



**How IBM positioned for business
growth using integrated business
communications.**

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Introduction: a movement whose time has come—and IBM is leading the way

At the most basic level—telephones—the movement to communications based on Internet Protocol (IP) is well on the way to reality. Recent studies project annual shipments of IP telephones to grow from 10 million units in 2006 to 164 million units by 2010.¹

The anticipated sunset of traditional telephone technology and the shift to Voice over IP (VoIP) will likely drive a number of business benefits—reduced cost being chief among them—though many of these benefits may not be apparent to users. People will continue using telephones in the way they always have—if telephones are all they are offered. But broader changes in IP-based communications can enable organizations to give their employees communications capabilities beyond telephones and receive significantly more business benefits in return.

The advent of IP-based communications supporting voice, video and data—known variously as “converged communications” or “unified communications”—ushers in a broad range of enhanced communications based on the convergence and integration of devices and networks. This shift can profoundly affect the way people live and work. And it can enable improvements in communications, collaboration, productivity, customer service and more—creating integrated business communications that can foster business advantages that far outweigh lowering the cost of a phone call.

Such transformation to integrated business communications is already happening inside IBM. This paper tells the story of how IBM is building one of the world’s largest converged networks, the business and IT benefits IBM is realizing from convergence, and the benefits other companies may realize by following a similar model.

Highlights

Like most companies, IBM found itself adopting integrated business communications to gain specific business advantages.

Trigger: why IBM made the move to integrated business communications

The adoption of integrated business communications by businesses around the world has been growing. At the same time, technologies have matured and organizations have taken advantage of internal triggering events to deploy converged communications capabilities that give their employees, customers, suppliers and partners the advantages of running voice, video and data together on one network.

Most implementations of converged communications technology occur among midsize, large and very large enterprises – and are driven by events more specific than the impending retirement of traditional telephones. Such events can include a new or expanded building, the end of a lease for a PBX system or a lack of expandability in an existing PBX, the need to support an increasingly mobile and distributed workforce, the adoption of new video devices, or the need to ensure communication in the event of a natural or human-made disaster.

IBM met these triggering criteria – with its more than 1,500 buildings in more than 160 countries, some 900 PBX systems, 400,000 telephones, 160,000 cellular phones and a mobile workforce approaching 40 percent. But beyond its large, dispersed and increasingly mobile organization, IBM found itself a prime candidate for converged communications for three other key reasons:

- *Since the mid-1990s, IBM's telecommunications costs had been declining 10 percent a year. But that rate, which was principally the result of a decline in carrier rates, could not be supported indefinitely. IBM would need to find new sources for cost savings in communications.*

Highlights

IBM sought to realize additional cost savings, create a technology showcase and build offerings in integrated business communications services.

IBM's internal solution also created new ways to meet key business needs.

- *IBM was asked by an internal organization planning a new laboratory in Toronto, Canada, to provide a converged communications network. The goal was to create a state-of-the-art technology showcase that would attract the best software engineers in Canada. Within months, IBM received a similar request from another new IBM facility—this time, in Singapore.*
- *In these internal implementations, IBM saw an opportunity to create a foundation for offering services that enabled converged communications. Successful bids—besting proposals for conventional PBX systems—and smooth implementations in Tel Aviv and Dubai paved the way for 165 other deployments to date.*

Beyond triggers: meeting functional needs

IBM found, as it initiated its own integrated business communications environment, that the events that prompted the move to a converged network provided more than a way to deal with the sunset of traditional phones. They created a gateway into meeting broader communications needs. And using converged communications to meet those needs could pave the way to a larger, more business-critical transformation.

Few organizations, for example, can survive today without communications that include data, voice and video capabilities of some variety. Whether employees pick up the phone to join a conference call, attach a document to an e-mail message, send a fax, transmit an image over the Internet or initiate an instant messaging (IM) session, most business activities and outcomes are enabled by communications, both formal and informal.

