**3GPP TSG- Meeting #**

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| *CR-Form-v12.3* |
| **CHANGE REQUEST** |
|  |
|  |  | **CR** |  | **rev** |  | **Current version:** |  |  |
|  |
| *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:***  |  |
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| ***Source to WG:*** |  |
| ***Source to TSG:*** | S4 |
|  |  |
| ***Work item code:*** |  |  | ***Date:*** |  |
|  |  |  |  |  |
| ***Category:*** |  |  | ***Release:*** |  |
|  | *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-17 (Release 17)Rel-18 (Release 18)Rel-19 (Release 19) Rel-20 (Release 20)* |
|  |  |
| ***Reason for change:*** | A noise suppression mode SDP parameter would be useful for IVAS for setting the session to a certain suppression mode or set ranges for the applied suppression level. A forward indication in the applied suppression level is useful for a receiver to adjust the requested suppression levels accordingly. |
|  |  |
| ***Summary of change:*** | A noise suppression mode parameter (ns-mode) is added to the IVAS SDP. The Dynamic Audio Suppression PI data type is modified to set request ranges based on the negotiated ns-mode parameter and to indicate the suppressed audio type with the Audio Identifier field (instead of indicating the audio type not to be suppressed as in the current version). A forward direction variant is added to the Dynamic Audio Suppression PI data type. |
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| ***Consequences if not approved:*** | It is not possible to negotiate noise suppression modes or adjust the noise suppression request range for an IVAS session. The receiver is unaware of what level of suppression is applied. |
|  |  |
| ***Clauses affected:*** | A.3, A.4 |
|  |  |
|  | **Y** | **N** |  |  |
| ***Other specs*** | **X** |  |  Other core specifications  | TS 26.114, CR26253-0016 |
| ***affected:*** |  | **X** |  Test specifications | TS/TR ... CR ...  |
| ***(show related CRs)*** |  | **X** |  O&M Specifications | TS/TR ... CR ...  |
|  |  |
| ***Other comments:*** | The Dynamic Audio Suppression PI data type is introduced in CR26253-0016 and the changes in this CR modify the proposal in CR26253-0016. The current state of the ATIAS work is documented in ATIAS-2 Permanent Document, S4-251020. Proposals for “Transparent”, “Nominal” and “Suppressed” capture are presented in S4-250205. The capture modes can be linked to the ns-mode values as (‘min’=Transparent), (‘def’=Nominal) and (‘max’=Suppressed). |
|  |  |
| ***This CR's revision history:*** |  |

CHANGE 1

### A.3.5.5 Supported PI data types

Supported PI types are listed in tables A.3.5.5-1 and A.3.5.5-2 and described in the following subsections. Table A.3.5.5-1 lists PI types for forward direction signalling. Table A.3.5.5-1A lists the PI types for reverse direction signalling. Table A.3.5.5-2 lists additional PI types.

