Technical Specification Group Services and System Aspects **TSGS#26(04)0839**
Meeting #26, Athens, Greece
13-16 December 2004

Source: **TSG-SA WG4**

Title: **CRs TS 26.234, TS 26.244 and TS 26.245 on PSS (Release 6)**

Document for: **Approval**

Agenda Item: **7.4.3**

The following CRs, agreed at the TSG-SA WG4 meeting #33, are presented to TSG SA #26 for approval.

Spec	CR	Rev	Phase	Subject	Cat	Vers	WG	Meeting	S4 doc
26.234	076		Rel-6	Correction of RDF schema for PSS capability vocabulary	F	6.1.0	S4	TSG-SA WG4#33	S4-040693
26.234	077		Rel-6	Transport-independent SDP bandwidth modifiers for PSS	F	6.1.0	S4	TSG-SA WG4#33	S4-040694
26.234	078		Rel-6	Correction of MIME type definition for DRM protected content	F	6.1.0	S4	TSG-SA WG4#33	S4-040695
26.234	079	1	Rel-6	Adoption of SVG Tiny 1.2 for PSS	B	6.1.0	S4	TSG-SA WG4#33	S4-040838
26.244	006	1	Rel-6	Correction of syntax of encryption boxes and outdated references	F	6.1.0	S4	TSG-SA WG4#33	S4-040858
26.244	007		Rel-6	Correction of sample structure for AMR-WB+ in 3GP files	F	6.1.0	S4	TSG-SA WG4#33	S4-040697
26.245	001	1	Rel-6	Removal of incorrect statement in Scope section of Rel-6 Timed Text	F	6.0.0	S4	TSG-SA WG4#33	S4-040848

3GPP TSG-SA WG4 Meeting #33
Helsinki, Finland, 22-26 November 2004

Tdoc ⌘S4-040693

CR-Form-v7

CHANGE REQUEST

⌘ **26.234** **CR** **076** ⌘ **rev** **-** ⌘ Current version: **6.1.0** ⌘

*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:	⌘	Correction of RDF schema for PSS capability vocabulary
Source:	⌘	TSG-SA WG4
Work item code:	⌘	PSSrel6-Stage3
Date:	⌘	14/12/2004
Category:	⌘	**F**
Release:	⌘	Rel-6

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 RDF schema for Release 6 contains mistakes in syntax and referred name spaces. Some references in the specification are outdated (invalid).
Summary of change:	⌘	• Corrected the RDF schema. • Updated references. • Corrected syntax for the reporting frequency of NADU APP packets for buffer feedback • Some minor editorial updates.
Consequences if not approved:	⌘	The User Agent capabilities of PSS will be inconsistent and the RDF schema invalid.

Clauses affected:	⌘	2, 5.1, 5.2.3.2.4, 5.3.3.5, A.2.1, A.4.3, F, K.1, K.2.5

Other specs affected:	⌘	Y	N		⌘
			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.

[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: "RTP: A Transport Protocol for Real-Time Applications", Schulzrinne H. et al., July 2003.

[10] IETF RFC 3551: "RTP Profile for Audio and Video Conferences with Minimal Control", Schulzrinne H. and Casner S., 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 ñ HTTP/1.1", Fielding R. et al., June 1999.

[18] 3GPP TS 26.071: "Mandatory Speech CODEC speech processing functions; AMR Speech CODEC; General description".

[19] (void)

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

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

[22] ITU-T Recommendation H.263 (02/98): "Video coding for low bit rate communication".

[23] ITU-T Recommendation H.263 ñ Annex X (03/04): "Annex X: Profiles and levels definition".

[24] ISO/IEC 14496-2:2004: "Information technology ñ Coding of audio-visual objects ñ Part 2: Visual".

[25] (void)

[26] ITU-T Recommendation T.81 (1992) | ISO/IEC 10918-1:1993: "Information technology ñ Digital compression and coding of continuous-tone still images ñ 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 ñ Universal Multiple-Octet Coded Character Set (UCS) ñ 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] (void)

[36] (void)

[37] (void)

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

[39] W3C Recommendation: "Composite Capability/Preference Profiles (CC/PP): Structure and Vocabularies 1.0", http://www.w3.org/TR/2004/REC-CCPP-struct-vocab-20040115/, January 2004.

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

[41] W3C Recommendation: "RDF Vocabulary Description Language 1.0: RDF Schema", http://www.w3.org/TR/2004/REC-rdf-schema-20040210/, February 2004.

[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] (void)

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

[50] 3GPP TS 26.244: "Transparent end-to-end packet switched streaming service (PSS); 3GPP file format (3GP)".

[51] 3GPP TS 26.245: "Transparent end-to-end packet switched streaming service (PSS); Timed text format".

[52] 3GPP TS 26.246: "Transparent end-to-end packet switched streaming service (PSS); 3GPP SMIL Language Profile".

[53] IETF RFC 2234: "Augmented BNF for Syntax Specifications: ABNF", Crocker D. and Overell P., November 1997.

[54] IETF RFC 3066: "Tags for Identification of Languages", Alvestrand H., January 2001.

[55] IETF RFC 3556: "Session Description Protocol (SDP) Bandwidth Modifiers for RTP Control Protocol (RTCP) Bandwidth", Casner S., July 2003.

[56] 3GPP TS 23.107: "Quality of Service (QoS) concept and architecture".

[57] IETF Internet Draft: "Extended RTP Profile for RTCP-based Feedback (RTP/AVPF)", Ott J. et al, http://www.ietf.org/internet-drafts/draft-ietf-avt-rtcp-feedback-11.txt, August 2004.

[58] IETF RFC 3611: "RTP Control Protocol Extended Reports (RTCP XR)", Friedman T., Caceres R. and Clark A., November 2003.

[59] IETF RFC 1952: "GZIP file format specification version 4.3", Deutsch P., May 1996.

[60] IETF RFC 2396: "Uniform Resource Identifiers (URI): Generic Syntax", Berners-Lee T., Fielding R., Irvine U.C. and Masinter L., August 1998.

[61] IETF RFC 2732: "Format for Literal IPv6 Addresses in URL's", Hinden R., Carpenter B. and Masinter L., December 1999.

[62] IETF RFC 3555: "MIME Type Registration of RTP Payload Formats", Casner S. and Hoschka P., July 2003.

[63] 3GPP TS 26.090: "Mandatory Speech Codec speech processing functions; Adaptive Multi-Rate (AMR) speech codec; Transcoding functions".

[64] 3GPP TS 26.073: "ANSI-C code for the Adaptive Multi Rate (AMR) speech codec".

[65] 3GPP TS 26.104: "ANSI-C code for the floating-point Adaptive Multi Rate (AMR) speech codec".

[66] 3GPP TS 26.190: "Speech Codec speech processing functions; AMR Wideband speech codec; Transcoding functions".

[67] 3GPP TS 26.173: "ANCI-C code for the Adaptive Multi Rate - Wideband (AMR-WB) speech codec".

[68] 3GPP TS 26.204: "ANSI-C code for the Floating-point Adaptive Multi-Rate Wideband (AMR-WB) speech codec".

[69] IETF RFC 3548: "The Base16, Base32, and Base64 Data Encodings", Josefsson S., Ed., July 2003.

[70] Mobile DLS, MMA specification v1.0. RP-41 Los Angeles, CA, USA. 2004.

[71] Mobile XMF Content Format Specification, MMA specification v1.0., RP-42, Los Angeles, CA, USA. 2004.

[72] IETF RFC 3711: "The Secure Real-time Transport Protocol (SRTP)", Baugher M. et al, March 2004.

[73] Bellovin, S., "Problem Areas for the IP Security Protocols" in Proceedings of the Sixth Usenix Unix Security Symposium, pp. 1-16, San Jose, CA, July 1996

[74] Open Mobile Alliance: "DRM Specification 2.0".

[75] Open Mobile Alliance: "DRM Content Format V 2.0".

[76] IETF RFC 3675: "IPv6 Jumbograms", Borman D., Deering S. and Hinden R., August 1999.

[77] NIST, "Advanced Encryption Standard (AES)", FIPS PUB 197, http://www.nist.gov/aes/.

[78] IETF RFC 3394: "Advanced Encryption Standard (AES) Key Wrap Algorithm", Schaad J. and Housley R., September 2002.

[79] IETF RFC 3839: "MIME Type Registrations for 3rd Generation Partnership Project (3GPP) Multimedia files", Castagno R. and Singer D., July 2004.

[80] IETF Internet Draft: "RTP Payload Format for 3GPP Timed Text", Rey J. and Matsui Y., ~~http://www.ietf.org/internet-drafts/draft-ietf-avt-rtp-3gpp-timed-text-04.txt, July 2004~~ http://www.ietf.org/internet-drafts/draft-ietf-avt-rtp-3gpp-timed-text-07.txt, October 2004.

[81] IETF Internet Draft: "RTP Retransmission Payload Format", Rey J. et al, http://www.ietf.org/internet-drafts/draft-ietf-avt-rtp-retransmission-10.txt, January 2004.

[82] 3GPP TS 26.290: ~~"~~"Extended AMR Wideband codec; Transcoding functions"~~"~~.

[83] 3GPP TS 26.304: "~~"~~ANSI-C code for the Floating-point; Extended AMR Wideband codec"~~"~~.

[84] 3GPP TS 26.273: "~~"~~ANSI-C code for the Fixed-point; Extended AMR Wideband codec"~~"~~.

[85] IETF Internet Draft: "Real-Time Transport Protocol (RTP) Payload Format for Extended AMR Wideband (AMR-WB+) Audio Codec", Sjoberg J., Westerlund M. and Lakaniemi A., ~~draft-ietf-avt-rtp-amrwbplus-01.txt~~ http://www.ietf.org/internet-drafts/draft-ietf-avt-rtp-amrwbplus-02.txt, September 2004.

[86] 3GPP TS 26.401: "General audio codec audio processing functions; Enhanced aacPlus general audio codec; General description".

[87] 3GPP TS 26.410: "General audio codec audio processing functions; Enhanced aacPlus general audio codec; Floating-point ANSI-C code".

[88] 3GPP TS 26.411: "General audio codec audio processing functions; Enhanced aacPlus general audio codec; Fixed-point ANSI-C code".

[89] ISO/IEC 14496-3:2001/Amd.1:2003, Bandwidth Extension.

[90] ITU-T Recommendation H.264 (2003): "Advanced video coding for generic audiovisual services" | ISO/IEC 14496-10:2003: "Information technology ñ Coding of audio-visual objects ñ Part 10: Advanced Video Coding".

[91] ISO/IEC 14496-10/FDAM1: "AVC Fidelity Range Extensions".

[92] IETF Internet Draft: "RTP payload Format for H.264 Video", Wenger S. et al, http://www.ietf.org/internet-drafts/draft-ietf-avt-rtp-h264-11.txt, August 2004.

Ö <cut text> Ö

5.1 Session establishment

Session establishment refers to the method by which a PSS client obtains the initial session description. The initial session description can e.g. be a presentation description, a scene description or just an URL to the content.

A PSS client shall support initial session descriptions specified in one of the following formats: SMIL, SDP, or plain RTSP URL.

In addition to rtsp:// the PSS client shall support URLs [4] to valid initial session descriptions starting with file:// (for locally stored files) and http:// (for presentation descriptions or scene descriptions delivered via HTTP).

Examples for valid inputs to a PSS client are: file://temp/morning_news.smil, http://~~mediaportal~~example.com/morning_news.sdp, and rtsp://~~mediaportal~~example.com/morning_news.

URLs can be made available to a PSS client in many different ways. It is out of the scope of this specification to mandate any specific mechanism. However, an application using the 3GPP PSS shall at least support URLs of the above type, specified or selected by the user.

The preferred way would be to embed URLs to initial session descriptions within HTML or WML pages. Browser applications that support the HTTP protocol could then download the initial session description and pass the content to the PSS client for further processing. How exactly this is done is an implementation specific issue and out of the scope of this specification.

As an alternative to conventional streaming, a PSS client should also support progressive download of 3GP files [50] delivered via HTTP. A progressive-download session is established with one or more HTTP GET requests. In order to improve playback performance for 3GP files that are not authored for progressive download, a PSS client may issue (multiple pipelined) HTTP GET requests with byte ranges [17]. Example of a valid URL is ~~http://mediaportal/morning_news.3gp~~http://example.com/morning_news.3gp.

Ö <cut text> Ö

5.2.3.2.4 PssSmil component

Attribute name: **SmilAccept**

Attribute definition: List of content types (MIME types) that can be part of a SMIL presentation. The content types included in this attribute can be rendered in a SMIL presentation. If video/3gpp (or audio/3gpp) is included, downloaded 3GP files can be included in a SMIL presentation. Details on the 3GP file support can then be found in the ThreeGPFileFormat component. If the identifier "Streaming-Media" is included, streaming media can be included in the SMIL presentation. Details on the streaming support can then be found in the Streaming component. For each content type a set of supported parameters can be given. A content type that supports multiple parameter sets may occur several times in the list.

Component: PssSmil

Type: Literal (Bag)

Legal values: List of MIME types with related parameters and the "Streaming-Media" identifier.

Resolution rule: Append

EXAMPLE 1:
```
<SmilAccept>
  <rdf:Bag>
    <rdf:li>image/gif</rdf:li>
    <rdf:li>image/jpeg</rdf:li>
    <rdf:li>Streaming-Media</rdf:li>
  </rdf:Bag>
</SmilAccept>
```

~~Attribute name: **SmilAccept-Subset**~~

~~Attribute definition: List of content types for which the PSS application supports a subset. MIME types can in most cases effectively be used to express variations in support for different media types. Many MIME types have several parameters that can be used for this purpose. There may exist content types for which the PSS application only supports a subset and this subset cannot be expressed with MIME-type parameters. In these cases the attribute SmilAccept-Subset is used to describe support for a subset of a specific content type. If a subset of a specific content type is declared in SmilAccept-Subset, this means that SmilAccept-Subset has precedence over SmilAccept. SmilAccept shall always include the corresponding content types for which SmilAccept-Subset specifies subsets of.~~

Attribute name: **SmilAccept-Subset**

Attribute definition: List of content types for which the PSS application supports a subset. MIME types can in most cases effectively be used to express variations in support for different media types. Many MIME types have several parameters that can be used for this purpose. There may exist content types for which the PSS application only supports a subset and this subset cannot be expressed with MIME-type parameters. In these cases the attribute SmilAccept-Subset is used

to describe support for a subset of a specific content type. If a subset of a specific content type is declared in SmilAccept-Subset, this means that SmilAccept-Subset has precedence over SmilAccept. SmilAccept shall always include the corresponding content types for which SmilAccept-Subset specifies subsets of.

The following values are defined:

- "JPEG-PSS": Only the two JPEG modes described in clause 7.5 of the present document are supported.
- "SVG-Tiny"
- "SVG-Basic"

Subset identifiers and corresponding semantics shall only be defined by the TSG responsible for the present document.

Component: PssSmil

Type: Literal (Bag)

Legal values: "JPEG-PSS", "SVG-Tiny", "SVG-Basic"

Resolution rule: Append

EXAMPLE 2:
```
<SmilAccept-Subset>
  <rdf:Bag>
    <rdf:li>JPEG-PSS</rdf:li>
    <rdf:li>SVG-Tiny</rdf:li>
  </rdf:Bag>
</SmilAccept-Subset>
```

Attribute name: **SmilBaseSet**

Attribute definition: Indicates a base set of SMIL 2.0 modules that the client supports.

Component: Streaming

Type: Literal

Legal values: Pre-defined identifiers. "SMIL-3GPP-R4" and "SMIL-3GPP-R5" indicate all SMIL 2.0 modules required for scene description support according to clause 8 of Release 4 and Release 5, respectively, of TS 26.234. "SMIL-3GPP-R6" indicates all SMIL 2.0 modules required for scene-description support according to clause 8 of the present document (Release 6 of TS 26.234) and to Release 6 of TS 26.246 [52].

Resolution rule: Locked

EXAMPLE 3:
```
<SmilBaseSet>SMIL-3GPP-R6</SmilBaseSet>
```

Attribute name: **SmilModules**

Attribute definition: This attribute defines a list of SMIL 2.0 modules supported by the client. If the SmilBaseSet is used those modules do not need to be explicitly listed here. In that case only additional module support needs to be listed.

Component: Streaming

Type: Literal (Bag)

Legal values: SMIL 2.0 module names defined in the SMIL 2.0 recommendation [31], section 2.3.3, table 2.

Resolution rule: Append

EXAMPLE 4:
```
<SmilModules>
  <rdf:Bag>
    <rdf:li>BasicTransitions</rdf:li>
    <rdf:li>MulitArcTiming</rdf:li>
  </rdf:Bag>
</SmilModules>
```

Ö <cut text> Ö

5.3.3.5 The bit-rate adaptation support attribute, ì3GPP-Adaptation-Supportî

To signal the support of bit-rate adaptation, a media level only SDP attribute is defined in ABNF [53]:

sdp-Adaptation-line = "a" "=" "3GPP-Adaptation-Support" ":" report-frequency CRLF

report-frequency = ~~1*2~~NonZeroDIGIT [DIGIT]

NonZeroDIGIT = %x31-39 ;1-9

A server implementing rate adaptation shall signal the "3GPP-Adaptation-Support" attribute in its SDP.