Highlights

***Running communications
over a single standards-driven
network helps people work
together more effectively.***

Traditional voice-only systems typically may not responsively and flexibly meet the changing demands of business today – they may not be able to provide the ability to rapidly deliver new services or scale to meet expanding or contracting requirements. From a technical standpoint, a traditional PBX is a closed, proprietary system that must be integrated, architected and implemented by the vendor. Resiliency must be uniquely engineered for each location. As for cost, traditional systems present a limited ability to adapt largely fixed cost structures or business processes to achieve additional savings.

In contrast, a converged communications infrastructure enables organizations to run all their communications, not simply voice, over one standards-driven network, so all elements – and all people – can work together. The ubiquitous nature of IP provides a way for organizations to facilitate global collaboration and information sharing, enable virtual workgroups without the limitations of geographic boundaries, and scale to respond rapidly to new and changing requests for services. These solutions support the alignment of IT with business – helping, for example, the IT organization to implement new productivity tools and applications that enable enhanced business processes. A converged network can facilitate consolidation of the infrastructure for all data types. It can help increase productivity across business functions, from sales to finance to human resources. And it can save money.

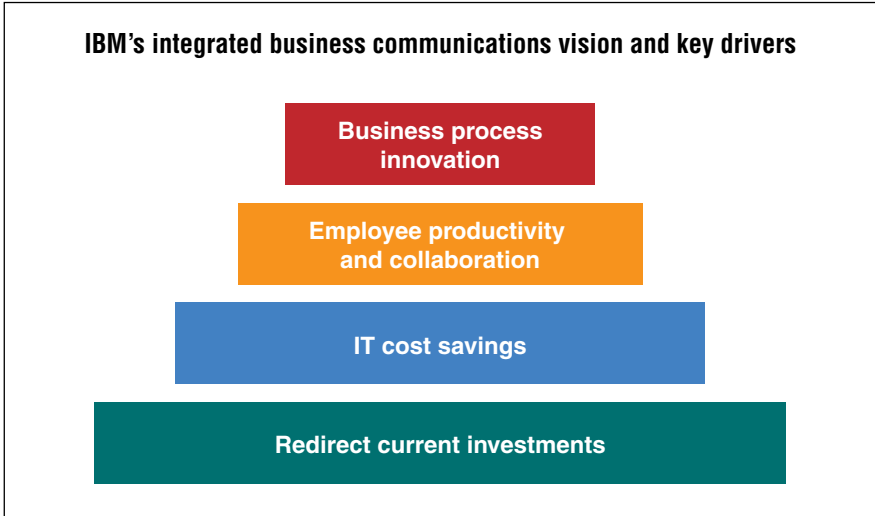
Beyond triggers: evolving the business

Since 2001, when it first began receiving requests for converged networks from its facilities around the world, IBM has observed an evolution in the reasons driving this communications change. In addition to cost reductions – always an abiding concern – more recent requests from IBM divisions have asked for increased and enhanced communications capabilities. The result is a pattern much like the model developed by Abraham Maslow to describe human development – once basic needs are met (in this case, cost reduction), it is possible to achieve more complex and sophisticated results.

Highlights

Once cost savings are achieved, organizations typically realize that they can move toward more complex and sophisticated communications goals.

So, while some 50 percent of IBM's converged communications implementations are prompted by a desire to reduce costs, a recent IBM study of its clients identified other growing business drivers. Among these are the needs to enhance the quality of communications, improve the efficiency and productivity of the organization, deploy up-to-date technology, enhance customer service and satisfaction, and generally improve how business is conducted. The ultimate desire is typically to achieve an integrated business communications environment that is second to none in the industry.



The reasons for adopting integrated business communications reveal a hierarchy of needs—with fundamental needs at the bottom that must be satisfied before the higher needs can be addressed. At higher levels, the business case for convergence becomes increasingly compelling.

Highlights

Three distinct phases in integrated business communications enable companies to move from basic cost reduction to business leadership and transformation.

