MOBILE E-MAIL USERS:

# FREED up [OR] TIED down?

Wireless e-mail can boost productivity if you select users wisely. Meantime, today's mature offerings are a good fit for most enterprises

BY PETER RYSAVY

People want their wireless e-mail. The challenge for IT is determining which users really need it, how best to manage and secure it, and what delivery architecture and devices to use. Wireless e-mail can increase productivity if used properly by the right subset of employees. That's a big if, and our reader poll confirms that you're deploying selectively: While 70 percent of respondents indicated that their organizations provide wireless e-mail, the majority cited isolated, tactical use by individuals or departments; only 13 percent reported widespread adoption.

Readers also expressed concerns about whether wireless e-mail technology is ready for prime time. The problem is less about immature technology and more about confusion. As we explain in our review of wireless e-mail gateways (page 37), there are some excellent

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products that can get a wireless e-mail service running with minimal effort. Vendors have solved problems that plagued the industry in the past, such as having to poll for new e-mail and manage multiple inboxes. In addition, comprehensive security and management features let IT support large deployments with thousands of users.

But there's also a high level of uncertainty. Wireless e-mail technology is evolving rapidly, and the myriad service delivery models are difficult to sort out. Although Research In Motion now owns three-quarters of a market serving roughly 4 million devices, other vendors are coming on strong.

## Executive Summary

# MOBILE MESSAGING GATEWAYS

In 1999, we were among the first to recommend the BlackBerry for mobile professionals, but we didn't foresee the phenomenon that was to come.

Fast forward to 2005. The North American mobile data service market will grow from 70.5 million connections last year to 177.1 million subscribers in 2008, according to Gartner. Your end users want their mobile e-mail, but should your company oblige? Although some employees will benefit, others could fall prey to the "Crackberry" syndrome—a disorder characterized by a diminished ability to concentrate and a tendency to use PDAs in inappropriate settings.

In "Freed Up or Tied Down?" we offer tips to determine who should get wireless e-mail. Bottom line, consider the urgency of the information. Could a few hours' delay cost your company money? For those ready to deploy, we run down the technology's providers, architectures and functionality, and likely evolution to help you decide which devices to support.

In "BlackBerrys and Treos and iPaqs, Oh My!" we tested mobile messaging gateways from Extended Systems, Good Technology, Intellisync Corp., JP Mobile, Research In Motion and Seven Networks in our Real-World Labs® at Syracuse University. After analyzing deployment and management capabilities, security, and efficiency in pushing data out to mobile devices, we named Good Technology's Exchange-only GoodLink 4.0 our Editor's Choice. GoodLink's high points include role-based administration, backup, wireless installation and end-user interface.

Caveat emptor: If you expect Symbian client groupware functions on par with Palm and Windows Mobile versions, you'll be sorely disappointed. If a vendor claims support for a given platform, full functionality should be provided—at least we think so. If your device list includes Symbian, check out second-place finisher Intellisync's Wireless Email 6.2, which came closest to providing equitable benefits.

## How Much Do They Need It?

**Wireless e-mail encompasses a wide range** of usage models, but in all cases, its value depends on the urgency of the conveyed information. For some workers, it doesn't matter whether they answer an e-mail message immediately, in several hours or even the next day. For others, timeliness can make or break a crucial deal.

In our poll, reader response was neutral as to whether wireless e-mail makes sense for a significant percentage of company employees, affirming our view that only a subset of workers truly needs the capability. Nevertheless, accommodating that subset can translate to considerable productivity gains.

If used unwisely, however, wireless e-mail may instill interrupt-driven work patterns that make it hard to get tasks done. It's as if the workers' phones are constantly ringing, but even worse, because many e-mail messages are just CCs of messages sent to somebody else. Spam only exacerbates the distraction.

