Technical Specification Group Services and System Aspects **TSGS#21(03)0448**
Meeting #21, Frankfurt, Germany
22-25 September 2003

Source: **TSG-SA WG4**

Title: **CR to TS 26.234 - Corrections (Release 5)**

Document for: **Approval**

Agenda Item: **7.4.3**

The following CRs, agreed at the TSG-SA WG4 meeting #27 & 28, are presented to TSG SA #21 for approval.

Spec	CR	Rev	Phase	Subject	Cat	Vers	WG	Meeting	S4 doc
26.234	061	1	Rel-5	Clarification on session bandwidth for RS and RR RTCP modifiers	F	5.5.0	S4	TSG-SA WG4#27	S4-030556
26.234	062	1	Rel-5	Correction of ambiguous range headers in SDP	F	5.5.0	S4	TSG-SA WG4#27	S4-030511
26.234	063	1	Rel-5	Timed-Text layout example	F	5.5.0	S4	TSG-SA WG4#27	S4-030555
26.234	064		Rel-5	Correction of ambiguity in RTP timestamps handling after PAUSE/PLAY RTSP requests	F	5.5.0	S4	TSG-SA WG4#27	S4-030517
26.234	065		Rel-5	Correction of obsolete RTP references	F	5.5.0	S4	TSG-SA WG4#28	S4-030607
26.234	066	1	Rel-5	Correction of wrong reference	F	5.5.0	S4	TSG-SA WG4#28	S4-030648
26.234	067		Rel-5	Missing signaling of live content	F	5.5.0	S4	TSG-SA WG4#28	S4-030654

3GPP TSG-SA4 Meeting #27
Munich, Germany, 7-11 July 2003

Tdoc ⌘S4-030511

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CHANGE REQUEST

⌘ **26.234** **CR** **62** ⌘ **rev** **1** ⌘ Current version: **5.5.0** ⌘

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Proposed change affects: UICC apps⌘ ☐ ME ☒ Radio Access Network ☐ Core Network ☐

Title:	⌘	Correction of ambiguous range headers in SDP
Source:	⌘	TSG SA WG4
Work item code:	⌘	PSS-E
Date:	⌘	22/09/2003
Category:	⌘	**F**
Release:	⌘	Rel-5

Use one of the following categories:
F *(correction)*
A *(corresponds to a correction in an earlier release)*
B *(addition of feature),*
C *(functional modification of feature)*
D *(editorial modification)*
Detailed explanations of the above categories can be found in 3GPP TR 21.900.

Use one of the following releases:

2	*(GSM Phase 2)*
R96	*(Release 1996)*
R97	*(Release 1997)*
R98	*(Release 1998)*
R99	*(Release 1999)*
Rel-4	*(Release 4)*
Rel-5	*(Release 5)*
Rel-6	*(Release 6)*

Reason for change:	⌘	The overview of SDP fields in Table A.1 in Annex A indicates that the a=range field is required on both session and media levels, which is inconsistent with the mandated usage of the a=range field given in Clause 5.3.3.
Summary of change:	⌘	A note has been added to Table A.1 explaining the correct usage of a=range for presentations with media streams of equal or different lengths, respectively.
Consequences if not approved:	⌘	Interoperability will not be maintained. SDP descriptions for media streams of different lengths will be ambiguous and interpreted differently by different clients.

Clauses affected:	⌘	Annex A.

Other specs affected: ⌘	Y	N		⌘
		X	Other core specifications	
		X	Test specifications	
		X	O&M Specifications	

Other comments: ⌘

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3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

Annex A (informative): Protocols

A.1 SDP

This clause gives some background information on SDP for PSS clients.

Table A.1 provides an overview of the different SDP fields that can be identified in a SDP file. The order of SDP fields is mandated as specified in RFC 2327 [6].

Table A.1: Overview of fields in SDP for PSS clients

Type	Description		Requirement according to [6]	Requirement according to the present document
Session Description				
V	Protocol version		R	R
O	Owner/creator and session identifier		R	R
S	Session Name		R	R
I	Session information		O	O
U	URI of description		O	O
E	Email address		O	O
P	Phone number		O	O
C	Connection Information		R	R
B	Bandwidth information	AS	O	O
		RS	ND	O
		RR	ND	O
One or more Time Descriptions (See below)				
Z	Time zone adjustments		O	O
K	Encryption key		O	O
A	Session attributes	control	O	R
		range	O	R
One or more Media Descriptions (See below)				
Time Description				
T	Time the session is active		R	R
R	Repeat times		O	O
Media Description				
M	Media name and transport address		R	R
I	Media title		O	O
C	Connection information		R	R
B	Bandwidth information	AS	O	R
		RS	ND	R
		RR	ND	R
K	Encryption Key		O	O
A	Attribute Lines	control	O	R
		range	O	R
		fmtp	O	R
		rtpmap	O	R
		X-predecbufsize	ND	O
		X-initpredecbufperiod	ND	O
		X-initpostdecbufperiod	ND	O
		X-decbyterate	ND	O
		framesize	ND	R (see note 5)

Note 1: R = Required, O = Optional, ND = Not Defined

Note 2: The "c" type is only required on the session level if not present on the media level.

