

## **Software-Powered Communications: Laying the Foundation for the Next Phase of the Digital Technology Revolution**

During the last 30 years, dramatic advances in technology—the development of the minicomputer; the rise of the personal computer; the emergence of the Internet—have revolutionized the way information is created, stored, shared, and used. These changes have transformed the world in fundamental and exciting ways. Today at work, we communicate and collaborate instantly with colleagues, customers, and partners around the world. Global supply chains speed the flow of products from factory floor to store shelf. Productivity is higher than it's ever been. Sellers have access to markets that were once beyond reach. The amount of information companies collect about customers, competitors, and markets is unprecedented.

At home, technology allows us to stay in contact with the people we care about no matter where they are and share our experiences with those people with incredible richness and immediacy. Using the Internet, we can shop the entire world from the comfort of our home. Digital technology has given us new tools that help us manage our lives more efficiently and it has dramatically expanded our entertainment choices.

But one scenario has changed very little over the years. It starts when you need to reach someone quickly. First you look up their phone number and give them a call, only to be directed to voicemail. After you leave a message, you find their mobile phone number and leave a second message. Next, you send an e-mail. If you happen to be tied up when that person gets your messages and tries to reach you, the process repeats itself, but from the other direction.

For all the benefits that three decades of technology innovation have delivered, the fact is that communicating and sharing information with other people is still far too complicated. Today, however, a new generation of innovations is laying the foundation for revolutionary advances that promise to transform communication. This transformation is being built on software designed to take full advantage of the combination of ever more powerful devices, expanding data storage capacity on devices and in massive data centers (“the cloud”), and the growing capacity and ubiquity of broadband networks.

This combination of power, speed, and bandwidth is enabling us to move larger and larger volumes of communications and content across the Internet and access it on more powerful mobile devices. And it is opening the door to a new generation of powerful software-driven communications solutions that take of Voice over Internet Protocol (VoIP) telephony and other protocols that let us rout communications and content over the Internet. The results will change the way we communicate in dramatic ways in the years ahead.

### **The Rise of Digital Communication: Convenience and Complexity**

Of all the sweeping changes we have seen in recent years, communications has probably undergone the most dramatic transformation. Fifteen years ago, the PC was just beginning to

achieve broad acceptance. E-mail was still in its infancy. The Internet was little more than a rumor to most people. Cell phones were big, heavy, and rare. Back then, faxes were just becoming a standard way to conduct business transaction and we still dropped quarters into pay phones to make calls when we were on the road. “Real time” communications with someone in a different location could only happen via a phone call.

Today, the fax machine is fast becoming an anachronism and pay phones have all but disappeared. Now we take for granted the ability to communicate and collaborate via e-mail and instant messaging. Mobile phones are ubiquitous and people increasingly expect not only to be able to make and receive phone calls from almost anywhere, but also to be able to check send and receive e-mail and to use many of the same applications on their mobile devices that they do on their desktop PC.

But the fact is that rather than making it easier to reach people, all of these new communications tools often make it more difficult and more time consuming. According to a recent study, there’s a 70 percent chance that when you call someone at work, you will get voicemail. When you do reach the person you’ve called, there’s no guarantee that it’s a convenient time for them to answer your question, or that they have access to the information you need.

There are other issues as well. We struggle today to keep track of e-mails and phone calls across multiple inboxes, devices, and phone numbers; to remember a growing number of passwords; and to synchronize contacts, appointments, and data between desktop PCs and mobile devices. This can be a frustrating problem at home. At work, where success depends on how quickly people can share information and make smart decisions, it can be a significant and costly business issue.

The problem is that our communications identities and experiences are linked too closely to our location and our devices. Your work number is tied to the phone on your desk. Your cell phone number calls the device you carry in your pocket. A third number rings your phone at home. You probably have different identities and passwords for your work and home email accounts, and for instant messaging.

This is far too complicated. Fortunately, new software-driven communications technologies will eliminate the boundaries between all of the various modes of communication we use throughout the day so that we can reach the people we need to reach easily and quickly, no matter where we are or what device we have at hand.

## **People-Centered Communications**

Microsoft’s vision is to replace today’s disconnected, device-centric approach to communications with a more integrated, software-driven approach that centers on people and the things they want to accomplish at work and at home. Our goal is to eliminate the complexity people struggle with today and create an environment where you’ll have a single identity that spans all of the ways people can reach you. With a software-driven approach that takes advantage VoIP and other Internet protocols, we can build streamlined communications solutions

that make it easy to move a conversation seamlessly between voice, text, and video and from one device to another as your location and information sharing needs change.

