3GPP TSG-CN Meeting #25 **NP-040383**
8th – 10th September 2004. Palm Springs, USA.

Source: **TSG CN WG1**

Title: **CR on Rel-6 WI IMS2 Additional SIP capabilities**

Agenda item: **9.1**

Document for: **APPROVAL**

This document contains **1 CRs on Rel-6 Work Item "IMS2 Additional SIP capabilities"**, that has been agreed by TSG CN WG1 CN#35 meeting and forwarded to TSG CN Plenary meeting #25 for approval.

TDoc #	Tdoc Title	Spec	CR #	Rev	CAT	Current version	WI	Rel
N1-041632	Addition of session set-up not requiring preconditions and reliable transport of provisional responses.	24.229	689	2	B	6.3.0	IMS2 Additional SIP capabilities	Rel-6

3GPP TSG-CN1 Meeting #35
Sophia Antipolis, France, 16-20 August 2004

Tdoc N1-041632
was tdoc N1-041593

CR-Form-v7

CHANGE REQUEST

⌘ **TS 24.229** **CR** **689** ⌘**rev** **2** ⌘Current versic **6.3.0** ⌘

*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 ☐

Title:	⌘	Addition of session set-up not requiring preconditions and reliable transport of provisional responses.
Source:	⌘	LM Ericsson, Siemens, Nokia
Work item code:	⌘	IMS2 Additional SIP capabilities
Date:	⌘	09/08/2004
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:	⌘	A number of services (IMS session based messaging POC) do not require precondition and reliable provisional responses.
Summary of change:	⌘	The SIP session initiating cases and related SDP cases have been enhanced with procedures where precondition and support for reliable provisional responses is nor required /supported.
Consequences if not approved:	⌘	Misalignment with 23.228.

Clauses affected:	⌘	5.1.3.1, 5.1.4.1, 6.1

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

Other comments: ⌘

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

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

2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be

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

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

5.1.3 Call initiation - mobile originating case

5.1.3.1 Initial INVITE request

5.1.3.1.1 General

Subclause 5.1.3.1 describe the procedures when the initial INVITE is sent by the originating UE. The default behaviour using the SIP precodintion mechanism is described in subclause 5.1.3.1.2.1. Session without preconditions may be initiated:

- when the remote node does not support the precondition mechanism, as discovered in subclause 5.1.3.1.2.2; or

- when the specifc service does not require the precondition mechanism, as described in subclause 5.1.3.1.3.

Editor's Note: The detailed criteria when to use the non-precondition procedures / resource reservation should be either derived from stage 2 or should be included as a reference to 3GPP TS 23.228.

5.1.3.1.2 "Integration of resource management" required by originating UE

5.1.3.1.2.1 Preconditions required by originating UE

Upon generating an initial INVITE request using precondtions, the UE shall:

- indicate the support for reliable provisional responses and specify it using the Supported header mechanism;

- indicate the requirement of precondition and specify it using the Require header mechanism.

The UE may also indicate that the proxies should not fork the INVITE request by including a "no-fork" directive within the Request-Disposition header in the initial INVITE request as described in draft-ietf-sip-callerprefs-10 [56B].

NOTE 1: Table A.4 specifies that UE support of forking is required in accordance with RFC 3261 [26]. The UE may accept or reject any of the forked responses, for example, if the UE is capable of supporting a limited number of simultaneous transactions or early dialogs.

When a final answer is received for one of the early dialogues, the UE proceeds to set up the SIP session. The UE shall not progress any remaining early dialogues to established dialogs. Therefore, upon the reception of a subsequent final 200 (OK) response for an INVITE request (e.g., due to forking), the UE shall:

1) acknowledge the response with an ACK request; and

2) send a BYE request to this dialog in order to terminate it.

If the UA receives a 503 (Service Unavailable) response to an initial INVITE request containing a Retry-After header, then the UE shall not automatically reattempt the request until after the period indicated by the Retry-After header contents.

If the UE receives a 488 (Not Acceptable Here) response to an initial INVITE request, the UE should send a new INVITE request containing SDP according to the procedures defined in subclause 6.1.

NOTE 2: An example of where a new request would not be sent is where knowledge exists within the UE, or interaction occurs with the user, such that it is known that the resulting SDP would describe a session that did not meet the user requirements.

If the UE receives a 420 (Bad Extension) response to an initial INVITE request with "precondition" option-tag in the Unsupported header field, the UE shall either:

a) abort the session attempt and shall not resend this INVITE request without "precondition" option-tag in the Require header, or

b) try to complete the session by relaxing the requirement on the usage of the "integration of resource management in SIP" extension as described in RFC 3312 [30] and proceed with the procedures described in subclause 5.1.3.2 and subclause 6.1.

