**3GPP TSG-CT WG1 Meeting #128-eC1-210582**

**Electronic meeting, 25 February – 5 March 2021**

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| *CR-Form-v12.1* |
| **CHANGE REQUEST** |
|  |
|  | **24.183** | **CR** | **0075** | **rev** | **-** | **Current version:** | **16.6.0** |  |
|  |
| *For* [***HE******LP***](http://www.3gpp.org/3G_Specs/CRs.htm#_blank)*on using this form: comprehensive instructions can be found at* [*http://www.3gpp.org/Change-Requests*](http://www.3gpp.org/Change-Requests)*.* |
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| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| ***Proposed change affects:*** | UICC apps |  | ME | **X** | Radio Access Network |  | Core Network | **X** |

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| ***Title:***  | Introduction of new media feature tag "g.3gpp.crs" in Contact header field for indicating terminating UE support of the capabilities for CRS |
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| ***Source to WG:*** | Qualcomm Incorporated, China Mobile, China Telecom |
| ***Source to TSG:*** | C1 |
|  |  |
| ***Work item code:*** | TEI17 |  | ***Date:*** | 2021-02-11 |
|  |  |  |  |  |
| ***Category:*** | **F** |  | ***Release:*** | Rel-17 |
|  | *Use one of the following categories:****F*** *(correction)****A*** *(mirror corresponding to a change in an earlier release)****B*** *(addition of feature),* ***C*** *(functional modification of feature)****D*** *(editorial modification)*Detailed explanations of the above categories canbe found in 3GPP [TR 21.900](http://www.3gpp.org/ftp/Specs/html-info/21900.htm). | *Use one of the following releases:Rel-8 (Release 8)Rel-9 (Release 9)Rel-10 (Release 10)Rel-11 (Release 11)...Rel-15 (Release 15)Rel-16 (Release 16)Rel-17 (Release 17)Rel-18 (Release 18)* |
|  |  |
| ***Reason for change:*** | The CRS AS has no way to know whether the terminating UE supports the capability to play CRS media (i.e., play the received early media before terminating user answer the call) or not.If the terminating UE has subscribed to the CRS service, the CRS AS shall include an Alert-info header field with value "urn:alert:service:crs" URN (Uniform Resource Name) without a URL for CRS media in the initial INVITE message for both gateway model and early session model for CRS, the CRS AS shall include an Alert-info header field with value "urn:alert:service:crs" URN with a URL for CRS media in the initial INVITE message for the download and play model for CRS.On reception of 18x response, the CRS AS may send an UPDATE with SDP offer with a=content media-level attribute with a "g.3gpp.crs" value. A terminating UE which does not support gateway model will respond to the SDP answer as not supported and this signalling of SDP offer and answer can be avoided.That has the similar requirements to the early session model for CRS. Further, for the download and play model for CRS, on reception of 18x response, the CRS AS may want to allow the URL of CRS media to be accessed or not.To resolve this, it is propose to introduce a new "g.3gpp.crs" media feature tag. |
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| ***Summary of change:*** | A terminating UE shall indicate support of CRS in the reliable 18x reponse by including a new "g.3gpp.crs" media feature tag with values "gw" "es" "dnp" in the Contact header field. The network shall apply CRS media to the terminating UE based on the "g.3gpp.crs" media feature tag in the Contact header field. |
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| ***Consequences if not approved:*** | For both the gateway model and the early session model, additional signaling of SDP offer and answer to apply CRS media. Or for the download and play model, it is impossible that the CRS AS allow the URL of CRS media to be accessed or not. |
|  |  |
| ***Clauses affected:*** | 2, 4.5.5.2.2.1, 4.5.5.2.3.1, 4.5.5.2.5.1, 4.5.5.3.2.1, 4.5.5.3.3, 4.5.5.3.6, Annex X (New), X.1 (New), X.2 (New) |
|  |  |
|  | **Y** | **N** |  |  |
| ***Other specs*** |  | **X** |  Other core specifications  | TS/TR ... CR ...  |
| ***affected:*** |  | **X** |  Test specifications | TS/TR ... CR ...  |
| ***(show related CRs)*** |  | **X** |  O&M Specifications | TS/TR ... CR ...  |
|  |  |
| ***Other comments:*** |  |
|  |  |
| ***This CR's revision history:*** |  |

\*\*\* 1st change \*\*\*

# 2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non‑specific.

- For a specific reference, subsequent revisions do not apply.

