

***WHITE PAPER***

**METAmessage<sup>®</sup>**  
**Advanced Paging**

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## Why Do Traditional Paging Systems Persist?

Despite the advent of sophisticated smartphone platforms that provide email, text messaging, and voice communications on one device, traditional paging systems persist in popularity. In fact, it is not unusual to find a mobile professional carrying two wireless devices — both a pager and a smartphone.

The reasons why paging remains popular are urgency and simplicity. When a pager buzzes, right away the user knows that:

- Something important needs attention.
- An immediate response is required.
- The alert includes the information needed to respond — usually a phone number.

Yet supporting both smartphones and pagers for a mobile staff is expensive. Traditional pager networks are increasingly being replaced with more powerful networks supporting faster user throughput and voice channels, requiring costly hardware upgrades and IT time.

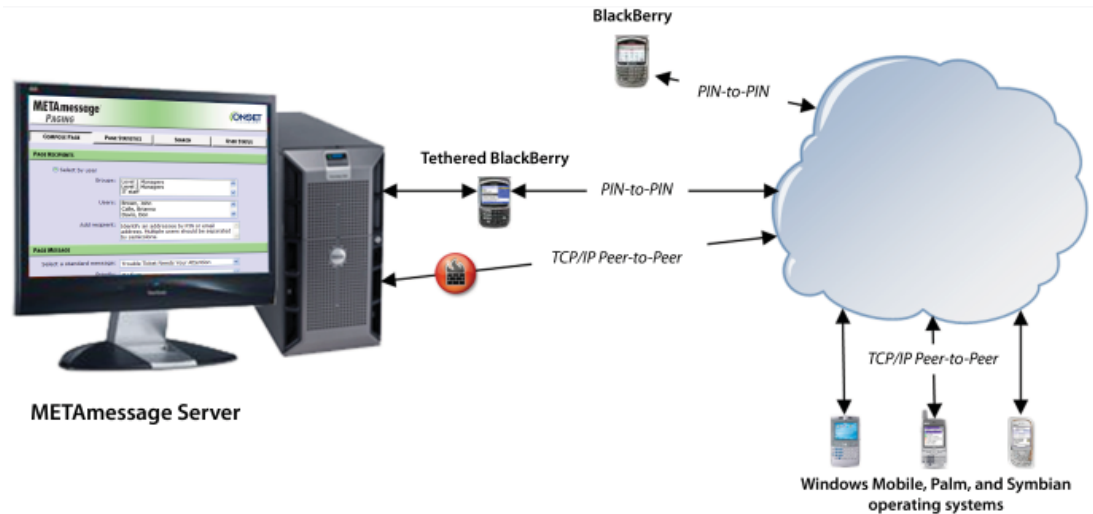
Faced with a network shutdown, will administrators simply replace old pagers with new pagers? How can they provide the urgency and simplicity of paging functionality on smartphones, which are typically used to manage hundreds of email messages?

**Users demand the urgency and simplicity of paging, yet supporting both smartphones and pagers is prohibitively expensive.**

## Why METAMessage Advanced Paging?

The METAMessage Advanced Paging solution delivers the urgency and simplicity of two-way paging to smartphones, enabling administrators to support and mobile professionals to carry just one wireless device.

METAMessage Paging server software works with an existing wireless gateway via SNPP or the METAMessage Gateway Server to send pages to BlackBerry, Windows Mobile, Palm OS, and Symbian OS smartphones equipped with METAMessage client software. The METAMessage Paging solution bypasses enterprise email infrastructure, enabling reliable communications anywhere — and at all times.



*METAMessage Paging Solution Architecture*

The METAMessage Gateway Server communicates with the Web console and with non-BlackBerry smartphones using TCP/IP-based peer-to-peer protocols. The server communicates with BlackBerry smartphones using PIN-to-PIN protocols via a tethered BlackBerry.

Smartphone-originated pages work similarly. BlackBerry smartphones communicate directly with other BlackBerry smartphones via PIN-to-PIN. If sending a page to a non-BlackBerry smartphone, the PIN message goes to the Gateway Server via its tethered BlackBerry and the server in turn sends out a message via TCP/IP-based peer-to-peer protocols.

**METAMessage brings all the benefits of paging to smartphones, letting IT staff support just one wireless deployment.**

## Advanced Paging Administration Features

Administrators can send METAMessage pages via three methods:

- The METAMessage Advanced Paging Web Console
- SMTP email sent to a specified METAMessage Advanced Paging mailbox
- Existing paging systems using the METAMessage SNPP gateway

The most commonly used method is via the Web Console described below.

