



Converged communications: a force for business transformation

How voice, video and data convergence is transforming collaborative relationships

Executive summary

Some organisations see the convergence of voice, video and data communications purely as a technology issue – an IT networking and telephony challenge with some interesting benefits, but ultimately with a purely infrastructural impact on an organisation. Forward-thinking organisations, however, are beginning to see the true potential of converged communications: its power to transform business relationships, business processes and collaboration between employees, suppliers and customers.

Voice and video are the missing link in collaborative relationships. Convergence enables organisations to close the gap between voice and data and so unify all major aspects of an employee's relationships, inside and outside the enterprise, through every major channel of interaction. Today's collaborative strategies span data-centric information, communications and processes, from email and instant messaging to business applications and external websites. Tomorrow's collaborative business environment will integrate voice and video too, enabling truly multi-modal, multi-channel collaboration inside and outside the enterprise.

This IBM Point of View is essential reading for senior management and decision-makers with responsibility for customer, supplier and employee-facing processes. The impact on business processes is deep and wide-ranging, and so are the potential returns for organisations that invest in converged communications.

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Organisations require a clear strategy to facilitate the move from disconnected silos of voice, video and data capability to the delivery of new collaborative applications based on converged communications networks. Realising that goal will require the support of organisations that understand how to best approach the challenges and opportunities that lie ahead.

What is converged communications?

Voice, video and data convergence is based on the emergence of Internet Protocol Communications, or IPC. Voice and video communications have traditionally relied on discrete networks running alongside data networks like the Internet. In a converged communications environment, however, voice and video are delivered across IPC networks. They become another data stream that's controlled and managed alongside communications from Web browsers, email clients, databases, business applications, instant messaging programmes and all of the other network traffic that's generated by a typical business.

As a result, voice and video communications can take place anywhere there's an Internet connection available, and via any device that supports Internet Protocol. Some organisations, and some vendors, still see converged communications purely as a technology issue – an IT and networking challenge, with infrastructural benefits but no real strategic impact on the enterprise.

It is true that converged communications is partly about Internet telephony and technologies like Voice over IP (VoIP). The initial growth in the converged communications market has been generated by the sale of networking products that simply replace existing telephony systems, and IP telephony can indeed provide clear infrastructure and cost benefits compared with traditional telephone networks.

From a business perspective, however, converged communications represent something far more significant. Communication is central to collaboration, and central to any kind of relationship. The convergence of voice, video and data communications is set to transform business relationships and promote vastly improved collaboration between organisations, their employees and customers.

“Convergence between communications and collaboration technologies will radically change the way people communicate in the next decade.”

– Unified Synchronized Communications Arrives, Forrester, 24 February 2004 (<http://www.forrester.com/Research/Document/Excerpt/0,7211,33930,00.html>)

Convergence and collaborative relationships

Collaborative strategies have already enabled companies make huge advances in service, productivity and agility using web-based portals to integrate data-centric applications and business processes. Collaborative portals streamline business processes by integrating disparate processes and applications into a single workplace used to facilitate employee-to-employee, employee-to-supplier and employee-to-customer relationships.

A collaborative portal brings together email and instant messaging, personalised news and content, role-based access to business applications, and workflow. It provides a common, intuitive user experience and a single workplace that can be horizontal (an employee workplace) or vertical (a supplier portal, store or customer portal) to suit a wide range of business needs. The next major evolution of collaborative processes is to bring voice and video into the collaborative portal environment.

