
Source: SA1
Title: Release 6 CRs to 22.233 on Streaming (Various subjects)
Document for: Approval
Agenda Item: 7.1.3

SA Doc	Spec	CR	Rev	Phase	Cat	Subject	Old Vers	New Vers	SA1 Doc
SP-020662	22.233	003		Rel-6	B	CR on streaming metrics	6.0.0	6.1.0	S1-022037
SP-020662	22.233	004		Rel-6	B	DRM requirement for streaming	6.0.0	6.1.0	S1-022335
SP-020662	22.233	005		Rel-6	B	Interaction MSS/PSS	6.0.0	6.1.0	S1-022337
SP-020662	22.233	006		Rel-6	B	Asset Information in File Format	6.0.0	6.1.0	S1-022353
SP-020662	22.233	007		Rel-6	B	Clarification of Transport Requirements	6.0.0	6.1.0	S1-022354
SP-020662	22.233	008		Rel-6	B	CR on 22.233 'PSS Charging'	6.0.0	6.1.0	S1-022355
SP-020662	22.233	009		Rel-6	A	CR FOR R6 22.233 on Declaration of Content Cache	6.0.0	6.1.0	S1-022327

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CHANGE REQUEST

⌘ **22.233 CR 003** ⌘ rev **-** ⌘ 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:	⌘ Real-Time Monitoring of Application-Level QoS		
Source:	⌘ SA1 (Hutchison3G)		
Work item code:	⌘ PSS	Date:	⌘ 14/10/2002
Category:	⌘ B	Release:	⌘ Rel-6
	<i>Use <u>one</u> of the following categories:</i> 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 .		<i>Use <u>one</u> of the following releases:</i> 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:	⌘ At present there is no feedback mechanism in PSS to determine user experience
Summary of change:	⌘ Addition of stage 1 requirement adding the capability for Real Time monitoring of application level feedback therefore allowing the operator to determine the quality of streaming provided to the end user.
Consequences if not approved:	⌘ It will not be possible to determine the quality of the user experience for the streaming service which could lead to a unsatisfactory experience of this service by the user.

Clauses affected:	⌘								
Other specs affected:	<table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td style="width: 20px; height: 20px; text-align: center;">Y</td> <td style="width: 20px; height: 20px; text-align: center;">N</td> </tr> <tr> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> </tr> <tr> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> </tr> </table>	Y	N					Other core specifications	⌘
	Y	N							
		Test specifications							
		O&M Specifications							
Other comments:	⌘								

How to create CRs using this form:

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

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

5.6 Service Management

User's control of the service:

- The client shall initiate the streaming session.
- The user shall have the possibility to stop the streaming session after it has been invoked.
- The user shall have the possibility to pause the streaming session after it has been invoked. E.g. if a user has activated the streaming session and then gets a phone call, he/she shall be able to decide whether or not he/she wants the streaming session to continue. After a pause the user can choose to resume the streaming session.
- The PSS should be able to simultaneously handle the streaming session and conversational (circuit or packet?) services (e.g. voice and video telephony)
- The user shall have the possibility of jumping to another point within the media clip (i.e., random access)
- The user should be able to search through media content whilst viewing the content.
- If the content is available under different formats corresponding to the terminal capabilities and user preferences, the client should have the opportunity to choose the format for which the content will be streamed. Assuming the user has already set the user profile and the client is aware of this.

Service Provider's management of the service:

- The end user should be notified if the PSS is unavailable.
- The Streaming session should be gracefully disconnected if the client is not capable of handling the streamed content.
- The service provider should have the means by which a streaming session can be gracefully terminated (e.g. in a prepay scenario when the user's account has run out of credit)
- *The PSS should be able to support real-time quality of service metrics data from the UE.*