### Composing and Sending Pages

This Web page lets the administrator select recipients and compose and send pages.

Administrators can manage paging with a convenient Web interface or set up METAMessage to work with an existing paging system.

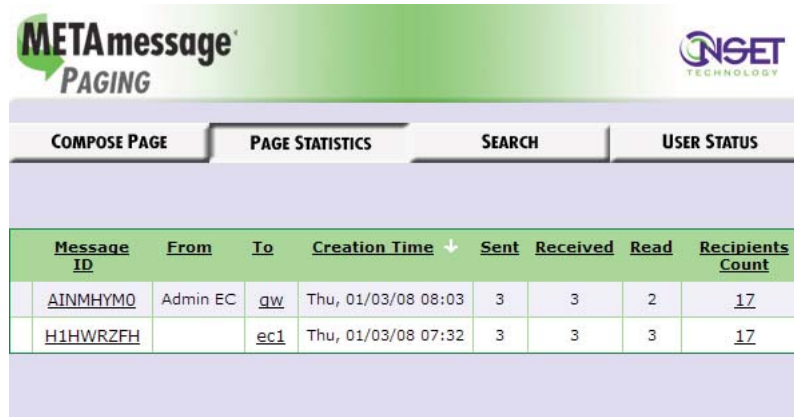


The screenshot displays the METAMessage PAGING web interface. At the top, there are navigation tabs: COMPOSE PAGE, PAGE STATISTICS, SEARCH, and USER STATUS. The main section is titled PAGE RECIPIENTS and includes a radio button for 'Select by user'. Below this, there are two dropdown menus: 'Groups' (with options: Level 1 Managers, Level 2 Managers, IT staff) and 'Users' (with options: Brown, John, Calle, Brianna, Davis, Don). An 'Add recipient' field allows for identifying an addressee by PIN or email address, with instructions to separate multiple users by semicolons. The PAGE MESSAGE section contains a 'Select a standard message' dropdown (set to 'Trouble Ticket Needs Your Attention'), a 'Priority' dropdown (set to 'Medium'), a 'Subject' text field (set to 'Trouble Ticket Needs Your Attention'), a 'Content' text area (with pre-filled text: 'The following customer ticket is assigned to you and requires your immediate attention:'), and a 'From' text field. At the bottom, there are 'Send' and 'Print Page' buttons.

Users select recipients from group lists and can identify recipients using PIN and email addresses as well. Administrators can create standard message templates that can be sent with varying priority levels.

## Monitoring Page Statistics

This Web page shows a list of individual pages already sent and their current status.



Message ID	From	To	Creation Time	Sent	Received	Read	Recipients Count
<a href="#">AINMHYMQ</a>	Admin EC	<a href="#">qw</a>	Thu, 01/03/08 08:03	3	3	2	<a href="#">17</a>
<a href="#">H1HWRZFH</a>		<a href="#">ec1</a>	Thu, 01/03/08 07:32	3	3	3	<a href="#">17</a>

The chart also shows when the page was sent and how many have been received and opened. Clicking a Page ID opens a window showing page content.

### Page Message

**Subject:** Trouble Ticket Needs Your Attention

**Content:** The following customer ticket is assigned to you and requires your immediate attention:  
015384A

Sender info:  
CSR Koontz

## Searching Page Statistics

This Web page enables an advanced search of individual pages already sent.



Message ID:

From:

Groups  Email address

To:

From:  To:

Creation date:  mm-dd-yyyy

Monitored fields include when pages were sent, received, and opened.

METAmessage provides complete control and monitoring of the paging environment.

## Monitoring User Status

This Web page shows the online status of groups and individual recipients in the METAMessage User List.



A yellow dot indicates that the individual's BlackBerry smartphone can currently communicate with the METAMessage server. A green dot indicates that the individual's WM, Palm, or Symbian OS smartphone can currently communicate with the METAMessage server. A red dot indicates that the individual's smartphone is currently turned off or is out of network coverage.