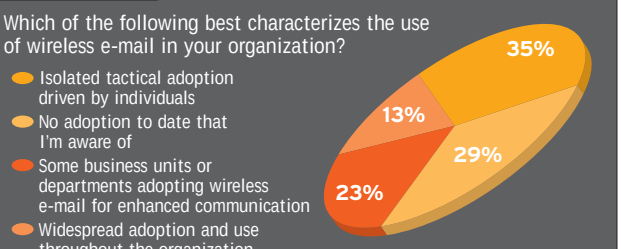
Once you've decided that the benefits of wireless e-mail outweigh the negatives, on which device will you deliver it? Those who send as much e-mail as they receive require highly interactive setups and may be best off using notebook computers with wireless data capabilities. In fact, this was the most deployed configuration in our e-poll, ahead of RIM BlackBerrys. With a notebook, connectivity options include both Wi-Fi and cellular. For cellular data, the cost of unlimited usage plans for laptops is much higher than for smartphones.

The form of wireless e-mail we most often associate with the genre, however, is a wireless PDA or smartphone, such as a RIM BlackBerry, PalmOne Treo or Microsoft Pocket PC, where you receive e-mail in close to real time. Good nationwide cellular-data coverage is available from many operators, and smartphones are an excellent fit for the speeds and capacities of these networks. The most common usage model is one in which 80 percent to 90 percent of e-mail is received and 10 percent to 20 percent is sent—no surprise given smartphones' input options. The little keyboards found on many newer wireless PDAs help greatly, but typing is still difficult.

The key feature of this model is the "push" of messages to the mobile client, which usually involves a gateway to do the pushing, most likely a client-initiated pull process. A variant of the PDA model is to have your users access mail servers directly from the device without employing the gateway. This setup is simpler, but you lose the push capability. However, though polling an e-

**READER POLL**

Which of the following best characterizes the use of wireless e-mail in your organization?




Source: NETWORK COMPUTING Reader Poll, 513 respondents

mail server every five or 10 minutes may provide an almost-real-time mail experience, it's highly inefficient from a network standpoint: It decreases battery life, and you must configure your firewalls for inbound mobile communications.

The final usage model involves monitoring e-mail using a mobile phone while sending only a tiny amount—painfully, using the 10-key pad. You can use a microbrowser, which also requires a gateway, or a mail client on the phone itself. Many phones now include mail clients, though capabilities are limited and tend to emphasize POP3 and IMAP. Java capability is becoming more common on handsets, and we expect mail clients written in Java to become more sophisticated and to support a higher number of e-mail protocols. Another wireless option—and not one we recommend—is to receive e-mail notifications through text messages using SMS (Short Message Service). Message-size limitations mean all you'll see is the subject line and who sent the e-mail.

## Providers, Approaches and Features

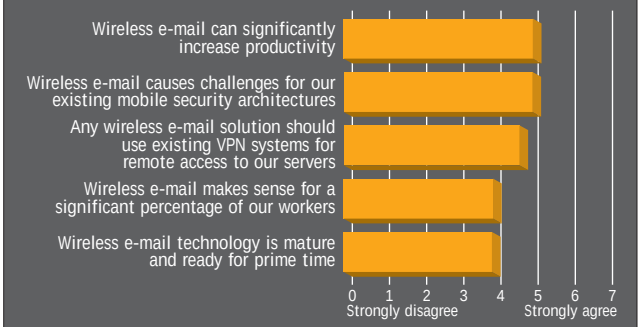
**Why does RIM have 75 percent of the market** for smartphone wireless e-mail services? Being first certainly helps. But RIM has also optimized every aspect of the wireless e-mail experience. It offers integration with all the major e-mail platforms, plus push capabilities, end-to-end security and protections against device loss. Management features include over-the-air provisioning and a platform for extending other corporate data to the mobile device.

As new wireless PDA platforms become available, challengers are jockeying for position. These include Critical Path, Extended Systems, Good Technology, Infowave, Intellisync, JP Mobile, Notify Technology, Seven Networks and Visto. Many now have capabilities that rival RIM's. In our e-poll, the RIM BlackBerry ranked highest in desirability, followed by a tie between the PalmOne Treo and the Microsoft Pocket PC, then Microsoft Smartphone and, finally, Symbian and Java offerings. Most users would prefer to carry one device for voice, e-mail and other data functions.