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CHANGE REQUEST

⌘ **22.233** CR **004** ⌘ rev **-** ⌘ 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:	⌘ Requirement for DRM		
Source:	⌘ SA1 (Orange)		
Work item code:	⌘ PSS	Date:	⌘ 04/10/2002
Category:	⌘ B	Release:	⌘ Rel6
	Use <u>one</u> of the following categories:		Use <u>one</u> of the following releases:
	F (correction)	R96 (Release 1996)	2 (GSM Phase 2)
	A (corresponds to a correction in an earlier release)	R97 (Release 1997)	R96 (Release 1996)
	B (addition of feature),	R98 (Release 1998)	R97 (Release 1997)
	C (functional modification of feature)	R99 (Release 1999)	R98 (Release 1998)
	D (editorial modification)	Rel-4 (Release 4)	R99 (Release 1999)
	Detailed explanations of the above categories can be found in 3GPP TR 21.900.	Rel-5 (Release 5)	Rel-4 (Release 4)
		Rel-6 (Release 6)	Rel-5 (Release 5)
			Rel-6 (Release 6)

Reason for change:	⌘ DRM need to be considered in the continuing PSS work.
Summary of change:	⌘ Additional requirement
Consequences if not approved:	⌘ The contents streamed won't be protected by any DRM mechanism. It could prevent the delivery of valuable content over a wireless network.

Clauses affected:	⌘ 8										
Other specs affected:	<table border="1" style="display: inline-table; border-collapse: collapse; text-align: center;"> <tr> <td style="width: 20px;">Y</td> <td style="width: 20px;">N</td> </tr> <tr> <td style="width: 20px;"> </td> <td style="width: 20px;">X</td> </tr> <tr> <td style="width: 20px;"> </td> <td style="width: 20px;"> </td> </tr> <tr> <td style="width: 20px;"> </td> <td style="width: 20px;"> </td> </tr> </table>	Y	N		X					Other core specifications	⌘
Y	N										
	X										
		Test specifications									
		O&M Specifications									
Other comments:	⌘										

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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 22.101: "Service Principles".
- [2] 3GPP TS 21.133: "3G Security; Security Threats and Requirements".
- [3] 3GPP TS 22.105: "Services and Service Capabilities".
- [4] 3GPP TS 26.233: "Transparent End to End Packet Switched Streaming Service (PSS): General Description".
- [5] 3GPP TS 26.234: "Transparent End to End Packet Switched Streaming Service (PSS): Protocol and Codecs".
- [6] 3GPP TS 21.905: "Vocabulary for 3GPP specifications".
- [7] 3GPP TS 22.115: "Charging and Billing".
- [8] IETF RFC 2046: "Multipurpose Internet Mail Extensions (MIME) part 2: media types".
- [9] 3GPP TS 22.242: "Digital Rights Management (DRM)".

8 Digital Rights Management

~~There are no requirements for DRM in Release 5.~~

PSS shall support the 3GPP DRM mechanism (see ref [9]).

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CHANGE REQUEST

⌘ **22.233 CR 005** ⌘ rev **-** ⌘ 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:	⌘	Interaction MMS / PSS	
Source:	⌘	SA1 (Orange)	
Work item code:	⌘	PSS	Date: ⌘ 14/11/2002
Category:	⌘	B	Release: ⌘ Rel6
		Use <u>one</u> of the following categories:	Use <u>one</u> of the following releases:
		F (correction)	2 (GSM Phase 2)
		A (corresponds to a correction in an earlier release)	R96 (Release 1996)
		B (addition of feature),	R97 (Release 1997)
		C (functional modification of feature)	R98 (Release 1998)
		D (editorial modification)	R99 (Release 1999)
		Detailed explanations of the above categories can be found in 3GPP TR 21.900.	Rel-4 (Release 4)
			Rel-5 (Release 5)
			Rel-6 (Release 6)

Reason for change:	⌘	There is no standard communication protocol between PSS and MMS.
Summary of change:	⌘	Additional requirement
Consequences if not approved:	⌘	PSS and MMS could not interact properly without a standard protocol to communicate.