Note 3: The "c" type is only required on the media level if not present on the session level.

Note 4: According to RFC 2327, either an 'e' or 'p' field must be present in the SDP description. On the other hand, both fields will be made optional in the future release of SDP. So, for the sake of robustness and maximum interoperability, either an 'e' or 'p' field shall be present during the server's SDP file creation, but the client should also be ready to receive SDP content containing neither 'e' nor 'p' fields.

Note 5: The "framesize" attribute is only required for H.263 streams.

Note 6: The “range” attribute is required on either session or media level: it is a session-level attribute unless the presentation contains media streams of different durations. If a client receives “range” on both levels, however, media level shall override session level.

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CHANGE REQUEST

⌘ **26.234** **CR** **64** ⌘ **rev** **-** ⌘ Current version: **5.5.0** ⌘

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Proposed change affects: UICC apps⌘ ☐ ME ☒ Radio Access Network ☐ Core Network ☐

Title:	⌘	Correction of ambiguity in RTP timestamps handling after PAUSE/PLAY RTSP requests
Source:	⌘	TSG SA WG4
Work item code:	⌘	PSS-E
Date:	⌘	22/09/2003
Category:	⌘	**F**
Release:	⌘	Rel-5

Use one of the following categories:
F *(correction)*
A *(corresponds to a correction in an earlier release)*
B *(addition of feature),*
C *(functional modification of feature)*
D *(editorial modification)*
Detailed explanations of the above categories can be found in 3GPP TR 21.900.

Use one of the following releases:
2 (GSM Phase 2)
R96 (Release 1996)
R97 (Release 1997)
R98 (Release 1998)
R99 (Release 1999)
Rel-4 (Release 4)
Rel-5 (Release 5)
Rel-6 (Release 6)

Reason for change:	⌘	Interoperability tests showed that the current specification is unclear about how a PSS server has to timestamp RTP packets after a PLAY request. Different interpretations lead to non-interoperable solutions and prevent the playback control to work properly.
Summary of change:	⌘	Add text in the specification clarifying what must be done by the server with RTP timestamps
Consequences if not approved:	⌘	Different flavors of PSS servers and clients will be deployed preventing interoperability

Clauses affected:	⌘	A.3.2

Other specs affected:	⌘	Y	N		⌘	
		☐	☐	Other core specifications		
		☐	☐	Test specifications		
		☐	☐	O&M Specifications		

Other comments:	⌘	

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downloaded from the 3GPP server under ftp://ftp.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.

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A.3.2.3 RTCP transmission interval

In RTP [9], Section 6.2, rules for the calculation of the interval between the sending of two consecutive RTCP packets, i.e. the RTCP transmission interval, are defined. These rules consist of two steps:

- Step 1: an algorithm that calculates a transmission interval from parameters such as the RTCP bandwidth defined in section 5.3.3.1 and the average RTCP packet size. This algorithm is described in [9], annex A.7.
- Step 2: Taking the maximum of the transmission interval computed in step 1 and a mandatory fixed minimum RTCP transmission interval of 5 seconds.

Implementations conforming to this TS shall perform step 1 and may perform step 2. All other algorithms and rules of [9] stay valid and shall be followed.

Following these recommendations results in regular sending of RTCP messages, where the interval between those is depending on the RTCP bandwidth and the average RTCP packet size.

A.3.2.4 Timestamp handling after PAUSE/PLAY requests

The description below intends to clarify how RTP timestamps are specified within the 3GPP PSS when a client sends a PLAY request following a PAUSE request. The RTP timestamp space must be continuous along time during a session and then reflect the actual time elapsed since the beginning of the session. A server must reflect the actual time interval elapsed between the last RTP packets sent before the reception of the PAUSE request and the first RTP packets sent after the reception of the PLAY request in the RTP timestamp. A client will need to compute the mapping between NPT time and RTP timestamp each time it receives a PLAY response for on-demand content. This means that a client must be able to cope with any gap in RTP timestamps after a PLAY request.

The PLAY request can include a Range header if the client wants to seek backward or forward in the media, or without a Range header if the client only wants to resume the paused session.

Example:
In this example Client C plays a media file from Server S. RTP timestamp rate in this example is 1000Hz for clarity.

C -> S: PLAY rtsp://example.com/mediastream RTSP/1.0
CSeq: 2
Session: 123456
Range: npt=1.125-

S -> C: RTSP/1.0 200 OK
CSeq: 2
Session: 123456
Range: npt=1.120-
RTP-Info: url=rtsp://example.com/mediastream;seq=1000;rtptime=5000

S -> C: RTP packet - seq = 1000 - rtptime = 5000 - corresponding media time (NPT time) = 1120ms
S -> C: RTP packet - seq = 1001 - rtptime = 5040 - corresponding media time (NPT time) = 1160ms
S -> C: RTP packet - seq = 1002 - rtptime = 5080 - corresponding media time (NPT time) = 1200ms
S -> C: RTP packet - seq = 1003 - rtptime = 5120 - corresponding media time (NPT time) = 1240ms

