**  a=rtpmap:96 opus/48000/2 |

**Example :**

{ “resultcode” : “200”,

“developermessage” : “OK”,

“SDP”:

“”

}

The application will Unbind the tunelling as described in section [4.X.X Reservation the Resource for Tunnelling & Cancelation the Reserved Resource](#_4.2.X_Reservation_the)

The application shall increment a statistic value named "SBC ส่ง Success response กลับ P-WRTC ".

The application will perform no further process.

#### 4.2.2.3 Retrying of Resource UnAllocate Request from P-WRTC?

### **4.2.X Credit Control Request Initiate (CCR-I)**

#### [SBC-01-00x-1] Construct the CCR Request

The application shall construct a **Credit Control Request (Initiate)** to P-WRTC to ask for the quota of this User Agent with the following parameters;

|  |  |
| --- | --- |
| **Protocol** | HTTP |
| **Method** | POST |
| **url (Request-URI)** | **Example:** /SBC/1.0/P-WRTC/**CCR-I**/MO:123456… |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Element** | | | | **Type** | **M/O** | **Description / Example** |
| URL | | | | String | M | url for request message to P-WRTC  **Format url:** "/AppName/version/${SubNode}/${command}/${x-session-id}?"  **SubNode:**   * P-WRTC   **Command:**   * CCR-I * CCR-U * CCR-T * TerminateUnreachable * TerminateInsufficeint |
| Body | | | |  |  |  |
|  | Session-Id | | | String | M | Get Value from x-session in instance |
|  | Auth-Application-Id | | | Number |  |  |
|  | Service-Context-Id | | | String |  |  |
|  | CC-Request-Type | | | Number |  |  |
|  | CC-Request-Number | | | Number |  |  |
|  | Event-Timestamp | | | String |  |  |
|  | Service-Identifier | | | Number |  |  |
|  | Route-Record | | | String |  |  |
|  | Subscription-Id **(Root)** | | |  |  |  |
|  |  | Subscription-Id-Type | | Number |  |  |
|  |  | Subscription-Id-Data | | String |  |  |
|  | Requested-Service-Unit **(Root)** | | |  | OM | Only I & U |
|  |  | CC-Time | | Number |  |  |
|  | Used-Service-Unit **(Root)** | | |  | OM | Only U & T |
|  |  | CC-Time | |  |  |  |
|  | Service-Information **(Root)** | | |  |  |  |
|  |  | IN-Information **(Sub-Root)** | |  |  |  |
|  |  |  | Charge-Flow-Type | Number |  |  |
|  |  |  | SSP-Time | String |  |  |
|  |  |  | Time-Zone | Number |  |  |
|  |  |  | Calling-Party-Address-Nature | Number |  |  |
|  |  |  | Called-Party-Address-Nature | Number |  |  |
|  |  |  | called-Party-BCDNumber-Nature | Number |  |  |
|  |  |  | EventType-BCSM | Number |  |  |

**Example :**

{

"Session-Id": "0:3917264604:scp103;1470211492;1072;2",

"Auth-Application-Id": "4",

"Service-Context-Id": "voice@huawei.com",

"CC-Request-Type": "1",

"CC-Request-Number": "1",

"Event-Timestamp": "3679200292",

"Subscription-Id": {

"Subscription-Id-Type": "0",

"Subscription-Id-Data": "933520261"

},

"Service-Identifier": "0",

"Route-Record": "scp103",

"Requested-Service-Unit": {

"CC-Time": "361"

},

"Used-Service-Unit": {

"CC-Time": "361"

},

"Service-Information": {

"IN-Information": {

"Charge-Flow-Type": "0",

"SSP-Time": "0x3230313630383033313530343532",

"Time-Zone": "32",

"Called-Party-Address-Nature": "0",

"Calling-Party-Address-Nature": "4",

"called-Party-BCDNumber-Nature": "0",

"EventType-BCSM": "2"

}

}

}

The application shall increment a statistic value named "SBC Send P-WRTC CCR-I Request".

#### [SBC-01-00x-1] Timeout

If SBC does not get the CCA-I Response in limited time , then the application shall raise a statistic value named “SBC ….. Timeout…….”.

The application will return the result to the application main function.

#### [SBC-01-00x-1] Reject

If SBC gets the Reject Response , then the application shall raise a statistic value named “SBC ….. Reject…….”.

The application will return the result to the application main function.

#### [SBC-01-00x-1] Error

If SBC gets the Error Response , then the application shall raise a statistic value named “SBC ….. Error…….”.

The application will return the result to the application main function.

#### [SBC-01-00x-1] Abort

If SBC gets the Abort Response, then the application shall raise a statistic value named “SBC ….. Abort…….”.

The application will return the result to the application main function.

#### [SBC-01-00x-1] BAD CCA-I Response

If SBC receives CCA-I Response then the application will extract the following mandatory fields unless being specified as Optional Mandatory (Om) or Optional Condition (Oc) from the received message:

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Element** | | | | | **Type** | **M/O** | **Description / Example** |
| Body | | | | |  |  |  |
|  | Session-Id | | | |  |  |  |
|  | Origin-Realm | | | |  |  |  |
|  | Origin-Host | | | |  |  |  |
|  | Auth-Application-Id | | | |  |  |  |
|  | CC-Request-Type | | | |  |  |  |
|  | Granted-Service-Unit (Root) | | | |  |  |  |
|  |  | CC-Time | | |  |  |  |
|  | CC-Request-Number | | | |  |  |  |
|  | Result-Code | | | |  |  |  |
|  | Service-Information (Root) | | | |  |  |  |
|  |  | IN-Information (Sub-Root) | | |  |  |  |
|  |  |  | Furnished-Charging-Information | |  |  |  |
|  |  |  | Service-Free-Indicator | |  |  |  |
|  |  |  | ChargePartyPayType | |  |  |  |
|  |  |  | Auth-Information (Sub-Root) | |  |  |  |
|  |  |  |  | Auth-UserState |  |  |  |
|  |  |  |  | Auth-ResultCode |  |  |  |
|  |  |  |  | Auth-Action |  |  |  |

