



**Mobile**  
**Communications:**  
**Inside the Evolution**

## Mobility Transforms the Modern Enterprise

The face of modern business has been changed by recent technological advances, such as wireless networks, broadband connectivity, and a proliferation of compact, portable communication devices. Forward-looking enterprises are finding that mobility applications and mobile devices have advanced in combination with improvements in remote access techniques. A gradual progression is evident, ranging from basic capabilities, such as email and calendaring, to deeper functionality, such as remote database access and worldwide video conferencing.

Companies and organizations that invest in the infrastructure to support mobility and remote access for employees and trusted partners increasingly rely on this infrastructure to enhance productivity and foster a more adaptive work environment. This trend suggests that the workplace of the future will be an open, collaborative realm, with less reliance on geographic limitations between the physical location of the enterprise and its employees.

This white paper examines the emerging patterns in the adoption and use of mobile applications and remote access services within enterprises and smaller organizations. These trends and patterns are illustrated and supported by data from a recent TechTarget industry survey.

### Survey Indicates Increasing Reliance on Mobility

A survey conducted by TechTarget in March 2005 tallied the responses of 200 respondents who were closely involved in the decision making for the acquisition and use of remote access and mobile communication technology within their organizations. About half of the

respondents were key decision makers in this role, and the other half played an advisory role. The results, some of which are described in this paper, show that mobile applications are making significant inroads in organizations of all sizes. The use patterns show trends toward more complex, enterprise-capable applications that are designed to boost productivity while staff members are out of the office and to support greater collaboration with partners, suppliers, and stakeholders.

TechTarget publishes a wide range of information targeted to enterprise IT professionals. Through its network of industry-specific Web sites, IT professionals gain access to experts and peers, original content, and links to relevant information from across the Internet. Conferences hosted by TechTarget provide access to vendor-neutral, expert commentary and advice on the issues and challenges faced by those involved in high-tech pursuits. With its focus clearly fixed on the enterprise IT space, the TechTarget team of editors and network of industry experts deliver authoritative, relevant content.

### A Hierarchy of Needs Defines Remote Access Use Patterns

Basic uses of remote or wireless access functionality are becoming ubiquitous, even as next-generation mobile applications become more fully integrated into organizational workflow and more closely linked to vital company resources. The emerging use patterns, ranging from the simple to complex, include:

- Email
- Access to the Internet
- Access to personal computer resources
- Connectivity to the corporate intranet
- Availability of personal information manager resources

- Messaging applications
- Access to customer, supplier, or partner data
- Links to enterprise resource planning tools
- Access to financial services applications
- Access to shipping, inventory, and supply chain data
- Links to custom vertical applications unique to business requirements

Today, it's generally larger companies, rather than smaller ones, that have implemented wireless data access within their organizations. Within two years, however, approximately 96 percent of both large and small companies will have wireless data access capability. Figure 1 illustrates this finding.

Adoption of certain fundamental applications, such as email, has reached the saturation point. As shown in Figure 2, about 95 percent of both large and small companies now support email from remote locations. Within two years, that percentage will increase to almost all small companies and over 97 percent of larger firms. With email considered a staple of corporate business operations, emphasis will be directed

to the more complex applications in the hierarchy.

