**3GPP TSG-SA WG4 Meeting #127S4-240042**

**Sophia-Antipolis, France, 29 January - 2 February 2024**

**Source: NTT**

**Title: [FS\_eiRTCW] Pseudo-CR on Key Issue #8 and Solution #8:** **Protocol-level interworking between RTC network and IMS network**

**Spec: 3GPP TR 26.930**

**Agenda item: 10.9**

**Document for: Agreement**

**1. Introduction**

This pCR proposes to update the description of Key Issue #8 and Solution #8: Protocol-level interworking between RTC network and IMS network.

**2. Reason for Change**

Key issue #8 and Solution #8 needs to be incorporated in TR 26.930 based on the agreement in FS\_eiRTCW PD.

**3. Proposal**

It is proposed to agree on the following changes to 3GPP TR 26.930.

Following modification is introduced to incorporate the description of FS\_eiRTCW PD in TR 26.930.

- Removal of the following editor's note based on the feedbacks from SA2/CT3.

Editor’s note: This Key Issue needs feedback from SA2, before implementation of this Key Issue into TR 26.930.

- Updating the signalling interworking procedure based on the update of RESPECT protocol.

- Move the example call-flows and messages to annex C of this document.

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

## 5.9 Key Issue #8: Protocol-level interworking between RTC network and IMS network

This key issue addresses the protocol-level interworking between RTC network and IMS network at the boundary of RTC network, based on the functional requirements and the enhanced RTC architecture described in Solution #4.

This key issue includes:

- C-Plane signalling interworking and

- U-Plane media related interworking.

\* \* \* Next Change \* \* \* \*

## 6.9 Solution #8: Protocol-level interworking between RTC network and IMS network

### 6.9.1 Solution description

This solution addresses Key Issue #8.

This solution identifies the protocol-level interworking between RTC network and IMS network for basic & legacy audio call/conference, based on the functional requirements and architecture described in Solution #4.

- C-Plane signalling interworking

- U-Plane media related interworking

This solution premises the followings:

1) RESPECT endpoint (UE) and IMS UE has its own MSISDN. Both RTC network and IMS network can identify the destination network based on MSISDN.

2) RTC network and IMS network are within the trust domain.

3) For C-plane signalling interworking, the IWF:

- supports the interworking between RESPECT described in this document and IMS SIP/SDP defined in 3GPP TS 29.165 [xx], as referred in 3GPP TS 29.162 [xx],

- terminates RTC or IMS specific capabilities/features and does not interwork to IMS or RTC network,

- is able to manipulate SDP in order to compose multiple media streams from RTC network to a single media stream for IMS media session if an SFU is applied for the media session on the RTC network side and

- does not interwork C-Plane signalling message for session keep-alive.

NOTE 1: Interface specifications on the non-roaming II-NNI between home IMS networks defined in 3GPP TS 29.165 [xx] are applied.

4) For U-plane media related interworking, the TGF:

- interworks audio media between RTC network and IMS network,

- adopts 3GPP TS 26.114 [xx] as U-Plane media specification for the interface between RTC network and IMS network, as specified in TS 29.165 [xx] and

- is able to compose multiple media streams from RTC network to a single media stream for IMS media session based on the instruction from IWF.

NOTE 2: Interworking of immersive media is FFS in this solution, as described in Solution #4.

5) The IMS network does not support optional capabilities/features. This aims to interwork with any IMS network.

6) The security aspects on the interface between RTC network and IMS network are compliant with 3GPP TS 29.162 [xx].

### 6.9.2 C-Plane signalling interworking

#### 6.9.2.1 General

This clause describes the followings as the RESPECT-IMS SIP/SDP interworking specification at the IWF:

- Protocol stack

- Interworking between RESPECT and IMS SIP/SDP signalling messages

#### 6.9.2.2 Protocol stack

Figure 6.9.2.2-1 shows the protocol stack for interworking between RESPECT and IMS SIP/SDP.

The IWF performs the signalling protocol interworking (RESPECT - IMS SIP/SDP) and the underlying protocol interworking (Secure WebSocket - UDP/TCP) at the boundary between RTC and IMS networks.



Figure 6.9.2.2-1: Protocol interworking between RESPECT and IMS SIP

#### 6.9.2.3 Interworking procedures at the IWF

##### 6.9.2.3.1 General

This clause describes the interworking procedures at the IWF.