C -> S: PAUSE rtsp://example.com/mediastream RTSP/1.0
CSeq: 3
Session: 123456

S -> C: RTSP/1.0 200 OK
CSeq: 3
Session: 123456

[10 seconds elapsed]

C -> S: PLAY rtsp://example.com/mediastream RTSP/1.0
CSeq: 4
Session: 123456

S -> C: RTSP/1.0 200 OK
CSeq: 4
Session: 123456
Range: npt=1.280-
RTP-Info: url=rtsp://example.com/mediastream;seq=1004;rtptime=15160

S -> C: RTP packet - seq = 1004 - rtptime = 15160 - corresponding media time (NPT time) = 1280ms
S -> C: RTP packet - seq = 1005 - rtptime = 15200 - corresponding media time (NPT time) = 1320ms
S -> C: RTP packet - seq = 1006 - rtptime = 15240 - corresponding media time (NPT time) = 1360ms

C -> S: PAUSE rtsp://example.com/mediastream RTSP/1.0
CSeq: 5
Session: 123456

S -> C: RTSP/1.0 200 OK
CSeq: 5
Session: 123456

C -> S: PLAY rtsp://example.com/mediastream RTSP/1.0
CSeq: 6
Session: 123456
Range: npt=0.5-

[55 milliseconds elapsed during request processing]

S -> C: RTSP/1.0 200 OK
CSeq: 6
Session: 123456
Range: npt=0.480-
RTP-Info: url=rtsp://example.com/mediastream;seq=1007;rtptime=15295

S -> C: RTP packet - seq = 1007 - rtptime = 15295 - corresponding media time (NPT time) = 480ms
S -> C: RTP packet - seq = 1008 - rtptime = 15335 - corresponding media time (NPT time) = 520ms
S -> C: RTP packet - seq = 1009 - rtptime = 15375 - corresponding media time (NPT time) = 560ms

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CHANGE REQUEST

⌘ **26.234** **CR** **063** ⌘**rev** **1** ⌘ Current version: **5.5.0** ⌘

*For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.*

Proposed change affects: UICC apps⌘ ☐ ME ☒ Radio Access Network ☐ Core Network ☐

Title:	⌘	CR 26.234 063 on correction of 26.234 Release 5 Timed-Text layout example (Release 5)
Source:	⌘	TSG SA WG4
Work item code:	⌘	PSS-E
Date:	⌘	22/09/2003
Category:	⌘	**F**
Release:	⌘	Rel-5

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R97	*(Release 1997)*
R98	*(Release 1998)*
R99	*(Release 1999)*
Rel-4	*(Release 4)*
Rel-5	*(Release 5)*
Rel-6	*(Release 6)*

Reason for change:	⌘	The example given is wrong. The included example is an important part of the specification. The mandatory text is hard (if not impossible) to understand without a correct example. It is not obvious that the example given is wrong and an implementer will thus not automatically look into a later release (.i.e. R6) but will instead do a flawed implementation.
Summary of change:	⌘	The character order example is corrected.
Consequences if not approved:	⌘	No interoperability between content provider and the client. No interoperability between R5 and R6 implementations. Implementations may follow the example and display right-left text incorrectly or handle bi-directional text wrongly, resulting in incomprehensible text in some countries or regions.

Clauses affected:	⌘	D.8a.10			
Other specs affected:	⌘	**Y**	**N**	Other core specifications	⌘
		☐	☐	Test specifications	
		☐	☐	O&M Specifications	
Other comments:	⌘				

In section D.8a.10, the following example of bi-directional layout management occurs:

"Terminals may also set, or allow the user to set, an overall writing direction, either explicitly or implicitly (e.g. by the language selection). This affects layout. For example, if upper-case letters are left-right, and lower-case right-left, and the Unicode string ABCdefGHI shall be rendered, it would appear as ABCfedGHI on a terminal with overall left-right writing (English, for example) and GHIdefABC on a system with overall right-left (Hebrew, for example)."

However, the example is incorrect and should be as follows:

"Terminals may also set, or allow the user to set, an overall writing direction, either explicitly or implicitly (e.g. by the language selection). This affects layout. For example, if upper-case letters are left-right, and lower-case right-left, and the Unicode string ABCdefGHI shall be rendered, it would appear as ABCfedGHI on a terminal with overall left-right writing (English, for example) and ~~GHIdefABC~~ GHIfedABC on a system with overall right-left (Hebrew, for example)."

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CHANGE REQUEST

⌘ **26.234** **CR** **061** ⌘**rev** **1** ⌘ Current version: **5.5.0** ⌘

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Proposed change affects: UICC apps⌘ ☐ ME ☒ Radio Access Network ☐ Core Network ☐

Title:	⌘	Correction on session bandwidth for RS and RR RTCP modifiers
Source:	⌘	TSG SA WG4
Work item code:	⌘	PSS-E
Date:	⌘	22/09/2003
Category:	⌘	**F**
Release:	⌘	Rel-5

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R99 (Release 1999)
Rel-4 (Release 4)
Rel-5 (Release 5)
Rel-6 (Release 6)

Reason for change:	⌘	To avoid misinterpretation of the specification.
Summary of change:	⌘	The session bandwidth for RTCP is based on the b=AS bandwidth value given at media level, not at session level as the reader might understand.
Consequences if not approved:	⌘	The rules are ambiguous, and interoperability problems will occur.