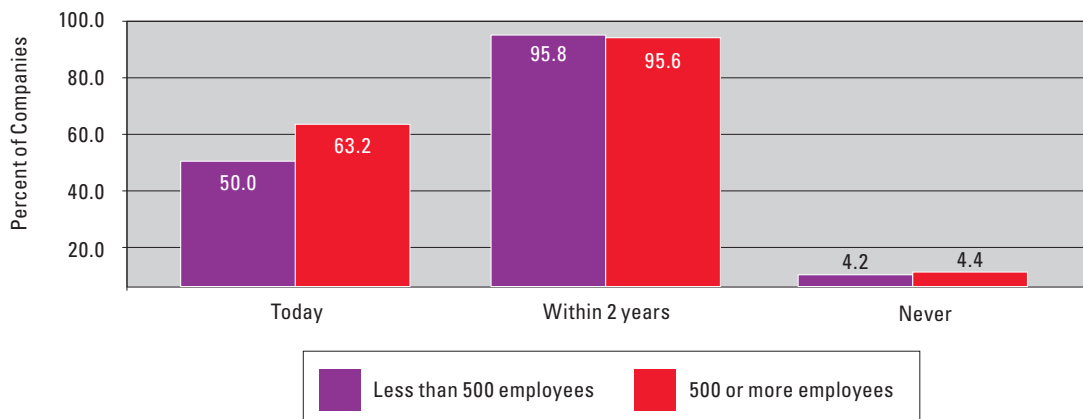
In between email and full wireless data access, other types of productivity-enhancing applications are growing in importance. As shown in the following sections, survey results indicate that acceptance of these applications will require the resolution of some key concerns, including security and ease of deployment.

### Security and Deployment Issues Affect Adoption of Mobile Applications

There are potential obstacles to the more widespread use of remote access and mobile communication. These include security issues, support considerations, implementation concerns, and lack of knowledge of core technologies.

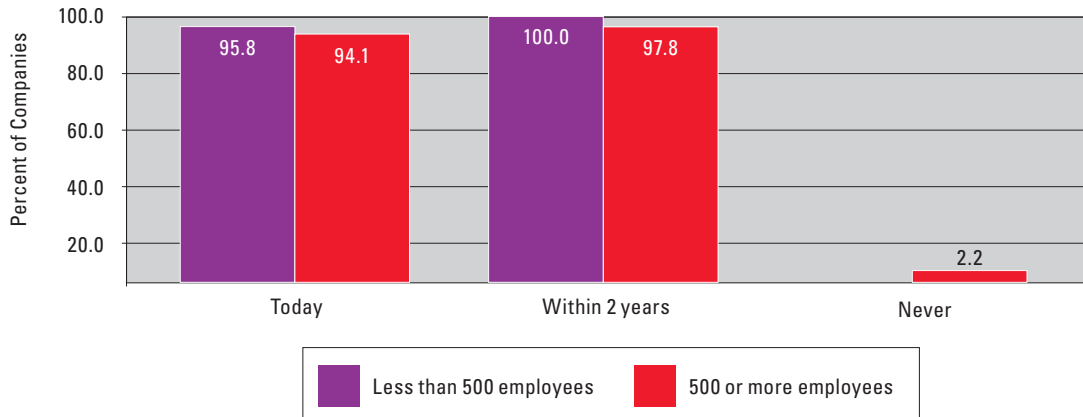
The use of more complex functionality requires greater consideration of the implementation issues, which clearly influence the adoption of remote access technology. As shown in Figure 3, the degree of difficulty associated with implementing new mobile applications

Figure 1. Wireless Data Access by Company Size



**Source:** TechTarget 2005 Mid-Market Wireless/Mobility Decision Maker's Survey (the data and opinions expressed in the remainder of this white paper are derived either directly from this survey or extrapolated from the data or assumptions contained therein).

Figure 2. Remote Access to Email



increases with the more comprehensive solutions (the figure shows the least difficult installation experiences at the top and the most challenging at the bottom). For companies to move past these adoption barriers, proven implementation paths and defined roadmaps will become more valuable in overcoming challenges and ensuring trouble-free deployments. Solutions that specifically address implementation and deployment concerns are the ones most likely to be chosen by decision makers who are wary of complex implementations.

When asked for the three biggest worries experienced when purchasing a remote access solution, survey respondents overwhelmingly listed security as the primary concern. No one wants to implement a mobility solution and then see the network downed by a rogue virus, or have intruders gain access to sensitive corporate data. Given the importance of security in the overall picture, this is an area where service providers can offer true value and provide offerings that meet their customers' specific business requirements.