From its own experience and the experience of its clients, IBM has seen that distinct chronological and functional stages exist on the path to achieving the full benefits of integrated business communications:

Network convergence and IP telephony: At this stage, an enterprise upgrades its infrastructure to combine its voice, video and data networks into a single IP network that can handle the quality-of-service, bandwidth, availability, call-control and traffic-handling capabilities needed to manage voice traffic. IP telephony and IP video can now be deployed over this converged network. This stage is typically driven by the need to achieve cost savings.

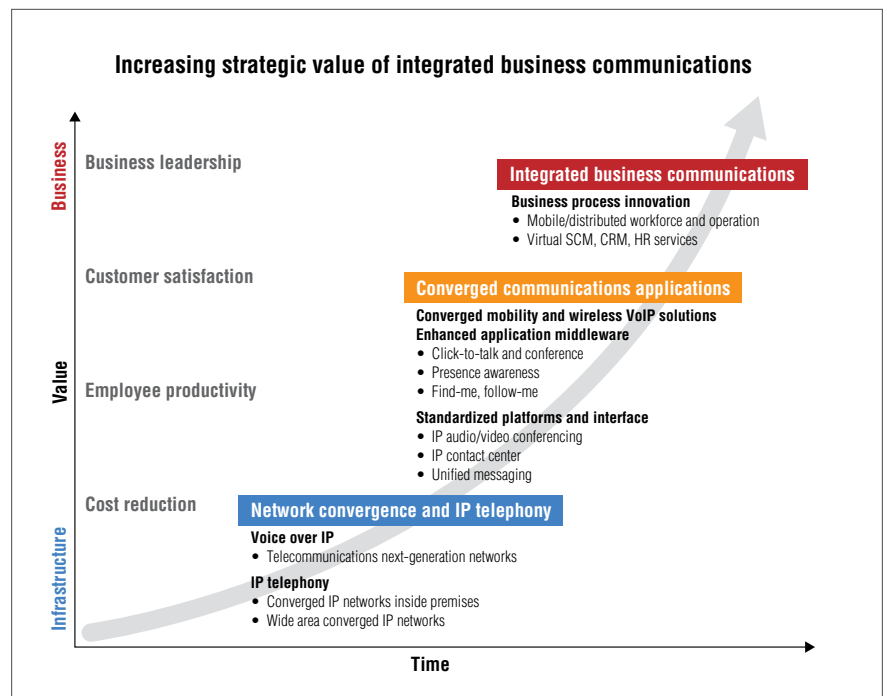
Converged communications applications: At this stage, stand-alone voice, video and data communications applications are integrated into converged applications. This stage is typically driven by the need to increase employee productivity.

Integrated business communications: At this stage, business processes and workflows are modified to take advantage of converged communications applications. Integrated business communications can help create innovative new business models, new methods of communication and information flows to provide business leadership.

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The following chart illustrates these three distinct chronological and functional phases:



IBM has identified three distinct phases in the adoption and related benefits of integrated business communications, from technology and function to higher-level business benefits.

For many organizations, converged networks have already reduced the overall maintenance and management costs associated with conventional communications. This includes freeing telephones from their physical locations to simplify moves, adds and changes (MACs) – because in an IP-based environment, a telephone is simply plugged in to any Ethernet connection. Integrated business communications, however, delivers benefits that are higher on the value chain. It is helping organizations improve employee productivity by providing powerful collaborative applications that can be used across a range of devices, including PCs, televisions, cellular phones, softphones, personal digital assistants (PDAs) and more. It is helping them increase customer satisfaction by enhancing the speed and quality of contact center response. And for

Highlights

Integrated business communications is helping organizations achieve higher employee productivity, increase customer satisfaction and enhance supply chain processes.

many, it is integrating supply chain processes so that vendors and customers can gain fast and efficient access to order status, inventory, store location and payment history.

Each stage in the move to integrated business communications can help enhance business value, as organizations move from technical concerns through functionality – to capabilities that aim to provide a competitive business advantage.

Timeline: planting seeds and reaping business benefits

IBM sought to create an innovative data and voice communications system that would enhance employee productivity and business processes. The company's experience reflects a classic transformation from addressing purely technical concerns to using IT to achieve business benefits.

