

**Source:** SA1

**Title:** CRs to 22.115 on CS interconnection – requirements for the identification of user data rate and user protocol at the interconnection point (R99, Rel-4, Rel-5)

**Document for:** Approval

**Agenda Item:** 7.1.3

Meet	Doc. No.	Spec	CR	Rev	Phase	Cat	Subject	Vers	New Vers	Doc. SA1
SP-22	SP-030686	22.115	017	-	R99	B	CR on 22.115 (Rel5): CS interconnection - requirements for the identification of user data rate and user protocol at the interconnection point e.g. for inter-network accounting purposes	3.3.0	3.4.0	S1-031297
SP-22	SP-030686	22.115	018	-	Rel-4	A	CR on 22.115 (Rel4): CS interconnection - requirements for the identification of user data rate and user protocol at the interconnection point for inter-network accounting purposes	4.0.0	4.1.0	S1-031298
SP-22	SP-030686	22.115	019	-	Rel-5	A	CR on 22.115 (Rel5): CS interconnection - requirements for the identification of user data rate and user protocol at the interconnection point for e.g. inter-network accounting purposes	5.3.0	5.4.0	S1-031299

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## CHANGE REQUEST

⌘ **22.115 CR 017** ⌘ rev - ⌘ Current version: **3.3.0** ⌘

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

<b>Title:</b>	⌘	CR on 22.115 (R99): CS interconnection - requirements for the identification of user data rate and user protocol at the interconnection point e.g. for inter-network accounting purposes
<b>Source:</b>	⌘	SA1 (T-Mobile International)
<b>Work item code:</b>	⌘	TEI-6
	<b>Date:</b>	⌘ 20/10/2003
<b>Category:</b>	⌘	<b>F</b>
		Use <u>one</u> of the following categories:
		<b>F</b> (correction)
		<b>A</b> (corresponds to a correction in an earlier release)
		<b>B</b> (addition of feature),
		<b>C</b> (functional modification of feature)
		<b>D</b> (editorial modification)
		Detailed explanations of the above categories can be found in 3GPP <a href="#">TR 21.900</a> .
	<b>Release:</b>	⌘ R99
		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)

<b>Reason for change:</b>	⌘	Currently there is no requirement specified for the determination of the user data rate and user protocols over CS interconnection circuits, thus preventing identification and differential inter-network accounting for multi-media services e.g. videotelephony.
<b>Summary of change:</b>	⌘	Requirement added for the determination of user data rate and protocol over CS interconnections at the interconnection point e.g. for inter-network accounting purposes
<b>Consequences if not approved:</b>	⌘	Inability to differentiate between data and different types of multi-media services, when carried over CS interconnection circuits and accounting at the GMSC

<b>Clauses affected:</b>	⌘	4								
<b>Other specs affected:</b>	⌘	<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>X</td> <td></td> </tr> <tr> <td></td> <td>X</td> </tr> <tr> <td></td> <td>X</td> </tr> </table> Other core specifications ⌘ 29.007, 32.005 Test specifications O&M Specifications	Y	N	X			X		X
Y	N									
X										
	X									
	X									
<b>Other comments:</b>	⌘									

**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.

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## 4 Requirements

The main new requirements for UMTS charging and accounting are:

- to provide a call detail record for all charges incurred and requiring settlement between the different commercial roles;
- to allow fraud control by the Home Environment and the Serving network;
- to allow cost control by the charged party;
- to provide at the beginning of a chargeable event an indication to the charged party (if involved in the chargeable event) of the charges to be levied for this event;
- to allow itemised billing for all services charged to each subscription, including voice and data calls, and services offered by home environments.

For circuit switched interconnection only a capability is required to collect information regarding user rate and user protocol at the interconnection point so that e.g. the identification of CS video telephony at the interconnection point for inter-network accounting purposes becomes possible.

These new requirements will allow users more freedom to obtain service when roaming, whilst providing effective cost and credit control for the Home Environment and User.