These new solutions will also simplify the task of getting in touch with someone in the first place by letting you know at a glance if the person you want to talk to is available to take your call. We can also provide significantly more control over how you can be reached and by whom. This next generation of solutions will have the intelligence to know who is allowed to interrupt you when you are busy and automatically route phone calls, e-mails, and instant messages to the right device when you are unavailable. Soon, you'll also be able to listen to your e-mail or read your phone messages.

This transformation extends beyond the devices we use for communications by embedding the ability to communicate directly into the applications we use every day. Today at work, when you contact a colleague, you probably need to switch from the application you are working in to an address book and then to a device (like a telephone) or a different application (such as e-mail). Now we are adding communications features that will enable you to collaborate directly from the application where you are working. By making the ability to initiate a conversation by email, voice, video, or instant messaging an integral part of productivity applications, communication and collaboration becomes a seamless part of day-to-day work processes, rather than an interruption. These same concepts apply at home, as well. Adding communications capabilities to the video game experience or to television means we can share entertainment experiences with people who are in distant locations in ways that we never could before.

The positive impact of all of these new technologies will be felt by corporate IT departments as well. Today, companies struggle to operate an unwieldy mix of disconnected systems: PBX systems for phone calls, messaging systems for voice mail, a solution for e-mail, a system for instant messaging, and more. According to one survey, a typical company provides employees with six types of communications devices and operates five separate communications software systems. The expense can be enormous. Microsoft spends up to \$750 to provide a new employee with basic telephony capabilities, plus an additional \$180 per user per year for maintenance and management. That's a considerable expense for any company, particularly as the PC replaces the telephone as the preferred way to communicate at work in many organizations.

### **The Benefits of Unified Communications**

For businesses, the convergence of VoIP telephony, e-mail, instant messaging, mobile communications, and audio and video Web conferencing into a single platform provides the foundation for unified communications solutions that make it possible to consolidate communications infrastructure and reduce costs, eliminate complexity, and provide communications tools and capabilities that better meet the needs of employees.

Unified communications solutions from Microsoft are already helping companies and organizations around the world get more value out of their communications infrastructure, at lower costs. One example is Lifetime Products, a U.S.-based company that is the world's largest manufacturer of basketball equipment and of polyethylene tables and chairs. In early 2007, the

company rolled out a unified messaging solution based on Microsoft Exchange Server 2007 to employees in the United States and China. By enabling employees to access their e-mail, voicemail, and faxes from their e-mail inbox, either at work, on the road, or at home, the new solution has provided productivity gains that average five hours per week per employee. In addition, Lifetime will see an annual savings of \$180,000 by replacing 300 desktop phones with mobile phones, a \$43,000 cost reduction that resulted when the company dropped a voicemail maintenance contract it no longer needed, and the company is phasing out its 300 fax machines, which each cost \$2,000 per year to maintain.

In northern California, the Tracy Unified School District has also replaced its traditional phone-and-voicemail system with unified communications technology from Microsoft that provides e-mail, voicemail, and instant messaging for all of the district's 1,500 employees. The new infrastructure has improved communications in the district, not only between employees, but between teachers, students, and parents. Tracy Unified School District is also seeing significant cost benefits as well, including the elimination of \$200,000 in annual spending on phone lines and an additional savings of \$168,000 earmarked for other messaging services.

Here at Microsoft, the move to a software-based unified messaging platform based on Microsoft Exchange Server 2007 has saved the company \$5 million annually by lowering the cost of hardware acquisition and maintenance. More importantly, Exchange Server 2007 enables integration of traditional telephone infrastructure and VoIP with corporate messaging, calendaring, and directories. This convergence of telephony and messaging has increased employee productivity and reduced the workload for IT professionals.

### **The Catalyst for Communications Innovations**

In many ways, the move to real-time unified communications is already well underway. For the generation or two that has grown up entirely in the digital era, real-time communication based on cell phones, text messaging and instant messages, and the ability to share photographs and even video instantly over mobile devices is the norm. Many of them have already taken a first step towards the era where a single identity spans communications modes by foregoing traditional landlines and relying exclusively on a mobile phone. To this generation, the desktop phone has about as much relevance as an electric typewriter does for those a generation or two older.

Using cutting-edge communications technologies, this new generation has devised entirely new ways to create community and share ideas and interests. Online communities, personal Web spaces, and blogs are just a few of the tools that have become essential mediums for self-expression and for creating, collecting, and sharing digital content and information including music, pictures, news, and video. Digital communications devices enable people to stay in constant contact with friends who may be in a different city, or even on the other side of the globe. It's all a testament to the power and immediacy of today's digital technology.