In the 1980s and early 1990s, IBM had taken an extremely decentralized approach to IT – with a complex and difficult-to-manage structure that included 31 networks, more than 200 data centers, 16,000 applications and 128 chief information officers (CIOs). Subsequent efforts in standardization, consolidation, centralization and simplification reduced the environment to one network, 13 key data centers, 4,000 applications and one CIO. IBM cut its expense-to-revenue ratio nearly in half. By 2004, Sam Palmisano, chairman and CEO of IBM, noted: "... we had to reintegrate IBM. That's really what we have been doing for the last 15 months."

IBM's integrated business communications initiatives, therefore, came at a time when the company was transitioning from a siloed technology and business structure to a model that was more horizontal. The move away from 900 traditional PBX systems housed in 700 different locations was integral – and natural – to this effort.

Highlights

IBM's move toward integrated business communications came at a time when it was transitioning away from a siloed technology and business structure.

From the initial deployment in Toronto in 2001, IBM's adoption of integrated business communications has grown steadily.

Setting the stage for achievable results

Recognizing that a new vision and approach to communications were required, IBM established a set of strategic goals designed to guide the transition process and to help achieve the desired results:

- *Return value to IBM by reducing cost while improving employee productivity*
- *Improve end-user satisfaction by better accommodating mobility requirements*
- *Facilitate IT management and growth with an environment based on open standards*
- *Centralize the infrastructure and provide resiliency by eliminating PBX systems*
- *Provide an integrated platform for voice, IM, presence awareness, video, calendaring, meeting services and other end-user functions*
- *Provide a showcase for IBM's internal communications transformation*
- *Provide a platform for future growth and innovation*

Beginning with the 3,000 users in Toronto in 2001, pilot projects grew steadily. By 2004, some 23 sites were in production for convergence, and 13 more pilots were in process. By 2006, 85,000 of IBM's 400,000 telephones have been converted to VoIP (75,000 hard phones and 10,000 softphones that run on software from a laptop or desktop computer).

Full conversion to a converged environment is anticipated by 2010 – at which time, IBM expects some 50 percent of its employees to be remote or mobile and supported by the converged network infrastructure. IBM no longer makes significant investments in legacy PBX systems for internal use; instead, it is focusing on the latest technologies, software and solutions capable of supporting integrated business communications environments.

Highlights

With tools for e-mail, instant messaging and conferencing now unified, IBM employees have more communications options at their fingertips more of the time.

Using technology for real business benefits

As it moves toward full integrated business communications, IBM has achieved benefits in several areas. Among them are the following advantages:

Enhancing employee productivity: Integrating communications channels such as e-mail, IM and conferencing into a unified set of services and capabilities means more communications options at users’ fingertips more of the time. This can enhance productivity with functions that are as simple and quick to use as an onscreen “Connect me” button that can automatically authenticate a user and connect to a conference in seconds with a double click of the mouse.

Traditional processes and systems may be slowed by their need for manual communication interactions. In contrast, integrating these functions can drastically reduce manual functions. Presence awareness capabilities, for example, allow a user to quickly determine whether another person is available to accept a telephone call and help initiate that call automatically.

The speed and ease of use possible in an integrated environment have led IBM to project considerable efficiencies and gains in productivity for its users – up to 4.5 million hours for the company annually – as illustrated in the following table:

Projected time savings for common business functions

Activity	Feature	Savings per user, per week
Messaging	Voicemail mailbox and unified messaging	One hour (time spent accessing messages for approximately 10 minutes per day of use)
Conferencing	IBM Rendezvous	Thirty minutes (time spent scheduling approximately 10 conference calls per week)
Mobility	E-mail, corporate directory with IBM mobile phones	One hour (time spent accessing messages and information)
Softphones	Click-to-call	Eight minutes (time spent dialing eight internal and external calls per day)

IBM anticipates that the savings in time—and a corresponding potential increase in productivity—can be significant with integrated business communications.

Highlights

An increase in the number of remote workers led to a demand for real-time communications, which IBM is meeting through integrated business communications.

