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Real 3G wireless service is finally here. Next step: Enterprise apps in the palm of your hand. **p30**



# 3G Arrives: Taking IT to the Streets

Broadband cellular service means the office can travel wherever the road warrior may roam

**C**ALL IT THE END OF DOWNTIME — ALL THOSE OFFLINE hours wasted in useless conference sessions or at the airport — and the start of rich applications accessible virtually anywhere. Whether your preferred device is a handheld or a notebook, in a year or so 3G networks will effectively reinvent how your mobile enterprise conducts business.

Say, for example, you're at a client site and suddenly discover that you need more details on a consulting project. No problem. You'll turn on your device and connect to the corporate

servers that run your enterprise apps. You'll be able to check e-mail and to participate in workgroup projects as if you were at your office. Colleagues may not even know you're off-site because you'll be doing your normal work in the normal way.

That has been the big promise of 3G cellular networks — one that has gone unrealized for half a decade, as cellular carriers postponed deployments and instead rolled out low-speed (30Kbps to 70Kbps) 2.5G networks, which even

dial-up modem connections can outrun. "You can't run rich applications" on 2.5G networks, concedes Kenny Wyatt, assistant vice president of integrated solutions at Sprint PCS.

But this year, carriers are finally starting to make good on their word. The first parts of real 3G networks are already here, offering throughputs between 200Kbps and 400Kbps — equivalent to the early DSL networks that revolutionized the home office. Verizon Wireless has deployed the

BY GALEN GRUMAN | ILLUSTRATION BY DENNIS IRWIN

CDMA2000 1xEvDO (evolution, data optimized) technology in no fewer than 15 urban areas and plans to make the service available nationwide by 2007. Sprint PCS

promises to start offering its own EvDO service this fall in a handful of cities before expanding nationally. Cingular Wireless now offers in six cities the UMTS (Universal Mobile

Telecommunications System) service it inherited from AT&T Wireless and plans to roll out a faster HSDPA (High-Speed Downlink Packet Access) service later this year. T-Mobile plans to start deploying HSDPA in 2006.

After carriers have completed their rollouts, 3G should be available broadly enough — and with enough user capacity — for enterprises to rely on it. Between now and then, however, businesses will have to decide whether the available coverage and capacity will be sufficient for their needs. Given the wireless industry's history of overstated claims for earlier-generation data services and its tendency to focus on consumer applications such as downloadable ring tones and camera phones, the question remains whether the carriers will truly follow through on their 3G promises, says Phil Smith, vice president of global solution marketing at IT consultancy Unisys.

EvDO is the 3G technology for CDMA-based networks, such as those used by Verizon and Sprint. UMTS and HSDPA are the 3G technology for GSM-based networks, used by Cingular and T-Mobile. All-you-can-eat service costs approximately \$80 per month and typically includes access to

2.5G networks — CDMA2000 1xRTT (Radio Transmission Technology) for CDMA users and GPRS and EDGE (Enhanced Data GSM Environment) for GSM users

— to ensure connectivity when users move outside 3G coverage areas.

Although 3G has the potential to revolutionize notebook users' productivity on the road, its benefit for handheld users is less clear, at least in the near term.

### Notebook Users: Take Your Office With You

Sandy Potter — vice president of business development at Canvas Systems, a provider of refurbished computer equipment — has experience using 2.5G networks and has found them significantly lacking. They were so slow, she recalls, that she brought her computer into the IT staff because she thought it was failing. Her timing was good: IT was testing an EvDO service and gave her a card. The difference in performance was dramatic.

"It's as though I'm sitting at my desk. It allows me to be out of the office for five or six days and not be backlogged when I come back," Potter says. "It's all about how you can do more deals in the same time — and not have a backlog that takes a weekend to go through or interrupts the group's workflow." Another advantage is that, when visiting clients, Potter and her staff don't have to use the client's network to get broadband access.

"3G provides the potential for enterprise services to run over the wide area network," says Mark Morell, director of

strategic marketing for carrier networks at Nortel Networks, which provides the carriers equipment for their 3G systems. "We expect to see mobile users have the same services and capabilities as in their offices."

When fully deployed, "3G will reduce the expectation gap and the delivery gap between wireless and wired connections," says Antoine Blondeau, vice president of wireless at Salesforce.com. "The user experience will compare to the Web experience." And Blondeau speaks from personal experience: "I've had an EvDO card for a while, and it works nicely. I'm using my laptop more often, and I'm doing more complex tasks [over the air] with it."

Oracle, for example, expects the arrival of 3G to change how its customers use Oracle software on the road, says Jacob Christfort, vice president of server technology at the database provider. "In the 2.5G world, we did not see much use of our eBusiness Suite [by mobile users]. 3G will make these Oracle applications available to them," he says. It also should ease the workload for the IT group: With 3G connections, "IT just manages a Web-based application and no longer needs to worry about synchronizing databases since there's no longer a need for a parallel system for mobile users," he says.

For IT, providing 3G access to notebook users is simple: Subscribe to the service and hand out 3G modem cards to users. Novatel Wireless currently offers EvDO and UMTS modem cards and plans to support HSDPA this fall. Sierra Wireless also provides EvDO cards and plans to release UMTS/HSDPA cards in the future. Current 3G modems aren't backward-compatible with 2.5G networks such as 1xRTT and GPRS, so users would need both modems if they frequently travel in





non-3G areas. When they lose 3G service, they'll need to swap their 3G modem card with a 2.5G modem card and then connect to the 2.5G network. When they re-enter 3G terrain, they'll need to revert to the 3G card. Fortunately, new models planned for the fall will support both 3G and 2.5G networks, thereby eliminating the need to carry two modem cards.