Clauses affected:	⌘	10										
Other specs affected:	⌘	<table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td style="width: 20px; height: 20px; text-align: center;">Y</td> <td style="width: 20px; height: 20px; text-align: center;">N</td> </tr> <tr> <td style="width: 20px; height: 20px; text-align: center;"> </td> <td style="width: 20px; height: 20px; text-align: center;">X</td> </tr> <tr> <td style="width: 20px; height: 20px; text-align: center;"> </td> <td style="width: 20px; height: 20px; text-align: center;"> </td> </tr> <tr> <td style="width: 20px; height: 20px; text-align: center;"> </td> <td style="width: 20px; height: 20px; text-align: center;"> </td> </tr> </table>	Y	N		X					⌘	Other core specifications
		Y	N									
			X									
				Test specifications								
				O&M Specifications								
Other comments:	⌘											

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10 Service Interaction

- The PSS shall define a common file format (common to all download mechanisms) for easy service interaction with other multimedia delivery services defined in 3GPP (e.g. MMS).
- It shall be possible for the PSS to interact with the shall interact with MMS and other 3GPP multimedia delivery services using standard protocols. The interfaces and protocols used between the PSS and other 3GPP multimedia delivery services shall be standardized.

Note : Service interaction with MMS is especially important because there are application scenarios where media delivery via a streaming service could be replaced by media delivery via MMS and vice versa.

- The PSS shall define a server file format to provide easy interoperability between Content Creators and Service Providers.

<small>CR-Form-v7</small>
<h2 style="margin: 0;">CHANGE REQUEST</h2>
⌘ 22.233 CR 006 ⌘ rev - ⌘ 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:	⌘	Inclusion of Asset Information
Source:	⌘	SA1 (Hutchison3G)
Work item code:	⌘	PSS
		Date: ⌘ 14/10/2002
Category:	⌘	B
		Use <u>one</u> 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 <u>one</u> 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:	⌘	At present the 3GPP file format does not support storing of asset information, which can be useful for the terminal or server applications
Summary of change:	⌘	Addition of stage 1 requirement adding the capability for asset information to be included to improve the end user experience and functionality.
Consequences if not approved:	⌘	It will not be possible to present asset information such as copyright, title, caption (description), artist (performer) and author in a consistent manner. Further, in some cases the user experience will be degraded when long filenames are not supported and trye asset information is not present.

Clauses affected:	⌘	5.3						
Other specs affected:	⌘	<table border="1" style="display: inline-table; vertical-align: middle;"> <tr> <td style="width: 20px; text-align: center;">Y</td> <td style="width: 20px; text-align: center;">N</td> </tr> <tr> <td style="width: 20px; height: 15px;"></td> <td style="width: 20px; height: 15px;"></td> </tr> <tr> <td style="width: 20px; height: 15px;"></td> <td style="width: 20px; height: 15px;"></td> </tr> </table> Other core specifications	Y	N				
		Y	N					
Test specifications								
		O&M Specifications						
Other comments:	⌘							

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5.3 Multimedia Composition and Interaction

- The PSS shall enable the creation of multimedia services incorporating multiple media objects.
- The PSS shall provide the capability to position and synchronise media objects on the client.
- The PSS shall support flowing/scrolling of text or graphics in any direction.
- The PSS shall provide the capability to specify the media attributes - text (e.g. colour, size, font, format) or graphics (e.g. size, colour) - in relation to the timebase of other media objects. E.g. in a karaoke application where the audio track and song lyrics are downloaded together, it should be possible to not only display the song lyrics in time to the music but to display the lyrics in different colours to indicate to the user when to sing them
- The PSS shall provide the capability to update media objects dynamically. E.g. substitution of news report with a more up to date version on the content server.
- The PSS should provide the capability to update the attributes of media objects dynamically. E.g. colour coded pre-paid indicator to indicate credit level.
- The PSS should provide the capability to update the multimedia composition dynamically. E.g. the user interacts with the application and changes a scene.
- The PSS shall provide the capability that allows the user to navigate through or interact with the multimedia service. E.g. Once a user has downloaded a "tour of London" application the user has the ability to navigate through London and see video clips or hear audio descriptions of points of interest in London.
- The PSS shall provide the capability that allows clients of different capabilities to maximise the user experience. E.g. if a client did not support graphic animations it could render a single image.
- “The PSS shall support the transfer to the terminal of information on the accessed content in addition to the filename (e.g. song title, artist).”

