

Andrzej Bartosiewicz, NASK

ENUM project in Poland

ETSI ENUM Workshop

BACKGROUND

- NASK is the administrative & technical contact for .pl (Country Code Top Level Domain)
- **NASK is the administrative & technical contact for 8.4.e164.arpa**
- **Research&Development State organization**

BACKGROUND

- It's the first attempt,
- Present registration policy is based on the administrative decisions:
 - Experience with “traditional” domain names (.PL)
 - Several implementations of Registrar software available
 - Guidelines from Office of Telecommunications and Post Regulation.

- **No direct registrations.**
- **Registration via the Telecom Operators ONLY (officially approved by the Regulator)**
(REGISTRAR = OPERATOR)
- **Registrar (Operator) MUST NOT register the numbers administered by the other Operators**
(numbers within the number blocks administered by this operators)

- **NASK DOES NOT verify the rights to the particular telephone number**
- Transfer of registrations between registrars only if number is ported, but NASK does not verify whether the number is ported or not
- NASK delegates **ONLY** the ENUM domain names to Operators' NSs

Status (February 2004)

- Registry: NASK (.pl Registry)
- Registrars: 0
- Test registrations: ca. 50

- Telecom Operators aware of ENUM:
„Polkomtel”, „PTC Era”
- Authentication Agency: NO APPLICABLE

**EPP for
ENUM (*8.4.e164.arpa*)**

EPP- Extensible Provisioning Protocol

„...application layer client-server protocol for the provisioning and management of objects stored in a shared central repository. Specified in XML, the protocol defines generic object management operations and an extensible framework that maps protocol operations to objects..”

Hollenbeck, VeriSign, „Extensible Provisioning Protocol” Internet Engineering Task Force

EPP- Extensible Provisioning Protocol

- EPP has been adapted for .pl (in the end of 2002)
- Good experience with EPP
- Polish registry (.pl) is based on the EPP
- Over 40 EPP registrars in Poland for .pl
- Infrastructure for EPP registration is ready

EPP adaptation for ENUM

*[http://www.ietf.org/internet-drafts/
draft-bartosiewicz-enum-48tld-00.txt](http://www.ietf.org/internet-drafts/draft-bartosiewicz-enum-48tld-00.txt)*

Internet Draft
draft-bartosiewicz-enum-48tld-00.txt
October 17, 2003
Expires in six months
Intended status: Informational

Tomek Zygmuntowicz
Patrycja Wegrzynowicz
Kuba Laszkiewicz
Juliusz Brzostek
Witold Zarowski
Krzysztof Olesik
Andrzej Bartosiewicz
NASK (+48 ENUM Registry)

EPP parameters for 8.4.e164.arpa Registry

EPP Modified Elements

- A transfer of a domain or a contact does not require a confirmation of sponsoring client of that object.
- Options of the <domain:transfer> and <contact:transfer> commands other than request are not supported.

EPP Modified Elements

- It is possible to delete a host using the `<host:delete>` command, even if there are domains delegated to that host, on the condition that the host is not configured for any domain which is delegated to this host. A side effect of a removal of a host is removal of all delegations to that host.

EPP Modified Elements

- A change of a host's name is forbidden.
- A providing of the <host:chg> element in the <host:update> element causes failure of the <host:update> command.

EPP Modified Elements

- The <domain:info> command returns full set of information only for sponsoring client of a domain and client which provided a correct authorization information in the <domain:authInfo> element.
- In other cases command fails.

