MBX^{TM} Brief

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MBX^{TM} Overview

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MBX (*Mobile Branch Exchange*) is a pure software solution that tightly integrates an office phone system (PBX) and all of its surrounding business support systems with employees' mobile phones, offering convenience and significant cost savings to mobile users.

MBX meets well-proven mobile telephony management needs including: major mobile cost savings, flexible working, call logging / recording and full corporate governance. Cost savings are enabled by advanced routing mechanisms in the client-server system and provide a quick and significant return on investment.

1.1

The MBX *'Office Phone'* software installs on the mobile phone and the corresponding server software integrates with the PBX. MBX autonomously routes all incoming and outgoing mobile calls through the office phone system, making the mobile phone operate as an exact duplicate of the desk phone, anywhere in the world.

1.6

MBX's enabler is its pioneering telephony internetworking architecture that combines mobile voice and data signaling channels in an end-to-end *Telephony Internetworking Protocol*^{TM} (TINP). This client-sever protocol enables 100% seamless telephony service provisioning between switches and phones across heterogenous telephony networks.

MBX is a highly scalable software-only solution that works over any mobile / wireless network (GSM, CDMA, W-LAN) and integrates to all major PBX platforms.

OnRelay has has received full approval by the international patent agency PCT's examiner. The claims cover the complete PBX-to-mobile voice internetworking system design and methods of MBX.

Benefits

MBX redefines fixed mobile telephony convergence and provides core, compelling reasons to buy:

Direct Savings
- Call savings up to 30% of mobile bill
- Make fixed-line calls from the mobile

Enables Flexible Working
- Mobile use of PBX integrated back-office (e.g. Call Centre, Billing, VM, etc)
- Reuse of PBX management/settings
- Corporate governance – separation of personal/business
- Complete remote use of PBX

Leader in Fixed Mobile Convergence
- Global scalability
- Non-intrusive installation
- Resilient for business continuity purposes
- Return on existing assets

MBX Meets Must Have Needs

The 'must-have' needs for *Fixed Mobile Convergence* are clear and validated, albeit not previously resolved by telecom vendors or mobile operators. MBX meets the following top ranked customer priorities for corporate telephony:

Direct Savings

MBX's least cost routing function allows up to 30% savings on mobile calls, principally from reducing roaming and international call charges over GSM. Further, MBX enforces call-barring mechanisms already implemented in the PBX that limit the destinations an employee may call.

Flexible Working

MBX can seamlessly work in combination with existing hot-desking or remote/home working solutions such that the office phone is fully enabled on the mobile when the employee is out of the office. MBX also accommodates for scenarios where the PBX has only virtual extensions so that all office phones can be mobile. *MBX also seamlessly hands over the mobile to the office phone and from the office phone to the mobile.*

Full Office Phone Functionality Anywhere

MBX extends the full PBX feature set to a mobile environment including conferencing, access to corporate directory and address book functions, call lists and internal short code dialing. MBX also allows re-use of all existing PBX settings, such as call barring, class of service, call pick-up, call forward no answer, call filtering, group hunt, multiple line appeaerance…

Regulatory Compliance

MBX ensures that an organisation is compliant with regulatory requirements for recording and logging calls received *or placed* on mobiles. MBX can enforce automatic routing of all *outbound* mobile calls through the PBX. MBX utilises *existing* voice recording and call logging systems. MBX also ensures use of *existing* PBX voice mail systems for the archiving of voice mails.

Reuse of Existing Back-Office Systems

MBX enables corporate IS/IT management to ensure use of *existing* legacy systems, such as voice mail, conference bridges, logging, billing and voice portal systems which are in place to provide consistent high quality handling of all incoming calls.

## Seamless Roaming for Office and Off-Site

MBX gives full seamless roaming both in- and outside of the office, as well as when traveling to other countries. MBX can be seamlessly transported over new and existing wireless networks such as GSM, Bluetooth, W-LAN, CDMA and 3G. *Used in combination with private wireless networks such s W-LAN, MBX can handle seamless handover between GSM and these networks.*

One Number/One Mailbox

MBX ensures that the existing PBX office number becomes the only number used by or seen by both external and internal called parties. MBX also allows the use of *existing* short-number dialing. MBX enforces use of the *existing* corporate voicemail systems.