The screenshot shows a corporate portal interface for Redbridge. The top navigation bar includes 'HOME', 'MY WORKPLACE', 'PHARMACEUTICAL NEWS', and 'RESEARCH TOOLS'. Below this is a secondary navigation bar with 'Home', 'Calendar', 'Address Book', 'Communications', 'Team Spaces', and 'Learning'. The main content area is titled 'LOTUS NOTES MAIL' and displays an email inbox with columns for 'From', 'Subject', 'Date', and 'Size'. Several callout boxes point to specific features: 'Customised links to favourite apps' points to the top navigation; 'Virtual Teaming' points to the 'Team Spaces' link; 'e-Learning' points to the 'Learning' link; 'Document Library' points to the email list; 'Personalised Employee Services' points to the email list; 'Personalised Content' points to the email list; 'Awareness' points to the email list; 'People Finding' points to the 'PEOPLE FINDER' sidebar; 'eMeetings' points to the 'AV Conference Preview' section; and 'Messaging' points to the 'CONTACTS & CONFERENCES' sidebar. The sidebar also shows a list of workgroups: 'Workgroup A' (with members Rebecca Lee, Joey Jeetun, and John Finch) and 'Workgroup B' (with a 'Preview' button). A context menu is open over 'Workgroup B', showing options: 'Chat', 'Join A/V Conference', 'Add Person to Group', 'Add Group', and 'Alert Me When Online'.

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The missing link in collaborative relationships

Voice and video are the missing link in collaborative relationships. In most organisations, voice and video networks do not form an integrated part of the IT infrastructure, and as a result they cannot form an integrated part of a process workflow. Most processes still require manual intervention at some point through the medium of voice, and most face-to-face meetings must still take place at a physical location.

“Despite investments in technology, business communications have become complex and challenging. Workers experience setbacks in meeting business objectives due to missed communications. When decision-makers are unreachable, customer service is also affected.”

– Integrated IP Applications Emerge in Europe, Forrester, 15 October 2004
(<http://www.forrester.com/Research/Document/Excerpt/0,7211,33930,00.html>)

Because of this lack of integration, the most efficient collaborative processes and systems can break down when people have to switch to a separate, cumbersome and time-intensive communication channel, and this has a significant impact on the relationship and process in question.

For example:

- Inbound telephone calls to your organisation are delayed and people are kept waiting while an operator launches an application manually to key in a customer's CRM information
- A marketing team loses a day on its project waiting for a domain expert to respond to voicemail and provide information for an urgent press release
- A supplier confirms a purchase order by telephone, but there is no firm record of the conversation – and they have to add administrative overhead by sending a fax
- A bank branch loses a major investment customer because its portfolio manager is in a customer meeting, and their current communications technology does not provide effective forwarding of the call to an assistant
- A customer service representative needs to divert a customer call to a product specialist, but before this can be done, an appropriately skilled person must first be identified and then availability checked – this takes time and does not demonstrate professional or efficient customer service
- A conference call with a range of geographically dispersed project team members cannot get underway to discuss progress and gain business approval for new activities because key stakeholders are late joining and cannot be located by telephone. A later call also fails to secure the necessary approvals because additional information needs to be reviewed offline before a decision can be made

- A regional sales manager who is frequently on the move is desperately trying to find details of a customer focussed audio conference and is frustrated by not being able to locate the dial in details
- The finance department is focused on lowering organisational communication costs – mobile telephones, fixed line calls, audio bridge, call-in cards, remote/branch site telephony costs and so on all seem to be impossible to reduce or even track
- An aggressive move by a pharmaceutical competitor leaves one of its rival's product team with little time to assess the impact on their organisation and their peers in the market – bringing together domain experts becomes an enormous task.

IBM's collaborative portal technologies have already been proven to benefit a huge range of companies spanning a range of industries and business models. Now, with its intelligent networking partner Cisco, IBM is moving to help organisations take the next big step in more effective, collaborative business with converged communication and collaboration solutions.

By integrating voice and video communication with collaborative portals, organisations can finally close the gap between voice and data to unify all major aspects of an employee's relationships, inside and outside the enterprise, through every major channel of interaction. Devices, processes and applications that normally exist in isolation from voice and video use those services just as they would any other channel, device, application or information source.

That simple fact belies a wealth of business benefit for organisations that adopt converged communications strategies – evolving business relationships to improve collaboration, optimising business processes through voice and video integration, improving the usefulness of business applications, and streamlining communications infrastructure and costs.

