Point of View

The Next Step for Convergence: Integrating Applications in an IP Environment

An AT&T survey and white paper in co-operation with the Economist Intelligence Unit

Executive Summary

Whereas the first wave of enterprise convergence projects focused on creating a single infrastructure based upon the Internet Protocol (IP), companies are now focusing on the challenge of integrating their major business applications with real-time communications running over IP. This is one of the main findings from a survey of 236 executives (including 77 CEOs) on network convergence issues conducted in 2005 by The Economist Intelligence Unit in co-operation with AT&T.

The analysis in this white paper suggests that it will become increasingly difficult to divide communications and information processing into separate categories as organizations load as much corporate traffic as possible onto their IP-based networks. No less than 20% of firms in the survey have either already migrated the major communications and application categories (mobile voice and data, fixed voice and data, enterprise applications, contact centers and multimedia services) to a converged IP network or plan to do so within the next 12 months. That figure rises sharply to include 50-70% of all surveyed enterprises when the time period is extended to 24 months.

Although the trend among enterprises to run "everything over IP" is sustained and widespread, there are significant applications-related issues to consider. Which applications should be migrated first? How can the migration be accomplished with minimal disruption to the current business? How can companies take advantage of IP-driven economies while laying the groundwork for future innovation? What does not concern most executives is whether in fact such a transition should take place.

This is the final in a series of four thought-leadership papers written by AT&T in co-operation with the Economist Intelligence Unit based on the 2005 survey research program.

Applications Then and Now

Modern organizations cannot function without communications networks and information technology (IT) applications. Whether checking customer records, processing orders, interacting with suppliers or managing internal operations, it is difficult to find an area of commercial activity that is not mediated or managed in some way by electronic communication and information processing.

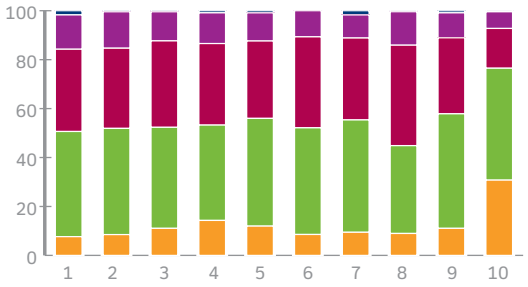
Until the advent of reliable IP infrastructure and services in the late 1990s and early 2000s, most organizations ran their communications and information traffic on separate voice and data networks. This not only added expense but contributed to a siloed way of managing the business, IT and telecommunications 'layers' that comprised the enterprise environment. Business management would routinely make requests to IT that applications be turned into services. In many cases, IT would pilot and test an application without evaluating how it might affect an enterprise network operating at global scale.

This approach to integrating business activities, IT applications and telecommunications networks is starting to dissolve as organizations outsource more business processes; as software starts to be offered as a service instead of a package; and as network boundaries are no longer defined by infrastructure owned by the firm. Companies are already well on the way to replacing these separate layers with converged network and IT architectures that use IP as the central transport protocol for voice, video and data. Future scenarios for converged IP networks include utility computing, whereby firms start to procure IT and communications services on a usage basis, in the same manner as they procure other utilities such as electricity or water.

Consequently, it becomes increasingly difficult to disentangle communications from computing services in terms of which is more critical to the business. Clearly, executives consider business process applications such as enterprise resource planning, supply chain management and customer relationship management as the most vital of network-based applications – 77% of survey respondents say they are important or critical. But more than half the surveyed executives also rank several communications applications including messaging and collaboration software as either 'important' or 'critical'.

at&t

How important are the following applications to your business?



	Critical	Important	Of minor importance	Not important	Don't know
1. Interactive voice response	7.66%	42.98%	33.62%	14.04%	1.70%
2. Contact centers	8.51%	43.40%	32.77%	14.89%	0.43%
3. IP telephony	11.06%	41.28%	35.32%	11.91%	0.43%
4. Remote access via an IP phone	14.29%	38.96%	33.33%	12.55%	0.87%
5. Collaboration software	11.97%	44.02%	31.62%	11.54%	0.85%
6. Video-conferencing	8.55%	43.59%	37.18%	10.68%	0.00%
7. Unified messaging	9.44%	45.92%	33.48%	9.44%	1.72%
8. Multimedia services	8.97%	35.90%	41.03%	13.68%	0.43%
9. Team management software	11.06%	46.81%	31.06%	10.21%	0.85%
10. Business process applications (e.g., customer relationship management, enterprise resource planning, supply-chain management)	30.77%	45.73%	16.24%	6.84%	0.43%

