Technical Specification Group Services and System Aspects ***TSGS#9(00)0423***
Meeting #9, Hawaii, USA, 25-28 September 2000

TrFO/TFO workshop **Tdoc N4-000720**
Seattle, Washington, US
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Title: TrFO Workshop Results
Source: TrFO Workshop Convenor

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1 Introduction

Since the last TSG#08 two TrFO Workshops has been held which meeting minutes are described in the following documents (NP-000xxx, NP-000xxy, RP-000xxx, RP-000xxx, SP-000xxx, SP-000xxx):

- 18th of July 2000, in Helsinki
- 29-30 of August 2000, in Seattle

The workshop was chaired by Yun-Chao Hu as the workshop convenor with Franco Settimo as the MCC secretariat.

The following results have been reached based on the disucssion held in the workshop.

2 Agreements

2.1 Core Network Framing Protocol

Two possible candidates for the Circuit-Switched Core Network Framing protocols have been identified:

- Iu UP Protocol for ATM and IP networks
- I.366.2 for ATM and RTP for IP networks

The workshop agreed to use the Iu UP Protocol as a framing protocol within the circuit-switched AAL2/ATM and IP core network for compressed speech and CS data services based on considerations of required protocol terminations and protocol conversions

Involved 3GPP WGs: R3, N4, N3

2.2 Relationship to Circuit-Switched Data

Based on agreement 2.1. “Core Network Framing Protocol” the discussion raised the issue of the allocation of the IWF. Currently the IWF are allocated within the VMSC for R’99. However, this will lead to required enhancements to signal PCM within the Iu UP or the usage of a 64K bearer protocol within the Core Network. The IWF at the edge of the network will simplify the service modifications (e.g. between speech/data/fax/multimedia).

The workshop agreed that it would be benificial to locate the CS data services IWF at the edge of the network (i.e. IWF on the Edge). However, the workshop also realised that the PLMN-BC IE needs to be available at the edge MGW to trigger the activation of the IWF.

It was understood that N3 will provide a WI to initiate this work. It was also relaiosed that N4 will be involved into this work to transfer the PLMN-BC towards the border MGW.
Involved 3GPP WGs: N3, N4

2.3 Symmetrical set of RFCIs

The workshop discussed the avoidance of the Iu UP reinitalisation at the remote end during SRNS relocation. However, it was realised that this will require symmetrical RFCIs in both directions of the Iu UP protocol to avoid the Iu UP re-initialisation. It was also understood that this will simplify the TrFO considerably.

Therefore the workshop agreed that the RFCI set per codec type shall be symmetrical in both directions. The behaviour of a RNC for receiving RFCIs at Iu UP initialisation from the core network shall be changed to be applied for both uplink and downlink. In R’99 only the uplink RFCIs are changed, for R’00 the downlink RFCIs need to be changed as well.

R3 shall provide the necessary specifications or CRs. Standardization of RFCI indexes would simplify the TrFO, but our understanding that this is sensitive within R3

Involved 3GPP WGs: R3

2.4 Always Monitoring

This mechanism uses monitoring devices in each MGW that is associated within the speech path during the whole call duration.

2.4.1 Benefits

- Fast response of insertion of the transcoder
- No impacts to Iu UP, Mc interface, and BICC interfaces
- All modifications to the RFCIs and rate control are seen by all associated MGWs

2.4.2 Disadvantages

- Additional Monitoring Hw is required for every associated MGW within the speech path

This mechanism could be used instead of the alternatives for obtaining RFCI information at TrFO Break, presented in section 3

The workshop realised that this mechanism has no protocol impacts and therefore there is no need for futher protocol standardization. This mechanism was considered as a viable solution but was not accepted by the workshop as the only solution.

3 Alternatives for obtaining RFCI information at TrFO Break

The following alternatives are identifed and evaluated. Recommendations on the selection among these alternatives are described in section 4 but guidance from the Plenaries is required.

3.1 Monitoring when needed

This alternative requires monitoring during call setup and when RFCIs are forseen to be changed. Monitoring can be removed during active phase of the call. It also requires storing of RFCIs in all MGW within the speech path.

3.1.1 Benefits

- No monitoring Hw required during stable call phase
- RFCI information always available within MGW

3.1.2 Disadvantages

- Every MGW needs to support the "monitoring" functions
- Storage capacity required for RFCI information

3.1.3 Estimated standardization work

- Prevention of changing of RFCI during the whole call, i.e. fixed-mode (R2,R3)
- One additional RANAP IE required to request fixed-mode of Iu UP, which needs to be specified (R3)

3.2 RFCI Interrogation

This alternative introduces the capability of interrogation of RFCIs in case of insertion of TrFO Break and Relocation. RFCIs are read from associated RNCs when is needed and there is no storage in the MGWs.

3.2.1 Benefits

- Hw efficiency, which results from the fact that no monitoring Hw is required
- No storage of RFCI information required within MGWs

3.2.2 Disadvantages

- Retrieve of RFCI information required from the RNC, introducing additional signalling delay of the TrFO break (NOTE: no impact to the speech path delays)
- Interrogation function to be introduced in MGWs

3.2.3 Estimated standardization work

- Iu UP standardisation impacts (new operations and protocol procedure interactions) (N4, R3)
- Temporry Suspension of initialisation & rate control during relocation (R2,R3)
- Delay of Handover needs to be investigated. (N1)

4 Conclusions

The workshop made considerable progress and reached a number of agreements.

The workshop realised that Alternative 1 will require some stage 3 standardization specification that is less then the required standardization for Alternative 2.

Plenary guidance is required to select one alternative to be worked out in 3GPP for TrFO. A decision of the Plenary is required to progress the work on stage 2 and stage 3.

The workshop also realised that standardization of TrFO will be challenging to be completed within anticipated Release 4 time frame.