Private Mobile Networks

Making mobile telephony an extension of your Office communications network

The Private Mobile Network solution provides the ability to access voice services in a corporate building using mobile handsets as an extension of choice with landline costs.

The Solution we Provide

The Private Mobile Network solution brings the mobile into the corporate network. This means that, when you walk into your office building, you can use your mobile as an extension of your PBX - with traffic carried on the LAN/WAN internally and through the PSTN externally - incurring no mobile call charges.

The Benefits of the Solution

This means that you can save on your mobile phone call costs by adding mobiles to the company's internal voice network. It provides cost-effective savings and enhances performance by automatically ensuring users communicate using the appropriate network and the appropriate device for maximum convenience and least cost to the business.

Solutions provided from Private Mobile Networks include:

All solutions make use of the **Private Mobile eXchange**

- **Fixed Mobile Convergence**
- **Private Mobile Office**
- **Rapid Deployment Unit**

Private Mobile eXchange

Private GSM Network solutions for in-building and on-campus communications.

Fixed Mobile Convergence

Fixed line services and capabilities delivered on the mobile phone provide users with a single mobile device which will switch between networks

Private Mobile Office

Increase mobility; use a single number and your mobile phone as your company managed PBX extension. A viable in-building alternative to DECT solution.

Rapid Deployment Unit

A pre-configured and portable unit providing a secure, private GSM network – at the touch of a button.

Network Transition

The entire transition operation is transparent to the mobile phone user. The mobile client application runs on the mobile to handle the transition seamlessly between the carrier mobile network of your choice and the private network. The application is delivered to the phone using an SMS message containing the download link. Once the application is installed, it will automatically start.

PMN applications are scalable to meet the customer's specific requirements and can be supplied pre-installed on a fully configured hardware platform and integrated into the existing infrastructure by accredited engineers.

Alternatively, applications can be provided for installation onto the customer's own platform or provided as a hosted service on a per-user-per-month fee basis.

RadioAccess

Private Mobile eXchange

Fixed Mobile communications when and where you need it

Private Mobile eXchange (PMX) enables the creation of a Private Mobile Network - a secure and private GSM network which can be used as an alternative to the macro GSM network.

PMX enables mobile phones to become part of the internal telephony infrastructure while in the vicinity of the workplace.

With a private mobile network, mobile phones can be used to make calls from the workplace for the same cost as calling from an internal telephone extension. Staff can call colleagues at the premises, or on-net over the corporate network, without incurring any call costs. Mobile calls from the office to external destinations are charged at the company's normal landline tariff.

Private Mobile Networks also enable a business to deploy mobile networks into remote regions or isolated user communities where network integration and infrastructure costs would otherwise be prohibitive. This is particularly suited to mining, shipping and tactical deployment situations. A standard GSM mobile phone can be used in conjunction with PMX environments where there is limited or no macro network GSM coverage.

PMX integrates with any 2G and 2.5G mobile phone and any PBX type.

Key Benefits

Allows mobile phones to **operate as PBX extensions** while user is on-site

Supports **business continuity** - the private mobile network continues to operate when the macro network (public mobile network) is unavailable

Maintains staff contactability to provide a **high level of customer service**

External calls through PMX at **landline rates**

Coverage in black spot areas

Free on-site calls and SMS text messages

Reduced cabling requirements

Ability to **rapidly deploy** at new locations

The data option allows traffic to be sent and received on a standard IP network GPRS or EGDE-enabled mobile handset

Ability to function in a **mixed telephony network environment**

Compatible with standard 2G and 2.5G mobile phones

Built on **industry standards** and utilises standard Intel architecture, **protecting investment** with ability to accommodate future developments on standard hardware

One device, one number PBX applications – **convergence without compromise**

RadioAccess

Implementation Overview

PMX creates a self contained, privately owned and managed mobile network based on standard GSM protocols. This enabling technology allows an organisation to manage staff mobile phones on the corporate telecoms infrastructure.

The solution comprises both hardware and software components. The hardware requirements include:

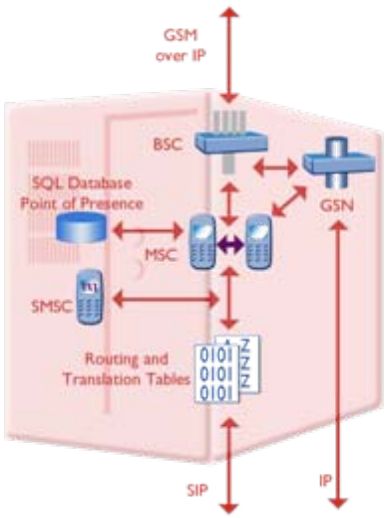
• mobile phone access points, known as Base Transceiver Station (BTS) units.

• a Base Station Controller (BSC) to manage the BTS.

• an industry standard server to run the PMX software.

The PMX software consists of three software components: a Mobile Switching Centre (MSC), translation and routing database and a Short Message Service Centre (SMSC). The PMX includes a fourth option to provide GPRS using an industry standard GSN (GPRS Service Node).

