[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

### Picture-01: SBC Call Flow (INVITE)

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

Access Network Changed

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

### Reach the Delay Time

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

No Network

### Picture-05: SBC Terminate (CCR-T)

UA 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 |  |
| P-SSF Control Keep Alive Session Handling Function |  |
| 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 “SBC ได้รับ Unknown Message”

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

The application will stand by for the 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-session-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 Error Message back to the requester, with ‘resultcode’ **"XXXX "** 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  Etc. |
|  | developermessage | String | O | 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 | Om | Session Description Protocol.  It must be mandatory when Resultcode is “200” |

The application shall increment a statistic value named "SBC ได้รับ Bad Resource Allocate Request from P-WRTC".

The application shall increment a statistic value named "SBC ส่ง Resource Allocate Error Response to P-WRTC".

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 the application extracts the Resource Allocate Request Message SUCCESS then will perform the next step by the conditions shown below

**# If this Session is already existed :**

Which means this session is performing as the Re-Invite flow then will continue manage as described in [section 4.2.7 Modifying Message to Provide Port and IP](#_4.2.7_Modifying_Message)

Then the application will start providing the resource as described in session [4.2.8 Reservation and Cancelation Resource](#_4.2.8_Reservation_and) then 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 | Om | 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 -----** This will follow by the session 4.2.7  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 -----** This will follow by the session 4.2.7  a=rtpmap:96 opus/48000/2  **Note :**   * In case Error ; this parameter is Optional. * In case Success ; this parmeter is Mandatory. |

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

The application shall increment a statistic value named "SBC ส่ง Allocate Response Success to P-WRTC ".

**# If this Session is Not existed :**

Which means this is the first time of this user agent . Then the application will be constructing the **CCR-I** Request Message as described in section [4.2.X Credit Control Request Initiate](#_4.2.9_P-SSF_Control)

And the application also reserves the resource for the requester and generates the operative Port Number for another node to bind after all of the Port of the related node in each individual session has provided as described in section [4.2.8 Reservation and Cancelation 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] Error/Reject/Abort/Timeout

From the return result of **section 4.2.3** ; if the application gets ‘Timeout’ message , the application will construct the message to send as Resource Allocate Response Error Message 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 ".

The application will perform no further process.

From the return result of **section 4.2.3** ; if the application gets ‘Error/Reject/Abort’ message and CCR-I Request is over limit of **‘CCRI-Retry’** from configuration , the application will construct the message to send as Resource Allocate Response Error Message 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 ".

The application will perform no further process.

From the return result of **section 4.2.3** ; if the application gets ‘Error/Reject/Abort’ message and CCR-I Request is under limit of **‘CCRI-Retry’** fromconfiguration, the application will construct the **CCR-I** Request Message as described in section [4.2.X Credit Control Request Initiate](#_4.2.9_P-SSF_Control)

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

From the return result of **section 4.2.3** ; Upon receipt of the Bad CCA-I Response Message , the 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 ".

The application will perform no further process.

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

From the return result of **section 4.2.3 ;** 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 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. |
|  | SDP | String | Om | 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  **Note :**   * In case Error ; this parameter is Optional. * In case Success ; this parmeter is Mandatory. |

**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 Reservation the Resource for Tunnelling & Cancelation the Reserved Resource](#_4.2.X_Allocate_the).

The application will perform no further process.

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

From the return result of **section 4.2.3 ;** 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_1) 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 quota will be continuously consumed in each eligible condition that agreeable with the condition of Quota’s Tracking

**If Condition 1 (CCR-U )**

The quota will be decreasing with time goes by till it reaches the “Delay Time” then the application will perform the next step by constructing the **CCR-U** Request Message as described in section [4.2.4 Credit Control Request Update](#_4.2.4_Credit_Control)

**If Condition 2 (CCR-T)**

The quota will be decreasing with time goes by till it reaches 0 (Zero) which means it’s out of credit then the application will perform the next step by constructing the CCR-T Request Message as described in section [4.2.5 Credit Control Request Terminate](#_4.2.5_Credit_Control)

#### [SBC-01-00x-1] Error/Reject/Abort/Timeout

From the return result of **section 4.2.4** ; if the application gets ‘Timeout’ message that means this User Agent couldn’t update quota completely. It will use the remaining quota till it’s out of quota and the application will construct the Terminate Request Message as described in section [4.2.2.3 In case Insufficient (Out of Quota)](#_4.2.2.3_In_case)

From the return result of **section 4.2.4** ; if the application gets ‘Error/Reject/Abort’ message and CCR-U Request is over limit of **‘CCRU-Retry’** from configuration , that means this User Agent couldn’t update quota completely. It will use the remaining quota till it’s out of quota and the application will construct the Terminate Request Message as described in section [4.2.2.3 In case Insufficient (Out of Quota)](#_4.2.2.3_In_case)

From the return result of **section 4.2.4** ; if the application gets ‘Error/Reject/Abort’ message and CCR-U Request is under limit of **‘CCRU-Retry’** fromconfiguration, the application will construct the **CCR-U** Request Message as described in section [4.2.4 Credit Control Request Update](#_4.2.4_Credit_Control)

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

From the return result of **section 4.2.4** ; Upon receipt of the Bad CCA-U Response Message that means this User Agent couldn’t update quota completely. It will use the remaining quota till it’s out of quota (Completely used) and the application will construct the Terminate Request Message as described in section [4.2.2.3 In case Insufficient (Out of Quota)](#_4.2.2.3_In_case)

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

From the return result of **section 4.X** ; Upon receipt of the valid CCA-U Response and ResultCode is Not 2001**( Error )** .

If resultCode is ‘XX’ (ไม่ Retry) ; then

If resultCode is ‘YY’ (Retry) ; then

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

From the return result of **section 4.2.4 ;** Upon receipt of the valid CCA-U Response and ResultCode is 2001**( Success )** .

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

The quota will be tracked in each eligible condition that agreeable with the condition of Quota’s Tracking

**If Condition 1 (CCR-U )**

The quota will be decreasing with time goes by till it reaches the “Delay Time” then the application will perform the next step by constructing the **CCR-U** Request Message as described in section [4.2.4 Credit Control Request Update](#_4.2.4_Credit_Control)

**If Condition 2 (CCR-T)**

The quota will be decreasing with time goes by till it reaches 0 (Zero) which means it’s out of credit then the application will perform the next step by constructing the CCR-T Request Message as described in section [4.2.5 Credit Control Request Terminate](#_4.2.5_Credit_Control)

### **4.2.2 SBC Resource Unallocate 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 **“ResourceUnAllocate”** nor **“ResourceUnAllocate”** then application will see it as the Unknown Message

The application shall increment a statistic value named “SBC ได้รับ Unknown Message”

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

The application will stand by for the 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? |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **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 |

**Example:**

url="/P-WRTC/1.0.0/SBC/**ResourceUnAllocate**/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;

}"/>

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 ได้รับ Bad UnAllo 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 |

**Example:**

url="/P-WRTC/1.0.0/SBC/ResourceUnAllocate/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;

}"/>

If application extracts the Resource UnAllocate Request Message SUCCESS then will perform the next step by constructing the **CCR-T** Request Message as described in section [4.2.X Credit Control Request Terminate](#_4.2.5_Credit_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] Error/Reject/Abort/Timeout

From the return result of **section 4.2.5** ; if the application gets ‘Timeout’ message that means this User Agent couldn’t get Done terminating completely then the application will construct the message to send as Resource UnAllocate Response Error Message 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 |
|  | 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 |

**Example :**

{ "resultcode" : "XXXX",

"developermessage" : "Error"

}

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

The application will perform no further process.

