Mobile Enterprise OUTLOOK™

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HIGHLIGHTS:

Wireless Wide-Area Broadband

Location-Based Services

Moving It Indoors

Command and Control

Location-Based Services

WELCOME to this edition of *Mobile Enterprise Outlook.*

Once again, the wireless industry is moving at breakneck speed. In this issue, I will discuss four trends: wireless broadband services, how to provide better wireless network coverage inside your company, location-based services and the move toward turning our wireless devices into our command-and-control devices. Each of these has implications for the corporate world.

Broadband wireless service provides wireless data speeds that until recently were unobtainable. With these services you can quickly and easily connect your field force to your corporate information stores. But as you will see in our first article, this is only a start; there is much more to broadband. Verizon Wireless has been the leader with wide-area broadband services up and running for more than a year. Now Sprint has joined the fray and Cingular is not far behind.

Need better wireless coverage inside your company's walls? There are a number of options available today. You can move toward a wide-area/Wi-Fi solution and buy all new wireless devices or you can look into some in-building devices that will enable you to easily and efficiently bring wide-area signals into your office at minimal cost.

Some location-based services (LBSs) have been available from various wireless network operators for a year or more, and some are only beginning to come online. Tracking your fleet or rerouting pick-up and delivery vehicles are not the only applications for LBS. There are many more. In our third article, we will help you understand what can and cannot be accomplished using LBS.

Much of the wireless industry is working toward enabling our wireless devices to become command-and-control devices with which we will purchase content, pay bills and participate in other activities that will appeal to consumers. However, some of this technology and the applications that will drive it can be of significant value in the corporate world when used to provide access to information and, in general, make better use of wireless devices. While command-and-control is still in its infancy, understanding what is happening in this space will give you a glimpse into the possibilities.

I think all of these topics will be of interest to you.

Wireless Advances

As I was preparing this issue, I came across two interesting pieces of information. The first is that according to the feds there are now more wireless phones in use in the United States than wired phones. The second is the prediction that by 2010 most wireless customers will use their wireless phones and data devices for more than 75 percent of their calls. Both announcements support the trend we are all seeing. As we become a more mobile community, the demand for wireless voice and data services is increasing. Today, U.S. citizens talk more per month, by a factor of two, than the rest of the world. According to a report issued my Merrill Lynch, we average more than 641 minutes of wireless voice use per month. The next closest is Hong Kong, with an average of only 385 minutes.

We use our wireless phones extensively

for voice services because it is convenient to do so. We can take care of both business and personal matters, and if we have wireless coverage at home, on the road and at work, our wireless phone provides a single point of contact, single voicemail access and unprecedented flexibility in our daily lives.

However, as I have said before, it is no longer a sure thing that the most important messages we will receive from a customer, client or our boss will arrive by voice. In many cases, the most important message we receive on any given day will come by e-mail or instant messaging. More than ever, we need to be able to take our e-mail with us.

Thanks to wireless voice and data, we don't have to be strapped to our desk. We can be mobile and still be in touch. Not only are we consuming wireless voice services at a record pace, we are quickly driving up wireless data usage. Data is the second part of the equation for us to be truly mobile and responsive at the same time. Being able to walk out of a meeting knowing what is going on before we even make it back to our office, or leaving a customer's location and being fully up-to-date before we get to the next customer, makes us more productive. We provide better service to our clients and co-workers, multitasking as never before, which, by the way, saves money for our company.

I am heartened by the number of new subscribers we are adding each month by way of single yearly subscriptions and corporate licenses. Don't forget that your feedback is welcomed and encouraged, as are suggestions for future topics and articles. As you know, the wireless industry is changing quickly. Keeping up with all of the advances is a challenge. One thing I enjoy about speaking at conferences and other events is that it gives me an opportunity to find out what is on people's minds when it comes to wireless technologies, implementations and solutions. So send me a note with your comments and/or suggestions for topics you would like to see

covered in these pages.

I hope you enjoy this issue of *Mobile Enterprise Outlook* as much as I enjoyed writing it.

WIRELESS WIDE-AREA BROADBAND

Wireless wide-area broadband is being referred to as the new killer technology for wireless data. Today there are more than 190 million wireless voice customers in the United States. That is about 60 percent of the U.S. population, and this percentage is expected to reach over 80 percent within the next five to eight years. Of these, a much smaller percentage are wireless data customers.