What's challenging in evaluating the actual platforms is taking into account the significant differences in features and the architectures they employ. Today, the optimal wireless e-mail system uses a wireless e-mail gateway, which is generally supplied by companies other than those providing the native system—Microsoft with Exchange and IBM with Lotus Domino. Does this mean

**READER POLL**

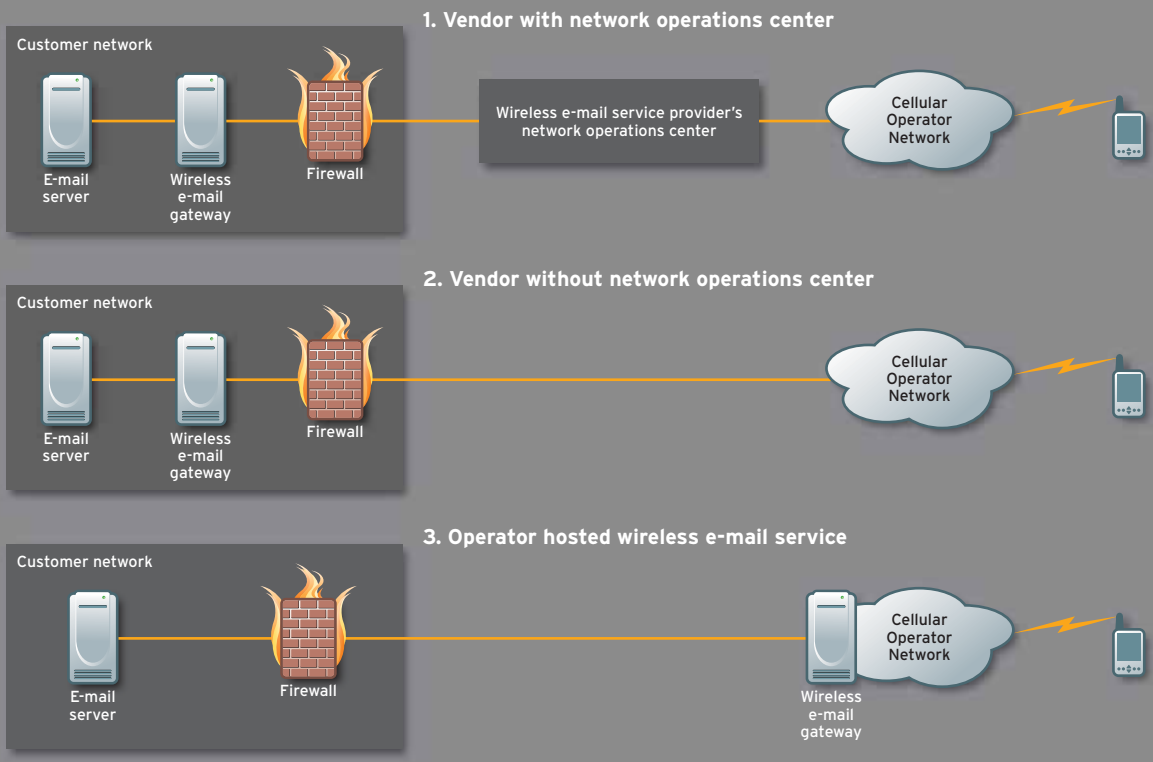
How strongly do you agree with the following?




Average response shown

Source: NETWORK COMPUTING Reader Poll, 513 respondents

**Push E-Mail Wireless Architectures**



that Microsoft and IBM don't have any skin in this game? Not at all. With Exchange Server, you can run ActiveSync, an Exchange protocol, across a wireless connection to synchronize e-mail and other information, such as contacts and appointments. You can even employ a push mechanism based on SMS. Microsoft provides client support for Windows Mobile, and you can also use ActiveSync on the Treo 650 using the VersaMail client included with the device. To do wireless ActiveSync, you must be on Exchange Server 2003. Meanwhile, IBM supplies IBM WebSphere Everyplace Access for Lotus Domino, which lets you wirelessly sync between a variety of handheld devices and Lotus Domino servers.