For the interface between RTC network and IMS network, the non-roaming II-NNI between home IMS networks defined in 3GPP TS 29.165 [xx] are applied. Therefore, SIP REGISTER request/response will never be sent over the interface.

For the purposes of this document, the interworking procedures described here basically focus on the information element shared between RTC and IMS network (e.g., identifier of destination, originating user ID). Also, the procedures for abnormal cases are not considered.

The call flows and messages example are described in annex C of this document to grasp the whole picture of the interworking.

##### 6.9.2.3.2 Media session setup from RTC to IMS

###### 6.9.2.3.2.1 General

This clause describes the interworking procedures at the IWF for media session setup initiated from RTC network. The procedures in this clause are needed for media session establishment.

In this case, the IWF needs to manage both the media session state and participant state and inform the WSF of these status for the media session according to RESPECT protocol as a terminating RESPECT endpoint (AS), since the succeeding entity (i.e., IBCF) does not aware these RESPECT specific state.

###### 6.9.2.3.2.2 Receiving msetup request containing a preOffer

The simple call flow addressed in this procedure is shown in Figure 6.9.2.3.2.2-1.



Figure 6.9.2.3.2.2-1: Receiving msetup request containing a preOffer

When receiving an msetup request containing "preOffer" type of the "mediaInfo" key from the WSF, then the IWF handles the "preOffer" as an initial SDP offer and then retrieves the IP address, port number for SIP, SIP domain name of the IBCF corresponding to an MSISDN set in "tn" field of the "dId" key, based on the pre-configured information in the IWF or ENUM transactions.

Upon successful retrieval, the IWF needs to:

1) store the received "preOffer" and construct an initial SDP offer being sent to the IBCF based on the local policy;

2) instruct the IGF to reserve U-Plane resource for the media session based on the received "preOffer" and the constructed initial SDP offer;

3) send an msetup response to the WSF containing:

a) the "mediaInfo" key containing:

- "type" field set to "info";

- the "participantDesc" sub-key containing;

\* the object in which "actType" filed set to "add", "participantId" field set to anonymized RTC user ID of an originating RESPECT endpoint locally generated at the IWF and "userState" field set to "joiningIn";

b) the "mediaSessionState" key set to "accepted" value;

c) the other keys required for the msetup response as RESPECT endpoint;

4) send an SIP initial INVITE request to the IBCF containing:

a) Request-URI set to the SIP URI containing global number digits in "tn" field of the "dId" key in the received msetup request;

b) To header field containing the same SIP URI with Request-URI;

c) From header field set to the SIP URI containing:

- if "tn" field is present in the "user" sub-key of the "oId" key of the received msetup request, then the global number digits in this "tn" field of "user" sub-key;

- if "tn" field is not present in the "user" sub-key of the "oId" key but in the "network" sub-key of the "oId" key, then the global number digits in this "tn" field of "network" sub-key;

- otherwise, the anonymous URI;

d) P-Asserted-Identity header field set to the tel URI containing:

- the global number digits in "tn" field of the "network" sub-key of the "oId" key, if present in the received msetup request;

- otherwise, the unavailable URI;

e) Privacy header field set to:

- "id", if both "tn" field of the "network" sub-key and the "privacy" sub-key set to "id" of the "oId" key are present in the received msetup request;

- "none", if "tn" field of the "network" sub-key of the "oId" key is present but no "privacy" subkey is present in the received msetup request;

f) Identity header field constructed from the received "identity", "info", "alg" and "ppt" fields, if "passport" sub-key of the "oId" key is present;

g) Attestation-Info header field set to "A" according to RESPECT protocol;

h) Origination-Id header field set to the UUID locally generated at the IWF;

i) the other SIP header field required for the SIP initial INVITE request, which is locally generated as a SIP UA regardless of the received msetup request; and

j) SDP set to the initial SDP offer constructed at step 1).

When receiving SIP 100 (Trying) response to the SIP initial INVITE request, the IWF recognizes the SIP initial INVITE was successfully received at the IBCF.

###### 6.9.2.3.2.3 Receiving SIP 18x response containing an initial SDP answer

The simple call flow addressed in this procedure is shown in Figure 6.9.2.3.2.3-1.



