

Agenda Item: 14.2
Source: Ericsson
Title: **Specification of RRC procedure: Cell update**
Document for: Decision

1 Introduction

Two companion contributions propose a new set of RRC states [2] and principles for how RRC procedures shall be specified using text [1].

This contribution contains a proposal for specification of the cell update procedure using those states and principles.

2 Cell update procedure

2.1 Purpose

The main purpose of the cell update procedure is to update UTRAN with the current cell of the UE after cell reselection in CELL_FACH or CELL_PCH state. It may also be used for supervision of the RRC connection, even if no cell reselection takes place.

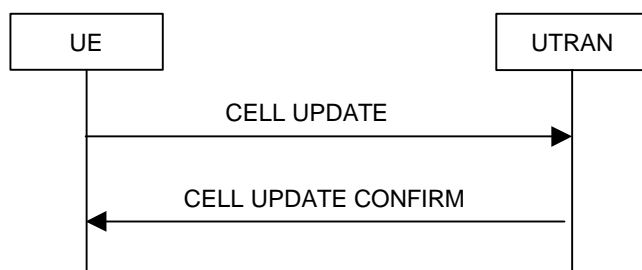


Figure 1. Cell update procedure, basic flow

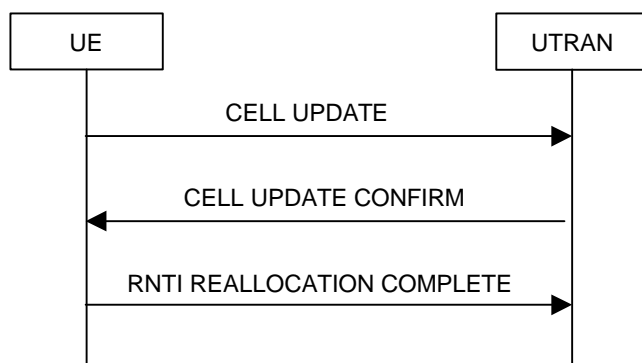


Figure 2. Cell update procedure with RNTI reallocation

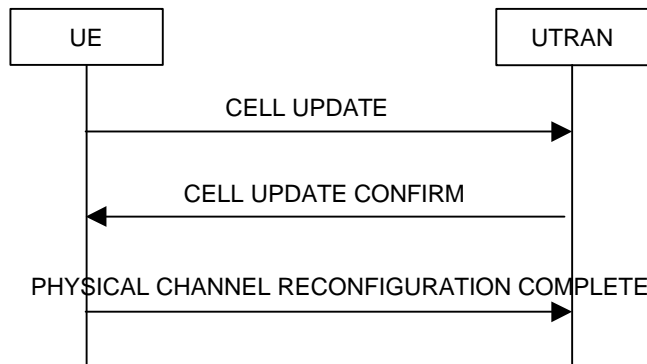


Figure 3. Cell update procedure with physical channel reconfiguration

2.2 Initiation

2.2.1 Cell update due to cell reselection

When the UE is in CELL_FACH or CELL_PCH state and originates from an UTRA cell and makes a successful reselection of another UTRA cell, it shall

- move to CELL_FACH state, if not already in that state
- transmit a CELL UPDATE message on the uplink CCCH,
- start timer T302 and reset counter V302

The IE “cell update cause” shall be set to “cell reselection”.

2.2.2 Cell update due to periodic cell update

When the UE is in CELL_RACH or CELL_PCH state, the UE shall perform periodic cell updating according to the system information. The timer T305 shall be reset when entering CELL_RACH state and after each uplink message transmission in CELL_RACH state.

Upon expiry of timer T305, the UE shall

- move to CELL_FACH state, if not already in that state
- transmit a CELL UPDATE message on the uplink CCCH,
- start timer T302 and reset counter V302
- restart timer T305

The IE “Cell update cause” shall be set to “periodic cell update”.

2.2.3 Message CELL UPDATE contents to set

The IE “Cell update cause” shall be set to the event causing the transmission of the CELL UPDATE message, see subclauses 2.2.1 and 2.2.2.

The UE shall include an intra-frequency measurement report in the CELL UPDATE message, when instructed to do so in the system information.

2.3 Reception of CELL UPDATE by the UTRAN

When the UTRAN receives a CELL UPDATE message, it shall transmit a CELL UPDATE CONFIRM message on the downlink DCCH.