Global Scalability of Architecture

MBX's client-server software architecture provides internet-level scalability across multi-vendor PBX environments and multiple mobile operators. MBX requires no number plan changes, no extra voice circuit hardware and minimised custom integration. MBX operates in a same multi-switch VPN environment and has full redundancy. The endpoint-centric design of the MBX architecture allows for global, fully roamable, multi-site installations.
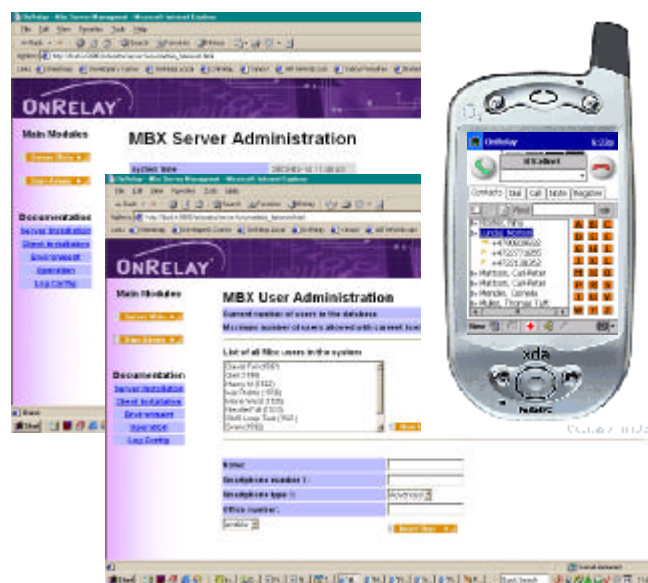
Tight PBX Integration

MBX's power for IT management lies in its tight and seamless integration with the PBX via the PBX Computer Telephony Interface (CTI). This mechanism allows mobile calls to appear to any PBX-integrated system as deskphone calls, thereby reusing all existing mechanisms for managing corporate telephony via the PBX system. This yields:

Use of existing PBX / office number
There are *no changes* to the existing PBX numbering plan. Employees keep their existing deskphone number, and IT has complete control over the corporate number plan.

Non-intrusive integration with the PBX
No voice calls are directly intercepted by MBX, so a potential failure of the MBX system cannot take down the normal operation of the PBX or normal routing of calls to the office phone / voicemail.

Re-use of PBX settings & functionality
Because of MBX's tight integration with the PBX, all existing / defined station settings are maintained for mobile calls, (e.g., call barring, class of service, call pick-up, call forward no answer, call filtering, group hunt, multi-representation, etc…) as well as the use of all PBX functionality.

Software Installation Speed
No hardware capital expenditures, such as ISDN lines or cards, are required, enabling trials for a smaller group of people on the system. MBX is pure software and integrates to the PBX via a standard LAN interface.

Mobile To Fixed Handover
MBX is the *only solution* available that allows seamless handover of a GSM call to the desk phone during a call. This saves money and eliminates the need to re-establish a call on a fixed line for e.g., mobile coverage purposes.

Advanced automatic least cost routing via PBX
- International calls from domestic locations are routed via the PBX, leaving a domestic mobile and a landline international call.
- Outbound roaming calls are automatically reverse routed via PBX, enabling significant call savings.

- Conference calls are setup and maintained in the PBX, reducing connection costs and use of external conference services.
- PBX, not mobile operator voicemail, is used, saving on receiving voicemail calls while roaming.

Use of existing PBX call barring and fraud detection mechanisms
- All outbound calls are barred according to existing barring settings for the desk-phone.
- Any fraud detection mechanisms in place that analyse call logs will be triggered by calls from mobiles as well.
- Automatic authentication based on desk phone ID and mobile SIMs are used for access to the voice mail system and other corporate voice portals.

Comprehensive call logging
- Mobile calls are logged according the desk phone number.
- Mobile calls can be billed back to the deskphone user's cost center.
- Mobile calls in/out are logged for regulatory compliance or other legal purposes.