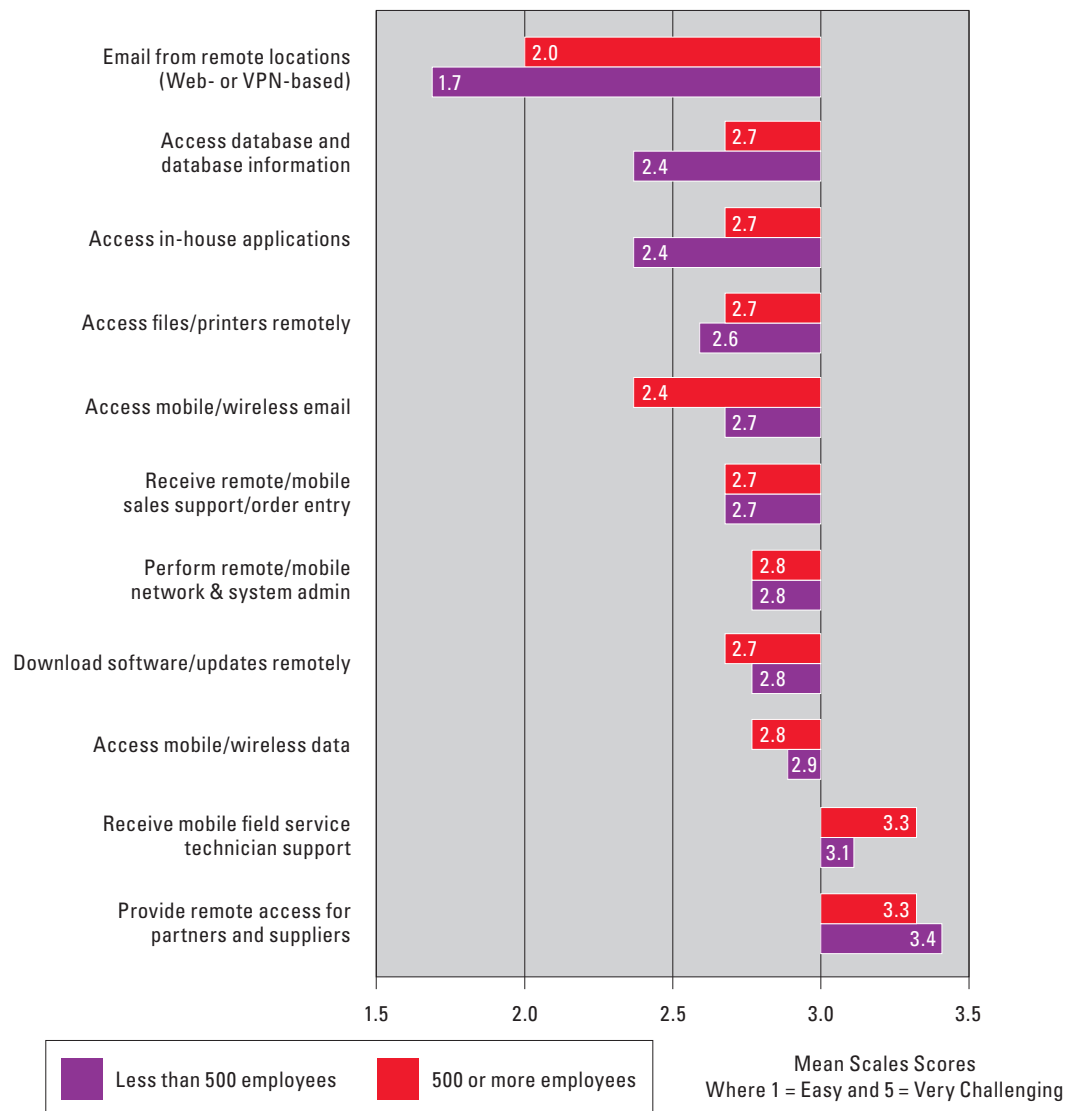
Other areas of significant concern, according

to survey respondents, are integration with existing systems and scalability to accommodate organizational growth, as illustrated in Figure 4.