<small>CR-Form-v7</small>
<h2 style="margin: 0;">CHANGE REQUEST</h2>
⌘ 22.233 CR 007 ⌘ rev - ⌘ 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:	⌘	Clarification of Transport Requirements
Source:	⌘	SA1 (Orange)
Work item code:	⌘	PSS
		Date: ⌘ 05/11/2002
Category:	⌘	B
		Use <u>one</u> 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.
		Release: ⌘ Rel6 Use <u>one</u> 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:	⌘	Clause 5.4 is not explicit in its description of the transport of streaming media, in particular the avoidance of degradation.
Summary of change:	⌘	Clarification in clause 5.4
Consequences if not approved:	⌘	Lack of clear specification about transport of streaming media avoiding degradation and handling of errors

Clauses affected:	⌘	8								
Other specs affected:	⌘	<table border="1" style="display: inline-table; vertical-align: middle;"> <tr> <td style="width: 20px; text-align: center;">Y</td> <td style="width: 20px; text-align: center;">N</td> </tr> <tr> <td style="text-align: center;"> </td> <td style="text-align: center;">X</td> </tr> <tr> <td style="text-align: center;"> </td> <td style="text-align: center;"> </td> </tr> <tr> <td style="text-align: center;"> </td> <td style="text-align: center;"> </td> </tr> </table> Other core specifications ⌘ Test specifications ⌘ O&M Specifications ⌘	Y	N		X				
Y	N									
	X									
Other comments:	⌘									

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5.4 Transport

- The PSS transport shall be provided by the PS Domain.
- Quality of Service (e.g. time delay) requirements shall be in accordance with requirements in 22.105 (ref. 3)
- The PSS should be able to work over different QoS bearers.
- The PSS shall provide a mechanism whereby the client is sent a list of media encoding bit rates and the client determines which one to use based on the network service bearers offered and the user preferences.
- The PSS client shall be capable of requesting an appropriate level of QoS for the session. The QoS supplied may be limited by the local operator's access policy and/or network functionality.
- The PSS should provide mechanisms for streaming servers and clients to adapt to the network conditions in order to achieve significant improvement in the quality of streaming, e.g. using information on end-to-end transport quality from the network.
- The PSS should provide a reliable delivery mechanism that enables the user to receive the content without any errors due to the transport mechanism. Such mechanism should support the following features :

The rendering of video content without any transport degradation : the content is downloaded without any errors, it assures that the subscribers see the content that has been designed by the content creators.

The rendering of the content should start before the transfer is complete.

A broken session should be restarted efficiently without going back to the beginning : the PSS client is able to detect what content is missing and to ask the server to send this content.

Note: In addition to the regular PSS transport mechanism it is possible to use download transport mechanisms in the following way: Audiovisual data encapsulated in a file is transmitted from the server to the client. The user is able to play the content during the file download, giving a similar look and feel to the regular PSS transport mechanism.

CR-Form-v7

CHANGE REQUEST

⌘ **22.233 CR 008** ⌘ rev **-** ⌘ 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:	⌘ addition of loss ratio data for charging		
Source:	⌘ SA1 (Orange)		
Work item code:	⌘ PSS	Date:	⌘ 04/10/2002
Category:	⌘ B	Release:	⌘ Rel6
	Use <u>one</u> 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 <u>one</u> 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 quality of service might vary during a streaming session. Therefore it can be useful for the operator to have an accurate idea of what the QoS was during a streaming session. The lost packet ratio (or loss ratio) can inform on the quality of a streaming session. This could allow the operator to possibly charge the session depending on the quality. For instance, under a certain threshold, the session would not be billed.
Summary of change:	⌘ The loss ratio should be part of the specific data included in the CDRs. This information can be taken from the "fraction lost" field of RTCP.
Consequences if not approved:	⌘ The quality of the streaming session won't be considered for charging.

