

Ericsson's Response to **ANACOM's Public Consultation on** **ENUM SERVICE**



Question 1 - Being ENUM the mapping between E.164 numbers and the different addresses of electronic communication services how do you see:

- a) the use by ENUM of the existing (actual) E.164 numbers already assigned (geographic, mobile e non geographic) which one should be elected for that function

Answer: ENUM as defined in IETF has two main purposes:

- 1) to allow the use of E.164 numbering scheme as Internet address and route the session based on the user Telecommunication numbering Identity, and
- 2) to support a mechanism for transporting and resolving a Telecom E.164 identity following the format of the E.164 numbering plan, through the DNS infrastructure.

Thus, ENUM is applicable for all the numbering schema defined in ITU E-164 Recommendation and cannot be assigned to a specific range of the numbering scheme. However, in case the National regulation wishes to block a specific numbering series, then the subject relates to the actual regional rules enforced by regulation on the communication infrastructure between Internet and Telecom domains.

- b) the creation of a specific numbering for the ENUM service

Ericsson does not encourage special treatment or specific numbering range to be dedicated for ENUM use. Ericsson would like to keep the ENUM mechanism as a mechanism, not converting it into a numbering schema.

Question 2 - What do you think of the substitution of TLD ".e164.arpa" by TLD ".tel" ?

Answer: The ".e164.arpa" TLD indicates that all addresses resolved by ENUM are subject for Internet infrastructure and not open for business. The reason of having ENUM TLD under arpa is a mean to protect the ITU numbering plan, assigned under United Nation organization. In case a new TLD ".tel" conforms to the integrity and protection of numbering series, there is no hinders that prevent the definition of a new TLD. However, having two TLDs dealing with the same numbering scheme, this will generates interactive and even interference problems among the industry, seen from a business as well as communication aspects, that needs to be resolved under the scope of a new defined TLD.

Question 3 - In which way the implementation of a protocol like ENUM can influence the offer:

a) of the existing services,

Answer: Ericsson has not identified that the introduction of ENUM will jeopardize or affect the existing service offering.

b) of the new services?

Answer: ENUM introduction may facilitate the aspect of interoperability between Telecom and Datacom industry for inter-domain communication of new services, provided that the services are designed to meet both worlds from a business, regulation and control perspective.

Question 4 - What type of applications or services, existing or new (such as supported in VoIP), can beneficiate - and in what terms - of the ENUM functionalities and/or can be amplified by its introduction?

Answer: It is somehow difficult to identify the service that benefit from ENUM. It is possible to run all type of services by using other means. So, rather than talking services, ENUM provides a mean to transport session's information across Public Internet domain irrespective of whether the network is a datacom, Telecom, or IP transport (Internet com) domain.

Question 5 - How do you see the way of validation of the E.164 number of the final user in order to warranty the Opt-in principle?

Answer: Validation of the E.164 number can be achieved from different aspects, such as:

- Validating that the number conform to the numbering plan format
- Validating that the number is defined in a network
- Validate the user assigned this Identity
- Etc..

A real validation of the E.164 can be obtained when the session reaches the destination logic, irrespective of addressing method used. Consequently, the validation process for opting-In has no relation to the addressing method used, rather it is a logic at specific instance that can analyze the received information and validated for further processing.

Question 6 - At what level do you think it should have concurrency in the administration of ENUM data (commercial level and/or technical implementation)?

Answer: E.164 numbering is administrated by ITU (ENUM Tier 0), assigning country code to UN members. Each country uses the National regulation agency (ENUM Tier 2) to distribute the numbering scheme to telecom operators. Consequently, ENUM is not imposing any demand for changing the roles of actors, rather, it is introduced to extend the addressing in Public Internet with the traditional Telecom addressing method ".164 numbering plan.

Question 7 - Which one of the currently possible implementation models seems to be the best solution for the establishment of ENUM or do you foresee a better model that fits best the Portuguese communications market?

Answer: See also previous answer. The only possible implementation model is to follow the principles defined between ICANN and ITU, and following the principle already adopted in all countries for managing the E.164 numbering plan. The business driver that has been assigned the responsibility or has been granted the leasing of a numbering series is seen as the responsible to manage all numbering ranges assigned to him. Any other routines added on top of existing relation are subject for agreement between regulation and industry (Telecom and Datacom).

Question 8 - What entities should assume the several functions described on that model?

Answer: As mentioned in the previous answers (questions 6 and 7), the implementation should follow the principles defined between ICANN and ITU, as well as principles already adopted in other countries. In any case, any extra routines defined on top of existing relations should be subject to agreement between regulation and industry.

Question 9 - What is the appropriated role of the electronic service providers on the administration of ENUM?

Answer: Please refer to the previous answers (6, 7 and 8)

Question 10 - Who should control and have the capacity to access, modify or transfer the registers of NAPTR resources?

Answer: - The regulator should have an important role in the definition of who to manage these resources. In any case, principles already adopted in other countries can be used.

Question 11 - What is the model of tariffs that you consider the most appropriated to the ENUM service, having in mind the necessity to warranty clear information about the price of the communications for the final end users? Do you propose or identify other possible models?

Answer: ENUM can be used to circumvent existing tariffing procedures, since Internet can be used for access, originating, transit, terminating and associated services and combinations thereof. An example could be large enterprise by becoming its own ASP (Application Service Provider) can establish several ways of establishing a call to another enterprise or residential user - for instance in another country - and chose the least expensive.