From the return result of **section 4.2.5** ; if the application gets ‘Error/Reject/Abort’ message and CCR-T Request is over limit of **‘CCRT-Retry’** from configuration , that means this User Agent couldn’t get Done terminating completely the application will construct the message to send as Resource UnAllocate Response Error Message 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 |
|  | 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 |

**Example :**

{ "resultcode" : "XXX",

"developermessage" : "Error"

}

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

The application จะ Write Log อะไรบางอย่างกรณีที่ CCRT ไม่ Success.

The application will perform no further process.

From the return result of **section 4.2.5** ; if the application gets ‘Error/Reject/Abort’ message and CCR-T Request is under limit of **‘CCRT-Retry’** fromconfiguration, that means this User Agent couldn’t get Done terminating completely then the application will construct the CCR-T Request Message as described in section [4.2.X Credit Control Request Terminate](#_4.2.5_Credit_Control)

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

From the return result of **section 4.2.5** ; Upon receipt of the Bad CCA-T Response Message that means this User Agent couldn’t get Done terminating completely then

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

From the return result of **section 4.2.5** ; Upon receipt of the valid CCA-T Response and ResultCode is Not 2001 **( Error )** , 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 |
|  | 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 |

**Example :**

{ "resultcode" : "XXX",

"developermessage" : "XXX"

}

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

The application จะ Write Log อะไรบางอย่างกรณีที่ CCRT ไม่ Success.

The application will perform no further process.

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

From the return result of **section 4.2.4 ;** Upon receipt of the valid CCA-U 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  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” : “200”,

“developermessage” : “OK”

}

The application will Unbind the tunnelling 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 ได้รับ CCAT Success จาก PWRTC ".

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

### **4.2.3 Unreachable Handling Function ( No Network)**

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

In case that the network has been down and it’s unreachable anymore. The application will send the **Terminate Request Message** to P-WRTC with following parameters;

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

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Parameter** | | **Type** | **M/O** | **Description** | **Example** |
| URL | | String | M | url for request message to P-WRTC  **Format url:** "/AppName/version/${SubNode}/${command}/${callback-Session}?"  **SubNode:**   * P-WRTC   **Command:**   * CCR-I * CCR-U * CCR-T * TerminateUnreachable * TerminateInsufficeint   **x-session-id :**  Get the value from instance which was set from ‘callback-session’  of request message from P-WRTC |  |
| Header | |  |  |  |  |
|  | Set-Cookie |  |  |  |  |
| Body | |  |  |  |  |
|  | x-session | String | M |  |  |

**Example :**

**URL = “**/SBC/1.0/P-WRTC/TerminateUnreachable /MO:MZwDhjp9NO”

**Header**

Set-Cookie

**Body**

**{**

"x-session" : "668100100001"

**}**

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

The application will be waiting for the Resource UnAllocate Request Message from P-WRTC and performing in the section [4.2.2 SBC Resource Unallocate Hadling Function](#_4.2.5_P-SSF_Main)

Application will get the Acknowledgement from P-WRTC which knows as P-WRTC has received the Terminate Request Message already ,หน้าตา ACK เป็นดังนี้

The application shall increment a statistic value named “SBC ไดรับ ACK”

#### [SBC-01-00x-1] Timeout of waiting for Resource Unallocate Request

In case that the application hasn’t gotten the Terminate Request Message in time then …..

\*\*\* มี Retry ไหม \*\*\*

### **4.2.4 Insufficient Handling Function (Out of Quota)**

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

In case that the quota has been continuously consumed till it’s completely finish. The application will send the **Terminate Request Message** to P-WRTC with 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}/${callback-Session}?"  **SubNode:**   * P-WRTC   **Command:**   * CCR-I * CCR-U * CCR-T * TerminateUnreachable * TerminateInsufficeint   **x-session-id :**  Get the value from instance which was set from ‘callback-session’  of request message from P-WRTC |  |
| Header | |  |  |  |  |
|  | Set-Cookie |  |  |  |  |
| Body | |  |  |  |  |
|  | x-session | String | M |  |  |

**Example :**

**URL = “**/SBC/1.0/P-WRTC/TerminateInsufficeint /MO:MZwDhjp9NO”

**Header**

Set-Cookie

**Body**

**{**

"x-session" : "668100100001"

**}**

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

The application will be waiting for the Resource UnAllocate Request from P-WRTC and performing in the section [4.2.2 SBC Resource Unallocate Hadling Function](#_4.2.5_P-SSF_Main)

Application will get the Acknowledgement from P-WRTC which knows as P-WRTC has received the Terminate Request Message already ,หน้าตา ACK เป็นดังนี้

The application shall increment a statistic value named “SBC ไดรับ ACK”

#### [SBC-01-00x-1] Timeout of waiting for Resource Unallocate Request

In case that the application hasn’t gotten the Terminate Request Message in time then …..