5.1.3.1.2.2 Preconditions not supported by remote end

This procedure is initiated upon the reception of a 420 (Bad Extension) response to an initial INVITE request, the response containing the "precondition" option-tag in the Unsupported header field value.

The UE may create another INVITE request addressed to the same destination the initial INVITE was sent. In creating this new initial INVITE request, the UE shall:

1) populate the From, To, Call-ID headers and the Request-URI as per the initial INVITE request;

2) include the “preconditions” option-tag in the Supported header;

3) set each of the media streams in inactive mode in SDP as described in subclause 6.1 in this specification; and

4) forward the INVITE request as per regular procedures.

Upon receiving a provisional response or final response containing the remote SDP, the UE shall:

1) acknowledge, if needed, the SIP response as per regular SIP procedures defined in RFC 3261 [26] and RFC 3262 [27]; and

2) initiate the regular resource reservation mechanism, as described in subclause 9.2.5.

When the above INVITE transaction is successfully completed, and when the local resource reservation procedure is complete, the UE shall create and forward a re-INVITE request including:

1) the From, To, Call-ID headers as per a re-INVITE request; and

2) SDP in which the media streams previously set in inactive mode are set to active mode, according to the procedures described in subclause 6.1 in this specification.

5.1.3.1.3 "Integration of resource management" not required by originating UE

This procedure is initiated when the SIP precondition procedure is not required for a session by the origination UE.

Upon generating the initial INVITE the UE may indicate the support of preconditions by including the “precondition” option-tag in the Supported header.

When the initial INVITE has been created and sent the forthcoming procedures are identical to those described in subcaluse 5.1.3.1.4.

~~5.1.3.2 INVITE request not requiring "integration of resource management in SIP"~~

~~This procedure is initiated upon the reception of a first 420 (Bad Extension) response to an initial INVITE request, the response containing the "precondition" option-tag in the Unsupported header field value.~~

~~The UE may create another INVITE request addressed to the same destination the initial INVITE was sent. In creating this new initial INVITE request, the UE shall:~~

~~1) populate the From, To, Call-ID headers and the Request-URI as per the initial INVITE request;~~

~~2) include the “preconditions” option-tag in the Supported header;include a Supported header that contains the "preconditions" and "100rel" option-tag, in addition to other supported option-tags;~~

~~3) set each of the media streams in inactive mode in SDP as described in draft-ietf-mmusic-sdp-new [39] and subclause 6.1 in this specification; and~~

~~4) forward the INVITE request as per regular procedures.~~

~~Upon receiving a provisional response or final response containing the remote SDP, the UE shall:~~

~~1) acknowledgeanswer, if needed, the SIP response as per regular SIP procedures defined in RFC 3261 [26] and RFC 3262 [27]; and~~

~~2) initiate the regular resource reservation mechanism, as described in subclause 9.2.5.~~

~~When the above INVITE transaction is successfully completed, and when the local resource reservation procedure is complete, the UE shall create and forward a re-INVITE request including:~~

~~1) the From, To, Call-ID headers as per a re-INVITE request; and~~

~~2) SDP in which the media streams previously set in inactive mode are set to active mode, according to the procedures described in draft-ietf-mmusic-sdp-new [39] and subclause 6.1 in this specification.~~

5.1.4 Call initiation - mobile terminating case

5.1.4.1 Initial INVITE request

5.1.4.1.1 General

The handling of incoming initial INVITE requests at the terminating UE is mainly dependant on the following conditions:

- the specific service requirements for resource reservation; and
- the UEs configuration for the case when the specific service does not require resource reservation.

Editor's Note: The detailed criteria when to use the non-precondition procedures / resource reservation should be either derived from stage 2 or should be included as a reference to 3GPP TS 23.228.

If an initial INVITE request is received the terminating UE shall check whether integration of resource management is required either due to the requested service or due to local configuration. If resource management is required at the terminating UE and

a) the received INVITE request includes the "precondition" option-tag in the Require header, the terminating UE shall perform the actions as described in subclause 5.1.4.1.2.1;

b) the received INVITE request does not include the "precondition" option-tag in the Require header and the terminating UE, based on local configuration, requires the usage of preconditions in this case, the terminating UE shall perform the actions as described in subclause 5.1.4.1.2.2; or

c) the received INVITE request does not include the "precondition" option-tag in the Require header and the terminating UE, based on local configuration, does not require the usage of preconditions in this case, the terminating UE shall perform the actions as described in subclause 5.1.4.1.2.3.