Source: Economist Intelligence Unit / AT&T survey, June 2005

In this sense, the focus of enterprise data and communications convergence has moved beyond the suite of transport technologies that make up an IP network. According to Ed Vonk, chairman of the European Virtual Private Network User's Association (EVUA), a telecommunications user organization for some of Europe's largest multinational companies: "The enterprise environment already uses IP as the transport network for nearly all kinds of applications except for systems that are unique and mission-critical, such as a refinery control system for the oil industry or low-value applications that are strong candidates for outsourcing".

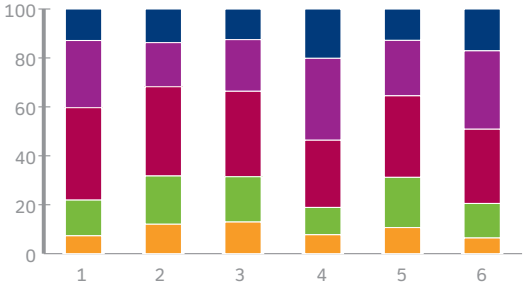
Hence, the main thrust of current convergence strategies involves migrating time-sensitive applications such as voice and video onto already existing IP data networks. Driving this push is not only a desire for lower costs but also the need for greater simplicity in operations that are becoming more distributed. "It doesn't matter if your existing application doesn't yet run in an IP-native format; you can bet that the next version will" says Vonk, "Even in the short to medium term, if large organizations have a chance to migrate to an IP platform for most of their communications and applications, they will do it. IP is simply the future."

Unum Provident is among the world's largest providers of group disability insurance. According to Randolph Chapman, Vice President of Communications and Desktop Services, the company is currently adding voice and video to an IP network that has carried data and internet traffic for the company for a long time. Along with lower costs, Chapman notes that Unum Provident is seeking greater simplicity in its operation of U.S. call center campuses in Chattanooga, Tennessee and Portland, Maine (which have a combined total of some 7,000 users). "The result of putting voice on the data network is that, along with gaining economies and scale, we don't have a lot of multiple connections to manage between ourselves and our clients now."

In most of the organizations surveyed, the migration of communications and information applications is in full swing. Between one-fifth to one-third of respondents report that their firms have already shifted their communications services as well as major enterprise applications to an all-IP or IP-centric platform or plan to do so in the next twelve months. That figure rises dramatically when the time frame is extended to two years.

Once an organization finishes its basic migration to IP, the pace with which applications are added picks up rapidly, according to Vonk. "Once organizations implement IP as their basic transport layer for communications, then within about 18 months they will typically have around 80%, sometimes 90% of their applications running on it."

Over what timeframe will your company migrate the following applications or facilities to a convergent IP network?

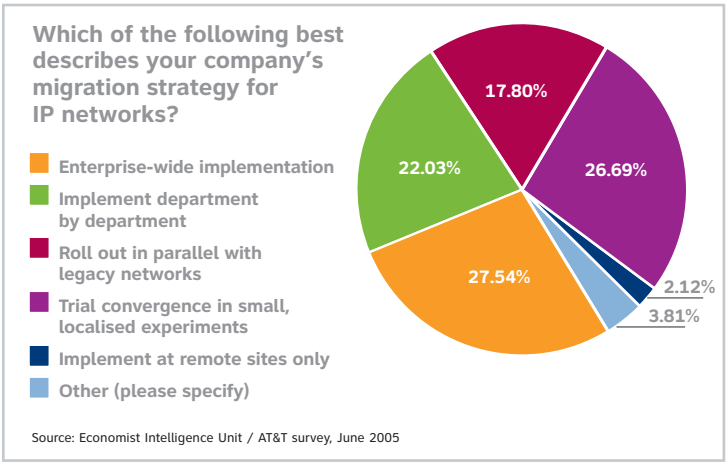


	Already migrated	Plan to migrate in next 12 months	Plan to migrate in 1 to 2 years	No plans to migrate	Don't know/Not applicable
1. Mobile voice and data	7.30%	14.59%	37.77%	27.47%	12.88%
2. Voice and data (non-mobile)	12.02%	19.74%	36.48%	18.03%	13.73%
3. Enterprise applications	12.93%	18.53%	34.91%	21.12%	12.50%
4. Contact centers	7.73%	11.16%	27.47%	33.48%	20.17%
5. Corporate telephony	10.68%	20.51%	33.33%	22.65%	12.82%
6. Multimedia services	6.41%	14.1%	30.34%	32.05%	17.09%