Corporate directory management
- Full LDAP integration for integration with corporate directories.
- Users retain existing deskphone numbers as corporate contact numbers.
- No need to publish mobile numbers.
- Deskphone numbers are presented for outbound mobile calls as well. If calling line presentation is disabled at PBX, mobile calls via the PBX will also have calling line suppressed.
- Bad leavers can bring their personal mobile number with them, without risk.
- Mobile numbers/subscriptions can be changed without re-publishing corporate contact numbers / business cards.
- Mobile calls via the PBX can be disabled immediately by IT administration in the event of mobile theft / loss.
- Users can have virtual extensions, real deskphones or IP extensions. MBX also works in hot-desking environments.

Use of Existing Recording Systems
- MBX supports both extension based and trunk based recording for digital extensions.

1.4

Technology

MBX's enabler is its pioneering telephony architecture that combines mobile voice and data signaling channels. This is a landmark achievement as it resolves the basic problem of telephony internetworking between existing fixed and mobile networks.

The use of MBX enables companies to have the same level of management over employees' use of mobile telephony as they currently have over their fixed line systems.

A fundamental building block of the MBX system is the patent-pending *Telephony Internetworking Protocol*[TM] (TINP) which has been developed to synchronise the client call model and the server call model over a parallel mobile voice and mobile data connection. The TINP protocol uses the previously not available opportunity that both the server and the client have full call control interfaces toward their respective call-endpoints, and thus enables the full functionality of the PBX to be extended to the mobile by means of proprietary signalling over the data-leg of the TINP call.

System and Platform Support

PBX Support

OnRelay aims to support all leading PBXs including models from Avaya, Nortel, Cisco, Siemens, Alcatel and Ericsson (*See below for current PBX support and system requirements*). Most leading PBXs support a Computer Telephony Integration (CTI) interface via the ECMA Computer Supported Telephony Applications (CSTA) interface.

Formal Interoperability Certifications

- **Avaya**: OnRelay have successfully completed formal Avaya interoperability testing for the Definity and Media Server range. OnRelay is an Avaya EMEA *Premier* Partner. (See OnRelay at www.avaya.com).
- **Cisco**: MBX 2.2 has met the Cisco AVVID (Architecture for Voice and Video Integrated Data) Partner Program test criteria for interoperability with the Cisco CallManager 3.3(3). OnRelay is a Cisco AVVID Partner. (See OnRelay at www.cisco.com).
- **Nortel**: MBX 2.1 passed a formal systems test at a global financial institution.

Mobile Phone Support

OnRelay is mobile phone agnostic and aims to support all leading mobile operating systems. Currently supported are: PocketPC 2002, Symbian 6.1 (Nokia) and Symbian 7.0 (Nokia). OnRelay will further support Symbian UIQ (Ericsson), PocketPC 2003, Smartphone 2002, Java, Blackberry and PalmOS. All regular GSM phones are also supported with limited, incoming-only functionality.