2.3.1 Message CELL UPDATE CONFIRM contents to set

UTRAN shall use the same S-RNTI and SRNC identity for the transmission of CELL UPDATE CONFIRM as the values of the IEs “S-RNTI” and “SRNC identity” in the received message CELL UPDATE.

UTRAN may allocate a new C-RNTI and/or a new S-RNTI plus SRNC identity for the UE. In that case UTRAN shall include those new identities in the IEs “new C-RNTI”, “new S-RNTI” and “new SRNC identity”, and start timer T361.

UTRAN may allocate new PRACH and/or Secondary CCPCH to the UE. In that case UTRAN shall include the IEs “PRACH info” and/or “Secondary CCPCH info”. UTRAN shall start timer T357, if not T361 has been started.

2.4 Reception of CELL UPDATE CONFIRM by the UE

When the UE receives a CELL UPDATE CONFIRM message on the downlink DCCH, it shall stop timer T302.

2.4.1 Message CELL UPDATE CONFIRM contents to use

If the CELL UPDATE CONFIRM message includes the IEs “new C-RNTI” and optionally “new S-RNTI” and “new SRNC identity”, the UE shall

- update its identities and transmit an RNTI REALLOCATION COMPLETE message on the uplink DCCH. The procedure ends when the UE has transmitted that message and the UE shall go back to CELL_PCH state if the cell update procedure was initiated from that state.

If the CELL UPDATE CONFIRM message includes the IE “URA update indicator”, the UE shall

- enter URA_PCH state, after all other possible actions. If the CELL UPDATE CONFIRM message also includes the IE “URA-Id” the UE shall store this URA identity.

If the CELL UPDATE CONFIRM message includes the IEs “PRACH info” and/or “Secondary CCPCH info”, but not the IEs “new C-RNTI”, “new S-RNTI” nor “new SRNC identity”, the UE shall

- Perform the actions stated in subclauses x and y [*Editor’s note: a reference to general actions for these IEs.*]
- transmit a PHYSICAL CHANNEL RECONFIGURATION COMPLETE message on the uplink DCCH. The procedure ends when the UE has transmitted that message and the UE shall go back to CELL_PCH state if the cell update procedure was initiated from that state.

If the CELL UPDATE CONFIRM message includes the IEs “PRACH info” and/or “Secondary CCPCH info”, and at least one of the IEs “new C-RNTI”, “new S-RNTI” or “new SRNC identity”, the UE shall

- Perform the actions stated in subclauses x and y [*Editor’s note: a reference to general actions for these IEs.*]

If the CELL UPDATE CONFIRM message includes the IEs “CN domain identity” and “NAS system information”, the UE shall forward the content of the IE to the non-access stratum entity of the UE indicated by the IE “CN domain identity”.

If the CELL UPDATE CONFIRM message includes neither the IEs “PRACH info”, “Secondary CCPCH info”, “new C-RNTI”, “new S-RNTI” nor “new SRNC identity”, the procedure ends and the UE shall go back to CELL_PCH state if the cell update procedure was initiated from that state.

2.5 Abnormal cases: T302 expiry or cell reselection

- Upon expiry of timer T302, and/or
- upon reselection of another UTRA cell when waiting for the CELL UPDATE CONFIRM message,

the UE shall check the value of V302 and

- If V302 is smaller or equal than N302, the UE shall retransmit a CELL UPDATE message on the uplink CCCH, restart timer T302 and increase counter V302. The UE shall set the IEs in the CELL UPDATE message according to subclause 2.2.3.
- If V302 is greater than N302, the UE shall enter idle mode. The procedure ends and a connection failure may be indicated to the non-access stratum. Other actions the UE shall perform when entering idle mode from connected mode are specified in subclause x.x.x.

2.6 Reception of RNTI REALLOCATION COMPLETE by the UTRAN

See subclause x.x.x [*Editor’s note: reference to the corresponding part of RNTI reallocation procedure to be inserted here*].

2.7 Abnormal case: T361 expiry

FFS

2.8 Reception of PHYSICAL CHANNEL RECONFIGURATION COMPLETE by the UTRAN

FFS

2.9 Abnormal case: T357 expiry

FFS

3 Proposal

It is proposed that the current description of the RRC procedure “cell update” TS 25.331 is replaced by chapter 2 of this contribution.

4 References

- [1] TSGR2#6(99)809, Principles for specification of RRC procedures, source: Ericsson
- [2] TSGR2#6(99)807, RRC protocol states, source: Ericsson