Users access the corporate services through the same remote-access protocols that any other remote employees would use. "You log in to the network just as if you were using a DSL or cable modem," Nortel's Morell says. That

could mean the use of VPNs, Web-based access, or terminal emulation such as Citrix Systems servers — the enterprise uses the same remote-access mechanism provided to users from a home broadband connection, an Internet terminal, or a Wi-Fi hot spot.

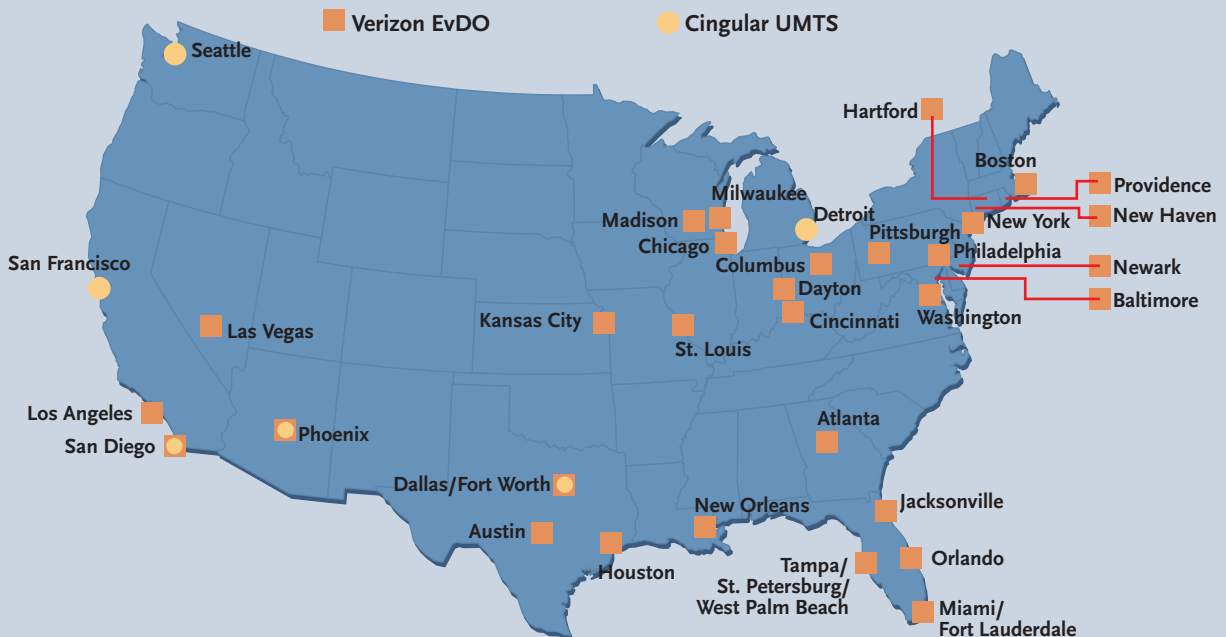
In an effort to secure their 3G networks, carriers have tapped technology built into the CDMA and GSM protocols to encrypt over-the-air data and hinder access by snoopers. Customers, however, remain responsible for securing connections from carrier networks through the public Internet and into their enterprise systems and must

secure user devices themselves. That means 3G users will have the same security methods — encryption, VPNs, hardware IDs, password challenges, and so forth — as any other remote user supported by their enterprise.

This standard remote-access security could be less than enterprises are used to with messaging services such as those from Research In Motion (RIM) and Good Technology. That's because the messaging services typically provide a high level of encryption and initiate the connection to the device, so the enterprise retains full control over the communications. As is any other

## Broadband Rolls Out Across the United States

Here's the the lay of the land for Verizon EvDO and Cingular UMTS deployments as they stood at press time. Note that both carriers offer service in Dallas, Phoenix, and San Diego, giving users there a choice. The other two major carriers won't deploy for awhile: Sprint starting in late 2005 and T-Mobile in 2006.



## 3G customers remain responsible for securing connections from carrier networks through the public Internet and into their enterprise systems.

remote device, a 3G-connected device is capable of initiating connections itself. And the encryption level implemented by IT may be less than what RIM or Good Technology offer.

The increased reliance on mobile devices encouraged by 3G networks means that IT should consider developing a mobile security policy that includes protecting the device's contents as well as its access to enterprise servers, says Marvin Chartoff, CTO of global infrastructure services at Unisys. Enterprises will also demand the ability to "kill" a lost or stolen device so that its data can no longer be accessed, he adds.

Although disabling a device remotely is possible over 2.5G networks, a faster, more reliable 3G connection "means the minute that I know the device is lost, I can zap it," says Ojas Rege, senior director of mobile solutions at Sybase mobile subsidiary iAnywhere. The faster speeds of 3G increases the

chances of the "kill" command being received by the device before the thief prevents that action.

Wi-Fi networks, by contrast, often use inferior security mechanisms, and in many cases not even the basic security has been turned on. Wi-Fi networks can be deployed by almost anyone, so the level of security know-how often varies widely ([infoworld.com/2577](http://infoworld.com/2577)).

### Incremental Gains for Handheld Users

The arrival of 3G will have a less dramatic effect on handheld users because these devices and their applications were designed mainly for offline uses, with occasional synchronization via a cradle or slow cellular connection necessary when the user moves from one location to another.

Good Technology, which provides a messaging service used largely by executives on handheld devices, expects 3G to

help bring richer applications to handheld devices. "EvDO and HSDPA will help make GoodAccess take off," says John Friend, CTO of Good Technology.

GoodAccess allows IT to build and deploy applications that connect to back-office products such as SFA and ERP, but the slow 2.5G networks have kept adoption low, Friend notes. (Executives at RIM, makers of the BlackBerry messaging device and service, declined to comment on how the company might take advantage of 3G connections, although in Europe it has used the technology to provide application access similar to GoodAccess.)