PMX Operational Functionality



PMX in Operation

The PMX BTS units are connected to the enterprise IP network and utilise Power over Ethernet. Each BTS creates a cell in much the same way as on a macro mobile network. Each PMX implementation is made up of one or more cells depending on the number of users, coverage area and call volumes required. A single BTS supports seven concurrent calls and BTS can be clustered to support up to 31 concurrent calls.

The BTS uses the internet protocol (IP) to communicate, enabling the placement of BTS at any location on the LAN or WAN. A BSC can manage up to 100 BTS. This includes their operating frequency, power output, IP addressing and other network characteristics. The BSC communicates with a Mobile Switching Centre (MSC) using the (GSM) A-Interface over IP. The MSC has two main roles, control of registration and call control.

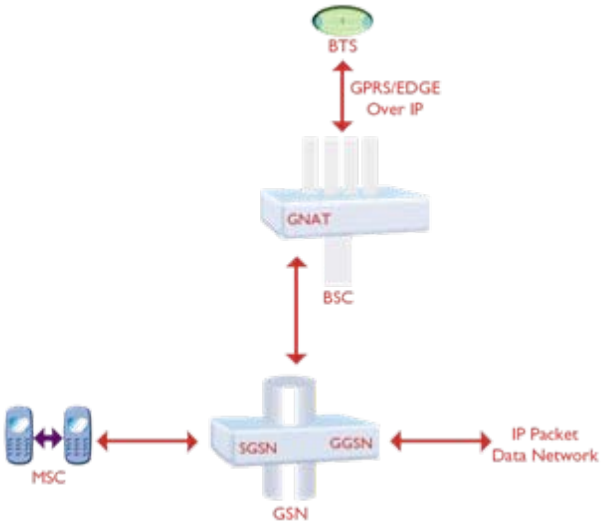
The MSC component of PMX controls the access to the private mobile network and restricts this to known users to provide standard PBX features such as intelligent call routing and short code dialling.

Using SMS

The SMSC allows mobile phones registered to the private mobile network to send and receive SMS text messages. Text messages are routed to phones on the network or are stored until they register to the network.

Using GPRS

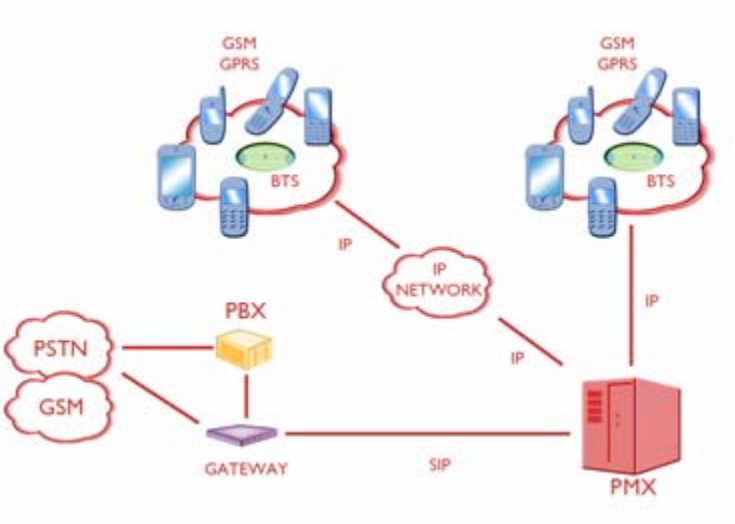
The optional GSN allows IP traffic to be exchanged between the mobile handset and the standard IP network. The PMX is also able to support the EDGE protocol which allows for higher data transfer rates than are achieved using standard GPRS.



RadioAccess

Integration into the Corporate PBX Network

In order for PMX to connect conventional mobile phones to most legacy PBX equipment, a hardware gateway is required to convert between protocols. PMX is able to use industry standard gateway that convert from SIP to protocols such as DPNSS and Q-SIG.



Sizing a PMX system

A radio planning survey of the chosen location/campus is required to ensure sufficient network coverage. This would be performed by a PMN approved radio networks engineer. The survey will produce a map of the location showing how many BTS are needed and where they have to be positioned to ensure maximum network coverage.

Hardware Requirements

• Minimum Server Hardware Requirements
2 GHz P4
2 GB RAM
38 GB hard disk
• Connection Options
SIP to DPNSS gateway (E1 or ISDN)
SIP to Q-Sig gateway (E1 or ISDN)
SIP to Q.931 gateway (E1 or ISDN)
Direct SIP interface

Protocols Supported

SIP – RFC 3261
SDP – RFC 2327
Hold requests – RFC 2543 and RFC 3261
RTP – RFC 1889 and RFC 1890
Audio – GSM FR, G.711 (a– and μ–law) and G.729
XML – 1.0
HTTP – 1.1
GSM – including 08.06, 08.08
GPRS – including SIGTRAN interfaces

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