Figure 6.9.2.3.2.3-1: Receiving SIP 18x response containing an initial SDP answer

When receiving a SIP 180 (Ringing) response or a SIP 183 (Session Progress) response containing an initial SDP answer from the IBCF, then the IWF needs to:

1) construct "sdp" sub-key as an initial SDP answer being sent to the WSF based on the stored "preOffer";

2) instruct the IGF to allocate U-Plane resource for the media session based on the received initial SDP answer and the constructed initial SDP answer;

3) send an mupdate request to the WSF containing:

a) the "mediaInfo" key containing:

- "type" field set to "answer";

- the "sdp" sub-key constructed at step 1);

- if media description(s) of audio and/or video are contained in the constructed "sdp" sub-key, the object(s) per media description(s) in the "metadata" sub-key of the "mc" sub-key containing:

\* "index number" field set to the number corresponding to "preOffer";

\* "actType" field set to either "aly" or "dcl";

\* if "actType" field is set to "aly", the "state" sub-key including both "connected" and "routed" field with appropriate value depending on the answer from IGF at step 2);

- if a media description of data channel is contained in the constructed "sdp" sub-key, the "dc" sub-key including "sdp index" field set to the number corresponding to "preOffer" and the object(s) per SCTP stream in the "metadata" sub-key containing:

\* "id" field set to the SCTP stream number managed in the TGF;

\* "actType" field set to either "aly" or "dcl";

\* if "actType" field is set to "aly", the "state" sub-key including both "connected" and "routed" field with appropriate value depending on the answer from IGF at step 2);

- the "participantDesc" sub-key containing:

\* the object in which "actType" filed set to "add", "participantId" field set to anonymized RTC user ID of a terminating IMS UE locally generated at the IWF and "userState" field set to "alerting", if the object for the anonymized RTC user ID was not previously sent to the WSF;

\* the object in which "actType" filed set to "mod", "participantId" field set to anonymized RTC user ID of the originating RESPECT endpoint and "userState" field set to "joined";

b) the "mediaSessionState" key set to:

- if all the "state" sub-key in "mc" and "dc" sub-key is "true" for "routed" field, then "routed" value;

- if all the "state" sub-key in "mc" and "dc" sub-key is "true" for "connected" field, then "connected" value;

- otherwise, "connecting" value;

c) the other keys required for the msetup response as RESPECT endpoint.

When receiving a successful mupdate response from the WSF, then the IWF needs to send a SIP PRACK request to the IBCF, if a Require header field set to "100rel" was present in the received 18x response.

When receiving a successful response to the SIP PRACK request, then the IWF recognizes the SIP PRACK request was successfully received at the terminating side.

###### 6.9.2.3.2.4 Receiving SIP 18x response not containing SDP

The simple call flow addressed in this procedure is shown in Figure 6.9.2.3.2.4-1.



Figure 6.9.2.3.2.4-1: Receiving SIP 18x response not containing SDP

When receiving a SIP 180 (Ringing) response or a SIP 183 (Session Progress) response not containing SDP from the IBCF, then the IWF needs to:

1) send an mupdate request to the WSF containing:

a) the "mediaInfo" key containing:

- "type" field set to "info";

- the "participantDesc" sub-key containing:

\* the object in which "actType" filed set to "add", "participantId" field set to anonymized RTC user ID of a terminating IMS UE locally generated at the IWF and "userState" field set to "alerting";

b) the other keys required for the msetup response as RESPECT endpoint.

When receiving a successful mupdate response from the WSF, then the IWF needs to send a SIP PRACK request to the IBCF, if a Require header field set to "100rel" was present in the received 18x response.

When receiving a successful response to the SIP PRACK request, then the IWF recognizes the SIP PRACK request was successfully received at the terminating side.

###### 6.9.2.3.2.5 Receiving SIP 200 (OK) response containing an initial SDP answer to the initial INVITE request

The simple call flow addressed in this procedure is shown in Figure 6.9.2.3.2.5-1.



