enum in the United States

The US ENUM Forum
A Progress Report
Mark McFadden
University of Wisconsin – Milwaukee
mcf @ uwm.edu
Background

- **December 2000**
  - NTIA holds an informal meeting to discuss enum issues
  - Proposal comes forward to convene an ad hoc group for enum in the United States

- **January 2001**
  - Ad hoc study group formed
  - Goal: complete work in the Spring 2001
Ad Hoc Report

- Ad hoc group started working in February 2001
- Met via teleconference and in a series of face-to-face meetings
- Primary outputs were:
  - A report back to the Department of Commerce and NTIA
  - Convening of a new organization: enum Forum
enum Forum

- Who are they?
  - Interested participants from the Internet and telecommunications industries

- What was their goal?
  - Further the work presented in the Ad Hoc group’s report
  - Lay the groundwork for ENUM implementation in the U.S.
enum Forum website

- www.enum-forum.org
ITU-T Study Group 2 has developed a Supplement to educate member states on the delegation of E.164 country codes is in process. Interim procedures govern the process of such delegations into “e164.arpa” using RIPE-NCC as the Tier 0 Registry for e164.arpa.
First Steps

- Significant difference of opinion on architecture for enum in the United States
- Also, disagreements on how provisioning should take place
- enum Forum charged with the task of coming up with a common point of view for architecture and provisioning
enum Forum divided into a series of task groups

- Architecture/infrastructure
- Provisioning
- Applications
- Security/privacy
- Interworking
- Legal
Published August 2001
  - Established deliverables for each of the task groups

Architecture task group
  - Describe the tier 1 structure
  - Also, the tier 1 and tier 2 operational requirements

Provisioning task group
  - Provisioning requirements
  - Service termination requirements
Other Parts of the Work Plan

- Work plan deliverables for other task groups
- Security task group
  - Number authorization/verification procedures
  - Consumer privacy protection
- Applications task group
  - enum user applications guide
- Interoperation task group
  - Interoperability report
- Goal: to be completed summer 2002
How Work Proceeded

- Each of the task groups met separately
- Forum met face-to-face occasionally
- Task group interim reports
  - www.enum-forum.org/workingdocs.html
- In general, work merged into a single unified deliverable
Functions: Registrant

- Registrant
  - Responsible for electing to register their telephone number in ENUM
  - Selecting a Registrar to do accomplish the registration
  - Choosing a Tier 2 Provider to host the NAPTR records for their number
Functions: Registrar

- Registrar
- Takes registration requests from Registrants
- Validates authority to register the number in question
- Interfaces with the Tier 1 Registry
  - Establishes a pointer to the Registrant’s Tier 2 nameserver from the Registry’s nameservers
Functions: Tier 1 Registry

- Tier 1 Registry
  - Responsible for Tier 1 nameservers
    - Indicate which tier 2 provider has the corresponding NAPTR record for any country code 1 phone number
  - Tier 1 registries nameservers respond to ENUM DNS queries with the appropriate Tier 2 host name
  - Accepts registrations from Registrars
  - Administers the dispute resolution process
Functions: Tier 2 Registry

Tier 2 Registry

- Responds to ENUM queries for served numbers by providing the NAPTR records associated with the queried number
- Provisioning the NATPR records requested by the ENUM Registrant
What’s Happened Recently

- Specifications for United States Implementation of ENUM
- February 2003
- Product of general agreement by the enum Forum
- Called “One Step Closer”
  - Lays out the fundamental structure for Tier 1 service, Registrar functionality as well as guidelines for the Tier 2 providers
Major Features

- Tier 1 operational security and administrative requirements
- Privacy Considerations Statement
- Tier 2 Requirements and Guidelines
- Provisioning Procedures
- Authentication and Verification Procedures
- Dispute Resolution
Tier 1 Requirements

- Tier 1 registry is a SRS registry
  - Allows registrars to compete to enter names (phone numbers)
  - Allows an unlimited number of registrars
  - Uses EPP (and IETF standard) between registry and registrars
  - Supports the so called “thick” registry model
- Tier 1 Registry will work with the U.S. ENUM industry to develop extensions to EPP for the purposes of supporting U.S. ENUM
Other Tier 1 Specifications

- Unified document specifies properties of the database to be used for registrations

- Also,
  - Generation and propagation of zone files
  - Distribution and operation of Tier 1 nameservers
  - Service level standards
  - Data escrow for reliability
Instead of a conventional WHOIS service

Third party diagnostic service
  - Provides a way of contacting the necessary entities for trouble resolution
  - Intended to avoid privacy problems of whois
  - Any Tier 1 candidate is required to describe how they would provide this service
    - meet the needs of the communications industry and the public
    - safeguarding the personal information of the Registrants
Tier 2 Specifications

- Effectively builds NAPTR records
- Updates the zone file regularly
- Does some basic duplicate registration
- Abide by the privacy policy
The proposal provides an extensive outline of:

- How enum registrations take place
- How the registrations are maintained
- The information collected and the flow of that information amongst registrars and tiers

A significant part of the document
Privacy Considerations

- No telephone numbers are registered without the consent of the owner.
- Registrants will choose exactly what information will be included in their NAPTR records and what preferences are set.
- They should have a choice in determining how the information they will be disclosing will be used.
Four Key Privacy Issues

- Open disclosure of the Registrant’s NAPTR records in the public DNS
- ENUM registration and initial provisioning
- Disclosure of Registrants’ PII to unauthorized third-party entities
- Third party diagnostic capability (e.g. ContactInfo databases)
Fair Information Practices

- Document provides a proposal for fair use of information

- **Notice:**
  - An Individual's right to receive certain information when data relating to the individual is collected.

- **Choice:**
  - An Individual's right to object to certain types of data collection/use with respect to that individual.
Fair Information Practices II

- **Access:**
  - An Individual's right to access data relating to the individual that is collected.

- **Security:**
  - A guarantee that the data will be secured against unauthorized access.

- **Quality:**
  - An Individual's right, when necessary, to have data relating to the individual corrected.
Fair Information Practices III

- **Relevance:**
  - A guarantee that the use of personal data will be limited to specified uses relevant to the purpose for which the data was collected.

- **Timeliness:**
  - An obligation to retain the data only for as long as is necessary.
Standards for Authorization

- Identity and authority
- Each requires verification of some kind
  - Mechanism to avoid hijacking of addresses
- Proposal provides scenarios for different kinds of registrations
NTIA Letter to State Department

- Letter from NTIA to State
- February 2003
- Take advantage of e164.arpa
- Encourages State Department to fully support work at ITU to complete ENUM recommendations
- Set of principles for enum in the United States
Proposed Principles for enum

- Support competition and innovation
- Preserve sovereignty
- Protect security and privacy for users
- Preserve opportunity for alternative deployments
- Preserve security and stability for operations
- Allow for interoperability
Conclusions in NTIA Letter

- Before opting in to e164.arpa
  - Create rules for selecting the tier 1 operator
  - Coordinate process for all nations in country code 1
  - Coordinate with State, FCC and other federal agencies
  - Convene a series of meetings to get the process started/completed
  - www.ntia.doc.gov
Responses to Letter

- Enum Forum is working on a response
- Enum Forum continuing other work
- FCC Responded “affirmatively”