The emphasis on the importance of interoperability and the scalability to support organizational growth suggests that companies see mobile and remote access as adjuncts to their existing network infrastructure, rather than the basis for replacing core network components or performing extensive retrofitting to existing hardware. Solutions that provide a flexible integration path and a design architecture that accommodates growth let enterprises employ a building-block approach for meeting expansion and upgrade requirements.

Security becomes fundamentally more important as basic applications, such as email, are eclipsed by more sensitive mobile applications, such as accessing customer databases, negotiating purchase orders with vendors, or viewing corporate financial records. To be effective, security mechanisms for mobile and remote access applications must address the core concerns of enterprises. The security

Figure 3. Implementation Experiences Based on Company Size



mechanisms must authenticate any users who access the network, encrypt all sensitive corporate information transferred by wireline or wireless means, and provide multilevel precautions for blocking intruders and hackers from the corporate infrastructure.

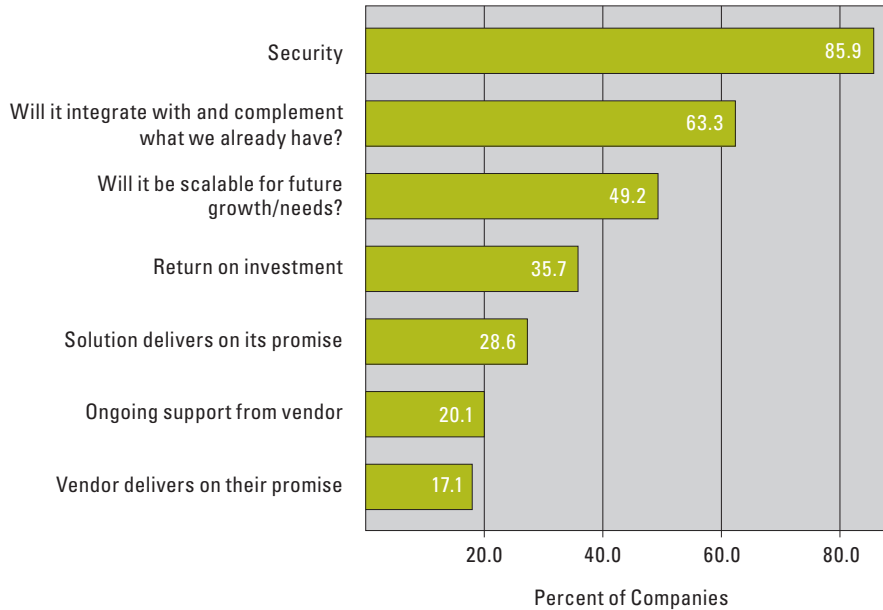
### Most Organizations Favor a Building Block Approach to Deployment

Mobile applications and remote access technology can be implemented in stages

and gradually scaled to the needs of the organization. This method of adoption is much more likely to be successful than an end-to-end deployment of a mobile communication infrastructure. Solutions that integrate easily into an existing infrastructure are strongly favored, as indicated in Figure 4.

However, companies typically do not have a comprehensive roadmap in place for implementing a remote access solution. As shown in Figure 5, only 27.6 percent of

Figure 4. Three Most Significant Concerns for Companies  
(All Companies)



companies have a comprehensive roadmap in place and are following the roadmap. More than 60 percent of companies either don't have a roadmap that is adequate to their needs, or are in the process of creating a roadmap. This may result from companies' perceptions that they do not have the internal expertise and solutions knowledge to develop a working roadmap, as discussed in the next section. A roadmap charts a path through a landscape of technological options. Companies that don't fully comprehend the benefits and tradeoffs of competing solutions can't be expected to craft an implementation approach that is well-suited to their organization.

