Convergence and collaboration

Get the bigger picture
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When people in information and communication companies talk about “convergence”, they usually mean the coming together of the traditionally separate worlds of voice and data networks.

The pressure to converge

The arguments for this convergence are familiar, and they start with cost. If you have to have one network for voice calls and a separate network for data, and you repeat this separation across every site in your business, then everything about maintenance, changes and upgrades becomes complex and potentially expensive, not to mention the duplicated capital cost of having two parallel networks. Moving to a single network would seem to offer an obvious route to streamline these tasks and costs.

This convergence became technically more feasible with the development of the Internet Protocol (IP), theoretically enabling converged multimedia (voice, video and data) over the same network. There were some problems: in their early incarnations IP networks struggled to give adequate priority to voice and video traffic (which is sensitive to time delays in ways plain data traffic is not) but these have been largely solved. Especially through the use of MPLS (multi-protocol label switching) networks, businesses can expect to enjoy voice and video services whose quality is indistinguishable from those delivered over more traditional and long-proven technologies.

None of this is particularly new.

In fact convergence advocates have been talking about it for years. Indeed the technology has been creeping in: most voice network hardware installed in the last few years will have an element of IP functionality, supporting a convergence path.

There have been significant early adopters. BT has won some notable converged network contracts, including Lloyds of London (one of the world’s major insurance centres) and the business information company Datamonitor, the latter working to a business case that predicts voice call savings for the business of 50 per cent.

But despite this recognition of the potential of converged networks, the path remains largely untaken.
There are good reasons for this, and good reasons why it is about to change. Cisco, the leading IP infrastructure manufacturer, has suggested that the converged marketplace will be worth some $30 billion over the next four years alone. Danny Sullivan of BT’s consultancy and systems integration arm suggests that there are compelling economic and technological drivers behind the shift.

“First there are some influential end-of-life effects in enterprise software, with Microsoft significantly looking to move from Exchange 5.5 to a different directory model,” he says. “Then you are beginning to see some of the waves from mass broadband beginning to break, with a dramatic fall in costs, and for related reasons a resurgence of interest in hosted and on-demand services, as we have learnt to get around some of the management complexity of the initial offerings that inhibited their take-up.

“At the same time we’re seeing new levels of collaboration in the supply chain, with the development of effective boundary services, and behind that an upgrading of directories and desktop clients. Put these things together and businesses begin to see a bigger case for convergence over the next two years.”

All of this is important, because as Sullivan admits, for most large organisations, the business case for an overnight switch to a converged network is thin. If you were installing on a green field site then a converged network makes compelling economic and organisational sense. You can install a single infrastructure to handle all your communications, with all the advanced application benefits promised by integrating your voice, video and data services, and a visibly lower infrastructure cost.

But if you have a mishmash of legacy systems (as most large organisations inevitably do) then the cost equations have looked very different.

This is the simple reason why until now the take-up of converged networks has been slow. But the cost equation changes again if you are facing the need for major systems upgrades for other reasons. “Organisations face a choice”, Sullivan argues. “They can continue building on their legacy systems, duplicating infrastructure, or they can use the opportunity to streamline what they do.”
Getting the bigger picture

Other economic shifts are playing their part. As Sullivan notes, there is a resurgent interest in hosted applications, driven partly by potential cost savings, but also by the opportunity to do things better.

“It’s been calculated that if you have anything over a 1,000 email users on Microsoft Exchange 5.5 you’re better off with a hosted version, but this is recent because we’ve only just got to the point where we have the tools and the network intelligence to ensure that the on demand services work properly. In BT we call this concept AAI, or Assured Applications Infrastructure, and it matters because it enables us to identify exactly what’s going on with all the different applications and services running over the network.”

The ability to take a complete view of the network and all the applications you want to run is fundamental to AAI. Instrumental too has been the development of the MPLS network itself, offering a global and scaleable platform for converged applications, with the built-in intelligence to manage those applications.

Research by the US based Gartner bears out this picture of growth and growing complexity.

“Organisations are investing in call centres to improve internal processes and ultimately, customer satisfaction. VoIP telephony is growing in popularity as organisations begin to understand the relevance and convenience of converged data and voice networks. … Demand for vendors to manage converged networks is increased by the complex problems organisations face when planning, designing, building and operating this new infrastructure …. Other technologies, put on hold for several years, are being revived. They include wireless LANs, mobile communications, storage area networks, and dedicated firewall and IP virtual private network (VPN) equipment. … Annual growth in shipments of dedicated firewall and IP VPN equipment will continue to exceed 30 per cent through to 2006, both worldwide and in Western Europe.” (Network IT services in Western Europe: market trends in 2002 and forecast to 2007).

In the meantime the absence of a unified view of a corporate network also highlights a necessary truth about the path to convergence.