Clauses affected:	⌘ 7										
Other specs affected:	<table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td style="width: 20px; text-align: center;">Y</td> <td style="width: 20px; text-align: center;">N</td> </tr> <tr> <td style="text-align: center;">⌘</td> <td style="text-align: center;">X</td> </tr> <tr> <td style="text-align: center;">⌘</td> <td style="text-align: center;">⌘</td> </tr> <tr> <td style="text-align: center;">⌘</td> <td style="text-align: center;">⌘</td> </tr> </table> Other core specifications ⌘ Test specifications ⌘ O&M Specifications ⌘	Y	N	⌘	X	⌘	⌘	⌘	⌘		
Y	N										
⌘	X										
⌘	⌘										
⌘	⌘										
Other comments:	⌘										

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7 Charging

PSS should support various charging mechanisms, for example, time base charging, volume based charging, event based charging, content based charging.

It shall be possible to include the following streaming specific data, as a minimum, in the CDRs as charging information:

- message type, length etc
- time of start of delivery
- duration
- packet loss ratio
- Streaming service sender / -recipient
- number of Streaming events sent
- number of Streaming events received.
- Media type
- Content id (the particular content stream being accessed)

CR-Form-v7	
CHANGE REQUEST	
⌘ 22.233 CR 009 ⌘ rev - ⌘	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:	⌘ Declaration of Content Cache		
Source:	⌘ SA1 (Huawei Technologies)		
Work item code:	⌘ PSS-E	Date:	⌘ 01/11/2002
Category:	⌘ B	Release:	⌘ Rel-6
	Use <u>one</u> of the following categories:		Use <u>one</u> of the following releases:
	F (correction)	2	(GSM Phase 2)
	A (corresponds to a correction in an earlier release)	R96	(Release 1996)
	B (addition of feature),	R97	(Release 1997)
	C (functional modification of feature)	R98	(Release 1998)
	D (editorial modification)	R99	(Release 1999)
	Detailed explanations of the above categories can be found in 3GPP <u>TR 21.900</u> .		Rel-4 (Release 4)
			Rel-5 (Release 5)
			Rel-6 (Release 6)

Reason for change:	⌘ In 22.233, Content Cache involved in Streaming service is not mentioned.
Summary of change:	⌘ Declaration of Content Cache and its function in Streaming service.
Consequences if not approved:	⌘ Content Cache is included in the figure of Network elements involved in a 3G packet switched streaming service, but no correlative declaration.

Clauses affected:	⌘ 4										
Other specs affected:	<table border="1" style="font-size: x-small;"> <tr> <td style="width: 20px;">Y</td> <td style="width: 20px;">N</td> </tr> <tr> <td style="text-align: center;">X</td> <td style="text-align: center;">X</td> </tr> <tr> <td style="text-align: center;">X</td> <td style="text-align: center;">X</td> </tr> <tr> <td style="text-align: center;">X</td> <td style="text-align: center;">X</td> </tr> </table>	Y	N	X	X	X	X	X	X	Other core specifications	⌘
	Y	N									
	X	X									
X	X										
X	X										
		Test specifications									
		O&M Specifications									
Other comments:	⌘ no impact on other groups										

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.

4 Entities involved in Streaming service

The figure shows the basic entities involved in the Streaming service and how they connect.

Clients initiate the service and connect to the selected content server. Content servers can generate live content e.g. video from a concert. User profile and terminal capability data can be stored on a network server and will be contacted at the initial set up. User Profile will provide the Streaming service with the user's preferences. Terminal capabilities will be used by the Streaming service to decide whether or not the client is capable of receiving the streamed content.

Portals are servers allowing convenient access to streamed media content. For instance, a portal might offer content browse and search facilities. In the simplest case, it is simply a Web/WAP-page with a list of links to streaming content. The content itself is usually stored on content servers (or content caches), which can be located elsewhere in the network. Content Cache located at the edge of the Internet close to clients can be used. It can enable transmission optimisation by caching content from content servers.