- For a non-specific reference, the latest version applies. In the case of a reference to a 3GPP document (including a GSM document), a non-specific reference implicitly refers to the latest version of that document *in the same Release as the present document*.

[1] 3GPP TR 21.905: "Vocabulary for 3GPP Specifications".

[2] 3GPP TS 22.173: "IP Multimedia Core Network Subsystem (IMS) Multimedia Telephony Service and supplementary services; Stage 1".

[3] 3GPP TS 24.229: "IP multimedia call control protocol based on Session Initiation Protocol (SIP) and Session Description Protocol (SDP); Stage 3".

[4] 3GPP TS 24.607: "Originating Identification Presentation (OIP) and Originating Identification Restriction (OIR) using IP Multimedia (IM) Core Network (CN) subsystem; Protocol specification".

[5] IETF RFC 3323: "A Privacy Mechanism for the Session Initiation Protocol (SIP)".

[6] IETF RFC 3325: "Private Extensions to the Session Initiation Protocol (SIP) for Network Asserted Identity within Trusted Networks".

[7] 3GPP TS 24.623: "Extensible Markup Language (XML) Configuration Access Protocol (XCAP) over the Ut interface for Manipulating Supplementary Services".

[8] IETF draft-ietf-stir-passport-divert-08 (March  2020): "PASSporT Extension for Diverted Calls".

Editor's note: The above document cannot be formally referenced until it is published as an RFC.

[9] OMA-TS-CPM\_Message\_Storage\_Using\_RESTFul\_API-V1\_0-20181025-D: "CPM Message Store using RESTFul API, Draft Version 1.0 – 25 Oct 2018",
<http://member.openmobilealliance.org/ftp/Public_documents/COM/COM-CPM/Permanent_documents/OMA-TS-Message_Storage_Using_RESTFul_API-V1_0-20181025-D.zip>.

[10] OMA-TS-REST\_NetAPI\_NMS-V1\_0-20190528-C: "RESTful Network API for Network Message Storage, Candidate Version 1.0 – 28 May 2019",
<http://member.openmobilealliance.org/ftp/Public_documents/ARCH/Permanent_documents/OMA-TS-REST_NetAPI_NMS-V1_0-20190528-C.zip>.

[11] 3GPP TS 24.629: "Explicit Communication Transfer (ECT) using IP Multimedia (IM) Core Network (CN) subsystem; Protocol specification".

[12] 3GPP TS 24.147: "Conferencing using the IP Multimedia (IM) Core Network (CN) subsystem; Stage 3".

[13] 3GPP TS 24.175: "Management Object (MO) for Multi-Device and Multi-Identity in IMS; Stage 3".

[14] 3GPP TS 23.003: "Numbering, addressing and identification".

[x] RFC 3840 (August 2004): "Indicating User Agent Capabilities in the Session Initiation Protocol (SIP)".

\*\*\* End of 1st change \*\*\*

\*\*\* 2nd change \*\*\*

###### 4.5.5.2.2.1 General

If the terminating UE supports the download and play model for CRS,

a) The UE shall include "g.3gpp.crs" media feature tag with value "dnp" in a Contact header field when sending a reliable SIP 18x response as specified in 3GPP TS 24.229 [3]; and

b) if an initial INVITE request contains an Alert-Info header field including a URI followed by a URN "urn:alert:service:crs", then the UE shall fetch and play the CRS media from the URL contained in the Alert-Info header field in the INVITE request.

