INTERNATIONAL TELECOMMUNICATION UNION

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OF ITU

E.168

Amendment 1
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SERIES E: OVERALL NETWORK OPERATION, TELEPHONE SERVICE, SERVICE OPERATION AND HUMAN FACTORS

International operation – Numbering plan of the international telephone service

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Application of E.164 numbering plan for UPT

Amendment 1: New Appendix I

ITU-T Recommendation E.168 (2002) – Amendment 1

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Summary

It has been shown in this appendix that the existing methods used already in VISIONng and the general technical and administrative principles and procedures already used for number portability in national environments may also be used to implement service provider portability with the UPT 878 Country Code for Global Services.

Source

Amendment 1 to ITU-T Recommendation E.168 (2002) was approved on 28 May 2004 by ITU-T Study Group 2 (2001-2004) under the WTSA Resolution 1.

FOREWORD

The International Telecommunication Union (ITU) is the United Nations specialized agency in the field of telecommunications. The ITU Telecommunication Standardization Sector (ITU-T) is a permanent organ of ITU. ITU-T is responsible for studying technical, operating and tariff questions and issuing Recommendations on them with a view to standardizing telecommunications on a worldwide basis.

The World Telecommunication Standardization Assembly (WTSA), which meets every four years, establishes the topics for study by the ITU-T study groups which, in turn, produce Recommendations on these topics.

The approval of ITU-T Recommendations is covered by the procedure laid down in WTSA Resolution 1.

In some areas of information technology which fall within ITU-T's purview, the necessary standards are prepared on a collaborative basis with ISO and IEC.

NOTE

In this Recommendation, the expression "Administration" is used for conciseness to indicate both a telecommunication administration and a recognized operating agency.

Compliance with this Recommendation is voluntary. However, the Recommendation may contain certain mandatory provisions (to ensure e.g. interoperability or applicability) and compliance with the Recommendation is achieved when all of these mandatory provisions are met. The words "shall" or some other obligatory language such as "must" and the negative equivalents are used to express requirements. The use of such words does not suggest that compliance with the Recommendation is required of any party.

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ITU draws attention to the possibility that the practice or implementation of this Recommendation may involve the use of a claimed Intellectual Property Right. ITU takes no position concerning the evidence, validity or applicability of claimed Intellectual Property Rights, whether asserted by ITU members or others outside of the Recommendation development process.

As of the date of approval of this Recommendation, ITU had not received notice of intellectual property, protected by patents, which may be required to implement this Recommendation. However, implementors are cautioned that this may not represent the latest information and are therefore strongly urged to consult the TSB patent database.

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I.1 Introduction

The issues of number portability are recognized as being complex and that VISIONng needs to be able to provide portability if another provider/entity is assigned numbering resources in the UPT 878 number range. This appendix provides a detailed explanation.

I.2 Requirements

The CC 878 is allocated, according to ITU-T Rec. E.164 to Global Services and specifically to the global implementation of UPT as defined in ITU-T F.85x-series Recommendations and in the body of this Recommendation. The services offered need to conform to the UPT service criteria. UPT stands for Universal Personal Telecommunications and one of the basic service criteria is the assignment of the related E.164 number to the end user (subscriber).

Regarding Number Portability, this implies as basic requirement Service Provider Portability. This means that an end user having assigned an UPT 878 E.164 number may change his/her service provider at any time and keep his assigned UPT 878 number. Since the UPT 878 country code is a global service, this also implies that the end user may choose a service provider independent of his nationality and the nationality of the service provider.

This Service Provider Portability has to be provided within the whole UPT 878 country code and not only within a given number range within UPT 878 (e.g., within 87810).

I.3 Implementation of Service Provider Portability within VISIONng

The number range 87810 has been assigned to VISIONng. VISIONng is currently setting up a global UPT service offering services according to the UPT service criteria. This also implies, as already stated above, Service Provider Portability between all VISIONng Service Providers offering UPT services to end users.

The Service Provider Portability is achieved by operating a common database called TIPHON Resolution Capability (TRC). The TRC consists of two parts: the Administrative Part, and the Real Time Part. The Administrative Part is administrating the 87810 number range by keeping track of available numbers and allowing the VISIONng operators and ENUM Registrars to request single numbers on the end users' behalf. The Administrative Part is also keeping track of which number is currently hosted by which VISIONng service provider for UPT service and/or for ENUM service.

The data in the Administrative Part of the TRC is also downloaded to the Real Time Part of the TRC. The Real Time Part of the TRC serves as online database to be queried during call setup time by VISIONng service providers to route the call properly to the VISIONng service provider currently hosting the UPT end user and/or launch an ENUM query if the end user has opted-in into ENUM.

The Real Time Part of the TRC is currently using a proprietary protocol defined by VISIONng; a development to use ENUM technology is ongoing.

The routing of calls from the PSTN is not concerned with the service provider portability within VISIONng, since all calls are routed to gateways operated by VISIONng service providers.

If VISIONng is assigned additional number ranges out of CC 878 for UPT, service provider portability can be implemented with the same principles.

I.4 Implementation of Service Provider Portability with other entities

If number ranges out of CC 878 for UPT are assigned to entities other than VISIONng, it is required that the end users assigned 878 UPT E.164 numbers out of the number ranges assigned to VISIONng may port these numbers to service providers of the other entities and vice versa, independent of the technology used within the entities.