**Example :**

{

"Session-Id": "0:2613953400:scp103;1470210604;1055;1",

"Origin-Realm": "sand.ais.co.th",

"Origin-Host": "ocf\_in2",

"Auth-Application-Id": "4",

"CC-Request-Type": "1",

"Granted-Service-Unit": {

"CC-Time": "361"

},

"CC-Request-Number": "0",

"Result-Code": "2001",

"Service-Information": {

"IN-Information": {

"Furnished-Charging-Information": "-1",

"Service-Free-Indicator": "0",

"ChargePartyPayType": "1",

"Auth-Information": {

"Auth-UserState": "200000",

"Auth-ResultCode": "2001",

"Auth-Action": "00"

}

}

}

}

If any of mandatory parameters is missing or any of optional parameters is conflicting the condition then the application shall raise a statistic value named “…………………………”.

The application will return the result to the application main function.

#### [SBC-01-00x-1] Valid CCA-I Response with Result-Code is Error

After received the valid CCA-I Response, the application will check if the value of “Result-Code” is NOT 2001 **(Error).**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Element** | | | | | **Type** | **M/O** | **Description / Example** |
| Body | | | | |  |  |  |
|  | Session-Id | | | |  |  |  |
|  | Origin-Realm | | | |  |  |  |
|  | Origin-Host | | | |  |  |  |
|  | Auth-Application-Id | | | |  |  |  |
|  | CC-Request-Type | | | |  |  |  |
|  | Granted-Service-Unit (Root) | | | |  |  |  |
|  |  | CC-Time | | |  |  |  |
|  | CC-Request-Number | | | |  |  |  |
|  | Result-Code | | | |  |  |  |
|  | Service-Information (Root) | | | |  |  |  |
|  |  | IN-Information (Sub-Root) | | |  |  |  |
|  |  |  | Furnished-Charging-Information | |  |  |  |
|  |  |  | Service-Free-Indicator | |  |  |  |
|  |  |  | ChargePartyPayType | |  |  |  |
|  |  |  | Auth-Information (Sub-Root) | |  |  |  |
|  |  |  |  | Auth-UserState |  |  |  |
|  |  |  |  | Auth-ResultCode |  |  |  |
|  |  |  |  | Auth-Action |  |  |  |

**Example :**

{

"Session-Id": "0:2613953400:scp103;1470210604;1055;1",

"Origin-Realm": "sand.ais.co.th",

"Origin-Host": "ocf\_in2",

"Auth-Application-Id": "4",

"CC-Request-Type": "1",

"Granted-Service-Unit": {

"CC-Time": "361"

},

"CC-Request-Number": "0",

"Result-Code": "2001",

"Service-Information": {

"IN-Information": {

"Furnished-Charging-Information": "-1",

"Service-Free-Indicator": "0",

"ChargePartyPayType": "1",

"Auth-Information": {

"Auth-UserState": "200000",

"Auth-ResultCode": "2001",

"Auth-Action": "00"

}

}

}

}

The application shall raise a statistic value named “SBC ได้รับ CCAI Error”.

The application will return the result to the application main function.

#### [SBC-01-00x-1] Valid CCA-I Response with Result-Code is Success

After received the valid CCA-I Response, the application will check if the value of “Result-Code” is 2001 **(Success)** .

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Element** | | | | | **Type** | **M/O** | **Description / Example** |
| Body | | | | |  |  |  |
|  | Session-Id | | | |  |  |  |
|  | Origin-Realm | | | |  |  |  |
|  | Origin-Host | | | |  |  |  |
|  | Auth-Application-Id | | | |  |  |  |
|  | CC-Request-Type | | | |  |  |  |
|  | Granted-Service-Unit (Root) | | | |  |  |  |
|  |  | CC-Time | | |  |  |  |
|  | CC-Request-Number | | | |  |  |  |
|  | Result-Code | | | |  |  |  |
|  | Service-Information (Root) | | | |  |  |  |
|  |  | IN-Information (Sub-Root) | | |  |  |  |
|  |  |  | Furnished-Charging-Information | |  |  |  |
|  |  |  | Service-Free-Indicator | |  |  |  |
|  |  |  | ChargePartyPayType | |  |  |  |
|  |  |  | Auth-Information (Sub-Root) | |  |  |  |
|  |  |  |  | Auth-UserState |  |  |  |
|  |  |  |  | Auth-ResultCode |  |  |  |
|  |  |  |  | Auth-Action |  |  |  |

**Example :**

{

"Session-Id": "0:2613953400:scp103;1470210604;1055;1",

"Origin-Realm": "sand.ais.co.th",

"Origin-Host": "ocf\_in2",

"Auth-Application-Id": "4",

"CC-Request-Type": "1",

"Granted-Service-Unit": {

"CC-Time": "361"

},

"CC-Request-Number": "0",

"Result-Code": "2001",

"Service-Information": {

"IN-Information": {

"Furnished-Charging-Information": "-1",

"Service-Free-Indicator": "0",

"ChargePartyPayType": "1",

"Auth-Information": {

"Auth-UserState": "200000",

"Auth-ResultCode": "2001",

"Auth-Action": "00"

}

}

}

}

The application shall raise a statistic value named “SBC ได้รับ CCAU Success”.

The application will perform as Quota Controller as the conditions described in section [4.2.X Condition of Quota’s tracking](#_4.2.X__Condition)

The application will return the result to the application main function.