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## CHANGE REQUEST

⌘ **22.115 CR 018** ⌘ rev **-** ⌘ Current version: **4.0.0** ⌘

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**Proposed change affects:** UICC apps  ME  Radio Access Network  Core Network

<b>Title:</b>	⌘ CR on 22.115 (Rel4): CS interconnection - requirements for the identification of user data rate and user protocol at the interconnection point for e.g. inter-network accounting purposes		
<b>Source:</b>	⌘ SA1 (T-Mobile International)		
<b>Work item code:</b>	⌘ TEI-6	<b>Date:</b>	⌘ 20/10/2003
<b>Category:</b>	⌘ <b>A</b>	<b>Release:</b>	⌘ Rel-4
	Use <u>one</u> of the following categories: <b>F</b> (correction) <b>A</b> (corresponds to a correction in an earlier release) <b>B</b> (addition of feature), <b>C</b> (functional modification of feature) <b>D</b> (editorial modification) Detailed explanations of the above categories can be found in 3GPP <a href="#">TR 21.900</a> .		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)

<b>Reason for change:</b>	⌘ Currently there is no requirement specified for the determination of the user data rate and user protocols over CS interconnection circuits, thus preventing identification and differential inter-network accounting for multi-media services e.g. videotelephony.		
<b>Summary of change:</b>	⌘ Requirement added for the determination of user data rate and protocol over CS interconnections at the interconnection point e.g. for inter-network accounting purposes		
<b>Consequences if not approved:</b>	⌘ Inability to differentiate between data and different types of multi-media services, when carried over CS interconnection circuits and accounting at the GMSC		

<b>Clauses affected:</b>	⌘ 4										
<b>Other specs affected:</b>	<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>X</td> <td></td> </tr> <tr> <td></td> <td>X</td> </tr> <tr> <td></td> <td>X</td> </tr> </table> Other core specifications Test specifications O&M Specifications	Y	N	X			X		X	⌘ 29.007, 32.205	
Y	N										
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	X										
	X										
<b>Other comments:</b>	⌘										

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## 4 Requirements

The main new requirements for UMTS charging and accounting are:

- to provide a call detail record for all charges incurred and requiring settlement between the different commercial roles;
- to allow fraud control by the Home Environment and the Serving network;
- to allow cost control by the charged party;
- to provide at the beginning of a chargeable event an indication to the charged party (if involved in the chargeable event) of the charges to be levied for this event;
- to allow itemised billing for all services charged to each subscription, including voice and data calls, and services offered by home environments.

For circuit switched interconnection only a capability is required to collect information regarding user rate and user protocol at the interconnection point so that e.g. the identification of CS video telephony at the interconnection point for inter-network accounting purposes becomes possible.

These new requirements will allow users more freedom to obtain service when roaming, whilst providing effective cost and credit control for the Home Environment and User.

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## CHANGE REQUEST

⌘ **22.115 CR 019** ⌘ rev - ⌘ Current version: **5.3.0** ⌘

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**Proposed change affects:** UICC apps  ME  Radio Access Network  Core Network

<b>Title:</b>	⌘ CR on 22.115 (Rel5): CS interconnection - requirements for the identification of user data rate and user protocol at the interconnection point for e.g. inter-network accounting purposes		
<b>Source:</b>	⌘ SA1 (T-Mobile International)		
<b>Work item code:</b>	⌘ TEI-6	<b>Date:</b>	⌘ 20/10/2003
<b>Category:</b>	⌘ <b>A</b>	<b>Release:</b>	⌘ Rel-5
	Use <u>one</u> of the following categories: <b>F</b> (correction) <b>A</b> (corresponds to a correction in an earlier release) <b>B</b> (addition of feature), <b>C</b> (functional modification of feature) <b>D</b> (editorial modification) Detailed explanations of the above categories can be found in 3GPP <a href="#">TR 21.900</a> .		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)