\*\*\* มี Retry ไหม \*\*\*

### **4.2.5 Credit Control Request Initiate (CCR-I)**

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

The application will construct a **Credit Control Request (Initiate) Message** to P-WRTC to ask for the quota of each 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   **x-session-id :**  Get the value from instance which was set from ‘callback-session’  of request message from P-WRTC |
| Body | | | |  |  |  |
|  | Session-Id | | | Octet  String | M | Identifies a Session-id by getting value from **‘callback-Session** in instance |
|  | Auth-Application-Id | | | Unsigned32 | M | Indicates the unique ID that is used for re-authentication or re-authorization. The Auth-Application-Id AVP contains the following values:  0: Indicates Diameter common messages  1: Indicates NASREQ  2: Indicates Mobile-IP  The IP address used for the mobile phone to connect to the internet.  3: Indicates Diameter base accounting  0xffffffff: Indicates the relay  4: Indicates the DCCA |
|  | Service-Context-Id | | | Octet  String | M | Indicates the unique ID (extendable) of a DCC service. |
|  | CC-Request-Type | | | Enumerted | M | Indicates the reason for sending a CCR message. This AVP must be contained in the CCR message. The CC-Request-Type AVP contains the following values:  1: INITIAL\_REQUEST Indicates that the initial CCR is used to initiate a credit control session. The session contains the credit control information about initiating a session.  2: UPDATE\_REQUEST Indicates that the update CCR contains the credit control information about the sessions of which credit control is set up. When the re-authorization needs to be initiated, an update CCR needs to be initiated.  3: TERMINATION\_REQUEST Indicates to interrupt a credit control session by terminating a credit request.  4: EVENT\_REQUEST Indicates to use EVENT\_REQUEST when the session status need not be maintained by the DCC server. This request contains all the information about the concerned service. In addition, this request is the unique request of this service. When CC-Request-Type of a CCR message is set to EVENT\_REQUEST, Requested-Action must be contained in the CCR message. |
|  | CC-Request-Number | | | Unsigned32 | M | Indicates the identity of a certain request in a session. As Session-Id is global unique, different requests and answers can be matched through Session-Id and CC-Request-Number. |
|  | Event-Timestamp | | | Octet  String | M | Indicates the time when an event occurs. The value of this AVP is generated by the DCC client. The time is conversed from January 1, 1900, 00:00 UTC, in seconds. Note: UTC: Coordinated Universal Time |
|  | Service-Identifier | | | Unsigned32 | M | Application Id  **Note :** Set value as 0 |
|  | Route-Record | | | DiameterIdentity | M | Set data as same as its defined in Config ; named ‘XXXXXXX’ |
|  | Subscription-Id | | | | O | **Root Element** |
|  |  | Subscription-Id-Type | | Enumerted | O | Indicates the type of a user's terminal ID. The Subscription-Id-Type AVP contains the following values:  0: END\_USER\_E164 Indicates that the terminal identity is of the international E.164 format defined according to the ITU-T E.164 number scheme.  1: END\_USER\_IMSI Indicates that the terminal ID is of the international IMSI format defined according to the ITU-T E.212 number scheme. Note:  IMSI: International Mobile Subscriber Identity  In this interface, only use: 0 (MSISDN) |
|  |  | Subscription-Id-Data | | Octet  String | O | Indicates the number of the charged party by getting value from **‘x-session’** in instance |
|  | Requested-Service-Unit | | | | Om | **Root Element**  The presence of this field means the quotas need to be filled up. The grant of another quota may need to be supervised by OCS.  **Note :** It must be mandatory when “CC-Request-Type” is “1” and “2” |
|  |  | CC-Time | | Unsigned32 | Om | It must be mandatory when “CC-Request-Type” is “1” and “2” |
|  | Used-Service-Unit | | | | Om | **Root Element**  **Note :** It must be mandatory when “CC-Request-Type” is “2” and “3” |
|  |  | CC-Time | | Unsigned32 | Om | It must be mandatory when “CC-Request-Type” is “1” and “2” |
|  | Service-Information | | | | X | **Root Element**  Grouped. Allows the transmission of additional MMS service-specific information. |
|  |  | IN-Information | | | X | **Root Element** |
|  |  |  | Charge-Flow-Type | Unsigned32 | M |  |
|  |  |  | SSP-Time | Octet  String | M |  |
|  |  |  | Time-Zone | Unsigned32 | M |  |
|  |  |  | Calling-Party-Address-Nature | Unsigned32 | M |  |
|  |  |  | Called-Party-Address-Nature | Unsigned32 | M |  |
|  |  |  | called-Party-BCDNumber-Nature | Unsigned32 | M |  |
|  |  |  | EventType-BCSM | Unsigned32 | M |  |

**Example :**

{

"Session-Id": "66888888888",

"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 increment a statistic value named "CCAI 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 increment a statistic value named "CCAI 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 increment a statistic value named "CCAI 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 increment a statistic value named "CCAI Abort".

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

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

If SBC receives CCA-I Response Message 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 | | | | Octet  String | M | Identifies a session ID. A session ID uniquely identifies a DCC session process. |
|  | Result-Code | | | | Unsigned32 | M | Indicates a specified request is successfully fulfilled or fails. If the host setting the Result-Code AVP is not the host that is designated in the Origin-Host AVP, a failed Result-Code AVP must contain the Error-Reporting-Host AVP. The Diameter protocol provides the following types of error codes. The error type is judged based on the first digit of an error code.  1xxx: informational  2xxx: success  3xxx: protocol errors  4xxx: transient failure  5xxx: permanent failure An error type that cannot be identified, that is, the first digit of an error type is not in the preceding definition is regarded as a permanent failure.  **Example :** 2001 |
|  | Origin-Host | | | | DiameterIdentity | M | Contains the identification of the source point of the operation and the realm of the operation originator. Relay agents must not modify this AVP. The value of the Origin-Host AVP is guaranteed to be unique within a single host. |
|  | Origin-Realm | | | | DiameterIdentity | M | Indicates the home realm of the device that initiates DCC messages. |
|  | Auth-Application-Id | | | | Unsigned32 | M | Indicates the unique ID that is used for re-authentication or re-authorization. The Auth-Application-Id AVP contains the following values:  0: Indicates Diameter common messages  1: Indicates NASREQ  2: Indicates Mobile-IP  The IP address used for the mobile phone to connect to the internet.  3: Indicates Diameter base accounting  0xffffffff: Indicates the relay  4: Indicates the DCCA |
|  | CC-Request-Type | | | | Enumerated | M | Indicates the reason for sending a CCR message. This AVP must be contained in the CCR message. The CC-Request-Type AVP contains the following values:  1: INITIAL\_REQUEST Indicates that the initial CCR is used to initiate a credit control session. The session contains the credit control information about initiating a session.  2: UPDATE\_REQUEST Indicates that the update CCR contains the credit control information about the sessions of which credit control is set up. When the re-authorization needs to be initiated, an update CCR needs to be initiated.  3: TERMINATION\_REQUEST Indicates to interrupt a credit control session by terminating a credit request.  4: EVENT\_REQUEST Indicates to use EVENT\_REQUEST when the session status need not be maintained by the DCC server. This request contains all the information about the concerned service. In addition, this request is the unique request of this service. When CC-Request-Type of a CCR message is set to EVENT\_REQUEST, Requested-Action must be contained in the CCR message. |
|  | CC-Request-Number | | | | Unsigned32 | M | Indicates the identity of a certain request in a session. As Session-Id is global unique, different requests and answers can be matched through Session-Id and CC-Request-Number. |
|  | Granted-Service-Unit | | | | | Om | **Root Element**  The presence of this field means the granted quotas.  **Note :** It must be mandatory when “CC-Request-Type” is “1” and “2” |
|  |  | CC-Time | | | Unsigned32 | Om | It must be mandatory when “CC-Request-Type” is “1” and “2” |
|  | 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 parameter is **missing** or the value of any parameters is **incorrect** format then the application shall raise a statistic value named “SBC ได้รับ Bad CCAI Response”.

