Technical Specification Group Services and System Aspects **GTT(01)0007**
Global Text Telephony Workshop, Dusseldorf, Germany, 18-19 April 2001

Source: **Nokia, Nortel Networks**

Title: **Observations on CTM service node solution**

Document for: **Discussion**

Agenda Item:

Introduction

This document presents some issues and challenges if GTT support is implemented in a separate service node with CAMEL routing procedures.

Emergency calls

Using a separate CTM service node has two main issues in emergency calls.

1. Emergency call routing.
All emergency calls must be routed to the CTM node because the VMSC can not know if the subscriber is a GTT-subscriber. This happens because:
a) no CAMEL triggering is allowed in emergency calls so the O-CSI is not useful here.
b) GTT-calls should succeed also from non-GTT subscription.
c) regardless of a) and b) the emergency call might be placed without SIM.

Emergency calls are always routed locally to the nearest emergency center. The visited network needs to have CTM service node to allow GTT-emergency calls.

CAMEL is not a mandatory feature meaning that emergency calls would only succeed even with SIM and from GTT-subscriptions if the network in question supports CAMEL ph.1.

As all emergency calls must be routed through the CTM node the dimensioning of the CTM node can be challenging. Typically the network is not allowed to be a bottleneck in emergency calls. This also sets high requirements to the reliability of the node. This is not an implementation issue, it is more of a regulatory issue and should be addressed by the operators.

2. Emergency center call back
There have been regulatory requirements that require that emergency call centers must be able to call back to subscribers who have made emergency calls (providing a MSISDN is available for the original calling party).
In this case the case described in 1.b) can not be routed via the CTM node as the subscription in that case has no T-CSI that could be used.

This is again a regulator and operator domain problem not an implementation issue.
Providing the network indicates some way that the originator of the call is an emergency center the calls can be routed via the CTM node, otherwise there is no other way to facilitate the function except by having the CTM capability in all voice channels in all MT-calls.

TFO and TrFO

In TFO connection coded speech is sent parallel with uncoded PCM samples between the transcoders. If TFO protocol support is not implemented in the service node TFO connection breaks when CTM signal is detected in the node. The fallback to PCM mode may cause quality degradation at least in VCO/HCO cases.

In Iu interface case, transcoders are located in the core network. CTM coding for the text signal must be done before speech coding. This means GTT calls must be routed to the service node before the transcoder at the PSTN edge.

Subscription

In order to be able to route GTT calls to the service node, GTT information must be stored in the subscriber data. This solution precludes GTT usage without subscription.

Interworking with other voice processing functions

If CTM is placed in a separate node it must be carefully tested that non-standard voice processing functions do not corrupt text conversation. This may require CTM signal detector implementation in the other voice processing devices. See also the roaming chapter below.

The CTM node introduces also additional delay in the voice path.

Roaming

According to GTT stage 1 requirements it shall be possible to implement GTT so that the visited network does not need any specific GTT support other than the routing capability.

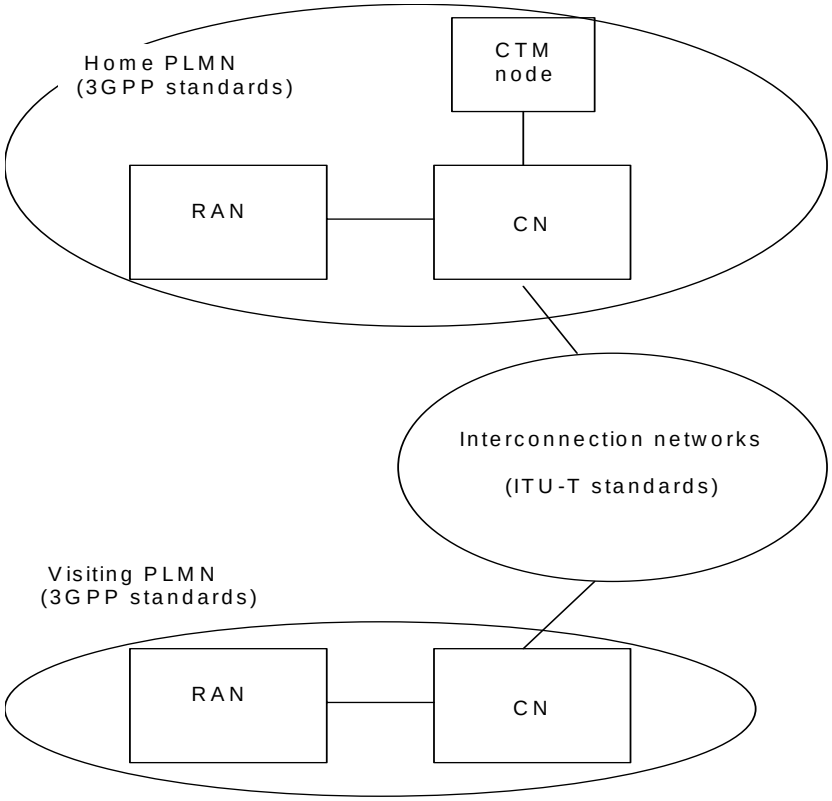

Figure 1: Example network structure.

It can be thought that CTM service node would fulfill this requirement. In this case CTM modulated text signal should pass also the interconnection networks between the two PLMNs. Currently, CTM is standardized only for the wireless (3GPP) environment. The minimum performance requirements do not say anything about fixed network devices like line echo cancellers.

In order to make sure the roaming really works CTM text signal must either be converted to the ITU-T text telephony format at the edge of the PLMN (like speech is converted to G.711 PCM) or testing procedures for should be defined also for fixed network environment. The first alternative requires CTM support also to the visiting networks.

Supplementary services

Supplementary services may cause problems. The issues addressed in the transcoder based solution paper (see contribution GTT(01)0xxx, source Nokia, Nortel Networks) apply also for the CTM service node case.

Operation & maintenance

CTM service node is a new network element that requires new hardware and new O&M procedures.

All services (e.g. VPN, prepaid) to be provided to both GTT and non-GTT subscribers need to be tailored to provide routing through the CTM node.

Conclusion

The above issues of separate CTM Service Node need to be addressed and solved on an appropriate level.