Source: Economist Intelligence Unit / AT&T survey, June 2005

Consolidating and Prioritizing

Better economics in network costs and increased operational flexibility clearly are driving companies to consolidate communications and information services on an IP platform. That said, there is not a uniform consensus on how to stage a transition from a legacy to a converged communications and operating environment. The survey suggests that organizations are almost evenly split between "big bang" enterprise-wide implementations, small local experiments or implementation department by department.



Source: Economist Intelligence Unit / AT&T survey, June 2005

The need to ensure the smooth inter-operation and prioritization of time-sensitive voice and video communications and less time-sensitive data traffic is behind much of the push toward IP networking based on Multi-protocol Label Switching (MPLS). Among other advantages the technology offers, MPLS assigns packets of time-sensitive data the equivalent of an 'express postage' stamp to speed their path through the network. For certain industries where customer interaction is both data-intensive and highly sensitive to delay, migration to MPLS has gathered considerable steam.

"MPLS-based IP networks label packets to help move information through the network faster and more accurately", states Tom Siracusa, AT&T Director of VPN Strategy. "These networks make it possible to manage end-to-end quality of service (QoS) levels to ensure high performance when transmitting delay-sensitive applications. Network administrators can manage the performance of multiple applications and control QoS across the entire network."

According to Siracusa, "Planning for an MPLS network begins with a detailed analysis of which applications will use the network, how much bandwidth they require and the usage patterns and enterprise locations the network must accommodate."

Extending Applications Far and Wide

If enterprises successfully migrate from a legacy to a converged IP infrastructure where they consolidate information and communications flows, some interesting things start to happen. First and foremost is the ability to rationalize the use of physical facilities, a savings that falls directly to the bottom line.

Sprinting Toward IP

Historically, the rolling hills of Kentucky have been known more for barns and thoroughbred horses than advanced IP networks. However, Churchill Downs, the venue for the Kentucky Derby, plans to migrate to an MPLS network in 2006, according to Jay Rollins, vice president of Information Technology. The new system will include advanced computer telephony integration (CTI) capability that will route customer information from a CRM application in parallel with the communications call stream.

Churchill Downs runs more than the Kentucky Derby. It is a public company that owns six race tracks and 22 off-track betting facilities in the United States. At any one time, several tracks are racing while others are getting ready. Hence, a major requirement for the organization is its ability to move communications and processing capacity around its various properties as the racing season progresses. Another critical function involves the ability to route overflow communications traffic from people requesting daily information, tickets or suite reservations from facilities that are racing to other facilities during times of peak demand.

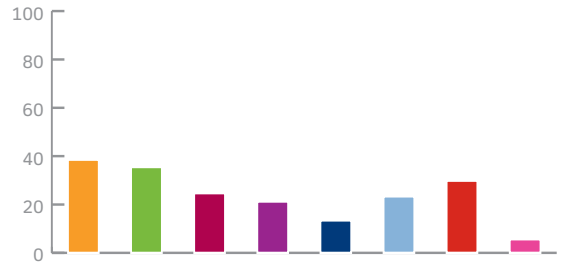
Rollins notes that in addition to helping Churchill Downs replace an aging telephony system, the company is looking to a converged IP network as a key ingredient for improving the group sales process for renting suites at the racetrack. "Along with selling a suite for a given racing day, our Group Sales department offers catering and other enhanced services," says Rollins. "So when the reservation is made and the catering package chosen by the customer, we can book a menu that goes into the food & beverage and staffing systems at the same time."

Rollins notes that along with enabling the salesperson to upgrade a suite client's catering menu, the combined communications and data network also allows the representative to sell additional services such as corporate gifts to those customers renting suites for a day at the races. "Of course, one of the main reasons we're going almost all-IP is to operate a lot more efficiently in terms of communications across Churchill Downs and its properties," says Rollins. "However, it is equally important that our customer service representatives have the tools to not only close a sale but enhance it. A converged data and telecommunications network is an important step in that direction."