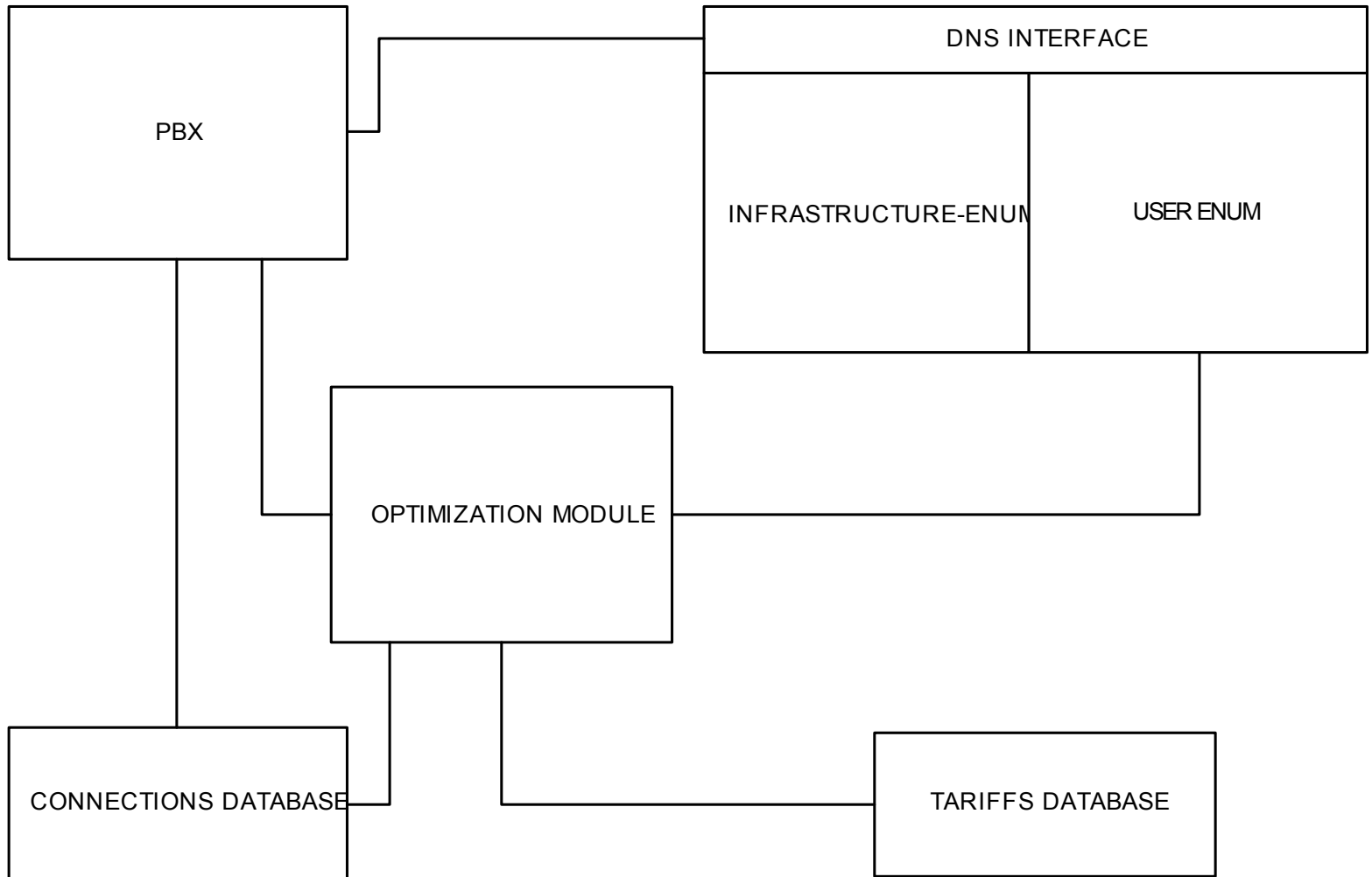
EPP Modified Elements

- The <contact:info> command returns full set of information only to sponsoring client of a domain and to client who provided a correct authorization information of domain in the <contact:authInfo> element.
- Furthermore, if contact represents a private person who consents to publish his/her personal details (consentForPublishing=1) then information is returned to the others clients. In other cases command fails

**Enterprise-ENUM –
platform for the cost
optimization based on
local ENUM entries**

- Research Project,
- Aim: to minimize costs of the telecommunication connections for enterprises,
- Based on Enterprise-ENUM and User-ENUM

- PBX (i.e. ASTERISK)
- Optimization module
- DNS interface
- User-ENUM (public DNS tree)
- Enterprise ENUM (local DNS tree)
- Tariffs' database (up-to-date and valid telecom. rates)
- Connections' database (history of the connections)



NAPTR extension

- **[ORDER]** of initiating a connection regarding to order of choosing contacts (in accordance with an order of choosing NAPTR records).
Preferences of the Caller do not have to be the same as preferences of the called person which are to be found in "public" DNS (User ENUM).

NAPTR extension

- **[PROBAILITY]** probability of correct initiation of connection with a certain telephone number (remark: it refers to every NAPTR record, also NAPTR record for an e-mail addresse=, being the integer in range from 0 to 100.

NAPTR extension

- **[QUALITY]** Overall quality indicator from the point of view of the Caller. Mentioned above indicator will be marked with a flag having value from 0 to 9 (range limited by RFC 3403), where "0" indicates not acceptable quality of connection, and "9" indicates an "ideal" connection (it means with a constant and acceptable delay, without lost of packets etc).
- The quality of connection can be determined on the basis of any parameter identifying the quality of connection; in particular for VoiP it could be the parameter MOS-LQ (Mean Opinion Score Listening Quality) or MOS-CQ (Mean Opinion Score Conversational-Quality).