A client receiving an SDP description where the SDP attribute "3GPP-Adaptation-Support" is present knows that the server provides rate adaptation. The client, if it supports bit-rate adaptation, shall then in its subsequent RTSP signalling use the ì3GPP-Adaptationî header as defined in clause 5.3.2.2, as well as the RTCP NADU APP packet for reporting the next unit to be decoded, as defined in clause 6.2.3.2.

The SDP attribute shall only be present at the media level. The report frequency value, which shall be larger than zero, indicates to the client that it shall include an NADU APP packet in at least every "report-frequency" compound RTCP packet. For example, if this value is 3, the client shall send the NADU APP packet in at least every 3rd RTCP packet.

Ö <cut text> Ö

A.2.1 General

EXAMPLE 2:

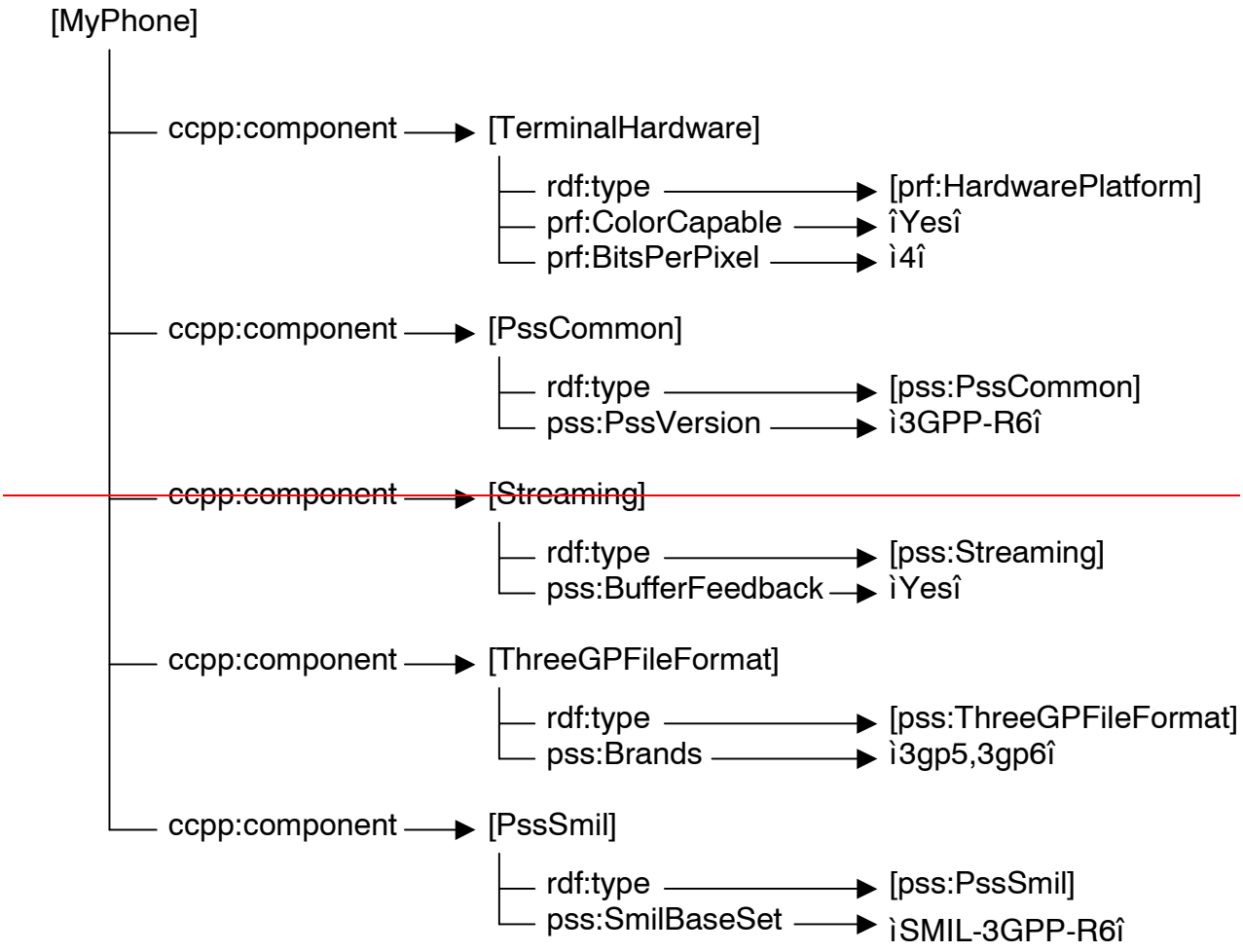
DESCRIBE rtsp://mediaserver.com/movie.test RTSP/1.0
CSeq: 1
User-Agent: TheStreamClient/1.1b2
x-wap-profile: "http://uaprof.example.com/products/TheStreamClient1.1b2"

Ö <cut text> Ö

A.4.3 The device capability profile structure

A device capability profile is a description of the capabilities of the device and possibly also the preferences of the user of that device. It can be used to guide the adaptation of content presented to the device. A device capability profile for PSS is an RDF [41] document that follows the structure of the CC/PP framework [39] and the CC/PP application UAProf [40]. The terminology of CC/PP is used in this text and therefore briefly described here.

Attributes are used for specifying the device capabilities and user preferences. A set of attribute names, permissible values and semantics constitute a CC/PP vocabulary. An RDF schema defines a vocabulary. The syntax of the attributes is defined in the schema but also, to some extent, the semantics. A profile is an instance of a schema and contains one or more attributes from the vocabulary. Attributes in a schema are divided into components distinguished by attribute characteristics. In the CC/PP specification it is anticipated that different applications will use different vocabularies. According to the CC/PP framework a hypothetical profile might look like Figure A.2. A further illustration of how a profile might look like is given in the example in clause A.4.7.


[MyPhone]
ccpp:component
[TerminalHardware]
rdf:type
[prf:HardwarePlatform]
prf:ColorCapable
îYesî
prf:BitsPerPixel
ì4î
ccpp:component
[PssCommon]
rdf:type
[pss:PssCommon]
pss:PssVersion
ì3GPP-R6î
ccpp:component
[Streaming]
rdf:type
[pss:Streaming]
pss:BufferFeedback
ìYesî
ccpp:component
[ThreeGPFileFormat]
rdf:type
[pss:ThreeGPFileFormat]
pss:Brands
ì3gp5,3gp6î
ccpp:component
[PssSmil]
rdf:type
[pss:PssSmil]
pss:SmilBaseSet
ìSMIL-3GPP-R6î

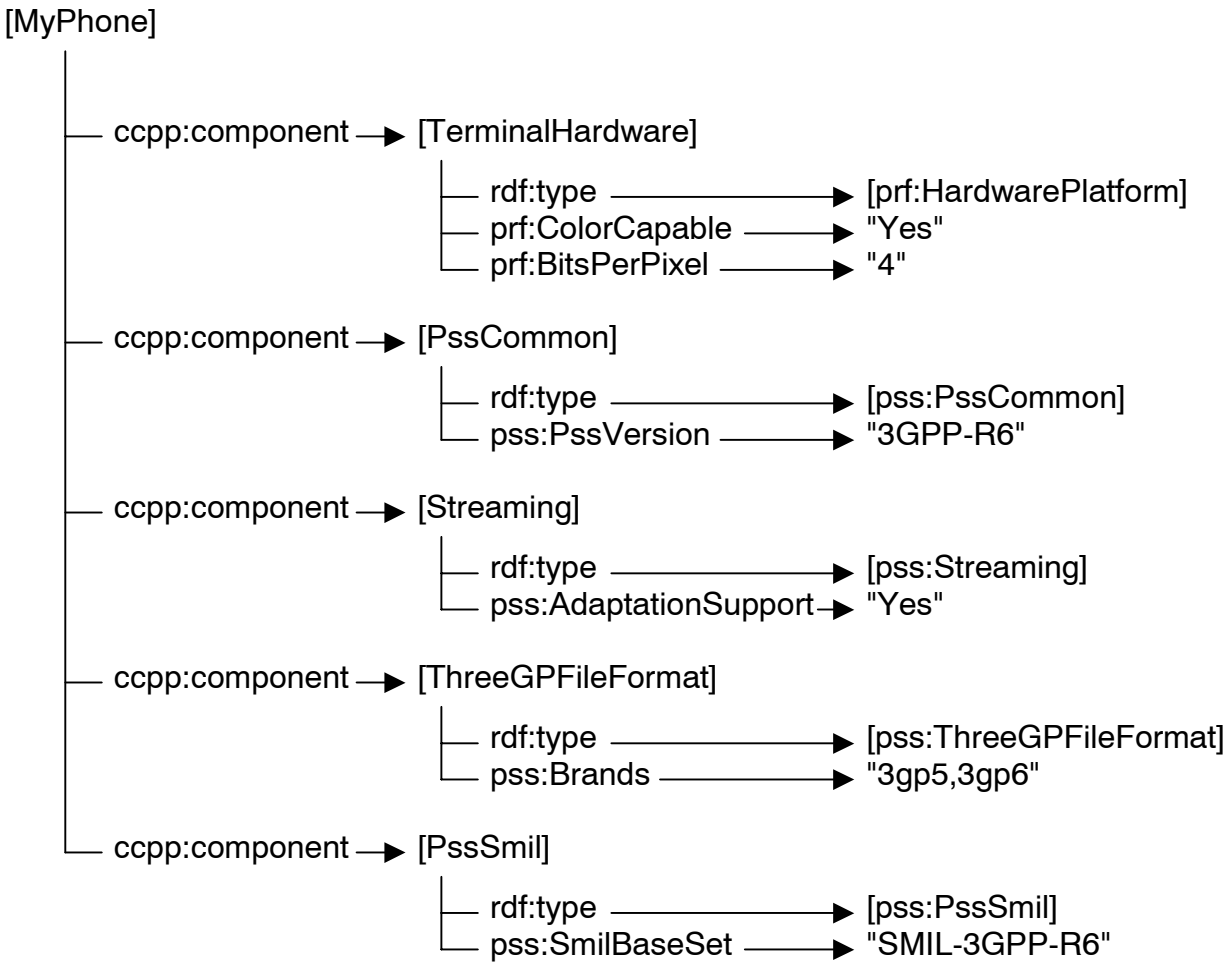


Figure A.2: Illustration of the profile structure

A CC/PP schema is extended through the introduction of new attribute vocabularies and a device capability profile can use attributes drawn from an arbitrary number of different vocabularies. Each vocabulary is associated with a unique XML namespace. This mechanism makes it possible to reuse attributes from other vocabularies. It should be mentioned that the prefix **ccpp** identifies elements of the CCPP namespace (URI http://www.w3.org/2002/11/08-ccpp-ns), **prf** identifies elements of the UAProf namespace (URI http://www.wapforum.org/profiles/UAPROF/ccppschema-20010330) ,**rdf** identifies elements of the RDF namespace (URI http://www.w3.org/1999/02/22-rdf-syntax-ns) and **pss** identifies elements of the PSS Release-6 namespace. (URI http://www.3gpp.org/profiles/PSS/ccppschema-PSS6).

Attributes of a component can be included directly or may be specified by a reference to a CC/PP default profile. Resolving a profile that includes a reference to a default profile is time-consuming. When the PSS server receives the profile from a device profile server the final attribute values can not be determined until the default profile has been requested and received. Support for defaults is required by the CC/PP specification [39]. Due to these problems, there is a recommendation made in clause 5.2.6 to not use the CC/PP defaults element in PSS device capability profile documents.

