



Is IT Prepared for the Mobile Worker Onslaught?

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Executive Summary

One of the impacts of the current business environment is the increased need for user mobility. Employees and managers are more mobile than anytime in the past. In fact, IDC predicts that mobile workers will account for one quarter of the world's working population by 2009.¹ These workers need to have their communications tools (cell phone, unified messaging, Internet access, etc.) with them at all times. This places increased demands upon the organization including: new applications, additional hardware, additional bandwidth, more network complexity, security concerns, and increased costs. Unified Communications solutions can, and are, being deployed to not only address the mobility concern but also the ability for the user to unify as many applications as possible into as few devices as possible. These solutions are within the grasp of any organization whether they are small, medium, or large.

This article provides an overview of several of the issues that are coming (if they haven't already started to arrive) for the IT department.

One of the impacts of the current business environment is the increased need for user mobility. Employees and managers are more mobile than anytime in the past. A study² from Sage Research in September of 2005 indicates that approximately 27% of employees of IP-enabled companies travel at least once per month. Another study³ from IDC indicates that more than 70% of the total US workforce (and 25% of the global workforce) will be made up of mobile workers by 2009. These workers need to have their communications tools (cell phone, unified messaging, Internet access, etc.) with them at all times to conduct business operations.

While some IT managers may hope this is just a phase, this trend is expected to increase so much that companies are now putting mobility needs as one of their top 5 initiatives for 2006 – 2009⁴. This places increased demands upon the organization including: new applications, additional hardware, additional bandwidth, more network complexity, security concerns, and increased costs. Unified Communications (UC) solutions can, and are, being deployed to not only address the mobility concern but also the ability for the user to unify as many applications as possible into as few devices as possible.

IP, by its very nature, provides improved user mobility capability (both wired and wireless) which enables key applications that deliver ROI such as: softphones, smartphones, Fixed Mobile Convergence, telecommuting, Wireless LAN, etc. UC further improves upon user mobility by making it easier for users to switch between devices and to communicate by their preferred device.

User mobility is a general category that can include many different applications within a company. For instance, road warriors working for Acme Corp. (an arbitrary fictional company) may use smartphones and softphones, while warehouse personnel at Acme are better served by a Wireless LAN phone. At the same time, doctors and nurses may prefer a wireless tablet integrated to their corporate patient software.

Different applications are often combined together to support business needs. For instance, unified messaging products allow the consolidation of voicemail, e-mail and text messaging so that the user has a single, consolidated messaging box versus having to access different applications. Smartphones can take this a step further and combine unified messaging with the following capabilities: cell phone, Internet web access, text messaging, wireless LAN dual mode capability, and instant messaging. Another application, such as the NEC Mobile Client, is software that can be downloaded into the smartphone that allows users to access their corporate network to send/receive messages through their corporate PBX. Other IP mobility sources include softphones, iPhones, Wireless LAN for voice and data applications, wireless RFID tracking, E-911, telecommuting, and specialized products like the Vocera wireless communications system.

Smartphones are a very hot application. Both SMB's and enterprises are embracing these devices because it allows the user to essentially have a mobile office with them at all times. This is relevant from real estate agents to store managers and from knowledge workers (that are often mobile) to C-level decision makers. A study from In-stat indicates, "Smartphone OS-based phones will grow at more than a 30% compound annual growth rate for the next five years globally, taking an increasing share of the overall phone market that is otherwise growing in single digits."⁵ A different study from J. Gold Associates found that 65% of enterprise mobile workers will have smartphones and other wireless devices (PDA's etc) by the end of 2009.⁶

RFID tracking devices using the IEEE 802.11 standard are also becoming more prevalent. These handy devices can provide cost-effective asset tracking for expensive and important business assets. Wireless LAN communication systems such as Vocera are also finding their way into vertical markets like healthcare, where nurses and doctors need a cost-effective and mobile environment for non-cell phone users.

All of these functions increase the complexity of the business communication system and requires businesses to hire the expertise to support the functions. For instance, some sort of e-mail package (such as Goodlink) is required to support smartphone usage. This means that the IT department has to purchase the software and server, then create the user database, and then synchronize this to the Microsoft Exchange (or other) e-mail database. Additional man hours are required to administer the function as well.