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 | | | Octet  String | M | Identifies a session ID. A session ID uniquely identifies a DCC session process. |
|  | Result-Code | | | Unsigned32 | M | Indicates a specified request is successfully fulfilled or fails. If the host setting the Result-Code AVP is not the host that is designated in the Origin-Host AVP, a failed Result-Code AVP must contain the Error-Reporting-Host AVP. The Diameter protocol provides the following types of error codes. The error type is judged based on the first digit of an error code.  1xxx: informational  2xxx: success  3xxx: protocol errors  4xxx: transient failure  5xxx: permanent failure An error type that cannot be identified, that is, the first digit of an error type is not in the preceding definition is regarded as a permanent failure.  **Example :** XXXX |
|  | Origin-Host | | | DiameterIdentity | O | Contains the identification of the source point of the operation and the realm of the operation originator. Relay agents must not modify this AVP. The value of the Origin-Host AVP is guaranteed to be unique within a single host. |
|  | Origin-Realm | | | DiameterIdentity | O | Indicates the home realm of the device that initiates DCC messages. |
|  | Auth-Application-Id | | | Unsigned32 | O | Indicates the unique ID that is used for re-authentication or re-authorization. The Auth-Application-Id AVP contains the following values:  0: Indicates Diameter common messages  1: Indicates NASREQ  2: Indicates Mobile-IP  The IP address used for the mobile phone to connect to the internet.  3: Indicates Diameter base accounting  0xffffffff: Indicates the relay  4: Indicates the DCCA |
|  | CC-Request-Type | | | Enumerated | M | Indicates the reason for sending a CCR message. This AVP must be contained in the CCR message. The CC-Request-Type AVP contains the following values:  1: INITIAL\_REQUEST Indicates that the initial CCR is used to initiate a credit control session. The session contains the credit control information about initiating a session.  2: UPDATE\_REQUEST Indicates that the update CCR contains the credit control information about the sessions of which credit control is set up. When the re-authorization needs to be initiated, an update CCR needs to be initiated.  3: TERMINATION\_REQUEST Indicates to interrupt a credit control session by terminating a credit request.  4: EVENT\_REQUEST Indicates to use EVENT\_REQUEST when the session status need not be maintained by the DCC server. This request contains all the information about the concerned service. In addition, this request is the unique request of this service. When CC-Request-Type of a CCR message is set to EVENT\_REQUEST, Requested-Action must be contained in the CCR message. |
|  | CC-Request-Number | | | Unsigned32 | M | Indicates the identity of a certain request in a session. As Session-Id is global unique, different requests and answers can be matched through Session-Id and CC-Request-Number. |
|  | Granted-Service-Unit | | | | Om | **Root Element**  The presence of this field means the granted quotas.  **Note :** It must be mandatory when “CC-Request-Type” is “1” and “2” |
|  |  | CC-Time | | Unsigned32 | Om | It must be mandatory when “CC-Request-Type” is “1” and “2” |
|  | Service-Information | | | | O | **Root Element**  Grouped. Allows the transmission of additional MMS service-specific information. |
|  |  | IN-Information | | | O | **Root Element** |
|  |  |  | Service-Free-Indicator |  | O |  |
|  |  |  | ChargePartyPayType |  | O |  |

**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": {

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

"ChargePartyPayType": "1"

}

}

}

}

The application shall raise a statistic value named “SBC ได้รับ CCAI Result-Code 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 | | | Octet  String | M | Identifies a session ID. A session ID uniquely identifies a DCC session process. |
|  | Result-Code | | | Unsigned32 | M | Indicates a specified request is successfully fulfilled or fails. If the host setting the Result-Code AVP is not the host that is designated in the Origin-Host AVP, a failed Result-Code AVP must contain the Error-Reporting-Host AVP. The Diameter protocol provides the following types of error codes. The error type is judged based on the first digit of an error code.  1xxx: informational  2xxx: success  3xxx: protocol errors  4xxx: transient failure  5xxx: permanent failure An error type that cannot be identified, that is, the first digit of an error type is not in the preceding definition is regarded as a permanent failure.  **Example :** XXXX |
|  | Origin-Host | | | DiameterIdentity | O | Contains the identification of the source point of the operation and the realm of the operation originator. Relay agents must not modify this AVP. The value of the Origin-Host AVP is guaranteed to be unique within a single host. |
|  | Origin-Realm | | | DiameterIdentity | O | Indicates the home realm of the device that initiates DCC messages. |
|  | Auth-Application-Id | | | Unsigned32 | O | Indicates the unique ID that is used for re-authentication or re-authorization. The Auth-Application-Id AVP contains the following values:  0: Indicates Diameter common messages  1: Indicates NASREQ  2: Indicates Mobile-IP  The IP address used for the mobile phone to connect to the internet.  3: Indicates Diameter base accounting  0xffffffff: Indicates the relay  4: Indicates the DCCA |
|  | CC-Request-Type | | | Enumerated | M | Indicates the reason for sending a CCR message. This AVP must be contained in the CCR message. The CC-Request-Type AVP contains the following values:  1: INITIAL\_REQUEST Indicates that the initial CCR is used to initiate a credit control session. The session contains the credit control information about initiating a session.  2: UPDATE\_REQUEST Indicates that the update CCR contains the credit control information about the sessions of which credit control is set up. When the re-authorization needs to be initiated, an update CCR needs to be initiated.  3: TERMINATION\_REQUEST Indicates to interrupt a credit control session by terminating a credit request.  4: EVENT\_REQUEST Indicates to use EVENT\_REQUEST when the session status need not be maintained by the DCC server. This request contains all the information about the concerned service. In addition, this request is the unique request of this service. When CC-Request-Type of a CCR message is set to EVENT\_REQUEST, Requested-Action must be contained in the CCR message. |
|  | CC-Request-Number | | | Unsigned32 | M | Indicates the identity of a certain request in a session. As Session-Id is global unique, different requests and answers can be matched through Session-Id and CC-Request-Number. |
|  | Granted-Service-Unit | | | | Om | **Root Element**  The presence of this field means the granted quotas.  **Note :** It must be mandatory when “CC-Request-Type” is “1” and “2” |
|  |  | CC-Time | | Unsigned32 | Om | It must be mandatory when “CC-Request-Type” is “1” and “2” |
|  | Service-Information | | | | O | **Root Element**  Grouped. Allows the transmission of additional MMS service-specific information. |
|  |  | IN-Information | | | O | **Root Element** |
|  |  |  | Service-Free-Indicator |  | O |  |
|  |  |  | ChargePartyPayType |  | O |  |

**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": {

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

"ChargePartyPayType": "1"

}

}

}

}

The application shall raise a statistic value named “SBC ได้รับ CCAI Result-code Success”.

The application will perform as the 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.