Key features of a converged communications environment

What are the features of this kind of collaborative network? How does it work in practice? IBM and Cisco are already working to develop transformational solutions based on converged communications technology. These are just some of the key elements of those solutions, many of which are already delivering benefits internally at IBM, as well as for IBM customers:

- Voice, video and business process workflow integration

Converged communications environments enable companies to embed multi-channel communication into core business processes. Today, the most advanced workflows rely on email or voice confirmation to obtain a decision from an approver or respond to a customer issue, and this usually takes place outside of the core applications or workflow systems being used to drive the process. The smooth flow of processes breaks down whenever manual intervention is required.

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In a converged collaboration environment, the integration of all modes of communication means that workflow can be re-routed intelligently based on presence management and other business logic. Using voice, email and instant messaging a collaborative process can operate via the most suitable channel to execute the steps required to attain a business goal.

- Voice, video and application integration

In a converged communications environment, voice and video can be integrated into core business applications such as CRM or ERP. For example, a customer's voicemail message can be linked to a detailed CRM record, so that when customer service representatives access the voicemail they instantly see the customer's details on-screen. Or, a purchasing clerk can simply click within a business/ERP application to dial a supplier to negotiate a better price – including a video link to support the negotiation process.

Converged communications also enable people to interact more effectively with Web-based applications. Voice is the most natural interface we possess, and converged communications provide the basis for voice-based control of Web applications, from customer service systems to simply browsing the Web in 'hands free' mode – for example, to get directions while driving. In effect this extends collaboration between people to include more effective collaboration with IT systems, and as speech recognition technologies continue to mature, voice access will play an increasingly important role in more usable, accessible interaction with a huge range of applications.

- Presence awareness and relationship management

Presence awareness, of the kind familiar to users of instant messaging tools (with icons showing who is 'available', 'in a meeting' and so on), can be extended to include voice and video communication too. An employee's personal portal can display contact lists of colleagues and extended teams with real-time information about their availability for each communication channel – email, instant messaging, voice and video.

There are straightforward productivity benefits – employees can see at a glance who is available to take a call or start a videoconference, and who can only be contacted via email or chat. The real benefit, however, lies in the ability to transform collaborative relationships by empowering employees to control the way communication takes place to improve teaming effectiveness and reduce time to make informed business decisions. Each user can establish rules about the channels they can be reached through at any given time, based on their availability, location, type of connection, the type of device they're using and the priority of a communication. These rules might also be established at a departmental or company level – for example, to dictate the path of interaction for a customer call or a communication from a senior manager.

Perhaps a sales representative is in a departmental meeting: other employees can see he's unavailable to take calls, so they email him instead. An incoming call from a prospect, however, is important enough to interrupt the meeting, and is routed directly to his

mobile telephone. Or, a project manager needs to set up an urgent conference call with her team. Through her portal she can instantly see that two team members are available for a voice and video conference, two have voice-only communication, and her key technical expert can only join via instant messaging – enough to make the conference worthwhile and achieve her goals.

- A truly consistent user experience

Converged communications environments enable organisations to provide a consistent user experience across all voice and data communications, engaging and empowering users whether they are employees or customers. Today, an organisation might have a usability and accessibility strategy for its websites, and perhaps its customer-facing branches or stores: with converged communications, it can extend this to all channels of interaction – boosting brand values and service for customers, and increasing ease of use and productivity for employees.

In a converged communications environment, all customer-facing applications, devices and channels can provide consistent access to a centrally-managed source of service and information, which enables organisations to provide a true multi-channel proposition to their customers and differentiate by delivering services in a more intelligent, usable way. For example, a call centre handles a customer enquiry: ten minutes later the same customer enters a branch, and the sales representative she speaks to has instant access to a recording of the call, the customer's email and an Instant messaging chat session with an expert through the company's website.

Converged communications can also be extended to multiple devices, from IP handsets to PCs, PDAs and kiosks (IBM has already prototyped an Instant Messaging wristwatch). This helps companies match devices to the situation at hand. A manager at a shipping facility, for example, probably doesn't need a laptop PC just to talk with his staff and update shipping manifests for his company's ERP system – but he could use a handheld IP device that provides voice communications with a touch-screen interface for manipulating the information he needs to.