Having a single infrastructure and consolidated traffic means that technology managers can "push" applications, software updates and security policies far wider and more flexibly than before. According to Chapman of Unum Provident, being able to use IP to serve the fabled traveling service or sales "road warrior" is only part of the story. "The real value of an IP-based network is that it allows you to extend your applications anyplace there is an IP connection. That can be a campus, a field office, a hotel or even an employee's home. For example, we have about 150 people who work at home full-time. They never come into the office but they are fully connected," he says.

While Unum Provident provides a glimpse of some of the advantages of running business operations on a converged IP network, the survey reveals that many executives are worried about how to get to that point from the standpoint of migrating their legacy systems. Along with a general concern about the level of in-house skills and expertise in relevant IP technologies, the most important consideration by executives involves managing the risk of disruption to operations during the actual migration.

For your company, what are the biggest challenges of migrating applications to an IP network?



Risk of disruption to business during migration	38.53%
Lack of in-house skills and expertise in relevant technologies	35.50%
Difficulty in ensuring application availability and reliability on IP networks	24.68%
Complexity of managing IP networks	21.21%
Difficulty in integrating applications on an IP network	13.42%
Maintaining some applications on legacy networks while migrating others	23.38%
Security	29.87%
Other (please specify)	5.63%

Source: Economist Intelligence Unit / AT&T survey, June 2005

Paradoxically, the ability to deal with disruption is perhaps one of the greatest value drivers for IP convergence, according to Chapman.

Unum Provident's enterprise network was impacted when Hurricane Katrina hit the U.S. gulf coast in August 2005. When the storm knocked out a central office switch at its telecommunications provider's New Orleans facility, the company saw 900 in-bound toll free numbers go down. Normally, that switch forwarded the customer calls to Unum Provident's Chattanooga, Tennessee call center, which was staffed by disability insurance experts. In response to the sudden outage, the company rapidly reconfigured the IP-based applications that route an in-bound call and customer record to the right service representative. It then contracted with another carrier to route the toll-free numbers to its Portland, Maine facility, which then transferred them within the corporate network to the right representatives back in Chattanooga.

"When you think about an IP-native network, your phone becomes like your PC in the sense that it connects and signs on, instead of being hard-wired to a switch. If the latter goes out, you can't do business," says Chapman. "The IP network allows you to distribute its brains in various places to where if only one of them is up, you still have what it takes to stay in business. Bits and pieces can go down, but just like the Internet, it's very hard to cripple the entire network."

Getting the Most Out of Old and New

With the vast majority of firms opting for a staged migration of enterprise networks to IP, the need to manage applications in both IP and legacy environments will remain for at least the next few years, and the challenges are multi-dimensional.

From a technical perspective, network managers must be able to integrate new applications or communications technologies within an all- or mostly-IP network while concurrently running older applications or technologies that may operate under proprietary (and not always compatible) standards.

The challenges also extend to maintaining telecommunications and IT support staff. Many companies running both IP-centric and legacy applications will use a mix of outsourced and in-house staff. How to balance that mix will be a hard task as time goes on, particularly as firms find that staff with a specialized knowledge of legacy applications are growing sparse. According to AT&T's Siracusa, this is the classic "build versus buy" decision. "Even if you have the resources in-house, is this how you want to use them? Service providers today offer hosting and outsourcing options, ranging from simple floor space in a secure data center to management of the applications infrastructure and the applications themselves."

The challenges of integrating disparate applications will become easier to manage in future as a new networking approach, known as service-oriented architecture (SOA), begins to find its way into enterprise networks. SOA essentially allows applications – and, crucially, the services built on top of them – to work as self-contained units, communicating with but not relying on each other to operate efficiently. Telecommunications providers and other technology firms are taking advantage of SOA now to build new services for their customers. Firms in other industries should also be able to use it to help simplify the applications integration challenge in their IP networks.

Conclusion

Companies are well under way in migrating their enterprise networks to IP. The same is true of the applications that they run on the networks. Our global research suggests that a majority, or at least a large share, will have shifted their major communications and enterprise applications to the IP network within two years. Achieving this migration without significant disruption to services is not without challenges, as is the task of operating legacy applications in a mostly IP environment, but firms seem to be aware of this and are planning for it.