### **4.2.6 Credit Control Request Update (CCR-U)**

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

The application will construct a **Credit Control Request (Update)** to P-WRTC to update the quota of each **User Agent** telling how many units have been used and how many it would like granted this time 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   **x-session-id :**  Get the value from instance which was set from ‘callback-session’  of request message from P-WRTC |
| Body | | | |  |  |  |
|  | Session-Id | | | Octet  String | M | Identifies a Session-id by getting value from **‘callback-Session’** in instance |
|  | Auth-Application-Id | | | Unsigned32 | M | Indicates the unique ID that is used for re-authentication or re-authorization. The Auth-Application-Id AVP contains the following values:  0: Indicates Diameter common messages  1: Indicates NASREQ  2: Indicates Mobile-IP  The IP address used for the mobile phone to connect to the internet.  3: Indicates Diameter base accounting  0xffffffff: Indicates the relay  4: Indicates the DCCA |
|  | Service-Context-Id | | | Octet  String | M | Indicates the unique ID (extendable) of a DCC service. |
|  | CC-Request-Type | | | Enumerted | M | Indicates the reason for sending a CCR message. This AVP must be contained in the CCR message. The CC-Request-Type AVP contains the following values:  1: INITIAL\_REQUEST Indicates that the initial CCR is used to initiate a credit control session. The session contains the credit control information about initiating a session.  2: UPDATE\_REQUEST Indicates that the update CCR contains the credit control information about the sessions of which credit control is set up. When the re-authorization needs to be initiated, an update CCR needs to be initiated.  3: TERMINATION\_REQUEST Indicates to interrupt a credit control session by terminating a credit request.  4: EVENT\_REQUEST Indicates to use EVENT\_REQUEST when the session status need not be maintained by the DCC server. This request contains all the information about the concerned service. In addition, this request is the unique request of this service. When CC-Request-Type of a CCR message is set to EVENT\_REQUEST, Requested-Action must be contained in the CCR message. |
|  | CC-Request-Number | | | Unsigned32 | M | Indicates the identity of a certain request in a session. As Session-Id is global unique, different requests and answers can be matched through Session-Id and CC-Request-Number. |
|  | Event-Timestamp | | | Octet  String | M | Indicates the time when an event occurs. The value of this AVP is generated by the DCC client. The time is conversed from January 1, 1900, 00:00 UTC, in seconds. Note: UTC: Coordinated Universal Time |
|  | Service-Identifier | | | Unsigned32 | M | Application Id  **Note :** Set value as 0 |
|  | Route-Record | | | DiameterIdentity | M | Set data as same as its defined in Config ; named ‘XXXXXXX’ |
|  | Subscription-Id | | | | O | **Root Element** |
|  |  | Subscription-Id-Type | | Enumerted | O | Indicates the type of a user's terminal ID. The Subscription-Id-Type AVP contains the following values:  0: END\_USER\_E164 Indicates that the terminal identity is of the international E.164 format defined according to the ITU-T E.164 number scheme.  1: END\_USER\_IMSI Indicates that the terminal ID is of the international IMSI format defined according to the ITU-T E.212 number scheme. Note:  IMSI: International Mobile Subscriber Identity  In this interface, only use: 0 (MSISDN) |
|  |  | Subscription-Id-Data | | Octet  String | O | Indicates the number of the charged party by getting value from **‘x-session’** in instance |
|  | Requested-Service-Unit | | | | Om | **Root Element**  The presence of this field means the quotas need to be filled up. The grant of another quota may need to be supervised by OCS.  **Note :** It must be mandatory when “CC-Request-Type” is “1” and “2” |
|  |  | CC-Time | | Unsigned32 | Om | It must be mandatory when “CC-Request-Type” is “1” and “2” |
|  | Used-Service-Unit | | | | Om | **Root Element**  To defined the units that actually have been used.  **Note :** It must be mandatory when “CC-Request-Type” is “2” and “3” |
|  |  | CC-Time | | Unsigned32 | Om | It must be mandatory when “CC-Request-Type” is “1” and “2” |
|  | Service-Information | | | | X | **Root Element**  Grouped. Allows the transmission of additional MMS service-specific information. |
|  |  | IN-Information | | | X | **Root Element** |
|  |  |  | Charge-Flow-Type | Unsigned32 | M |  |
|  |  |  | SSP-Time | Octet  String | M |  |
|  |  |  | Time-Zone | Unsigned32 | M |  |
|  |  |  | Calling-Party-Address-Nature | Unsigned32 | M |  |
|  |  |  | Called-Party-Address-Nature | Unsigned32 | M |  |
|  |  |  | called-Party-BCDNumber-Nature | Unsigned32 | M |  |
|  |  |  | EventType-BCSM | Unsigned32 | M |  |

**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 ส่ง CCR-U Request Message to P-WRTC".

#### [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 | | | Octet  String | M | Identifies a session ID. A session ID uniquely identifies a DCC session process. |
|  | Result-Code | | | Unsigned32 | M | Indicates a specified request is successfully fulfilled or fails. If the host setting the Result-Code AVP is not the host that is designated in the Origin-Host AVP, a failed Result-Code AVP must contain the Error-Reporting-Host AVP. The Diameter protocol provides the following types of error codes. The error type is judged based on the first digit of an error code.  1xxx: informational  2xxx: success  3xxx: protocol errors  4xxx: transient failure  5xxx: permanent failure An error type that cannot be identified, that is, the first digit of an error type is not in the preceding definition is regarded as a permanent failure.  **Example :** 2001 |
|  | Origin-Host | | | DiameterIdentity | M | Contains the identification of the source point of the operation and the realm of the operation originator. Relay agents must not modify this AVP. The value of the Origin-Host AVP is guaranteed to be unique within a single host. |
|  | Origin-Realm | | | DiameterIdentity | M | Indicates the home realm of the device that initiates DCC messages. |
|  | Auth-Application-Id | | | Unsigned32 | M | Indicates the unique ID that is used for re-authentication or re-authorization. The Auth-Application-Id AVP contains the following values:  0: Indicates Diameter common messages  1: Indicates NASREQ  2: Indicates Mobile-IP  The IP address used for the mobile phone to connect to the internet.  3: Indicates Diameter base accounting  0xffffffff: Indicates the relay  4: Indicates the DCCA |
|  | CC-Request-Type | | | Enumerated | M | Indicates the reason for sending a CCR message. This AVP must be contained in the CCR message. The CC-Request-Type AVP contains the following values:  1: INITIAL\_REQUEST Indicates that the initial CCR is used to initiate a credit control session. The session contains the credit control information about initiating a session.  2: UPDATE\_REQUEST Indicates that the update CCR contains the credit control information about the sessions of which credit control is set up. When the re-authorization needs to be initiated, an update CCR needs to be initiated.  3: TERMINATION\_REQUEST Indicates to interrupt a credit control session by terminating a credit request.  4: EVENT\_REQUEST Indicates to use EVENT\_REQUEST when the session status need not be maintained by the DCC server. This request contains all the information about the concerned service. In addition, this request is the unique request of this service. When CC-Request-Type of a CCR message is set to EVENT\_REQUEST, Requested-Action must be contained in the CCR message. |
|  | CC-Request-Number | | | Unsigned32 | M | Indicates the identity of a certain request in a session. As Session-Id is global unique, different requests and answers can be matched through Session-Id and CC-Request-Number. |
|  | Granted-Service-Unit | | | | Om | **Root Element**  The presence of this field means the granted quotas.  **Note :** It must be mandatory when “CC-Request-Type” is “1” and “2” |
|  |  | CC-Time | | Unsigned32 | Om | It must be mandatory when “CC-Request-Type” is “1” and “2” |
|  | Service-Information | | | | O | **Root Element**  Grouped. Allows the transmission of additional MMS service-specific information. |
|  |  | IN-Information | | | O | **Root Element** |
|  |  |  | Service-Free-Indicator |  | O |  |
|  |  |  | ChargePartyPayType |  | O |  |

