

# The VoIP Peering Puzzle◆Part 8: ENUM Trials

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In our last tutorial, we looked at some of the issues—primarily political, not technical—that impact a worldwide [deployment of the ENUM technology](#). The International Telecommunications Union—Telecommunications Standardization Sector, or ITU-T, has provided a substantial amount of information on its website regarding these early deployments and field trials that are underway in many nations around the globe (see <http://www.itu.int/osg/spu/enum/index.phtml>). In the United States, several organizations are making a great effort to further ENUM.

The first is the ENUM Forum, a consortium of carriers and vendors, including such heavyweights as Cablevision, Cingular, Cisco Systems, Comcast Cable, Hewlett-Packard, Level 3 Communications, Lucent Technologies, SBC, Sprint, Telcordia, Time Warner Cable, Qwest, Verizon, and many others (see <http://www.enumf.org>).

Quoting from the organization's Principles and Procedures document:

The ENUM Forum is established to develop industry standard processes, procedures, and requirements to implement both public and private instances of an ENUM Domain Name structure for ITU Recommendation E.164 numbers that reside within the U.S. and potentially other countries of the North American Numbering Plan.

The ENUM Forum also acknowledges work that other organizations are undertaking in this area of technology, including the ITU-T, International Telecommunications Advisory Committee (ITAC), an advisory board to the U.S. Department of State, the National Telecommunications and Information Administration (NTIA), part of the U.S. Department of Commerce, the North American Numbering Council, and advisory committee to the Federal Communications Commission, the Internet Corporation for Assigned Names and Numbers (ICANN), and others (see <http://www.enumf.org/EnumLinks.html>.)

Of special interest is a group that evolved from the ENUM Forum specifically to address the issues of ENUM development within North America, called the Country Code 1 ENUM Limited Liability Company (see [www.enumllc.com](http://www.enumllc.com)). Recall that Country Code 1 includes the United States, Canada, and the Caribbean nations—all countries that have telephone numbers with a long distance prefix of "1". The goal of this group is to build a commercial implementation of ENUM that is consistent with the IETF and ITU-T standards, and then to help implement that system with the nations that are part of the North American Numbering Plan (NANP) that choose to participate.

This organization has implemented both End-User ENUM and Provider ENUM (also called Infrastructure or Carrier ENUM) trials during 2006. Recall from our previous tutorial that in User ENUM, the entity having the right to use a particular number can assign the content associated with that number. With Provider ENUM, the objective is to map an E.164 number to a URI (Universal Resource Identifier), thereby enabling the originating party to establish an end-to-end connection. Thus, in the first instance, the objective is to correlate services with that number, while in the second instance, the objective is to map numbers and addresses, thus creating a connection.

Given these underlying differences, two trials are in process, using different domains within the DNS. The End-User trial is being conducted in the 1.e164.arpa domain, which is separate from the Provider trial being conducted in the private e164.enum.us domain. (Recall that an integral part of ENUM is the Domain Name System, or DNS, which maps domain names (such as jupitermedia.com) to a specific IP address. The DNS is arranged in a tree-like structure, with a root and various branches, which provides for one domain (e.g. jupitermedia.com) to be unique from another one that might appear to be similar (e.g. jupitermedia.biz), since they would be associated with different branches off of the root).

The End-User's trial's objectives include:

- To decouple policy and technological goals to allow for concurrent progress of both, and in particular, to allow for a faster timeline for ENUM trials
- To conduct tests of zone architectures using designated US/CC1 telephone numbers mapped into the e164.arpa domain
- To test the Query/Response mechanism of the ENUM DNS protocol using NANP numbers in e164.arpa and test resource records in various domains
- To perform tests of call setup and completion for test user agents/service providers of ENUM-enabled services
- To test registration and operational procedures and interfaces that could apply between the roles involved in ENUM implementation: US/CC1 Tier 1, US Tier 2, Registrar, Application Service Provider, etc.
- To evaluate potential DNS security mechanisms

The stated objectives of the Provider trial include:

- To evaluate potential architectures for implementation of provider ENUM
- To understand interactions, including the provisioning implications of end user numbering events, such as porting and disconnects, between provider ENUM and end user ENUM

- To understand and consider potential architectures for joint implementation of provider ENUM and end user ENUM
- To evaluate potential privacy concerns
- To study mechanisms for linking a US implementation of provider ENUM with other national implementations in both the short and long term to evolve towards a global provider ENUM tree
- To study mechanisms for provider control of resolution and call admission
- To evaluate authorization requirements for provider ENUM

As you can see from the above lists, both trials, which are likely to be concluded in the early part of 2007, have established a significant course of study, but should also result in an equally significant amount of information learned.

Our next tutorial will begin an examination of some of the commercial enterprises that are already offering ENUM and other directory services.

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#### Author's Biography

Mark A. Miller, P.E. is President of DigiNet ® Corporation, a Denver-based consulting engineering firm. He is the author of many books on networking technologies, including Voice over IP Technologies, and Internet Technologies Handbook, both published by John Wiley & Sons.