ETNS Serving Network Role

Single Operator Serving Network Model
Vs.
Multiple Operator Serving Network Model

Introduction

This paper discusses the ETNS serving network role. It describes how the the serving network function could be implemented as a single operator model or as a multiple operator model.

Under the single operator model, in most cases one network operator would provide the serving network function for an ETNS call. The choice of this network operator would be under the control of the assisted (originating) network.

Under the multiple operator model, the serving network function for a particular call could be implemented by more than one operator in many cases. The choice of the entry operator into the serving network would be under the control of the assisted (originating) network while the choice of the exit operator would be under the control of the ETNS service provider.

The paper proposes that the single operator serving network model should be the normal implementation method.

ETSI EN 301 160 V1.2.1 Definitions

Assisted network: network which routes a call to an ETNS number towards a serving network it has agreement with in order to complete the call

ETNS service provider: functional entity that provides one or more ETNS service(s) to its ETNS subscribers on a contractual basis and is not involved in real-time control of the service

Service exchange: exchange of the service network that triggers the provision of the service on reception of the routeing number, and then forwards the call

Service network: network that operates one or more service exchange(s)

Serving exchange: exchange, in the serving network, that can interrogate directly or indirectly an ETNS translation database to obtain a routeing number related to the ETNS number, and then forwards the call to the service network.

Serving network: network that operates one or more serving exchange(s)

Single Operator Serving Network Assumptions

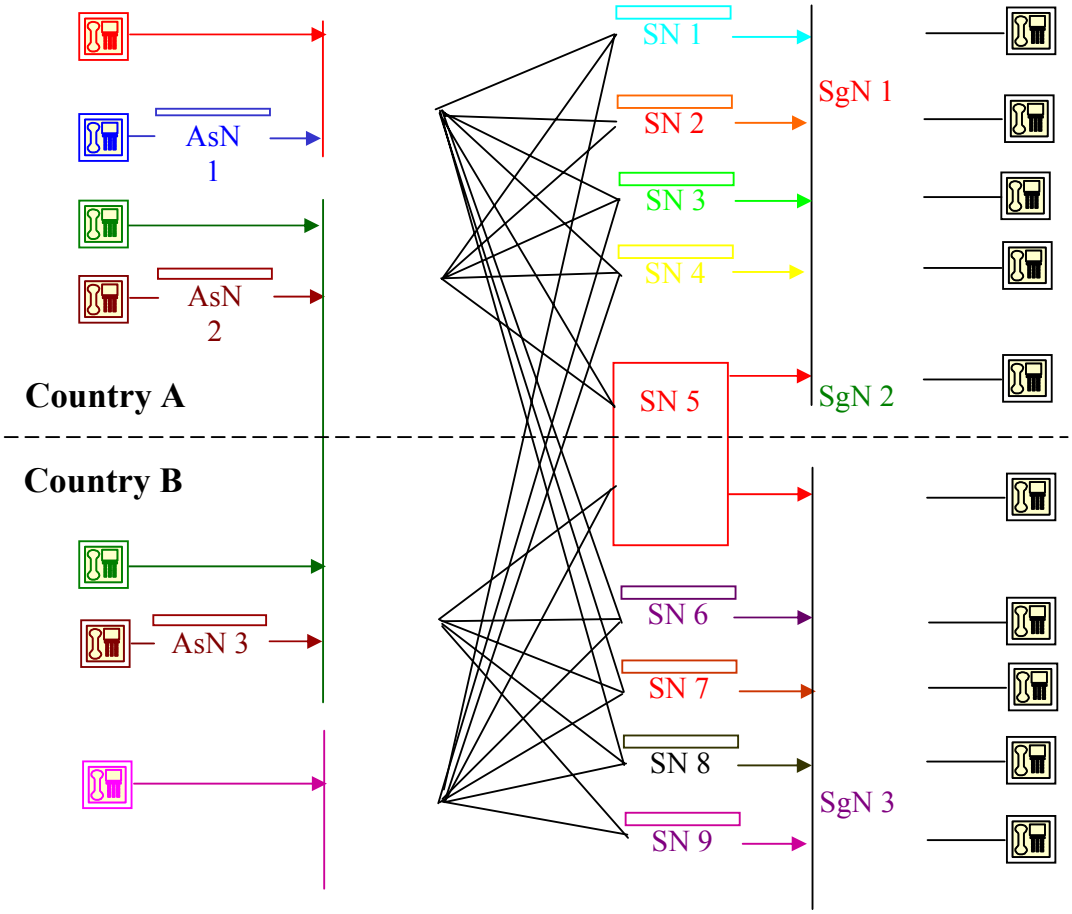
The basic assumptions that underpin single operator serving network model are:

- Assisted (originating) networks select one serving network for all ETNS calls to a particular ESI. When switching an ETNS call, the assisted network analyses +3883[ESI] and switches the call to the serving network of his choice.
- The serving network function is normally provided by one network operator. The role of this operator is to analyse the ETNS number and translate number into a routeing number that identifies the service network. The serving network then switches the call to the service network based on the routeing number
- At some point in the network, an ETNS call must be passed from an operator who has been chosen by the originating customer to an operator who has been chosen by the ETNS customer. This handover occurs as the call is passed from the serving network to the service network.

Single Operator Serving Network Implementation

Given the basic assumptions above, each serving network must develop commercial relationships with all service networks that handle calls able to be originated in the serving network's country(s) of operation. Some of the service networks may operate in the country in which the ETNS call originates. Other service networks may not offer a call handover point in the origination country, but a relationship to the service network would still be required.

Single Operator Serving Network Implementation Diagram

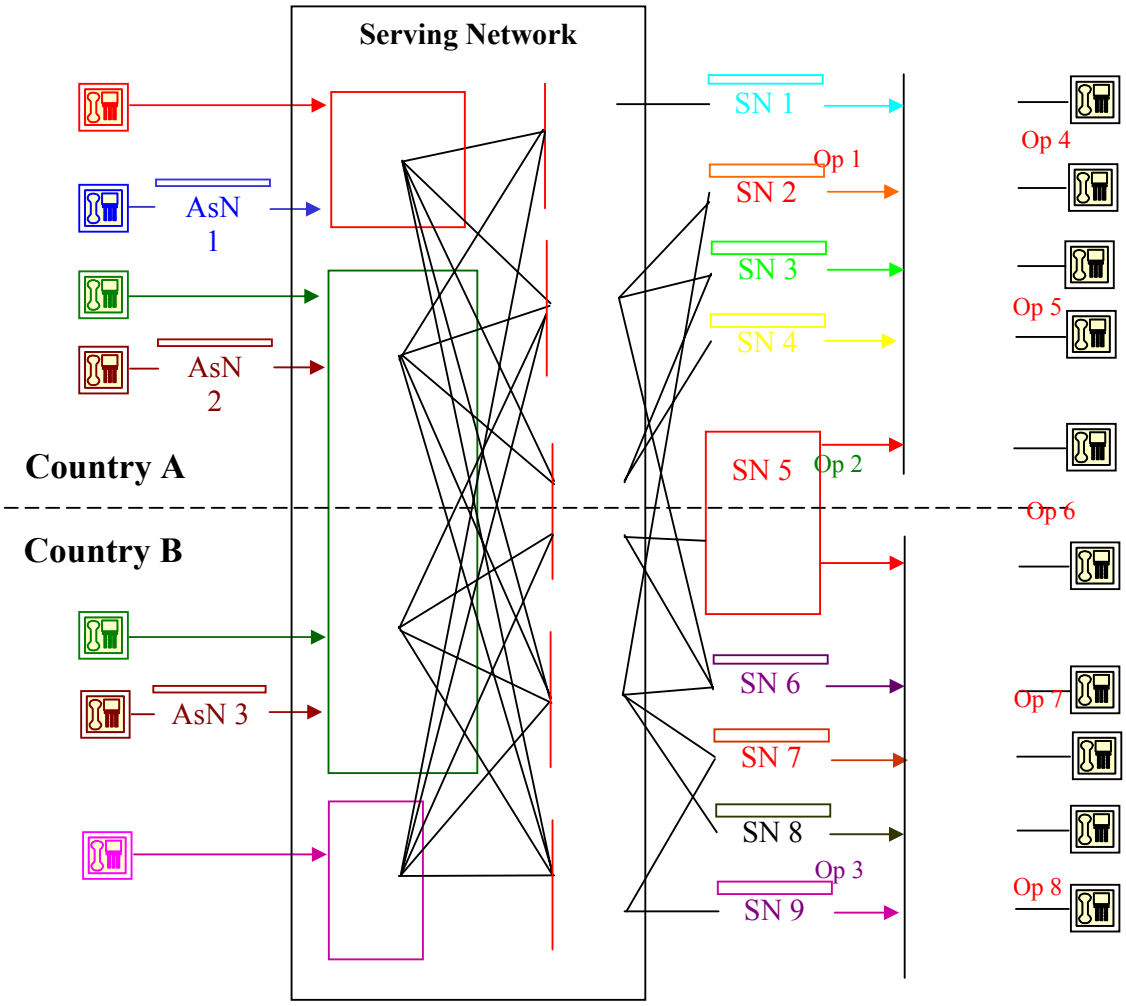


Multiple Operator Serving Network Assumptions

An alternative approach is the serving network function for a particular ETNS call would normally be implemented by more than one network operator. The entry point to the serving network would be under the control of the assisted (originating) network and the exit point would be under the control of the service provider.

Under this approach, the handover of the call from an operator who is chosen by the calling customer to an operator that is chosen by the ETNS customer would occur within the serving network function.

Multiple Operator Serving Network Implementation Diagram



Reasons For Preferring Single Operator Serving Network Model

At some point in the network, an ETNS call must be passed from an operator under the control of the calling customer to an operator chosen by the ETNS customer. At this network point each operator on the originating side must develop a relationship with all operators that may terminate ETNS calls.

Wherever this handover occurs, there may be friction between the operators at each end of the handover due to the commercial expectations of the two parties.

Under the single operator serving network model, the friction would occur between the serving and service network operators. Under the multiple operator serving network model, the friction would occur within the serving network function.

Reasons for supporting single operator model:

1. The ETNS definitions as specified in ETSI EN 301 160 and the text of the specification appear to expect the serving network function to be implemented by a single operator:

    - A serving network is a network with one or more serving exchanges (Definition)
    - The serving exchange, analysing the ESI, triggers the ETNS translation database using the incoming En to derive an outgoing ETNS Routeing Number or ETNS signalling address (4.1.1 para. 3)