**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": {

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

"ChargePartyPayType": "1",

}

}

}

}

If any of mandatory parameter is **missing** or the value of any parameters is **incorrect** format 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 | | | Octet  String | M | Identifies a session ID. A session ID uniquely identifies a DCC session process. |
|  | Result-Code | | | Unsigned32 | M | Indicates a specified request is successfully fulfilled or fails. If the host setting the Result-Code AVP is not the host that is designated in the Origin-Host AVP, a failed Result-Code AVP must contain the Error-Reporting-Host AVP. The Diameter protocol provides the following types of error codes. The error type is judged based on the first digit of an error code.  1xxx: informational  2xxx: success  3xxx: protocol errors  4xxx: transient failure  5xxx: permanent failure An error type that cannot be identified, that is, the first digit of an error type is not in the preceding definition is regarded as a permanent failure.  **Example :** 2001 |
|  | Origin-Host | | | DiameterIdentity | M | Contains the identification of the source point of the operation and the realm of the operation originator. Relay agents must not modify this AVP. The value of the Origin-Host AVP is guaranteed to be unique within a single host. |
|  | Origin-Realm | | | DiameterIdentity | M | Indicates the home realm of the device that initiates DCC messages. |
|  | Auth-Application-Id | | | Unsigned32 | M | Indicates the unique ID that is used for re-authentication or re-authorization. The Auth-Application-Id AVP contains the following values:  0: Indicates Diameter common messages  1: Indicates NASREQ  2: Indicates Mobile-IP  The IP address used for the mobile phone to connect to the internet.  3: Indicates Diameter base accounting  0xffffffff: Indicates the relay  4: Indicates the DCCA |
|  | CC-Request-Type | | | Enumerated | M | Indicates the reason for sending a CCR message. This AVP must be contained in the CCR message. The CC-Request-Type AVP contains the following values:  1: INITIAL\_REQUEST Indicates that the initial CCR is used to initiate a credit control session. The session contains the credit control information about initiating a session.  2: UPDATE\_REQUEST Indicates that the update CCR contains the credit control information about the sessions of which credit control is set up. When the re-authorization needs to be initiated, an update CCR needs to be initiated.  3: TERMINATION\_REQUEST Indicates to interrupt a credit control session by terminating a credit request.  4: EVENT\_REQUEST Indicates to use EVENT\_REQUEST when the session status need not be maintained by the DCC server. This request contains all the information about the concerned service. In addition, this request is the unique request of this service. When CC-Request-Type of a CCR message is set to EVENT\_REQUEST, Requested-Action must be contained in the CCR message. |
|  | CC-Request-Number | | | Unsigned32 | M | Indicates the identity of a certain request in a session. As Session-Id is global unique, different requests and answers can be matched through Session-Id and CC-Request-Number. |
|  | Granted-Service-Unit | | | | Om | **Root Element**  The presence of this field means the granted quotas.  **Note :** It must be mandatory when “CC-Request-Type” is “1” and “2” |
|  |  | CC-Time | | Unsigned32 | Om | It must be mandatory when “CC-Request-Type” is “1” and “2” |
|  | Service-Information | | | | O | **Root Element**  Grouped. Allows the transmission of additional MMS service-specific information. |
|  |  | IN-Information | | | O | **Root Element** |
|  |  |  | Service-Free-Indicator |  | O |  |
|  |  |  | ChargePartyPayType |  | O |  |

**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": {

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

"ChargePartyPayType": "1"

}

}

}

}

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-U Response, the application will check if the value of “Result-Code” is 2001 **(Success)** .

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Element** | | | | **Type** | **M/O** | **Description / Example** |
| Body | | | |  |  |  |
|  | Session-Id | | | Octet  String | M | Identifies a session ID. A session ID uniquely identifies a DCC session process. |
|  | Result-Code | | | Unsigned32 | M | Indicates a specified request is successfully fulfilled or fails. If the host setting the Result-Code AVP is not the host that is designated in the Origin-Host AVP, a failed Result-Code AVP must contain the Error-Reporting-Host AVP. The Diameter protocol provides the following types of error codes. The error type is judged based on the first digit of an error code.  1xxx: informational  2xxx: success  3xxx: protocol errors  4xxx: transient failure  5xxx: permanent failure An error type that cannot be identified, that is, the first digit of an error type is not in the preceding definition is regarded as a permanent failure.  **Example :** 2001 |
|  | Origin-Host | | | DiameterIdentity | M | Contains the identification of the source point of the operation and the realm of the operation originator. Relay agents must not modify this AVP. The value of the Origin-Host AVP is guaranteed to be unique within a single host. |
|  | Origin-Realm | | | DiameterIdentity | M | Indicates the home realm of the device that initiates DCC messages. |
|  | Auth-Application-Id | | | Unsigned32 | M | Indicates the unique ID that is used for re-authentication or re-authorization. The Auth-Application-Id AVP contains the following values:  0: Indicates Diameter common messages  1: Indicates NASREQ  2: Indicates Mobile-IP  The IP address used for the mobile phone to connect to the internet.  3: Indicates Diameter base accounting  0xffffffff: Indicates the relay  4: Indicates the DCCA |
|  | CC-Request-Type | | | Enumerated | M | Indicates the reason for sending a CCR message. This AVP must be contained in the CCR message. The CC-Request-Type AVP contains the following values:  1: INITIAL\_REQUEST Indicates that the initial CCR is used to initiate a credit control session. The session contains the credit control information about initiating a session.  2: UPDATE\_REQUEST Indicates that the update CCR contains the credit control information about the sessions of which credit control is set up. When the re-authorization needs to be initiated, an update CCR needs to be initiated.  3: TERMINATION\_REQUEST Indicates to interrupt a credit control session by terminating a credit request.  4: EVENT\_REQUEST Indicates to use EVENT\_REQUEST when the session status need not be maintained by the DCC server. This request contains all the information about the concerned service. In addition, this request is the unique request of this service. When CC-Request-Type of a CCR message is set to EVENT\_REQUEST, Requested-Action must be contained in the CCR message. |
|  | CC-Request-Number | | | Unsigned32 | M | Indicates the identity of a certain request in a session. As Session-Id is global unique, different requests and answers can be matched through Session-Id and CC-Request-Number. |
|  | Granted-Service-Unit | | | | Om | **Root Element**  The presence of this field means the granted quotas.  **Note :** It must be mandatory when “CC-Request-Type” is “1” and “2” |
|  |  | CC-Time | | Unsigned32 | Om | It must be mandatory when “CC-Request-Type” is “1” and “2” |
|  | Service-Information | | | | O | **Root Element**  Grouped. Allows the transmission of additional MMS service-specific information. |
|  |  | IN-Information | | | O | **Root Element** |
|  |  |  | Service-Free-Indicator |  | O |  |
|  |  |  | ChargePartyPayType |  | O |  |

**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": {

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

"ChargePartyPayType": "1"

}

}

}

}

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

The application will perform as the 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.