Figure 6.9.2.3.2.5-1: Receiving SIP 200 (OK) response containing an initial SDP answer to the initial INVITE request

When receiving a SIP 200 (OK) response containing an initial SDP answer from the IBCF, then the IWF needs to:

1) construct "sdp" sub-key as an initial SDP answer being sent to the WSF based on the stored "preOffer";

2) instruct the IGF to allocate U-Plane resource for the media session based on the received initial SDP answer and the constructed initial SDP answer;

3) send an mupdate request to the WSF containing:

a) the "mediaInfo" key containing:

- "type" field set to "answer";

- the "sdp" sub-key constructed at step 1);

- if media description(s) of audio and/or video are contained in the constructed "sdp" sub-key, the object(s) per media description(s) in the "metadata" sub-key of the "mc" sub-key containing:

\* "index number" field set to the number corresponding to "preOffer";

\* "actType" field set to either "aly" or "dcl";

\* if "actType" field is set to "aly", the "state" sub-key including both "connected" and "routed" field with appropriate value depending on the answer from IGF at step 2);

- if a media description of data channel is contained in the constructed "sdp" sub-key, the "dc" sub-key including "sdp index" field set to the number corresponding to "preOffer" and the object(s) per SCTP stream in the "metadata" sub-key containing:

\* "id" field set to the SCTP stream number managed in the TGF;

\* "actType" field set to either "aly" or "dcl";

\* if "actType" field is set to "aly", the "state" sub-key including both "connected" and "routed" field with appropriate value depending on the answer from IGF at step 2);

- the "participantDesc" sub-key containing:

\* the object in which "actType" filed set to "mod", "participantId" field set to anonymized RTC user ID of a terminating IMS UE and "userState" field set to "joined", if the object for the anonymized RTC user ID was previously sent to the WSF;

\* the object in which "actType" filed set to "add", "participantId" field set to anonymized RTC user ID of a terminating IMS UE locally generated at the IWF and "userState" field set to “joined”, if the object for the anonymized RTC user ID was not previously sent to the WSF;

\* the object in which "actType" filed set to "mod", "participantId" field set to anonymized RTC user ID of the originating RESPECT endpoint and "userState" field set to "joined";

b) the "mediaSessionState" key set to:

- if all the "state" sub-key in "mc" and "dc" sub-key is "true" for "routed" field, then "routed" value;

- if all the "state" sub-key in "mc" and "dc" sub-key is "true" for "connected" field, then "connected" value;

- otherwise, "connecting" value;

c) the other keys required for the msetup response as RESPECT endpoint.

When receiving a successful mupdate response from the WSF, then the IWF needs to send a SIP ACK request to the IBCF.

###### 6.9.2.3.2.6 Receiving SIP 200 (OK) response not containing SDP to the initial INVITE request

The simple call flow addressed in this procedure is shown in Figure 6.9.2.3.2.6-1.



Figure 6.9.2.3.2.6-1: Receiving SIP 200 (OK) response not containing SDP to the initial INVITE request

When receiving a SIP 200 (OK) response not containing SDP from the IBCF, then if the IWF already received an initial SDP answer in SIP 18x response the IWF needs to:

1) send an mupdate request to the WSF containing:

a) the "mediaInfo" key containing:

- "type" field set to "info";

- the "participantDesc" sub-key containing:

\* the object in which "actType" filed set to "mod", "participantId" field set to anonymized RTC user ID of a terminating IMS UE and "userState" field set to "joined";

b) the other keys required for the msetup response as RESPECT endpoint.

When receiving a successful mupdate response from the WSF, then the IWF needs to send a SIP ACK request to the IBCF.

##### 6.9.2.3.3 Media session setup from IMS to RTC

###### 6.9.2.3.3.1 General

This clause describes the interworking procedures at the IWF for media session setup initiated from IMS network. The procedures in this clause are needed for media session establishment.

In this case, the IWF does not need to manage both the media session state and participant state and will be informed these status from the WSF, since the succeeding entity (i.e., WSF) does aware these RESPECT specific state.

###### 6.9.2.3.3.2 Receiving SIP initial INVITE request containing an initial SDP offer

The simple call flow addressed in this procedure is shown in Figure 6.9.2.3.3.2-1.



Figure 6.9.2.3.3.2-1: Receiving SIP initial INVITE request containing an initial SDP offer

When receiving a SIP initial INVITE request containing an initial SDP offer from the IBCF, then the IWF handles the initial SDP offer as a "preOffer" and then retrieves both the identifier of the destination WSF and RTC ID (RTC user ID or RTC resource ID) corresponding to an MSISDN set in the Request-URI by accessing the internal ASWF.