After applications migration and integration are completed, companies will begin to focus greater attention on the service innovation potential that a converged IP environment affords. The virtue of IP convergence, after all, lies not only in reducing the costs of communications and network management, but also in delivering increased revenues.

This is the last in a series of four thought-leadership papers written by AT&T in co-operation with the Economist Intelligence Unit on the theme of network convergence and business strategy based upon the 2005 survey research program.

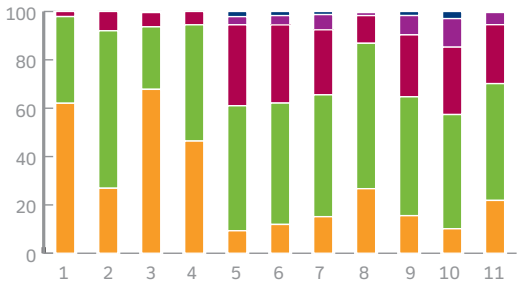
For more information contact an AT&T Representative or visit www.att.com.

Appendix: 2005 AT&T / Economist Intelligence Unit survey results

Survey Results

The following findings are drawn from a survey of 236 global executives in a range of industries. The survey was conducted in June 2005, and we are grateful for the time and insights of everyone who participated.

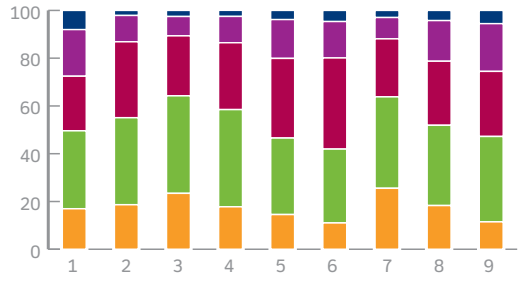
How important are the following network performance attributes to your business?



Source: Economist Intelligence Unit / AT&T survey, June 2005

	Critical				Not Important
1. Network availability/ downtime	62.03%	35.86%	2.11%	0.00%	0.00%
2. Speed of network	26.89%	65.13%	7.98%	0.00%	0.00%
3. Security	67.80%	25.85%	5.93%	0.42%	0.00%
4. Reliability of connections	46.41%	48.10%	5.49%	0.00%	0.00%
5. Scalability	9.32%	51.69%	33.47%	3.39%	2.12%
6. Reach (number of end points)	11.91%	50.21%	32.34%	3.83%	1.70%
7. Efficiency/capacity utilization	15.13%	50.42%	26.89%	6.30%	1.26%
8. Applications performance	26.69%	60.17%	11.44%	1.27%	0.42%
9. Intelligence (eg, ability for network to "self-heal" with automatic restoration or re-routing)	15.55%	49.16%	25.63%	7.98%	1.68%
10. Open, standards-based architecture	10.13%	47.26%	27.85%	11.81%	2.95%
11. Accessibility (ie, access to full suite of network applications from outside the office)	21.85%	48.32%	24.37%	5.04%	0.42%

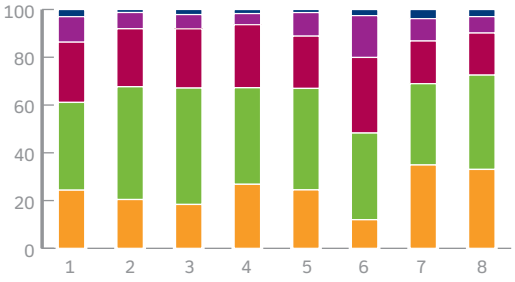
How significant are these barriers to implementing a converged IP network at your company? Please rate on a scale of 1 to 5, where 1=Major barrier and 5=No barrier.