### **4.2.X Credit Control Request Update (CCR-U)**

#### [SBC-01-00x-1] Construct the CCR Request

The application shall construct a **Credit Control Request (Update)** to P-WRTC to update the quota of this User Agent with the following parameters;

|  |  |
| --- | --- |
| **Protocol** | HTTP |
| **Method** | POST |
| **url (Request-URI)** | **Example:** /SBC/1.0/P-WRTC/**CCR-U**/MO:123456… |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Element** | | | | **Type** | **M/O** | **Description / Example** |
| URL | | | | String | M | url for request message to P-WRTC  **Format url:** "/AppName/version/${SubNode}/${command}/${x-session-id}?"  **SubNode:**   * P-WRTC   **Command:**   * CCR-I * CCR-U * CCR-T * TerminateUnreachable * TerminateInsufficeint |
| Body | | | |  |  |  |
|  | Session-Id | | | String | M | Get Value from x-session in instance |
|  | Auth-Application-Id | | | Number |  |  |
|  | Service-Context-Id | | | String |  |  |
|  | CC-Request-Type | | | Number |  |  |
|  | CC-Request-Number | | | Number |  |  |
|  | Event-Timestamp | | | String |  |  |
|  | Service-Identifier | | | Number |  |  |
|  | Route-Record | | | String |  |  |
|  | Subscription-Id **(Root)** | | |  |  |  |
|  |  | Subscription-Id-Type | | Number |  |  |
|  |  | Subscription-Id-Data | | String |  |  |
|  | Requested-Service-Unit **(Root)** | | |  | OM | Only I & U |
|  |  | CC-Time | | Number |  |  |
|  | Used-Service-Unit **(Root)** | | |  | OM | Only U & T |
|  |  | CC-Time | |  |  |  |
|  | Service-Information **(Root)** | | |  |  |  |
|  |  | IN-Information **(Sub-Root)** | |  |  |  |
|  |  |  | Charge-Flow-Type | Number |  |  |
|  |  |  | SSP-Time | String |  |  |
|  |  |  | Time-Zone | Number |  |  |
|  |  |  | Calling-Party-Address-Nature | Number |  |  |
|  |  |  | Called-Party-Address-Nature | Number |  |  |
|  |  |  | called-Party-BCDNumber-Nature | Number |  |  |
|  |  |  | EventType-BCSM | Number |  |  |

**Example :**

{

"Session-Id": "0:3917264604:scp103;1470211492;1072;2",

"Auth-Application-Id": "4",

"Service-Context-Id": "voice@huawei.com",

"CC-Request-Type": "1",

"CC-Request-Number": "1",

"Event-Timestamp": "3679200292",

"Subscription-Id": {

"Subscription-Id-Type": "0",

"Subscription-Id-Data": "933520261"

},

"Service-Identifier": "0",

"Route-Record": "scp103",

"Requested-Service-Unit": {

"CC-Time": "361"

},

"Used-Service-Unit": {

"CC-Time": "361"

},

"Service-Information": {

"IN-Information": {

"Charge-Flow-Type": "0",

"SSP-Time": "0x3230313630383033313530343532",

"Time-Zone": "32",

"Called-Party-Address-Nature": "0",

"Calling-Party-Address-Nature": "4",

"called-Party-BCDNumber-Nature": "0",

"EventType-BCSM": "2"

}

}

}

The application shall increment a statistic value named "SBC Send P-WRTC CCR-I Request".

#### [SBC-01-00x-1] Timeout

If SBC does not get the CCA-U Response in limited time , then the application shall raise a statistic value named “SBC ….. Timeout…….”.

The application will return the result to the application main function.

#### [SBC-01-00x-1] Reject

If SBC gets the Reject Response , then the application shall raise a statistic value named “SBC ….. Reject…….”.

The application will return the result to the application main function.

#### [SBC-01-00x-1] Error

If SBC gets the Error Response , then the application shall raise a statistic value named “SBC ….. Error…….”.

The application will return the result to the application main function.

#### [SBC-01-00x-1] Abort

If SBC gets the Abort Response, then the application shall raise a statistic value named “SBC ….. Abort…….”.

The application will return the result to the application main function.

#### [SBC-01-00x-1] BAD CCA-U Response

If SBC receives CCA-U Response then the application will extract the following mandatory fields unless being specified as Optional Mandatory (Om) or Optional Condition (Oc) from the received message:

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Element** | | | | | **Type** | **M/O** | **Description / Example** |
| Body | | | | |  |  |  |
|  | Session-Id | | | |  |  |  |
|  | Origin-Realm | | | |  |  |  |
|  | Origin-Host | | | |  |  |  |
|  | Auth-Application-Id | | | |  |  |  |
|  | CC-Request-Type | | | |  |  |  |
|  | Granted-Service-Unit (Root) | | | |  |  |  |
|  |  | CC-Time | | |  |  |  |
|  | CC-Request-Number | | | |  |  |  |
|  | Result-Code | | | |  |  |  |
|  | Service-Information (Root) | | | |  |  |  |
|  |  | IN-Information (Sub-Root) | | |  |  |  |
|  |  |  | Furnished-Charging-Information | |  |  |  |
|  |  |  | Service-Free-Indicator | |  |  |  |
|  |  |  | ChargePartyPayType | |  |  |  |
|  |  |  | Auth-Information (Sub-Root) | |  |  |  |
|  |  |  |  | Auth-UserState |  |  |  |
|  |  |  |  | Auth-ResultCode |  |  |  |
|  |  |  |  | Auth-Action |  |  |  |

**Example :**

{

"Session-Id": "0:2613953400:scp103;1470210604;1055;1",

"Origin-Realm": "sand.ais.co.th",

"Origin-Host": "ocf\_in2",

"Auth-Application-Id": "4",

"CC-Request-Type": "1",

"Granted-Service-Unit": {

"CC-Time": "361"

},

"CC-Request-Number": "0",

"Result-Code": "2001",

"Service-Information": {

"IN-Information": {

"Furnished-Charging-Information": "-1",

"Service-Free-Indicator": "0",

"ChargePartyPayType": "1",

"Auth-Information": {

"Auth-UserState": "200000",

"Auth-ResultCode": "2001",

"Auth-Action": "00"

}

}

}

}

If any of mandatory parameters is missing or any of optional parameters is conflicting the condition then the application shall raise a statistic value named “SBC ได้รับ Bad CCAU Response”.