Salesforce.com's Blondeau expects both IT and third-party software developers to start taking high-speed access into consideration as they create mobile applications. That would mean less reliance on storing local data, for example. "The need for a fully asynchronous architecture is reduced," he says.

## Wireless Operators Hate Business

WIRELESS OPERATORS LOVE CONSUMERS. CONSUMERS ARE bottomless wells of continuing revenue, boosting the operator's ARPU (average revenue per user) from text-messaging fees, ring-tone and game downloads, and now music and video. Businesses, on the other hand, are a pain.

Except for giant enterprises, a business delivers lousy ARPU. Businesses want detailed paper billing grouped by division or department. They're slow to pay because that's just the way business is done. They want premium services, such as e-mail, which are tough for operators to maintain. They expect add/change orders to be processed immediately. They want choice in devices, the freedom to switch operators, responsive human support, and the ability to deal face-to-face instead of through consumer channels. They make more use of long distance and roaming, services that operators must bundle in order to keep competitive.

Huge enterprise sales make the extra cost and effort worthwhile, but if a business isn't buying hundreds of phones,

device manufacturers defer to operators instead of dealing direct, and operators won't budge from their published rates.

Operators are developing ways to maximize ARPU on non-enterprise business accounts. They're reworking service plans to make all voice minutes, not just daytime minutes, more expensive in plans that focus on daytime access. As opposed to consumer plans, which are loaded with giveaway minutes, business plans are prepaid metered services with the first batch of minutes sold at a moderate discount.

Operators are also boosting business account ARPU by restricting access to data services. Some operators used to compete on data service, even offering unlimited service for a fixed fee, but as are business-grade voice plans, data plans that offer more than a consumer phone's limited browser are either expensive or metered.

Because the revenue brought in by business wireless customers is miniscule compared with consumer revenue, operators have no incentive to compete for business customers



Blondeau also expects Web services to increasingly support access from handhelds, by using technologies such as DHTML and XML to present an appropriate interface for the handheld's smaller screen and limited input capability — reducing the need for separate mobile applications.

Given that 3G networks will also allow over-the-air management of mobile device, enterprises will be able to upload application and anti-virus updates — files too large to transmit across 2.5G networks. Both Good Technology and RIM already offer management services for their devices. Both devices are part of an overall service that includes a messaging server at the enterprise, so it makes sense for the enterprise to manage that service directly.

For carrier-supplied 3G services, Salesforce.com's Blondeau says it's natural for the carriers to provide such ser-

vices, rather than having IT deploy it, because carriers will be rolling out multiple applications over multiple devices and thus must figure out the connectivity and management capabilities anyway. Anticipating this demand, Sprint PCS will offer its Managed Mobility Services later this year. In addition to updating software and disabling missing devices, the service will allow IT to provision services to new users, including specifying their capabilities and access rights. Cingular Wireless is contemplating a similar service.

If the carrier provides the management infrastructure, the enterprise still must manage the devices and services using a Web application. But enterprises that prefer not to outsource their management activities don't have to: A few companies — including iAnywhere's XcelleNet division and Intellisync (formerly named Pumatech) — provide their own device management

platforms that work via Wi-Fi and cellular networks.

The 3G handheld may provide an additional benefit, notes Good Technology's Friend: With a Bluetooth or UWB (Ultra Wideband) wireless connection, a 3G handheld can act as a modem for a laptop, so a user could share one 3G service plan between the two devices. That would mark a real revolution: a cell phone giving the notebook real broadband speed.

Even if you end up with a separate 3G card for your notebooks, that broadband speed will untether business travelers and field forces from hotels, hot spots, and other location-specific connections. Assuming the 3G networks are rolled out broadly and with sufficient capacity, that will keep you connected and as productive as any desktop employee — that is until you run out of battery power. ☛

*Galen Gruman is a San Francisco-based freelance writer.*

on rates, devices, or services. No competition means there's no pressure to upgrade infrastructure for services such as high-speed data, which consumers seldom use, and there's no downward pressure on prices.

Yet operators are finding ways to wring more ARPU out of businesses. Higher-end devices such as BlackBerry, Pocket PC, Symbian Series 60 (especially Nokia), and Treo phones and handhelds are catching on among a new class of subscribers called mobile professionals. These mobile-pro devices are much more profitable than throwaway phones.

What's more, third-party vendors such as Nokia, Research In Motion, and Seven are shifting the technical burden of managing business services — including device management, e-mail, security, and Internet access — onto subscribers, leaving operators with a lot less work to do for business customers. They'll be overjoyed when a business account requires no more setup and hand-holding than a consumer account does.

That day will come. Some operator will eventually break from the pack and go after mobile professionals and businesses with attractive service plans that make daytime minutes

and data access cheaper than the present market standards.

Until then, the best strategy for customers is to make it easy to switch. Purchase devices at full price instead of going for a contract. Even though it costs a little more, paying month-to-month gives you the freedom to switch service plans or operators at will. If all business customers did that, it would force competition among operators, who will do anything to convert month-to-month customers to contracts.

Furthermore, ask that mobile-pro devices be delivered to you unlocked — capable of moving from one operator to another — but be aware that even an unlocked phone won't work on an incompatible network. For example, a GSM BlackBerry from T-Mobile can't be made to work on Verizon's CDMA network.

And finally, if you can afford it, set up a behind-the-firewall mobile server that handles messaging, synchronization, tracking, management, and Internet access so that you won't be dependent on an operator for these services. If you follow this strategy, when competition finally comes to the mobile market, you'll be ready to go where the value, speed, and coverage are best.