- Rich media applications

A converged network provides a wealth of opportunities for new rich-media applications, from video conferencing for workgroup collaboration to e-learning, rich media data mining and distribution of music or video promotional content.

Rich media applications that are difficult to achieve today (because they rely on centralised videoconferencing suites, or running separate applications for online training, for example) can become an integral part of employee-to-employee and employee-to-customer relationships. And, because converged networks provide equal access to voice and video as well as traditional data streams, it becomes possible to apply business logic and develop new applications to search and analyse audio/visual content. Applications might include surveillance and object recognition, voice search and conflict detection during customer calls.

“During 2005/06, corporate usage of rich media will become mainstream as organisations seek to improve information exchange and collaboration. Through 2007, maturing end user tools and expectations will drive video, audio, and animation into everyday use, increasingly challenging IT organisations to provide adequate infrastructure resources.”

– Infrastructure Strategies 2005/06, META Group (<http://www.metagroup.com/us/displayArticle.do?oid=46228>)

- Click-to-dial contact management

‘Click-to-dial’ is a simple but incredibly effective productivity tool that is enabled by converged voice, video and data communications. A collaborative portal will typically provide contact lists from email, groupware and instant messaging applications, but can now include voice and video channels too. Wherever a contact appears on screen, a user can click to automatically dial the IP handset or IP softphone of that person – or group of people – for instant discussion. The same applies to users or groups with videoconference capabilities.

- Extension mobility

Traditional PBXs have gone some way towards number portability, with hot-desking giving employees some degree of freedom within a fixed location. The problem is that in a typical large global organisation there are multiple varieties of PBX installed at different locations, which limits the extent to which employees can take their telephony services with them wherever they go. When an employee is travelling or at home, the system breaks down completely. As a result, people have to manage multiple fixed and mobile telephone numbers and play a ‘where are they?’ guessing game just to have a simple conversation.

In a converged communications environment, an organisation can give each employee a dedicated extension number, with true extension mobility – so that an employee can be contacted on the same number wherever they have access to an Ethernet or VPN Internet connection.

- Infrastructure benefits

Finally, by centralising voice and video in the data centre, organisations can realise significant infrastructure and cost benefits. Instead of running PBXs at each location that requires telephony services, organisations can centralise voice and video in the data centre, preserving all the functionality of an advanced PBX but with significant cost, scalability and flexibility benefits. An

IP-based voice communications system running in a single data centre can scale to millions of users, none of which need be tied to a specific exchange. Instead of separate networks and technologies for telephony and videoconferencing, it's all integrated into a single, enterprise IT infrastructure, reducing the total cost of ownership (TCO).

Other cost benefits stem from a reduced reliance on external voice and video conference service providers; reductions in the cost of information publishing for traditionally distinct channels, such as IVR systems and the Web; and in many cases a reduced need for office real-estate, because employees aren't tied to a physical workspace.

Converged communications: transformational scenarios

Collaborative portals; acting as a single, unified point of access for employees, partners, suppliers and customers, who have already demonstrated clear productivity, teaming and communication benefits for a wide range of companies. Principally for internal employee-to-employee and employee-to-partner relationships. Integrating voice and video takes these collaborative benefits to the next level, and opens up a world of new opportunities for more effective customer collaboration. The integration of 'islands' of voice, data, processes, applications and infrastructure can help organisations build a single view of a customer, business pattern or group of transactions across all channels and drive fact-based insights back into their core

management processes in near real-time, making their organisations highly responsive to the shifting demands of the market. Organisational agility can be sustained through improvements in teaming effectiveness and business relationships. And customer experience improvements can enhance brand position, customer service, acquisition and loyalty. These are just a few examples:

Collaborative customer service: 'dynamic branches' in banking

Bank branches have to support many different collaborative relationships: between employees in a single branch, between employees in different branches, between the branch and head offices, between the branch and call centres, and between the branch and visiting customers. Each branch has to manage relationships across multiple channels – the Internet, private networks, telephone and IVR, ATMs and over the counter. Most retail banks are trying to develop this multi-channel relationship concept, but at the same time they cannot implement full-service branches at every location because of the high cost of specialists in each of the expanding range of services they provide.