The application will return the result to the application main function.

#### [SBC-01-00x-1] Valid CCA-U Response with Result-Code is Error

After received the valid CCA-U Response, the application will check if the value of “Result-Code” is NOT 2001 **(Error)** .

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Element** | | | | | **Type** | **M/O** | **Description / Example** |
| Body | | | | |  |  |  |
|  | Session-Id | | | |  |  |  |
|  | Origin-Realm | | | |  |  |  |
|  | Origin-Host | | | |  |  |  |
|  | Auth-Application-Id | | | |  |  |  |
|  | CC-Request-Type | | | |  |  |  |
|  | Granted-Service-Unit (Root) | | | |  |  |  |
|  |  | CC-Time | | |  |  |  |
|  | CC-Request-Number | | | |  |  |  |
|  | Result-Code | | | |  |  |  |
|  | Service-Information (Root) | | | |  |  |  |
|  |  | IN-Information (Sub-Root) | | |  |  |  |
|  |  |  | Furnished-Charging-Information | |  |  |  |
|  |  |  | Service-Free-Indicator | |  |  |  |
|  |  |  | ChargePartyPayType | |  |  |  |
|  |  |  | Auth-Information (Sub-Root) | |  |  |  |
|  |  |  |  | Auth-UserState |  |  |  |
|  |  |  |  | Auth-ResultCode |  |  |  |
|  |  |  |  | Auth-Action |  |  |  |

**Example :**

{

"Session-Id": "0:2613953400:scp103;1470210604;1055;1",

"Origin-Realm": "sand.ais.co.th",

"Origin-Host": "ocf\_in2",

"Auth-Application-Id": "4",

"CC-Request-Type": "2",

"Granted-Service-Unit": {

"CC-Time": "361"

},

"CC-Request-Number": "0",

"Result-Code": "2001",

"Service-Information": {

"IN-Information": {

"Furnished-Charging-Information": "-1",

"Service-Free-Indicator": "0",

"ChargePartyPayType": "1",

"Auth-Information": {

"Auth-UserState": "200000",

"Auth-ResultCode": "2001",

"Auth-Action": "00"

}

}

}

}

The application shall raise a statistic value named “SBC ได้รับ CCAU Error”.

The application will return the result to the application main function.

#### [SBC-01-00x-1] Valid CCA-U Response with Result-Code is Success

After received the valid CCA-I Response, the application will check if the value of “Result-Code” is 2001 **(Success)** .

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Element** | | | | | **Type** | **M/O** | **Description / Example** |
| Body | | | | |  |  |  |
|  | Session-Id | | | |  |  |  |
|  | Origin-Realm | | | |  |  |  |
|  | Origin-Host | | | |  |  |  |
|  | Auth-Application-Id | | | |  |  |  |
|  | CC-Request-Type | | | |  |  |  |
|  | Granted-Service-Unit (Root) | | | |  |  |  |
|  |  | CC-Time | | |  |  |  |
|  | CC-Request-Number | | | |  |  |  |
|  | Result-Code | | | |  |  |  |
|  | Service-Information (Root) | | | |  |  |  |
|  |  | IN-Information (Sub-Root) | | |  |  |  |
|  |  |  | Furnished-Charging-Information | |  |  |  |
|  |  |  | Service-Free-Indicator | |  |  |  |
|  |  |  | ChargePartyPayType | |  |  |  |
|  |  |  | Auth-Information (Sub-Root) | |  |  |  |
|  |  |  |  | Auth-UserState |  |  |  |
|  |  |  |  | Auth-ResultCode |  |  |  |
|  |  |  |  | Auth-Action |  |  |  |

**Example :**

{

"Session-Id": "0:2613953400:scp103;1470210604;1055;1",

"Origin-Realm": "sand.ais.co.th",

"Origin-Host": "ocf\_in2",

"Auth-Application-Id": "4",

"CC-Request-Type": "2",

"Granted-Service-Unit": {

"CC-Time": "361"

},

"CC-Request-Number": "0",

"Result-Code": "2001",

"Service-Information": {

"IN-Information": {

"Furnished-Charging-Information": "-1",

"Service-Free-Indicator": "0",

"ChargePartyPayType": "1",

"Auth-Information": {

"Auth-UserState": "200000",

"Auth-ResultCode": "2001",

"Auth-Action": "00"

}

}

}

}

The application will perform as Quota Controller as the conditions described in section [4.2.X Condition of Quota’s tracking](#_4.2.x.x_Check_Account)

The application shall raise a statistic value named “SBC ได้ CCAU Success”.

The application will return the result to the application main function.