— Tom Yager

# Hot Handhelds for the Road Warrior

Late-model smartphones and data gizmos offer mobile professionals and IT organizations nearly endless possibilities



**H**ANDHELDS HAVE come a long way from desktop synchronization with contacts, calendar, and task lists. An emerging class of business-oriented smartphones and PDAs — typically running the BlackBerry, Palm, Symbian, or Windows Mobile 2003 operating system — offer an amazing wealth of data capabilities, with browsing the Web and editing Word and Excel documents just the start. Throw in a new generation of mobile middleware, from vendors such as Good Technology, Intellisync, and Research In Motion, and they not only can link to familiar Lotus Domino/Notes and Microsoft Exchange servers, but can even take advantage of wireless extensions to back-end applications and services.

## Hewlett-Packard iPaq h6315 Pocket PC

Available exclusively from T-Mobile, this solidly built alternative to a laptop sports a crisp color screen and runs the Windows Mobile 2003 operating system. It's larger and, at 6.7 ounces, a tad heavier than many phone-based PDAs, but it boasts extensive connectivity — quad-band GSM/GPRS, Wi-Fi, Bluetooth, infrared, and USB. Most impressive, it automatically switches data connections from the T-Mobile GPRS network to the faster Wi-Fi as you come within range of an access point.

The h6315's Texas Instruments 1510 processor isn't as powerful as the Intel XScale engines found in other Pocket PCs, although I have no complaints about its speed when running the built-in Pocket Word and Pocket Excel applications. Moreover, I can use the phone and applications for several days without having to recharge the removable battery.

I have received trouble-free access to corporate servers via GSM/GPRS and to WLANs via Intellisync's Mobile Suite ([infoworld.com/2566](http://infoworld.com/2566)). For enterprises that don't want to set up third-party connectivity infrastructures, an add-on service is available for \$9.99 per month to provide wireless access to Microsoft Exchange servers — but it works only via T-Mobile Wi-Fi hot spots. Either way, this handheld is a fine choice for high-speed wireless access to e-mail,

corporate networks, and the Internet — not to mention its worldwide phone capabilities.

**PRICE:** \$599; Hewlett-Packard [hp.com](http://hp.com)

— Mike Heck

## HP Compaq Tablet PC tc1100

The Tablet PC is something you either love or hate. Sure, it doesn't fit in a suit pocket, but if you're willing to lug three or four pounds, you'll get desktop-class productivity in return. My love affair with the Tablet PC began when I first used the original tc1000 to take written and graphical notes on a project; HP's latest offering, the tc1100, has improved on an already winning formula.

Replacing the Compact Flash with a Secure Digital card slot and adding Bluetooth (Wi-Fi is also standard), the Tablet PC tc1100 screams journalist, doctor, or engineer. Just flip a latch and rotate the keyboard, and the portrait display changes to landscape, exposing a great keyboard that skimps only on the size of the function keys. Flip another latch to lose the keyboard (14 ounces), and turn the tc1100 into a writing slate worthy of Captain Kirk. The tc1100's sleek lines were made to cradle in your arm, although lefties (like me) do lose out on one neat feature: the very usable toggle under the (right-



hander's) ring finger that takes the place of a mouse scroll wheel.

My new favorite way to use the tc1100 is to plug in a microphone to record meetings while using Microsoft's OneNote. Being able to play back audio or video in sync with my jottings takes note-taking to a new level. Another killer app is something I added myself: the Sierra Wireless AirCard 755, a wireless modem that supports EDGE (Enhanced Data GSM Environment) and GSM/GPRS networks. The AirCard gives me voice and data services in most metropolitan areas, and it's fast enough to keep me from falling asleep while my VPN client starts. On EDGE, I've clocked 157Kbps down link and 79Kbps up.

Although not a handheld, the Tablet PC tc1100 is a mobile warrior's dream. I never fail to find new uses for it, and it never fails to draw attention wherever I go.

**PRICE:** Starts at \$1,599; Hewlett-Packard [hp.com](http://hp.com)

— Brian Chee

## palmOne Treo 650

Nothing comes close to a Treo for organizing a hectic working life. Seamless integration between phone and PIM makes the Treo 650 a great tool. Combining a full suite of messaging capabilities — text, multimedia, e-mail — with support for thousands of Palm applications, including the integrated Web browser and several common scheduling and productivity applications, this phone literally has it all, at least as far as this reviewer is concerned.

Using third-party products such as Palm VersaMail, the Treo integrates with IBM Lotus Domino/Notes and Microsoft Exchange/Outlook, providing POP/IMAP mailboxes that are similar to those of RIM's BlackBerry

Enterprise Server. But unlike the BlackBerry, the Treo doesn't allow you to talk on the phone and browse the Web or download e-mail messages at the same time (phone calls go directly to voice mail).



Typing one-handed on the Treo is easier than on the BlackBerry, thanks to the 650's ergonomic QWERTY keyboard, and it allows you to view and edit Word documents and Excel spreadsheets, thanks to Palm OS-compatible products such as DataViz's Documents To Go. VGA camera aside, one more way the Treo 650

(GSM model) edges BlackBerry is support for AT&T Wireless' high-speed EDGE service.

The 650's battery life is great if you don't go overboard on the Web surfing and Bluetooth linking and you regularly charge the phone at the end of the day. I've made more than four hours' worth of calls with my CDMA-based model and still had juice left over (quad-band GSM phones are supposed to have even longer battery life). To go weeks between recharges, I shut off the cellular radio and use only the Palm apps.

**PRICE:** \$449; palmOne  
[palmone.com](http://palmone.com)

— Victor R. Garza

### palmOne Tungsten T5

The Tungsten T5 is palmOne's latest high-end handheld. This device is designed to do everything the original Palm Pilot could do — keep



contacts, calendar, tasks, and notes; sync with Outlook; and create and edit Word and Excel files — only better, faster, and easier. It's also leaner and sleeker.