Table A.3.5.5-1 : Supported forward direction PI types in an IVAS session.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Type bits** | **Forward direction PI type** | **Description** | **SDP indication** | **Size (bytes)** | **Described in clause** |
| 00000 | SCENE\_ORIENTATION | Describes the orientation of a spatial audio scene in unit quaternions. | fsco | 8 | A.3.5.6.1.2 |
| 00001 | DEVICE\_ORIENTATION\_COMPENSATED | Describes the orientation of a device in unit quaternions. The orientation is compensated in the transmitted audio. | fdoc | 8 | A.3.5.6.1.3 |
| 00010 | DEVICE\_ORIENTATION\_UNCOMPENSATED | Describes the orientation of a device in unit quaternions. The orientation is not compensated in the transmitted audio. | fdou | 8 | A.3.5.6.1.3 |
| 00011 | ACOUSTIC\_ENVIRONMENT | Selects and optionally describes the acoustic environment. | face | 1,5 or 8 | A.3.5.6.2 |
| 00100 | AUDIO\_DESCRIPTION | Describes the content in the transmitted audio | faud | 1 to 5 | A.3.5.6.3 |
| 00101 | ISM\_NUM | Indicates the number of ISM(s). | finm | 1 | A.3.5.6.4.2 |
| 00110 | ISM\_ID | Indicates ID of each transported ISM. | fiid | Number of ISMs x 1 | A.3.5.6.4.3 |
| 00111 | ISM\_GAIN | Describes gain factor for each ISM. | figa | Number of ISMs x 1 | A.3.5.6.4.4 |
| 01000 | ISM\_ORIENTATION | Describes an orientation for each ISM. | fiso | Number of ISMs x 8 | A.3.5.6.4.5 |
| 01001 | ISM\_POSITION | Describes a position of each ISM. | fipo | Number of ISMs x 6 | A.3.5.6.4.6 |
| 01010 | ISM\_DISTANCE\_ATTENUATION | Describes distance attenuation for all ISMs. | fida | 3 or Number of ISMs x 3 | A.3.5.6.4.7 |
| 01011 | ISM\_DIRECTIVITY | Describes directivity for each ISM. | fidr | 2 orNumber of ISMs x 2 | A.3.5.6.4.8 |
| 01100 | DIEGETIC\_TYPE | Indicates if the audio is diegetic or non-diegetic. | fdit | 1 | A.3.5.6.5 |
| 01101 | DYNAMIC\_AUDIO\_SUPPRESSION\_INDICATION | Indicates the applied audio suppression level. | fdas | 2 | A.3.5.7.4.2 |

**Table A.3.5.5-1A: Supported reverse direction PI types in an IVAS session.**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Type bits** | **Reverse direction PI type** | **Description** | **SDP indication** | **Size (bytes)** | **Described in clause** |
| 10000 | PLAYBACK\_DEVICE\_ORIENTATION | Feedback. Describes the orientation of the playback device in Quaternions. | rpdo | 8 | A.3.5.7.1 |
| 10001 | HEAD\_ORIENTATION | Feedback. Describes the head orientation of the listener in Quaternions. | rhor | 8 | A.3.5.7.2 |
| 10010 | LISTENER\_POSITION | Feedback. Describes the position of the listener in 3D space. | rlip | 6 | A.3.5.7.3 |
| 10011 | DYNAMIC\_AUDIO\_SUPPRESSION\_REQUEST | Describes receiver’s preference with respect to audio suppression. | rdas | 2 | A.3.5.7.4.1 |
| 10100 | AUDIO\_FOCUS\_DIRECTION | Describes a direction of interest for the listener in Quaternions. | rafd | 8 | A.3.5.7.5 |
| 10101 | PI\_LATENCY | Round-trip latency for PI frames | rlat | 4 | A.3.5.7.6 |
| 10110 | R\_ISM\_ID | Indicates ID of each editing request ISM. | riid | Number of ISMs x 1 | A.3.5.7.7.2 |
| 10111 | R\_ISM\_GAIN | An editing request for gain factor for each ISM. | riga | Number of ISMs x 1 | A.3.5.7.7.3 |
| 11000 | R\_ISM\_ORIENTATION | An editing request for orientation for each ISM. | riso | Number of ISMs x 8 | A.3.5.7.7.4 |
| 11001 | R\_ISM\_POSITION | An editing request for position for each ISM. | ripo | Number of ISMs x 6 | A.3.5.7.7.5 |
| 11010 | R\_ISM\_DIRECTION | An editing request for direction for each ISM. | rido | Number of ISMs x 2 | A.3.5.7.7.6 |

Table A.3.5.5-2: Additional PI types in an IVAS session.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Type bits** | **PI type** | **Description** | **SDP indication** | **Size (bytes)** |
| 01110, 01111, 11011-11110 | Reserved | - | - | - |
| 11111 | NO\_PI\_DATA | Indicates an empty PI data frame. | nopi | 0 |

CHANGE 2

#### A.3.5.7.4 Dynamic Audio Suppression

##### A.3.5.7.4.1 Dynamic Audio Suppression request

The Dynamic Audio Supression (DAS) request PI data (DYNAMIC\_AUDIO\_SUPPRESSION\_REQUEST) describes receiver’s preference with respect to the type of audio content (for e.g., Speech only) that should be enhanced and the amount of suppression to be applied to the background noise, where the background noise is defined as the type of audio content that should be suppressed according to the receiver preference.