Clauses affected:	⌘	5.3.3.1

	Y	N		
Other specs affected: ⌘		X	Other core specifications	⌘
		X	Test specifications	
		X	O&M Specifications	

Other comments: ⌘

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5.3.3 SDP

5.3.3.1 General

RTSP requires a presentation description. SDP shall be used as the format of the presentation description for both PSS clients and servers. PSS servers shall provide and clients interpret the SDP syntax according to the SDP specification [6] and appendix C of [5]. The SDP delivered to the PSS client shall declare the media types to be used in the session using a codec specific MIME media type for each media. MIME media types to be used in the SDP file are described in clause 5.4 of the present document.

The SDP [6] specification requires certain fields to always be included in an SDP file. Apart from this a PSS server shall always include the following fields in the SDP:

- "a=control:" according to clauses C.1.1, C.2 and C.3 in [5];
- "a=range:" according to clause C.1.5 in [5];
- "a=rtpmap:" according to clause 6 in [6];
- "a=fmtp:" according to clause 6 in [6].

When an SDP document is generated for media stored in a 3GP file, each control URL defined at the media-level “a=control:” field shall include a stream identifier in the last segment of the path component of the URL. The value of the stream id shall be defined by the track-ID field in the track header (tkhd) atom associated with the media track. When a PSS server receives a set-up request for a stream, it shall use the stream identifier specified in the URL to map the request to a media track with a matching track-ID field in the 3GP file. Stream identifiers shall be expressed using the following syntax:

streamIdentifier = <stream_id_token>“=”<stream_id>
stream_id_token = 1*alpha
stream_id = 1*digit

The bandwidth field in SDP is needed by the client in order to properly set up QoS parameters. Therefore, a PSS server shall include the “b=AS:” field at the media level for each media stream in SDP, and a PSS client shall interpret this field. When a PSS client receives SDP, it should ignore the session level “b=AS:” parameter (if present), and instead calculate session bandwidth from the media level bandwidth values of the relevant streams. A PSS client shall also handle the case where the bandwidth parameter is not present, since this may occur when connecting to a Release-4 server.

Note that for RTP based applications , ‘b=AS:’ gives the RTP "session bandwidth" (including UDP/IP overhead) as defined in section 6.2 of [9].

The bandwidth for RTCP traffic shall be described using the "RS" and "RR" SDP bandwidth modifiers, as specified by [52]. The "RS" SDP bandwidth modifier indicates the RTCP bandwidth allocated to the sender (i.e. PSS server) and "RR" indicates the RTCP bandwidth allocated to the receiver (i.e. PSS client). A PSS server shall include the "b=RS:" and "b=RR:" fields at the media level for each media stream in SDP, and a PSS client shall interpret them. A PSS client shall also handle the case where the bandwidth modifier is not present according to section 3 of [52], since this may occur when connecting to a Release-4 server.

There shall be a limit on the allowed RTCP bandwidth for senders and receivers in a session. This limit is defined as follows:

- 4000 bps for the RS field (at media level);
- 5000 bps for the RR field (at media level).

The default value for each of the "RS" and "RR" SDP bandwidth modifiers is 2.5% of the ~~session~~ bandwidth given by the “b=AS” parameter at media level.

In Annex A.2.1 an example SDP in which the limit for the total RTCP bandwidth is 5% of the session bandwidth is presented.

IPv6 addresses in SDP descriptions shall be supported according to RFC 3266[49].

NOTE: The SDP parsers and/or interpreters shall be able to accept NULL values in the 'c=' field (e.g. 0.0.0.0 in IPv4 case). This may happen when the media content does not have a fixed destination address. For more details, see Section C.1.7 of [5] and Section 6 of [6].

********** END OF THE AMENDED SECTION **********

3GPP TSG-SA4 Meeting #28
Erlangen, Germany, 1-5 September 2003

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CHANGE REQUEST

⌘ **26.234** **CR** **65** ⌘ **rev** **-** ⌘ Current version: **5.5.0** ⌘

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Proposed change affects: UICC apps⌘ ☐ ME ☒ Radio Access Network ☐ Core Network ☐

Title:	⌘	Correction of obsolete RTP references
Source:	⌘	TSG SA WG4
Work item code:	⌘	PSS-E
Date:	⌘	22/09/2003
Category:	⌘	**F**
Release:	⌘	Rel-5

Use one of the following categories:
F *(correction)*
A *(corresponds to a correction in an earlier release)*
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R97	*(Release 1997)*
R98	*(Release 1998)*
R99	*(Release 1999)*
Rel-4	*(Release 4)*
Rel-5	*(Release 5)*
Rel-6	*(Release 6)*

Reason for change:	⌘	IETF has published new RFC specifications for RTP and AVP (RTP Profile for Audio and Video Conferences with Minimal Control). The new specifications • make references [9] and [10] in 26.234 obsolete • contain necessary information for the implementation of the mandatory SDP bandwidth modifiers RR and RS, • include corrections and clarifications resolving ambiguities. Backward compatibility is maintained for all areas relevant to 26.234.
Summary of change:	⌘	References [9] and [10] have been updated.
Consequences if not approved:	⌘	The specification will refer to obsolete references. The mandatory SDP bandwidth modifiers RR and RS cannot be correctly implemented. Implementers will have problems resolving ambiguities.