When you use it, you immediately notice the new features. The T5 has 256MB of memory, plus space for a Secure Digital memory card, a MultiMediaCard, or palmOne's new 802.11b Wi-Fi card, which I didn't test. It also boasts an MP3 player, a high-resolution color screen, snappier software, and it can work similar to a USB drive. As for connectivity options, built-in Bluetooth allows you to connect to the Web through a Bluetooth-enabled cell phone. You can also use Bluetooth to synchronize the T5 with your computer, or you can connect the T5 to a Windows PC or Mac using infrared or a USB cable, as was the case with previous iterations of the product.

Although not a phone, the T5 is easier on the budget than the Treo is — and it's much less bulky. But if you're planning an upgrade from an existing Palm environment, think twice. You can't simply move to the new platform with a HotSync as you could with previous versions. You must go through a complex maneuver of

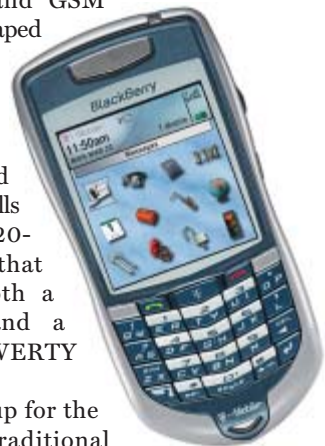
reinstalling applications, exporting and importing databases, and changing names. Worse, not every application will work. And, mastering the new handwriting software, Graffiti 2, requires old Palmers to learn a new trick.

**PRICE:** \$399; palmOne  
[palmone.com](http://palmone.com)

— Wayne Rash

### Research In Motion BlackBerry 7100t

Forget those bulky, rounded PDAs you've seen clutched between the thumbs of die-hard road warriors. The new BlackBerry 7100 series from Canada's RIM is more compact than any previous BlackBerry device. It's a quad-band GSM world phone, shaped like a large candy bar, with green and red buttons for answering and disconnecting calls and a unique, 20-key touchpad that doubles as both a phone dial and a miniature QWERTY keyboard.



RIM makes up for the loss of the traditional BlackBerry keypad with a unique predictive text-entry method. If you've had bad experiences with T9 or other similar systems, you owe it to yourself to give this a try. With only two letters assigned to each key, the 7100's text input may not be perfect, but it's alarmingly accurate most of the time.

On the downside, the 7100's battery life could be better, and RIM lacks the support from third-party developers that other PDA platforms enjoy. And although the 7100 has Bluetooth, it's for headsets and car kits only and can't be used to sync to a PC.

Still, the BlackBerry's messaging UI and PDA applications are top-notch, and RIM's BlackBerry Enterprise Server software offers the best connectivity to Microsoft Exchange and IBM Lotus Domino servers of any handheld device ([infoworld.com/1922](http://infoworld.com/1922)). Throw in a gorgeous full-color screen, a clear-

sounding speakerphone, and a low price point, and the 7100 may just be the new reigning smartphone to beat.

**PRICE:** \$299.99; Research In Motion [blackberry.com](http://blackberry.com)

— Neil McAllister

## Research In Motion BlackBerry 7250

The BlackBerry 7100t may woo potential customers put off by the traditional BlackBerry's price and size. But current and prospective BlackBerry users, as well as those gravitating toward palmOne Treo handhelds, should be looking at the BlackBerry 7250.

A CDMA handheld branded for Verizon, the BlackBerry 7250 is a substantial enhancement to the 7230 ([infoworld.com/2558](http://infoworld.com/2558)), with its stand-out features being Bluetooth and a much-improved color display.

Disappointingly, the

7250's Bluetooth interface is limited to headset operation. It handles neither

file transfers nor Internet gateway/modem functions.

But the BlackBerry 4.0 OS links with BlackBerry Enterprise Server to provide secure, enterprise-controlled,

over-the-air access to files, PIM data, and Internet-hosted services. Desktop sync works with USB. I had no trouble using PocketMac ([pocketmac.net](http://pocketmac.net)) to sync the 7250 with the contacts, calendar, and tasks stored on my PowerBook using Mac OS X's built-in applications.

RIM finally got the display just right. High contrast makes it perfectly viewable in indoor lighting, and there are

two levels of backlighting. I found it very readable in all conditions. Other enhancements include a sturdier case, a stiffer thumb-wheel, and better keyboard backlighting.

I'm a longtime BlackBerry user, and the 7250 feels like a different device, not just a fresh paint job on an old box. All the improvements considered, the 7250 — or its counterpart from your favorite wireless operator, coming soon — is a good reason to put down your current BlackBerry or to add the BlackBerry to your shopping list of converged handhelds.

**PRICE:** \$349.99;

Research In Motion [blackberry.com](http://blackberry.com)

— Tom Yager

## Siemens SX66 Pocket PC Phone

Siemens crams every feature imaginable into the SX66, integrating a full-size PDA and a quad-band GSM phone into a single package. Unfortunately, among its many capabilities it's hard to find anything the SX66 does really well.

Its form factor favors a PDA, with its large touchscreen and buttons that activate applications rather than phone features. Even for a PDA, however, it's disarmingly hefty, weighing in at almost half a pound. For phone calls, a Bluetooth headset will probably be your first accessory. Holding the unit to your ear is awkward, and the quality of the built-in speaker is poor.

In addition to the touchscreen, the SX66 features a slide-out miniature QWERTY keyboard, but this, too, is a disappointment. Most notably, the tiny and nearly identical Enter and Delete

keys are placed side by side — a formula for frustration. Imagine confusing those two while trying to configure a wireless network key, and you'll understand how I learned to prefer the onscreen keyboard. The unit also supports handwriting recognition, but in practice this seemed like little more than a novelty.