IBM has achieved cost savings through the consolidation of IT and the empowerment of remote workers.

Empowering remote workers: In 1998, some 25 percent of the IBM workforce was working from non-IBM locations such as client sites or while traveling; no one from IBM was based from home. Over the next seven to eight years, that composition changed dramatically. In 2005, 7 percent of IBM employees worked from a home office; and by mid-2006, more than 35 percent of the IBM workforce was without assigned office space and constantly traveled between home, various IBM offices and client locations. This has resulted in a pent-up demand for real-time communications, which IBM is meeting through integrated business communications applications. At the same time, the capabilities of the underlying converged infrastructure enable more remote employees. IBM, once known for relocating its employees, now makes it possible for employees to remain in one city even as their careers advance – creating a significant contribution to employee satisfaction.

Reducing costs: Over the past decade, changes in its operations set IBM on the path to considerable cost savings. In the early 1990s, when IBM maintained a large and dispersed IT infrastructure, IT costs represented 10 percent of revenue. Consolidation in the following years reduced IT costs to 5 percent of revenue. And the growth in IBM's remote and mobile workforce resulted in a corresponding decrease in the cost of office space. Since 1998, the amount of space IBM owns and rents globally has decreased by 17 percent.

Recent benefits – including savings that result from enhanced productivity and improved business processes – can be harder to precisely quantify financially because they are new developments. But audio conferencing, which represents a significant portion of IBM's annual telecommunications bill, has seen a 35 percent cost reduction. The cost of VoIP long distance is 60 percent less than the cost of traditional long distance. And offices in Canada – which now run fully converged environments – expect to approach a 50 percent decrease in their overall pre-convergence communications expenses in 2006.

Highlights

Transforming voice into an IT discipline helps drive cost savings and investment protection as it helps increase IT staff efficiency and productivity.

IBM's real-world experience spans a wide range of functions that provide benefits for IT operations, employees and the organization at large.

Streamlining IT management: With the majority of its deployment completed, IBM now has a single, consolidated and converged corporate IP network that is the largest enterprise deployment of converged communications in the world. The goal has been to transform voice into an IT discipline, using existing IT methodologies to provide voice services. Application servers are now on the same servers used for voice applications – so that IT staff who operate, monitor and maintain servers for other applications now handle voice as well. The teams that manage capacity planning, security and user support for other applications now do so for voice. IBM is transforming voice into an infrastructure application similar to e-mail and IM infrastructure applications. This infrastructure strategy helps drive corporate cost savings and investment protection as it fosters increased efficiency and productivity and helps streamline processes.

Functionality: IBM solutions for moving the business forward

IBM's move to a converged network environment has given it hands-on experience with the technologies, applications, functions and benefits of integrated business communications – ranging from technologies such as IBM WebSphere® Application Server, a middleware platform for integrating communications with applications, to servers that can accommodate up to 100,000 phones. IBM's real-world expertise also spans functions such as the integration of voice, video and applications and click-to-dial contact management. And it covers realization of benefits such as streamlined IT, which is possible when voice is treated as an application – and when PBX systems are no longer hardware components that must be integrated, architected and implemented by the vendor but, instead, are applications that the IT staff can install and manage.

The remainder of this section provides a brief look at several functions – and the resulting benefits – that IBM has realized.

Audio conferencing: IBM calls audio conferencing its “first IPC [IP communications] killer application” because the potential exists to drive down conferencing costs by as much as 35 percent. By 2006, IBM moved about 50 percent of its audio conferencing minutes to IP and was well on the way to realizing the anticipated savings. Previously, IBM paid an outside service for more than 100 million audio conferencing minutes per month.

Highlights

Audio conferencing has the potential to drive down conferencing costs by as much as 35 percent.

IBM employees can quickly find the person they need to call, send text messages instantly, initiate calls with a click or send voice communications on a laptop—for enhanced productivity and employee satisfaction.

