

Work Item Description

Title: CS and PS Call Setup Delay Improvement

1 3GPP Work Area

X	Radio Access
X	Core Network
	Services

2 Linked work items

None

3 Justification

In a modern telecommunication network such as UMTS, the aim of the operator is to offer high quality of service to users. The Quality of Service is the collective effect of service performances, which determine the degree of satisfaction of a user of a service... The average user is not interested in the technical aspects of the network and it can only sense the end-to-end performance.

Under the general heading of quality of experience (QoE) one of the more noticeable points faced by the user is the apparent delay in voice call set up time. The call set up delay can be defined as the time interval from the instant the user initiate a connection request until the complete message indicating call disposition is received by the calling terminal. When establishing a connection the user, due to this delay, may think that the call has not gone through or the network is not responding which may prompt the user to re-dial or in some cases to abandon the connection attempt. Users can experience similar delays during the establishment of packet-based services such as Internet browsing. From the service provider's perspective maintaining an acceptable quality of service is very important. This issue decreases the users perception of the network performance and efficiency.

This work item is intended to investigate mechanisms to improve the connection establishment times and implement those changes in the specifications.

In summary, the call setup delay needs to be improved.

The delay in call set up can be attributed to:

- Processing time in the UTRAN
- Processing time in the Core network
- Processing time in UE
- Call setup and alerting phase in the core network
- UTRAN and CN Protocols and associated overhead including protocol conversion
- Signalling delay on the air interface
- Signalling delay on UTRAN interfaces and towards CN
- NAS procedures

Furthermore, it could be due to the following factors:

- Complex protocols in UTRAN and Core Network side

This work item shall not delay the finalization of the already ongoing work for release 6 targeting faster channel setup times.

4 Objective

The objectives of this work item are:

- To review the CS and PS Call and session Setup procedures in UMTS
- To highlight the bottlenecks where call and session setup process are delayed and consider impacts the relevant specifications
- To highlight the bottlenecks that cause delays in the reactivation of a data session that was in a "dormant" state, i.e. a data session that had not been generating user traffic in the recent past
- To identify possible ways to enhance call and session setup performance whilst keeping in mind R99 backwards compatibility
- To put forward change request relevant to specifications
- To focus on the delay caused by RAN related aspects
- To review performance requirements for e.g. RRC procedures

This investigation should determine possible enhancements, which will be documented in a technical report. The report should also propose in the conclusion suggested changes to existing specifications.

The possible standards enhancements identified in the Study may be proposed for earlier releases. This means that enhancements once identified should not wait for the completion of the complete Study Item before the CRs being written in as a TEIX

Priorities should be given to decrease the latency, which is caused by the different factors. Solutions with limited impact on the UE development should be preferred in order to ensure a fast delivery.

Given the importance of this aspect, the relevant specifications should be enhanced as soon as a solution can be agreed in the technical working groups, without waiting for the formal conclusion of the overall Work Item across all the involved working groups. Change Requests should be approved for the earliest possible release of the 3GPP specifications.

Solutions with limited impact on the UE development should be preferred in order to ensure a fast delivery.

5 Service Aspects

None

6 MMI-Aspects

None.

7 Charging Aspects

TBD

8 Security Aspects

TBD

9 Impacts

Affects:	UICC apps	ME	AN	CN	Others
Yes		X	X	X	
No	X				
Don't know					

10 Expected Output and Time scale (to be updated at each plenary)

New specifications						
Spec No.	Title	Prime rsp. WG	2ndary rsp. WG(s)	Presented for information at plenary#	Approved at plenary#	Comments
TR 25.XXX	CS and PS Call Set Up Delay Improvement	RAN2	RAN3 RAN1 CN1	29	30	
Affected existing specifications						
Spec No.	CR	Subject		Approved at plenary#	Comments	
25.331						
25.321						
25.322						

11 Work item rapporteur(s)

Nokia

12 Work item leadership

TSG RAN WG2

13 Supporting Companies

3, Ericsson, LG, Motorola, NEC, Nokia, Nortel, Qualcomm, Samsung, Siemens, Telia-Sonera, T-Mobile

14 Classification of the WI (if known)

X	Feature (go to 14a)
	Building Block (go to 14b)
X	Work Task (go to 14c)

form change history:
v1.11.0: includes those changes from v1.8.0 agreed at SP-25.
v1.10.0: full circle
v1.9.0: a clean sheet
v1.8.0: includes comments from SA#24
v1.7.0: includes comments from RAN, CN and T #24; also includes "early implementation" data
v1.6.0: includes comments made during review period prior to TSG#24
v1.5.0: includes comments made at TSG#23 (Phoenix)
v1.4.0: offered to SA#23 for approval

v1.3.0: offered to CN#23, RAN#23 and T#23 for comments
DRAFT4 v1.3.0: 2004-03-09: Incorporation of comments from Leaders list
DRAFT3 v1.3.0: 2004-02-19: Incorporation of comments from MCC members
DRAFT2 v1.3.0: 2004-01-29: Complete redraft
v1.2.0: 2002-07-04: "USIM" box changed to "UICC apps"
2003-05-28: spelling of "rapporteur" corrected
2002-07-04: "USIM" box changed to "UICC apps"