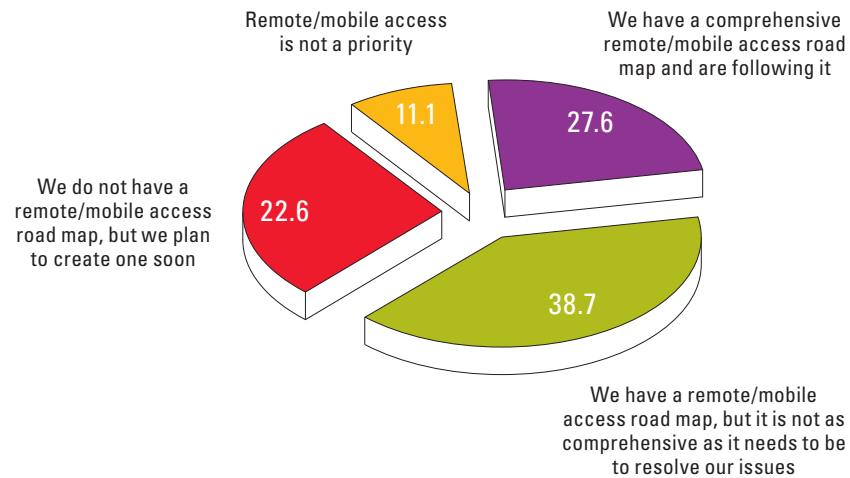
### Mobile Applications Are Becoming Indispensable within Organizations

Virtually all of the respondents indicated that mobility and remote access will become more important and more widespread within their organization in the years to come, and that these increases will be dramatic at times. Their enthusiasm is tempered by security and

implementation concerns. Companies express a clear desire to invest in remote access solutions, as long as they feel confident the selected technology will alleviate key concerns.

Despite the optimistic attitude toward future mobile communication and remote access roles within organizations, the survey identified particular areas where the majority of concerns were focused, as companies move toward all-encompassing solutions that extend business processes outside the corporate firewall. As shown in Figure 6, lack of funding and lack of time were much more significant concerns than a perceived lack of knowledge about solutions, lack of support from vendor organizations, or lack of solutions implementation expertise within the organization. This suggests that many companies will rely on cost-effective turnkey solutions to provide remote access within their organizations. With lack of time being cited as a key concern, easy-to-deploy solutions or managed solutions should be more likely to gain favor.

Figure 5. Approach to Mobility and Remote Access Solutions  
(All Companies)



### Productivity Improvements Are an Important Motivator

The need to streamline business processes and boost employee productivity ranks high in the list of motivating factors for many organizations.

Mobile applications are viewed as an important means to accomplish these goals. Organizations usually support and foster mobility and remote access for employees who travel frequently, or who work from customer locations or home offices. Prospective job candidates generally

Figure 6. Issues That Generate the Most Concern  
(All Companies)