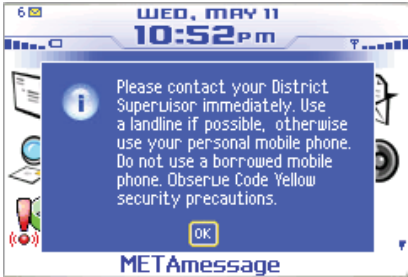
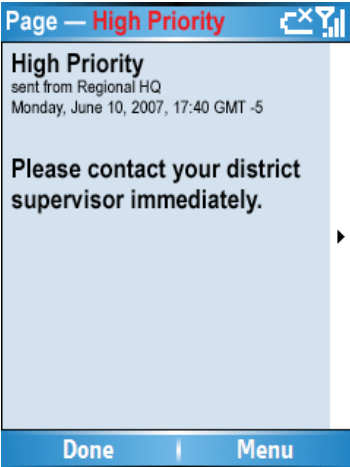
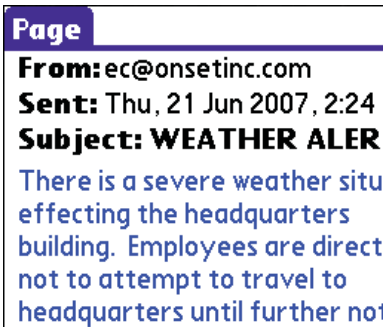
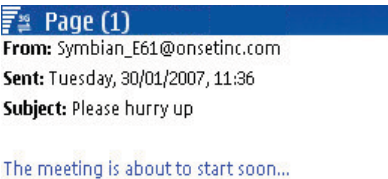
**Administrators instantly know who is available and receiving pages and who is offline.**

**METAmessage  
Advanced Paging  
supports all major  
smartphone  
operating systems,  
supporting  
everyone in your  
deployment.**

## Advanced Paging Client Features

Client software installed on user smartphones receives pages and displays them in a variety of administrator-configurable ways. For example, BlackBerry users may receive a page as a pop-up dialog along with an audio alert. The audio alert can be set to override default “Quiet” settings and can persist until the user acknowledges the page.

METAmessage supports BlackBerry, Palm, Windows Mobile, and Symbian handheld operating systems. Paging client features vary depending on the supported platform.

BlackBerry OS	Windows Mobile OS
	
Palm OS	Symbian OS
	

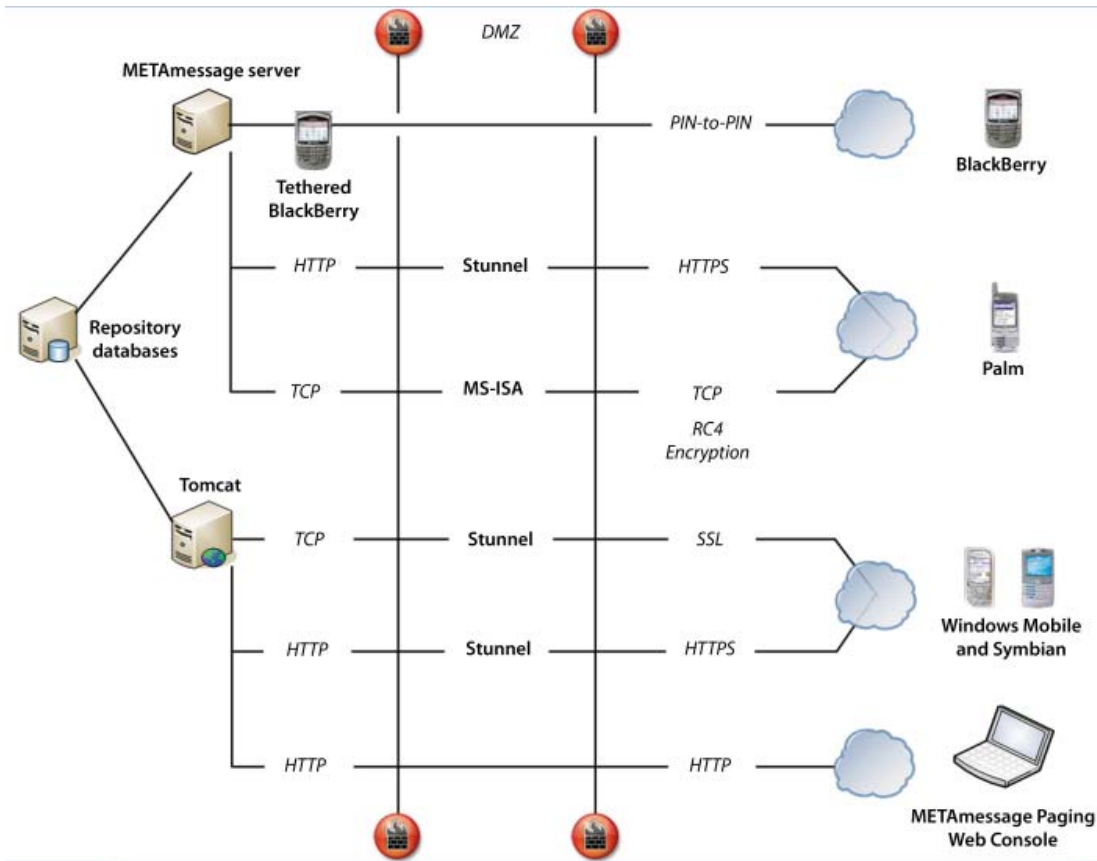
# Technical Information

This section outlines

- Network Configuration
- Software Architecture
- System Requirements
- Supported Platforms