### **4.2.X Credit Control Request Terminate (CCR-T)**

#### [SBC-01-00x-1] Construct the CCR Request

The application shall construct a **Credit Control Request (Terminate)** to P-WRTC to terminate session this User Agent with the following parameters;

|  |  |
| --- | --- |
| **Protocol** | HTTP |
| **Method** | POST |
| **url (Request-URI)** | **Example:** /SBC/1.0/P-WRTC/**CCR-T**/MO:123456… |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Element** | | | | **Type** | **M/O** | **Description / Example** |
| URL | | | | String | M | url for request message to P-WRTC  **Format url:** "/AppName/version/${SubNode}/${command}/${x-session-id}?"  **SubNode:**   * P-WRTC   **Command:**   * CCR-I * CCR-U * CCR-T * TerminateUnreachable * TerminateInsufficeint |
| Body | | | |  |  |  |
|  | Session-Id | | | String | M | Get Value from x-session in instance |
|  | Auth-Application-Id | | | Number |  |  |
|  | Service-Context-Id | | | String |  |  |
|  | CC-Request-Type | | | Number |  |  |
|  | CC-Request-Number | | | Number |  |  |
|  | Event-Timestamp | | | String |  |  |
|  | Service-Identifier | | | Number |  |  |
|  | Route-Record | | | String |  |  |
|  | Subscription-Id **(Root)** | | |  |  |  |
|  |  | Subscription-Id-Type | | Number |  |  |
|  |  | Subscription-Id-Data | | String |  |  |
|  | Requested-Service-Unit **(Root)** | | |  | OM | Only I & U |
|  |  | CC-Time | | Number |  |  |
|  | Used-Service-Unit **(Root)** | | |  | OM | Only U & T |
|  |  | CC-Time | |  |  |  |
|  | Service-Information **(Root)** | | |  |  |  |
|  |  | IN-Information **(Sub-Root)** | |  |  |  |
|  |  |  | Charge-Flow-Type | Number |  |  |
|  |  |  | SSP-Time | String |  |  |
|  |  |  | Time-Zone | Number |  |  |
|  |  |  | Calling-Party-Address-Nature | Number |  |  |
|  |  |  | Called-Party-Address-Nature | Number |  |  |
|  |  |  | called-Party-BCDNumber-Nature | Number |  |  |
|  |  |  | EventType-BCSM | Number |  |  |

**Example :**

{

"Session-Id": "0:3917264604:scp103;1470211492;1072;2",

"Auth-Application-Id": "4",

"Service-Context-Id": "voice@huawei.com",

"CC-Request-Type": "1",

"CC-Request-Number": "1",

"Event-Timestamp": "3679200292",

"Subscription-Id": {

"Subscription-Id-Type": "0",

"Subscription-Id-Data": "933520261"

},

"Service-Identifier": "0",

"Route-Record": "scp103",

"Requested-Service-Unit": {

"CC-Time": "361"

},

"Used-Service-Unit": {

"CC-Time": "361"

},

"Service-Information": {

"IN-Information": {

"Charge-Flow-Type": "0",

"SSP-Time": "0x3230313630383033313530343532",

"Time-Zone": "32",

"Called-Party-Address-Nature": "0",

"Calling-Party-Address-Nature": "4",

"called-Party-BCDNumber-Nature": "0",

"EventType-BCSM": "2"

}

}

}

The application shall increment a statistic value named "SBC Send P-WRTC CCR-I Request".

#### [SBC-01-00x-1] Timeout

If SBC does not get the CCA-T Response in limited time , then the application shall raise a statistic value named “SBC ….. Timeout…….”.

The application will return the result to the application main function.

#### [SBC-01-00x-1] Reject

If SBC gets the Reject Response , then the application shall raise a statistic value named “SBC ….. Reject…….”.

The application will return the result to the application main function.

#### [SBC-01-00x-1] Error

If SBC gets the Error Response , then the application shall raise a statistic value named “SBC ….. Error…….”.

The application will return the result to the application main function.

#### [SBC-01-00x-1] Abort

If SBC gets the Abort Response, then the application shall raise a statistic value named “SBC ….. Abort…….”.

The application will return the result to the application main function.

#### [SBC-01-00x-1] BAD CCA-T Response

If SBC receives CCA-T Response then the application will extract the following mandatory fields unless being specified as Optional Mandatory (Om) or Optional Condition (Oc) from the received message:

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Element** | | | | | **Type** | **M/O** | **Description / Example** |
| Body | | | | |  |  |  |
|  | Session-Id | | | |  |  |  |
|  | Origin-Realm | | | |  |  |  |
|  | Origin-Host | | | |  |  |  |
|  | Auth-Application-Id | | | |  |  |  |
|  | CC-Request-Type | | | |  |  |  |
|  | Granted-Service-Unit (Root) | | | |  |  |  |
|  |  | CC-Time | | |  |  |  |
|  | CC-Request-Number | | | |  |  |  |
|  | Result-Code | | | |  |  |  |
|  | Service-Information (Root) | | | |  |  |  |
|  |  | IN-Information (Sub-Root) | | |  |  |  |
|  |  |  | Furnished-Charging-Information | |  |  |  |
|  |  |  | Service-Free-Indicator | |  |  |  |
|  |  |  | ChargePartyPayType | |  |  |  |
|  |  |  | Auth-Information (Sub-Root) | |  |  |  |
|  |  |  |  | Auth-UserState |  |  |  |
|  |  |  |  | Auth-ResultCode |  |  |  |
|  |  |  |  | Auth-Action |  |  |  |

**Example :**

{

"Session-Id": "0:2613953400:scp103;1470210604;1055;1",

"Origin-Realm": "sand.ais.co.th",

"Origin-Host": "ocf\_in2",

"Auth-Application-Id": "4",

"CC-Request-Type": "1",

"Granted-Service-Unit": {

"CC-Time": "361"

},

"CC-Request-Number": "0",

"Result-Code": "2001",

"Service-Information": {

"IN-Information": {

"Furnished-Charging-Information": "-1",

"Service-Free-Indicator": "0",

"ChargePartyPayType": "1",

"Auth-Information": {

"Auth-UserState": "200000",

"Auth-ResultCode": "2001",

"Auth-Action": "00"

}

}

}

}

If any of mandatory parameters is missing or any of optional parameters is conflicting the condition then the application shall raise a statistic value named “SBC ได้รับ Bad CCAU Response”.