Most of the wireless wide-area networks in the United States are reporting that less than 10 percent of their total monthly revenue is derived from data services. However, they are also quick to point out that this number is on the rise. In fact, while there are reports that only 500,000 of Verizon Wireless' 45.5 million wireless customers now use wireless broadband services, the number is growing each month.

Verizon entered the high-speed wireless world in October 2003 with two markets: San Diego, Calif., and Washington, D.C. Today it offers broadband service in 43 markets, with a total population of 119 million, and it's not stopping there; it will have more markets up this year and next.

Meanwhile, Sprint PCS, which has been working on its own network upgrade plan, has launched service in 34 markets and is promising to have 60 markets with a total population of 150 million covered by early 2006.

As you can see from the coverage sidebars, many cities are up and running with wireless wide-area broadband today, and more will be coming online as fast as the network providers can install the equipment. Also important, Cingular Wireless has announced that it will be rolling out its 3G network upgrades in the form of WCDMA (also referred to as UMTS) with a high-speed data component known as

HSDPA (don't you just love the acronyms?) toward the end of 2005 and into 2006.

TODAY AND TOMORROW

Today we have wide-area wireless broadband available in a number of markets with more on the way. Verizon, Sprint and Cingular are all on track to add cities. In many cases, upgrades will encompass much more of the geography in cities where high-speed service is available only at airports or in the city core.

Since Verizon and Sprint are the only networks offering commercial broadband wireless services today, I will limit this discussion to these two networks, their data speeds, published pricing and product offerings. I will update this report once Cingular brings some of its UMTS/HSDPA network into commercial operation and will include new Verizon and Sprint figures.

WHAT'S THE BIG DEAL?

When it brought up its high-speed data network in two cities in 2003, Verizon's first customers were people who owned laptops and wanted to access their corporate data at speeds approaching wired DSL and cable speeds. Sprint is also targeting these customers—for a very good reason.

Companies with employees who travel and use notebook computers to communicate with the home office and corporate applications find it easy to use wide-area wireless broadband. Both Sprint and Verizon offer PC Cards for sale at their stores, on their Web sites and, of course, through their corporate sales channels.

Verizon's PC Cards include products from Novatel, Audiovox, Kyocera and Sierra Wireless. They are available online for between $50 and $200. Various service plans are available with an unlimited access plan selling for $79.99. Sprint's PC Cards are from Sierra Wireless and Novatel. They will retail for between $150 and $250, but because it just launched this service, the PC Cards are free for the moment. Published data service rates include a 40MB-per-month plan at $40 and an unlim-

ited plan for $80 per customer per month.

Obviously, if you are purchasing a number of cards and service contracts you should discuss pricing with your sales representative. Like all wireless services, there are usually discounts available for quantity and extended contracts.

THE USER EXPERIENCE

Wireless broadband services are growing quickly and will continue to accelerate due to the ease with which a laptop can be outfitted with a card, and because the user experience is similar to being connected to a DSL or cable network. As a result, customer support is not an issue.

I have learned for myself how easy and reliable the Verizon service is. (I will also be using the Sprint network now that it is commercial.) When I received my PC Card and software, it was a simple matter to install the software, insert the PC Card and set up the automatic log-in information (user phone number and password). Once this was done, I simply booted up my laptop and clicked on the application to load it. Then I saw the screen that indicates whether EV-DO service is available or if I will have to use 1X, and the signal strength. I have found in the 10 or more cities where I have used EV-DO that the signal strength is usually very good—even inside hotels and companies I am visiting. I can click on the connect button and within seconds the application reports that I am connected.

Without having to reenter my user name and password, I launch my Microsoft Outlook client, which automatically invokes my VPN (virtual private network), and off I go. The system speed is great and I often find myself working with multiple sessions (e.g., Outlook and an Internet connection), just as I do when I am in my office connected to my DSL service.

I have found that if I have Verizon's EV-DO coverage at a hotel that offers wired Internet access, or I am in a coffee shop that offers Wi-Fi service, I don't connect to them. Wireless broadband is so simple to use and so consistently fast that

Name of provider:

Sprint

Technology:
CDMA2000 1xEV-DO

Cities covered:
34 markets
(60 by early 2006)

Data speeds:
Down to device:
400 to 700 Kbps
Up to network:
128 Kbps

Markets:
Atlanta, GA
Austin, TX

(continues)

I don't have to pay the $10 per day to the hotel or sign up for Wi-Fi service.

