

# **Rel-7 VoIP Service Continuity**

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**AI: 8**

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# Status of the specification

- No Rel-7 solution yet for HSPA VoIP / WCDMA CS continuity
- **Not possible** yet to switch an HSPA VoIP call into a WCDMA CS call\*
- This results in limited possibility to efficiently deliver voice services anchored in the IMS domain.

\* *Note that once HSPA VoIP → WCDMA CS is enabled, the HSPA VoIP → GSM CS continuity is addressed with a 2-step approach: HSPA VoIP → WCDMA CS → GSM CS.*

# Proposed Rel-7 solution

- A solution is currently being discussed for the following cases
  - Handovers in connected mode
  - Call delivery in idle mode
- The solution can be regarded as an extension of Rel-7 TS 23.206 VCC
  - TS 23.206 has been developed for 3GPP  $\leftrightarrow$  WLAN
  - The proposal is to extend it to the intra-UTRAN case
- The extension is visible only to the RAN
  - No architecture impact
    - Establishing a CS call while in a PS session within the same radio link is already allowed
  - Two RRC changes
    - Additional IEs for paging type2 and SIB3
    - Draft RRC CR attached to this presentation

# Status of the discussion

- The solution has been reviewed by RAN2, RAN & SA2
- SA2 #58
  - LS from SA2 to RAN2 (S2-072866)
    - OK'ed the proposed introduction of additional RAN information
    - Provided the following recommendation
      - *UE determines when and whether to initiate domain transfer, based on inputs such as signal strength, operator and user policy.*
      - *Thus, in order to reuse the currently defined VCC principles, information from the RAN would serve as an additional input for the UE to determine whether to initiate domain transfer*
  - Conclusion: no showstoppers identified by SA2 / CT1
- RAN2 #59
  - Still some concerns from few companies on whether Rel-7 should include any intra-UTRAN voice continuity solution at all

# Proposed way forward

## Proposed action for TSG RAN

- Confirm that a solution for voice continuity applicable to HSPA VoIP should be specified as part of Rel-7
- Provide corresponding guidance to WG2

ANNEX: More details on the solution...

HSPA VoIP → WCDMA CS Service Continuity:

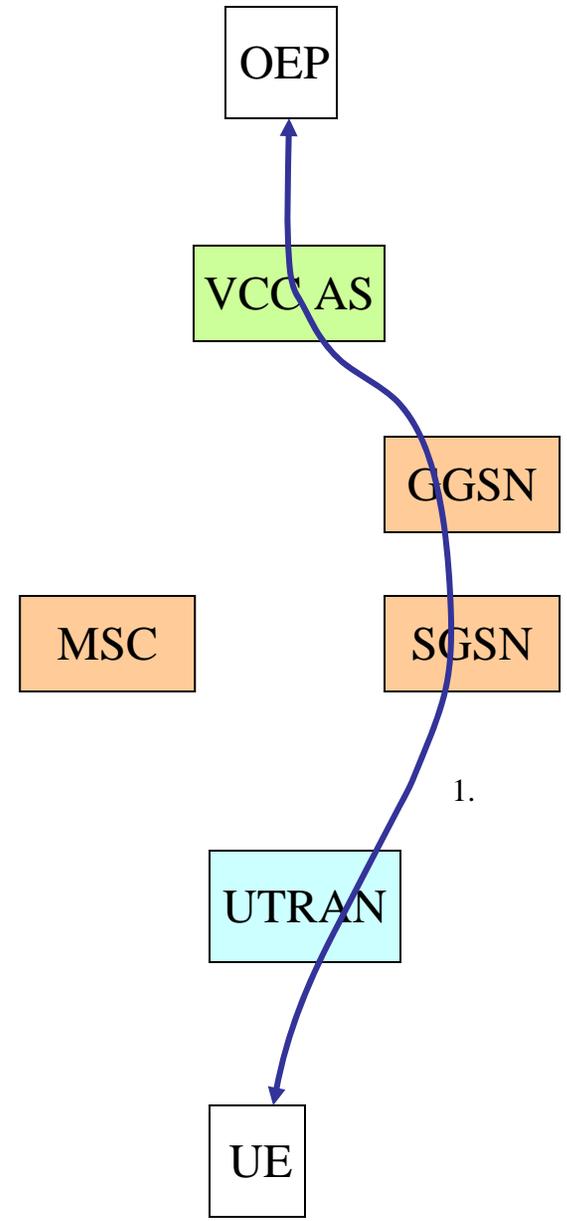
Handover in connected mode

Call Delivery in idle mode

# HSPA VoIP → WCDMA CS: Handover

## Call Flow

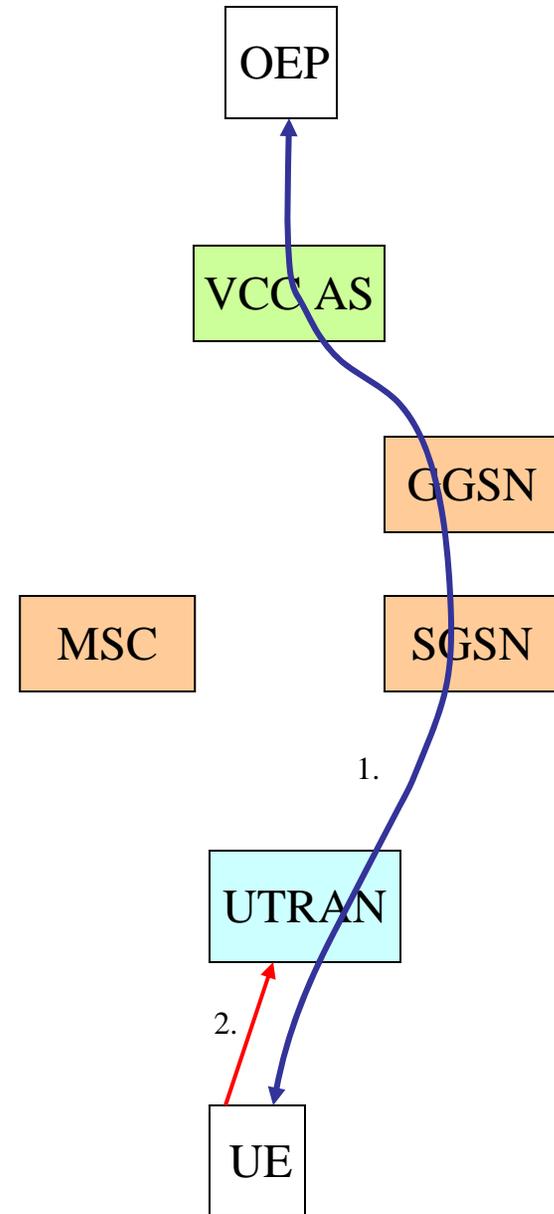
1. UE is in a VoIP call anchored in the VCC AS



# HSPA VoIP → WCDMA CS: Handover

## Call Flow

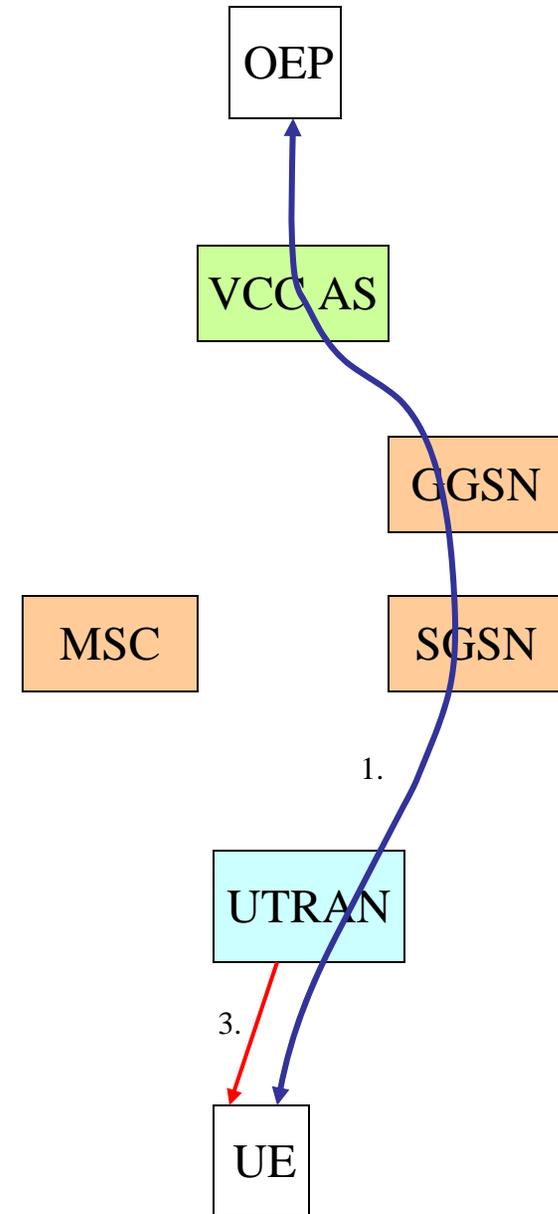
1. UE is in a VoIP call anchored in the VCC AS
2. Based on UE measurement reports, UTRAN realizes that the UE is running out of HSPA VoIP coverage