The IBM Rendezvous audio conferencing system, due for general release soon, will deliver access to conference calls from any voice device. Already in use within IBM, it is estimated to be saving IBM US\$24 million a year. Rendezvous users dial the same number and use the same sign-on credential for all calls. They no longer need to look up numbers in their calendars, a significant time-saving advantage for mobile workers. Users receive automated assistance with problems such as noisy lines and difficulty joining calls, eliminating the need for assistance from live operators.

Presence awareness: This high-impact, productivity-enhancing application offers the potential to radically change how people conduct interpersonal communication—by allowing them to determine in real time whether another person is available for contact. A related function used during a conference call can show who has called in and who has not, who is speaking, and details about individual attendees, such as title, job description, reporting structure and home location.

Instant messaging: With more than four million messages exchanged among IBM employees on a typical day, IM is pervasive and business critical at IBM. IBM Lotus® Sametime® 7.5 software is expected to further facilitate a virtual office environment. In addition to leveraging functionality for communicating easily and quickly with coworkers, users will soon be able to communicate instantly with clients, partners or suppliers who may be using other IM platforms such as Yahoo! or Google.

Click-to-call: To establish a telephone call, users simply click on a hotspot on a computer screen. Click-to-call interfaces with a telephone directory so that users do not need to look up and enter phone numbers. The function also interfaces with Lotus Sametime software, allowing users to see presence information for call recipients and optionally to initiate a text chat.

Highlights

***IBM employees save time with
integrated message tools,
collaborate more freely and
move their equipment more
easily—benefits not possible
with conventional systems.***

Softphones: IBM employees can use laptop and desktop computers, rather than conventional handsets, to connect for telephone communications. Audio conferencing, instant messaging, presence awareness and click-to-call can be available on this platform. With software deployed centrally in the data center, all employees can have equal access to VoIP calling without the need to install desktop applications, simplifying IT management and accelerating return on investment.

Unified messaging: This function enables users to access and manage all their message tools, including voice, e-mail and fax, using either a touch-tone telephone or network-connected workstation—making it particularly valuable to mobile employees. Studies have shown up to an hour of additional productivity per day by employees who use unified messaging.²

Collaborative work sessions: IBM Jam Events can provide online, real-time, companywide brainstorming sessions, generating thousands of ideas in days. Jam Events allow IBM to record text chats, voice chats and audio conferencing into desktop files that can be saved, sent and stored.

Easy move/add/change: Installing an IP-based phone means simply plugging in to an Ethernet port. This eliminates the need for PBX procurement and implementation. It allows individuals to move freely and enables new sites to be brought online and populated quickly. In 2005, a simplified IP telephone environment helped facilitate IBM's move into the Crystal Tower in Madrid, two to three months ahead of schedule.

Interchangeable handsets: The universal nature of IP allows the mixing of handsets from different manufacturers on the same telephone network, offering flexibility and cost savings not possible with conventional PBX systems.

Conclusion: extending benefits beyond IBM to clients

IT today is not only about implementing technology – it is also about enabling business innovation. The same is true for communications. One of IT's key roles is to provide the organization with a leading-edge communications system – a system that can deliver both functionality and benefits designed to help the business achieve a competitive edge.

Integrated business communications can result in wide-ranging business benefits – including increased employee productivity, reduced cost, enhanced workflow process, simpler and easier MAC and improved business agility. Many of these advantages derive from the ability of mobile workforces to communicate using any method and device, quickly find the person or resources they need with presence awareness, and freely collaborate with simplified audio conferencing. Together, these benefits can result in increased competitiveness.

IBM's strength is bolstered by its behind-the-scenes capabilities – including middleware applications that make integrated business communications possible – and its hands-on experience in dollars saved, networks simplified and people empowered.

IBM's experience in architecting and implementing a world-class and global-scale environment for integrated business communications for its own organization, however, is more than just an example of implementing IP telephony and VoIP in a large organization. IBM's leadership and experience enable new and improved services and solutions that can be leveraged for the benefit of IBM clients. Clients engaging IBM for consulting, engineering, implementation and operational support receive the expertise of IBM's combined intellectual capital to help position their organizations for success in a world that demands real-time collaboration and innovation at every organizational level.



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