People who have grown up using all of these digital tools as a matter of course come into the workplace with new ideas and new expectations about how they should be able to communicate and collaborate with others. For a generation that grew up using cell phones, the desktop phone is an anachronism that lacks the flexibility and many of the basic capabilities they expect. Their

day-to-day reliance on text messaging is a driving force behind the rapid adoption of instant messaging as a standard business communications tool. Accustomed to forming ad hoc virtual communities, they recognize the advantages that come from bringing people together through digital means and they look for opportunities to create virtual workgroups. They are used to collecting and storing content and information online, and they expect to be able to use SharePoint sites, Wikis, and other digital means to create and share information.

All of these expectations are forcing companies to adapt by implementing new communications strategies and technologies. There's no doubt that this transition can be difficult at times as IT departments struggle to integrate new devices and find the right balance between streamlined access to information and network resources and the need to maintain adequate levels of security. But companies that are making the transition are seeing significant benefits in the form of higher productivity and the ability to respond more rapidly to changing business conditions. New technologies also enable these organizations to create closer ties to customers, develop innovative products more quickly, and reduce costs.

### **Communications Products From Microsoft**

Today, Microsoft offers a broad range of communications technologies for both consumers and business users. From the e-mail and instant messaging capabilities offered by Windows Live and the video chat and instant messaging features built into Xbox 360 to unified communications solutions for business built on Exchange Server, Microsoft provides a comprehensive set of solutions, applications, and tools that span every aspect of communications, collaboration, and information sharing. Our broad knowledge of trends and technologies across both the consumer and business markets gives Microsoft a unique ability take advantage of emerging innovations from both worlds and integrate them into powerful new solutions that deliver great results.

Communications products and offering for consumers include:

**Windows Live Hotmail:** The successor to MSN Hotmail, Windows Live Hotmail was built from the ground up to enable a safer, more productive, and more powerful Web mail experience. Windows Live Hotmail provides flexible access to e-mail via the Web, a mobile phone, or a PC. Windows Live Hotmail is one of the largest e-mail services in the world with more than 310 million active accounts.

**Windows Live Messenger:** The world's largest instant messaging service, Windows Live Messenger allows people to connect with others in real time, using text instant messaging and full-screen rich video conversations with people on their contact list. With Windows Live Messenger, people can also call their friends on their PC or phone and share personal files instantly. Windows Live Messenger is used by more than 280 million people each month, who send more than 8 billion messages each day. A free download, it is available in 26 languages in more than 60 countries.

**Windows Live Spaces:** A free, customizable social networking and blogging service. Windows Live Spaces enables people to communicate with friends and express their individuality using blogs, photos, and more. Windows Live Spaces is available in more

than 15 languages and has more than 130 million unique users from around the world each month.

**Xbox Live:** The online gaming and entertainment network for Xbox 360, Xbox Live enables people to play games over the Web with friends. Xbox Live also provides a comprehensive range of communications options including video chat and instant messaging, as well as text, voice, and picture messaging, all seamlessly integrated into the video game experience. With more than 7 million subscribers, Xbox Live is quickly redefining the way people access entertainment of all kinds.

**Games for Windows – Live:** This new service extends the Xbox Live games and entertainment network to Windows. Games for Windows – Live links Xbox 360 gamers with the millions of people who play games on their PCs. Now, Windows and Xbox 360 video game players can find each other, play games, and communicate with each other without across Windows computers and Xbox 360 consoles.

Solutions for businesses include:

**Microsoft Office Communications Server 2007:** Created to manage all real-time communications including instant messaging, VoIP, and audio and video conferencing, Office Communications Server 2007 works with existing telecommunications systems so that businesses can deploy advanced VoIP and conferencing without tearing out their legacy phone networks. Office Communications Server 2007 also supports presence capabilities so that users can see at a glance if someone is available and then contact them with a single click using instant messaging, a phone call, or a video conference.

**Microsoft Office Communicator 2007:** A client application for real-time communications, Office Communicator 2007 is the primary tool for presence and directory information, instant messaging, plus telephone calls, and audio- and videoconferencing. It was designed to make it easy for users to communicate using features like click-to-call and provide the ability to shift conversations from instant messages to phone or videoconferences on the fly. Office Communicator 2007 also helps users control incoming communications with alerts, automatic call forwarding, and the ability to manually control their presence information.

**Microsoft Exchange Server 2007:** This new version of Exchange Server manages all asynchronous communications and delivers unified messaging (e-mail, voice mail, faxes, and calendaring) to users' Microsoft Office Outlook 2007 inboxes. Exchange Server 2007 enables employees to access e-mail, voice mail, calendars, and contacts from anywhere, using a variety of clients and devices and it provides built-in protective technologies that reduce spam and viruses, enable confidential communications, and help company achieve compliance. Exchange Server 2007 also enables new levels of operational efficiency through capabilities that optimize hardware and networking investments and features that help administrators increase efficiency.