If resource management is not required by the terminating UE and:

a) the received INVITE request includes the "precondition" option-tag in the Require header, the terminating UE shall perform the actions as described in subclause 5.1.4.1.2.1; or

b) the received INVITE request does not include the "precondition" option-tag in the Require header, the terminating UE shall perform the actions as described in subclause 5.1.4.1.3.

~~Upon receiving an initial INVITE request without containing either Supported: precondition or Require: precondition header values, the UE shall either follow the procedures described in subclause 5.1.4.1.2 or follow the procedures described in subclause 5.1.4.1.3.~~

NOTE: Table A.4 specifies that UE support of forking is required in accordance with RFC 3261 [26].

Editor's Note: The above note needs further investigation.

5.1.4.1.2 "Integration of resource management" required by terminating UE

5.1.4.1.2.1 Preconditions used by originating UE

Upon generating the first response to the initial INVITE request that indicated the "precondition" options-tag in the Require header, the UE shall indicate the requirement for reliable provisional responses and specify it using the Require header mechanism.The UE shall send the 200 (OK) response to the initial INVITE request only after the local resource reservation has been completed and the call is accepted by the termination user.

5.1.4.1.2.2 Preconditions not used by originating UE but preconditions required by terminating UE

~~5.1.4.1.2 Preconditions and reliable provisional responses required~~

Upon receiving an initial INVITE request without the "precondition" option-tag in ~~either the Supported or~~ the Require header ~~field values~~, and the precondition ~~if the UE is configured to require the usage of the "integration of resource management in SIP"~~ extension as described in RFC 3312 [30] is required by the terminating UE, the terminating UE shall generate a 421 (Extension Required) response indicating the required extension in the Require header field value.

~~Upon generating the first response to the initial INVITE request, the UE shall indicate the requirement for reliable provisional responses and specify it using the Require header mechanism.The UE shall send the 200 (OK) response to the initial INVITE request only after the local resource reservation has been completed and the call is accepted by the termination user.~~

5.1.4.1.2.3 Preconditions not used by originating UE and preconditions not required by terminating UE

Editor's Note: It needs to be investigated whether the solution proposed in this subclause (for the case when an UE outside the IMS calls an IMS UE) is covered by the solution given in subclause 5.1.4.1.3. In that case the resource reservation would be initiated when the initial INVITE is received, and the 200 (OK) for the initial INVITE would then be sent after the related resources have been reserved and the called user has accepted the call.

Upon receiving an initial INVITE request without containing the "precondition" option-tag in ~~either~~ the ~~Supported or~~ Require header ~~field values~~, if the terminating UE is configured to not use either the ~~"integration of resource management in SIP"~~ precondition extension as described in RFC 3312 [30] or the reliable provisional responses extension defined in RFC 3262 [27], the UE shall:

1) if the INVITE request includes the "100rel" option-tag in the Supported header field value, answer with a 183 (Session Progress) response and include the "100rel" option-tag in the Require header field in the response; or

2) if the INVITE request does not include the "100rel" option-tag in the Supported header field value, providing that the user accepts the session establishment, answer with a 200 (OK) response; and

3) in any of the above cases, set each of the media streams in inactive mode in SDP as described in ~~draft-ietf-mmusic-sdp-new [39] and~~ subclause 6.1 in this specification; and

4) initiate the regular resource reservation mechanisms, as described in subclause 9.2.5.

When the above INVITE transaction has successfully complete, and when the local resource reservation procedure has complete, the UE shall create and forward a re-INVITE request which shall include:

1) the From, To, Call-ID headers as per a re-INVITE request;

2) a Supported header containing the "preconditions" and "100rel" option-tags, in addition to other supported option-tags; and

3) SDP in which the media streams previously set in inactive mode are set to active mode, according to the procedures described in ~~draft-ietf-mmusic-sdp-new [39] and~~ subclause 6.1 in this specification.

5.1.4.1.3 "Integration of resource management" not required by terminating UE

Upon receiving an initial INVITE request without containing the "precondition" option-tag Require headers, and "integration of resource management" is not required by the terminating UE, the terminating UE shall:

1) send none or more provisional response(s) (eg. 183 Session Progress); and

2) send 200 (OK) response, when the call is accepted by the terminating user.

6 Application usage of SDP

6.1 Procedures at the UE

Usage of SDP by the UE:

1. In order to authorize the media streams, the P-CSCF and S-CSCF have to be able to inspect the SDP payloads. Hence, the UE shall not encrypt the SDP payloads.

2. An INVITE request generated by a UE shall contain SDP payload. The SDP payload shall reflect the calling user's terminal capabilities and user preferences for the session. The UE shall order the SDP payload with the most preferred codec listed first.

