Introduction: Ubiquitous Wireless Connectivity—Are We There Yet?

In 2000, there were 39 million mobile and remote workers in the U.S. By 2004 that number is expected to grow to 54 million. With numbers like these, it’s easy to see why this question of wireless connectivity is so critical. Are we there yet?

The answer is a qualified "yes."

For a demonstration of the wireless CRM contact us at info@siennasolutions.com

While the global infrastructure that will enable truly ubiquitous, seamless, wireless connectivity is still several years out, today a matrix of wireless technologies is delivering connectivity in almost all metropolitan areas in N. America, Europe and Asia. (refer to coverage maps below). We have found, for business people, current coverage in N. America allows reliable wireless access to centralized corporate applications (CRM, accounting, ERP, management reports). A good way of looking at this is: If you can get cell phone service, you can get wireless PC access @ 50-80kbps with burst to higher speeds. Some companies like Verizon are offering broadband @ 200-500kbps with burst to 2mbps. With speed equivalent to desktop DSL or Cable Internet access, these speeds are adequate for accessing centralized corporate applications via Citrix and Terminal Server, which use a 20kbps bandwidth.

Will wireless connectivity get better? Yes, and very soon!

In the wireless world (by decade's end), people will move through their day from home, to school, to work, to customer, surrounded by a cloud of connectivity that enables them to access information wherever it lives—on the Internet, the company intranet, the campus network, heir desktop, their home network, their PC—instantly from wherever they are. In that world, when wireless connectivity is ubiquitous and transparent, we won't have think about how we access our information; we'll just do it.

Connecting You to Your Information, No Matter Where You Are

For those new to the discussion, it may be helpful to think of wireless technologies as replacements for cables of one sort or another:

- Personal Area Networks link devices within close proximity of one another (about 30 feet); they replace USB cables; they’re spontaneous, or "ad hoc"; and unlike the other types of wireless networks, PANs need no infrastructure.

- Wireless Local Area Networks replace the Ethernet cables that enable corporatwide networks. A W-LAN delivers connectivity throughout a localized site, such as a university or corporate campus, or a home network, by placing "access points," fixed base stations with a range of about 500 feet, along the existing
infrastructure.

- The Wide Area Network is perhaps the most familiar of the three since it’s the technology behind cell phones. WANs replace telephone wires. Today, WAN antennas can be spotted on rooftops around the globe.

**Wide Area Networks**

For remote business users, we will focus on WANs. The WAN is what enables people to stay connected while on the road and access centralized applications such as CRM, accounting, ERP and management tools. Internet and extranet access that allows you to “pull down” essentially whatever information you want, email, instant messaging, “buddy chats”—all these are enabled by the WAN.

**Where WANs Are Going**

The two major hurdles to ubiquitous wireless connectivity are

1. WANs’ slow data transfer rates using what had been essentially voice technology; and

2. A geographically and technologically fragmented market, which has produced an alphabet soup of incompatible technologies: WAP and GSM in Europe, CDMA and GSM in the U.S., CMDA and PDC in Japan. Recently, however, we have seen the emergence of industry initiatives designed to overcome both these hurdles.

Both the GSM and CDMA networks are rolling out what they call 2.5G (“2 1/2-generation”), new voiceless data services that are about four times as fast as current rates—not as fast as the much-touted and elusive 3G, but comparable to the difference between your screeching dial-up modem and DSL. Downloads will be faster, Web pages will “paint” faster, allowing richer websites. AM-quality, streaming audio also becomes practical. *In other words, plenty fast for just about everything but streaming video and highly interactive entertainment offerings.*

The second development has to do with open standards. In what *The Weekly Mobile Computing & Wireless News* called an “unprecedented” move, companies across the wireless industry recently announced that they have committed themselves to a global set of open standards and a broad framework to foster cooperation. (Microsoft, which is promoting its own .NET Program, was conspicuously absent from the list of participating network operators and hardware manufacturers.)

Third-generation “G3” networks will provide higher speeds and greater compatibility. Whereas the current generations of GSM and CDMA (as well as their 2.5G versions, GPRS and 1XRTT, respectively) are incompatible, in 3G we see greater interoperability. In addition to enabling people to access their information from any of the major markets around the world, the higher speeds will also enable high-bandwidth applications, such as streaming video and enhanced synchronization capability.
Wireless Plans & Major Coverage

A variety of plans exist at each of the major telecom carries for wireless Internet access. Below is a time-line for wireless access and speeds along with descriptions of the major wireless Internet carriers and coverage.

**Sprint PSC Wireless**

As the use of wireless networking increases, many companies are finding that their needs go beyond basic email, contacts and calendars. With PCS Data Link™, your mobile and remote employees can bring your entire network on the road. By establishing a secure, private connection between your network and the advanced Sprint Nationwide PCS Network, PCS Data Link gives your employees access to:

- Corporate intranets
- The Internet
- Internal databases and shared files
- Email and other business applications

PCS Data Link offers you two solutions for connecting to your network wirelessly: IP Virtual Private Network (IP VPN) or Sprint Frame Relay Permanent Virtual Circuit (PVC). Whichever access method you choose, you'll gain the freedom to perform mission-critical tasks anytime on the advanced Sprint Nationwide PCS Network. Additional PCS Data Link features include:

- **Security controls** – User authentication is proxied to your AAA Server giving administrators complete access control. User access to the Internet is also controlled by the administrator at the corporate firewall, which allows for enforcement of policies, filtering and monitoring. PCS Connection Manager™ software supports three user authentication modes: Stored user name and password mode, password prompt mode, and user name/password prompt mode.