\*\*\* End of 2nd change \*\*\*

\*\*\* 3rd change \*\*\*

###### 4.5.5.2.3.1 General

If the terminating UE supports the early session model for CRS, the UE shall follow the procedures specified in 3GPP TS 24.229 [3] for session termination with the following additions:

a) The UE shall include "g.3gpp.crs" media feature tag with value "es" in a Contact header field when sending a reliable SIP 18x response as specified in 3GPP TS 24.229 [3]; andb) Upon receiving an initial INVITE request, the UE shall:

- check whether an Alert-Info header field with a URN "urn:alert:service:crs" present; and

c) If present, then the UE shall:

- send the reliable SIP 18x response as specified in 3GPP TS 24.229 [3];

- not play local ringing tone to terminating user when a 180 response is sent;

- if SIP PRACK request containing an SDP early session offer, containing an SDP a=content attribute with a "a.3gpp.crs" value for each media description is received, send back a SIP 200(OK) response to the request including an SDP early session answer; and

- receive the CRS media from network and play it as ringing tone.

NOTE: The UE plays a local ringing tone if no CRS media is received within a specific time.

\*\*\* End of 3rd change \*\*\*

\*\*\* 4th change \*\*\*

4.5.5.2.5.1 General

If the UE supports the gateway model for CRS, the UE shall follow the procedures specified in 3GPP TS 24.229 [3] for session termination, and additionally:

a) The UE shall include "g.3gpp.crs" media feature tag with value "gw" in a Contact header field when sending a reliable SIP 18x response as specified in 3GPP TS 24.229 [3]; and

b) if the received initial INVITE request contains an Alert-Info header field with an URN "urn:alert:service:crs" and without a URL of CRS media, the UE shall play CRS media that is received from the network as ringing signal. The CRS media is identified by the a=content media-level attribute with a "g.3gpp.crs" value being in the SDP offer.

NOTE: The UE plays local ringing tone if no UPDATE request with an SDP offer including a=content media-level attribute with a "g.3gpp.crs" value and no CRS media is received within a specific time.

\*\*\* End of 4th change \*\*\*

\*\*\* 5th change \*\*\*

###### 4.5.5.3.2.1 General AS actions

Upon receiving an initial INVITE request from the served user, the AS shall forward the initial INVITE request to the terminating UE after inserting an Alert-Info header field with an URN "urn:alert:service:crs" and inserting a Supported header field containing "early-session" option-tag as specified in RFC 3959 [4].

Upon receiving the first reliable SIP 18x response to the initial INVITE request including a Supported header field with "early-session" tag and including the media feature tag "g.3gpp.crs" with value "es" in a Contact header field, the AS:

- may contact the MRF to request CRS resource; and

- shall forward the reliable SIP 18x response to the originating UE.

Upon receiving the PRACK request of the first reliable SIP 18x response from the served user, the AS shall:

1) contact the MRF to request CRS resource if it has not been previously requested; and

2) forward the SIP PRACK request to the terminating UE. The PRACK request shall:

- include the SDP content for CRS as early-session SDP offer based on the information from the MRF and if preconditions are used, indicate the local preconditions are fulfilled. The early session SDP offer shall contain an SDP a=content attribute with a "g.3gpp.crs" value for each media description.

Upon receiving a SIP 200 (OK) response to the SIP PRACK request of the first reliable SIP 18x response, the AS shall remove the early-session SDP answer in the SIP 200 (OK) response, and forward the response to the originator of the SIP PRACK request.

Upon receiving additional SIP 18x responses to the initial INVITE request, the AS shall forward them to the originating UE.

Upon receiving a SIP UPDATE request from served user, the AS shall:

- generate an early-session SDP offer based on the information from the MRF and, if preconditions are used, indicate that the local preconditions are fulfilled;

- include the early-session SDP offer in the SIP request, and forward it to the terminating UE; and

- after receiving a SIP 200 (OK) response to the request, remove the early-session SDP answer in the SIP 200 (OK) response, and forwards the response to the originator.