Upon successful retrieval, the IWF needs to:

1) creates control session for C-Plane signalling if it does not exist;

2) store the received initial SDP offer and construct "preOffer" based on the local policy;

3) instruct the IGF to reserve U-Plane resource for the media session based on the received initial SDP offer and the constructed "preOffer";

4) send a SIP 100 (Trying) response to the IBCF;

5) send an msetup request to the WSF containing:

a) "uri" field set to either the RTC user ID or the RTC resource ID retrieved in the "dId" key;

b) "tn" field set to an MSISDN in the "user" sub-key of the "oId" key, if global number digits are present in the received From header field;

c) "displayName" field set to a display-name in the "user" sub-key of the "oId" key, if display-name is present in the received From header field;

d) "tn" field set to an MSISDN in the "network" sub-key of the “oId” key, if global number digits are present in the received P-Asserted-Identity header field;

e) "displayName" field set to a display-name in the "network" sub-key of the "oId" key, if display-name is present in the received P-Asserted-Identify header field;

f) "privacy" sub-key set to "id" if the Privacy header field set to "id" is received;

g) "identity", "info", "alg" and "ppt" fields set to the corresponding value of the Identity header field, if received;

h) the "mediaInfo" key containing:

- "type" field set to "preOffer";

- the "sdp" sub-key constructed at step 2);

- if media description(s) of audio and/or video are contained in the constructed "sdp" sub-key, the object(s) per media description(s) in the "metadata" sub-key of the "mc" sub-key containing:

\* "index number" field set to the number corresponding to "preOffer";

\* "actType" field set to either "add";

- if a media description of data channel is contained in the constructed "sdp" sub-key, the "dc" sub-key including "sdp index" field set to the number corresponding to "preOffer" and the object(s) per SCTP stream in the "metadata" sub-key containing:

\* "id" field set to the SCTP stream number managed in the TGF;

\* "actType" field set to "add";

i) the other keys required for the msetup request as RESPECT endpoint.

###### 6.9.2.3.3.3 Receiving msetup response not containing SDP with media session state change

The simple call flow addressed in this procedure is shown in Figure 6.9.2.3.3.3-1.



Figure 6.9.2.3.3.3-1: Receiving msetup response not containing SDP with media session state change

When receiving a msetup response containing the "mediaSessionState" key set to "accepted", then the IWF needs to send a SIP 183 (Session Progress) response not containing SDP to the initial INVITE request.

When receiving a SIP PRACK request from the IBCF, then the IWF sends a SIP response to the PRACK request.

###### 6.9.2.3.3.4 Receiving mupdate request not containing SDP without media session state change

The simple call flow addressed in this procedure is shown in Figure 6.9.2.3.3.4-1.



Figure 6.9.2.3.3.4-1: Receiving mupdate request not containing SDP without media session state change

When receiving a msetup response from the WSF, if the response;

- does not contain the "mediaSessionState" key; and

- does not contain the "mediaInfo" key or contain the "info" type of "mediaInfo" key;

then the IWF needs to send a mupdate response to the WSF as RESPECT endpoint.

###### 6.9.2.3.3.5 Receiving mupdate request containing an "answer" with media session state change

The simple call flow addressed in this procedure is shown in Figure 6.9.2.3.3.5-1.



Figure 6.9.2.3.3.5-1: Receiving mupdate request containing an "answer" with media session state change

When receiving an mupdate request, if the request;

- contains the "mediaSessionState" key set to either "routed" or "connected"; and

- contains the "answer" type of "mediaInfo" key;

then the IWF needs to:

1) store the received "answer" type of "mediaInfo" key and construct an initial SDP answer based on the stored initial SDP offer;

2) instruct the IGF to allocate U-Plane resource for the media session based on the received "answer" type of "mediaInfo" key and the constructed initial SDP answer; and

3) send a SIP 200 (OK) response to the initial INVITE request containing the constructed initial SDP answer.

When receiving SIP ACK request from the IBCF, the IWF needs to send a msetup response to the WSF containing the keys required for the mupdate request as RESPECT endpoint.

###### 6.9.2.3.3.6 Receiving mupdate request containing an "offer" without media session state change

The simple call flow addressed in this procedure is shown in Figure 6.9.2.3.3.6-1.