Source: Economist Intelligence Unit / AT&T survey, June 2005

	Major barrier				No barrier
1. Lack of in-house skills and experience in relevant technologies	16.95%	32.63%	22.88%	19.49%	8.05%
2. Cost of new equipment/ technology to support convergence	18.64%	36.44%	31.78%	11.02%	2.12%
3. Implementation costs	23.40%	40.85%	25.11%	8.09%	2.55%
4. Complexity of implementation	17.80%	40.68%	27.97%	11.02%	2.54%
5. Concern about quality (eg, of voice communications)	14.53%	32.05%	33.33%	16.24%	3.85%
6. Time scales for return on investment	11.02%	30.93%	38.14%	15.25%	4.66%
7. Network security issues	25.53%	38.3%	24.26%	8.94%	2.98%
8. Disruption to business while converting	18.30%	33.62%	26.81%	17.02%	4.26%
9. Putting eggs in one basket on single network	11.49%	35.74%	27.23%	20.00%	5.53%

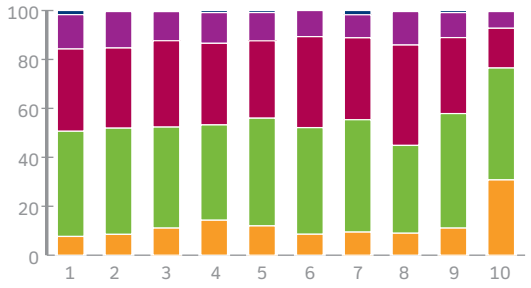
How important are these benefits of network convergence to your business? Please rate on a scale of 1 to 5, where 1=Critical and 5=Unimportant



Source: Economist Intelligence Unit / AT&T survey, June 2005

	Critical				Unimportant
1. Reduced cost of voice calls	24.36%	36.75%	25.21%	10.68%	2.99%
2. Overall lower cost of network management	20.43%	47.23%	24.26%	6.81%	1.28 %
3. Simplified network management	18.38%	48.72%	24.79%	5.98 %	2.14%
4. Better quality communications	26.81%	40.43%	26.38 %	4.68 %	1.70%
5. Better collaboration between employees	24.46%	42.49%	21.89 %	9.87%	1.29%
6. New applications (e.g., multimedia training tools)	11.97%	36.32 %	31.62%	17.52 %	2.56%
7. Better customer service	34.89%	34.04%	17.87%	9.36 %	3.83%
8. Better collaboration with customers, suppliers and partners	33.05 %	39.48%	17.60%	6.87%	3.00%

How important are the following applications to your business?



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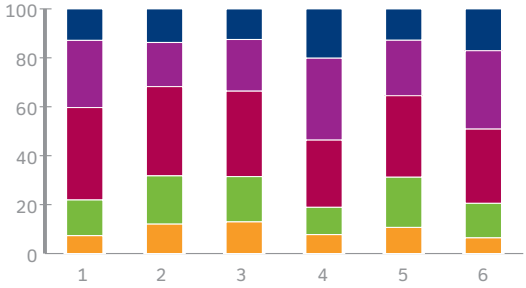
Over what timeframe will your company migrate the following applications or facilities to a convergent IP network?



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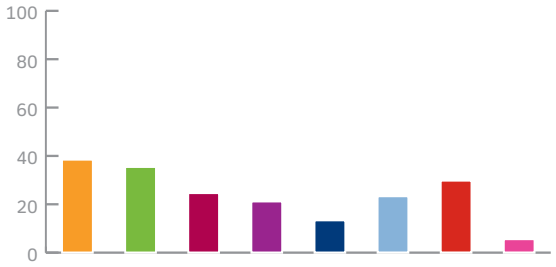
6. Multimedia services	6.41%	14.1%	30.34%	32.05%	17.09%

Source: Economist Intelligence Unit / AT&T survey, June 2005

For your company, what are the biggest challenges of migrating applications to an IP network? Please select no more than two responses.



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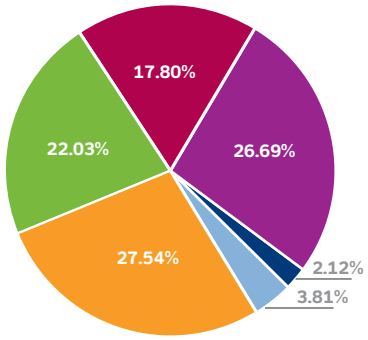
Other (please specify)	5.63%

Source: Economist Intelligence Unit / AT&T survey, June 2005

Which of the following best describes your company's migration strategy for IP networks?



- Enterprise-wide implementation
- Implement department by department
- Roll out in parallel with legacy networks
- Trial convergence in small, localised experiments
- Implement at remote sites only
- Other (please specify)

Source: Economist Intelligence Unit / AT&T survey, June 2005

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