

Inter-Operator Carrier ENUM—A Business Perspective

Leveraging ENUM to Unlock the Value Behind Communications Over IP

Executive Summary

In a world that is going all-IP network operators are looking for ways to bring together the Internet and telephony worlds. Carrier ENUM is an enabler that bridges the gap between Internet Protocol (IP)-based and traditional telephony services.

Carrier ENUM is a key enabler for the exchange of IP traffic between operators. It allows customers to continue to use the telephone number in an all-IP world and allows operators to centralise IP-based services behind the telephone number.

What is Carrier ENUM?

- Telephone Number Mapping (ENUM) translates telephone numbers to IP routable addresses
- It enables the routing of IP based services using the telephone number
- It is based on the Domain Name System (DNS) that is used to route domain names, e.g. www.boozallen.com, on the Internet
- Carrier ENUM is a private implementation of ENUM that is managed by network operators

The Value in Carrier ENUM

The value of Carrier ENUM can be found in three areas: (1) reinforcing the telephone number; (2) reducing network costs; and (3) promoting new revenue streams in the service space:

- Carrier ENUM reinforces the asset of the telephone number. It links telephone numbers to e-mail addresses, instant messaging accounts, and any other communication service. Indeed individuals are more

likely to share their telephone number before sharing an e-mail address. With Carrier ENUM, no details need be shared other than the telephone number.

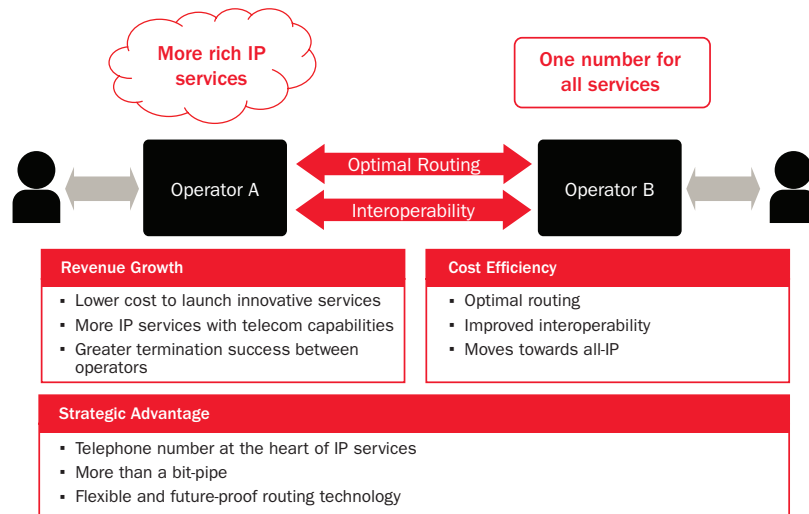
- Carrier ENUM provides network cost savings. It provides a single IP-based routing mechanism that supports all services and takes out the costly routing duplication that occurs for each individual service (e.g. SMS, voice, etc). The management of routing tables for each application is made redundant, as these tables are replaced with queries to Carrier ENUM servers that are managed centrally by operators. In addition, Carrier ENUM is capable of simplifying access to number portability registries.
- Carrier ENUM stimulates new revenue opportunities. The barriers to set up new services are lowered through using Carrier ENUM's ready-to-use routing mechanism and gateway capabilities between IP and telephony. This enables innovation for services and creates new revenue opportunities.

The Critical Success Factors of Carrier ENUM

There are four critical success factors for the widespread success of inter-operator Carrier ENUM:

1. *Co-operation*: Multiple operators need to recognise the benefits of Carrier ENUM and co-operate to make it work.
2. *Technical capabilities*: Adequate IP interconnects and a central Carrier ENUM capability should be in place and must operate with high performance and reliability.
3. *Simplicity*: To ensure adoption the implementation must be simple, supported by commonly agreed interoperable business and technical frameworks.

Exhibit 1
Benefits of Carrier ENUM



Source: Booz Allen Hamilton

4. *Openness and competition:* Carrier ENUM must be implemented in a manner that is open to all operators. Operators should participate in a competitive development environment to ensure innovation in new services.

Proposed Rollout Plan

Booz Allen Hamilton proposes a three-phase rollout for inter-operator Carrier ENUM.

Phase 1: Intra- and inter-operator cost efficiency improvements: After a pilot program, inter-operator Carrier ENUM is rolled out across operators. The rollout is driven by the cost and inter-operability improvements of the move to all-IP. The end user should observe no disturbance during this first phase.

Phase 2: New services enablement: The second phase would offer new Carrier ENUM-enabled services; i.e. developers could create IP-based services for mobiles that allow carrier-enabled services to be embedded. Through the new services, end users would visibly recognise the direct impacts of Carrier ENUM.

Phase 3: Subscriber preferences enablement: In the third and final phase, operators would begin providing support for customers to set their communication preferences.

Key Players and Recommended Action

There are two key players in the Carrier ENUM ecosystem: the operators (fixed or mobile) and a

trusted third party to manage a universal Carrier ENUM offering. They need to understand and embrace their roles in Carrier ENUM rollout.

- *Fixed and mobile operators* need to agree to co-operate on the implementation of inter-operator carrier ENUM and they should plan to roll it out in the absence of business or technical complexity. They should engage with service developers to align service offerings to the new capabilities.
- A *trusted third party* should develop Carrier ENUM offerings that meet the needs of multiple operators. They guide the industry through the development of a common framework.

The benefits of inter-operator Carrier ENUM are clear: it enables global interconnect of telephony services using IP; it allows customers to continue to use the telephone number in an all-IP world; and it puts the telephone number at the heart of IP-based services. The technology streamlines inter-operator communications and opens the door to service innovation, both refining and enriching the user experience.

For Carrier ENUM to flourish, co-operation is essential. Operators need to mandate a third party to drive a multilateral framework. The operators must then subscribe to the framework in order to make it a success. With operators moving to next generation networks and with IP interconnects available, Carrier ENUM is the necessary next step to realise the value of communications over IP.