Coverage

An amazing amount of geography is covered by Verizon's EV-DO. In the Los Angeles area, for example, I had great coverage in the city and well down into Orange County. In San Diego, I had great coverage even inside many hotels and buildings. This is also true on the East Coast. It appears that when Verizon brings up a city with EV-DO it brings up a large surrounding area as well.

Even so, there are times when I am outside of EV-DO coverage. In those cases, I access the Verizon network using its CDMA2000 1X data service, which gives me connectivity at between 50 and 100 Kbps. Though this works and I can easily access my Exchange server and other applications, it is not nearly as nice as having EV-DO.

Both Sprint and Verizon's PC Cards provide seamless data connectivity on their 1X and EV-DO networks. Before I connect, the launch application shows me which service is available. Over the past year, I have found that once I make the EV-DO connection the service is fast and usable even in low-signal areas.

I have heard it said many times that 85 percent of all of mobile workers who travel do so within a single region. If this is the case for your staff and EV-DO is available in their home regions, it certainly pays to investigate equipping those who carry laptops with a PC Card and EV-DO service.

Since this solution is so easy to set up and use, your support staff should not be overloaded with calls from your mobile fleet. Once the software and PC Card are loaded and installed, mobile workers should be able to use the wireless wide-area broadband as though they were on a wired service.

If your mobile workforce is part of the 15 percent who travel from region to region, you will need to consider where they travel and how many of the cities are covered with EV-DO. Some cities where the airports have been covered do not have EV-DO up and running. For example,

Verizon provides EV-DO coverage at the three San Francisco Bay airports (San Francisco International, Oakland and San Jose) but the cities are not yet covered. However, from my observation, if an airport is covered, it is likely that the rest of city will be in the near future.

Beyond Laptops

While Verizon, Sprint and soon Cingular will be spending billions on their upgrades to wide-area broadband data services, they all know that laptop customers alone will not provide a return on these large investments. (One reason Wi-Fi hotspots are not necessarily money-making endeavors is that the number of people using laptop computers is much smaller than the number using wireless voice services.)

To see what is coming next for corporate wireless broadband customers, you only have to look as far as Verizon. In the spring of this year, Verizon launched VCast, a series of multimedia services, on its EV-DO network. VCast is aimed at the consumer space, and there are four or more wireless phones capable of VCast service. The addition of consumer applications will help the company recover the costs of the network upgrade and will certainly add to its average revenue per user (ARPU).

Now that VCast is up and running, Verizon is going back to the business community with additional handheld devices on EV-DO. Verizon's latest broadband device is the Samsung SCH-i730 smartphone based on Microsoft's Windows Mobile 2003 Pocket PC phone second-edition software. This phone also has Bluetooth for local-area access and Wi-Fi for use on corporate and Wi-Fi hotspot systems. The phone has a large screen that slides up to expose a QWERTY keyboard.

The SCH-i730 can be used to connect to corporate, Internet or intranet e-mail services using Microsoft's ActiveSync solution, Intellisync's Mobile Suite or Good's Good Link server software (which is comparable to RIM's BlackBerry service). It can handle most e-mail attachments including

Microsoft Word, Excel and PowerPoint. There will also be a number of corporate applications available for this phone.

This is the first of many broadband-capable phones we will be seeing in the market. Many mobile workers will find that this phone does everything they need while in the field and will elect not to carry a notebook computer in the future.

Conclusions

Wireless wide-area broadband services are here. They should prove a boon for corporate IT managers who want to provide wireless access to their workforce but have been waiting until the speeds improved. Well, they are better, a lot better, and they will be even better over time. The next evolution of CDMA2000 1xEV-DO (called Rev. A) will see speed increases in both directions. Data speeds down to the device will more than double, and speeds from the device to the network will increase considerably.

Cingular's wireless broadband system will also provide fast access when it is launched in the near future, but with both Verizon and Sprint upgrading their networks to true wireless broadband capabilities, you don't have to wait to get your corporate customers up and running quickly and easily.

If you and your staff have not yet experienced a wireless wide-area broadband connection, it's time to find out how easy and compelling it is. Your mobile workers will appreciate it, and you will have hassle-free wireless connections back to your corporate information stores.

Here's a sneak peek at the rest of the issue:

- LOCATION-BASED SERVICES
- LBS ISSUES
- ADDITIONAL LBS TOOLS COMING SOON
- MOVING IT INDOORS
- COMMAND AND CONTROL
- NEW DEVICES

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