Figure 6.9.2.3.3.6-1: Receiving mupdate request containing an "offer" without media session state change

When receiving an mupdate request, if the request;

- does not contain the "mediaSessionState" key; and

- contains the "offer" type of "mediaInfo" key;

then the IWF needs to:

1) store the received "offer" type of "mediaInfo" key;

2) construct an "answer" type of the "sdp" sub-key of the "mediaInfo" key based on the received "mediaInfo" key;

3) construct an initial SDP answer based on the stored SDP offer and store the constructed SDP answer;

4) instruct the IGF to allocate U-Plane resource for the media session based on the received "offer" type of "mediaInfo" key, the constructed "answer" type of "mediaInfo" key and the constructed initial SDP answer; and

5) send an mupdate response containing:

a) the "mediaInfo" key containing:

- "type" field set to "answer";

- the "sdp" sub-key constructed at step 2);

- if media description(s) of audio and/or video are contained in the constructed "sdp" sub-key, the object(s) per media description(s) in the "metadata" sub-key of the "mc" sub-key containing:

\* "index number" field set to the number corresponding to "offer";

\* "actType" field set to either "aly" or "dcl";

- if a media description of data channel is contained in the constructed "sdp" sub-key, the "dc" sub-key including "sdp index" field set to the number corresponding to "offer" and the object(s) per SCTP stream in the "metadata" sub-key containing:

\* "id" field set to the SCTP stream number managed in the TGF;

\* "actType" field set to either "aly" or "dcl";

b) the other keys required for the msetup response as RESPECT endpoint.

the constructed "answer" type of "mediaInfo" key.

###### 6.9.2.3.3.7 Receiving mupdate request not containing SDP with media session state change

The simple call flow addressed in this procedure is shown in Figure 6.9.2.3.3.7-1.



Figure 6.9.2.3.3.7-1: Receiving mupdate request not containing SDP with media session state change

When receiving an mupdate request, if the request;

- contains the "mediaSessionState" key; and

- does not contain the "mediaInfo" key or contain the "info" type of "mediaInfo" key;

then the IWF needs to:

1. send an mupdate response containing the keys required for the mupdate response as RESPECT endpoint; and
2. send a SIP 200 (OK) response to the initial INVITE request containing the stored initial SDP answer, if the IWF does not previously send the response to the IBCF.

When receiving SIP ACK request from the IBCF, the IWF recognizes the SIP 200 (OK) response to the initial INVITE was successfully processed at IMS side.

##### 6.9.2.3.4 Media session set up callcellation from RTC to IMS

###### 6.9.2.3.4.1 General

This clause describes the interworking procedures at the IWF for media session setup cancellation from RTC network.

###### 6.9.2.3.4.2 Receiving mdisc request for establishing media session

The simple call flow addressed in this procedure clause is shown in Figure 6.9.2.3.4.2-1.



Figure 6.9.2.3.4.2-1: Receiving mdisc request for establishing media session

When receiving an mdisc request for a media session which has not been reached the media session status "connected" or "routed", then the IWF needs to:

1) instruct the IGF to cancel U-Plane resource for the media session;

2) send an mdisc response to the WSF; and

3) send a SIP CANCEL request for the INVITE transaction to the IBCF.

When receiving a SIP 200 (OK) response to the SIP CANCEL request, then IWF needs to send a SIP 487 (Request Terminated) response as a final SIP response to the IBCF. Then, the IWF will receive the ACK request from the IBCF.

##### 6.9.2.3.5 Media session set up callcellation from IMS to RTC

###### 6.9.2.3.5.1 General

This clause describes the interworking procedures at the IWF for media session setup cancellation from IMS network.

###### 6.9.2.3.5.2 Receiving SIP CANCEL request for establishing media session

The simple call flow addressed in this procedure is shown in Figure 6.9.2.3.5.2-1.



Figure 6.9.2.3.5.2-1: Receiving SIP CANCEL request for establishing media session

When receiving a SIP CANCEL request for a media session, then the IWF needs to:

1) instruct the IGF to cancel U-Plane resource for the media session;

2) send a SIP 200 (OK) response to the SIP CANCEL request to the IBCF; and

3) send an mdisc request to the IWF.

When receiving a SIP 487 (Request Terminated) response as a final SIP response from the IBCF, then IWF needs to send ACK request to the IBCF.

##### 6.9.2.3.6 Media session update from RTC to IMS

The interworking procedures at the IWF essential for the media session update in the aspect of RTC-IMS interworking are not identified for the time being.