“Organisations will have different starting points when they consider convergence”, Sullivan argues. “They might be managing all their networks themselves. They might have some managed or completely outsourced elements. For large organisations this mix will vary across their different operations. Convergence raises issues which are not just technical, but also involve process change and cultural shifts for people. If you are to realise the potential business benefits you need to tackle those issues properly, and to do that you need to know first how you are going to get to understand what it is that you actually have, and then how you are going to develop a road map for change that takes into account all these different elements.”

These challenges are not trivial.

Network infrastructures have necessarily developed in an ad hoc way as new applications and possibilities have come onto the market. Many organisations are the result of mergers and acquisition, their infrastructures joined pragmatically rather than being fully integrated. A recent survey of 250 IT professionals by Compaq found that 83 per cent did not know what applications were running on their networks. Some 82 per cent did not know how much traffic was non-business related.
Improving productivity

This lack of knowledge is fundamentally inefficient: it means that organisations will be poorly placed to plan investment and upgrades.

But more than this, the big picture of what you have and how people are using it, whether they are in your offices, working from home or on the move, is vital if you want to be competitive in a world about to be changed by convergence.

We have seen so far that there are technical reasons why we can expect an accelerated adoption of convergent applications, but perhaps more significant are the softer cultural pressures at work.

Outside of technology, we tend to work in a “converged” sort of way. We expect to be able to look at texts, pictures or video materials simultaneously, to talk about them with colleagues and make changes or suggestions. Of course to do this we have all had to be in the same place, a fact which has shaped how businesses have organised themselves, and which brings its own restrictions.

Communication and information technologies have helped us to get over some of the limitations of distance, but only by constraining us to work in some fairly artificial ways, forcing a rigidity in how we arrange and structure contact with colleagues, or suppliers or customers. We cannot walk down some metaphorical corridor and ask “what do you think of this?” We have to send out materials for discussion in advance, and book a time when we can talk through them on the phone, or else follow an email trail. We have accepted these limitations as normal, or as the price we have to pay for our new freedoms in where and when we work, or how we manage our relationships and social contact in and outside work.

But convergent technologies promises to transcend these limitations. To quantify the return on investment from the move to convergent networks, organisations will need to factor in the way our work changes as a result, the way we can become more productive because we can work more naturally with other people, without having to be in the same location as those other people.

It’s no surprise then that the first wave of “converged” applications have been largely collaborative tools, typically offering variations on conferencing incorporating shared document spaces, interactive whiteboards and video links. Interestingly these applications lend themselves to hosting: because they tend to link “many to many” they can be better and more easily managed if users log in from a client machine to a centralised server.

The IT research company IDC estimates that the total market for different types of collaboration applications is already worth $4bn, rising to $5.6bn in 2007.
Informal collaboration

An important element in this growth is the trend towards informal collaborative tools, whether in the form of weblogging or instant messaging (IM).

Weblogs themselves do not depend on convergence, since they can work over an organisation’s intranet or email network. They offer an easy way for people in an enterprise to record thoughts and experience, and for other interested people to “subscribe” to those notes, receiving them automatically on their own computer or device. In other words they are an informal knowledge sharing tool which is proving particular useful in workgroups or project teams. They are significant in this context because they reinforce the trend to informal and easy knowledge exchange within an organisation.

IM is also likely to be increasingly important. It started as a simple way for people to exchange short messages in real time over the network to colleagues or friends. It does so via a small panel on the computer monitor, which can act as a kind of crude virtual meeting space allowing communications through text and speech. It is important partly because the software is quickly developing to offer simple video links, mostly because it has a “presence” capability; that it can let you know when other people you might want to talk to are logged on to the network.

Danny Sullivan sounds a note of caution.

“IM is not always popular in corporates at the moment. In the longer term though it will be significant. You can see that in the way that Microsoft is building intelligence about presence into its directory products, so when you come to set up any kind of online collaboration it gives you options appropriate to where you happen to be and the devices you are using. In effect they are aiming to change the way we communicate.”

These pressures will continue. As the Financial Times noted in a review of collaborative technologies early in 2004, from the CEO’s viewpoint

“… the need for electronic collaboration is growing all the time. Companies have branch offices, customers and suppliers all over the world, but business cycles are getting ever shorter, and decisions need to be made in minutes or hours rather than days.”

It added as a rider for CIOs that convergence brings a significant change in user expectation.

“Real-time applications are more like the telephone network than a computer system. Users expect it to be there all the time. The network should be designed with this in mind, with greater redundancy to minimise the effect of a mishap.”
At work, at home

This change in expectation, and indeed the corporate take-up of IM, illustrates a further, subtle layer of convergence, between our lives inside and outside of work. For those who have learnt how to use IM at home, it is natural enough to expect to be able to use it at work.