Downgrade compatibility

- PBX “standard” extensions using the ENUM database, can use the modified INFRASTRUCTURE-ENUM database without problems.

Example

*In this example „User-ENUM” 5 NAPTR
RRs are encoded into 12 NAPTR RRs
stored in Enterprise-ENUM*

Example of the User-ENUM

0.0.2.1.3.2.5.2.2.e164.arpa NAPTR 100 10 "up"
"tel+E2U" "!^.*\$!tel:+48225231200!".

0.0.2.1.3.2.5.2.2.e164.arpa NAPTR 200 10 "up"
"tel+E2U" "!^.*\$!tel:+48225231204!".

0.0.2.1.3.2.5.2.2.e164.arpa NAPTR 300 10 "up"
"sip+E2U" "!^.*\$!sip:204@obelix.nask.waw.pl!".

0.0.2.1.3.2.5.2.2.e164.arpa NAPTR 300 20 "up"
"mailto+E2U" "!^.*\$!email: info@nask.biz!".

0.0.2.1.3.2.5.2.2.e164.arpa NAPTR 300 30 "up"
"tel+E2U" "!^.*\$!tel:+48225231395!".

Example of the Enterprise-ENUM part 1

**0.0.2.1.3.2.5.2.2.e164.arpa NAPTR 100 50 "5oup"
"sip+E2U" "!^.*\$!sip:204@obelix.nask.waw.pl!"**

**0.0.2.1.3.2.5.2.2.e164.arpa NAPTR 200 10 "9oup"
"tel+E2U" "!^.*\$!tel:+48225231200!"**

**0.0.2.1.3.2.5.2.2.e164.arpa NAPTR 200 10 "9oup"
"tel+E2U" "!^.*\$!tel:+48225231204!"**

**0.0.2.1.3.2.5.2.2.e164.arpa NAPTR 200 100 "oup"
"tel+E2U" "!^.*\$!tel:+48225231395!"**

Example of the Enterprise-ENUM part 2

**4.0.2.1.3.2.5.2.2.e164.arpa NAPTR 100 50 "5oup"
"sip+E2U" "!^.*\$!sip:204@obelix.nask.waw.pl!"**

**4.0.2.1.3.2.5.2.2.e164.arpa NAPTR 200 10 "9oup"
"tel+E2U" "!^.*\$!tel:+48225231200!"**

**4.0.2.1.3.2.5.2.2.e164.arpa NAPTR 200 10 "9oup"
"tel+E2U" "!^.*\$!tel:+48225231204!"**

**4.0.2.1.3.2.5.2.2.e164.arpa NAPTR 200 100 "oup"
"tel+E2U" "!^.*\$!tel:+48225231395!"**

Example of the Enterprise-ENUM part 3

***5.9.3.1.3.2.5.2.2.e164.arpa NAPTR 100 50 "5oup"
"sip+E2U" "!^.*\$!sip:204@obelix.nask.waw.pl!"***

***5.9.3.1.3.2.5.2.2.e164.arpa NAPTR 200 10 "9oup"
"tel+E2U" "!^.*\$!tel:+48225231200!"***

***5.9.3.1.3.2.5.2.2.e164.arpa NAPTR 200 10 "9oup"
"tel+E2U" "!^.*\$!tel:+48225231204!"***

***5.9.3.1.3.2.5.2.2.e164.arpa NAPTR 200 100 "oup"
"tel+E2U" "!^.*\$!tel:+48225231395!"***

Optimization algorithm using Enterprise-ENUM database:

Establishment of connection

- 1. The PBX MUST query the "Enterprise-ENUM" database.*
- 2. In response a switchboard receives a list of NAPTR records or information about lack of record in DNS.*
- 3. The switchboard is trying to establish a connection, considering the sequence of NAPTR records by including parameters saved in fields: ORDER and PREFERENCE. When connection is established, an algorithm is finished.*
- 4. If there is a lack of record in Enterprise-ENUM database, the switchboard MUST query User-ENUM database.*
- 5. As a response, switchboard receives a list of NAPTR records or information about lack of record in DNS.*
- 6. Switchboard is trying to establish a connection, considering the sequence of NAPTR records by including parameters saved in fields: ORDER and PREFERENCE.*

More info...

www.bartosiewicz.pl/

[draft-bartosiewicz-enterprise-enum-00.txt](#)

- [Andrzej.Bartosiewicz @ NASK.pl](mailto:Andrzej.Bartosiewicz@NASK.pl)
- www.bartosiewicz.pl/ENUM
- www.dns.pl/ENUM