# HSPA VoIP → WCDMA CS: Handover

## Call Flow

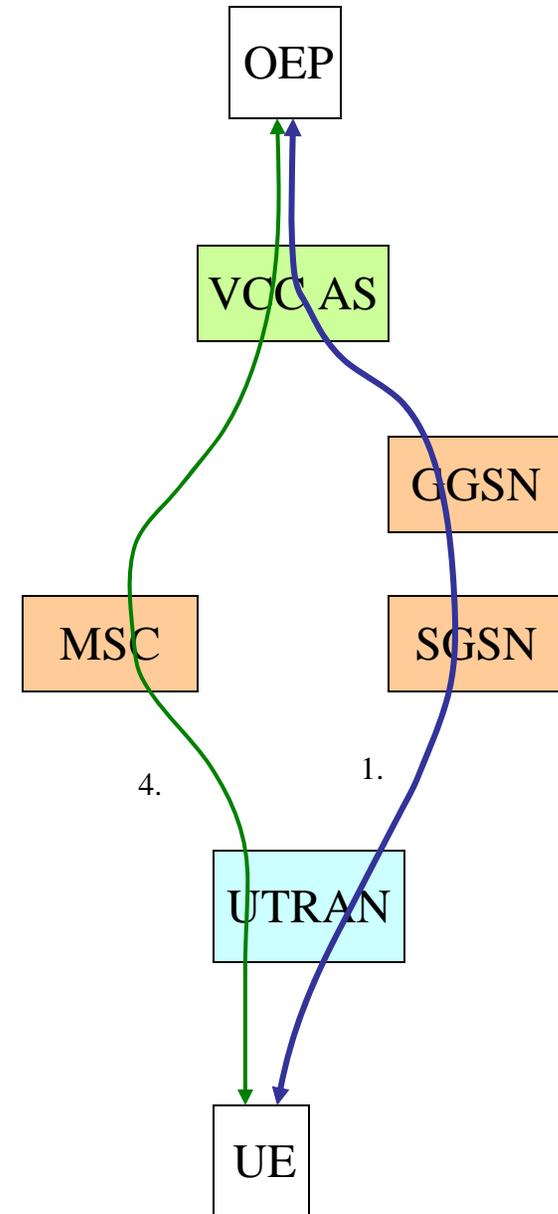
1. UE is in a VoIP call anchored in the VCC AS
2. Based on UE measurement reports, UTRAN realizes that the UE is running out of HSPA VoIP coverage
3. UTRAN sends a “Paging for voice call continuity” to the UE suggesting a domain transfer; this triggers the CS call establishment