**Microsoft Office 2007:** Designed to take full advantage of Microsoft unified communications technologies, the Office system integrates presence technology throughout Office applications, from document workspaces inside Word 2007, Excel 2007, and PowerPoint 2007 to team sites on SharePoint Server 2007. Because every person who works on a file stays associated with it, presence technology provides multiple channels for communication, enabling information workers to instantly launch conversations using instant messaging, voice, or video with the people who are most likely to have the information they need.

**Microsoft Office Outlook 2007:** An integrated solution for managing communications and time, Office Outlook 2007 delivers innovations that make it easy to quickly search through e-mail, voice mail, and other communications; organize work; and share information with others, all from one place.

**Microsoft Exchange Hosted Services:** A set of four distinct services for messaging security and management Exchange Hosted Services helps organizations protect themselves from e-mail-borne malware, satisfy retention requirements for compliance, encrypt data to protect confidentiality, and preserve access to e-mail during and after emergency situations. Deployed over the Internet, the services were designed to minimize additional capital investment, free up IT resources to focus on other value-producing initiatives, and mitigate messaging risks before they reach the corporate firewall.

**Microsoft Solution for Hosted Messaging and Collaboration:** Created to enable service providers to offer the widest range of messaging services, Microsoft Solution for Hosted Messaging and Collaboration starts with a basic, e-mail-only Microsoft Outlook Web Access (OWA) client experience, and then adds incremental functionality provided by Exchange Server 2007, Outlook 2007, and Windows SharePoint Services so that businesses can access exactly the capabilities they need for their specific business requirements.

**Microsoft Office Live Meeting 2007:** For online meetings, training, and events, Live Meeting enables people to collaborate with others without leaving their desk. With meeting attendees participating from their PCs, users can kick off projects, brainstorm ideas, edit files, collaborate on whiteboards, and negotiate deals at a fraction of the cost of travel. Live Meeting provides unique interactive tools, integrates with existing systems and productivity applications, and incorporates a familiar and easy-to-use interface that improves remote collaboration and enables effective meetings for companies of all sizes. Live Meeting also delivers proven 99.99 percent uptime availability and always-on Secure Sockets Layer encryption.

**Windows Mobile 6:** For organizations with mobile information workers, Windows Mobile powered solutions provide mobile access to e-mail, contacts, and calendar, and tasks. Windows Mobile 6 provides significant enhancements to familiar Microsoft mobile applications like Outlook Mobile, Office Mobile, and Windows Live, along with security, scalability, and manageability improvements.

**Microsoft Office Communicator Mobile:** The 2007 release of Communicator Mobile client is designed to extend the reach of Office Communications Server 2007 using Windows Mobile-powered devices. The 2007 release of Communicator Mobile has a look and feel similar to the desktop version of Microsoft Office Communicator 2007 and ensures users can stay connected to the real-time communication capabilities they are used to, even when away from their desktops. Through integration with corporate directories via Office Communications Server 2007, Communicator Mobile can be used to quickly search for and communicate with anyone in an organization.

**Microsoft RoundTable:** An advanced collaboration and conferencing device, RoundTable provides a 360-degree view of the conference room, along with wideband audio and video that tracks the flow of conversation between multiple speakers. Combined with Office Communications Server 2007 or Office Live Meeting 2007, RoundTable enables meeting participants in different locations to converse and share information as if they were physically in the same room.

**Microsoft Response Point:** A fully functional, software-based phone and messaging system for small businesses, Response Point provides VoIP capabilities that can enhance or replace traditional phone systems. With Response Point, small businesses can add new extensions and phones without paying additional licensing fees and take advantage of voice activated commands to reach anyone in the company directory or their contact list, access voice mail, transfer and receive calls, and more.

## **Conclusion**

Three decades ago, the introduction of the personal computer launched a wave of innovation that continues to change the world in profound and important ways. The coming transition from disconnected, device-centric communications to integrated communications that center on people and the things they want to accomplish will be a catalyst for change that is similar in scope and impact to the move from mainframe computers to PCs. With the arrival of streamlined and intuitive software-powered communications technologies, we will be able to create a seamless continuum that brings together voice, video, text, applications, information, and transactions across people's work and home lives. This will provide the foundation for new products, services, and capabilities that will bring about the next phase in an ongoing revolution that continues to improve the way we communicate, run our businesses, create and access entertainment, and much more.