## Network Configuration

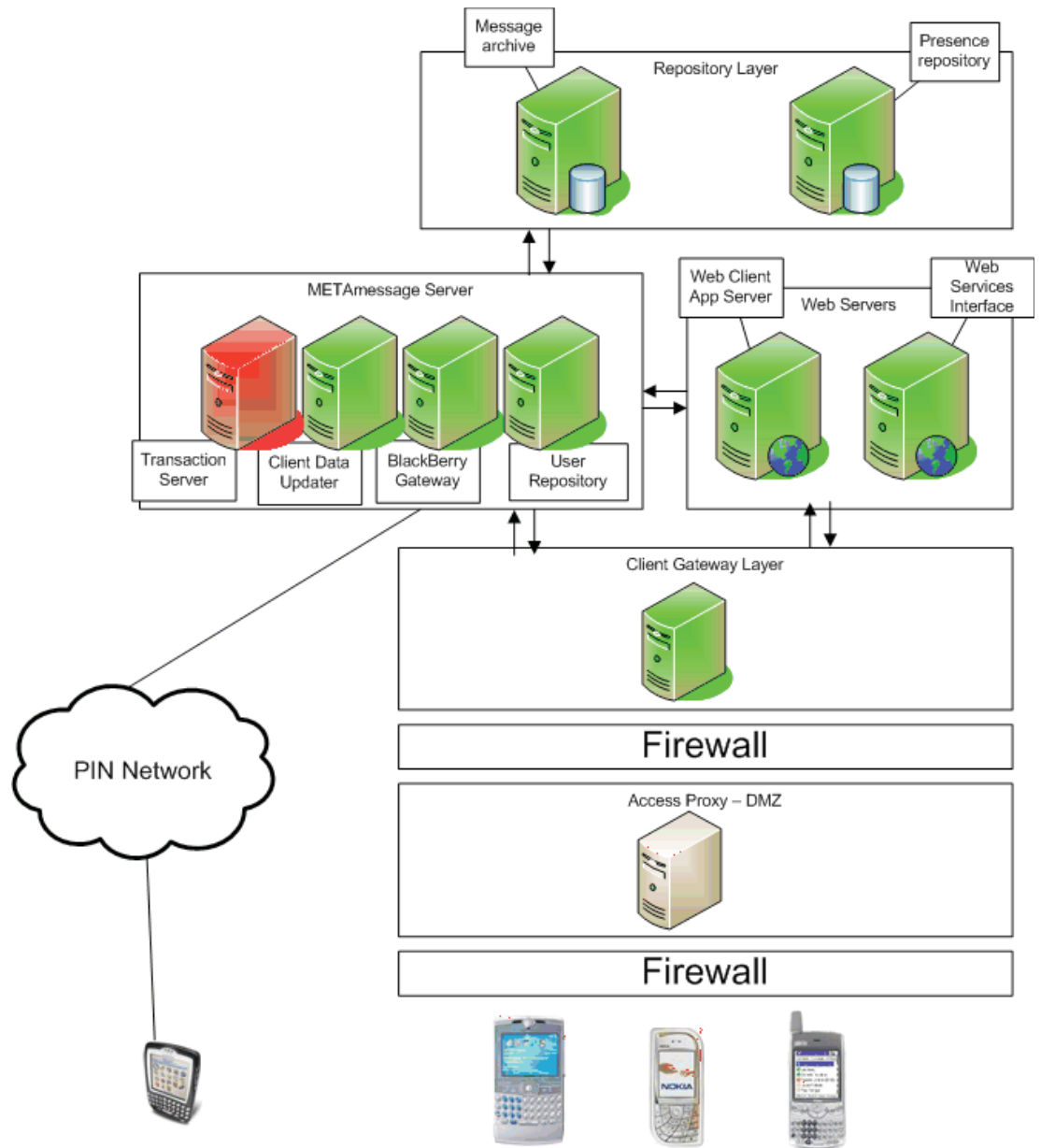
METAmessage Paging supports several network protocols as shown below.