3. If the SIP request includes a "precondition" option-tag in the Require header ~~field value~~, the calling user shall indicate the desired QoS for the session, using the segmented status type. In an initial INVITE request the UE shall indicate that it mandates local QoS and that this precondition is not yet satisfied, i.e. the UE shall include the following preconditions:

   a=des: qos mandatory local sendrecv

   a=curr: qos local none

   If the SIP request does not include the "precondition" option-tag in the Require header, the UE shall not indicate that it mandates local QoS. The UE may indicate its desire for optional local QoS, by including the following preconditions:

   a=des:qos optional local sendrecv

   In the case described in subclause 5.1.3.1.2.2 in the first SDP offer the UE sends, the UE shall set each media stream in inactive mode by including an "a=inactive" line, according to the procedures described in draft-ietf-mmusic-sdp-new [39].

4. Providing that the INVITE request received by the UE contains an SDP offer including one or more "m=" media descriptions, and the precondition mechanism is used as described in subclause 5.1.4.1.2.1, the first 183 (Session Progress) provisional response that the UE sends, shall contain the answer for the SDP received in the INVITE. The said SDP answer shall reflect the called user's terminal capabilities and user preferences.

   In the case described in subclause 5.1.4.1.3 no specific SDP procedures for integration of resource reservation have to be performed.

   ~~If the SIP "integration of resource management in SIP" extension as described in RFC 3312 [30] is not used~~In the case described in subclause 5.1.4.1.2.3 ~~,~~ in the first SDP answer the UE sends ~~(as described in subclause 5.1.4.1.2)~~, the UE shall set each media stream~~s~~ in inactive mode by ~~setting~~ including an "a=inactive" line, according to the procedures described in draft-ietf-mmusic-sdp-new [39] ~~and subclause 5.1.4.1.2 in this specification~~.

   If the UE is setting one or more media streams in active mode, it shall apply the procedures described in draft-ietf-mmusic-sdp-new [39] with respect to setting the direction of media streams.

5. When the UE sends a 183 (Session Progress) response with SDP payload including one or more "m=" media descriptions, if the ~~SIP "integration of resource management in SIP"~~ precondition extension as described in RFC 3312 [30] is supported by the calling UE, the called UE shall request confirmation for the result of the resource reservation at the originating end point.

6. During session establishment procedure, SIP messages shall only contain SDP payload if that is intended to modify the session description, or when the SDP payload must be included in the message because of SIP rules described in RFC 3261[26].

7. For "video" and "audio" media types that utilize the RTP/RTCP, the UE shall specify the proposed bandwidth for each media stream utilizing the "b=" media descriptor and the "AS" bandwidth modifier in the SDP.

   If the media line in the SDP indicates the usage of RTP/RTCP, in addition to the "AS" bandwidth modifier in the media-level "b=" line, the UE shall include two media-level "b=" lines, one with the "RS" bandwidth modifier and the other with the "RR" bandwidth modifier as described in RFC 3556 [56] to specify the required bandwidth allocation for RTCP.

   For other media streams the "b=" media descriptor may be included. The value or absence of the "b=" parameter will affect the assigned QoS which is defined in 3GPP TS 29.208 [13].

NOTE 1: In a two-party session where both participants are active, the RTCP receiver reports are not sent, therefore, the RR bandwidth modifer will typically get the value of zero.

8. The UE shall include the MIME subtype "telephone-event" in the "m=" media descriptor in the SDP for audio media flows that support both audio codec and DTMF payloads in RTP packets as described in RFC 2833 [23].

9. The UE shall inspect the SDP contained in any SIP request or response, looking for possible indications of grouping of media streams according to RFC 3524 [54] and perform the appropriate actions for IP-CAN bearer establishment for media according to IP-CAN specific procedures (see subclause B.2.2.5 for IP-CAN implemented using GPRS).

10. If an IP-CAN bearer is rejected or modified, the UE shall, if the SDP is affected, update the remote SIP entity according to RFC 3261 [26] and RFC 3311 [29].

11. If the UE builds SDP for an INVITE request generated after receiving a 488 (Not Acceptable Here) response, as described in subclause 5.1.3.1, the UE shall include SDP payload containing a subset of the allowed media types, codecs and other parameters from the SDP payload of all 488 (Not Acceptable Here) responses related to the same session establishment attempt (i.e. a set of INVITE requests used for the same session establishment). The UE shall order the codecs in the SDP payload according to the order of the codecs in the SDP payload of the 488 (Not Acceptable Here) response.

NOTE 2: The UE may be attempting a session establishment through multiple networks with different policies and potentially may need to send multiple INVITE requests and receive multiple 488 (Not Acceptable Here) responses from different CSCF nodes. The UE therefore takes into account the SDP contents of all the 488 (Not Acceptable Here) responses received related to the same session establishment when building a new INVITE request.