### **4.2.7 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 end the session of 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   **x-session-id :**  Get the value from instance which was set from ‘callback-session’  of request message from P-WRTC |
| Body | | | |  |  |  |
|  | Session-Id | | | Octet  String | M | Identifies a Session-id by getting value from **‘callback-Session’** in instance |
|  | Auth-Application-Id | | | Unsigned32 | M | Indicates the unique ID that is used for re-authentication or re-authorization. The Auth-Application-Id AVP contains the following values:  0: Indicates Diameter common messages  1: Indicates NASREQ  2: Indicates Mobile-IP  The IP address used for the mobile phone to connect to the internet.  3: Indicates Diameter base accounting  0xffffffff: Indicates the relay  4: Indicates the DCCA |
|  | Service-Context-Id | | | Octet  String | M | Indicates the unique ID (extendable) of a DCC service. |
|  | CC-Request-Type | | | Enumerted | M | Indicates the reason for sending a CCR message. This AVP must be contained in the CCR message. The CC-Request-Type AVP contains the following values:  1: INITIAL\_REQUEST Indicates that the initial CCR is used to initiate a credit control session. The session contains the credit control information about initiating a session.  2: UPDATE\_REQUEST Indicates that the update CCR contains the credit control information about the sessions of which credit control is set up. When the re-authorization needs to be initiated, an update CCR needs to be initiated.  3: TERMINATION\_REQUEST Indicates to interrupt a credit control session by terminating a credit request.  4: EVENT\_REQUEST Indicates to use EVENT\_REQUEST when the session status need not be maintained by the DCC server. This request contains all the information about the concerned service. In addition, this request is the unique request of this service. When CC-Request-Type of a CCR message is set to EVENT\_REQUEST, Requested-Action must be contained in the CCR message. |
|  | CC-Request-Number | | | Unsigned32 | M | Indicates the identity of a certain request in a session. As Session-Id is global unique, different requests and answers can be matched through Session-Id and CC-Request-Number. |
|  | Event-Timestamp | | | Octet  String | M | Indicates the time when an event occurs. The value of this AVP is generated by the DCC client. The time is conversed from January 1, 1900, 00:00 UTC, in seconds. Note: UTC: Coordinated Universal Time |
|  | Service-Identifier | | | Unsigned32 | M | Application Id  **Note :** Set value as 0 |
|  | Route-Record | | | DiameterIdentity | M | Set data as same as its defined in Config ; named ‘XXXXXXX’ |
|  | Subscription-Id | | | | O | **Root Element** |
|  |  | Subscription-Id-Type | | Enumerted | O | Indicates the type of a user's terminal ID. The Subscription-Id-Type AVP contains the following values:  0: END\_USER\_E164 Indicates that the terminal identity is of the international E.164 format defined according to the ITU-T E.164 number scheme.  1: END\_USER\_IMSI Indicates that the terminal ID is of the international IMSI format defined according to the ITU-T E.212 number scheme. Note:  IMSI: International Mobile Subscriber Identity  In this interface, only use: 0 (MSISDN) |
|  |  | Subscription-Id-Data | | Octet  String | O | Indicates the number of the charged party by getting value from **‘x-session’** in instance |
|  | Requested-Service-Unit | | | | Om | **Root Element**  The presence of this field means the quotas need to be filled up. The grant of another quota may need to be supervised by OCS.  **Note :** It must be mandatory when “CC-Request-Type” is “1” and “2” |
|  |  | CC-Time | | Unsigned32 | Om | It must be mandatory when “CC-Request-Type” is “1” and “2” |
|  | Used-Service-Unit | | | | Om | **Root Element**  **Note :** It must be mandatory when “CC-Request-Type” is “2” and “3” |
|  |  | CC-Time | | Unsigned32 | Om | It must be mandatory when “CC-Request-Type” is “1” and “2” |
|  | Service-Information | | | | X | **Root Element**  Grouped. Allows the transmission of additional MMS service-specific information. |
|  |  | IN-Information | | | X | **Root Element** |
|  |  |  | Charge-Flow-Type | Unsigned32 | M |  |
|  |  |  | SSP-Time | Octet  String | M |  |
|  |  |  | Time-Zone | Unsigned32 | M |  |
|  |  |  | Calling-Party-Address-Nature | Unsigned32 | M |  |
|  |  |  | Called-Party-Address-Nature | Unsigned32 | M |  |
|  |  |  | called-Party-BCDNumber-Nature | Unsigned32 | M |  |
|  |  |  | EventType-BCSM | Unsigned32 | M |  |

**Example :**

{

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

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

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

"CC-Request-Type": "3",

"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-T 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 | | | Octet  String | M | Identifies a session ID. A session ID uniquely identifies a DCC session process. |
|  | Result-Code | | | Unsigned32 | M | Indicates a specified request is successfully fulfilled or fails. If the host setting the Result-Code AVP is not the host that is designated in the Origin-Host AVP, a failed Result-Code AVP must contain the Error-Reporting-Host AVP. The Diameter protocol provides the following types of error codes. The error type is judged based on the first digit of an error code.  1xxx: informational  2xxx: success  3xxx: protocol errors  4xxx: transient failure  5xxx: permanent failure An error type that cannot be identified, that is, the first digit of an error type is not in the preceding definition is regarded as a permanent failure.  **Example :** 2001 |
|  | Origin-Host | | | DiameterIdentity | O | Contains the identification of the source point of the operation and the realm of the operation originator. Relay agents must not modify this AVP. The value of the Origin-Host AVP is guaranteed to be unique within a single host. |
|  | Origin-Realm | | | DiameterIdentity | O | Indicates the home realm of the device that initiates DCC messages. |
|  | Auth-Application-Id | | | Unsigned32 | M | Indicates the unique ID that is used for re-authentication or re-authorization. The Auth-Application-Id AVP contains the following values:  0: Indicates Diameter common messages  1: Indicates NASREQ  2: Indicates Mobile-IP  The IP address used for the mobile phone to connect to the internet.  3: Indicates Diameter base accounting  0xffffffff: Indicates the relay  4: Indicates the DCCA |
|  | CC-Request-Type | | | Enumerated | M | Indicates the reason for sending a CCR message. This AVP must be contained in the CCR message. The CC-Request-Type AVP contains the following values:  1: INITIAL\_REQUEST Indicates that the initial CCR is used to initiate a credit control session. The session contains the credit control information about initiating a session.  2: UPDATE\_REQUEST Indicates that the update CCR contains the credit control information about the sessions of which credit control is set up. When the re-authorization needs to be initiated, an update CCR needs to be initiated.  3: TERMINATION\_REQUEST Indicates to interrupt a credit control session by terminating a credit request.  4: EVENT\_REQUEST Indicates to use EVENT\_REQUEST when the session status need not be maintained by the DCC server. This request contains all the information about the concerned service. In addition, this request is the unique request of this service. When CC-Request-Type of a CCR message is set to EVENT\_REQUEST, Requested-Action must be contained in the CCR message. |
|  | CC-Request-Number | | | Unsigned32 | M | Indicates the identity of a certain request in a session. As Session-Id is global unique, different requests and answers can be matched through Session-Id and CC-Request-Number. |
|  | Granted-Service-Unit | | | | Om | **Root Element**  The presence of this field means the granted quotas.  **Note :** It must be mandatory when “CC-Request-Type” is “1” and “2” |
|  |  | CC-Time | | Unsigned32 | Om | It must be mandatory when “CC-Request-Type” is “1” and “2” |
|  | Service-Information | | | | M | **Root Element**  Grouped. Allows the transmission of additional MMS service-specific information. |
|  |  | IN-Information | | | O | **Root Element** |
|  |  |  | Service-Free-Indicator |  | O |  |
|  |  |  | ChargePartyPayType |  | O |  |

**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": {

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

"ChargePartyPayType": "1"

}

}

}

}

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-T Response, the application will check if the value of “Result-Code” is NOT 2001 **(Error)** .