- **Bandwidth optimization** – PCS Data Link maximizes data throughput, offering connections two to five times faster than average network speeds of 50 - 70 Kbps. Bandwidth optimization can also help you get the most out of your service plan by reducing the amount of data transmitted.

- **Redundancy and Monitoring** – PCS Data Link is a fully redundant solution, engineered for high availability and includes a fully alarmed platform for early fault detection and rapid service restoration.
Diagram of Sprint Wireless Network

Sprint PCS Wireless Coverage Map:
Verizon Wireless

When you’re on the go, VZACCESS services give you various ways to keep in touch with the people and critical information you rely on everyday. Verizon Wireless offers remote access via the NationalAccess and BroadbandAccess services, a wide-area mobile Internet access solution providing you with the speed and coverage you need, when and where you need it most. Wi-FiAccess is a complementary remote access service, offering high-speed bandwidth in select airports and hundreds of hotel across the nation.

NationalAccess and BroadbandAccess

Together, Verizon Wireless NationalAccess and BroadbandAccess services offer a national mobile wireless data solution, providing you with the coverage and speed you need.

NationalAccess is Verizon Wireless' national wireless Internet service, which enables users to access the Internet, email, attachments, and business applications with a laptop at average speeds of 40-60 kbps and bursts up to 144 kbps. NationalAccess is available in thousands of cities and towns across the nation.

BroadbandAccess is Verizon Wireless' premier data service, offering you one of the fastest, fully mobile wireless Internet data solutions available today providing you with the speeds required to work efficiently outside the office. This ultra-high-speed wireless service, available in the Washington, D.C. and San Diego areas only from Verizon Wireless, provides users with typical speeds of 300-500 kbps, capable of bursts up to 2 Mbps.

Verizon Wireless Coverage Map:
**Speed up your business with Verizon Wireless BroadbandAccess, available today in:**

<table>
<thead>
<tr>
<th>Market</th>
<th></th>
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<tbody>
<tr>
<td>San Diego, CA</td>
<td>Las Vegas, NV</td>
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<tr>
<td>Los Angeles, CA</td>
<td>Milwaukee, WI</td>
</tr>
<tr>
<td>Kansas City, MO</td>
<td>New York, NY-Newark, NJ</td>
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<tr>
<td>Philadelphia, PA</td>
<td>Baltimore, MD</td>
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<tr>
<td>Miami–Fort Lauderdale, FL</td>
<td>Tampa, FL</td>
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<tr>
<td>Austin, TX</td>
<td>Atlanta, GA</td>
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<tr>
<td>West Palm Beach, FL</td>
<td>Washington, D.C.</td>
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**Airports**

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<tr>
<td>Phoenix Sky Harbor International</td>
<td>Dallas/Fort Worth International</td>
</tr>
<tr>
<td>Orlando International</td>
<td>Dallas Love Field</td>
</tr>
<tr>
<td>Louis Armstrong</td>
<td>Houston/George Bush Intercontinental</td>
</tr>
<tr>
<td>New Orleans International</td>
<td>Houston/William P. Hobby</td>
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**Speed up your business with Verizon Wireless BroadbandAccess, available today in:**

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<thead>
<tr>
<th></th>
<th>National Access</th>
<th>BroadbandAccess</th>
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</thead>
<tbody>
<tr>
<td>Maximum Download Speed*</td>
<td>144 kbps</td>
<td>2 Mbps</td>
</tr>
<tr>
<td>Typical Download Speed*</td>
<td>60–80 kbps</td>
<td>300–500 kbps</td>
</tr>
<tr>
<td>Exchange Email &amp; Attachments</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Access Web Information</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Access Intranet Files &amp; Applications</td>
<td>✓</td>
<td>✓</td>
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<tr>
<td>Coverage Area</td>
<td>National</td>
<td>Select markets nationwide</td>
</tr>
</tbody>
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**Security**

- Authentication and data protection provided by CDMA technology, compatible with most WiPcs
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**PC Card Required**

- Verizon Wireless PC 5250 Card
- Sierra Wireless AirCard 5516
- NationalAccess compatible phone with Mobile Office Kit
- Verizon Wireless PC 5250 Card

**Best Suited For**

- Mobile Users and Business Travelers
- Mobile Users and Business Travelers

*Actual speeds may vary.*

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**AT&T EDGE Wireless**

AT&T Wireless has more than tripled the speed of its GPRS wireless date network with EDGE technology, which can provide new levels of productivity to mobile workers.

**Speed**

With burst speeds up to 200 kbps and average speeds of 100-130 kbps, the AT&T Wireless EDGE network is nearly twice the speed of any other national wireless data network.

**Mobility**

Stay in touch with customers and co-workers and access vital business information in over 6,500 cities and towns and along more than 30,000 miles of highway (population area of approximately 220 million)

**Broad application support**

Send and receive business and personal email, including attachments, and access corporate networks/intranets, web based applications, and the Internet, when you’re on the go.

**Secure wireless access**

Sophisticated authentication and encryption features help protect your information. Unlimited and metered data plans available.

**AT&T Wireless Coverage Map:**

![AT&T Wireless Coverage Map](image-url)