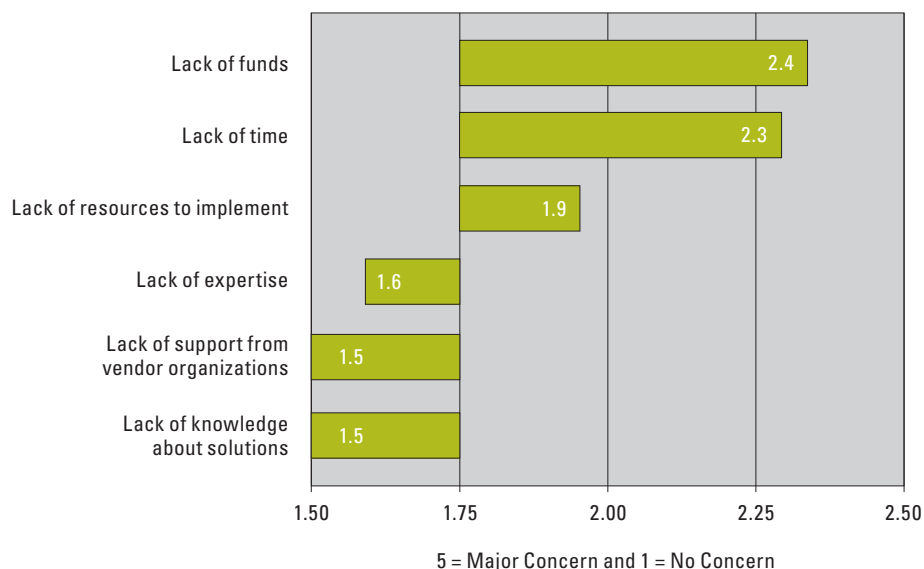
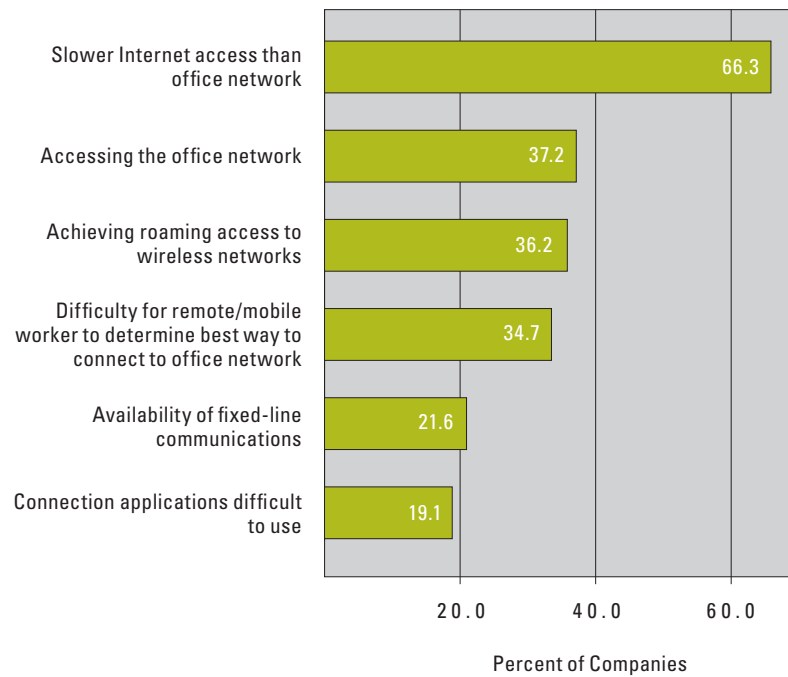


Figure 7. Major Communication Problems Faced by Users  
(All Companies)



consider these to be important benefits within these organizations.

### Wireless High-speed Access

Connectivity rates, as shown in Figure 7, represent one of the concerns of business users who rely on remote access or mobility services. Just over 66 percent of the survey respondents reported that their remote Internet access is slower than their office network. However, new technologies, such as wireless high-speed access, make it possible to gain untethered access to corporate resources without sacrificing connectivity speed.

In some cases, as shown in Figure 7, mobile workers found it difficult to determine the best way to connect to the office network. For this group, which represented 34.7 percent of the respondents, remote access solutions that intelligently monitor conditions and assist in selecting the best connectivity methods offer a significant advantage.