Ö <cut text> Ö

Annex F (normative): RDF schema for the PSS base vocabulary

```
<?xml version="1.0"?>

<!--
     This document is the RDF Schema for Packet-switched Streaming
     Service (PSS)-specific vocabulary as defined in 3GPP TS 26.234
     Release 6 (in the following "the specification").

     The URI for unique identification of this RDF Schema is
       http://www.3gpp.org/profiles/PSS/ccppschema-PSS6

     This RDF Schema includes the same information as the respective
     chapter of the specification. Greatest care has been taken to keep
     the two documents consistence. However, in case of any divergence
     the specification takes presidence.

     All reference in this RDF Schmea are to be interpreted relative to
     the specification. This means all references using the form
     [ref] are defined in chapter 2 "References" of the specification.
     All other references refer to parts within that document.

     Note: This Schemas has been aligned in structure and base
     vocabulary to the RDF Schema used by UAProf [40].

-->

<rdf:RDF xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
         xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#" >

<!-- ************************************************************** -->
<!-- ***** Properties shared among the components***** -->

  <rdf:Description rdf:ID="defaults">
    <rdfs:type rdf:resource="http://www.w3.org/2000/01/rdf-schema#Property1999/02/22-rdf-syntax-
ns#Property"/>
    <rdfs:domain rdf:resource="#PssCommon"/>
    <rdfs:domain rdf:resource="#Streaming"/>
    <rdfs:domain rdf:resource="#ThreeGPFileFormat"/>
    <rdfs:domain rdf:resource="#PssSmil"/>
    <rdfs:comment>
      An attribute used to identify the default capabilities.
    </rdfs:comment>
  </rdf:Description>

<!-- ************************************************************** -->
<!-- ***** Component Definitions ***** -->

  <rdf:Description rdf:ID="PssCommon">
    <rdf:type rdf:resource="http://www.w3.org/2000/01/rdf-schema#Class"/>
    <rdfs:subClassOf rdf:resource="http://www.wapforum.org/profiles/UAPROF/ccppschema-
20010330#Component"/>
    <rdfs:label>Component: PssCommon</rdfs:label>
    <rdfs:comment>
      The PssCommon component specifies the base vocabulary common for all
      PSS applications, in contrast to application-specific parts of the PSS
      base vocabulary which are described by the Streaming, ThreeGPFileFormat and
      PssSmil components defined below.
```

```
      PSS servers supporting capability exchange should understand the attributes
      in this component as explained in detail in 3GPP TS 26.234 Release 6..
    </rdfs:comment>
  </rdf:Description>

  <rdf:Description rdf:ID="Streaming">
    <rdf:type rdf:resource="http://www.w3.org/2000/01/rdf-schema#Class"/>
    <rdfs:subClassOf rdf:resource="http://www.wapforum.org/profiles/UAPROF/ccppschema-
20010330#Component"/>
    <rdfs:label>Component: Streaming</rdfs:label>
    <rdfs:comment>
      The Streaming component specifies the base vocabulary for pure RTSP/RTP-
      based streaming in PSS.

      PSS servers supporting capability exchange should understand the attributes
      in this component as explained in detail in 3GPP TS 26.234 Release 6.
    </rdfs:comment>
  </rdf:Description>

  <rdf:Description rdf:ID="ThreeGPFileFormat">
    <rdf:type rdf:resource="http://www.w3.org/2000/01/rdf-schema#Class"/>
    <rdfs:subClassOf rdf:resource="http://www.wapforum.org/profiles/UAPROF/ccppschema-
20010330#Component"/>
    <rdfs:label>Component: ThreeGPFileFormat</rdfs:label>
    <rdfs:comment>
      The ThreeGPFileFormat component specifies the base vocabulary for 3GP file
      download or progressive download in PSS.

      PSS servers supporting capability exchange should understand the attributes
      in this component as explained in detail in 3GPP TS 26.234 Release 6.
    </rdfs:comment>
  </rdf:Description>

  <rdf:Description rdf:ID="PssSmil">
    <rdf:type rdf:resource="http://www.w3.org/2000/01/rdf-schema#Class"/>
    <rdfs:subClassOf rdf:resource="http://www.wapforum.org/profiles/UAPROF/ccppschema-
20010330#Component"/>
    <rdfs:label>Component: PssSmil</rdfs:label>
    <rdfs:comment>
      The PssSmil component specifies the base vocabulary for SMIL presentations
      in PSS. Note that capabibilites regarding streaming and 3GP files that are
      part of a SMIL presentation are expressed by the vocabularies specified by
      the Streaming and ThreeGPFileFormat components, respectively.

      PSS servers supporting capability exchange should understand the attributes
      in this component as explained in detail in 3GPP TS 26.234 Release 6.
    </rdfs:comment>
  </rdf:Description>

<!-- **
     ** In the following property definitions, the defined types
     ** are as follows:
     **
     ** Number: A positive integer
     ** [0-9]+
     ** Boolean: A yes or no value
     ** Yes|No
     ** Literal: An alphanumeric string
     ** [A-Za-z0-9/.\-_]+
     ** Dimension: A pair of numbers
     ** [0-9]+x[0-9]+
     **
-->

<!-- ************************************************************** -->
<!-- ***** Component: PssCommon ***** -->

  <rdf:Description rdf:ID="AudioChannels">
    <rdf:type rdf:resource="http://www.w3.org/2000/01/rdf-schema#Property1999/02/22-rdf-syntax-
ns#Property"/>
    <rdfs:domain rdf:resource="#PssCommon"/>
    <rdfs:comment>
      Description: This attribute describes the stereophonic capability of the
      natural audio device. The only legal values are "Mono" and "Stereo".

      Type: Literal
      Resolution: Locked
```

```
      Examples: "Mono", "Stereo"
    </rdfs:comment>
  </rdf:Description>

  <rdf:Description rdf:ID="MaxPolyphony">
    <rdf:type rdf:resource="http://www.w3.org/2000/01/rdf-schema#Property1999/02/22-rdf-syntax-
ns#Property"/>
    <rdfs:domain rdf:resource="#PssCommon"/>
    <rdfs:comment>
      Description: The MaxPolyphony attribute refers to the maximal polyphony
      that the synthetic audio device supports as defined in [44]. Legal values
      are integer between 5 to 24.
      NOTE: MaxPolyphony attribute can be used to signal the maximum polyphony
            capabilities supported by the PSS client. This is a complementary
            mechanism for the delivery of compatible SP-MIDI content and thus
            the PSS client is required to support Scalable Polyphony MIDI i.e.
            Channel Masking defined in [44].

      Type: Number
      Resolution: Locked
      Examples: 8
    </rdfs:comment>
  </rdf:Description>

  <rdf:Description rdf:ID="NumOfGM1Voices">
    <rdf:type rdf:resource="http://www.w3.org/2000/01/rdf-schema#Property1999/02/22-rdf-syntax-
ns#Property"/>
    <rdfs:domain rdf:resource="#PssCommon"/>
    <rdfs:comment>
      Description: The NumOfGM1Voices attribute refers to the maximum number
      of simultaneous GM1   voices that the synthetic audio engine supports.
      Legal values are integers greater or equal than 5.

      Type: Number
      Resolution: Locked
      Examples: 24
    </rdfs:comment>
  </rdf:Description>

<rdf:Description rdf:ID="NumOfMobileDLSVoicesWithoutOptionalBlocks">
    <rdf:type rdf:resource="http://www.w3.org/2000/01/rdf-schema#Property1999/02/22-rdf-syntax-
ns#Property"/>
    <rdfs:domain rdf:resource="#PssCommon"/>
    <rdfs:comment>
      Description: The NumOfMobileDLSVoicesWithoutOptionalBlocks attribute
      refers to the maximum number of simultaneous voices without optional
      group of processing blocks that the synthetic audio engine supports.
      Legal values are integers greater or equal than 5.

      Type: Number
      Resolution: Locked
      Examples: 24
    </rdfs:comment>
  </rdf:Description>

  <rdf:Description rdf:ID="NumOfMobileDLSVoicesWithOptionalBlocks">
    <rdf:type rdf:resource="http://www.w3.org/2000/01/rdf-schema#Property1999/02/22-rdf-syntax-
ns#Property"/>
    <rdfs:domain rdf:resource="#PssCommon"/>
    <rdfs:comment>
      Description: The NumOfMobileDLSVoicesWithOptionalBlocks attribute refers
      to the maximum number of simultaneous voices with optional group of
      processing blocks that the synthetic audio engine supports. This attribute
      is set to zero for devices that do not support the optional group of
      processing blocks. Legal values are integers greater or equal than 0.

      Type: Number
      Resolution: Locked
      Examples: 24
    </rdfs:comment>
  </rdf:Description>

  <rdf:Description rdf:ID="PssVersion">
    <rdf:type rdf:resource="http://www.w3.org/2000/01/rdf-schema#Property1999/02/22-rdf-syntax-
ns#Property"/>
    <rdfs:domain rdf:resource="#PssCommon"/>
    <rdfs:comment>
      Description: Latest PSS version supported by the client. Legal
```

```
      values are "3GPP-R4", "3GPP-R5", "3GPP-R6" and so forth.

      Type: Literal
      Resolution: Locked
      Examples: "3GPP-R5", "3GPP-R6"
    </rdfs:comment>
  </rdf:Description>

  <rdf:Description rdf:ID="RenderingScreenSize">
    <rdf:type rdf:resource="http://www.w3.org/2000/01/rdf-schema#Property1999/02/22-rdf-syntax-
ns#Property"/>
    <rdfs:domain rdf:resource="#PssCommon"/>
    <rdfs:comment>
      Description: The rendering size of the device's screen in unit of
      pixels available for PSS media presentation. The horizontal size is
      given followed by the vertical size. Legal values are pairs of integer
      values equal or greater than zero. A value equal "0x0"means that there
      exists no display or just textual output is supported.

      Type: Dimension
      Resolution: Locked
      Examples: "160x120"
    </rdfs:comment>
  </rdf:Description>

<!-- ************************************************************** -->
<!-- ***** Component: Streaming ***** -->

  <rdf:Description rdf:ID="StreamingAccept">
    <rdf:type rdf:resource="http://www.w3.org/2000/01/rdf-schema#Property1999/02/22-rdf-syntax-
ns#Property"/>
    <rdf:type rdf:resource="http://www.w3.org/2000/01/rdf-schema#Bag1999/02/22-rdf-syntax-ns#Bag"/>
    <rdfs:domain rdf:resource="#Streaming"/>
    <rdfs:comment>
      Description: List of content types (MIME types) relevant for streaming
      over RTP supported by the PSS application. Content types listed shall be
      possible to stream over RTP. For each content type a set of MIME parameters
      can be specified to signal receiver capabilities. A content type that
      supports multiple parameter sets may occur several times in the list.
      Legal values are lists of MIME types with related parameters.

      Type: Literal (bag)
      Resolution: Append
      Examples: "audio/AMR-WB;octet-alignment=1,application/smil"
    </rdfs:comment>
  </rdf:Description>

  <rdf:Description rdf:ID="StreamingAccept-Subset">
    <rdf:type rdf:resource="http://www.w3.org/2000/01/rdf-schema#Property1999/02/22-rdf-syntax-
ns#Property"/>
    <rdf:type rdf:resource="http://www.w3.org/2000/01/rdf-schema#Bag1999/02/22-rdf-syntax-ns#Bag"/>
    <rdfs:domain rdf:resource="#Streaming"/>
    <rdfs:comment>
      Description: List of content types for which the PSS application supports
      a subset. MIME types can in most cases effectively be used to express
      variations in support for different media types. Many MIME types, e.g.
      AMR-WB has several parameters that can be used for this purpose. There
      may exist content types for which the PSS application only supports a
      subset and this subset cannot be expressed with MIME-type parameters.
      In these cases the attribute StreamingAccept-Subset is used to describe
      support for a subset of a specific content type. If a subset of a specific
      content type is declared in StreamingAccept-Subset, this means that
      StreamingAccept-Subset has precedence over StreamingAccept.
      StreamingAccept shall always include the corresponding content types for
      which StreamingAccept-Subset specifies subsets of.
      No legal values are currently defined.

      Type: Literal (bag)
      Resolution: Locked
    </rdfs:comment>
  </rdf:Description>

  <rdf:Description rdf:ID="LinkChar">
    <rdf:type rdf:resource="http://www.w3.org/2000/01/rdf-schema#Property1999/02/22-rdf-syntax-
ns#Property"/>
    <rdfs:domain rdf:resource="#Streaming"/>
    <rdfs:comment>
      Description: This attribute indicates whether the device supports the
```

```
      3GPP-Link-Char header according to clause 10.2.1.1 of the specification.
      Legal values are "Yes" and "No".

      Type: Literal
      Resolution: Override
      Examples: "Yes"
    </rdfs:comment>
  </rdf:Description>

  <rdf:Description rdf:ID="AdaptationSupport">
    <rdf:type rdf:resource="http://www.w3.org/2000/01/rdf-schema#Property1999/02/22-rdf-syntax-
ns#Property"/>
    <rdfs:domain rdf:resource="#Streaming"/>
    <rdfs:comment>
      Description: This attribute indicates whether the device supports
      client buffer feedback signaling according to clause 10.2.3 of the
      specification. Legal values are "Yes" and "No".

      Type: Literal
      Resolution: Locked
      Examples: "Yes"
    </rdfs:comment>
  </rdf:Description>

  <rdf:Description rdf:ID="ExtendedRtcpReports">
    <rdf:type rdf:resource="http://www.w3.org/2000/01/rdf-schema#Property1999/02/22-rdf-syntax-
ns#Property"/>
    <rdfs:domain rdf:resource="#Streaming"/>
    <rdfs:comment>
      Description: This attribute indicates whether the device supports
      extended RTCP reports according to clause 6.2.3.1 of the specification.
      Legal values are "Yes" and "No".

      Type: Literal
      Resolution: Locked
      Examples: "Yes"
    </rdfs:comment>
  </rdf:Description>

  <rdf:Description rdf:ID="RtpRetransmission">
    <rdf:type rdf:resource="http://www.w3.org/2000/01/rdf-schema#Property1999/02/22-rdf-syntax-
ns#Property"/>
    <rdfs:domain rdf:resource="#Streaming"/>
    <rdfs:comment>
      Description: This attribute indicates whether the device supports RTP
      retransmission according to clause 6.2.3.3 of the specification.
      Legal values are "Yes" and "No".

      Type: Literal
      Resolution: Locked
      Examples: "Yes"
    </rdfs:comment>
  </rdf:Description>

  <rdf:Description rdf:ID="MediaAlternatives">
    <rdf:type rdf:resource="http://www.w3.org/2000/01/rdf-schema#Property1999/02/22-rdf-syntax-
ns#Property"/>
    <rdfs:domain rdf:resource="#Streaming"/>
    <rdfs:comment>
      Description: This attribute indicates whether the device interprets the
      SDP attributes "alt", "alt-default-id", and "alt-group", defined in
      clauses 5.3.3.3 and 5.3.3.4 of the specification.
      Legal values are "Yes" and "No".

      Type: Literal
      Resolution: Override
      Examples: "Yes"
    </rdfs:comment>
  </rdf:Description>

  <rdf:Description rdf:ID="RtpProfiles">
    <rdf:type rdf:resource="http://www.w3.org/2000/01/rdf-schema#Property1999/02/22-rdf-syntax-
ns#Property"/>
    <rdf:type rdf:resource="http://www.w3.org/2000/01/rdf-schema#Bag1999/02/22-rdf-syntax-ns#Bag"/>
    <rdfs:domain rdf:resource="#Streaming"/>
    <rdfs:comment>
      Description: This attribute lists the supported RTP profiles. Legal
      values are profile names registered through the Internet Assigned Numbers
```

```
      Authority (IANA), www.iana.org.

      Type: Literal (bag)
      Resolution: Append
      Examples: "RTP/AVP,RTP/AVPF"
    </rdfs:comment>
  </rdf:Description>

  <rdf:Description rdf:ID="StreamingOmaDrm">
    <rdf:type rdf:resource="http://www.w3.org/2000/01/rdf-schema#Property1999/02/22-rdf-syntax-
ns#Property"/>
    <rdf:type rdf:resource="http://www.w3.org/2000/01/rdf-schema#Bag1999/02/22-rdf-syntax-ns#Bag"/>
    <rdfs:domain rdf:resource="#Streaming"/>
    <rdfs:comment>
      Description: Indicates whether the device supports streamed OMA DRM
      protected content, as defined by OMA and Annex K. Legal values are OMA
      Version numbers supported as a floating number. 0.0 indicates no support.

      Type: Literal (bag)
      Resolution: Locked
      Examples: "2.0"
    </rdfs:comment>
  </rdf:Description>

  <rdf:Description rdf:ID="PSSIntegrity">
    <rdf:type rdf:resource="http://www.w3.org/2000/01/rdf-schema#Property1999/02/22-rdf-syntax-
ns#Property"/>
    <rdf:type rdf:resource="http://www.w3.org/2000/01/rdf-schema#Bag1999/02/22-rdf-syntax-ns#Bag"/>
    <rdfs:domain rdf:resource="#Streaming"/>
    <rdfs:comment>
      Description: Indicates whether the device supports integrity protection
      for streamed content as defined by Annex K.2. Legal values are "Yes" and
      "No".

      Type: Literal
      Resolution: Locked
      Examples: "Yes"
    </rdfs:comment>
  </rdf:Description>

  <rdf:Description rdf:ID="VideoDecodingByteRate ">
    <rdf:type rdf:resource="http://www.w3.org/2000/01/rdf-schema#Property1999/02/22-rdf-syntax-
ns#Property"/>
    <rdfs:domain rdf:resource="#Streaming"/>
    <rdfs:comment>
      Description: If Annex G is not supported, the attribute has no meaning.
      If Annex G is supported, this attribute defines the peak decoding byte
      rate the PSS client is able to support. In other words, the PSS client
      fulfils the requirements given in Annex G with the signalled peak decoding
      byte rate. The values are given in bytes per second and shall be greater
      than or equal to 16000. According to Annex G, 16000 is the default peak
      decoding byte rate for the mandatory video codec profile and level
      (H.263 Profile 0 Level 45). Legal values are integer values greater than
      or equal to 16000.

      Type: Number
      Resolution: Locked
      Examples: "16000"
    </rdfs:comment>
  </rdf:Description>

  <rdf:Description rdf:ID="VideoInitialPostDecoderBufferingPeriod">
    <rdf:type rdf:resource="http://www.w3.org/2000/01/rdf-schema#Property1999/02/22-rdf-syntax-
ns#Property"/>
    <rdfs:domain rdf:resource="#Streaming"/>
    <rdfs:comment>
      Description: If Annex G is not supported, the attribute has no
      meaning. If Annex G is supported, this attribute defines the
      maximum initial post-decoder buffering period of video. Values are
      interpreted as clock ticks of a 90-kHz clock. In other words, the
      value is incremented by one for each 1/90 000 seconds. For
      example, the value 9000 corresponds to 1/10 of a second initial
      post-decodder buffering. Legal values are all integer values equal
      to or greater than zero.

      Type: Number
      Resolution: Locked
      Examples: "9000"
```

```
    </rdfs:comment>
  </rdf:Description>

  <rdf:Description rdf:ID="VideoPreDecoderBufferSize">
    <rdf:type rdf:resource="http://www.w3.org/2000/01/rdf-schema#Property1999/02/22-rdf-syntax-
ns#Property"/>
    <rdfs:domain rdf:resource="#Streaming"/>
    <rdfs:comment>
      Description: This attribute signals if the optional video
      buffering requirements defined in Annex G are supported. It also
      defines the size of the hypothetical pre-decoder buffer defined in
      Annex G. A value equal to zero means that Annex G is not
      supported. A value equal to one means that Annex G is
      supported. In this case the size of the buffer is the default size
      defined in Annex G.  A value equal to or greater than the default
      buffer size defined in Annex G means that Annex G is supported and
      sets the buffer size to the given number of octets. Legal values are all
      integer values equal to or greater than zero. Values greater than
      one but less than the default buffer size defined in Annex G are
      not allowed.

      Type: Number
      Resolution: Locked
      Examples: "0", "4096"
    </rdfs:comment>
  </rdf:Description>

<!-- ************************************************************** -->
<!-- ***** Component: ThreeGPFileFormat ***** -->

  <rdf:Description rdf:ID="Brands">
    <rdf:type rdf:resource="http://www.w3.org/2000/01/rdf-schema#Property1999/02/22-rdf-syntax-
ns#Property"/>
    <rdf:type rdf:resource="http://www.w3.org/2000/01/rdf-schema#Bag1999/02/22-rdf-syntax-ns#Bag"/>
    <rdfs:domain rdf:resource="#ThreeGPFileFormat"/>
    <rdfs:comment>
      Description: This attribute lists the supported 3GP profiles identified
      by brand. Legal values are brand identifiers according to 5.3.4 and 5.4
      in [50].

      Type: Literal (bag)
      Resolution: Append
      Examples: "3gp4,3gp5,3gp6,3gr6"
    </rdfs:comment>
  </rdf:Description>

  <rdf:Description rdf:ID="ThreeGPAccept">
    <rdf:type rdf:resource="http://www.w3.org/2000/01/rdf-schema#Property1999/02/22-rdf-syntax-
ns#Property"/>
    <rdf:type rdf:resource="http://www.w3.org/2000/01/rdf-schema#Bag1999/02/22-rdf-syntax-ns#Bag"/>
    <rdfs:domain rdf:resource="#ThreeGPFileFormat"/>
    <rdfs:comment>
      Description: List of content types (MIME types) that can be included
      in a 3GP file and handled by the PSS application. For each content
      type a set of supported parameters can be given. A content type that
      supports multiple parameter sets may occur several times in the list.

      Type: Literal (bag)
      Resolution: Append
      Examples: "video/H263-2000;profile=0;level=45,audio/AMR"
    </rdfs:comment>
  </rdf:Description>

  <rdf:Description rdf:ID="ThreeGPAccept-Subset">
    <rdf:type rdf:resource="http://www.w3.org/2000/01/rdf-schema#Property1999/02/22-rdf-syntax-
ns#Property"/>
    <rdf:type rdf:resource="http://www.w3.org/2000/01/rdf-schema#Bag1999/02/22-rdf-syntax-ns#Bag"/>
    <rdfs:domain rdf:resource="#ThreeGPFileFormat"/>
    <rdfs:comment>
      Description: List of content types for which the PSS application
      supports a subset. MIME types can in most cases effectively be used
      to express variations in support for different media types. Many MIME
      types have several parameters that can be used for this purpose. There
      may exist content types for which the PSS application only supports a
      subset and this subset cannot be expressed with MIME type parameters.
      In these cases the attribute ThreeGPAccept-Subset is used to describe
      support for a subset of a specific content type. If a subset of a
      specific content type is declared in ThreeGPAccept-Subset, this means that
```

```
      ThreeGPAccept-Subset has precedence over ThreeGPAccept. ThreeGPAccept shall always
      include the corresponding content types for which ThreeGPAccept-Subset
      specifies subsets of. No legal values are currently defined.

      Type: Literal (bag)
      Resolution: Locked
    </rdfs:comment>
  </rdf:Description>

  <rdf:Description rdf:ID="ThreeGPOmaDrm">
    <rdf:type rdf:resource="http://www.w3.org/2000/01/rdf-schema#Property1999/02/22-rdf-syntax-
ns#Property"/>
    <rdf:type rdf:resource="http://www.w3.org/2000/01/rdf-schema#Bag1999/02/22-rdf-syntax-ns#Bag"/>
    <rdfs:domain rdf:resource="#ThreeGPFileFormat"/>
    <rdfs:comment>
      Description: List of the OMA DRM versions that is supported to be used
      for DRM protection of content present in the 3GP file format. Legal values
      are OMA DRM version numbers as floating values. 0.0 indicates no support.

      Type: Literal (bag)
      Resolution: Locked
      Examples: "2.0"
    </rdfs:comment>
  </rdf:Description>

<!-- ************************************************************** -->
<!-- ***** Component: PssSmil ***** -->

  <rdf:Description rdf:ID="SmilAccept">
    <rdf:type rdf:resource="http://www.w3.org/2000/01/rdf-schema#Property1999/02/22-rdf-syntax-
ns#Property"/>
    <rdf:type rdf:resource="http://www.w3.org/2000/01/rdf-schema#Bag1999/02/22-rdf-syntax-ns#Bag"/>
    <rdfs:domain rdf:resource="#PssSmil"/>
    <rdfs:comment>
      Description: List of content types (MIME types) that can be part of a
      SMIL presentation. The content types included in this attribute can be
      rendered in a SMIL presentation. If video/3gpp (or audio/3gpp) is
      included, downloaded 3GP files can be included in a SMIL presentation.
      Details on the 3GP file support can then be found in the ThreeGPFileFormat
      component. If the identifier "Streaming-Media" is included, streaming
      media can be included in the SMIL presentation. Details on the
      streaming support can then be found in the Streaming component.
      For each content type a set of supported parameters can be given.
      A content type that supports multiple parameter sets may occur several
      times in the list. Legal values are lists of MIME types with related
      parameters and the "Streaming-Media" identifier.

      Type: Literal (bag)
      Resolution: Append
      Examples: "image/gif,image/jpeg,Streaming-Media"
    </rdfs:comment>
  </rdf:Description>

  <rdf:Description rdf:ID="SmilAccept-Subset">
    <rdf:type rdf:resource="http://www.w3.org/2000/01/rdf-schema#Property1999/02/22-rdf-syntax-
ns#Property"/>
    <rdf:type rdf:resource="http://www.w3.org/2000/01/rdf-schema#Bag1999/02/22-rdf-syntax-ns#Bag"/>
    <rdfs:domain rdf:resource="#PssSmil"/>
    <rdfs:comment>
      Description: List of content types for which the PSS application
      supports a subset. MIME types can in most cases effectively be used to
      express variations in support for different media types. Many MIME types
      have several parameters that can be used for this purpose. There may
      exist content types for which the PSS application only supports a subset
      and this subset cannot be expressed with MIME-type parameters. In these
      cases the attribute SmilAccept-Subset is used to describe support for a
      subset of a specific content type. If a subset of a specific content type
      is declared in SmilAccept-Subset, this means that SmilAccept-Subset has
      precedence over SmilAccept. SmilAccept shall always include the
      corresponding content types for which SmilAccept-Subset specifies subsets
      of.

      The following values are defined:
        - "JPEG-PSS": Only the two JPEG modes described in clause 7.5 of the
                      specifictaion are supported.
        - "SVG-Tiny"
        - "SVG-Basic"
```

```
      Subset identifiers and corresponding semantics shall only be defined by
      the TSG responsible for the present document.

      Type: Literal (bag)
      Resolution: Append
      Examples: "JPEG-PSS,SVG-Tiny"
    </rdfs:comment>
  </rdf:Description>

  <rdf:Description rdf:ID="SmilBaseSet">
    <rdf:type rdf:resource="http://www.w3.org/2000/01/rdf-schema#Property1999/02/22-rdf-syntax-
ns#Property"/>
    <rdfs:domain rdf:resource="#PssSmil"/>
    <rdfs:comment>
      Description: Indicates a base set of SMIL 2.0 modules that the client
      supports. Leagal values are the following pre-defined identifiers:
      "SMIL-3GPP-R4" and "SMIL-3GPP-R5" indicate all SMIL 2.0 modules required
      for scene-description support according to clause 8 of Release 4 and
      Release 5, respectively, of TS 26.234. "SMIL-3GPP-R6" indicates all
      SMIL 2.0 modules required for scene description support according to
      clause 8 of the specification and to Release 6 of TS 26.246 [52].

      Type: Literal
      Resolution: Locked
      Examples: "SMIL-3GPP-R4", "SMIL-3GPP-R5"
    </rdfs:comment>
  </rdf:Description>

  <rdf:Description rdf:ID="SmilModules">
    <rdf:type rdf:resource="http://www.w3.org/2000/01/rdf-schema#Property1999/02/22-rdf-syntax-
ns#Property"/>
    <rdf:type rdf:resource="http://www.w3.org/2000/01/rdf-schema#Bag1999/02/22-rdf-syntax-ns#Bag"/>
    <rdfs:domain rdf:resource="#PssSmil"/>
    <rdfs:comment>
      Description: This attribute defines a list of SMIL 2.0 modules
      supported by the client. If the SmilBaseSet is used those modules
      do not need to be explicitly listed here. In that case only
      additional module support needs to be listed. Legal values are all
      SMIL 2.0 module names defined in the SMIL 2.0 recommendation [31],
      section 2.3.3, table 2.

      Type: Literal (bag)
      Resolution: Locked
      Examples: "BasicTransitions,MulitArcTiming"
    </rdfs:comment>
  </rdf:Description>

</rdf:RDF>
```