Using native software has advantages, but you won't find the range of capabilities offered by the products we tested. For instance, Exchange lacks the manageability large organizations need because it doesn't provide the ability to set up a device over the air, what some call an IT zero-touch deployment. And IBM lacks a push capability. Of course, many enterprises will find native offerings perfectly adequate, especially for small deployments, and the price is right. And as mobile networking becomes more common, we expect these vendors to keep improving their offerings. In particular, Microsoft is hoping to close the gap later this year with Exchange Server 2003 Service Pack 2 (see "Exchange OTA Capabilities," page 45). Although not as full-featured as the products we tested, Microsoft's latest could well be sufficient for many companies running Exchange Server 2003.

## Eat In ...

**When using a wireless e-mail gateway,** there are two main configurations. One is where IT operates the gateway behind the firewall. The other is a utility model, where a service provider, generally the cellular one, operates a gateway serving many different customers. In both cases, the gateway vendor provides client software.

The behind-the-firewall gateway offers the greatest functionality. Yes, it's one more system IT has to worry about. But for large deployments, it will quickly pay for itself in ease of management. Just more than half our poll respondents preferred this approach.

Typical features for both behind-the-firewall and operator-provided gateways include:

» **Easy-to-use clients.** Your users will spend a lot of time with them, so vendors are emphasizing intuitive, full-featured clients.

» **Push.** The gateway pushes new e-mail as well as new appointments, and even other corporate data. The systems also synchronize contact databases.

» **Single-mailbox integration.** If a user deletes an e-mail message or makes an appointment, the change propagates back to your e-mail server.

» **Client platform support.** Possibilities include the RIM BlackBerry, Palm OS smartphones, Windows Mobile Pocket PCs and smartphones, Symbian OS smartphones, Java- and BREW-capable devices, and devices with WAP (Wireless Application Protocol) microbrowsers.

» **Support for multiple types of e-mail.** The most flexi-

# BEYOND E-MAIL: WIRELESS MESSAGING GETS FLEXIBLE

Although we're concentrating on wireless e-mail, other types of wireless messaging have grown popular. The most widely used form of messaging is, in fact, SMS (Short Message Service). While the main U.S. users are teens and twentysomethings who manage their social calendars by exchanging text messages on cell phones, the same could be said about instant messaging not long ago, and look how far IM has crept into the mainstream enterprise. Text messaging has so far generated more revenue for cellular operators on a global basis than general-purpose packet data. Most operators have an e-mail gateway to their messaging services, letting you also send messages over the Internet. We recommend you keep an eye on SMS and consider how it could give you a competitive edge.

In the past couple of years, operators have begun to offer MMS (Multimedia Messaging Service), which lets users send and receive pictures and video clips. Again, usage has been mainly on the consumer side, and operators have not emphasized business applications, but it doesn't take a brain surgeon to see where the ability to instantly send images could confer a business advantage.

Finally, there's wireless IM, where wireless devices are used to access both corporate IM systems and popular services such as AOL Instant Messaging, MSN and Yahoo Messaging. Similar to the desktop IM experience, you can get presence information about which coworkers are available. And in many cases, the IM system will show your presence as a mobile user, which is useful for letting people know you're not likely to be chatty.

Users currently access most wireless IM services using a microbrowser that interacts with an IM gateway in the cellular operator's network. Although the browser approach works, it's awkward and slow. Fortunately, device vendors are increasingly including IM clients on their devices. Clients can be service-specific (AIM only) or general purpose if based on the Open Mobile Alliance's "Wireless Village" standard. Even if your company's device doesn't have an IM client, it's likely to support Java, so you should be able to download an appropriate client. In the business world, wireless IM deployments are mostly ad hoc; few IT departments have a comprehensive support program. But as companies make greater internal use of IM, the stage is set to extend these services to mobile devices.

ble gateways can access e-mail from a variety of systems, including Microsoft Exchange, Lotus Domino, Novell GroupWise and Internet POP3/IMAP servers.

**» End-to-end security.** The gateway communicates with the mobile client over secure encrypted tunnels. Many store data on the device in encrypted form.

**» PIM synchronization.** Most gateways let users synchronize personal information management data, such as contacts and appointments.