# HSPA VoIP → WCDMA CS: Handover

## Call Flow

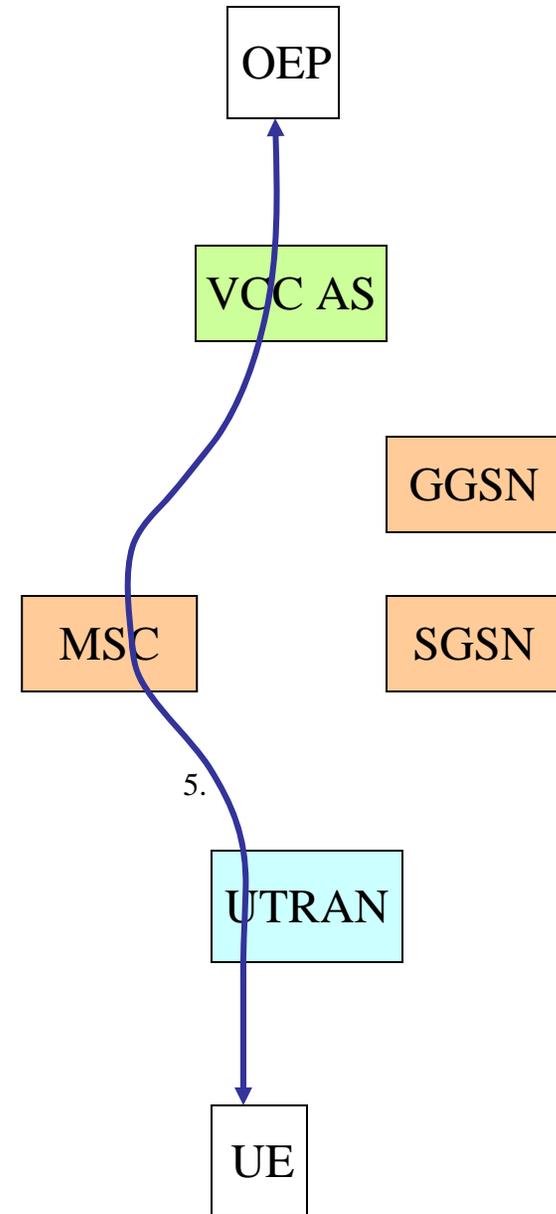
1. UE is in a VoIP call anchored in the VCC AS
2. Based on UE measurement reports, UTRAN realizes that the UE is running out of HSPA VoIP coverage
3. UTRAN sends a “Paging for voice call continuity” to the UE suggesting a domain transfer; this triggers the CS call establishment
4. UE simultaneously sets up a CS call in the same cell and anchors it at the VCC AS



# HSPA VoIP → WCDMA CS: Handover

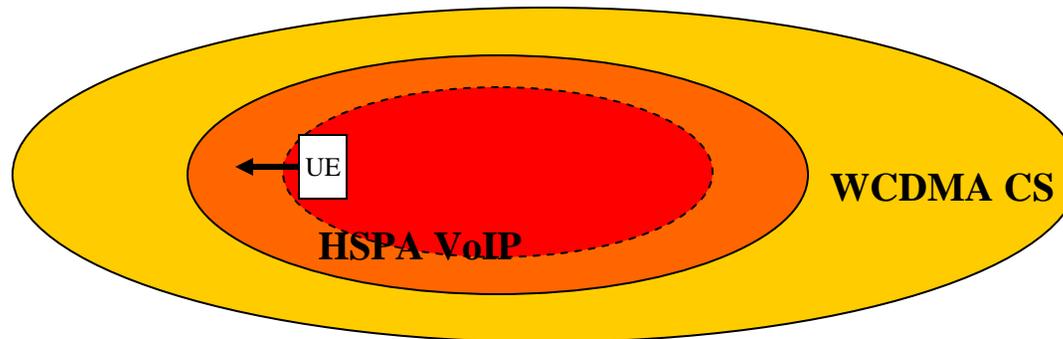
## Call Flow

1. UE is in a VoIP call anchored in the VCC AS
2. Based on UE measurement reports, UTRAN realizes that the UE is running out of HSPA VoIP coverage
3. UTRAN sends a “Paging for voice call continuity” to the UE suggesting a domain transfer; this triggers the CS call establishment
4. UE simultaneously sets up a CS call in the same cell and anchors it at the VCC AS
5. VCC AS switches data path for the voice call and resource are released in the source side. From now on UTRAN can perform a regular handover to a cell that is not VoIP capable



## HSPA VoIP → WCDMA CS: Handover (cont'd)

- Assumption
  - UTRAN knows the cell HSPA-capability
- Example of operation
  - The operator configures a “buffer zone” of cells at the edge of the HSPA-capable area of coverage
    - Orange in the picture
  - When a UE that is running a conversational/speech PS RABs enter the “buffer zone”, the UTRAN may
    - Configure a new measurement event in the UE
    - Based on measurement reports, send the “paging for voice call continuity” indication to the UE



More details on the solution...

HSPA VoIP → WCDMA CS Service Continuity:

Handover in connected mode

Call Delivery in idle mode

## HSPA VoIP → WCDMA CS: Call Delivery

- What is the problem?
  - How does an idle UE know that it has moved out of an HSPA-capable area so that it can modify its IMS registration accordingly
    - IMS needs to know in which domain to deliver the paging/call
- In the proposed solution
  - UTRAN cells broadcast their HSPA capability
  - UE modifies its IMS registration based on the HSPA capability of the cell on which is camping on