Ö <cut text> Ö

K.1 RTP payload format for encryption

This clause defines an RTP payload format for confidentiality protection for OMA DRM version 2 [74] for streamed media within PSS. The format specification addresses the following requirements:

- Support random seek capabilities in the encrypted media stream;
- Support pre-encryption of RTP payloads for usage in RTP hint-tracks as present in the 3GPP file format [50];
- Support selective encryption of individual payloads;
- Support usage of a strong encryption mechanism;
- Support arbitrary media payload formats.

To fulfil the above requirements a solution based on an RTP payload format that encapsulates an original RTP payload into a new RTP payload has been developed. The complete original payload is encrypted using a crypto transform. This specification defines one crypto transform using AES [77] in counter mode with a 128-bit key. To enable pre-encryption and random seek capabilities, an explicit Initialization Vector sequence number (IVSN) is used to derive the real initialization vector (IV). A minimalistic approach is taken in regards to overhead, and therefore the RTP payload type is used to support selective encryption, provide indication of the original RTP payload and determine any protection configuration. Thus there is need for a number of parameters to be signalled in relation to any defined payload type using this format.

To be able to use any other crypto transform one will need to identify if the IVSN field is needed, or some other field(s) are needed in addition to the encrypted body, and define these. To indicate this new transform, a new MIME subtype is defined that identifies the crypto transform used. Such a crypto transform could also define the presence of key indicator fields.

The description of the RTP payload format below uses the following definitions:

Content Encryption Key (CEK):	The key used to encrypt the content, i.e. the original payloads.
Encrypted body:	The encrypted bits of an original payload.
Encryption payload format:	The RTP payload format defined in this chapter.
Encryption payload:	The RTP payload that consists of an IV sequence number, key indicator field, and an encrypted body.
Initialization Vector (IV):	The starting state of the cryptographic mode.
Original payload:	A complete RTP payload in accordance with another RTP payload format specification.
Original RTP packet:	A complete RTP packet that contains header values and payloads in accordance with the RTP specification and another RTP payload format specification.
Protected RTP packet:	An RTP packet with the encryption payload format as payload, and its header values set according to RTP and the encryption payload format.

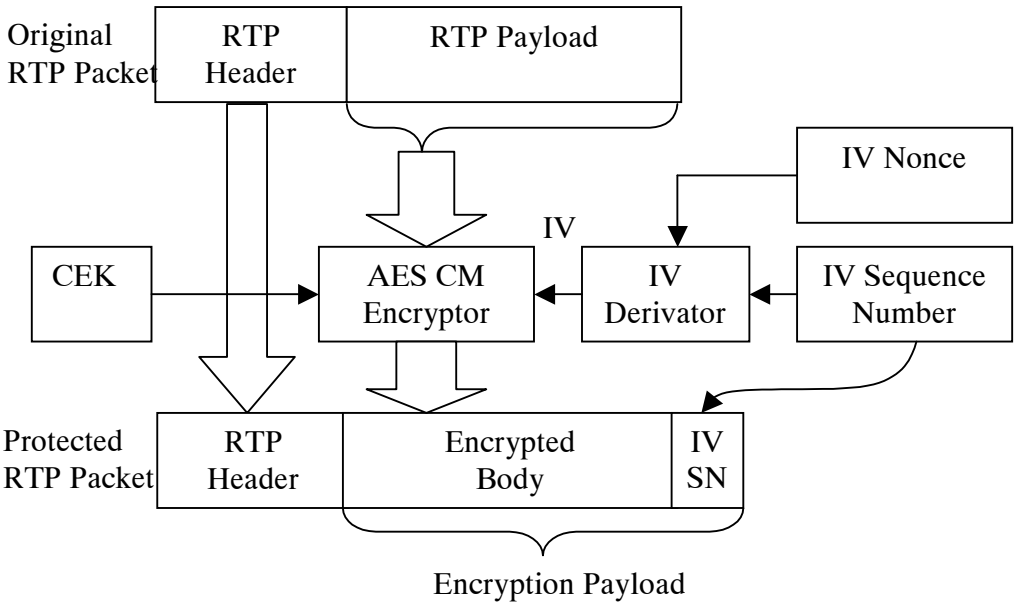


Figure K.1: Schematic process - from an unprotected RTP packet to a protected one

The confidentiality protection of the original RTP payload is accomplished through the encryption of the complete payload using a crypto transform, the defined format uses AES in counter mode (AES CM) with 128-bit keys, as shown in Figure K.1. The encryption of each individual payload is made independently from each other by assigning an Initialization Vector to each payload. In order to avoid sending the complete IV (128 bits for AES CM) in each RTP packet, a derivation process is used, to create the IV for each packet. As the IV derivation is a fully defined operation, the receiver can also perform it to determine the full IV. The IV Nonce is to protect against pre-computational attacks and is signalled out of band from the RTP stream. The IV sequence number used, as input to the IV derivation, is placed in the RTP payload of the protected packet together with the resulting ciphertext.

The header fields of a protected RTP packet are populated based on the RTP header fields of the original packet. The only field that is necessary to change is the RTP payload type, which is replaced with another type indicating that the RTP payload is using the encryption payload format. Further the payload type is also used to indicate which original payload type the packet contains. This usage of the payload type avoids using any bit in the RTP payload for the signalling.

No bits in the payload format need to be spent to enable the usage of selective encryption. This is also accomplished by using the payload type of the RTP header. A sender utilizing selective encryption, (on a packet-by-packet basis) signals for each packet if it wants to send the RTP payload protected or not, by using the corresponding payload type and format. A simple de-multiplexing as shown in Figure K.2 is all that is required on the receiver side to determine which payloads that needs decryption. A signalling attribute is defined to inform the receiver when selective encryption is used.

Ö <cut text> Ö

K.2.5 Example

This clause shows an example including the key management protocol for the content integrity protection between the streaming server and the client. First is an overview in the form of a flow diagram (see Figure K.4).

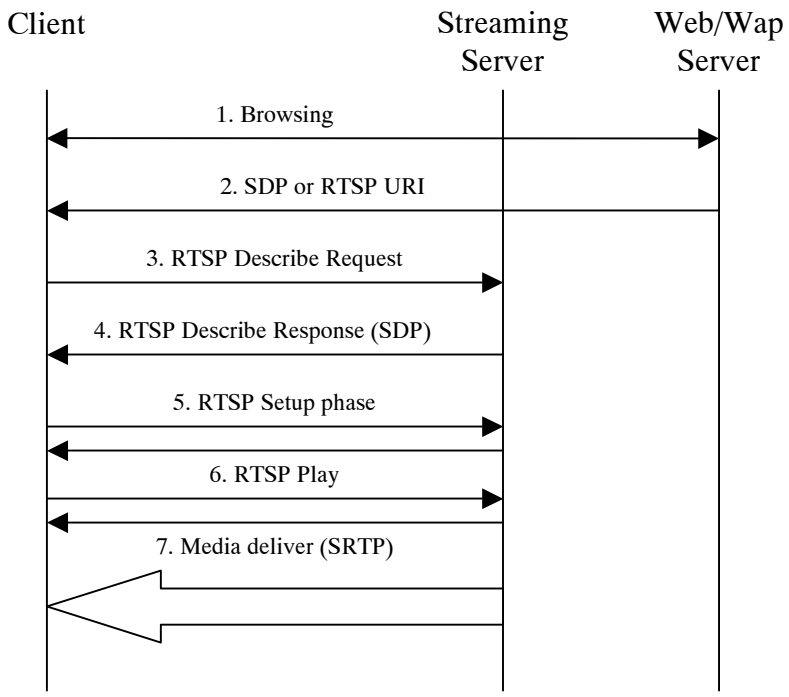


Figure K.4: Flow diagram for Session Establishment with Integrity Protection

1. (Optional) A user is browsing for streaming content.

2. (Optional) Upon finding interesting content the client retrieves either an RTSP URI or an SDP. If the client retrieves a SDP file, then that SDP will contain m= lines with RTP/SAVP and the integrity key management attributes. However the actual key related values will most probably not be used. See the following example:

   v=0
   o=- 950814089 950814089 IN IP4 144.132.134.67
   s=Example of aggregate control of AMR speech and H.263 video with DRM with confidentiality and Integrity protection.
   e=foo@bar.com
   c=IN IP4 0.0.0.0
   b=AS:77
   t=0 0
   a=range:npt=0-59.3478
   a=control:rtsp://example.com/SecuredMedia/hobbs.3gp
   a=3GPP-Integrity-Key: OMADRMv2:
   m=audio 0 RTP/SAVP 97 98
   b=AS:13
   b=RR:350
   b=RS:300
   a=rtpmap:97 AMR/8000
   a=fmtp:97 octet-align=1
   a=rtpmap:98 RTP.ENC.AESCM128/8000
   a=fmtp:98 opt=97; ContentID=" content1000221@ContentIssuer.com";
   RightsIssuerURL="http://drm.rightsserver.org/1000221"; IVnonce=JDE0SYJCAAqWUwWJiBM=;
   SelectiveEncryption=1

a=control:rtsp://example.com/SecuredMedia/hobbs.3gp/streamID=0
a=3GPP-Adaptation-Support:2
m=video 0 RTP/SAVP 99 100
b=AS:64
b=RR:2000
b=RS:1200
a=rtpmap:99 H263-2000/90000
a=fmtp:99 profile=3;level=10
a=rtpmap:100 RTP.ENC.AESCM128/90000
a=fmtp:100 opt=99; ContentID="content6188164@ContentIssuer.com"; RightsIssuerURL="
http://drm.rightsserver.org/6188164"; IVnonce= IwOSRWeSAUiVEiN5gVA=
a=control:rtsp://example.com/SecuredMedia/hobbs.3gp/streamID=1
a=3GPP-Adaptation-Support:1

The client upon receiving this SDP can determine the need to support SRTP for this media (signalled by the SAVP profile). Also the key management scheme is evident, through the SDP attribute a=3GPP-Integrity-Key and its method identifier. The a=3GPP-Integrity-Key not containing key and freshness token also tells the client that it needs to request a new SDP containing session specific values.