Clauses affected:	⌘	2 and A.3.2.1
Other specs affected:	⌘	Y / N ☐ / ☒ Other core specifications ☐ / ☒ Test specifications ☐ / ☒ O&M Specifications
	⌘	
Other comments:	⌘	The correction is also proposed for PS Conversational in CR 6 to TS 26.236.

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3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

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 TS 22.233: "Transparent End-to-End Packet-switched Streaming Service; Stage 1".

[2] 3GPP TS 26.233: "Transparent end-to-end packet switched streaming service (PSS); General description".

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

[4] IETF RFC 1738: "Uniform Resource Locators (URL)", Berners-Lee T., Masinter L. and McCahill M., December 1994.

[5] IETF RFC 2326: "Real Time Streaming Protocol (RTSP)", Schulzrinne H., Rao A. and Lanphier R., April 1998.

[6] IETF RFC 2327: "SDP: Session Description Protocol", Handley M. and Jacobson V., April 1998.

[7] IETF STD 0006: "User Datagram Protocol", Postel J., August 1980.

[8] IETF STD 0007: "Transmission Control Protocol", Postel J., September 1981.

[9] IETF RFC 3550~~1889~~: "RTP: A Transport Protocol for Real-Time Applications", Schulzrinne H. et al., ~~January 1996~~July 2003.

[10] IETF RFC 3551~~1890~~: "RTP Profile for Audio and Video Conferences with Minimal Control", Schulzrinne H. and Casner S.~~et al.~~, ~~January 1996~~July 2003.

[11] IETF RFC 3267: "Real-Time Transport Protocol (RTP) Payload Format and File Storage Format for the Adaptive Multi-Rate (AMR) Adaptive Multi-Rate Wideband (AMR-WB) Audio Codecs", Sjoberg J. et al., June 2002.

[12] (void)

[13] IETF RFC 3016: "RTP Payload Format for MPEG-4 Audio/Visual Streams", Kikuchi Y. et al., November 2000.

[14] IETF RFC 2429: "RTP Payload Format for the 1998 Version of ITU-T Rec. H.263 Video (H.263+)", Bormann C. et al., October 1998.

[15] IETF RFC 2046: "Multipurpose Internet Mail Extensions (MIME) Part Two: Media Types", Freed N. and Borenstein N., November 1996.

[16] IETF RFC 3236: "The 'application/xhtml+xml' Media Type", Baker M. and Stark P., January 2002.

[17] IETF RFC 2616: "Hypertext Transfer Protocol – HTTP/1.1", Fielding R. et al., June 1999.

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[19] 3GPP TS 26.101: "Mandatory Speech Codec speech processing functions; Adaptive Multi-Rate (AMR) speech codec frame structure".

[20] 3GPP TS 26.171: "AMR Wideband Speech Codec; General Description".

[21] ISO/IEC 14496-3:2001: "Information technology – Coding of audio-visual objects – Part 3: Audio".

[22] ITU-T Recommendation H.263 (1998): "Video coding for low bit rate communication".

[23] ITU-T Recommendation H.263 – Annex X (2001): "Annex X: Profiles and levels definition".

[24] ISO/IEC 14496-2:2001: "Information technology – Coding of audio-visual objects – Part 2: Visual".

[25] ISO/IEC 14496-2:2001/Amd 2:2002: "Streaming video profile".

[26] ITU-T Recommendation T.81 (1992) | ISO/IEC 10918-1:1993: "Information technology – Digital compression and coding of continuous-tone still images – Requirements and guidelines".

[27] C-Cube Microsystems: "JPEG File Interchange Format", Version 1.02, September 1, 1992.

[28] W3C Recommendation: "XHTML Basic", http://www.w3.org/TR/2000/REC-xhtml-basic-20001219, December 2000.

[29] ISO/IEC 10646-1:2000: "Information technology – Universal Multiple-Octet Coded Character Set (UCS) – Part 1: Architecture and Basic Multilingual Plane".

[30] The Unicode Consortium: "The Unicode Standard", Version 3.0 Reading, MA, Addison-Wesley Developers Press, 2000, ISBN 0-201-61633-5.

[31] W3C Recommendation: "Synchronized Multimedia Integration Language (SMIL 2.0)", http://www.w3.org/TR/2001/REC-smil20-20010807/, August 2001.

[32] CompuServe Incorporated: "GIF Graphics Interchange Format: A Standard defining a mechanism for the storage and transmission of raster-based graphics information", Columbus, OH, USA, 1987.

[33] CompuServe Incorporated: "Graphics Interchange Format: Version 89a", Columbus, OH, USA, 1990.

[34] (void)

[35] 3GPP TS 26.140: "Multimedia Messaging Service (MMS); Media formats and codecs".

[36] (void)

[37] 3GPP TS 26.201: " Speech Codec speech processing functions; AMR Wideband Speech Codec; Frame Structure".