These features are generally available only with behind-the-firewall gateways:

**» Over-the-air provisioning/updating.** Some gateways let IT load client software and send software updates using wireless connections. This is particularly useful for deploying large numbers of units to mobile workers.

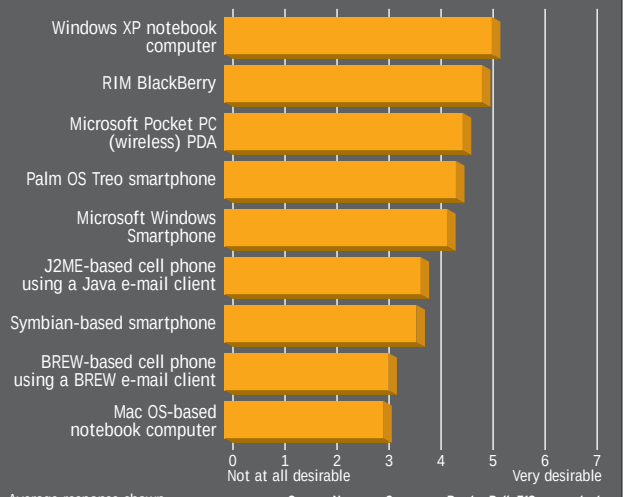
**» Over-the-air security management.** Some gateways let IT wipe data stored on the device, reset passwords and prevent further wireless usage.

**» Access to other corporate information.** Vendors are enhancing their systems to deliver a variety of information. Access to back-end databases is enabling field service, sales force automation and customer relationship management. This is still a relatively immature area, but one where vendors anticipate significant growth.

Not all vendors support all these features, and some may have features not listed above. For large deployments, RIM and Good Technology are the leaders in the behind-the-firewall field.

**READER POLL**

How desirable are the following mobile computing environments as a platform for wireless e-mail services?




Average response shown

Source: NETWORK COMPUTING Reader Poll, 513 respondents

## ... Or Take Out

**Although there are companies that host** BlackBerry Enterprise Server and Exchange seats, the main alterna-

tive to the behind-the-firewall model is a wireless e-mail service hosted by a cellular operator.

Most cellular operators offer wireless e-mail in partnership with a third-party provider. The leaders are Seven Networks (which recently acquired Smartner) and Visto. In this case, the operator hosts the e-mail gateway, and you configure it to access the e-mail servers residing on your network. This approach will yield most of the functions listed above, with the notable exceptions of over-the-air provisioning/updating, over-the-air security management and access to other corporate information. Also, you won't have a huge amount of choice, as most operators work with only a few wireless e-mail service partners.

On the plus side, for small deployments, outsourcing gets you up and running quickly and may be all you need. But any company serious about control, management and security will be better served with a wireless e-mail gateway installed behind the firewall.

## Messages at the Gate

**So how do these wireless e-mail** systems work? Essentially, the gateway functions as a proxy for the mobile client, interacting with the e-mail (and other) servers on its behalf. Once the mobile gateway has new information, it forwards the data in a path that varies by vendor. Some companies, including Good Technology, RIM, Smartner and Visto, operate NOCs (network operations centers). For these vendors, the gateway first sends the information to the NOC. The NOC relays the information to the operator, and the info arrives at the mobile device over a cellular-data connection. With other vendors, the gateway communicates directly with the operator network. For example, with Seven, the gateway at the enterprise site communicates with a Seven server in the operator's network, which then communicates with the mobile client. In other cases, such as with Extended Systems and Intellisync, the gateway at the enterprise communicates directly with the mobile device.

A key security feature: Communications between the gateway on your site and the NOC or operator are on an outbound basis to a predefined site. You won't have to configure your firewall for inbound communications from a lot of individual devices, as you would if they were all running VPNs back to your central site.

The model where the operator provides the gateway is simpler, but it may require that the gateway in the operator network be granted inbound access to your e-mail servers. See "Push E-Mail Wireless Architectures," page 29, for diagrams of the different configurations.

Of the vendors whose products we tested, Good Technology and RIM support the first model; Extended Systems, Intellisync and JP Mobile support the second model; and Seven supports the second and third models.