The SX66 supports data networking using Wi-Fi, Bluetooth, or the Cingular GSM network. Battery life is good even with Wi-Fi enabled. A Windows Mobile Edition 2003 device, the SX66 allows you to use the full range of Pocket PC applications, including Pocket Word, Excel, and Windows Media Player. Still, unless you insist on carrying no more than one device, you might consider the SX66 an example of a device that aims high but ultimately falls flat.

**PRICE:** \$649.99; Siemens [siemens.com](http://siemens.com)

— N.M.

## Sierra Wireless Voq Professional Phone

The perfect smartphone would do away with the unnecessary (camera, colored plates) and concentrate on the three things the roving executive needs: a quality phone, PIM synchronization, and the ability to play music during downtime. Next to palmOne's Treo, I've never encountered a real contender until now.

The Voq Professional Phone from Sierra Wireless combines the Windows Mobile 2003 OS with a comfortably sized cell phone containing the usual goodies, including voice dialing and a speaker phone. The Voq also hides a very handy QWERTY keyboard



behind a fold-out maw, which uses the Voq's Internet connectivity to assist with Web browsing, text messaging, and e-mail.

What makes the Voq a "professional" phone is its secure ActiveSync connectivity back to a Microsoft Exchange Server 2003 server, which I grumpily set up from scratch just for this review. When connected, the Voq wirelessly autosyncs e-mail, calendar, contacts, and even shared resources using this client; of course, it is also capable of obtaining e-mail from any POP3- or IMAP-based server. And there's the usual USB-based desktop sync as well.

Sierra includes not only Microsoft Autosync but also its own VoqMail software, which provides wireless e-mail without the need for an enterprise server, and its myVoq desktop software, which includes predictive search capabilities for fast information retrieval. The Voq is presently available only from AT&T.

Wireless only in the United States, Sierra is working on additional relationships as well as connectivity to faster wireless Internet access services such as AT&T's EDGE network.

**PRICE:** \$499; Sierra Wireless  
[sierrawireless.com](http://sierrawireless.com)  
 — *Oliver Rist*

### Sony Ericsson P910a

It's a cell phone! No, it's a PDA! Wait, it's the Sony Ericsson P910a! As gadgets go, it's almost impossible to resist Sony Ericsson's latest deluxe gadget — and this is coming from a confirmed gadget skeptic. But the Symbian-based P910a has won my affections,

with features such as a removable, flip-out 33-key QWERTY keyboard, integration with IBM Lotus Notes and Microsoft Exchange, and as much as 1GB of removable storage. The P910a requires an 850/1,800/1,900MHz GSM network and supports GPRS.

As one would expect from a top-of-the-line cell phone/PDA/gadget, there are more ways to synchronize the data on the P910a with a notebook than most people have notebooks. Bluetooth, cable, and infrared connections are all options. A jog dial and stylus — which can be used in closed and flipped-open modes, respectively — makes navigating menus simple. Handwriting recognition software is also built-in.

One catch — true of most mobile devices — is that the enclosed application suite is strictly Windows-only. Although it's possible to perform many of the same functions with the built-in utilities of Mac OS X, the experience is terribly generic and, if one uses Macintosh collaboration clients such as Entourage or Notes, it's completely pointless.  
**PRICE:** \$749; Sony Ericsson  
[sonyericsson.com](http://sonyericsson.com)  
 — *P.J. Connolly*

### T-Mobile Sidekick II (Danger hiptop2)

If the RIM BlackBerry is the sturdy, functional BMW of handheld data devices, the Sidekick is that category's McLaren F1, a sleek supercar of a PDA that brings the Web, POP3 or IMAP e-mail (but not Domino), IM, and even an optional SSH/Telnet console client down to (largish) pocket size.

The unit's most distinctive exterior feature, a bright, sharp LCD display, swings aside at the flick of your thumb to expose a decent-quality chiclet keyboard. And let's not forget, it's a capable mobile phone, with basic security, scheduling, memo, and to-do list features thrown in for good measure. The Sidekick can't sync with your PC, but your phonebook, e-mail, to-do list, and notepad are all mirrored to a private T-Mobile



Web page, so you can import and export your address book or perform data entry using your PC's keyboard.

Four separate function buttons take position in each corner of the Sidekick's face, and an eight-position directional pad and scroll wheel flank the screen. If you don't need to manually enter text or a phone number on the keyboard, the face's controls enable you to use most functions of the phone while the screen remains in its recessed position.

A great data device, however, does not a good phone make. Shaped like a portly deck of cards, the Sidekick isn't well-suited to being held up to your face. If you don't want cheek grease on the screen, a headset or an ear bud is a must. And as a final word of warning: its built-in camera — complete with flash — leaves a lot to be desired.

**PRICE:** \$299; T-Mobile [t-mobile.com](http://t-mobile.com),  
 Danger [danger.com](http://danger.com)  
 — *Andrew Brandt*

*Andrew Brandt is a senior associate editor at PC World.*



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## 1 WHAT IS YOUR ORGANIZATION'S PRIMARY BUSINESS ACTIVITY AT THIS LOCATION? (PLEASE CHECK ONE ONLY):

### General Business Industries

- 01. Defense Contractor / Aerospace
- 02. Retail
- 03. Wholesale / Distribution (non-computer)
- 04. Pharmaceutical / Medical / Dental / Healthcare
- 05. Financial Services / Banking
- 06. Insurance / Real Estate / Legal
- 07. Transportation / Utilities
- 08. Media (print / electronic)
- 09. Communication Carriers (telecomm, data comm., TV / cable)
- 10. Construction / Architecture / Engineering
- 11. Manufacturing & Process Industries (other than computer-related)
- 12. Research / Development