[38] IETF RFC 2083: "PNG (Portable Networks Graphics) Specification Version 1.0", Boutell T., et al., March 1997.

[39] W3C Working Draft Recommendation: "CC/PP structure and vocabularies", http://www.w3.org/Mobile/CCPP/Group/Drafts/WD-CCPP-struct-vocab-20010620/, June 2001.

[40] WAP UAProf Specification, http://www1.wapforum.org/tech/terms.asp?doc=WAP-248-UAProf-20011020-a.pdf , October 2001.

[41] W3C Candidate Recommendation: "Resource Description Framework (RDF) Schema Specification 1.0", http://www.w3.org/TR/2000/CR-rdf-schema-20000327, March 2000.

[42] W3C Recommendation: "Scalable Vector Graphics (SVG) 1.1 Specification", http://www.w3.org/TR/2003/REC-SVG11-20030114/, January 2003.

[43] W3C Recommendation: "Mobile SVG Profiles: SVG Tiny and SVG Basic", http://www.w3.org/TR/2003/REC-SVGMobile-20030114/, January 2003.

[44] Scalable Polyphony MIDI Specification Version 1.0, RP-34, MIDI Manufacturers Association, Los Angeles, CA, February 2002.

[45] Scalable Polyphony MIDI Device 5-to-24 Note Profile for 3GPP Version 1.0, RP-35, MIDI Manufacturers Association, Los Angeles, CA, February 2002.

[46] "Standard MIDI Files 1.0", RP-001, in "The Complete MIDI 1.0 Detailed Specification, Document Version 96.1", The MIDI Manufacturers Association, Los Angeles, CA, USA, February 1996.

[47] WAP Forum Specification: "XHTML Mobile Profile", http://www1.wapforum.org/tech/terms.asp?doc=WAP-277-XHTMLMP-20011029-a.pdf, October 2001.

[48] "Unicode Standard Annex #13: Unicode Newline Guidelines", by Mark Davis. An integral part of The Unicode Standard, Version 3.1.

[49] IETF RFC 3266: "Support for IPv6 in Session Description Protocol (SDP)", Olson S., Camarillo G. and Roach A. B., June 2002.

[50] ISO/IEC 14496-12:2003 | 15444-12:2003: "Information technology – Coding of audio-visual objects – Part 12: ISO base media file format" | "Information technology – JPEG 2000 image coding system – Part 12: ISO base media file format".

[51] ISO/IEC 14496-14:2003: "Information technology – Coding of audio-visual objects – Part 14: MP4 file format".

[52] IETF RFC 3578: "SDP bandwidth modifier for RTCP bandwidth".

--- <cut> ---

A.3.2.1 Maximum RTP packet size

The RFC 3550~~1889~~ (RTP) [9] does not impose a maximum size on RTP packets. However, when RTP packets are sent over the radio link of a 3GPP PSS system there is an advantage in limiting the maximum size of RTP packets.

Two types of bearers can be envisioned for streaming using either acknowledged mode (AM) or unacknowledged mode (UM) RLC. The AM uses retransmissions over the radio link whereas the UM does not. In UM mode large RTP packets are more susceptible to losses over the radio link compared to small RTP packets since the loss of a segment may result in the loss of the whole packet. On the other hand in AM mode large RTP packets will result in larger delay jitter compared to small packets as there is a larger chance that more segments have to be retransmitted.

For these reasons it is recommended that the maximum size of RTP packets should be limited in size taking into account the wireless link. This will decrease the RTP packet loss rate particularly for RLC in UM. For RLC in AM the delay jitter will be reduced permitting the client to use a smaller receiving buffer. It should also be noted that too small RTP packets could result in too much overhead if IP/UDP/RTP header compression is not applied or unnecessary load at the streaming server.

In the case of transporting video in the payload of RTP packets it may be that a video frame is split into more than one RTP packet in order not to produce too large RTP packets. Then, to be able to decode packets following a lost packet in the same video frame, it is recommended that synchronisation information be inserted at the start of such RTP packets. For H.263 this implies the use of GOBs with non-empty GOB headers and in the case of MPEG-4 video the use of video packets (resynchronisation markers). If the optional Slice Structured mode (Annex K) of H.263 is in use, GOBs are replaced by slices.

CR-Form-v7

CHANGE REQUEST

⌘ **26.234** **CR** **066** ⌘**rev** **1** ⌘ Current version: **5.5.0** ⌘

*For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.*

Proposed change affects: UICC apps⌘ [ ] ME [X] Radio Access Network [ ] Core Network [ ]

Title:	⌘	Correction of wrong reference
Source:	⌘	TSG SA WG4
Work item code:	⌘	PSS-E
Date:	⌘	22/09/2003
Category:	⌘	**F**
Release:	⌘	Rel-5

Use one of the following categories:
F *(correction)*
A *(corresponds to a correction in an earlier release)*
B *(addition of feature),*
C *(functional modification of feature)*
D *(editorial modification)*
Detailed explanations of the above categories can be found in 3GPP TR 21.900.