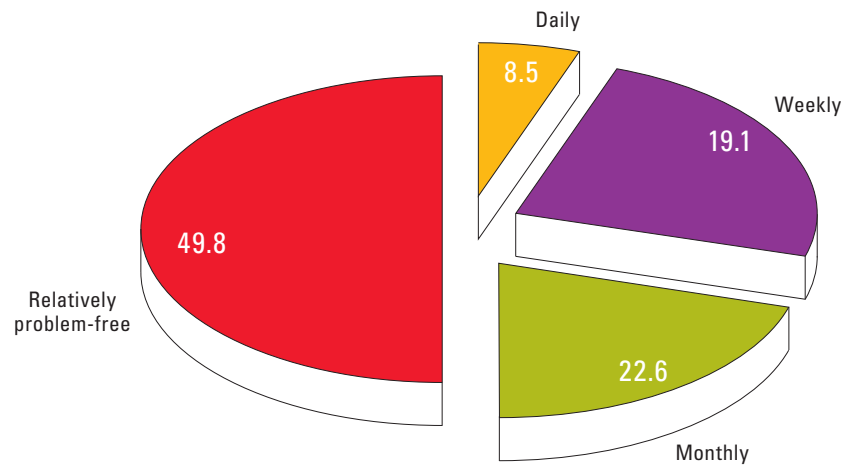
### Ongoing Maintenance

Employees generally find remote access to be relatively trouble-free. However, more than half of the survey respondents reported that some attention to maintenance issues was required on at least a monthly basis, with daily maintenance requirements indicated by a surprisingly high 8.5 percent. Figure 8 illustrates this finding. To ensure that remote and mobile access solutions deliver the anticipated productivity benefits, companies need an efficient, clear-cut process for managing maintenance issues. This should be part of their overall mobility strategy.

### Choosing Remote Access Solutions Intelligently

Many of the concerns and issues related to the adoption of mobile applications and remote access solutions can be mitigated by technologies that are currently available, or that will soon be available. Enterprises may not be

Figure 8. Frequency of Maintenance Issues  
(All Companies)



aware of the latest technological solutions, or may be discussing possible implementations with providers that do not offer the latest solutions. In both cases, education and knowledge are valuable allies in choosing a remote access solution that fits enterprise requirements and equips the mobile workforce with the tools to operate more effectively.

Among the many technological advances spurring companies to adopt mobility and remote access solutions, the following are noteworthy:

- **Increasing reliance on carrier-managed remote access services:** While the majority of enterprises rely on in-house deployments of remote access services, an increasing number are using carrier-managed services. Both SSL and IPsec protocols are being employed in greater numbers, in order to extend the advantages of remote connectivity to more employees while minimizing deployment issues. [Source: *Remote Access for the Enterprise*, released by The Yankee Group, September 2004. David Parks.]
- **Instantaneous wireless communication:** Some corporations are deploying “walkie-talkie” style mobile devices as a replacement

for conventional desk phones. Ford Motor Company’s implementation of a PCS wireless network “push-to-talk” solution increased the mobility of over 8,000 employees by freeing them from wired phone connections. This centrally managed communication medium is particularly well suited to short, impromptu messages exchanged between geographically separated staff members, which facilitates greater workplace efficiency and more creative problem solving. [Source: Sprint Press Release, *Ford Selects Sprint to Replace Desk Phones with Mobile Devices and Mobilize Workforce*. January 24, 2005.]

- **Management services for mobile devices:** Many organizations are taxed with management issues associated with maintaining hundreds or thousands of mobile devices. Some are finding that management services offer a better way to distribute software, enforce security, and keep directories and company information current. For example, Imagistics International Inc. keeps its field technicians updated with the most current technical information by distributing manuals to mobile devices using Sprint Managed Mobility Services. Distributions get routed to the entire

technical team at one time. This type of approach centralizes and standardizes many of the administrative tasks that previously complicated asset management, wireless billing, provisioning, and data security.

[Source: Sprint Press Release, *Sprint Makes Industry-First Wireless Management Services Available to Businesses*. March 14, 2005.]