The size of DAS PI data is 2 bytes and is described in figure A.3.5.7.4-1. The DAS PI data payload contains an Audio Identifier (AID) byte and a Suppression Level Indicator (SLI) byte, as illustrated in Figure A.3.5.7.4-1. The value of AID field shall be non-zero for the audio identifier bits (V, M, A) and the reserved bits in AID shall be set to 0, unless defined. Likewise, there are 4 useable bits of the SLI while the 4 other (reserved) bits shall be set to 0. The AID byte contains V, M and A field, as defined in Table A.3.5.6.3-2, Table A.3.5.6.3-3 and Table A.3.5.6.3-4 respectively, which specifies the audio type(s) to be suppressed. The Suppression Level Indicator, as defined in table A.3.5.7.4-1, allows specifying a desired degree of suppression where audio signal components specified by the AID field are considered as undesired audio components. The SLI takes values from 0 to 13 wherein the expected amount of audio suppression is proportional (in approximate logarithmic domain) to the indicator value with 0 indicating minimum audio suppression and 13 indicating maximum audio suppression supported by the media sender for the session. SLI bits value of 1110 indicates a request for default suppression level performed by the media sender. SLI bits value of 1111 indicates no preference in the requested suppression level. If the ns-mode parameter is not negotiated for the session, the minimum suppression level indicates no suppression. If the ns-mode SDP parameter is negotiated for the session, the minimum and maximum audio suppression levels should be determined by the ns-mode SDP parameter. For example, if the ns-mode parameter for the session is negotiated as (‘def’,’def’,’max’), the SLI value of 0 would reflect to the default suppression mode of the media sender and the SLI value of 13 would reflect to the maximum suppression mode of the media sender. The SLI values in between 0 and 13 would reflect to proportional (in approximate logarithmic domain) suppression between the default and maximum suppression.

The latest received DAS request PI data is valid until a new DAS request PI data is received.

|  |
| --- |
|  0 1 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 +-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+ |V|M|A| RES | SLI | RES | +-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+ + AID + SLI byte + |

Figure A.3.5.7.4-1: DAS PI data frame

Table A.3.5.7.4-1: Suppression Level Indicator

|  |  |  |
| --- | --- | --- |
| **SLI Size bits** | **Value** | **Description** |
| 0000 | 0 | Minimum suppression supported by the media sender for the session |
| 0001 | 1 | … |
| … | … | … |
| 1101 | 13 | Maximum suppression supported by the media sender for the session |
| 1110 | - | Default suppression |
| 1111 | - | No preference/No indication |

##### A.3.5.7.4.2 Dynamic Audio Suppression forward indication

The Dynamic Audio Suppression (DAS) forward indication PI data (DYNAMIC\_AUDIO\_SUPPRESSION\_INDICATION) describes the suppression level that is applied to the transmitted audio. The PI data follows the structure presented in Figure A.3.5.7.4-1. The AID field indicates the audio type(s) (voice, music and/or ambience) that is suppressed. The SLI field indicates the amount of applied suppression according to Table A.3.5.7.4-1 and the description in clause A.3.5.7.4.2. In the forward indication DAS PI type, the SLI bit combination of 1111 is reserved for “No indication” in which case the applied suppression level is undefined.