The application will return the result to the application main function.

#### [SBC-01-00x-1] Valid CCA-T Response with Result-Code is Error

After received the valid CCA-U Response, the application will check if the value of “Result-Code” is NOT 2001 **(Error)** .

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Element** | | | | | **Type** | **M/O** | **Description / Example** |
| Body | | | | |  |  |  |
|  | Session-Id | | | |  |  |  |
|  | Origin-Realm | | | |  |  |  |
|  | Origin-Host | | | |  |  |  |
|  | Auth-Application-Id | | | |  |  |  |
|  | CC-Request-Type | | | |  |  |  |
|  | Granted-Service-Unit (Root) | | | |  |  |  |
|  |  | CC-Time | | |  |  |  |
|  | CC-Request-Number | | | |  |  |  |
|  | Result-Code | | | |  |  |  |
|  | Service-Information (Root) | | | |  |  |  |
|  |  | IN-Information (Sub-Root) | | |  |  |  |
|  |  |  | Furnished-Charging-Information | |  |  |  |
|  |  |  | Service-Free-Indicator | |  |  |  |
|  |  |  | ChargePartyPayType | |  |  |  |
|  |  |  | Auth-Information (Sub-Root) | |  |  |  |
|  |  |  |  | Auth-UserState |  |  |  |
|  |  |  |  | Auth-ResultCode |  |  |  |
|  |  |  |  | Auth-Action |  |  |  |

**Example :**

{

"Session-Id": "0:2613953400:scp103;1470210604;1055;1",

"Origin-Realm": "sand.ais.co.th",

"Origin-Host": "ocf\_in2",

"Auth-Application-Id": "4",

"CC-Request-Type": "2",

"Granted-Service-Unit": {

"CC-Time": "361"

},

"CC-Request-Number": "0",

"Result-Code": "2001",

"Service-Information": {

"IN-Information": {

"Furnished-Charging-Information": "-1",

"Service-Free-Indicator": "0",

"ChargePartyPayType": "1",

"Auth-Information": {

"Auth-UserState": "200000",

"Auth-ResultCode": "2001",

"Auth-Action": "00"

}

}

}

}

The application shall raise a statistic value named “SBC ได้รับ CCAT Error”.

The application will return the result to the application main function.

#### [SBC-01-00x-1] Valid CCA-T Response with Result-Code is Success

After received the valid CCA-I Response, the application will check if the value of “Result-Code” is 2001 **(Success)** .

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Element** | | | | | **Type** | **M/O** | **Description / Example** |
| Body | | | | |  |  |  |
|  | Session-Id | | | |  |  |  |
|  | Origin-Realm | | | |  |  |  |
|  | Origin-Host | | | |  |  |  |
|  | Auth-Application-Id | | | |  |  |  |
|  | CC-Request-Type | | | |  |  |  |
|  | Granted-Service-Unit (Root) | | | |  |  |  |
|  |  | CC-Time | | |  |  |  |
|  | CC-Request-Number | | | |  |  |  |
|  | Result-Code | | | |  |  |  |
|  | Service-Information (Root) | | | |  |  |  |
|  |  | IN-Information (Sub-Root) | | |  |  |  |
|  |  |  | Furnished-Charging-Information | |  |  |  |
|  |  |  | Service-Free-Indicator | |  |  |  |
|  |  |  | ChargePartyPayType | |  |  |  |
|  |  |  | Auth-Information (Sub-Root) | |  |  |  |
|  |  |  |  | Auth-UserState |  |  |  |
|  |  |  |  | Auth-ResultCode |  |  |  |
|  |  |  |  | Auth-Action |  |  |  |

**Example :**

{

"Session-Id": "0:2613953400:scp103;1470210604;1055;1",

"Origin-Realm": "sand.ais.co.th",

"Origin-Host": "ocf\_in2",

"Auth-Application-Id": "4",

"CC-Request-Type": "2",

"Granted-Service-Unit": {

"CC-Time": "361"

},

"CC-Request-Number": "0",

"Result-Code": "2001",

"Service-Information": {

"IN-Information": {

"Furnished-Charging-Information": "-1",

"Service-Free-Indicator": "0",

"ChargePartyPayType": "1",

"Auth-Information": {

"Auth-UserState": "200000",

"Auth-ResultCode": "2001",

"Auth-Action": "00"

}

}

}

}

The application will perform as Quota Controller as the conditions described in section [4.2.X Condition of Quota’s tracking](#_4.2.x.x_Check_Account)

The application shall raise a statistic value named “SBC ได้ CCAT Success”.

The application will return the result to the application main function.

### **4.2.X Condition of Quota’s tracking & Quota ที่ได้รับจริงๆ**

#### [SBC-01-00x-1] *Condition of CCR’s Life Cycle*

After the application gets the CCA-I / CCA-U Success Response from P-WRTC then will perform itself as a Quota Controller as well , there are 2 possible conditions as shown down below :

**Condition 1 :**  **Received Quota** = **Limit Quota**

The application will set the **‘Delay Time’** for tracking the quota . When the quota reaches the Delay Time then will send CCR-U Request to P-WRTC for asking for the new quota.

**Condition 2 :** **Received Quota** < **Limit Quota**

The application will be tracking the quota till it’s out of quota then will send CCR-T Request to P-WRTC for terminate.

**Note**

\*\* **Received Quota** means the data in parameter named **‘CC-Time’** in CCA-I / CCA-U Response

**\*\* Limit Quota** might be set in either in the Credit Control Request or in the Configuration

\*\* **Delay Time** is the number set as the ………….

The application will return the result to the application main function.