Use one of the following releases:

2	*(GSM Phase 2)*
R96	*(Release 1996)*
R97	*(Release 1997)*
R98	*(Release 1998)*
R99	*(Release 1999)*
Rel-4	*(Release 4)*
Rel-5	*(Release 5)*
Rel-6	*(Release 6)*

Reason for change:	⌘	To avoid misinterpretation of the specification.
Summary of change:	⌘	The RFC number is wrong and it has been corrected.
Consequences if not approved:	⌘	The reference points to the wrong IETF document and there could be problems in implementations.

Clauses affected:	⌘	2

		Y	N		
Other specs affected:	⌘		X	Other core specifications	⌘
			X	Test specifications	
			X	O&M Specifications	

Other comments:	⌘	

How to create CRs using this form:
Comprehensive information and tips about how to create CRs can be found at http://www.3gpp.org/specs/CR.htm. Below is a brief summary:

1) Fill out the above form. The symbols above marked ⌘ contain pop-up help information about the field that they are closest to.
2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under ftp://ftp.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.
3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

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 TS 22.233: "Transparent End-to-End Packet-switched Streaming Service; Stage 1".

[2] 3GPP TS 26.233: "Transparent end-to-end packet switched streaming service (PSS); General description".

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

[4] IETF RFC 1738: "Uniform Resource Locators (URL)", Berners-Lee T., Masinter L. and McCahill M., December 1994.

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[7] IETF STD 0006: "User Datagram Protocol", Postel J., August 1980.

[8] IETF STD 0007: "Transmission Control Protocol", Postel J., September 1981.

[9] IETF RFC 1889: "RTP: A Transport Protocol for Real-Time Applications", Schulzrinne H. et al., January 1996.

[10] IETF RFC 1890: "RTP Profile for Audio and Video Conferences with Minimal Control", Schulzrinne H. et al., January 1996.

[11] IETF RFC 3267: "Real-Time Transport Protocol (RTP) Payload Format and File Storage Format for the Adaptive Multi-Rate (AMR) Adaptive Multi-Rate Wideband (AMR-WB) Audio Codecs", Sjoberg J. et al., June 2002.

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[33] CompuServe Incorporated: "Graphics Interchange Format: Version 89a", Columbus, OH, USA, 1990.

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[37] 3GPP TS 26.201: " Speech Codec speech processing functions; AMR Wideband Speech Codec; Frame Structure".

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[40] WAP UAProf Specification, http://www1.wapforum.org/tech/terms.asp?doc=WAP-248-UAProf-20011020-a.pdf , October 2001.

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[48] "Unicode Standard Annex #13: Unicode Newline Guidelines", by Mark Davis. An integral part of The Unicode Standard, Version 3.1.

[49] IETF RFC 3266: "Support for IPv6 in Session Description Protocol (SDP)", Olson S., Camarillo G. and Roach A. B., June 2002.

[50] ISO/IEC 14496-12:2003 | 15444-12:2003: "Information technology – Coding of audio-visual objects – Part 12: ISO base media file format" | "Information technology – JPEG 2000 image coding system – Part 12: ISO base media file format".

[51] ISO/IEC 14496-14:2003: "Information technology – Coding of audio-visual objects – Part 14: MP4 file format".

[52] IETF RFC 35~~78~~56: "Session Description Protocol (SDP) B~~b~~andwidth M~~m~~odifiers for RTP Control Protocol (RTCP) bandwidth", Casner S., July 2003.~~.~~

********** END OF THE AMENDED SECTION **********

3GPP TSG-SA4 Meeting #28
Erlangen, Germany, 1-5 September 2003

Tdoc ⌘S4-030654

CR-Form-v7

CHANGE REQUEST

⌘ **26.234** **CR** **67** ⌘ **rev** **-** ⌘ Current version: **5.5.0** ⌘

*For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.*

Proposed change affects: UICC apps⌘ ☐ ME ☒ Radio Access Network ☐ Core Network ☐

Title:	⌘	Missing signaling of live content
Source:	⌘	TSG SA WG4
Work item code:	⌘	PSS-E
Date:	⌘	22/09/2003
Category:	⌘	**F**
Release:	⌘	Rel-5

Use one of the following categories:
F *(correction)*
A *(corresponds to a correction in an earlier release)*
B *(addition of feature),*
C *(functional modification of feature)*
D *(editorial modification)*
Detailed explanations of the above categories can be found in 3GPP TR 21.900.

Use one of the following releases:

2	*(GSM Phase 2)*
R96	*(Release 1996)*
R97	*(Release 1997)*
R98	*(Release 1998)*
R99	*(Release 1999)*
Rel-4	*(Release 4)*
Rel-5	*(Release 5)*
Rel-6	*(Release 6)*

Reason for change:	⌘	There are two types of media a PSS server can offer: on-demand and live. In contrast to on-demand content, live content is non-seekable and may only be available during certian times. A client need to behave differently when receiving live content, as it needs to restrict its usage of the range header and invalidate controls for seeking. Furthermore, data stored in buffers will be invalid after a pause. The problem this CR addresses is that in the current PSS specification, there is no way for the server of signalling live content and therefore a client will not be able to act acoordingly.
Summary of change:	⌘	Explanation on how live content is signalled is included in clause 5.3.3.1.
Consequences if not approved:	⌘	A client is not aware that offered content is live, which may lead to interoperability problems and failure of service.