There’s little doubt that convergence in the home will change expectations at work too.

Residential Voice over IP (VoIP) products are rapidly becoming available, whether in the form of DIY services from the likes of Skype, to more formal offerings from the telecommunications giants (including BT) or new entrants like Vonage in the US. These offerings are being driven initially by price (the prospect of “free” or very low cost calls), but as penetration rises we are likely to see value added collaborative services that change our perceptions of what we can do either with our computers or our handsets.

In this light, “presence”, or the ability of the network to understand who is where and what access device they are using, is potentially one of the most radical aspects of convergence. In the converged world, devices finally become personal. This works on an immediately practical level for system administrators, because it means that when employees change their physical location the network will automatically recognise the change (when they plug in their equipment) and route traffic accordingly: the user is recognised by his or her IP address. But as we have seen, you can also build in the intelligence to understand whether this user is an office or home, using a PC or a PDA or a smartphone, on a fixed or wireless access network.

From the user’s point of view, the access route taken should become irrelevant, or certainly invisible. The resources to communicate, collaborate, and generally take advantage of any online services, will be available anywhere and everywhere, with the device and the network sorting out the best connection without needing user intervention. This is the vision that underpins BT’s 21st Century Network project, designed to create a seamless IP-based public infrastructure capable of delivering converged services wherever they are needed.

Supply chains and customers

This vision could have far reaching implications for how we act as individuals, implications that are discussed at greater length in our companion paper on Virtual Personal Networks.

It has immediate consequences for enterprises hoping to deliver products and services in a form that their customers will expect and value, because as we have begun to see, convergence and collaboration is not just an issue within the enterprise; it has fundamental implications both for the supply chain and for customer relationships.

Convergence is about a customer going into a shop and buying (let us say) a new sofa. Sitting in a bar that evening with his friends he changes his mind about the colour. He goes online, checks fabric availability, tracks his order and makes the change to a more expensive option. The system captures his request, feeds it automatically down the supply chain and back to the billing system, as well as notifying the customer of any change in the expected delivery time that will result. A week later and the customer is standing bored on the train wondering about his order.
He uses his phone to go to the shop’s web page and taps a link to initiate a call to its call centre. The call centre agent sees the customer’s details automatically on screen together with the latest data on expected delivery, alongside the fact that the delivery must be made after seven in the evening or at the weekend.

The technologies and the accompanying standards to do all this are already pretty much in place. The implicit supply chain automation offers powerful cost reduction benefits to all partners in that chain, but more important, as customers get used to this kind of flexibility so they will come to demand it.

There are early signs of the convergence of online and real world retailing: global supermarket retailers like WalMart, Tesco and Metro are experimenting actively with Radio Frequency Identification (RFID) tags, which promise not only to transform the supply chain, but could help those retailers add value to the way the products are used even within home via the internet.

(For example, staple products could “add themselves” to your electronic shopping list as you use them up, but even at this apparently simple level there are some profound implications for our relationships with the companies who serve us. These are also discussed more fully in our companion paper on Virtual Personal Networks.)

Convergence and globalisation trends are reinforcing each other.

We are seeing a multiplication of channels for customers in the way they deal with companies, whether through phone, email, IM and SMS or other online interactions via a website. While the channels may be multiplying, companies need to bring them together if they want to maintain a focused view of the customer or particular enquiry. They are increasingly doing this through integrated multi-media contact centres. At the same time the availability of fast and high quality global networking means these centres can be located anywhere in the world, making effective use of customer contact skills wherever they happen to be.

Towards the digital networked economy

Some of these developments are still some way off. Others are just around the corner. Others are already with us. As Danny Sullivan suggests, the real driver for convergence is not the opportunity to save a bit of money on network investment and management. It is the fact that convergence is happening on multiple levels, and everything is moving that way.

This is the reality of the digital networked economy. Customer expectations are changing rapidly, and rising. Service excellence will just be the entry point if you want to stay competitive. Convergence matters because it supports the concept of a joined up company, where people can collaborate effectively to deliver more effective customer engagement. It is a catalyst for the rationalising of disparate processes, to create a focused view of the business, its customers, and priorities for change.

“The issue isn’t whether the supermarket will be using RFID tags to bring up special offers or recipe ideas on your kitchen monitor when you take your chicken out of the fridge,” says Sullivan. “Who knows about those things? What does matter if you are an enterprise looking at infrastructure investment, is that you better start moving to a converged network now if you want a chance of being ready to deliver more sophisticated customer experiences in a couple of years’ time. Depending on where you are on that journey you might be looking at managed service concepts like AAI to help you implement that change incrementally, or you could be using the same analytical thinking to underpin bespoke solutions. The important thing is to start the conversation now.”
Offices worldwide

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