##### 6.9.2.3.7 Media session update from IMS to IMS

The interworking procedures at the IWF essential for the media session update in the aspect of RTC-IMS interworking are not identified for the time being.

##### 6.9.2.3.8 Media session release from RTC to IMS

###### 6.9.2.3.8.1 General

This clause describes the interworking procedures at the IWF for media session release of established media session from RTC network.

###### 6.9.2.3.8.2 Receiving mdisc request for established media session

The simple call flow addressed in this procedure is shown in Figure 6.9.2.3.8.2-1.



Figure 6.9.2.3.8.2-1: Receiving mdisc request for established media session

When receiving an mdisc request for a media session in either "connected" or "routed" media session state from the WSF, the IWF needs to:

1) instruct the IGF to deallocate U-Plane resource for the media session;

2) send an mdisc response to the WSF containing the keys required for the response as RESPECT endpoint; and

3) send a SIP BYE request to the IBCF.

When receiving a successful response to the SIP BYE request, then the IWF recognizes the SIP BYE request was successfully processed on the IMS side.

##### 6.9.2.3.9 Media session release from IMS to RTC

###### 6.9.2.3.9.1 General

This clause describes the interworking procedures at the IWF for media session release of established media session from IMS network.

###### 6.9.2.3.9.2 Receiving SIP BYE request for established media session

The simple call flow addressed in this procedure is shown in Figure 6.9.2.3.9.2-1.



Figure 6.9.2.3.9.2-1: Receiving SIP BYE request for established media session

When receiving a SIP BYE request for a media session in either "connected" or "routed" media session state from the IBCF, the IWF needs to:

1) instruct the IGF to deallocate U-Plane resource for the media session; and

2) send an mdisc request to the WSF.

When receiving a successful response to the mdisc request, then the IWF sends a SIP 200 (OK) response to the BYE request towards the IBCF.

### 6.9.3 U-Plane media related interworking

#### 6.9.3.1 General

This clause describes the followings as U-Plane media related interworking specification at the TGF:

- Protocol stack

- RTC media mixising for IMS

#### 6.9.3.2 Protocol stack

Figure 6.9.3.2-1 shows the protocol stack for U-Plane media related interworking between RTC and IMS networks.

The IGF provides the following functionalities for U-Plane:

- U-Plane Protocol over the UDP interworking

- Coded transcoding

- NAPT (Network Address Port Translation), IPv4 - IPv6 conversion

- Termination of capabilities which is not supported by the other side. (e.g., multiplexing RTP data and control packets on a single port as specified in IETF RFC 5761 [xx] and IETF RFC 8035 [xx] may not be supported in the IMS side.)



Figure 6.9.3.2-1: Protocol interworking between RTC media and IMS media



Figure 6.9.3.2-2: Protocol interworking between RTC data channel and IMS data channel

TGF is not expected to transcode WebRTC data channel related protocols, since DCMTSI client in IMS network supports IMS data channel which complies to WebRTC data channel as described in 3GPP TS 26.114 [xx]. If the called MTSI client is not DCMTSI client, then the data channel related SDP offer is ignored at the MTSI client.

NOTE: Data channel related SDP offer might be removed or transcoded at the IWF or IBCF, based on the operator policy and the inter-operator agreements.

#### 6.9.3.3 RTC media mixising for IMS

When SFU is used for the conference media session in the RTC network, a media stream will be generated from each RTC endpoint (UE) and sent all the media streams to each RTC endpoint (UE). Therefore, the RTC endpoint (UE) needs to receive media streams from all the participants in the conference and perform SDP offer/answer every time a new participant joins the conference. However, an IMS or IMS UE not expecting frequent media changes or huge media streams may not be able to handle the above SDP offer/answer correctly.

Therefore, the IGF needs to perform compose multiple media streams from RTC network to a single media stream for IMS media session based on the instruction from the IWF as described in clause 6.9.2.

### 6.9.5 Solution evaluation

This solution proposes the protocol-level interworking between RTC network and IMS network, based on the proposed functional requirements and architecture in Solution #4. The proposed solution realizes the interconnecttion of media session between RTC network and IMS network using existing IMS specification, and it is confirmed that the solution is feasible for nomal cases. Therefore, it is proposed to use this specification as a basis of stage 3 normative work.

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