#### [SBC-01-00x-1] *Calculation of the real number of quota*

### **4.2.X Modifying Message to Provide Port and IP**

The application will modify the message by adding the new IP (Current IP) and Port in parameter named ‘SDP’

### **4.2.X Reservation the Resource for Tunnelling & Cancelation the Reserved Resource**

#### [SBC-01-00x-1] Reserve

1. ระหว่าง P-WRTC กับ SBC
2. ระหว่าง SBC (MO) กับ SBC (MT)

The application will reserve the resource for ………………..

#### [SBC-01-00x-1] Cancle (Unbinding)

## 4.3 Non-Functional Requirements

### 4.3.1 Performance and Stability Requirement

### 4.3.2 Reliability

### 4.3.3 Operational and Maintenance

### 4.3.4 Security

# 5. Statistic Description

|  |  |  |
| --- | --- | --- |
| **No.** | **Statistic Name** | **Statistic Description** |
| 1 |  |  |
| 2 |  |  |
| 3 |  |  |
| 4 |  |  |

# 6. Alarm Description

|  |  |  |
| --- | --- | --- |
| **No.** | **Alarm Name** | **Alarm Description** |
| 1 |  |  |
| 2 |  |  |
| 3 |  |  |
| 4 |  |  |

# 7. Application Log

## 7.1 Detail Log

### Format

Timestamp@%Y%m%d%H:%M:%S.ms@|${hostname}|${appname}|${service-instance}|

{

"@ApplicationName.Details": {

"Session": "@Session",

"InitialInvoke": "@InitialInvoke",

"Scenario": "@Scenario",

"Input": [

{

"Invoke": "@Invoke",

"Event": "@Original.@CommandName",

"Type": "@{Request/Response}",

"RawDataAttribute": "@RawDataAttribue",

"RawDataMessage": "@RawDataMessage",

"Data": {

"@Data"

}

},

{

"Invoke": "@Invoke",

"Event": "@Original.@CommandName",

"Type": "@{Request/Response}",

"RawDataAttribute": "@RawDataAttribue",

"RawDataMessage": "@RawDataMessage",

"Data": {

"@Data"

},

"ResponseTime": "@ResponseTIme"

},

],

"InputTimeStamp": "@InputTimeStamp",

"Output": [

{

"Invoke": "@Invoke",

"Event": "@Original.@CommandName",

"Type": "@Type",

"RawDataAttribute": "@RawDataAttribue",

"RawDataMessage": "@RawDataMessage",

"Data": {

"@Data"

}

},

{

"Invoke": "@Invoke",

"Event": "@Original.@CommandName",

"Type": "@Type",

"RawDataAttribute": "@RawDataAttribue",

"RawDataMessage": "@RawDataMessage",

"Data": {

"@Data"

}

}

],

"OutputTimeStamp": "@OutputTimeStamp",

},

"CurrentState": "@CurrentState",

"NextState": "@NextState",

"ProcessingTime": "@ProcessingTime"

}

### Description

|  |  |  |
| --- | --- | --- |
| **Field name** | **Description** | **Possible value / Description** |
| Timestamp | Time at which the command was done whether the result was success or fail  Format: YYYYmmDDHH:MM:SS.ms | 20130304 15:24:26.766 |
| hostname | Hostname of HW | localhost |
| appname | Application name | P-SSF |
| service-instance | service instance number | 0 |
| log-pattern | Detail log which are generated in format of AF common log pattern v1.0.7 Draft D | See detail below. |

Log-Pattern Description

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Parameter** | | | | | **M/O** | **Description** | **Example** |
| ApplicationName | | | | | M | This field contain public name of the application | P-SSF.Details |
|  | Session | | | | M | This field contain global session for all activities in flow | 2baeebbc27a9025a28560597de0aff4a@55.55.55.55 |
|  | InitialInvoke | | | | M | This field contain invoke of initial message. | 1093610485 |
|  | Scenario | | | | O | Name of Business depends on | P-SSF :-REGISTRATION, INVITATION,BYE  P-SSF.Control :-  REGISTRATION  P-SSF.Contact :-  REGISTRATION |
|  | \*Input | | | | M |  |  |
|  |  | Invoke | | | M | The invoke of the message | 6f5de188 |
|  |  | Event | | | M | Short term for describe the message |  |
|  |  |  | OriginalNode | | M | The original entry resource that the message has been through. | P-SACF  P-SSF.Control  P-SSF.Contact |
|  |  |  | CommandName | | M | The public name of the message | ACCESS-REQUEST  SERVER-REQUEST  CSAR  ASAR  TSAR  ACER  TCER  TCR |
|  |  | Type | | | M | Type of the message   * request * response | request |
|  |  | RawDataAttribute | | | O | Raw data attribute in JSON format |  |
|  |  | RawDataMessage | | | O | Raw data message in text format |  |
|  |  | Data | | | O | Readable data in JSON Format |  |
|  |  | | | SIP-Header | O |  |  |
|  |  | | | MsgCmd | O |  |  |
|  | InputTimeStamp | | | | M | Timestamp of incoming message | 20150115 09:02:54.284 |
|  | \*Output | | | | O |  |  |
|  |  | Invoke | | | M | The invoke of the message | 1d36d2e8 |
|  |  | Event | | | M | Short term for describe the message |  |
|  |  |  | OriginalNode | | M | The original entry resource that the message has been through. | P-SACF  P-SSF.Control  P-SSF.Contact |
|  |  |  | CommandName | | M | The public name of the message | ACCESS-REQUEST  SERVER-REQUEST  CSAR  ASAR  TSAR  ACER  TCER  TCR |
|  |  | Type | | | M | Type of the message   * request * response | request |
|  |  | RawDataAttribute | | | O | Raw data attribute in JSON format |  |
|  |  | RawDataMessage | | | O | Raw data message in text format |  |
|  |  | Data | | | O | Readable data in Json Format |  |
|  |  | | | SIP-Header | O | All “SIP-Header” parameter in AR |  |
|  |  | | | MsgCmd | O | All “MsgCmd” parameter in AR |  |
|  | CurrentState | | | | M | Name of original state | IDLE |
|  | NextState | | | | M | Name of after state | W\_CSAA |
|  | ProcessingTime | | | | M | Time since start to end transaction processing | 20 |