Extra functionality and applications added to the network will naturally require additional bandwidth. Applications supporting mobility typically include the following: voice conversations, UC client, Wireless LAN, RFID asset tracking, unified messaging, presence, and Find Me/Follow Me. The actual bandwidth requirements, of course, vary based upon the components used within your solution and whatever dimensioning you feel appropriate based upon the number of users in the network, throughput, etc.

As one can imagine, this can get quite complex fast. As an example, here are some general bandwidth requirements:

Normal voice call (G.711 codec) = 72 kbps (including overhead for 40 ms payload)
Compressed voice call (G.729 codec) = 16 kbps (including overhead for 40 ms payload)

Server to PBX Connection Bandwidth

Application	Dedicated Bandwidth Requirement
Attendant console	5 Kbps per attendant
Generic UC client	1.5 Kbps per activation
TAPI Link	6.5 Kbps per User
Short Text Messaging	3 Kbps per User
Group Call Forward Control	5 Kbps

Server to Client Connection Bandwidth

Application	Dedicated Bandwidth Requirement
Attendant console	150 Kbps per attendant
Generic UC client	1.0 Kbps per User
TAPI Link	3 Kbps per User
Short Text Messaging	NA
Average Size e-mail	3 Kb per e-mail

Presence Messaging (information comes from the Internet draft⁷)

Total number of watchers in domains	40,000
Size of an average presence document	3,000
Total number of message & bytes during the day	
Number of msgs	12,800,000
Bytes	20,376,000,000
Total number of message & bytes per second	
Number of msgs	444
Bytes	707,500

Security becomes another issue for the IT department to contend with. While most of the UC applications do not open additional security holes for the IT department, these applications may highlight the need to address existing security concerns such as locking down ports that do not need to be open on the firewall, using VPN concentrators with IPSEC, enforcing password and logon protection, beefing up firewalls, applying software security updates to Windows and other operating systems, data encryption, updating anti-viral software, and updating/purchasing anti-SPAM software.

Some UC components should be investigated further from a security point of view. For instance, what are the security procedures for protecting smartphone messaging (e-mail, IM, text messages, etc.)? Because this technology is becoming a fundamental application employed for user mobility, it must be protected. Fortunately, information is now available on the Internet to help organizations provide security and data encryption for these new devices.

Another question to answer is whether the new technology has special implementation requirements due to government regulations (Sarbanes-Oxley, HIPAA, etc.) and are those concerns addressed in the current technology implementation plan? For instance, HIPAA has direct requirements for the security of patient data. At the same time, the technology may address many of the concerns. As an example, WPA encryption can address portions of HIPAA requirements for patient data transmitted over a wireless LAN network. Other technology can address the rest of the requirements.

As with security, costs are always a factor for the IT department to consider. The mobile user applications typically have a cost for the software as well as servers to run the software. Other costs include the device hardware and maintenance costs. If we use the smartphone again as an example, there is the cost of the phone itself (which may run \$200-400 a piece) and the wireless service plan. Then there is the software to interface the smartphone to the corporate e-mail system. Using Goodlink as an example of the wireless synchronization software, this may run about \$17-20 a month per device for integration to the Microsoft Exchange server.

Other costs include hardware for a VPN concentrator to allow remote users onto the network so they can telecommute, use softphones, or use other application software. Dialer software (and tokens) for each VPN user are also required. Additional costs arise for wireless LAN access points and controllers. And, of course, all of this will typically require additional bandwidth (routers, layer 2/3 switches, MPLS network, etc.) along with additional network setup (VLAN's, class of service, etc.).

In the end, while there are additional costs for applications to support Unified Communications, the business value from UC can be enormous. Unified Communications essentially opens the floodgate to productivity because applications are what really deliver the value. The degree of savings, however, mirrors the degree of investment and deployment that the business decision maker will make. Businesses and IT departments must be prepared to invest the technology if they expect to stay current with the competition.

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About the Author

Keith Bromley is a product marketing manager for NEC Unified Solutions, Inc., with more than 16 years of telecommunications experience. Keith is responsible for marketing activities for NEC's IP telephony enterprise solutions, including all applications and platforms, as well as unified communications.

As a spokesperson for the industry, Keith is a subject matter expert on unified communications, IP telephony, SIP, wireless and wireline infrastructure. Keith joined NEC in 2004 as the product line manager for the UNIVERGE SV7000 VoIP server. He has written many industry whitepapers/articles covering topics on IP telephony drivers, SIP, unified communications, as well as discussions around ROI and TCO for IP telephony solutions.

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