- **High-speed wireless communications:** Complaints over the laggard performance of wireless network connections can be alleviated with a new technology, EV-DO (Evolution Data Optimized). Through EV-DO, data transfer speeds are as much as 10 times faster than conventional wireless access methods. Mobile workers who need access to larger files residing on the corporate network, or who often receive large email attachments, can take advantage of this technology to bring wireless connectivity speeds much closer to the wired speeds available through a wireline central office. EV-DO and other high-speed wireless networks are being rolled out in the U.S. by the major carriers throughout 2005.
- **Wireless performance commitments through Service Level Agreements:** Concerns over the reliability and performance of wireless networks can be minimized through the use of Service Level Agreements (SLAs) that credit businesses when the network operations do not perform to specified metrics. Credits can be accrued for incidents such as dropped data sessions, blocked data sessions, or unavailability of the data network. Businesses that are moving toward greater reliance on remote access solutions gain a measure of assurance from SLAs, because they put a monetary value on the availability and reliability of the wireless network resources.
- **High-speed Wi-Fi access:** One of the proven productivity gains for mobile workers is the ability to utilize the long waits during travel to access the corporate network and do some useful work. Those tasks are made much easier with the availability of high-speed Wi-Fi access points. For example, Houston's Hobby Airport is now equipped with wireless connectivity through Sprint PCS Wi-Fi Access, which achieves data transfer rates that are up to 100 times faster than conventional dial-up connectivity. Similar capabilities, using 802.11b technology, are being deployed in hotels, convention centers, government buildings, and other public settings to help remove performance barriers and connectivity issues for those people who require higher data speeds while out of the office. [Source: Sprint Press Release, *Houston Airport System and Sprint Kick Off Availability of High-Speed Wi-Fi Access for Air Travelers*. March 2, 2005.]
- **Wireless multi-band worldwide phones:** For business travelers who traverse the world, the complexities of maintaining wireless phone coverage present a substantial challenge. New technologies that address this problem include digital quad-band phones that support voice calls on both CDMA and GSM networks. For example, Sprint offers a phone tailored to multinational travelers, the Sprint PCS International Phone IP-A790, that provides a basic flat-rate fee through roaming agreements that span 130 countries. The phone itself, produced by Samsung, supports delivery of multimedia content and includes voice-recognition capabilities. The jumble of standards and disparate networks that characterize international wireless systems can be unified and managed by technology that adapts to the region and network protocols that are in place.

[Source: Sprint Press Release, *Sprint to Launch International Wireless Device for Globe-Trotting Business Customers; Phone Brings Customers the World—at Simple, Predictable Prices*. February 24, 2005.]

These and other technologies are bridging many of the obstacles to more widespread use of mobile devices and remote access services. Enterprises now have more seamless solutions for extending their business processes to wherever their workers happen to be.

### **Sprint Mobility Solutions Provide Enabling Technologies**

The demand for remote access solutions that are secure, interoperable, and reliable is strikingly apparent and widespread, as clearly indicated by the TechTarget survey results. The requirements of organizations seeking robust, end-to-end mobile application solutions can be met by the latest generation of products and services from Sprint. Sprint Wireless and Remote Access Solutions provide flexible, scalable techniques for expanding and extending enterprise mobility—based on a proven infrastructure, backed by an industry leader, and built on a solid technological framework.

With a breadth of remote access services that accommodate smaller businesses as well as rigorous enterprise requirements, Sprint offers the advantages of an extensive wireline and wireless network infrastructure. Both DSL and dial-up Internet access are available, with connectivity rates up to 128 Kbps available from 9,700 POPs worldwide. Wireless connectivity options include WLAN, Wi-Fi PCS (802.11b), and PCS Vision and Data Link (CDMA-based wireless modem). Through a partnership with Aventail, Sprint has added support for SSL to complement its existing

IPsec solution. Support for CPE- and network-based site-to-site IP VPNs, and MPLS VPNs, can also be provided for organizations seeking greater privacy in remote communications.

Within this wide range of options, both large and small organizations can find the optimal means to expand the range of connectivity choices for their mobile workforce. For more information about Sprint Remote Access Solutions, visit [www.sprint.com/business](http://www.sprint.com/business).