<b>Reason for change:</b>	⌘ Currently there is no requirement specified for the determination of the user data rate and user protocols over CS interconnection circuits, thus preventing identification and differential inter-network accounting for multi-media services e.g. videotelephony.		
<b>Summary of change:</b>	⌘ Requirement added for the determination of user data rate and protocol over CS interconnections at the interconnection point for e.g. inter-network accounting purposes		
<b>Consequences if not approved:</b>	⌘ Inability to differentiate between data and different types of multi-media services, when carried over CS interconnection circuits, and accounting at the GMSC		

<b>Clauses affected:</b>	⌘ 4										
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Y	N										
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## 4 Main Requirements and High Level Principles

The main new requirements for 3GPP system charging and accounting are:

- to provide a call detail record for all charges incurred and requiring settlement between the different commercial roles;
- to allow fraud control by the Home Environment and the Serving network;
- to allow cost control by the charged party;
- to provide at the beginning of a chargeable event an indication to the charged party (if involved in the chargeable event) of the charges to be levied for this event;
- to allow itemised billing for all services charged to each subscription, including voice and data calls, and services offered by home environments.
- to enable the Home environment to provide a Prepay Service and to enable the serving network to support that Prepay Service for the Home environment's subscribers.
- to allow interconnect (inter-operator) charging including mobile operator to mobile operator and mobile operator to fixed operator (circuit switched & IP) and mobile operator to IP network provider;
- to allow Network operator to 3<sup>rd</sup> party supplier (eg Value Added Service Provider) charging;
- to provide details required for Customer Care purposes

The high level principles that will guide the charging requirements are summarised as follows:

- It must be possible to charge separately for each type of medium used (eg voice, video, data) in a session and for each service used (eg voice call, streaming video, file download);
- It must be possible to charge for different levels of QoS applied for and/or allocated during a session for each type of medium or service used;
- It must be possible to charge each "leg" of a session separately. This includes the incoming and outgoing legs and any forwarded/redirected legs. (Note: The legs mentioned here are logical legs, i.e. not necessarily identical to actual signal and traffic flow. Even though tromboning may be avoided by optimal routing, the operator should still be able to charge for the 'virtual legs' of the call)
- The user can be charged according to the service used irrespective of the technology used to deliver it. (That is, the charge is not derived from whether 2G or 3G is used);
- The user can be charged according to the technology used to deliver a service. (That is, different charges can be applied on 2G and 3G);
- It must be possible to charge a user according to the network resources used. For example, if a large bandwidth is required to use high quality video, the user could be charged accordingly. This is related to charging by QoS;
- It must be possible to charge users flexibly for the use of extra resources (in at least the same network) for all legs of the call. For example, if a video component is added to a voice call the use of extra radio resource at both ends of the call could be paid for by each user in the call or totally by the initiating user.
- It must be possible to suppress charging for certain types of connection e.g. when a customer receives tones or network announcements or during sessions such as automated pre-pay top-up.
- It must be possible for the home network to charge its customers while roaming in the same ways as when they are at home. For example, if duration based charging is used for charging for streaming music in the home network, then it must be possible to apply the same principle when the user is roaming.
- It must be possible for operators to have the option to apply charging mechanisms that are used in GSM/GPRS. For example for duration of a voice call, for the amount of data transmitted (eg for streaming, file download, browsing) and for an event (one-off charge).

- It must be possible for charging to be applied based on location, presence, push services etc
- It must be possible to charge using pre-pay, post-pay, advice of charge, 3<sup>rd</sup> party charging techniques.
- It must be possible for the home network to apply different tariffs to national calls and short messages established/sent by their subscribers while roaming in their Home PLMN depending on whether or not the called subscriber's Home PLMN equals the calling subscriber's Home PLMN, rather than on the called subscriber's MSISDN.

Note: This distinction is necessary only in the case, where the called subscriber's MSISDN may have been ported by Mobile Number Portability [2].

For circuit switched interconnection only a capability is required to collect information regarding user rate and user protocol at the interconnection point so that e.g. the identification of CS video telephony at the interconnection point for inter-network accounting purposes becomes possible.

These new requirements and principles will allow users more freedom to obtain service when roaming, whilst providing effective cost and credit control for the Home Environment and User.