

Private GSM network solutions for in-building communications

Private Mobile Office (PMO) provides a complete, packaged, private GSM network solution for use within an office, warehouse or campus area to support communications between workers and to extend or replace the current PBX infrastructure, or to offer an effective alternative to Digital Enhanced Cordless Telecommunications (DECT) and Private Mobile Radio (PMR) installations.

Standard GSM mobile phone handsets are used to connect users together on a secure, private network without incurring any mobile phone call charges. Voice quality is high, as expected, on an industry standard-based GSM network, and support for SMS and GPRS is available.

The mobile handset has established itself as the device of choice with business users. However, in-building installations have, up till now, relied on DECT or PMR systems to achieve mobility.

The Private Mobile Office solution is both cost-effective and a sound technical alternative to DECT or PMR. The solution provides businesses with a competitive edge through cost effective utilisation of standard mobile phones and the improvement of in-building coverage through GSM technology. Mobile handsets operating on Private Mobile Office can, optionally, be integrated with the incumbent PBX infrastructure or directly to the carrier network for offsite calls.

Private Mobile Office has a number of powerful telephony applications available to overlay and integrate with both the private mobile network and the PBX infrastructure to add in-building and offsite flexible working support through intelligent call routing and advanced telephony capabilities.

Is Private Mobile Office right for your business?

If you are looking for flexibility, an efficient use of resources and to improve your corporate contactability, internally and externally, then the answer is a definite yes.

Most organisations can benefit from a mobile, yet fully contactable, workforce and Private Mobile Office has been designed to fulfil that fundamental principle for in-building communications. Flexibility and ease of implementation gives organisations the choice of deploying PMO as a fully standalone PBX replacement or as an adjunct to an existing PBX infrastructure. It is also an ideal solution where rapid telephony deployment is required or where temporary business locations are used, such as in the construction and outdoor events industries. In areas where voice privacy is an issue Private Mobile Office allows organisations to implement localised islands of communication with the inherent security of GSM.

Key Benefits

Enables **call cost savings**; mobile services at no charge when in range of the Private Mobile Network, and at landline rates when passed out through the local PBX

Automatic switch over to private network when in range ensures **costs are optimised**

Utilises **standard mobile phones** - existing business mobiles or ruggedised versions

Use of mobile phones ensures **long battery life** and **extended handset choice** compared with alternative solutions

An effective range of up to 350m omni directional ensures **superior coverage**

Operation is **immune to interference** from WiFi or video senders

A **cost-effective** alternative to DECT technology for in-building or campus use

Using mobile handsets **extends the functionality** of legacy equipment, which impacts positively on operational costs

Business-critical continuity is maintained on occasions when the macro network is not available

Remote workers can become more **productive**, more **time-efficient** and more capable of delivering benchmark customer service because they have access to their employer's **data network** via GPRS services on their mobile handset

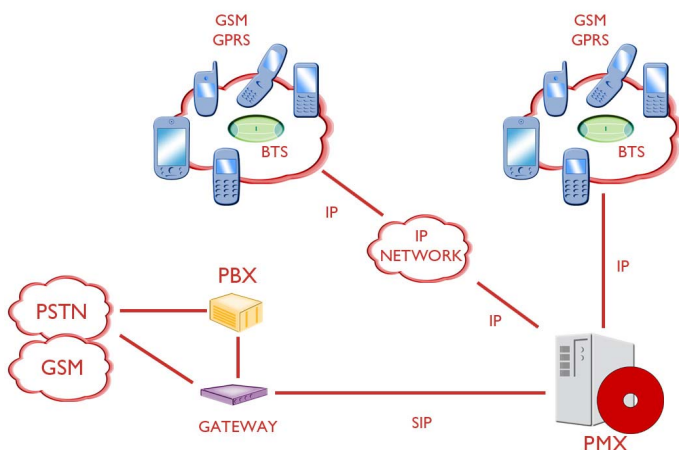
Ability to be **deployed very quickly**, making it an ideal solution in transient or temporary site situations

How PMO Works

Using one or more base stations, strategically placed to ensure full network coverage, PMO registered mobile handsets are able to communicate with each other in a localised GSM 'island'. Through an additional connection to a local PBX infrastructure or a PSTN gateway, the handsets can also communicate with internal PBX extensions and the outside world.

PMO handsets are standard mobile GSM phones and are used, for calls and SMS messaging, in exactly the same way they would be within a macro mobile network. To ensure that the network is secure from unwanted parties, PMO SIMs are pre-registered with the network and only handsets with registered SIMs can utilise network functionality. Pico cell base stations are placed to give maximum coverage and to act as an interface between the handset and the PMO network. Callers are able to roam anywhere within the PMO network with call control being seamlessly handed between base stations.

PMO handsets become extensions of the PBX, without the limitations of fixed lines but with all the benefits of a shared, extended network. As PMO can also connect to a carrier network or PSTN, it can be used to effectively replace a PBX to create a fully mobile workforce.



25 Mobile Handset Solution

Designed to support up to 25 mobile handsets, this package will support coverage of up to 6000 sq metres. The package is supplied as a plug-and-play pre-configured solution and includes:

- 2 x Base Transceiver Stations (BTS)
- Private Mobile eXchange Server
- 25 x GSM SIMS for Private Mobile Office
- Industry standard SIP to PBX/PSTN Gateway

50 Mobile Handset Solution

Designed to support up to 50 mobile handsets, this package will support coverage of up to 9000 sq metres. The package is supplied as a plug-and-play pre-configured solution and includes:

- 3 x BTS
- Private Mobile eXchange Server
- 50 x GSM SIMS for Private Mobile Office
- Industry standard SIP to PBX/PSTN Gateway

Optional Items

Handsets

PMO will support a wide selection of 2G and 2.5G handsets with Nokia handsets recommended. Solutions are, typically, provided without handsets. However, we can offer additional handset packages on request.