3. The client may now know (due to the SDP) that it needs to retrieve a SDP from the streaming server. Therefore it sends an RTSP DESCRIBE request to the server including a freshness token.

DESCRIBE rtsp://mediaserver.com/movie.test RTSP/1.0
CSeq: 1
User-Agent: TheStreamClient/1.1b2
x-wap-profile: "http://uaprof.example.com/products/TheStreamClient1.1b2"
3GPP-Freshness-Token: zSARrvlkL94OcWB/yqDszw==

4. The server has received a DESCRIBE request for content that shall be integrity protected. If the server is delivering content from a 3GP file, the server determines this based on the SRTP hint-tracks present in the file, and its schemeTypeBox. If this indicates that the key management to be used is the one specified above. The server generates the i_nonce values, and derives the keys Ks and Km. The server specifies the SRTP security parameters within the SDP, adding the i_nonce values, the encrypted copy of k, and the freshness token, and integrity protects such SDP part with the derived key Ks. This results in a new SDP looking like this:

v=0
o=- 950814089 950814089 IN IP4 144.132.134.67
s=Example of aggregate control of AMR speech and H.263 video with DRM with confidentiality and Integrity protection.
e=foo@bar.com
c=IN IP4 0.0.0.0
b=AS:77
t=0 0
a=range:npt=0-59.3478
a=control:rtsp://example.com/session0000012838984
a=3GPP-Integrity-Key: OMADRMv2: 1SCxWEMNe397m24SwgyRhg==,"
content1000221@ContentIssuer.com","http://drm.rightsserver.org/1000221"
zSARrvlkL94OcWB/yqDszw==
a=3GPP-SDP-Auth:1SCxWEMNe397m24SwgyRhg== fmVZNGmrsuVmyGIEtwVaU2xFwOw=
m=audio 0 RTP/SAVP 97 98
b=AS:13
b=RR:350
b=RS:300
a=rtpmap:97 AMR/8000
a=fmtp:97 octet-align=1
a=rtpmap:98 RTP.ENC.AESCM128/8000
a=fmtp:98 opt=97; ContentID=" content1000221@ContentIssuer.com"; RightsIssuerURL="
http://drm.rightsserver.org/1000221"; IVnonce=JDE0SYJCAAqWUwWJiBM=; SelectiveEncryption=1
a=control:rtsp://example.com/session0000012838984/m1
a=3GPP-Adaptation-Support:2
a=3GPP-SRTP-Config:3NivNiiwMNgZmngs128OcA== NRknve/o/LXY97cRY7Y= auth-tag-len=32
m=video 0 RTP/SAVP 99 100

b=AS:64
b=RR:2000
b=RS:1200
a=rtpmap:99 H263-2000/90000
a=fmtp:99 profile=3;level=10
a=rtpmap:100 RTP.ENC.AESCM128/90000
a=fmtp:100 opt=99; ContentID="content6188164@ContentIssuer.com"; RightsIssuerURL="
http://drm.rightsserver.org/6188164"; IVnonce= IwOSRWeSAUiVEiN5gVA=
a=control:rtsp://example.com/session0000012838984/m2
a=3GPP-Adaptation-Support:1
a=3GPP-SRTP-Config:PyChokXYVigC9kDftofE7Q== 0zvrjkBK/9Yc3BJ61/Q= auth-tag-len=80

This SDP is then transmitted to the client.

5. The client decrypts k, derives the keys Ks and Km, and verifies the integrity of the SDP part. The freshness token's validity needs also to be checked. If successful, the clients populates the SRTP crypto contexts using the supplied keys and parameters. The client uses RTSP to setup both media streams in an aggregated session at server. This is done using the new control URI supplied in the SDP, which allows the server to determine which of its generated contexts shall be used for this session.

6. The client requests to start media deliver through a RTSP PLAY request. The server responds.

7. The server delivers a stream of SRTP packets that are integrity protected (as well as pre-encrypted, in accordance to section K.1).

Annex L (informative): Change history

Change history							
Date	TSG SA #	TSG Doc.	CR	Rev	Subject/Comment	Old	New
03-2001	11	SP-010094			Version for Release 4		4.0.0
09-2001	13	SP-010457	001	1	3GPP PSS4 SMIL Language Profile	4.0.0	4.1.0
09-2001	13	SP-010457	002		Clarification of H.263 baseline settings	4.0.0	4.1.0
09-2001	13	SP-010457	003	2	Updates to references	4.0.0	4.1.0
09-2001	13	SP-010457	004	1	Corrections to Annex A	4.0.0	4.1.0
09-2001	13	SP-010457	005	1	Clarifications to chapter 7	4.0.0	4.1.0
09-2001	13	SP-010457	006	1	Clarification of the use of XHTML Basic	4.0.0	4.1.0
12-2001	14	SP-010703	007		Correction of SDP Usage	4.1.0	4.2.0
12-2001	14	SP-010703	008	1	Implementation guidelines for RTSP and RTP	4.1.0	4.2.0
12-2001	14	SP-010703	009		Correction to media type decoder support in the PSS client	4.1.0	4.2.0
12-2001	14	SP-010703	010		Amendments to file format support for 26.234 release 4	4.1.0	4.2.0
03-2002	15	SP-020087	011		Specification of missing limit for number of AMR Frames per Sample	4.2.0	4.3.0
03-2002	15	SP-020087	013	2	Removing of the reference to TS 26.235	4.2.0	4.3.0
03-2002	15	SP-020087	014		Correction to the reference for the XHTML MIME media type	4.2.0	4.3.0
03-2002	15	SP-020087	015	1	Correction to MPEG-4 references	4.2.0	4.3.0
03-2002	15	SP-020087	018	1	Correction to the width field of H263SampleEntry Atom in Section D.6	4.2.0	4.3.0
03-2002	15	SP-020087	019		Correction to the definition of "b=AS"	4.2.0	4.3.0
03-2002	15	SP-020087	020		Clarification of the index number's range in the referred MP4 file format	4.2.0	4.3.0
03-2002	15	SP-020087	021		Correction of SDP attribute 'C='	4.2.0	4.3.0
03-2002	15	SP-020173	023		References to "3GPP AMR-WB codec" replaced by "ITU-T Rec. G.722.2" and "RFC 3267"	4.2.0	4.3.0
03-2002	15	SP-020088	022	2	Addition of Release 5 functionality	4.3.0	5.0.0
06-2002	16	SP-020226	024	1	Correction to Timed Text	5.0.0	5.1.0
06-2002	16	SP-020226	026	3	Mime media type update	5.0.0	5.1.0
06-2002	16	SP-020226	027		Corrections to the description of Sample Description atom and Timed Text Format	5.0.0	5.1.0
06-2002	16	SP-020226	029	1	Corrections Based on Interoperability Issues	5.0.0	5.1.0
09-2002	17	SP-020439	030	2	Correction regarding support for Timed Text	5.1.0	5.2.0
09-2002	17	SP-020439	032	3	Required RTSP header support	5.1.0	5.2.0
09-2002	17	SP-020439	034	1	Including bitrate information for H.263	5.1.0	5.2.0
09-2002	17	SP-020439	035	1	RTCP Reports and Link Aliveness in Ready State	5.1.0	5.2.0
09-2002	17	SP-020439	036	2	Correction on media and session-level bandwidth fields in SDP	5.1.0	5.2.0
09-2002	17	SP-020439	037	2	Correction on usage of MIME parameters for AMR	5.1.0	5.2.0
09-2002	17	SP-020439	038	1	Correction of Mapping of SDP parameters to UMTS QoS parameters (Annex J)	5.1.0	5.2.0
12-2002	18	SP-020694	039	2	Addition regarding IPv6 support in SDP	5.2.0	5.3.0
12-2002	18	SP-020694	040		Code points for H.263	5.2.0	5.3.0
12-2002	18	SP-020694	041	2	File format 3GP based on ISO and not MP4	5.2.0	5.3.0
12-2002	18	SP-020694	044	1	SMIL authoring instructions	5.2.0	5.3.0
12-2002	18	SP-020694	045	1	Client usage of bandwidth parameter at the media level in SDP	5.2.0	5.3.0
12-2002	18	SP-020694	047	1	SMIL Language Profile	5.2.0	5.3.0
12-2002	18	SP-020694	050	1	Usage of Multiple Media Sample Entries in Media Tracks of 3GP files	5.2.0	5.3.0
12-2002	18	SP-020694	051	1	Progressive download of 3GP files	5.2.0	5.3.0
03-2003	19	SP-030091	052	1	SDP bandwidth modifier for RTCP bandwidth	5.3.0	5.4.0
03-2003	19	SP-030091	053		Specification of stream control URLs in SDP files	5.3.0	5.4.0

03-2003	19	SP-030091	054		Clarification of multiple modifiers for timed text	5.3.0	5.4.0
03-2003	19	SP-030091	056	4	Correction of wrong references	5.3.0	5.4.0
03-2003	19	SP-030091	057	2	Correction of signalling frame size for H.263 in SDP	5.3.0	5.4.0
06-2003	20	SP-030217	058	1	SMIL supported event types	5.4.0	5.5.0
06-2003	20	SP-030217	060		Correction to the Content Model of the SMIL Language Profile	5.4.0	5.5.0
09-2003	21	SP-030448	061	1	Correction on session bandwidth for RS and RR RTCP modifiers	5.5.0	5.6.0
09-2003	21	SP-030448	062	1	Correction of ambiguous range headers in SDP	5.5.0	5.6.0
09-2003	21	SP-030448	063	1	Timed-Text layout example	5.5.0	5.6.0
09-2003	21	SP-030448	064		Correction of ambiguity in RTP timestamps handling after PAUSE/PLAY RTSP requests	5.5.0	5.6.0
09-2003	21	SP-030448	065		Correction of obsolete RTP references	5.5.0	5.6.0
09-2003	21	SP-030448	066	1	Correction of wrong reference	5.5.0	5.6.0
09-2003	21	SP-030448	067		Missing signaling of live content	5.5.0	5.6.0
06-2004	24	SP-040434	068	1	Addition of Release-6 functionality	5.6.0	6.0.0
09-2004	25	SP-040652	070	1	Additional Release-6 updates to PSS Protocols and codecs	6.0.0	6.1.0
09-2004	25	SP-040642	074	1	Introduction of Extended AMR-WB and Enhanced aacPlus into PSS service	6.0.0	6.1.0
09-2004	25	SP-040656	075	1	Introduction of the H.264 (AVC) video codec into the PSS service	6.0.0	6.1.0

3GPP TSG-SA WG4 Meeting #33
Helsinki, Finland, 22-26 November 2004

Tdoc ⌘S4-040694

CR-Form-v7

CHANGE REQUEST

⌘ **26.234** **CR** **077** ⌘ **rev** **-** ⌘ Current version: **6.1.0** ⌘

*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:	⌘	Transport-independent SDP bandwidth modifiers for PSS
Source:	⌘	TSG-SA WG4
Work item code:	⌘	PSSrel6-Stage3
Date:	⌘	14/12/2004
Category:	⌘	**F**
Release:	⌘	Rel-6

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:	⌘	These changes to TS 26.234 were proposed in S4-040421 and agreed at SA4#32 (PSM report S4-040600). By mistake, the corresponding CR was never produced. The changes solve the issue with expressing media and session bandwidth values in SDP. The current usage of only using the SDP bandwidth modifier "AS" prevents a single value from being used over different IP protocols, as the overhead differs between IPv4 and IPv6.
Summary of change:	⌘	The agreed SDP bandwidth modifier TIAS is added and usage rules are claried.
Consequences if not approved:	⌘	PSS Streaming session bandwidth requirements cannot be correctly represented with a single value if different IP versions or usage of header compression occur.

Clauses affected:	⌘	2, 5.3.3.1

Other specs affected: ⌘	Y	N		⌘
		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

Ö

[93] IETF RFC 3890: "A Transport Independent Bandwidth Modifier for the Session Description Protocol (SDP)", Westerlund M., September 2004.

Ö <cut text> Ö

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 ìa=control:î 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) box 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 ìb=AS:î and "b=TIAS:" and "a=maxprate" [93] fields at the media level for each media stream in SDP, and should include "b=TIAS" and "a=maxprate" at session level, and a PSS client shall interpret these fields. If both bandwidth modifiers are present, "b=TIAS" should be used, however it may be missing in content produced according to earlier releases. When a PSS client receives SDP, it should ignore the session level ìb=AS:î parameter (if

present), and instead calculate session bandwidth from the media level bandwidth values of the relevant streams. If "b=TIAS" and "a=maxprate" is present at session level, it should be used in preference over the media level values, as session level can provide a more accurate description of the needed session bandwidth when aggregating several media streams together. A PSS client shall also handle the case where the bandwidth parameters ~~is~~are not present, since this may occur when connecting to a Release-4 server.

Note that for RTP based applications , ëb=AS:í 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 [55]. 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 [55], 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 bandwidth given by the ìb=ASî 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.

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].

3GPP TSG-SA WG4 Meeting #33
Helsinki, Finland, 22-26 November 2004

Tdoc ⌘S4-040695

CR-Form-v7

CHANGE REQUEST

⌘ **26.234** **CR** **078** ⌘ **rev** **-** ⌘ Current version: **6.1.0** ⌘

*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:	⌘	Correction of MIME type definition for DRM protected content
Source:	⌘	TSG-SA WG4
Work item code:	⌘	PSSrel6-Stage3
Date:	⌘	14/12/2004
Category:	⌘	**F**
Release:	⌘	Rel-6

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:	⌘	Dots "." are not allowed in MIME type names unless they belong to a defined media type tree.
Summary of change:	⌘	Replaced dots "." with dashes "-".
Consequences if not approved:	⌘	The MIME type is invalid and cannot be registered.

Clauses affected:	⌘	K.1.4.1, K.1.4.2, K1.4.3, K.2.5			
Other specs affected:	⌘	**Y**	**N**	Other core specifications	⌘
		☐	☐	Test specifications	
		☐	☐	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.

K.1.4 Signalling

This clause specifies the RTP payload format MIME type, and how it is utilized in SDP. An example is included as well.

Any unknown MIME parameter shall be ignored.

K.1.4.1 MIME type definition

MIME media type name: audio, video, text~~, application, image~~

MIME subtype name: rtp-~~-~~enc-~~-~~aescm128

Required parameters:

opt: The payload type number of the payload type contained in the encrypted payload. An integer value between 0-127.

rate: The timestamp rate of this payload type, which shall be the same as that of the original payload type. This is an integer value between 1 and 2^32.

ContentID: The OMA DRM content ID [75] used to identify the content when establishing a crypto context. The value is an RFC 2396 [60] URI, which shall be quoted using <">.

RightsIssuerURL: The right issuer URL as defined by OMA DRM [75]. The value is an URI in accordance with RFC 2396 [60], which shall be quoted using <">.

IVnonce: The value of this parameter is the nonce that forms the IV as specified by the crypto transform, encoded using Base 64 [69].

Optional parameters:

SelectiveEncryption: Indicates if this stream is selectively encrypted. Allowed values are 0 (false) and 1 (true). If not present, selective encryption shall not be used. Please note that unless this indicator is integrity protected, it fulfills no purpose.

Encoding considerations:

This type is only defined for transfer via RTP (RFC 3550).

Security considerations:

See considerations raised in RTP RFC 3550 [9] and any applicable profile like RFC 3551 [10] or RFC 3711 [72]. Further see 3GPP TS 26.234, Release 6, Annex K for comments on security issues. The main issues that exists are:

- This RTP payload format only confidentiality protects the RTP payload, thus header information is leaked, similarly to SRTP.

- The use of stream ciphers as AES CM and no integrity protection allows an attacker to purposefully attack the content of the encrypted RTP payload by switching individual bits.

- The usage of selective encryption without integrity protection allows for an attacker to perform any replacements of complete RTP payloads and packets it desires.

- The payload format makes the receiver vulnerable to denial of service attacks that inserts RTP packets into the stream, that the receiver then interprets as being encrypted thus wasting computational resources. To prevent this attack, authentication needs to be used.

Interoperability considerations:

Published specification:

3GPP TS 26.234, Release 6.

Open Mobile Alliance DRM Content Format V2.0

Applications which use this media type:

Third Generation Partnership Project (3GPP) Packet-switched Streaming Service (PSS) clients and servers, which supports the Open Mobile Alliance's specification of Digital Rights Management version 2.0.