NOTE 1: The early-session SDP offer included in the SIP UPDATE request can in some cases be identical to a previous early-session SDP offer sent towards the terminating UE, if the associated media parameters have not changed.

If preconditions are used, the AS should not instruct the MRF to start applicable media for the CRS service before the both the originating and terminating UE have indicated that local preconditions are fulfilled, and a 180 (Ringing) response has been received from the terminating UE.

If a SIP message from served UE containing an SDP offer related to an early session is received, the AS shall send an SDP answer to the SDP offer related to the early-session sent by the served UE and set all port numbers of the media types to "0".

Upon receiving a SIP 200 (OK) response from the terminating UE to the initial INVITE request, the AS shall instruct the MRF to stop media for the CRS service and forward the SIP 200 (OK) response to the originating UE.

NOTE 2: The interaction between the AS and MRF is not specified for the CRS service but can use the Cr reference point as described in 3GPP TS 24.229 [3].

Upon receiving a SIP 4xx, 5xx or 6xx response from the terminating UE the AS shall:

- instruct the MRF to stop the media for the CRS service; and

- forward the final response to the originating UE.

\*\*\* 6th change \*\*\*

##### 4.5.5.3.3 AS Actions for download and play model

Upon receiving an initial INVITE request from the served user, the AS supporting download and play model shall insert an Alert-Info header field with the URI of the CRS media labeled with the URN "urn:alert:service:crs" as the value into the INVITE request, and forward the INVITE request to the terminating UE.

Upon receiving the first reliable SIP 18x response to the initial INVITE request including "g.3gpp.crs" media feature tag with value "dnp" in a Contact header field, the AS may allow the URL to be accessed.

\*\*\* End of 6th change \*\*\*

\*\*\* 7th change \*\*\*

##### 4.5.5.3.6 AS Actions for Gateway model

The AS performing the Gateway model shall follow the procedure as specified in RFC 3960 [10] and annex G in 3GPP TS 24.628 [11] with the additional procedures described in this subclause.

Upon receiving an initial INVITE request from the originating UE, the AS shall forward the initial INVITE request to the terminating UE with the following clarifications:

a) insert an Alert-Info header field with an URN "urn:alert:service:crs"; and

b) if no "precondition" option tag was received in the Supported header field of the incoming INVITE request, and if the AS uses precondition mechanism for providing CRS, add a "precondition" option tag to the Supported header field, insert precondition SDP parameters and indicate the status of local resource availability as specified in RFC 3312 [14].

Upon receiving the first reliable SIP 18x response to the initial INVITE request including "g.3gpp.crs" media feature tag with value "gw" in a Contact header field, the AS:

a) may contact the MRF to request CRS resource; and

b) shall forward the reliable SIP 18x response to the originating UE. If no "precondition" option tag was included in the Supported header field of the INVITE request and if the precondition mechanism is used in the received 18x, before forwarding the 18x response, the AS shall remove the "precondition" option tag from the Require header field and remove precondition SDP parameters from the SDP answer.

Upon receiving the PRACK request of the first reliable 18x response from originating UE, the AS shall forward the PRACK request to the terminating UE and contact the MRF to request CRS resource if it has not been previously requested.

When the video media feature tag is not included in the Contact header field of the previously received 18x response from the terminating UE and there is no video description in the SDP answer included in the 18x response, the AS shall not request video CRS resource from MRF, and shall not apply video CRS media to the terminating UE.

When the "g.3gpp.crs" media feature tag with value "gw" is not included in the Contact header field of the previously received 18x response from the terminating UE, the AS shall not request gateway model CRS resource from MRF, and shall not apply gateway model CRS media to the terminating UE.