Support for GPRS

GPRS support provides access to the Internet, Intranet or Corporate LAN.

With GPRS support you can enjoy the convenience of accessing the Internet from your mobile phone. Voice and data sessions can be conducted simultaneously.

Network Transition

A mobile phone application for automatic switching between micro and macro GSM networks enables a business user on a private mobile network to move seamlessly between the private and public networks. The phone automatically selects the PMO network when in range.

intelligent Mobile

Provides a menu-based interface for PBX features, such as call recording, hold and transfer.

Telephony Applications

Optionally available*, PMO can utilise powerful telephony applications that can overlay the PMO network and integrate with existing PBX infrastructures.

Intelligent Routing

PMO intelligent routing applications can add remote working capabilities to user accounts to improve contactability, both on and off the PMO network. Allocating users a single business number, which routes initially to PMO, simplifies the process for the caller and allows the PMO to apply powerful underlying functionality that routes callers to the account holder's exact location. Complete control is given to the user to specify where and when calls should be routed and, as they move from the PMO network to the macro or PSTN network, they simply change their registered location.

Individual PMO users within an organisation can be grouped together to form a 'community'. This allows them to utilise the resources of the whole community by configuring other PMO users as alternative contacts and create true team working by forming wide area teams.

Advanced Messaging Services

There will always be instances where calls cannot be taken. This can be catered for by the addition of PMO messaging services. A corporate grade voice mailbox will extend the PMO intelligent routing capabilities with functionality such as voice-to-email delivery, message forwarding and broadcast announcements. Voicemails can be accessed on and off network or by an intuitive web interface which allows voicemail access and intelligent routing management. (See intelligent Office datasheets).

Auto Attendant and Interactive Voice Response (IVR) Development Tools

A well designed IVR, as a first point of contact for an organisation, can be an important element of a corporate call handling strategy. PMO supports the ability to rapidly develop and implement IVR applications that can integrate seamlessly with an existing PBX infrastructure. The IVR development tools require no prior programming experience but, instead, focus on the functional layout of the IVR which makes creation extremely straightforward and flexible. (See intelligent Application Builder datasheets)

*Under certain circumstances, additional hardware to provide processing resources may be required.

Seamless Private to Macro Network Transition

An application can be run on the mobile will enable seamless transition between the private mobile network and your carrier network of choice. The application will be delivered to the phone using an SMS message containing the download link. Once the application is installed, it will operate automatically.

Installation

Prior to installation, our radio planning determines the appropriate package size. Although most solutions can be based around standard packages, it may be necessary to offer bespoke solutions appropriate to the radio planning and site survey. Our Project Team provides ongoing support and advice on the required pre-installation works and assists in the installation.

The solution is plug-and-play, with Ethernet connectivity between the PMO server and the base station transceivers(s). Wherever possible, the solution is shipped fully pre-configured for ease of administration and installation. Ongoing administration is possible through the web-based administration tools provided and no specialised skills are required.

Protocols Supported

When integrating with an existing PBX infrastructure, the PMO package is designed to be installed without having to modify the existing network.

Industry standard protocols are supported to guarantee maximum flexibility.

GSM – including 08.06, 08.08

GPRS – including SIGTRAN interfaces

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

Voice – Analogue DID, E1, QSig

XML – 1.0

HTTP – 1.1

Technical Specifications*

BTS

Call Capacity (per BTS)	8 channels (7 Voice, 1 call control)
Transmission Range	350m (omni-directional open air) 100m (omni-directional in-building) Subject to site conditions
Dimensions	L 275mm, W 205mm, D 63mm
Weight	< 2kg
Operational Temp/Humidity	Temp: -5~+45C Ambient Humidity: 5-90% non condensing
Input Voltage	36-57vDC (to cover POE range)
Input Current	500mA from 36v input
Maximum Transmission Power	+23dBm (200mW)

PMO Server

Base model	HP DL360 G5 Dual Core Xeon 5120 Processor (1.86 GHz)
Memory	2Gb
Hard Drive	36Gb
Dimensions	4.32 x 42.62 x 70.49cm (1U)
Weight	27.5lbs (base weight)
Rated Input Voltage	100 to 240 VAC
Rated Input Current	7.1amps(at 120VAC) to 3.5amps (at 240VAC)
Rated Input Frequency	50-60HZ
Rated Input Power	852W
BTU Rating	2910 BTU/HR (at 120VAC) to 2870 BTU/HR (at 240VAC)
Operational Temperature	10-35C (No direct sustained sunlight)
10C/Hr Rate of Change	
Operational Humidity	10-90% relative humidity (non-condensing)

Gateway

Model	Cisco 2811
Dimensions	4.45 x 41.6 x 43.8cm (1U)
Weight	6.4kg (base weight)
Rated Input Voltage	100 to 240 VAC (auto ranging)
Rated Input Current	2amps(at 110VAC) to 1amp (at 230VAC)
Rated Input Frequency	47-63HZ
Rated Input Power	160W
BTU Rating	717 BTU/Hr MAX
Operational Temperature	0-40C
Operational Humidity	5-95% relative humidity (non-condensing)

*Specifications are based on current hardware provision. Hardware may be substituted with that of a comparable or higher specification

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