



PathFinder[®]

GSMA'S NUMBER TRANSLATION SERVICE

GSMA Carrier ENUM





Interoperability in the IP World

The transition from the voice-centric, circuit-switched world to a flexible IP environment supporting rich voice and data services brings both opportunities and challenges. Services such as Packet Voice, MMS, Mobile IM and IMS create new revenue opportunities. But for these services to reach their full potential, any subscriber needs to be able to reach any other subscriber world-wide.

As the industry moves to IP services and number portability becomes more widely deployed, identifying correct routing information based on telephone numbers and fully realizing the IP service capability is becoming more challenging. The GSMA has been working with leading operators and vendors to provide an open standards-based solution to this problem. The solution is GSMA Carrier ENUM supported by the GSMA PathFinder Service.

Carrier ENUM: The Conduit for Change

Circuit-switched networks use telephone/E.164 numbers to identify the destination of a call, whereas IP networks use service specific Universal Resource Identifiers (URIs). ENUM, developed by the Internet Engineering Task Force (IETF), is a DNS-based protocol used to translate telephone/E.164 numbers into information that represents the gateway address of the target service provider. This end point can be a session boarder controller, MMSC, SMSC, IMSC address, or any one of a number of different service addresses. Thus, for any

service where a telephone number is used to identify the end subscriber, ENUM facilitates the discovery of information to enable service providers and carriers to perform accurate routing.

Carrier ENUM is a concept where by ENUM information is exchanged privately amongst service providers to facilitate routing. Service providers maintain the sovereignty, security and privacy of their data using Carrier ENUM.



The Role of the GSMA

The GSMA plays a pivotal role in the development of the GSM platform and the global wireless industry. Much of the GSMA's work is focused on emerging services and enablers. The GSMA helps its members develop and launch new services – ranging from traditional Roaming to Packet Voice, Rich Communication Suite and mobile internet access – that work across networks and national boundaries.

To facilitate global IP interconnect, Carrier ENUM requires a commonly agreed commercial and technical implementation framework. GSMA working groups have identified an open interoperable method of publishing and accessing service provider ENUM data. This framework is called GSMA Carrier ENUM.



Introducing GSMA Carrier ENUM

GSMA Carrier ENUM is an interoperable, industry-wide solution, enabling the routing of global IP service based interconnect traffic. Interoperability is particularly important in facilitating the uptake of emerging services such as MMS, IMS, and Packet Voice. GSMA Carrier ENUM underpins this growth, by enabling interconnect between mobile, fixed and application service providers. It helps the industry control interconnect costs and simplifies network architectures.

GSMA Carrier ENUM allows operators to publish addressing information to carriers, hubs and interconnect partners. The information is supplied in response to queries, enabling calls, messages, content and other types of communication sessions to occur.

GSMA Carrier ENUM results are Number Portability corrected, allowing service providers and carriers to reduce the complexity of managing multiple, application specific routing tables and data feeds, simplifying operations and architecture.

GSMA Carrier ENUM is uniquely extensible. As well as supporting all of today's communications applications, i.e. Voice, SMS and MMS, new services can easily be integrated as they emerge. More than 20 different service types have already been registered with the Internet Assigned Numbers Authority (IANA). Addressing needs are now met by a single interface technology.

GSMA Carrier ENUM is globally scalable allowing distributed ENUM data bases to be established by authoritative number holders and discovered through a global database hierarchy. GSMA Carrier ENUM uses DNS delegation techniques so that querying users can identify which database contains information about a target number. Tier 0 resolves country codes, Tier 1 resolves network codes and Tier 2 provides the number translations.

Number holders and national portability authorities are responsible for the accuracy and authority of ENUM data. GSMA Carrier ENUM policy ensures that information is authoritative, compliant with national regulation and is managed in a private and secure way. Number holders determine who may access their data within this framework.

GSMA Carrier ENUM enables Service Providers to make their IP service customers reachable by other service providers, indicate their preferences for the technical delivery of traffic and provide accurate notification of number ownership in a number portability environment. Querying customers are able to implement cost effective interconnect policies and ensure traffic is delivered without expensive fallback to legacy technology.

Introducing PathFinder

GSMA Carrier ENUM uses a root and tree delegation architecture to allow users to navigate the different Carrier ENUM databases across the globe. The GSMA membership requested that the GSMA provide the root directory free to the industry to facilitate the physical implementation of the GSMA Carrier ENUM framework.

PathFinder is a GSMA managed service operated by NeuStar. PathFinder supports GSMA Carrier ENUM registry tiers, in particular the "Root Directory" through its Interconnect Discovery Service suite. In administering the Root, the GSMA seeks to recognize authoritative National Carrier ENUM registries, and authoritative Service Provider or Federated Carrier ENUM registries and link them through the PathFinder root. In so doing, PathFinder facilitates access to global sources of ENUM data and links a worldwide interconnect community via a single cost effective addressing standard.

Optionally PathFinder offers Tier 1 and Tier 2 registry hosting services. Service Providers maintain sovereignty over their data and provision ENUM data and access controls through PathFinder APIs at their discretion. PathFinder hosting services enable users to outsource platform management, global interconnectivity arrangements and security to a specialist third party and enable their data to be placed closer to their partner consumers. PathFinder is implemented to "telco" standards of reliability and includes multiple installations around the globe for high performance access and redundancy.

Using a simple ENUM based lookup, PathFinder returns operator populated ENUM data according to the number owner's policy. Data may consist of service gateway address data for routing or a pointer to another database where the ENUM data is stored.

PathFinder thus provides operators access to all the globally distributed Carrier ENUM data, using the standard IETF ENUM Tier architecture, and allows operators to exploit their greatest asset, their installed base of subscriber phone numbers, as they improve the services offered to their subscribers through IP technology.



GSMA Carrier ENUM and PathFinder: Key Benefits

- Allows consumers to access IP-based services via their existing phone number, making it easier to access rich, convergent services
- Standard interoperable industry-wide solution, enabling the routing of global IP service based interconnect traffic
- Standard solution to number portability for IP services
- Unlock the value of new IP-based services, enabling increased revenue generation via a cost effective architecture
- Available to Mobile Network Operators, Fixed Network Operators, Carriers, Hubs and Application Providers
- With a long and successful track record of enabling global roaming interoperability, the GSMA is ideally placed to facilitate open interoperable communities such as Carrier ENUM and services such as PathFinder, which require a common commercial and technical approach
- PathFinder is designed to be easy to adopt, solving operators multilateral ENUM data publishing needs, allowing rapid deployment and global reachability of new service



For more information:

www.gsmworld.com/pathfinder

pathfinder@gsm.org