2. The Neustar database provides functionality to allow service providers to inform serving networks of the routeing number to be used to switch ETNS calls to the correct service network.

    If the serving network function is provided by multiple operators, another database may be required to inform serving network entry point operators of the serving network exit operator for each ETNS number. If this requirement arose, debate is required on whether this second database should replace the original function of the Neustar database or be a parallel database requirement for ETNS call routeing - one database to link entry point serving network operators to exit point serving network operators and a second database that links exit point serving network operators to service networks.

    There may also a requirement for another set of routeing numbers required to allow ETNS calls to be passed from entry point serving network operators to exit point serving network operators, possibly via transit operators.

3. At some point in the network, friction is likely to occur when the call is handed from operators selected from the originating end to operators selected by the ETNS customer side of the call. This friction may lead to some form of regulatory involvement at some point in time. Should this intervention be required, it is best to have a well defined point of confrontation. If such a well defined point is not defined within the ETNS standards, then individual regulatory authorities may place different and possibly additional interpretations on the ETNS network model.

4. The number of operators involved in handling an ETNS call should be as low as possible to minimise the cost of switching these calls. Allowing resolution of commercial differences between the originating end and ETNS customer side of the call to occur within the serving network function is likely to add at least one additional operator to the number involved in switching an average ETNS call. This additional operator is not required if the resolution of commercial differences occurs as the call is passed from the serving to service network.

Conclusion

The single operator serving network model is proposed as the preferred implementation method of the ETNS model as it appears to be the model assumed within the ETSI EN 301 160 document. The current Neustar database

implementation also supports this model. The multiple operator model may require an additional database to be developed to support linking entry serving network operators to exit serving network operators. Additional routeing numbers may also be required to implement this call switching.

Friction that may lead to regulatory intervention is likely to occur at some network point as ETNS calls are passed from originating controlled operators to ETNS customer selected operators. If regulatory intervention becomes necessary, it is best to have a well defined point of friction that would encourage standard regulated solutions to emerge in the various ETNS countries.

For reasons of efficiency and cost minimisation, it is preferable to minimise the number of operators involved in the switching of ETNS calls. The single operator model is likely to involve at least one fewer operators than the multiple operator model.