The option of using ENUM for least cost routing could also be a utility for operators. In this sense, the definition of the tariff model should be done according to country and operator specifics.

Question 12 - What are the mechanisms to implement in order to warranty an effective information of the communication pricing to the originating client at the communication establishment, and in case it applies, to the terminating client when receiving a communication?

Answer: Many of the Telecommunication networks are following the principle of a link-by-link call and session establishment. Irrespective of the existence of ENUM, charging of end-users is managed by the operators serving that End-user. To handle the accounting between operators, then all Internet providers using the ENUM and are involved in the routing of a session will also be obliged to follow the Interconnect

regulation rules applied in Telecom domains. Mechanism to insure fair treatment and business control would be required involving regulation, Telecom and Datacom operators, Internet and service providers as well as broker industries.

Question 13 - How do you see the use of the Infrastructure ENUM service in conjunction with the User ENUM, having in mind the flexibility and profitability of the infrastructures to be provided and the transparency and independency of the global service providers or globalizing service providers?

Answer: The user ENUM is 100% consistent with the traditional E.164 business rules, as users expects the same behavior of Telecom rules to be applied on User ENUM given Identity, as well as all regulatory rules that applies for E.164 numbering scheme (such as emergency, uniqueness, number portability, etc..). The infrastructure ENUM is subject for following the business and Industry Interconnect rules normally adjusted and defined by National regulation Agency or government to assure fair competition on the market.

Question 14 - How can the portability be implemented at ENUM level, considering the definition of Tier 2?

Answer: Portability involves in the majority of cases an administrative portability control managed by National regulator Agency (managing the porting of an Identity between operators) and the Telecom operators (managing the routing and addressing of calls based on portability information. At Tier 2, the ENUM administrator need to conform to both and involves the NRA as well as Industry player during the porting as well as the routing of a ported number.

Question 15 - What are the procedures to be executed for the actualization of the domain names on the database, to include or remove the data of a subscriber on a portability case?

Answer: Porting a user implies that the Identity assigned to that user will still be required in the database as it needs to be assigned specific routing information that points out the new recipient. Thus the information will never cease to exist from databases unless the subscription assigned to that identity is removed/withdrawn (provided that the ported number is returned to the operator managing that numbering series). Once a subscription is removed, all subscription information (except for portability information) needs to be removed, otherwise, a conflict of interest may occur.

Question 16 - How do you foresee the way of protecting the personal data on ENUM database?

Answer: Personal data cannot be protected if associated with ENUM, as the Internet DNS is a public service open to the complete world. In case protection layer is needed then special measures need to be inserted in the DNS infrastructure to block or hide specific information related to the requester origin. Such a mechanism needs to be insured along the chain of DNS servers involved in the resolution process of the submitted Identity.

Question 17 - How should the acts of piracy of the domain names corresponding to the phone numbers be prevented?

Answer: ".arpa" is the base of Internet DNS infrastructure and consequently the selection of the protected world for managing the ITU E.164 numbering plan. Piracy measures may still occur (e.g. ID thefts, etc..) which would requires some measures to assure user integrity and privacy in the Internet world. This may imply a demand for using DNSSec along the path of ENUM resolution process.

Question 18 - How do you see the possibility of avoiding fraudulent translations/routing on ENUM?

Answer: A wrong management of ENUM hierarchy will always lead to possibility or opening for fraudulent use of ENUM, irrespective of adopted security measures. Consequently, the management of ENUM tier 0, 1, and 2 are crucial parts to protect fraudulent use in addition to DNSsec capability for securing the DNS resolution process itself.

Question 19 - What risks or blocking obstacles of the correct ENUM functioning can be already identified and what solutions do you foresee for solving those issues?

Answer: Blocking issue of ENUM may happen when the ENUM structure deviates from the E.164 numbering, rules of telecommunications and regulations, accounting and other legal requirements imposed on Telecommunication means identified by the E.164 numbering. Deviations will lead to misrouting between Telecom and Internet, affecting user behavior, perception of offered services and fraud related to the communication business Industry between players, actors and intruders.

Question 20 - How do you see the ENUM implementation in Portugal, having in mind:

- a) the interest of the market agents,
- b) the available technology,
- c) the existing normalization?

Answer: From one hand, there is a growing interest in Multimedia Services (such as VoIP and IP Centrex), from the market agents point-of-view (including Operators, Enterprises and Residential users). On the other hand, the technology exists, and standards are being addressed. In this sense, all these factors work a major motivation for the ENUM implementation in Portugal.

In any case, tests of ENUM implementation in other countries could be used in order to identify and understand any possible obstacles that need to be resolved, as mentioned in the answer to question 21.

Question 21 - How should the realization of an experimental phase implementation in Portugal be addressed:

- a) **What are their objectives?**
- b) **In what aspects it justifies more focus: operational, administrative or market?**
- c) **Who should take the tests initiative?**
- d) **How do you see the interest of Ericsson on the tests, on the process of implementation of ENUM in Portugal, with the consequent assumption of functions?**
- e) **What do you think of the creation of a working group that incentives this activity?**

Answer: with reference to other European country (e.g. Sweden), a test of ENUM implementation involving different actors may benefit the understanding of obstacles that needs to be resolved either as part of regulation rules for ENUM in Portugal and/or the realization of an Industry ENUM that can function properly between Telecom and Datacom industries.