If the DAS forward indication PI data is negotiated for a session, the DAS request PI data shall also be negotiated for the session. The media sender may create and transmit a DAS forward indication PI data in response to a received DAS request PI data when the requested suppression level is accepted and applied in the processing of the transmitted audio. The media sender may also send DAS forward indication PI data to indicate the current suppression status without receiving a corresponding DAS request PI data.

The latest received DAS forward indication PI data is valid until a new DAS forward indication PI data is received.

CHANGE 3

## A.4.1 IVAS Media Type Registration

[…]

**ns-mode**: Specifies the supported noise suppression modes for the session. Permissive values are: ‘min’, ‘def’ and ‘max’. ‘min’ and ‘max’ modes indicate minimum and maximum suppression performed by the media sender, respectively. ‘def’ mode indicates a default suppression level between ‘min’ and ‘max’ modes performed by the media sender. If the parameter is not present, all suppression modes are allowed for the session and the default suppression mode should be used at the start of the session. The parameter shall list either a single value or three values separated by commas. With a single parameter value the session is fixed to the negotiated single suppression mode. With three parameter values (e.g., ‘mode1’,’mode2’,’mode3’), the first listed ‘mode1’ shall be used at the start or update of the session and the session can use noise suppression levels within the range indicated by the last two values where ‘mode2’ indicates the minimum supported suppression level and ‘mode3’ indicates the maximum supported suppression level for the session. The first listed ‘mode1’ shall comply with the supported range indicated by ‘mode2’ and ‘mode3’. If DAS PI type (see clause A.3.5.7.4) is negotiated for the session, the suppression level limits should be determined by the minimum and maximum range indicated by ‘mode2’ and ‘mode3’. If a single suppression mode is negotiated for the session, the DAS PI type should not be negotiated for the session.

[…]

CHANGE 4

### A.4.3.1 Offer-Answer Model Considerations

[…]

**ns-mode**: If present, the parameter in the SDP offer shall list a single suppression mode or three suppression modes separated by a comma where the first mode indicates the initial suppression mode at the start or update of the session and the last two modes determine the range of supported suppression modes for the session. When the same suppression modes are defined for the send and the receive directions, ns-mode should be used but ns-mode-send and ns-mode-recv may also be used. For sendonly session, ns-mode and ns-mode-send can be interchangeably used. For recvonly session, ns-mode and ns-mode-recv can be interchangeably used. When ns-mode is not offered for a payload type, the answerer may include ns-mode for the payload type in the SDP answer. When a single suppression mode is offered and the payload type is accepted, the answerer shall include the same suppression mode in the SDP answer, if the answerer supports the parameter. When the offer includes three suppression modes and the payload type is accepted, the last two listed suppression modes shall be identical or a subset of the supported suppression mode range and the first listed suppression mode may be changed within the supported range in the SDP answer. When the offer includes three suppression modes, the answerer may respond with a single suppression mode within the supported range in the SDP answer. When ns-mode is offered and the receiver does not support the parameter for the session, the ns-mode parameter shall be dropped from the SDP answer.

**ns-mode-send**: When ns-mode-send is not offered for a payload type, the answerer may include ns-mode-recv for the payload type in the SDP answer. When ns-mode-send is offered for a payload type and the payload type is accepted, the answerer shall include ns-mode-recv in the SDP answer, if the answerer supports the parameter. The ns-mode-recv shall be identical to or a subset of ns-mode-send for the payload type in the SDP offer. If the receiver does not support the parameter for the session, the ns-mode-recv shall be dropped from the SDP answer.

**ns-mode-recv**: When ns-mode-recv is not offered for a payload type, the answerer may include ns-mode-send for the payload type in the SDP answer. When ns-mode-recv is offered for a payload type and the payload is accepted, the answerer shall include ns-mode-send in the SDP answer, if the answerer supports the parameter. The ns-mode-send shall be identical to or a subset of ns-mode-recv for the payload type in the SDP offer. If the receiver does not support the parameter for the session, the ns-mode-send shall be dropped from the SDP answer.

[…]

END OF CHANGES