

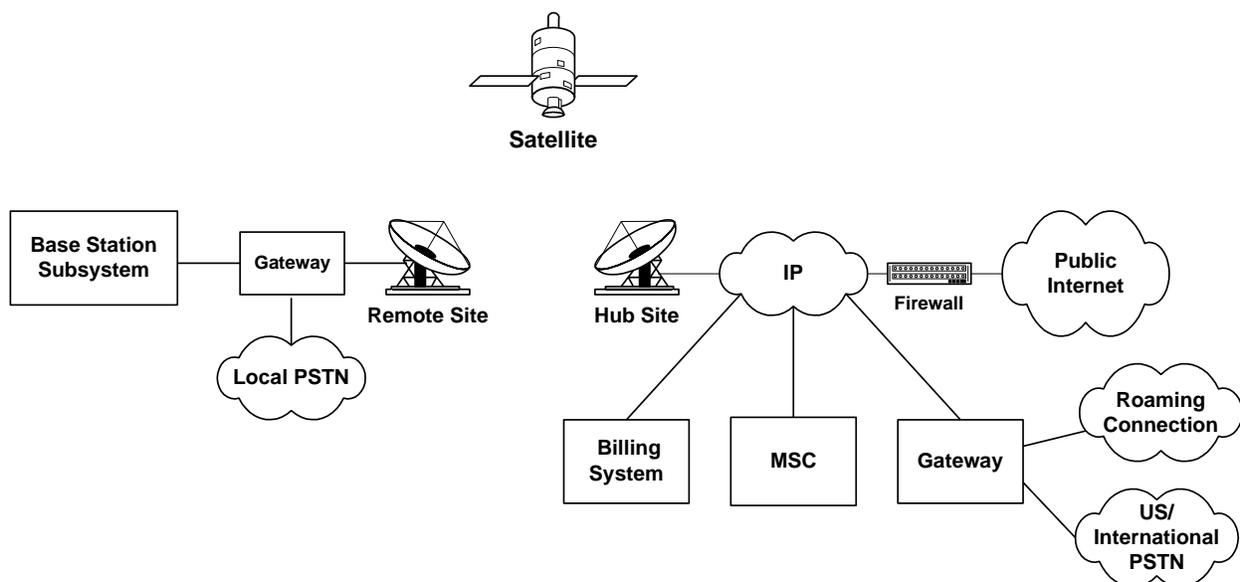
## Enabling Mobile Phone Services Anywhere

By Globecomm Systems, Inc.

A classic problem is encountered when trying to deliver modern telecommunications services at affordable prices to geographically disperse and/or low-density communities. Historically these populations simply do not get the services. Mandates for Universal Service as part of global deregulation of the telecommunications sector is creating new demand for viable solutions to this problem. Through the application of Internet Protocol (IP) and satellite technologies, Globecomm Systems Inc. (GSI) is offering a unique new solution to provide these services cost effectively virtually anywhere. This solution was winner of the GSM Association's 2003 award for Best Network Solution.

The solution is based on a unique architecture where the switching functions are distributed throughout the network. In traditional mobile networks, all calls are switched through a central Mobile Switching Center (MSC) regardless of where the call originates. The MSC is one of the most expensive elements in the network, and also requires dedicated connections to all the base station subsystems (BSS's) in the network. These factors often make it cost prohibitive to provide service in areas at great distance from the MSC (due to the backhaul costs), and/or in areas of low subscriber density (because the cost of deploying a local MSC to service the area cannot be justified).

GSI's solution is unique and cost effective in that it enables a single MSC to service many remote areas. BSS's and IP gateways need only be deployed in areas that require service, and are connected back to the MSC via IP connections. These connections can be terrestrial, but in many cases the only viable connection is via satellite. In this approach, only the mobile network signaling is transmitted to the MSC. All voice traffic is routed directly to its destination by the gateways, thus eliminating the need to backhaul. The gateways also implement voice compression algorithms for voice over Internet Protocol (VoIP) communications. These factors greatly reduce operations costs. A simplified diagram of this architecture is given below.



Some of the features and benefits resulting from the use of this technology are summarized below.

- **IP Format** – Communications are carried in an IP format. This allows sharing of the common transmission backbone with other IP based services, such as Internet access and videoconferencing. Furthermore the fully meshed nature of an IP network allows for single hop communication between network nodes (i.e., traffic is automatically routed to its destination via the shortest route).
- **Distributed Architecture** – Network elements can be located anywhere within the IP network, that is, they can be put where they best suit the requirements of the network. This means, for example, that an MSC can be located in one place, such as at a remote secure service provider facility, and the BSS infrastructure is only deployed as and where needed. Furthermore, call processing is distributed and intelligent. In a satellite example this allows local calls to connect locally (voice path requires no satellite bandwidth), and a mesh satellite network allows all long distance (over satellite) calls to be single hop.
- **Network Expansion** –Service is available anywhere within the IP network. New remote service areas can be easily added to the network regardless of location, and network expansion costs are incremental (i.e., a new service area does not require a new switch).
- **Network Operations** – Network operations can be simplified and reduced since the amount of remote infrastructure to be deployed is minimized, and key network infrastructure (e.g., MSC, billing, and other support functions) can be centrally located and leveraged to manage many remote areas.
- **Value Added Services** – This solution can provide the same value added services available in traditional networks (e.g., voicemail, messaging, data, roaming).

This solution can be provided for both GSM and CDMA networks. For operators interested in this solution on a subscription basis, GSI can provide service from its satellite headquarters in New York. All that is required in country is a satellite terminal and the appropriate base station equipment. GSI can also provide a turnkey system to an operator who wishes to operate the network himself.

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