### Technology Providers

- 13. Managed Service Provider / Business Service Provider
- 14. Technology Service Provider (ISP / ASP / MSP, etc.)
- 15. Computer / Network Consultant
- 16. Systems or Network Integrator
- 17. VAR / VAD
- 18. Technology Manufacturer (hardware, software, peripherals, etc.)
- 19. Technology - Related Retailer / Wholesaler / Distributor

### Government / Education

- 20. Government: federal (including military)
- 21. Government: state or local
- 22. Education
- 98. Other \_\_\_\_\_ (Please specify)

## 2 WHAT IS YOUR PRIMARY JOB TITLE? (PLEASE CHECK ONLY ONE):

### IT / Technology Professionals

- 01. Chief Technology Officer (CTO)
- 02. Chief Information Officer (CIO)
- 03. Chief Security Officer (CSO)
- 04. Vice President (including SVP, EVP, etc.)
- 05. Director
- 06. Manager / Supervisor
- 07. Engineer
- 08. Systems Analyst / Programmer / Architect
- 09. Consultant / Integrator
- 10. Developer
- 11. IT Staff
- 12. Other IT Professional \_\_\_\_\_ (Please specify)

### Corporate / Business Management

- 13. CEO, COO, President, Owner
- 14. CFO, Controller, Treasurer
- 15. Vice President (including SVP, EVP, etc.)
- 16. Director
- 17. Manager / Supervisor
- 18. Other Business Management Title \_\_\_\_\_ (Please specify)
- 98. Other Title \_\_\_\_\_ (Please specify)

## 3 PLEASE INDICATE YOUR JOB FUNCTION(S)? (PLEASE CHECK ALL THAT APPLY):

### IT / Technology Functions

- 01. Executive
- 02. Department Management - IT
- 03. Research and Development Management
- 04. Systems / Network Management
- 05. Management of Enterprise Applications (CRM, ERP, SCM, etc.)
- 06. Applications Development
- 07. Consultant / Integrator
- 08. Other IT Department Management \_\_\_\_\_ (Please describe)
- 09. Other IT - Staff \_\_\_\_\_ (Please describe)

### Corporate / Business Functions

- 10. Executive
- 11. Department Management - Business
- 12. Financial / Accounting Management
- 13. Research and Development Management
- 14. Sales / Marketing Management
- 15. Other Department Management
- 16. Other Department Staff \_\_\_\_\_ (Please describe)
- 98. Other \_\_\_\_\_ (Please describe)

## 4 HOW MANY PEOPLE ARE EMPLOYED AT THIS ORGANIZATION, INCLUDING ALL OF ITS BRANCHES, DIVISIONS AND SUBSIDIARIES? (PLEASE CHECK ONE ONLY):

- 01. 20,000 or more
- 02. 10,000 - 19,999
- 03. 5,000 - 9,999
- 04. 1,000 - 4,999
- 05. 500 - 999
- 06. 100 - 499
- 07. 50 - 99
- 08. Less than 49

## 5 OVER THE COURSE OF ONE YEAR, DO YOU BUY, SPECIFY, RECOMMEND, OR APPROVE THE PURCHASE OF THE FOLLOWING PRODUCTS OR SERVICES WORTH:

\* CONSULTANTS: PLEASE INCLUDE WHAT YOU RECOMMEND FOR YOUR CLIENTS AS WELL AS WHAT YOU BUY FOR YOUR OWN BUSINESS, IF APPLICABLE. IF YOU CANNOT DISTINGUISH BETWEEN THIS AND OTHER LOCATIONS, PUT RESPONSE IN THE FIRST COLUMN.

- |                                  |                                |                            |
|----------------------------------|--------------------------------|----------------------------|
| 01. \$100 million or more        | 06. \$5,000,000 to \$9,999,999 | 11. \$100,000 to \$399,999 |
| 02. \$50,000,000 to \$99,999,999 | 07. \$2,500,000 to \$4,999,999 | 12. \$50,000 to \$99,999   |
| 03. \$30,000,000 to \$49,999,999 | 08. \$1,000,000 to \$2,499,999 | 13. Less than \$49,999     |
| 04. \$20,000,000 to \$29,999,999 | 09. \$600,000 to \$999,999     | 14. None                   |
| 05. \$10,000,000 to \$19,999,999 | 10. \$400,000 to \$599,999     |                            |

Product category	For this location: (write code in box)	For other locations: (write code in box)
Large systems	<input type="text"/>	<input type="text"/>
Client computers	<input type="text"/>	<input type="text"/>
Networking / Telecom (including servers)	<input type="text"/>	<input type="text"/>
Internet / Intranet / Extranet	<input type="text"/>	<input type="text"/>
Security	<input type="text"/>	<input type="text"/>
Storage	<input type="text"/>	<input type="text"/>
Peripheral equipment	<input type="text"/>	<input type="text"/>
Software	<input type="text"/>	<input type="text"/>
Service / Support	<input type="text"/>	<input type="text"/>

Please answer the questions on the following page. 