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Element** | | | | **Type** | **M/O** | **Description / Example** |
| Body | | | |  |  |  |
|  | Session-Id | | | Octet  String | M | Identifies a session ID. A session ID uniquely identifies a DCC session process. |
|  | Result-Code | | | Unsigned32 | M | Indicates a specified request is successfully fulfilled or fails. If the host setting the Result-Code AVP is not the host that is designated in the Origin-Host AVP, a failed Result-Code AVP must contain the Error-Reporting-Host AVP. The Diameter protocol provides the following types of error codes. The error type is judged based on the first digit of an error code.  1xxx: informational  2xxx: success  3xxx: protocol errors  4xxx: transient failure  5xxx: permanent failure An error type that cannot be identified, that is, the first digit of an error type is not in the preceding definition is regarded as a permanent failure.  **Example :** 2001 |
|  | Origin-Host | | | DiameterIdentity | O | Contains the identification of the source point of the operation and the realm of the operation originator. Relay agents must not modify this AVP. The value of the Origin-Host AVP is guaranteed to be unique within a single host. |
|  | Origin-Realm | | | DiameterIdentity | O | Indicates the home realm of the device that initiates DCC messages. |
|  | Auth-Application-Id | | | Unsigned32 | M | Indicates the unique ID that is used for re-authentication or re-authorization. The Auth-Application-Id AVP contains the following values:  0: Indicates Diameter common messages  1: Indicates NASREQ  2: Indicates Mobile-IP  The IP address used for the mobile phone to connect to the internet.  3: Indicates Diameter base accounting  0xffffffff: Indicates the relay  4: Indicates the DCCA |
|  | CC-Request-Type | | | Enumerated | M | Indicates the reason for sending a CCR message. This AVP must be contained in the CCR message. The CC-Request-Type AVP contains the following values:  1: INITIAL\_REQUEST Indicates that the initial CCR is used to initiate a credit control session. The session contains the credit control information about initiating a session.  2: UPDATE\_REQUEST Indicates that the update CCR contains the credit control information about the sessions of which credit control is set up. When the re-authorization needs to be initiated, an update CCR needs to be initiated.  3: TERMINATION\_REQUEST Indicates to interrupt a credit control session by terminating a credit request.  4: EVENT\_REQUEST Indicates to use EVENT\_REQUEST when the session status need not be maintained by the DCC server. This request contains all the information about the concerned service. In addition, this request is the unique request of this service. When CC-Request-Type of a CCR message is set to EVENT\_REQUEST, Requested-Action must be contained in the CCR message. |
|  | CC-Request-Number | | | Unsigned32 | M | Indicates the identity of a certain request in a session. As Session-Id is global unique, different requests and answers can be matched through Session-Id and CC-Request-Number. |
|  | Granted-Service-Unit | | | | Om | **Root Element**  The presence of this field means the granted quotas.  **Note :** It must be mandatory when “CC-Request-Type” is “1” and “2” |
|  |  | CC-Time | | Unsigned32 | Om | It must be mandatory when “CC-Request-Type” is “1” and “2” |
|  | Service-Information | | | | M | **Root Element**  Grouped. Allows the transmission of additional MMS service-specific information. |
|  |  | IN-Information | | | O | **Root Element** |
|  |  |  | Service-Free-Indicator |  | O |  |
|  |  |  | ChargePartyPayType |  | O |  |

**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": "3",

"Granted-Service-Unit": {

"CC-Time": "361"

},

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

"Result-Code": "2001",

"Service-Information": {

"IN-Information": {

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

"ChargePartyPayType": "1"

}

}

}

}

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 | | | Octet  String | M | Identifies a session ID. A session ID uniquely identifies a DCC session process. |
|  | Result-Code | | | Unsigned32 | M | Indicates a specified request is successfully fulfilled or fails. If the host setting the Result-Code AVP is not the host that is designated in the Origin-Host AVP, a failed Result-Code AVP must contain the Error-Reporting-Host AVP. The Diameter protocol provides the following types of error codes. The error type is judged based on the first digit of an error code.  1xxx: informational  2xxx: success  3xxx: protocol errors  4xxx: transient failure  5xxx: permanent failure An error type that cannot be identified, that is, the first digit of an error type is not in the preceding definition is regarded as a permanent failure.  **Example :** 2001 |
|  | Origin-Host | | | DiameterIdentity | O | Contains the identification of the source point of the operation and the realm of the operation originator. Relay agents must not modify this AVP. The value of the Origin-Host AVP is guaranteed to be unique within a single host. |
|  | Origin-Realm | | | DiameterIdentity | O | Indicates the home realm of the device that initiates DCC messages. |
|  | Auth-Application-Id | | | Unsigned32 | M | Indicates the unique ID that is used for re-authentication or re-authorization. The Auth-Application-Id AVP contains the following values:  0: Indicates Diameter common messages  1: Indicates NASREQ  2: Indicates Mobile-IP  The IP address used for the mobile phone to connect to the internet.  3: Indicates Diameter base accounting  0xffffffff: Indicates the relay  4: Indicates the DCCA |
|  | CC-Request-Type | | | Enumerated | M | Indicates the reason for sending a CCR message. This AVP must be contained in the CCR message. The CC-Request-Type AVP contains the following values:  1: INITIAL\_REQUEST Indicates that the initial CCR is used to initiate a credit control session. The session contains the credit control information about initiating a session.  2: UPDATE\_REQUEST Indicates that the update CCR contains the credit control information about the sessions of which credit control is set up. When the re-authorization needs to be initiated, an update CCR needs to be initiated.  3: TERMINATION\_REQUEST Indicates to interrupt a credit control session by terminating a credit request.  4: EVENT\_REQUEST Indicates to use EVENT\_REQUEST when the session status need not be maintained by the DCC server. This request contains all the information about the concerned service. In addition, this request is the unique request of this service. When CC-Request-Type of a CCR message is set to EVENT\_REQUEST, Requested-Action must be contained in the CCR message. |
|  | CC-Request-Number | | | Unsigned32 | M | Indicates the identity of a certain request in a session. As Session-Id is global unique, different requests and answers can be matched through Session-Id and CC-Request-Number. |
|  | Granted-Service-Unit | | | | Om | **Root Element**  The presence of this field means the granted quotas.  **Note :** It must be mandatory when “CC-Request-Type” is “1” and “2” |
|  |  | CC-Time | | Unsigned32 | Om | It must be mandatory when “CC-Request-Type” is “1” and “2” |
|  | Service-Information | | | | M | **Root Element**  Grouped. Allows the transmission of additional MMS service-specific information. |
|  |  | IN-Information | | | O | **Root Element** |
|  |  |  | Service-Free-Indicator |  | O |  |
|  |  |  | ChargePartyPayType |  | O |  |

**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": "3",

"Granted-Service-Unit": {

"CC-Time": "361"

},

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

"Result-Code": "2001",

"Service-Information": {

"IN-Information": {

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

"ChargePartyPayType": "1"

}

}

}

}

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

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

### **4.2.8 Condition of Quota’s Tracking & Quota Calculation**

#### [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 :**  **Granted Quota** = **Limit Quota**

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

**Condition 2 :** **Granted 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**

\*\* **Granted 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.

### **4.2.9 Modifying Message to Provide Port and IP**

This is the logic of building the message to provide IP&Port which be prepared for the streaming . So, there are 2 conditions to modify the message.

**Condition 1 :** Replacing with the new ones

In case the session is the new session then the application will modify the message by replacing the new IP (Current IP) and Port into the old ones in parameter named **‘SDP’** .

**Condition 2 :** Replacing with the old ones

In case the session is already existed then the application will modify the message by putting the old IP and Port as the old reserved ones in parameter named **‘SDP’** .

### **4.2.10 Reservation and Cancelation Resource**

#### [SBC-01-00x-1] Reservation the Resource for Streaming

The process of preparing the resource as defined by IP & Port.There are 2 different type of streaming consist of

1. Between **User Agent** and **SBC**
2. Between **SBC (MO)** and **SBC (MT)**

#### [SBC-01-00x-1] Cancelation the Reserved Resource

Whenever the streaming has been down then all of the reserved Port in each IP will be cleared for being available to the other stream.

## 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