Additional information:

Magic number(s): N/A

File extension(s): N/A

Macintosh File Type Code(s): N/A

Person & email address to contact for further information:

magnus.westerlund@ericsson.com

Intended usage:

Common

Author/Change controller:

3GPP TSG SA

K.1.4.2 Mapping of MIME to SDP

The MIME media types for the encrypted RTP payload format and its parameter strings are mapped to fields in the Session Description Protocol (SDP) [6] as follows:

- The media name in the "m=" line of SDP shall be set to the used media type, i.e. audio, video, text, application, or image.
- The encoding name in the "a=rtpmap" line of SDP shall be rtp-enc-aescm128 (the MIME subtype).
- The clock rate in the "a=rtpmap" line shall be equal to the rate parameter.
- The remaining parameters when present, shall be included in the "a=fmtp" line of SDP. These parameters are expressed as a MIME media type string, in the form of a semicolon separated list of parameter=value pairs.

Note that the payload format (encoding) names are commonly shown in upper case. MIME subtypes are commonly shown in lower case. These names are case-insensitive in both places. Similarly, parameter names are case-insensitive both in MIME types and in the default mapping to the SDP a=fmtp attribute.

This MIME type is only intended for declarative usage, like in RTSP. The usage and behaviour in the SDP Offer/Answer model is undefined.

K.1.4.3 SDP example

```
v=0
o=- 950814089 950814089 IN IP4 144.132.134.67
s=Example of aggregate control of AMR speech and H.263 video including DRM
e=foo@bar.com
c=IN IP4 0.0.0.0
b=AS:77
t=0 0
a=range:npt=0-59.3478
a=control:*
m=audio 0 RTP/AVP 97 98
b=AS:13
b=RR:350
b=RS:300
a=rtpmap:97 AMR/8000
a=fmtp:97 octet-align=1
a=rtpmap:98 RTP-ENC-AESCM128/8000
a=fmtp:98 opt=97; ContentID="content1000221@ContentIssuer.com";
RightsIssuerURL="http://drm.rightsserver.org/1000221";
IVnonce=JDE0SYJCAAqWUwWJiBM=; SelectiveEncryption=1
a=control: streamID=0
a=3GPP-Adaptation-Support:2
m=video 0 RTP/AVP 99 100
b=AS:64
b=RR:2000
b=RS:1200
a=rtpmap:99 H263-2000/90000
a=fmtp:99 profile=3;level=10
a=rtpmap:100 RTP-ENC-AESCM128/90000
a=fmtp:100 opt=99; ContentID="content6188164@ContentIssuer.com";
RightsIssuerURL=" http://drm.rightsserver.org/6188164"; IVnonce=
IwOSRWeSAUiVEiN5gVA=
a=control: streamID=1
a=3GPP-Adaptation-Support:1
```

Ö <cut text> Ö

K.2.5 Example

This clause shows an example including the key management protocol for the content integrity protection between the streaming server and the client. First is an overview in the form of a flow diagram (see Figure K.4).

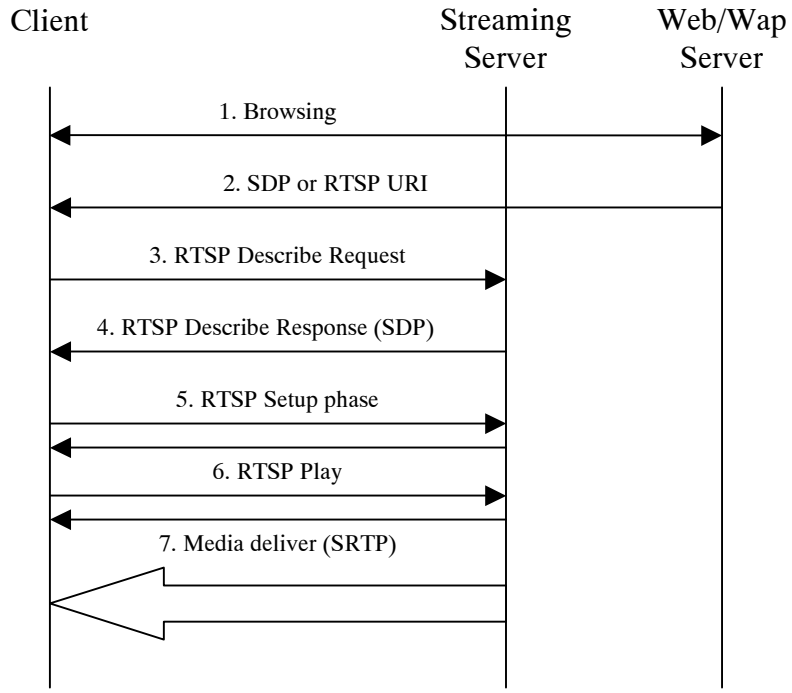


Figure K.4: Flow diagram for Session Establishment with Integrity Protection

1. (Optional) A user is browsing for streaming content.
2. (Optional) Upon finding interesting content the client retrieves either an RTSP URI or an SDP. If the client retrieves a SDP file, then that SDP will contain m= lines with RTP/SAVP and the integrity key management attributes. However the actual key related values will most probably not be used. See the following example:

   v=0
   o=- 950814089 950814089 IN IP4 144.132.134.67
   s=Example of aggregate control of AMR speech and H.263 video with DRM with confidentiality and Integrity protection.

e=foo@bar.com
c=IN IP4 0.0.0.0
b=AS:77
t=0 0
a=range:npt=0-59.3478
a=control:rtsp://example.com/SecuredMedia/hobbs.3gp
a=3GPP-Integrity-Key: OMADRMv2:
m=audio 0 RTP/SAVP 97 98
b=AS:13
b=RR:350
b=RS:300
a=rtpmap:97 AMR/8000
a=fmtp:97 octet-align=1
a=rtpmap:98 ~~RTP.ENC.AESCM128~~RTP-ENC-ASECM128/8000
a=fmtp:98 opt=97; ContentID=" content1000221@ContentIssuer.com";
RightsIssuerURL="http://drm.rightsserver.org/1000221"; IVnonce=JDE0SYJCAAqWUwWJiBM=;
SelectiveEncryption=1
a=control:rtsp://example.com/SecuredMedia/hobbs.3gp/streamID=0
a=3GPP-Adaptation-Support:2
m=video 0 RTP/SAVP 99 100
b=AS:64
b=RR:2000
b=RS:1200
a=rtpmap:99 H263-2000/90000
a=fmtp:99 profile=3;level=10
a=rtpmap:100 ~~RTP.ENC.AESCM128~~RTP-ENC-ASECM128/90000
a=fmtp:100 opt=99; ContentID="content6188164@ContentIssuer.com"; RightsIssuerURL="
http://drm.rightsserver.org/6188164"; IVnonce= IwOSRWeSAUiVEiN5gVA=
a=control:rtsp://example.com/SecuredMedia/hobbs.3gp/streamID=1
a=3GPP-Adaptation-Support:1

The client upon receiving this SDP can determine the need to support SRTP for this media (signalled by the SAVP profile). Also the key management scheme is evident, through the SDP attribute a=3GPP-Integrity-Key and its method identifier. The a=3GPP-Integrity-Key not containing key and freshness token also tells the client that it needs to request a new SDP containing session specific values.

3. The client may now know (due to the SDP) that it needs to retrieve a SDP from the streaming server. Therefore it sends an RTSP DESCRIBE request to the server including a freshness token.

DESCRIBE rtsp://mediaserver.com/movie.test RTSP/1.0
CSeq: 1
User-Agent: TheStreamClient/1.1b2
x-wap-profile: http://uaprof.example.com/products/TheStreamClient1.1b2
3GPP-Freshness-Token: zSARrvlkL94OcWB/yqDszw==

4. The server has received a DESCRIBE request for content that shall be integrity protected. If the server is delivering content from a 3GP file, the server determines this based on the SRTP hint-tracks present in the file, and its schemeTypeBox. If this indicates that the key management to be used is the one specified above. The server generates the i_nonce values, and derives the keys Ks and Km. The server specifies the SRTP security parameters within the SDP, adding the i_nonce values, the encrypted copy of k, and the freshness token, and integrity protects such SDP part with the derived key Ks. This results in a new SDP looking like this:

v=0
o=- 950814089 950814089 IN IP4 144.132.134.67
s=Example of aggregate control of AMR speech and H.263 video with DRM with confidentiality and Integrity protection.
e=foo@bar.com
c=IN IP4 0.0.0.0
b=AS:77
t=0 0
a=range:npt=0-59.3478
a=control:rtsp://example.com/session0000012838984

a=3GPP-Integrity-Key: OMADRMv2: 1SCxWEMNe397m24SwgyRhg==,"
content1000221@ContentIssuer.com","http://drm.rightsserver.org/1000221"
zSARrvlkL94OcWB/yqDszw==
a=3GPP-SDP-Auth:1SCxWEMNe397m24SwgyRhg== fmVZNGmrsuVmyGIEtwVaU2xFwOw=
m=audio 0 RTP/SAVP 97 98
b=AS:13
b=RR:350
b=RS:300
a=rtpmap:97 AMR/8000
a=fmtp:97 octet-align=1
a=rtpmap:98 ~~RTP.ENC.AESCM128~~RTP-ENC-ASECM128/8000
a=fmtp:98 opt=97; ContentID=" content1000221@ContentIssuer.com"; RightsIssuerURL="
http://drm.rightsserver.org/1000221"; IVnonce=JDE0SYJCAAqWUwWJiBM=; SelectiveEncryption=1
a=control:rtsp://example.com/session0000012838984/m1
a=3GPP-Adaptation-Support:2
a=3GPP-SRTP-Config:3NivNiiwMNgZmngs128OcA== NRknve/o/LXY97cRY7Y= auth-tag-len=32
m=video 0 RTP/SAVP 99 100
b=AS:64
b=RR:2000
b=RS:1200
a=rtpmap:99 H263-2000/90000
a=fmtp:99 profile=3;level=10
a=rtpmap:100 ~~RTP.ENC.AESCM128~~RTP-ENC-ASECM128/90000
a=fmtp:100 opt=99; ContentID="content6188164@ContentIssuer.com"; RightsIssuerURL="
http://drm.rightsserver.org/6188164"; IVnonce= IwOSRWeSAUiVEiN5gVA=
a=control:rtsp://example.com/session0000012838984/m2
a=3GPP-Adaptation-Support:1
a=3GPP-SRTP-Config:PyChokXYVigC9kDftofE7Q== 0zvrjkBK/9Yc3BJ61/Q= auth-tag-len=80

This SDP is then transmitted to the client.

5. The client decrypts k, derives the keys Ks and Km, and verifies the integrity of the SDP part. The freshness token's validity needs also to be checked. If successful, the clients populates the SRTP crypto contexts using the supplied keys and parameters. The client uses RTSP to setup both media streams in an aggregated session at server. This is done using the new control URI supplied in the SDP, which allows the server to determine which of its generated contexts shall be used for this session.

6. The client requests to start media deliver through a RTSP PLAY request. The server responds.

7. The server delivers a stream of SRTP packets that are integrity protected (as well as pre-encrypted, in accordance to section K.1).

3GPP TSG-SA WG4 Meeting #33
Helsinki, Finland, 22-26 November 2004

Tdoc ⌘S4-040838

CR-Form-v7

CHANGE REQUEST

⌘ **26.234** **CR** **079** ⌘ **rev** **1** ⌘ Current version: **6.1.0** ⌘

*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:	⌘	Adoption of SVG Tiny 1.2 for PSS
Source:	⌘	TSG SA WG4
Work item code:	⌘	PSSrel6-Stage3
Date:	⌘	14/12/2004
Category:	⌘	**B**
Release:	⌘	Rel-6

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:	⌘	Addition of Scalable Vector Graphics (SVG) Tiny 1.2 to PSS
Summary of change:	⌘	SVG Tiny 1.2 added as a supported format togther with content creation guidelines in an informative annex. ECMAScript added as a scripting language.
Consequences if not approved:	⌘	PSS in Release 6 will not be capable of SVG Tiny 1.2.

Clauses affected:	⌘	2, 7.7, L			
Other specs affected:	⌘	**Y**	**N**		
		X		Other core specifications	⌘ TS 26.140 (see below)
			X	Test specifications	
			X	O&M Specifications	
Other comments:	⌘	SVG Tiny 1.2 is added to MMS in CR 26.140 010, which refers to the content creation guidelines provided by this CR.			

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.

[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: "RTP: A Transport Protocol for Real-Time Applications", Schulzrinne H. et al., July 2003.

[10] IETF RFC 3551: "RTP Profile for Audio and Video Conferences with Minimal Control", Schulzrinne H. and Casner S., 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 ñ HTTP/1.1", Fielding R. et al., June 1999.

[18] 3GPP TS 26.071: "Mandatory Speech CODEC speech processing functions; AMR Speech CODEC; General description".

[19] (void)

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

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

[22] ITU-T Recommendation H.263 (02/98): "Video coding for low bit rate communication".

[23] ITU-T Recommendation H.263 ñ Annex X (03/04): "Annex X: Profiles and levels definition".

[24] ISO/IEC 14496-2:2004: "Information technology ñ Coding of audio-visual objects ñ Part 2: Visual".

[25] (void)

[26] ITU-T Recommendation T.81 (1992) | ISO/IEC 10918-1:1993: "Information technology ñ Digital compression and coding of continuous-tone still images ñ 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 ñ Universal Multiple-Octet Coded Character Set (UCS) ñ 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] (void)

[36] (void)

[37] (void)

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

[39] W3C Recommendation: "Composite Capability/Preference Profiles (CC/PP): Structure and Vocabularies 1.0", http://www.w3.org/TR/2004/REC-CCPP-struct-vocab-20040115/, January 2004.

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

[41] W3C Recommendation: "RDF Vocabulary Description Language 1.0: RDF Schema", http://www.w3.org/TR/2004/REC-rdf-schema-20040210/, February 2004.

[42] ~~W3C Recommendation: "Scalable Vector Graphics (SVG) 1.1 Specification", http://www.w3.org/TR/2003/REC-SVG11-20030114/, January 2003.~~W3C Last Call Working Draft: "Scalable Vector Graphics (SVG) 1.2", http://www.w3.org/TR/2004/WD-SVG12-20041027/, October 2004.

[43] ~~W3C Recommendation: "Mobile SVG Profiles: SVG Tiny and SVG Basic", http://www.w3.org/TR/2003/REC-SVGMobile-20030114/, January 2003.~~W3C Last Call Working Draft: "Mobile SVG Profile: SVG Tiny, Version 1.2", http://www.w3.org/TR/2004/WD-SVGMobile12-20040813/, August 2004.

[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] (void)

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

[50] 3GPP TS 26.244: "Transparent end-to-end packet switched streaming service (PSS); 3GPP file format (3GP)".

[51] 3GPP TS 26.245: "Transparent end-to-end packet switched streaming service (PSS); Timed text format".

[52] 3GPP TS 26.246: "Transparent end-to-end packet switched streaming service (PSS); 3GPP SMIL Language Profile".

[53] IETF RFC 2234: "Augmented BNF for Syntax Specifications: ABNF", Crocker D. and Overell P., November 1997.

[54] IETF RFC 3066: "Tags for Identification of Languages", Alvestrand H., January 2001.

[55] IETF RFC 3556: "Session Description Protocol (SDP) Bandwidth Modifiers for RTP Control Protocol (RTCP) Bandwidth", Casner S., July 2003.

[56] 3GPP TS 23.107: "Quality of Service (QoS) concept and architecture".

[57] IETF Internet Draft: "Extended RTP Profile for RTCP-based Feedback (RTP/AVPF)", Ott J. et al, http://www.ietf.org/internet-drafts/draft-ietf-avt-rtcp-feedback-11.txt, August 2004.

[58] IETF RFC 3611: "RTP Control Protocol Extended Reports (RTCP XR)", Friedman T., Caceres R. and Clark A., November 2003.

[59] IETF RFC 1952: "GZIP file format specification version 4.3", Deutsch P., May 1996.

[60] IETF RFC 2396: "Uniform Resource Identifiers (URI): Generic Syntax", Berners-Lee T., Fielding R., Irvine U.C. and Masinter L., August 1998.

[61] IETF RFC 2732: "Format for Literal IPv6 Addresses in URL's", Hinden R., Carpenter B. and Masinter L., December 1999.

[62] IETF RFC 3555: "MIME Type Registration of RTP Payload Formats", Casner S. and Hoschka P., July 2003.

[63] 3GPP TS 26.090: "Mandatory Speech Codec speech processing functions; Adaptive Multi-Rate (AMR) speech codec; Transcoding functions".

[64] 3GPP TS 26.073: "ANSI-C code for the Adaptive Multi Rate (AMR) speech codec".

[65] 3GPP TS 26.104: "ANSI-C code for the floating-point Adaptive Multi Rate (AMR) speech codec".

[66] 3GPP TS 26.190: "Speech Codec speech processing functions; AMR Wideband speech codec; Transcoding functions".

[67] 3GPP TS 26.173: "ANCI-C code for the Adaptive Multi Rate - Wideband (AMR-WB) speech codec".

[68] 3GPP TS 26.204: "ANSI-C code for the Floating-point Adaptive Multi-Rate Wideband (AMR-WB) speech codec".

[69] IETF RFC 3548: "The Base16, Base32, and Base64 Data Encodings", Josefsson S., Ed., July 2003.