Mobile Network Support

MBX has no technical dependency towards the wireless network. OnRelay's endpoint-centric TINP protocol architecture pushes all intelligence and advanced algorithms to server and client endpoints, thereby allowing strong and seamless portability across different wireless voice and data networks. It is therefore able to extend MBX to support any publicly licensed (GSM, 3G, CDMA) and privately unlicensed (W-LAN, Bluetooth) networks, making it future proof for new networking technologies.
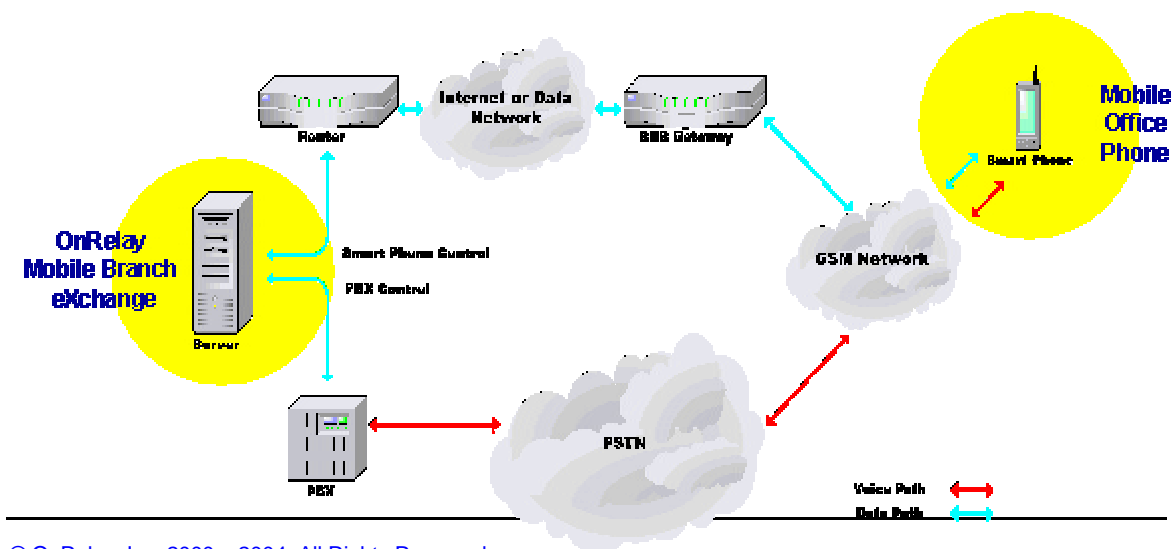
End User Features

For the end-user, every time a call related event occurs at the office phone, MBX mirrors this event in real-time on the mobile phone. Any call treatment or functionality available at the desk phone can be accessed remotely via MBX.

MBX provides a step-change in convenience and user friendliness to the corporate phone user, and offers a simple graphical user interfaces to standard hard-to-learn PBX functions. MBX also includes seamless integration with MS Outlook and Lotus Notes based phone/address lists, greatly simplifying the process of maintaining and utilising a contact directory.

One business number
- Use the existing office number for both office and mobile
- No corporate number plan changes

True calling line ID for calls routed via the PBX
- Additional caller details/name in caller ID
- Advanced call filtering

Simultaneous ringing at office and mobile
- Answer call at either phone
- No manual configuration of forwarding or call routing needed

Seamless fixed-mobile hand-over between the office and mobile phone
- Answer or place the call from the mobile, and continue the call in process on your desk phone with a single-click operation. True Fixed Mobile Integration which minimises cost while maintaining in-building connectivity

Internal short number dialing
- Just dial the existing short number
- Switchboard can be dialed with a '0', as from the desk-phone
- Incoming calls from other desk-phones are presented with internal short number
- By means of using the PBX dialing plan, short numbers for often used destinations can also be directly dial accessed from the mobile

Instant conference call set-up
- Use existing (and paid for) PBX conferencing facility
- Single step add new party to conference
- Drop individual conference party
- Conference participant name and time display

One click access to PBX voice mail
- Single click operation to dial and log onto the voice mail system
- Voice mail indicator lamp on/off is also displayed on the mobile

Personal call detail records and call notes
- Call records can be automatically or manually stored in Outlook calendar at time of call
- Call records can searched per contact

Complete missed call notifications
- See every time someone tried to call even when the mobile is turned off (e.g., in a plane, dropped out of coverage, etc…)

Full UI integration with contact list
- One-click dialing from contact list
- Last caller can be added to contact list
- Automatic number matching in Outlook contact list for inbound and outbound calls
- Intelligent parsing of all numbers in Outlook allows dialing of readable numbers with parenthesis, dashes, spaces etc.
- Outlook can be synched with Lotus Notes and Outlook on the PC

Private v. business call separation
- Turn off the office phone, leave on the personal phone
- Select per call whether call is placed via PBX, according to a least cost table, or directly over the mobile network

Intuitive GUI for basic call features
- Simple handling and swapping between two simultaneous calls
- No hard to remember sequences of function key presses
- Use of menus, icons, buttons, help etc. to simplify handling of advanced functions
- No risk or scare of inadvertently losing a call while executing a function