Converged communications provides the opportunity to achieve this transformation. Branches can become proactive 'relationship centres' that use converged communications to enhance collaboration through every channel of interaction. The result is a 'dynamic branch' that can maintain local resources according to its size and location, and provide additional services to customers using converged voice, video and data networks.

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For example, if a product advisor in a branch is not available when a customer needs advice, most banks can simply offer to make an appointment for a later date – an invitation to the customer to shop around. Convergence can allow the branch to videoconference in remote expertise from a contact centre or another branch as an integrated part of the process, and an integrated part of the banking or CRM application on the desktop of the user. This not only increases customer satisfaction, but also helps increase the win rate for sales.

If an Internet customer is stuck on the website, they can simply click on a 'call-me' button and have a call centre agent share desktops to see what information the user has already supplied, talking them through the problem to capture an otherwise lost sale. With a converged infrastructure, this kind of multi-modal collaboration is integral to the business process.

Collaborative trading: b2b channel networks

Integrated voice, video and data communication can bring significant benefits to a range of collaborative trading environments where data, communication and personal relationships are intrinsically linked. For example, an automotive manufacturer has a national network of dealerships that customers consider as 'one company' but that are in fact franchises with their own management, communication processes and business goals. The dealerships do work together, but on an informal basis, via telephone, email and fax: they have more of a relationship with head office than they do with each other, but in fact by fostering collaboration the dealer network can be mutually beneficial for them all.

With a converged communication and collaboration strategy, the dealerships could collaborate via a single portal that delivered application data, voice, email, messaging and video services as required to support their daily business activities. Sensitive negotiations could take place face-to-face by video. A customer in one location could see the specific car they're looking for in a dealership on the other side of the country, without the company going to the expense of shipping it down. The dealers have direct links to their channel managers at head office and a unified platform for the latest corporate news, product announcements, promotions and other details.

Collaborative government: public sector

Governments all over the world are adopting electronic service provision to reduce costs but also provide a higher quality of service. Relationships are essential to public sector organisations, but they are more complex than relationships between a typical provider and customer because of the dependence of each party on information from the other. The public sector is increasingly driven by service level agreements (SLA), charters and government initiatives to improve service while reducing cost; the public is driven by a need for better information, faster service and in many cases a legal requirement to provide information. As a result the sector is founded on collaborative relationships in which each party is as dependent as the other on high quality communication and service. E-government is central to the development of this collaborative service environment, and converged communication will play an important role in the evolution of electronic public services.

The UK government, for example, has stated its commitment to improving accessibility of services via the Internet – by the end of 2005 all major services must be accessible online. That doesn't help the large number of people who simply cannot afford the technology to access the Web, however, and as a result there will still be significant cost involved in supporting over-the-counter enquiries and contact centres.

With a converged communication strategy, governments can roll out lightweight access devices and IP telephones to provide direct access to the relevant department or personnel without incurring call costs: in government-managed estates, for example, or via public multimedia kiosks. They can integrate Web and IVR contact systems to maximise accessibility while reducing infrastructure costs, enable voice-driven access to key applications, and even integrate video communication into social services and other sensitive areas of the citizen-government relationship.

Collaborative retail: Integrated multi-channel retailing

A collaborative portal with converged voice and data capability is an enabler for retail businesses to assist in transforming themselves by integrating core capability, processes and organisation across their retail channels (for example stores, catalogue, e-shop, call centre, interactive television and mobile phones).

Such a portal can optimise the customer experience by improving access to product specialists and information, and providing a consistent and joined-up experience across all channels from pre-purchase to purchase through to after sales support. It also enables the retailer to leverage a means of generating awareness and driving the right 'traffic' from one channel to another for cross-sell, up-sell and customer service.