[70] Mobile DLS, MMA specification v1.0. RP-41 Los Angeles, CA, USA. 2004.

[71] Mobile XMF Content Format Specification, MMA specification v1.0., RP-42, Los Angeles, CA, USA. 2004.

[72] IETF RFC 3711: "The Secure Real-time Transport Protocol (SRTP)", Baugher M. et al, March 2004.

[73] Bellovin, S., "Problem Areas for the IP Security Protocols" in Proceedings of the Sixth Usenix Unix Security Symposium, pp. 1-16, San Jose, CA, July 1996

[74] Open Mobile Alliance: "DRM Specification 2.0".

[75] Open Mobile Alliance: "DRM Content Format V 2.0".

[76] IETF RFC 3675: "IPv6 Jumbograms", Borman D., Deering S. and Hinden R., August 1999.

[77] NIST, "Advanced Encryption Standard (AES)", FIPS PUB 197, http://www.nist.gov/aes/.

[78] IETF RFC 3394: "Advanced Encryption Standard (AES) Key Wrap Algorithm", Schaad J. and Housley R., September 2002.

[79] IETF RFC 3839: "MIME Type Registrations for 3rd Generation Partnership Project (3GPP) Multimedia files", Castagno R. and Singer D., July 2004.

[80] IETF Internet Draft: "RTP Payload Format for 3GPP Timed Text", Rey J. and Matsui Y., http://www.ietf.org/internet-drafts/draft-ietf-avt-rtp-3gpp-timed-text-04.txt, July 2004.

[81] IETF Internet Draft: "RTP Retransmission Payload Format", Rey J. et al, http://www.ietf.org/internet-drafts/draft-ietf-avt-rtp-retransmission-10.txt, January 2004.

[82] 3GPP TS 26.290: ì Extended AMR Wideband codec; Transcoding functionsî

[83] 3GPP TS 26.304: ì ANSI-C code for the Floating-point; Extended AMR Wideband codecî

[84] 3GPP TS 26.273: ì ANSI-C code for the Fixed-point; Extended AMR Wideband codecî

[85] Real-Time Transport Protocol (RTP) Payload Format for Extended AMR Wideband (AMR-WB+) Audio Codec, draft-ietf-avt-rtp-amrwbplus-01.txt

[86] 3GPP TS 26.401: "General audio codec audio processing functions; Enhanced aacPlus general audio codec; General description".

[87] 3GPP TS 26.410: "General audio codec audio processing functions; Enhanced aacPlus general audio codec; Floating-point ANSI-C code".

[88] 3GPP TS 26.411: "General audio codec audio processing functions; Enhanced aacPlus general audio codec; Fixed-point ANSI-C code".

[89] ISO/IEC 14496-3:2001/Amd.1:2003, Bandwidth Extension

[90] ITU-T Recommendation H.264 (2003): "Advanced video coding for generic audiovisual services" | ISO/IEC 14496-10:2003: "Information technology ñ Coding of audio-visual objects ñ Part 10: Advanced Video Coding".

[91] ISO/IEC 14496-10/FDAM1: "AVC Fidelity Range Extensions".

[92] IETF Internet Draft: "RTP payload Format for H.264 Video", Wenger S. et al, http://www.ietf.org/internet-drafts/draft-ietf-avt-rtp-h264-11.txt, August 2004.

[93] Standard ECMA-327: "ECMAScript 3rd Edition Compact Profile", June 2001.

Ö <cut text> Ö

7.7 Vector graphics

If vector graphics is supported, ~~the~~ SVG Tiny 1.2 ~~profile~~ [42] [43] and ECMAScript [93] shall be supported. ~~In addition SVG Basic profile [42] [43] may be supported.~~

NOTE 1: The compression format for SVG content is GZIP [59], in accordance with the SVG specification [42].

NOTE 2 Only codecs and MIME media types supported by PSS, as specified in clause 7 and in subclause 5.4, respectively, shall be used. PSS clients do not support the Ogg Vorbis format.

NOTE 3~~2~~: ~~Adoption of SVG Tiny 1.2 to Release 6 is still being considered (as a working assumption) to PSS. Decision will be made as a late Release 6 item during TSG SA Meeting #26.~~Content creators of SVG Tiny 1.2 are strongly recommended to follow the content creation guidelines provided in Annex L.

NOTE 4: If SVG Tiny 1.2 will not be published within a reasonable timeframe, the decision to adopt SVG Tiny 1.2 in favour of SVG Tiny 1.1 may be reconsidered.

Ö <cut text> Ö

Annex L (informative): SVG Tiny 1.2 content creation guidelines

L.1 Feature analysis

This clause provides an analysis of SVG Tiny 1.2 features in Table L.1.

Table L.1: Feature analysis of SVG Tiny 1.2

Element / feature	Status	Comment
animate*	Should be used with caution.	In conjunction with other expensive features, which are OK for static scenes, animation may yield scenes with insufficient performance.
Animation	(=embedded image support) To be used sparingly.	High potential for performance hit, should be used with caution.
audio	No constraint	
desc / title / metadata	No constraint	
flow text	Should not be animated continuously.	
SVG fonts	Should be used sparingly.	Use of SVG fonts may lead to poor readability, in which case device font support should be preferred. Also, SVG fonts increase the size of content and thus download times.
foreignObject	No constraint	May be safely ignored by SVG Tiny implementations.
a / g / defs	No constraint	
handler	Should be used sparingly.	
image	Animation of scale and rotation should be used sparingly.	Animation of scale and rotation of an image has a similar CPU requirement than transformed video rendering, and as such should be avoided on most devices.
linearGradient / radialGradient / stop	Should be used sparingly.	This may lead to a significant performance hit on lower/middle-end devices.
complex stroking and transparency	Should be used sparingly.	The screen surface used by transparent objects should be small. Full screen fade-in, fade-out (by simply animating fill-opacity and opacity on images) or cross-fade should be avoided on most devices. Use of complex stroking will incur a significant performance hit.
page / pageSet	No constraint	Specification problems may lead to usability problems.
<all shapes>	No constraint	
prefetch	No constraint	
script	No constraint	
set	No constraint	
solidColor	No constraint	
svg	No constraint	
switch	No constraint	
text / tspan	No constraint	
use	(=embedded image support). To be used sparingly.	High potential for performance hit, should be used with caution.
video	Video could be used with media-handling=ípinnedí Scaling = 1,1 / Rotation (none/0∞) SVG could provide a handling=media rotation for translation, rotation by 90∞multiples or scaling. In any case no animation of the transformation.	On devices without hardware acceleration, frame-by-frame scaling, rotation and re-sampling of video is not achievable. Overlaying graphics on video content is considered a very expensive operation and may have significant consequences, such as lack of synchronization and degraded output quality. The video rendering features are highly dependent on the host capabilities and one may expect potential differences between implementations. Content creators should be very cautious when dealing with such functionality.

L.2 Recommendations

L.2.1 General

This clause provides detailed recommendations for the usage of SVG Tiny 1.2 features.

L.2.2 Video element

L.2.2.1 Inclusion of the video element in SVG content

The video element should be included within a "switch" element. The feature string for video could be

1. http://www.w3.org/TR/SVG12/feature#3GPPTransformedVideo
2. the feature string for video is http://www.w3.org/TR/SVG12/feature#3GPPVideo
3. or the alternate representation of a "video" element could be an image.

EXAMPLE:

```
    <g transform="translate(10,0);scale(1.5)">
      <switch>
        <video
          xlink:href="video.3gp"
          type="video/H263-2000"
          requiredFeatures="http://www.w3.org/TR/SVG12/feature#3GPPTransformedVideo"/>
        <video
          xlink:href="video.3gp"
          type="video/H263-2000"
          requiredFeatures="http://www.w3.org/TR/SVG12/feature#3GPPVideo
          media-handling=”pinned"/>
        <image xlink:ref="image.jpg" width="176" height="144">
      </switch>
    </g>
```

The above example shows a transformed video. If the PSS client supports "3GPPTransformedVideo", i.e. transformations with only translation and scaling, the video shall be transformed, if not, a video-enabled PSS client shall display the video without scaling and rotation ("pinned"). Finally, an image shall be displayed if neither one of the above cases is possible at the PSS client.

L.2.2.2 Transformation of video

SVG Tiny 1.2 supports the video element and proper rendering requires video to be subject to transformation just like any other graphics object. This implies that any arbitrary transform can be applied to embedded video content. Dynamic transformation of video content is an expensive operation and therefore would largely (and negatively) impact the frame rate of animated SVG content. This feature is also known to be very complex to be supported among most of the current mobile devices.

SVG Tiny 1.2 does not require transform video. As a consequence transform video is optional. When optionally applied to video elements, the following transformations and the animations thereof are applicable in increasing complexity order:

1. Translation of the video element shall be applied.
2. Rotation of video by 90∞-90∞degrees is permitted.
3. Scaling of the video element is permitted.

NOTE: PSS clients may decide not to apply scaling through the media handling attribute.

Dynamic transformation of video content should be avoided. Overlaying graphics on video content is considered a very expensive operation and may have significant consequences, such as lack of synchronization and degraded output quality.

The video rendering features are highly dependent on the host capabilities and one may expect potential differences between implementations. Content creators should be very cautious when dealing with such functionality.

L.2.3 Embedded image support

PSS clients shall support the rendering of raster images referenced by the ëimageí element.

Recommendation: Content creators should be cautious when using this feature due to the potential negative performance impact.

NOTE: This feature requires maintaining multiple DOM trees between the referenced and the root or main SVG image. It can potentially lead to memory and performance issues with additional requirements, such as extra data validation/parsing and maintaining multiple buffers/contexts

L.2.4 Handler element

Recommendation: Content creators should be cautious when using this feature due to the potential negative performance impact.

NOTE: SVG Tiny 1.2 adds support for the new <handler> element that allows event handling to be processed in a compiled language. This feature brings extra complexity to script management. For example, it requires internal access from the SVG engine to other engines such as Java Virtual Machine. Scripting (i.e. <script> element) is sufficient and reasonable for all the use cases.

L.2.5 Transparency, stroking and gradients

SVG Tiny 1.2 supports fill-opacity and stroke-opacity, complex stroking and gradients. Using transparency basically makes the rendering of the current object 3 times slower. No animation of gradients or animation of a small part of the screen only is recommended. No animation of shapes with stroking is recommended. Transparency on a small surface of the screen is recommended

Recommendation: Content creators should be cautious when using these features due to the potential negative performance impact by restricting their use to small surfaces and/or refraining from animating them.

L.2.6 Events

SVG Tiny 1.2 supports the following events: mousemove, mouseover, mouseout, mousedown, mouseup, click, DOMActivate, DOMFocusIn, DOMFocusOut, SVGLoad, SVGScroll, SVGResize, SVGZoom, beginEvent, endEvent, repeat, Text events.

Recommendation: Content creators should be aware that some events are not universally available on all platforms, and consequently they should not rely on the use of the following events: mousemove, mouseover, mouseout, mousedown, mouseup, click.

L.2.7 Flowing text

SVG Tiny 1.2 enables a block of text and graphics to be rendered inside a single flowregion of rectangle shape, while automatically wrapping the objects into lines, using the flowRoot element. This feature introduces four new elements <flowRoot>, <flowRegion>, <flowPara>, <flowSpan> with some restrictions.

Recommendation: Content creators should be cautious when using this feature due to the potential negative performance impact and refrain from continuous animation of the flow region.

L.2.8 SVG fonts

SVG Tiny 1.2 supports the definition and use of SVG fonts for rendering text. The lack of hinting in SVG fonts means that small text which is antialiased will become unreadable in most cases. This problem is even more evident when text is rotated or animated.

Recommendation: Usage of device-native fonts is recommended. SVG fonts should be used with caution.

L.2.9 Bitmap fonts

When using bitmapped fonts to display text, the content author needs to be aware of the limitations. Rotated text using a bitmapped font may be unreadable.

Recommendation: When using bitmapped fonts, content creators should avoid the display of text rotated at an arbitrary angle. Instead, only multiples of 90 degrees should be used to ensure readability.

L.2.10 Animation

SVG animation has a non-uniform frame rate. The overall complexity of a scene determines the animation frame rate. Complex paths, stroking and property inheritance all have a potential negative impact on the complexity of a scene.

Animation of scale and/or rotation of images also have a significant impact on the fluidity of the rendering, as it is very similar to transformed video rendering in CPU requirement (frame-by-frame resizing, rotation and re-sampling of the bitmap).

Recommendation: Content creators should be cautious when designing animated content with lengthy or complex paths, extensive stroking or excessive property inheritance. Content creators should refrain from animating the scale or rotation of images on devices that do not support transformed video.

L.2.11 User interaction and content navigation

Mobile devices do not provide the same amount of screen area and user input means as a PC. When designing interactive content for mobile devices it is therefore important to remember the potential limitations of the target hardware. For example, most mobile phones do not have a pointing device so having small "hot-spots" of user interaction on the screen is not recommended. Also, the user is typically involved in another activity when using a mobile device, unlike a PC where the machine usually has the user's undivided attention.

Recommendation: Content creators need to be aware of any potential limitations and design user interaction and content navigation accordingly.

Annex ML (informative): Change history

Ö <cut text> Ö

3GPP TSG-SA WG4 Meeting #33
Helsinki, Finland, 22-26 November 2004

Tdoc ⌘S4-040858

CR-Form-v7

CHANGE REQUEST

⌘ **26.244** **CR** **006** ⌘ **rev** **1** ⌘ Current version: **6.1.0** ⌘

*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:	⌘	Correction of syntax of encryption boxes and outdated references
Source:	⌘	TSG-SA WG4
Work item code:	⌘	PSSrel6-Stage3
Date:	⌘	14/12/2004
Category:	⌘	**F**
Release:	⌘	Rel-6

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 syntax for signalling encrypted/protected media in the 3GP files differs from the syntax defined in parallel for the ISO Base Media File Format. Some references are outdated (invalid).
Summary of change:	⌘	• The Protection Scheme Information Box and the Scheme Information Box updated (ìboxesî instead of ìfullboxesî). Version field of Scheme Type Box updated. • Editorial updates in relation to encryption and H.264 (AVC). • References updated.
Consequences if not approved:	⌘	Encrypted 3GP files will not be interoperable with encrypted MP4 files or other files in the ISO Base Media file format family.

Clauses affected:	⌘	2, 6.2, 10.2, 10.3

Other specs affected:	⌘	Y	N		⌘
			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 TS 26.234: "Transparent end-to-end packet switched streaming service (PSS); Protocols and codecs".

[4] 3GPP TS 26.245: "Transparent end-to-end packet switched streaming service (PSS); Timed text format".

[5] 3GPP TS 26.246: "Transparent end-to-end packet switched streaming service (PSS); 3GPP SMIL Language Profile".

[6] 3GPP TR 21.905: "Vocabulary for 3GPP Specifications".

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

[8] 3GPP TS 26.140: "Multimedia Messaging Service (MMS); Media formats and codecs".

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

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

[11] 3GPP TS 26.071: "Mandatory Speech CODEC speech processing functions; AMR Speech CODEC; General description".

[12] 3GPP TS 26.171: "AMR Wideband Speech Codec; General Description".

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

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

[15] 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.

[16] 3GPP TS 26.101: "Mandatory Speech Codec speech processing functions; Adaptive Multi-Rate (AMR) speech codec frame structure".

[17] 3GPP TS 26.201: "Speech Codec speech processing functions; AMR Wideband Speech Codec; Frame Structure".

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

[19] IETF RFC 3711: "The Secure Real-time Transport Protocol", Baugher M. et al., March 2004.

[20] ISO/IEC 14496-15: 2004: "Information technology ñ Coding of audio-visual objects ñ Part 15: Advanced Video Coding (AVC) file format".

[21] 3GPP TS 26.290: "Extended AMR Wideband codec; Transcoding functions".

[22] IETF Internet Draft: "Real-Time Transport Protocol (RTP) Payload Format for Extended AMR Wideband (AMR-WB+) Audio Codec", Sjoberg J., Westerlund M. and Lakaniemi A., http://www.ietf.org/internet-drafts/draft-ietf-avt-rtp-amrwbplus-01.txt, July 2004.

[23] 3GPP TS 26.401: "General audio codec audio processing functions; Enhanced aacPlus general audio codec; General description".

[24] 3GPP TS 26.410: "General audio codec audio processing functions; Enhanced aacPlus general audio codec; Floating-point ANSI-C code".

[25] 3GPP TS 26.411~~xxx~~: "General audio codec audio processing functions; Enhanced aacPlus general audio codec; Fixed-point ANSI-C code".

[26] ISO/IEC 14496-3:2001/Amd.1:2003, Bandwidth Extension.

[27] IETF RFC 3839: "MIME Type Registrations for 3rd Generation Partnership Project (3GPP) Multimedia files", Castagno R. and Singer D., July 2004.