METAmessage Paging Network Configuration

METAmessage uses a variety of network protocols to ensure secure, reliable communications under any circumstances.

## Software Architecture



*METAmessage Paging Software Architecture*

### *Repository Layer*

Repositories are implemented by a commercial RDBMS such as the Microsoft SQL Server. The repository acts as a focal point for the various system components. The Message Archive holds data regarding message content, message delivery status, and message management. The Presence Repository holds information regarding users' device management (who holds which device with what privileges, etc.) and users' availability (who's connected to the server, etc.).

### *METAmessage Server*

The transaction server is an NT service that monitors the incoming queue of messages and submits each of them for appropriate processing. The server installs with a standard Windows wizard. User lists import quickly and easily via an LDAP-

Onset Technology has been a key partner with Research In Motion since the initial introduction of the BlackBerry handheld.

**The Client Data Updater optimizes BlackBerry Enterprise Server “push” capabilities for easier deployment management.**

compatible and Notes accessing feature that can also update lists automatically. The METAMessage server integrates with Exchange and Groupwise email systems via MAPI, POP3/SMTP, and IMAP, and integrates with Lotus Notes via native Notes.

The METAMessage user interface is exceptionally intuitive and friendly and conforms to Windows interface standards. Numerous Wizards automate common tasks. A tabbed console lets administrators access and manage METAMessage quickly and easily. The LDAP-compatible accessing feature automatically updates user list information as needed, and complete system log files allow for efficient troubleshooting.

The Client Data Updater is a desktop application used to push information such as modifications to files or user’s details to BlackBerry smartphones.

The BlackBerry gateway component is a combination of a C++ application installed on the Gateway Server machine and a java application installed on one or more BlackBerry tethered smartphones that serve as modems. The BlackBerry gateway sends messages to the PIN network and receives delivery confirmations. All transactions are archived in the SQL DB Message Repository.

The User Repository is a proprietary file-based database that holds user information for authentication and licensing and is a data source for the METAMessage Client Data Updater tool.

The server’s architecture enables the distribution of several servers to handle multiple clients, for load distribution.

*Web Servers*

The Web servers provide both inter-component services (for example, User List retrieval), and may include the Web Console user interface for managing the system such as sending pages and retrieving status information. The specific container used is Tomcat v. 5.5. a J2EE servlet container provides Web services.

The Web Client App Server servers also manages client sessions. It is a pure Java application which makes use of several open-source packages such as MINA, XML-RPC, and Log4j. It acts both as a TCP/IP server, listening for client connections, and as an HTTP server, listening for XML-RPC transactions from the METAMessage server.

The server interacts with a DBMS to retrieve messages and update their status (sent/delivered/read). The server uses a proprietary protocol when communicating with a client (usually a smartphone). This protocol’s messages contain a binary header and a textual, XML formatted, body.

*Access Proxy*

Several 3rd party components such as Microsoft Internet Security and Acceleration and Stunnel bridge external clients’ connections to the corporate MZ. Stunnel also encrypts and decrypts SSL connections so that backend servers handle only plain-text messages.

## System Requirements

### *Operating System Software*

You may install the METAMessage server software using any of the following operating systems:

- Windows 2000 Server or Professional
- Windows 2003 Server

### *Supporting Software*

METAMessage Paging requires the following supporting software:

- Java Runtime Environment 1.6 or later
- Apache Tomcat 5.5 or later
- Microsoft SQL or SQL Express
- Stunnel 4.0 or later (if you are supporting non-BlackBerry devices)

### *Hardware*

- Network connection
- 1GHz CPU or faster
- 512MB RAM
- 2GB free hard disk space for server, third-party, and temporary files
- SuperVGA display (800x600)

## Supported Operating Systems

Currently supported smartphone platforms include:

- BlackBerry handheld operating system 4.1 or later
- Windows Mobile 5 or later
- Palm OS 3.5 or later
- Symbian OS Series 60 v.9.x

## About Onset Technology

Founded in 1997, Onset Technology is the creator of METAMessage®, a suite of unique software solutions that enhance the functionality of smartphone deployments. METAMessage offers solutions for financial institutions, government agencies, healthcare, law firms and a broad range of other enterprises. Since its introduction, METAMessage has been widely adopted by Fortune 1000 companies and government agencies, sold to over 1,400 customers with more than 150,000 users. Onset has developed extensive experience and methodologies for working with large multinational enterprises, system integrators and tier-1 carriers worldwide.

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