Since the technology used by such other entities is unknown, only general principles and the view of VISIONng can be given here.

In the PSTN, many different solutions exist for number portability in different countries and also for different purposes even in a specific country, depending on regulations and also on technology.

The easiest solution to be implemented is onward routing; this is also the basic solution proposed here.

The reasons are:

1) Onward routing is not involving the originating network: This is important because it is difficult enough to convince originating networks to open access to the number ranges, without placing extra burdens such as querying an NP database.
2) Onward routing does not require a common (in this case global) database.
3) Administration and provisioning procedures are well known and understood and may easily be implemented.
4) If other entities are also operating on the Internet, only call signalling is involved, whereas the media streams still may be routed directly, avoiding tromboning.

Other, more advanced and efficient solutions, e.g., direct routing and All Call Query may be implemented later by other networks depending on the technology available and on agreements with these networks. For example, it may be appropriate for service providers of UPT to check calls originating on their network to other UPT ranges (i.e., VISIONng to check ranges other than +87810) to detect any calls to numbers imported to them.

I.4.1 Numbers ported out from VISIONng

If a number is ported out from VISIONng, this fact is stored within the Administrative Part of the TRC. In addition, the identification of the recipient entity is stored. It has to be agreed between VISIONng and the recipient entity where calls hosted by a service provider of the recipient entity have to be routed to, that is one or more Points-of-Interconnect (PoI) have to be defined between VISIONng and the other entity, including the proper routing and signalling information. These PoIs may be located on the PSTN or on the Internet or on both.

The identification for the entity hosting the ported-out number is also downloaded to the Real Time TRC. If a call is received by a VISIONng service provider, the Real Time TRC is queried as usual and if an identification of another entity is retrieved, the call is routed by the VISIONng service provider to the nearest available PoI. This may or may not involve routing via other VISIONng service providers. The routing within environment of the other entity to the service provider hosting the subscriber is up to the other entity.

If there are several other entities (two or more), each entity needs a proper identification within the VISIONng TRC, and the calls are routed according to the identifications provided.

In case of onward routing, VISIONng remains the anchor entity for the number ranges assigned to VISIONng. If an 878 number originally assigned to VISIONng is ported from one other entity to another, VISIONng needs to be notified to properly update the TRC. The administrative and provisioning procedures in this case will be similar to existing procedures in use. No notification is necessary if such an 878 number is ported within an entity from one service provider of this entity to another.

I.4.2 Numbers ported into VISIONng

If a number is ported into VISIONng from another entity, VISIONng needs to host this number. Therefore, VISIONng needs to expand its Administrative and Real Time TRC to numbers or number ranges not assigned to VISIONng. This can be implemented easily; the TRC just needs to store the identification of the hosting VISIONng service provider for this number.

If a call is received by a VISIONng service provider for *any* 878 UPT number (not only for 87810), the Real Time TRC is queried. This is to determine if a number has been imported to one of the VISIONng service providers. If a number range is queried that is not assigned to any entity, and the number has not been imported, the call is routed to the nearest PoI of the entity holding this number range. It is then up to the other entity to handle this number properly. If the number is hosted by a VISIONng service provider, either native to or ported in, the VISIONng service provider, identification is retrieved and the number is routed within VISIONng.

It is of course assumed by VISIONng that the other number range holders have the same responsibilities, e.g., if a call is received to their range and where a number is ported out to VISIONng to determine this fact and route the call properly to VISIONng.

I.5 Routing of calls from networks not supporting the UPT service

I.5.1 Onward routing

Currently, calls to UPT 87810 are routed from the originating network to the nearest VISIONng ingress gateway. If other entities are assigned other number ranges out of UPT 878, it is envisaged that numbers are routed to gateways or PoIs defined by this entity. With number portability, a call to numbers ported out from VISIONng to another entity is still routed to VISIONng gateways, because the originating network may have no way to access the VISIONng Real Time TRC. It is therefore up to VISIONng to route this call onward to the proper entity.

In the same way, number ranges from other entities ported into VISIONng will be routed originally from the originating network to the gateways or PoIs of the entity originally hosting the number. It is then up to this entity to re-route the call properly onward to VISIONng.

A special case is the routing of calls to 878 800, since in this case the call may be routed to any entity, because the originating network has no way to find out even the numbering range. There has to be a special agreement between all entities providing UPT services to start the specified IVR sequence, find out the UPT number and then to route the call to the entity hosting the number.

If onward routing is implemented, it is suggested that the same charge is collected for a call to an 878 UPT number from the originating user by the originating network regardless of the number range dialled; however, this is a matter for the originating network.

I.5.2 Direct routing

At a later stage, an originating network may be provided with access to the databases used by the entities providing UPT services. In this case, the originating network may route the call immediately to the gateway or PoI of the entity currently hosting the 878 number, independent of the numbering range.

This may be of importance if UPT service is implemented also on the PSTN. If UPT is only implemented on IP-based networks or on the Internet, this may not be an issue.

Also in this case it is suggested that the same charge is collected for a call to an 878 UPT number from the originating user by the originating network regardless of the number range dialled; however, this is a matter for the originating network.

I.6 Other possibilities

Considering the current developments in ENUM and VoIP, other possibilities to implement number portability may be implemented between entities providing UPT service. This is for further study.

I.7 Further study

If another UPT provider is allocated a numbering range, the routing mechanism for end users who port their number from one provider to another will need to be studied.

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