The matter of the final push to the device may seem

trivial, as the device has an IP address and you can theoretically just send IP datagrams to it. However, there are complications. For example, most operators time out their data sessions to conserve network resources. If a device has not communicated for an operator-specified number of minutes or hours, the network terminates the data session and the device loses its IP address. If the device initiates another data session, it's likely to get a different IP address. Given that devices can spend more time off or asleep than active, sending unsolicited data to the device is not trivial.

Vendors take two approaches to get around this problem. One is to use SMS to notify the device that new e-mail is available. Operating over the cellular network control channels, SMS pushes small amounts of information) to a mobile device, which then initiates an IP data session if it doesn't already have one and downloads the e-mail. This approach is becoming less popular, mainly because the SMS channel capacity is limited, and operators would prefer to keep it open for revenue-generating applications such as text messaging.

The alternative approach, which RIM and Good Technology already use and other vendors are likely to adopt soon, is for the mobile client to take an active role in monitoring its IP session state. The client makes sure it always has an IP session active, bringing it back up if it expires. Remember that these are packet-data networks, so having a data session active in itself does not consume radio resources. The client then communicates with the wireless e-mail gateway every time its address changes, identifying itself so the gateway knows which IP address to use for the mobile device. This tight coupling between client and gateway increases network chatter, but the result is an effective push mechanism.

## Beyond E-Mail

**With a secure, managed and real-time tunnel** in place between the mobile device and the gateway, vendors are now looking at how to extend the range of supported applications. It makes sense to leverage the platform to deliver all types of urgent information to your users. Numerous third-party vendors, including SAP and Salesforce.com, are developing the appropriate hooks. RIM lists 300 ISVs for its platform, and PalmSource and Microsoft are no slouches here either. Some offerings have well-defined APIs you can use yourself with customized development. But there are no standards or consistency among the vendors on how to access non-message corporate data. You can provide this access, but don't expect an out-of-the-box implementation.

Our advice: Concentrate on your immediate needs. The market is evolving quickly, as are devices. When you're ready to upgrade your users' PDAs or smartphones, new options will be open to you.

## Adoption and Evolution

**Today's offerings are flexible** and powerful enough to address almost any wireless e-mail need. Many deployments are, in fact, driven by the conclusion that wireless e-mail is essential for some workers, such as senior managers, with no ROI calculation necessary. But for those who must establish ROI, the cash outlay is relatively straightforward: $200 to $600 for a device, data plans that begin at $20 per month and client-server licensing fees (see the pricing chart on page 47 for a cost analysis of reviewed gateways). Support and administration costs are less tangible. Once you determine a value, factor in the cost of employees' time to determine how many minutes a day must be saved to justify wireless e-mail.

Keep in mind that your wireless e-mail architecture is likely to operate in parallel with any general-purpose remote-access system you have that uses VPNs. If you can migrate some mobile workers to wireless PDAs or smartphones, you'll see some savings. If you're running VPNs to your PDAs or smartphones, these must operate independently of any wireless e-mail system with gateways.

A couple of factors will influence the evolution of these systems. Native offerings, like Microsoft Exchange, will continue to gain functionality, though enabling advanced features like wireless e-mail will likely require the most up-to-date versions of their servers. Also, vendors are licensing their systems, facilitating cross-platform support. For example, Microsoft is licensing ActiveSync, making it available to platforms such as Palm OS and Symbian. Similarly, RIM is licensing BlackBerry protocols. The result is that, in the near future, your choice of gateway won't dictate which mobile devices you use. While this may further complicate your decision, all in all, the more choices the better.

OUR COVER PACKAGE ON MOBILE MESSAGING GATEWAYS
CONTINUES ON P.37

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## BY THE NUMBERS

Business users grow more dependent on e-mail every year:

**1 to 3**
Hours spent per day checking, reading, responding to and managing e-mail

**100**
Average business e-mail messages per user per day

**15%**
Compound annual growth in number of business e-mail messages sent and received

**592,000**
Number of new BlackBerry subscribers RIM acquired in Q2 2005

Sources: Gartner, NETWORK COMPUTING