[28] IETF Internet Draft: "RTP Payload Format for 3GPP Timed Text", Rey J. and Matsui Y.,~~- http://www.ietf.org/internet-drafts/draft-ietf-avt-rtp-3gpp-timed-text-04.txt, July 2004~~ http://www.ietf.org/internet-drafts/draft-ietf-avt-rtp-3gpp-timed-text-07.txt, October 2004.

[29] ITU-T Recommendation H.264 (2003): "Advanced video coding for generic audiovisual services" | ISO/IEC 14496-10:2003: "Information technology ñ Coding of audio-visual objects ñ Part 10: Advanced Video Coding".

[30] IETF Internet Draft: "RTP payload Format for H.264 Video", Wenger S. et al,~~- http://www.ietf.org/internet-drafts/draft-ietf-avt-rtp-h264-10.txt, July 2004~~ http://www.ietf.org/internet-drafts/draft-ietf-avt-rtp-h264-11.txt, August 2004.

Ö <cut text> Ö

6.2 Sample Description box

In an ISO file, Sample Description Box gives detailed information about the coding type used, and any initialisation information needed for that coding. The Sample Description Box can be found in the ISO file format Box Structure Hierarchy shown in figure 6.1.

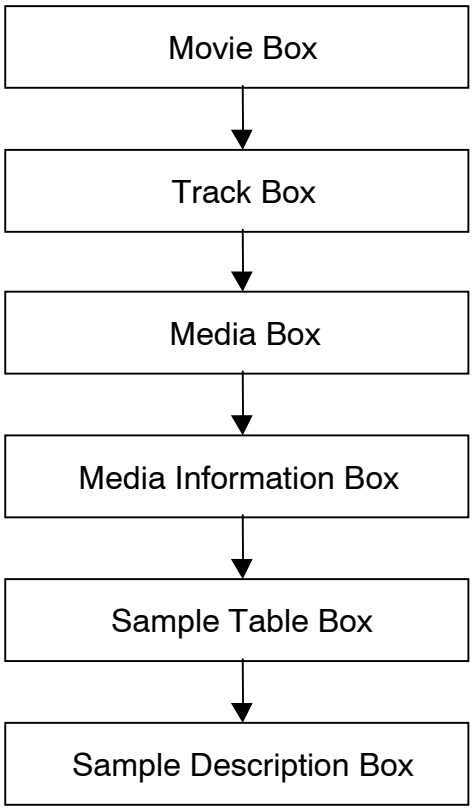


Figure 6.1: ISO File Format Box Structure Hierarchy

The Sample Description Box can have one or more Sample Entries. Valid Sample Entries already defined for ISO and MP4 include MP4AudioSampleEntry, MP4VisualSampleEntry and HintSampleEntry. The Sample Entries for AMR and AMR-WB shall be AMRSampleEntry, for AMR-WB+ it shall be AMRWPSampleEntry, for H.263 it shall be H263SampleEntry, for H.264 (AVC) it shall be AVCSampleEntry, ~~and~~ for timed text it shall be TextSampleEntry, and for hint tracks it shall be HintSampleEntry.

The format of SampleEntry and its fields are explained as follows:

SampleEntry ::= **MP4VisualSampleEntry |**
MP4AudioSampleEntry |
AMRSampleEntry |
AMRWPSampleEntry |
H263SampleEntry |
AVCSampleEntry |
TextSampleEntry |
HintSampleEntry

Table 6.1: SampleEntry fields

Field	Type	Details	Value
MP4VisualSampleEntry		Entry type for visual samples defined in the MP4 specification.	
MP4AudioSampleEntry		Entry type for audio samples defined in the MP4 specification.	
AMRSampleEntry		Entry type for AMR and AMR-WB speech samples defined in clause 6.5 of the present document.	
AMRWPSampleEntry		Entry type for AMR-WB+ audio samples defined in clause 6.9 of the present document.	
H263SampleEntry		Entry type for H.263 visual samples defined in clause 6.6 of the present document.	
AVCSampleEntry		Entry type for H.264 (AVC) visual samples defined in the AVC file format specification.	
TextSampleEntry		Entry type for timed text samples defined in the timed text specification	
HintSampleEntry		Entry type for hint track samples defined in the ISO specification.	

From the above 8~~6~~ Sample Entries, only the MP4VisualSampleEntry, MP4AudioSampleEntry, H263SampleEntry, AMRSampleEntry and AMRWPSampleEntry are taken into consideration here. TextSampleEntry is defined in [4], ~~and~~ HintSampleEntry in [7], and AVCSampleEntry in [20].

Ö <cut text> Ö

10.2 Sample entries for encrypted media tracks

The sample entries stored in the sample description box of a media track in a 3GP file identify the format of the encoded media, i.e. codec and other coding parameters. All valid sample entries for unencrypted media in a 3GP file are described in Clause 6. The principle behind storing encrypted media in a track is to ìdisguiseî the original sample entry with a generic sample entry for encrypted media. Table 10.1 gives an overview of the formats (identifying sample entries) that can be used in 3GP files for signalling encrypted video, audio and text.

Table 10.1: Formats for encrypted media tracks

Format	Original format	Media content
'encv'	's263', 'mp4v', 'avc1', Ö	encrypted video: H.263, MPEG-4 visual, H.264(AVC), Ö
'enca'	'samr', 'sawb', 'sawp', 'mp4a', Ö	encrypted audio: AMR, AMR-WB, AMR-WB+, Enhanced aacPlus, AAC, Ö
'enct'	'tx3g', Ö	encrypted text: timed text, Ö

The generic sample entries for encrypted media replicate the original sample entries and include a Protection scheme information box with details on the original format, as well as all requirements for decrypting the encoded media. The EncryptedVideoSampleEntry and the EncryptedAudioSampleEntry are defined in Tables 10.2 and 10.3, where the ProtectionSchemeInfoBox (defined in clause 10.2) is simply added to the list of boxes contained in a sample entry.

Table 10.2: EncryptedVideoSampleEntry

Field	Type	Details	Value
BoxHeader.Size	Unsigned int(32)		
BoxHeader.Type	Unsigned int(32)		ëencví
All fields and boxes of a visual sample entry, e.g. MP4VisualSampleEntry or H263SampleEntry.			
ProtectionSchemeInfoBox		Box with information on the original format and encryption	

Table 10.3: EncryptedAudioSampleEntry

Field	Type	Details	Value
BoxHeader.Size	Unsigned int(32)		
BoxHeader.Type	Unsigned int(32)		ëencaí
All fields and boxes in an audio sample entry, e.g. MP4AudioSampleEntry or AMRSampleEntry.			
ProtectionSchemeInfoBox		Box with information on the original format and encryption	

The EncryptedVideoSampleEntry and the EncryptedAudioSampleEntry can also be used with any additional codecs added to the 3GP file format, as long as their sample entries are based on the SampleEntry of the ISO base media file format [7].

The EncryptedTextSampleEntry is defined in Table 10.4. Text tracks are specific to 3GP files and defined by the Timed text format [4]. In analogy with the cases for audio and video, a ProtectionSchemeInfoBox is added to the list of contained boxes.

Table 10.4: EncryptedTextSampleEntry

Field	Type	Details	Value
BoxHeader.Size	Unsigned int(32)		
BoxHeader.Type	Unsigned int(32)		ëenctí
All fields and boxes of TextSampleEntry.			
ProtectionSchemeInfoBox		Box with information on the original format and encryption	

NOTE: The boxes within the sample entries defined in Tables 10.2-10.4 may not precede any of the fields. The order of the boxes (including the ProtectionSchemeInfoBox) is not important though.

10.3 Key management

The necessary requirements for decrypting media are stored in the Protection scheme information box. It contains the Original format box, which identifies the codec of the decrypted media, the Scheme type box, which identifies the protection scheme used to protect the media, and the Scheme information box, which contains scheme-specific data (defined for each scheme). It is out of the scope of this specification to define a protection scheme.

The Protection scheme information box and its contained boxes are defined in Tables 10.5 ñ 10.8.

~~Table 10.5: ProtectionSchemeInfoBox~~

~~Field~~	~~Type~~	~~Details~~	~~Value~~
~~**BoxHeader**.Size~~	~~Unsigned int(32)~~		
~~**BoxHeader**.Type~~	~~Unsigned int(32)~~		~~ësinfí~~
~~**BoxHeader**.Version~~	~~Unsigned int(8)~~		~~0~~
~~**BoxHeader**.Flags~~	~~Bit(24)~~		~~0~~
~~**OriginalFormatBox**~~		~~Box containing identifying the original format~~	
~~**SchemeTypeBox**~~		~~Box containing the protection scheme.~~	
~~**SchemeInformationBox**~~		~~Box containing the scheme information.~~	

Table 10.5: ProtectionSchemeInfoBox

Field	**Type**	**Details**	**Value**
BoxHeader.Size	Unsigned int(32)		
BoxHeader.Type	Unsigned int(32)		ësinfí
OriginalFormatBox		Box containing identifying the original format	
SchemeTypeBox		Optional box containing the protection scheme.	
SchemeInformationBox		Optional box containing the scheme information.	

Table 10.6: OriginalFormatBox

Field	Type	Details	Value
BoxHeader.Size	Unsigned int(32)		
BoxHeader.Type	Unsigned int(32)		ërmaí
DataFormat	Unsigned int(32)	original format	

DataFormat identifies the format (sample entry) of the decrypted, encoded data. The currently defined formats in 3GP files include 'mp4v', 'h263', 'avc1', 'mp4a', 'samr', 'sawb', 'sawp' and 'tx3g'.

Table 10.7: SchemeTypeBox

Field	Type	Details	Value
BoxHeader.Size	Unsigned int(32)		
BoxHeader.Type	Unsigned int(32)		ëschmí
BoxHeader.Version	Unsigned int(8)		0
BoxHeader.Flags	Bit(24)		0 or 1
SchemeType	Unsigned int(32)	four-character code identifying the scheme	
SchemeVersion	Unsigned int(32~~16~~)	Version number	
SchemeURI	Unsigned int(8)[ ]	Browser URI (null-terminated UTF-8 string). Present if (Flags & 1) true	

SchemeType and **SchemeVersion** identifiy the encryption scheme and its version. As an option, it is possible to include **SchemeURI** with an URI pointing to a web page for users that donít have the encryption scheme installed.

~~**Table 10.8: SchemeInformationBox**~~

~~**Field**~~	~~**Type**~~	~~**Details**~~	~~**Value**~~
~~**BoxHeader**.Size~~	~~Unsigned int(32)~~		
~~**BoxHeader**.Type~~	~~Unsigned int(32)~~		~~ëschií~~
~~**BoxHeader**.Version~~	~~Unsigned int(8)~~		~~0~~
~~**BoxHeader**.Flags~~	~~Bit(24)~~		~~0~~
		~~Box(es) specific to scheme identified by SchemeType~~	

Table 10.8: SchemeInformationBox

Field	**Type**	**Details**	**Value**
BoxHeader.Size	Unsigned int(32)		
BoxHeader.Type	Unsigned int(32)		~~ë~~schií
		Box(es) specific to scheme identified by SchemeType	

The boxes contained in the Scheme information box are defined by the scheme type, which is out of the scope of this specification to define.

3GPP TSG-SA WG4 Meeting #33
Helsinki, Finland, 22-26 November 2004

Tdoc ⌘S4-040697

CR-Form-v7

CHANGE REQUEST

⌘ **26.244** **CR** **007** ⌘ **rev** **-** ⌘ Current version: **6.1.0** ⌘

*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:	⌘	Correction of sample structure for AMR-WB+ in 3GP files
Source:	⌘	TSG-SA WG4
Work item code:	⌘	PSSrel6-Stage3
Date:	⌘	14/12/2004
Category:	⌘	**F**
Release:	⌘	Rel-6

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 number of AMR-WB+ storage units that can be contained in one AMR-WB+ sample is not defined.
Summary of change:	⌘	It is specifed that each sample can contain one or more storage units and that the number of storage units can vary from sample to sample.
Consequences if not approved:	⌘	Different implementations of players may not be interoperable as some implementations may assume that each sample contains exactly one storage unit.

Clauses affected:	⌘	2, 6.1, 6.10

Other specs affected:	⌘	Y	N		
		X		Other core specifications	⌘ TS 26.290
			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

[22] (void)~~IETF Internet Draft: "Real-Time Transport Protocol (RTP) Payload Format for Extended AMR Wideband (AMR-WB+) Audio Codec", Sjoberg J., Westerlund M. and Lakaniemi A., http://www.ietf.org/internet-drafts/draft-ietf-avt-rtp-amrwbplus-01.txt, July 2004.~~

Ö <cut text> Ö

6.1 General

The purpose of this clause is to define the necessary structure for integration of the H.263, MPEG-4 video, AMR, AMR-WB, Extended AMR-WB (AMR-WB+), Enhanced aacPlus and AAC media specific information in a 3GP file. Clause 6.2 gives some background information about the Sample Description box in the ISO base media file format [7] and clauses 6.3 and 6.4 about the MP4VisualSampleEntry box and the MP4AudioSampleEntry box in the MPEG-4 file format [14]. The definitions of the Sample Entry boxes for AMR, AMR-WB, AMR-WB+ and H.263 are given in clauses 6.5 to 6.10. The integration of timed text in a 3GP file is specified in [4] and the integration of H.264 (AVC) is specified in [20].

AMR and AMR-WB data is stored in the stream according to the AMR and AMR-WB storage format for single channel header of Annex E [15], without the AMR magic numbers.

The 3GPP file format is the native storage format AMR-WB+. The data stream, stored in samples of a 3GP file, shall be formatted according to clause 8.3 of [21]~~ where the syntax of a sample for AMR-WB+ is defined by referring to the RTP payload format definition [22] and its basic mode~~. Each sample contains one or more AMR-WB+ storage units. The number of storage units per sample may differ from sample to sample.

Ö <cut text> Ö

6.10 AMRWPSpecificBox field for AMRWPSampleEntry box

The AMRWPSpecificBox fields for AMR-WB+ shall be as defined in table 6.10. The AMRWPSpecificBox for the AMRWPSampleEntry Box shall always be included if the 3GP file contains AMR-WB+ media.

Table 6.10: The AMRWPSpecificBox fields for AMRWPSampleEntry

Field	Type	Details	Value
BoxHeader.Size	Unsigned int(32)		
BoxHeader.Type	Unsigned int(32)		ædawpí
DecSpecificInfo	AMRWPDecSpecStruc	Structure which holds the AMR-WB+ Specific information	

BoxHeader Size and Type: indicate the size and type of the AMR-WB+ decoder-specific box. The type must be ædawpí.

DecSpecificInfo: the structure where the AMR-WB+ stream specific information resides.

The AMRWPDecSpecStruc is defined as follows:

struct **AMRWPDecSpecStruc**{
Unsigned int (32) **vendor**
Unsigned int (8) **decoder_version**
}

The definitions of AMRWPDecSpecStruc members are as follows:

vendor: four character code of the manufacturer of the codec, e.g. 'VXYZ'. The vendor field gives information about the vendor whose codec is used to create the encoded data. It is an informative field, which may be used by the decoding end. If a manufacturer already has a four-character code, it is recommended that it uses the same code in this field. Else, it is recommended that the manufacturer creates a four character code which best addresses the manufacturerís name. It can be safely ignored.

decoder_version: version of the vendorís decoder which can decode the encoded stream in the best (i.e. optimal) way. This field is closely tied to the vendor field. It may give advantage to the vendor which has optimal encoder-decoder version pairs. The value is set to 0 if decoder version has no importance for the vendor. It can be safely ignored.

NOTE: For AMR and AMR-WB the AMRSpecificBox defines the number of frames that are stored in a sample. For AMR-WB+, however, the AMRWPSpecificBox does not specify an overall sample structure, as the number of storage units per sample may differ from sample to sample.

3GPP TSG-SA4 Meeting #33
Helsinki, Finland, November 2004

***Tdoc* S4-040848**

CR-Form-v7.1

CHANGE REQUEST

⌘ **26.245** **CR** **001** ⌘ **rev** **1** ⌘ Current version: **6.0.0** ⌘

*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:	⌘	Removal of incorrect statement in Scope section of Rel-6 Timed Text
Source:	⌘	TSG-SA WG4
Work item code:	⌘	PSSrel6-Stage3
Date:	⌘	14/12/2004
Category:	⌘	**F**
Release:	⌘	Rel-6

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:

Ph2	*(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)*
Rel-7	*(Release 7)*

Reason for change:	⌘	The statement is untrue.
Summary of change:	⌘	Remove ìtimed text is not streamedî as in Rel-6 there is a streaming definition.
Consequences if not approved:	⌘	The scope section is seriously misleading

Clauses affected:	⌘	1. Scope

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

Other comments:	⌘	

1 Scope

The present document defines the timed text format relative to the 3GPP file format. This specification defines the format of timed text in downloaded files. ~~In this release, timed text is downloaded, not streamed.~~