Visiting a store after researching the web site can be made to feel familiar with similar presentation of products and information and even navigation through different departments or product ranges. This can remove frustration and complexity from the customer experience. If additional product information is required, access to kiosks can be made available, again using methods of access consistent across other channels. If a 'help-me' option on the kiosk is selected then the customer can initiate a conversation with a product specialist using an attached IP telephone handset. The specialist could be located in-store or anywhere in the world and have immediate access to recent activity on the kiosk (to understand the product areas and requests the customer has already made through the web interface on the kiosk) to provide any additional information required. Such a request does not necessarily need to be initiated from a kiosk – it could be made directly from an IP handset provided to customers in-store. It could even include video capability to enable a specialist to provide visual guidance or demonstration to help address a customer query. Again, these staff could be located anywhere in the world, helping to bring specialist, and often scarce and expensive knowledge into every store and across all channels.

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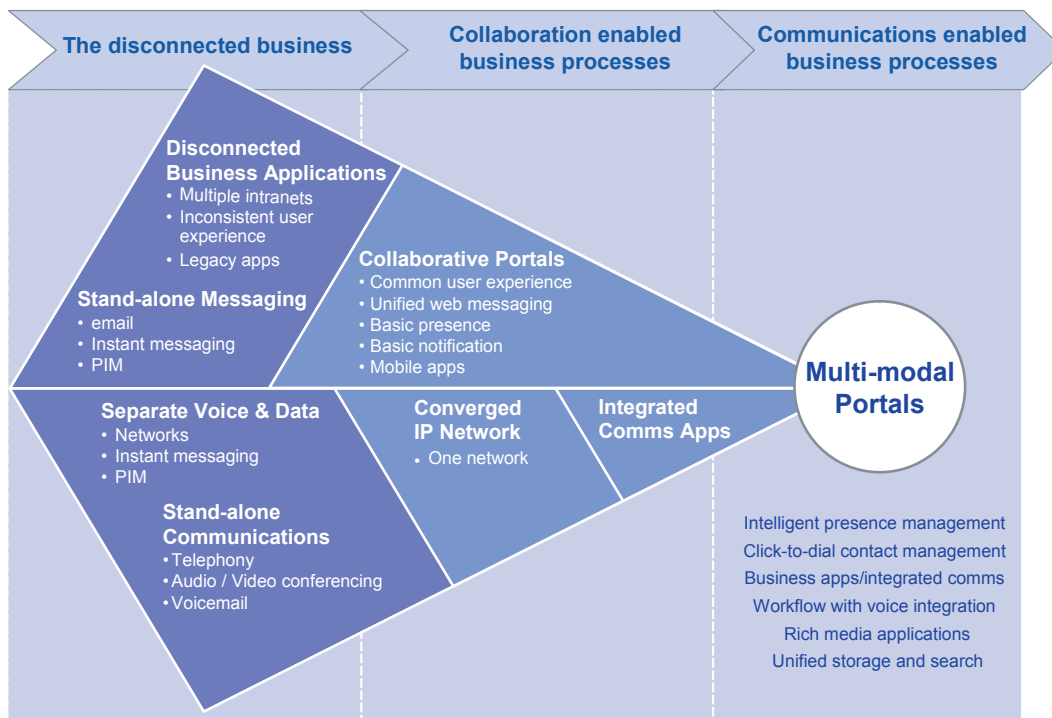
A portal can also improve workforce efficiencies and capabilities within the store through collaboration and sharing of key operational and sales information. It can provide learning to employees electronically as needed based on their role and include short briefings on products, regulatory or corporate policies, task instructions, and so on. The information can be delivered in-store via kiosks, Point of Sale (POS) terminals or IP telephones without reliance on the limited back-room PC facilities with limited staff access.

Staff can have the facility to register for notification when selected business events (conditions, measurement points, and so on) occur and be notified interactively via a Personal Digital Assistant (PDA), POS terminal or nearest IP telephone of those registered business events. A PDA or wearable PC device could also be used to provide presence awareness information to further aid collaboration and accessibility. Integrating these access devices through a portal facilitates mobility for the store management team by having the capability to access all relevant capabilities from a multi-function telephony device, targeting information delivery directly to the people who need it. It allows critical information to be pushed as well as allowing users to pull important information, leading to benefits in the harvesting knowledge and increased know-how.