After receiving 180 (Ringing) response or receiving a SIP 200 (OK) response to the PRACK request of the first reliable SIP 18x response from terminating UE, the AS shall update media of CRS service with terminating UE by UPDATE request as specified in RFC 3311 [12] with:

a) P-Early-Media header field with a "sendrecv" value or a "sendonly" value;

b) an SDP offer, which is based on the CRS information received from the MRF and includes an a=content media-level attribute with a "g.3gpp.crs" value., The media types can include additional media types compared to the SDP answer of the previous 18x response from the terminating UE; and.

c) precondition mechanism as specified in RFC 3312 [14] if "precondition" option tag is included in the Require header field of a received 18x response.

If the terminating UE requires the use of precondition mechanism, the AS shall not instruct the MRF to start applicable media for the CRS service before the terminating UE has indicated that preconditions are fulfilled. The point when the AS instruct the MRF to start applicable media for the CRS service is based on local policy.

Upon receiving a SIP 200 (OK) response to the INVITE request from the terminating UE, the AS shall instruct the MRF to stop media for the CRS service and update media for conversation. If the AS is going to update media with both originating side and terminating side, the AS shall:

a) send an offerless re-INVITE request to the terminating side;

b) upon receiving a SIP response to the re-INVITE request containing an SDP offer from the terminating side, generate an UPDATE request as specified in RFC 3311 [12] to send an SDP offer to the originating UE. The SDP offer shall only contain the media components which appeared both in the SDP offer contained in the SIP response to the re-INVITE request and the previously stored SDP offer in the initial INVITE request. The port number of the corresponding m-line shall be set to zero if it has been set to zero during previous SDP negotiation; and

c) upon receiving a 200 (OK) response to the UPDATE request from the originating side, generate an SDP answer to the terminating side, included in the ACK request associated with the re-INVITE request. The SDP answer shall be based on the SDP answer contained in the 200 (OK) response to the UPDATE request, and for the media components which do not appear in the SDP answer in the 200 (OK) response, set the port number of the corresponding m-line to zero.

Upon receiving a SIP 4xx, 5xx or 6xx response to the initial INVITE request from the terminating UE, the AS shall:

a) instruct the MRF to stop the media for the CRS service; and

b) forward the final response to the originating UE.

\*\*\* End of 7th change \*\*\*

\*\*\* 8th change \*\*\*

Annex X (normative):
media feature tag "g.3gpp.crs"

## X.1 Introduction

This annex provides the IANA registration information for a new SIP media feature tag, "g.3gpp.crs". This media feature tag is for indicating terminating UE support of the models and capabilities for CRS.

Editor’s note [CR#0075, WI TEI17]: the ASN.1 Identifier will need to be updated once the IANA registration is completed.

## X.2 IANA registration

Media feature-tag name: g.3gpp.crs

ASN.1 Identifier: 1.3.6.1.8.2.x

Editor’s note [CR#0075, WI TEI17]: the ASN.1 Identifier will need to be updated once the IANA registration is completed.

Summary of the media feature indicated by this tag: This media feature tag is for indicating terminating UE support of the models and capabilities for CRS.

Values appropriate for use with this feature-tag: Token with an equality relationship. Typical values include:

gw: The value is for indicating terminating UE support of the gateway model and normal capabilities for CRS.

es: The value is for indicating terminating UE support of the early session model and normal capabilities for CRS.

dnp: The value is for indicating terminating UE support of the download and play model and normal capabilities for CRS.

The feature tag is intended primarily for use in the following applications, protocols, services, or negotiation mechanisms: This feature tag is most useful in a communications application for describing the capabilities of a device, such as a phone or PDA.

Related standards or documents: 3GPP TS 24.183: IP Multimedia Subsystem (IMS) Customized Ringing Signal (CRS); Protocol specification".

Security Considerations: Security considerations for this media feature-tag are discussed in subclause 11.1 of IETF RFC 3840 [x].

\*\*\* End of 8th change \*\*\*