Detail Scenario Description

|  |  |
| --- | --- |
| **Scenario name** | **Description** |
| REGISTRATION | REGISTER SIP Request was received by the application to perform   * User-Registration * User-Deregistration |
| INVITATION | INVITE SIP Request was received by the application to perform call session establishment |
| BYE | Bye SIP Request was received by the application to perform call session termination |

Detail Input/Output Event

Input/Output event is a combination of node name and the command name

|  |  |  |
| --- | --- | --- |
| **Original Node** | **Command name** | **Description** |
| P-SACF | ACCESS-REQUEST | * The application receive AR Request with SIP Request/Response from SACF * The application respond AR Response with SIP Request/Response back to SACF to perform next step |
| SERVER-REQUEST | * The application send SR Request with SIP Request/Response to ask SACF for sending out SIP Reqeuest/Response * The application receive SR Response with outcome of SR Request |
| CSAR | * The application send CSAR Request to check s-address and contact in P-SSF.Control * The application receive CSAA Response with outcome of CSAR Request from P-SSF.Control |
| ASAR | * The application send ASAR Request to add s-address and contact in P-SSF.Control * The application receive ASAA Response with outcome of ASAR Request from P-SSF.Control |
| TSAR | * The application send TSAR Request to terminate s-address and contact in P-SSF.Control * The application receive TSAA Response with outcome of TSAR Request from P-SSF.Control |
| P-SSF.Control | CSAR | * The application receive CSAR Request to check s-address and contact in P-SSF.Control * The application send CSAA Response with outcome of CSAR Request to P-SSF |
| ASAR | * The application receive ASAR Request to add s-address and contact in P-SSF.Control * The application send ASAA Response with outcome of ASAR Request to P-SSF |
| TSAR | * The application receive TSAR Request to terminate s-address and contact in P-SSF.Control * The application send TSAA Response with outcome of TSAR Request to P-SSF |
| TCR | * The application receive TCR Request to terminate contact that contact is no longer serving user * The application send TCA Response with outcome of TCR Request to P-SSF.Contact |
| ACER | * The application send ACER Request to add contact-address to P-SSF.Contact * The application receive ACEA Response with outcome of ACER Request from P-SSF.Contact |
| TCER | * The application send TCER Request to terminate contact-address to P-SSF.Contact * The application receive TCEA Response with outcome of TCER Request from P-SSF.Contact |
| P-SSF.Contact | ACER | * The application receive ACER Request to add contact-address in P-SSF.Contact * The application send ACEA Response with outcome of ACER Request to P-SSF.Control |
| TCER | * The application receive TCER Request to terminate contact-address in P-SSF.Contact * The application send TCEA Response with outcome of TCER Request to P-SSF.Control |
| TCR | * The application send TCR Request to terminate contact that contact is no longer serving user when session expired * The application receive TCA Response with outcome of TCR Request from P-SSF.Control |

### Example

xxx

## 7.2 Summary Log

### Format

@ReqTimestamp|@Session|@InitInvoke|@CmdName|@Identity|@ResultCode|@ResultDesc|[@DestNodeName;@DestNodeCmd();[@DestNodeResultCode;@DestNodeResultDesc()]|@DestNodeName;@DestNodeCmd();[@DestNodeResultCode;@DestNodeResultDesc()]]|@ResTimestamp|@UsageTime

### Description

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Parameter** | | **M/O** | **Treatment** | **Example** |
| ReqTimeStamp | | M | Request time  (YYMMDD HH:MM:SS.MS) | 20160202 13:33:45.071 |
| Session | | M | This field contain global session for all activities in flow | 2baeebbc27a9025a28560597de0aff4a@55.55.55.55: SIP/2.0/UDP 192.168.1.P-SACF:5060 |
| InitInvoke | | M | This field contain invoke of initial message, for multiple initial invoke use comma (,) for seperator. | 1061411631 |
| CmdName | | M | Name of command or scenario | REGISTER ,INVITE ,BYE |
| Identity | | O | “To” header in SIP | sip:user@192.168.1.ue |
| ResultCode | | M | Global Result. If the field hasn’t value do set null into value. | Default is null |
| ResultDesc | | M | Description of Global Result. If the field hasn’t value does set null into value. | Default is null  System Time Out |
| Array of Destination | |  |  |  |
|  | DestNodeName | M | Name of destination node | * SACF * P-SSF.Control   P-SSF.Contact |
|  | DestNodeCmd | M | Name of command from destination node | * SACF;ACCESS-REQUEST * SACF;SERVER-REQUEST * P-SSF;CHECK-S-ADDRESS * P-SSF; ADD-S-ADDRESS * P-SSF; TERMINATE-S-ADDRESS |
| Array of Result | |  |  |  |
|  | DestNodeResultCode | M | Result code of command from destination node | 400 |
|  | DestNodeResultDesc | M | Result description of command from destination node | Missing or invalid parameter  Time Out Equinox  Error Equinox |
| ResTimeStamp | | M | Response time  (YYMMDD HH:MM:SS.MS) | 20160202 13:33:55.071 |
| UsageTime | | M | Used time since receive to response the requester (msec.) | 104 |

### Example

xxx

# 8. Result Code Mapping

# 9. Application Configuration

# 10. Features Table

# 11. Action Process Table

# 12. Effort Estimation

## 12.1 Events

## 12.2 Plausible Action Process Modules

# 13. Interface Control Specification