**6 PLEASE TELL US YOUR INVOLVEMENT WITH YOUR COMPANY'S STRATEGIC TECHNOLOGY INITIATIVES (PLEASE CHECK ALL THAT APPLY):**

- 01. Integrate Technology with company goals
- 02. Define Architecture
- 03. Choose Technology Platforms
- 04. Develop Technology Integration Strategy
- 05. Test, pilot, implement emerging technologies
- 06. Scalability Planning
- 07. Build, Run Web Services
- 08. Internet / Network Infrastructure
- 09. Customer Relationship Management
- 10. External Partnership Management
- 11. Budgeting
- 12. Recruitment & Retention
- 13. Other \_\_\_\_\_ (Please describe)
- 99. None of the above

**9 ARE YOU INVOLVED IN BUYING, SPECIFYING, RECOMMENDING OR APPROVING THE FOLLOWING TECHNOLOGY SERVICES? (PLEASE CHECK ALL THAT APPLY):**

- 01. Technology Services
- 02. Systems / Application Integration
- 03. E-Business / Internet / Intranet / Extranet
- 04. Application Development
- 05. Application Hosting (ASP)
- 06. Web Hosting
- 07. Web Development
- 08. Security
- 09. Storage
- 10. Content Delivery Networks
- 11. Disaster Recovery / Business Continuity
- 12. Outsourcing
- 13. Utility Computing Services
- 14. Telecommunications
- 15. Call Center / IT Services
- 16. Consulting
- 17. Other Technology Services

**7 ARE YOU INVOLVED IN BUYING, SPECIFYING, RECOMMENDING OR APPROVING THE FOLLOWING SOFTWARE? (PLEASE CHECK ALL THAT APPLY):**

- 01. Enterprise / E-Business Applications
  - 02. Customer Relationship Management (CRM / eCRM)
  - 03. Enterprise Resource Planning (ERP)
  - 04. Supply Chain / Procurement
  - 05. Business Process Management
  - 06. Business Intelligence / Data Mining
  - 07. Knowledge Management
  - 08. Portals
  - 09. Collaborative Applications / Groupware
  - 10. Project Management
  - 11. Financial / Payroll / Billing
  - 12. E-business / E-commerce
  - 13. Database Management Systems (DBMS)
  - 14. Data Warehouse
  - 15. Manufacturing
  - 16. Asset Management / Software Distribution
  - 17. Performance / Application Management
  - 18. Streaming Media
  - 19. Other Enterprise / E-Business Applications
- 20. Integration Software
  - 21. Web Services
  - 22. Web Services Orchestration
  - 23. Application Servers
  - 24. Enterprise Application Integration (EAI) / Middleware
  - 25. Business Process Management
  - 26. Legacy Application Integration Tools
  - 27. Other Integration Software
- 28. Application Development
  - 29. Application Development Tools
  - 30. Application Servers
  - 31. Web services
  - 32. Java / J2EE
  - 33. XML
  - 34. .NET
  - 35. Testing Tools
  - 36. Other Application Development Software

**10 ARE YOU INVOLVED IN BUYING, SPECIFYING, RECOMMENDING OR APPROVING THE FOLLOWING PRODUCTS OR TECHNOLOGIES? (PLEASE CHECK ALL THAT APPLY):**

- 01. Networking
  - 02. LANs (Local Area Networks)
  - 03. WANs (Wide Area Networks)
  - 04. Switches / Routers / Hubs
  - 05. Caching / Load Balancing
  - 06. Grid / Utility Computing
  - 07. E-mail
  - 08. Instant Messaging / Peer-to-Peer
  - 09. Content Delivery Networks
  - 10. Network and Systems Management
  - 11. Traffic Monitoring and Analysis
  - 12. QoS (Quality of Service)
  - 13. VoIP (Voice over IP)
  - 14. Telecommunications
  - 15. IP Telephony
  - 16. Wireless
  - 17. Remote Access
  - 18. Web / Video Conferencing
  - 19. Other Networking
- 20. Storage
  - 21. High-end / Enterprise Class Storage
  - 22. Network Attached Storage (NAS)
  - 23. Storage Area Networks (SANs)
  - 24. Storage Management Software
  - 25. IP Storage
  - 26. Direct Attached Storage (DAS)
  - 27. Storage Blades
  - 28. Storage Backup (Tape, Disk, Optical, RAID)
  - 29. Removable / Portable Storage
  - 30. Disaster Recovery
  - 31. Other Storage
- 32. Security
  - 33. Anti-Virus / Content Filtering
  - 34. Firewall
  - 35. VPN (Virtual Private Network)
  - 36. Identity Management / Authentication
  - 37. Intrusion Detection
  - 38. Encryption
  - 39. Other Security
- 40. Internet / Intranet / Extranet
  - 41. Web Servers
  - 42. Web Development / Authoring Tools
  - 43. Web Performance Management / Monitoring Software
  - 44. Content Management / Document Management
  - 45. Content Delivery Networks
  - 46. Internet Software
  - 47. Other Internet / Intranet / Extranet

**8 ARE YOU INVOLVED IN BUYING, SPECIFYING, RECOMMENDING OR APPROVING THE FOLLOWING HARDWARE? (PLEASE CHECK ALL THAT APPLY):**

- 01. Hardware
  - 02. Mainframes
  - 03. NT / Windows 2000 / .NET Servers
  - 04. Unix Servers
  - 05. Linux Servers
  - 06. Blade Servers
  - 07. PCs / Workstations
  - 08. Notebooks / Laptops
  - 09. PDAs / Handhelds / Pocket PC / Wireless Devices
  - 10. Other Hardware
- 11. Peripherals
  - 12. Laser Printers
  - 13. Inkjet Printers
  - 14. Monitors
  - 15. Flat Panel Displays
  - 16. UPS (Uninterruptible Power Supply)
  - 17. Network Copiers
  - 18. Other Peripherals

**11 WHICH OF THE FOLLOWING OPERATING SYSTEMS ARE IN USE OR PLANNED FOR USE AT THIS LOCATION? (PLEASE CHECK ALL THAT APPLY):**

- 01. Windows XP
- 02. Windows 2000
- 03. Windows NT
- 04. Windows 95/98
- 05. Windows CE
- 06. Mac OS (Macintosh)
- 07. Solaris
- 08. UNIX
- 09. Linux
- 10. MVS, VMS, ESA
- 11. VM
- 12. OS 400
- 13. Netware
- 14. Palm OS
- 15. Other OS

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