Next steps: the roadmap for business transformation

IBM has years of experience implementing collaborative portal solutions for major organisations, providing a consistent user experience and empowering employees with the information and tools they need to perform effectively, whatever their role. Now IBM is extending the potential of collaboration by integrating voice and video into the portal environment, with business processes and with applications.

A converged communications and collaboration strategy is the ultimate goal of a journey from 'disconnected business', to collaboration-enabled business processes, and finally towards communications-enabled business processes. This journey can be seen as a roadmap for business transformation:



Achieving this goal requires a combination of business process, collaboration, hardware and software expertise. In IBM's experience there are several issues and questions an organisation should address in order to deliver a successful converged collaboration strategy:

- Establish a clear strategy

Where are you today on the roadmap and what are you trying to achieve? 'Disconnected businesses' need to move towards a more integrated, collaborative environment before embarking on a convergence project. Existing portal users need to establish a strategy for the convergence of existing telephony systems, which can be a major project in itself for complex, distributed

organisations. Some companies have already solved their telephony infrastructure problems by migrating to IP-enabled systems, but have no clear strategy for building applications on those systems that deliver improved collaboration and real business value.

- Portal development is critical

Converged communications depend on an effective collaborative interface. A converged, collaborative portal is the only interface most of your internal users will have with business and communication processes. Consequently you need to have a complete understanding of the way processes work for each major part of your business to create a portal for effective collaboration.

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Do you need to create functional workplaces, role-based workplaces, customer or supplier workplaces, or a combination of each of them? What processes are in place for content creation and delivery? How will you manage personalisation and authorisation? How prescriptive does your portal need to be? How will it interact with existing communication channels, data sources and applications as you evolve to a true converged collaboration environment?

- Focus on the user experience

Usability and accessibility are of paramount importance to ensure employees can work in the most effective way possible through the widest possible range of devices. These issues impact customers, too: designing converged customer-facing solutions also depends on creating fast, effective and accessible services that meet each customer's usability expectations.

- Manage business transformation and organisational change

The convergence of voice, video and data will have significant implications across your business. You need to prepare for the cultural impact of converged applications on employees and customers, as well as the perceived effect they will have on those currently responsible for managing voice, video and data. There has been some resistance from managers of telephony networks who

see convergence as a disenfranchising force that shifts control of their responsibilities to the IT department – but in fact converged networks depend equally on IT and communications departments. Voice services are just as empowered by access to IT resources as business applications are by being voice-enabled. Voice and data expertise are both required to deliver value to your organisation.

- Implementation issues

Do you have the internal resources and expertise to host a potentially much wider range of communication applications? Is your network infrastructure up to the job? Should you consider outsourcing? How can you maintain business as usual during the evolution of your voice, video and data networks? Convergence empowers any business function to which relationships are important, which means it involves every business function, not just heads of IT and telephony.

“Most companies will integrate voice and data networking, with the major work starting in earnest in 2005 and continuing through 2008/09.”

– Infrastructure Strategies 2005/06, META Group (<http://www.metagroup.com/us/displayArticle.do?oid=46228>)

Conclusion

Most organisations have some elements of a converged communications and collaboration environment in place already, whether it's a basic intranet portal or an IP-enabled telephone systems, but that doesn't mean they can simply combine a collection of disparate technologies to transform their business.

To realise the promise of convergence, you need a clear strategy to transform your organisation from a 'disconnected business' to one that has integrated key processes through collaborative portals. You also need to work with partners who understand the pitfalls and opportunities inherent in any major converged communications transformation. The impact on business processes is deep and wide-ranging, and so are the potential benefits.

The voice revolution started with the invention of the telephone, which allowed people to collaborate one-to-one in real time. The Internet provided a many-to-many communication network, and enabled organisations to engage in truly collaborative processes on a global basis for the first time. Today, the convergence of voice, video and data is set to transform business relationships and collaborative strategies – forever.

For more information

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