Clauses affected:	⌘	5.3.3.1

		Y	N		
Other specs affected:	⌘		X	Other core specifications	⌘
			X	Test specifications	
			X	O&M Specifications	

Other comments:	⌘	

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Below is a brief summary:

1) Fill out the above form. The symbols above marked ⌘ contain pop-up help information about the field that they are closest to.

2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under ftp://ftp.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.

3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

5.3.3 SDP

5.3.3.1 General

RTSP requires a presentation description. SDP shall be used as the format of the presentation description for both PSS clients and servers. PSS servers shall provide and clients interpret the SDP syntax according to the SDP specification [6] and appendix C of [5]. The SDP delivered to the PSS client shall declare the media types to be used in the session using a codec specific MIME media type for each media. MIME media types to be used in the SDP file are described in clause 5.4 of the present document.

The SDP [6] specification requires certain fields to always be included in an SDP file. Apart from this a PSS server shall always include the following fields in the SDP:

- "a=control:" according to clauses C.1.1, C.2 and C.3 in [5];
- "a=range:" according to clause C.1.5 in [5];
- "a=rtpmap:" according to clause 6 in [6];
- "a=fmtp:" according to clause 6 in [6].

When an SDP document is generated for media stored in a 3GP file, each control URL defined at the media-level “a=control:” field shall include a stream identifier in the last segment of the path component of the URL. The value of the stream id shall be defined by the track-ID field in the track header (tkhd) atom associated with the media track. When a PSS server receives a set-up request for a stream, it shall use the stream identifier specified in the URL to map the request to a media track with a matching track-ID field in the 3GP file. Stream identifiers shall be expressed using the following syntax:

streamIdentifier = <stream_id_token>“=”<stream_id>
stream_id_token = 1*alpha
stream_id = 1*digit

The bandwidth field in SDP is needed by the client in order to properly set up QoS parameters. Therefore, a PSS server shall include the “b=AS:” field at the media level for each media stream in SDP, and a PSS client shall interpret this field. When a PSS client receives SDP, it should ignore the session level “b=AS:” parameter (if present), and instead calculate session bandwidth from the media level bandwidth values of the relevant streams. A PSS client shall also handle the case where the bandwidth parameter is not present, since this may occur when connecting to a Release-4 server.

Note that for RTP based applications , ‘b=AS:’ gives the RTP "session bandwidth" (including UDP/IP overhead) as defined in section 6.2 of [9].

The bandwidth for RTCP traffic shall be described using the "RS" and "RR" SDP bandwidth modifiers, as specified by [52]. The "RS" SDP bandwidth modifier indicates the RTCP bandwidth allocated to the sender (i.e. PSS server) and "RR" indicates the RTCP bandwidth allocated to the receiver (i.e. PSS client). A PSS server shall include the "b=RS:" and "b=RR:" fields at the media level for each media stream in SDP, and a PSS client shall interpret them. A PSS client shall also handle the case where the bandwidth modifier is not present according to section 3 of [52], since this may occur when connecting to a Release-4 server.

There shall be a limit on the allowed RTCP bandwidth for senders and receivers in a session. This limit is defined as follows:

- 4000 bps for the RS field (at media level);
- 5000 bps for the RR field (at media level).

The default value for each of the "RS" and "RR" SDP bandwidth modifiers is 2.5% of the session bandwidth given by the “b=AS” parameter.

In Annex A.2.1 an example SDP in which the limit for the total RTCP bandwidth is 5% of the session bandwidth is presented.

The media which has an SDP description that include an open ended range (format=startvalue-) in any time format in the SDP attribute "a=range", e.g. "a=range: npt=now-", or "a=range: clock=20030825T152300Z-", shall be considered

media of unknown length. Such a media shall be considered as non-seekable, unless other attributes override this property.

The "t=", "r=", and "z=" SDP parameters are used to indicate when the described session is active. It can be used for users to filter out obsolete SDP files. When creating an SDP for a streaming session, one should try to come up with the most accurate estimate of time that the session is active. The "t=", "r=", and "z=" SDP parameters are used for this purpose, i.e., to indicate when the described session is active. If the time at which a session is active is known to be only for a limited period, the "t=", "r=", and "z=" attributes should be filled out appropriately (the "t=" should contain non-zero values, possibly using the "r=" and "z=" parameters). If the stop-time is set to zero, the session is not bounded, though it will not become active until after the start-time. If the start-time is also zero, the session is regarded as permanent. A session should only be marked as permanent ("t=0 0") if the session is going to be available for a significantly long period of time or if the start and stop times are not known at the time of SDP file creation. Recommendations for what is considered a significant time is present in the SDP specification [6].

IPv6 addresses in SDP descriptions shall be supported according to RFC 3266[49].

NOTE: The SDP parsers and/or interpreters shall be able to accept NULL values in the 'c=' field (e.g. 0.0.0.0 in IPv4 case). This may happen when the media content does not have a fixed destination address. For more details, see Section C.1.7 of [5] and Section 6 of [6].