

# I D C   E X E C U T I V E   B R I E F

## **Migrating to IP Telephony Networks: Smart Path for Enabling Advanced Communication Applications**

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### **Introduction**

Internet Protocol Telephony (IPT) networks are gaining significant momentum in the enterprise market, with the IP-based equipment market including IP telephones to exceed \$10.9 billion worldwide in 2009, a compound annual growth rate of more than 19%. IPT networks represent the next step in the evolution of voice communications systems, and enterprise IT managers need to plan a cost-effective migration path toward a converged voice and data network.

The emergence of IP telephony standards such as Session Initiation Protocol (SIP) is enabling greater system interoperability and bringing important flexibility to network configuration choices. Integrating and supporting advanced, standards-based IPT services such as voice, video, and text communications, as well as user-defined communications (UCD), can help companies reduce complexity and save money while leveraging existing investments.

Making this goal a reality requires companies to pursue a migration path that addresses technology within a business needs context. This Brief explains how standards-based IP telephony networks provide great flexibility and increasingly important higher-level services integrated into traditional voice networks. It further gives guidance to companies on intelligently designing, migrating, and implementing an integrated IPT solution across their enterprise to connect all workers to advanced communication applications.

### **Answering the Call of IP Telephony**

An IPT network merges formerly separate types of communications and data — such as Internet communications and voice — onto a shared IP network. Such networks also often integrate responsive

communications with business processes, for instance, creating information exchanges and collaboration spaces in which users can interact in real time via voice, text, and video. The Internet Protocol (IP) forms the core of an IPT network, but such a network must also be able to integrate other types of networks, such as PSTN, frame relay, and ATM using IP as common exchange translator.

Creating such a shared network is a necessary step in enabling advanced applications that provide a business or organization with a competitive advantage. Making this goal a reality requires that companies pursue a migration path that addresses technology within a business needs context. Balancing these needs will demand a carefully planned, multistage process with both consulting and integration stages.

By pursuing an IPT integration strategy, organizations can achieve goals such as:

**Lower total cost of ownership (TCO) for a converged Voice and Data system.** In many cases, cost savings have emerged as a major driver of IPT migration. IP PBXs, the leading-edge devices in IP telephony networks and in the evolution of voice systems, can enable the elimination of dedicated voice lines by moving traffic to the corporate data network. Other important TCO points include but aren't limited to the fact that new IP PBXs, in many instances, offer more capabilities than traditional PBXs at lower cost; they're often easier to manage than traditional systems, especially in larger enterprises with multiple facilities; and moves, adds, and changes cost less.

**Enhanced business productivity potential.** Advanced communication services such as voice over IP (VoIP), IP telephony, and user-defined communications (UDC) let branches, teleworkers, and road warriors essentially duplicate their desktop functions and capabilities at remote sites, home, or on a mobile laptop. From a software-based telephone in their laptops, for example, mobile workers can call their home office or anywhere in the world at the bulk long-distance rates negotiated by the company and without the use of a calling card. Software-based telephones are often integrated with portals, which enable increases in productivity because they can screen calls, route calls to cellular telephones, and set up Web-based teleconferences and videoconferences.

**Investment protection.** Companies can save money on a well-designed, integrated communications architecture that leverages existing investments while supporting open telecom protocol standards such as Session Initiation Protocol (SIP). Standards-based IP PBXs can be integrated with traditional voice PBXs, as well as offer multivendor interoperability to support future growth.

**Greater configuration flexibility.** Strong demand for SIP support from large corporations and governments will increasingly compel more vendors to embrace the protocol, at least as part of a multiprotocol product offering. This will drive market growth, as

equipment makers build systems with more standardization and interoperability than before. Enterprises, in turn, will have more configuration choices to help optimize performance of their converged networks. Increasing standardization will also make price an important purchase criterion.

**Reducing complexity of separate voice and data systems.** IP

PBXs are often easier to manage than traditional systems, especially in larger enterprises with multiple facilities. Centralized administration of multisite facilities allows organizations to upgrade and add new features at a central site without needing to physically repeat the action at each individual location. Simplifying network complexity is a major goal, especially when it comes to the ability to leverage advanced communications applications across diverse IP, wireless, and broadband networks.

**Connecting the distributed enterprise.** IPT networks enable companies to provide consistent and powerful communication tools to all workers regardless of location (HQ, branches, remote) to better serve customers. Advanced IPT systems, for example, provide call-routing functions that can ensure business continuity (e.g., workers can more easily work remotely during bad weather) and call flows can be directed more efficiently to appropriate branches or remote workers.

## **IPT Network Migration Drivers**

IPT network migration is being driven by a combination of technology and business factors. Technology goals generally center around enabling advanced communications applications such as:

- Voice over Internet Protocol (VoIP) allows users to access voice communications over the Internet or other computer networks. As mentioned, VoIP can offer significant costs savings by allowing companies to avoid the long-distance charges that come with standard telephone calls.
- IP telephony services refer to the real-time transmission of voice communications over IP networks, often interfacing with traditional telephone networks. This can include PC-to-phone, phone-to-phone, and PC-to-PC voice services, as well as PDAs, smart cellular phones, and WiFi devices. IP telephony is distinguished from VoIP in that it relies on gateway switches that interface between the public-switched telephone network and IP networks such as the Internet or a private intranet.
- Unified communications (UC) and unified messaging (UM) tools allow users the ability to manage voice, email, Web, and fax communications, and make these available through both speech and the user interface (UI) of PCs, cell phones, and other new devices.
- User-defined communications (UDC) are Web-based capabilities that allow telecom administrators to provide and change

services, and end users to control the flow of their communications at the desktop level.

- Advanced conferencing, scheduling, and collaboration are becoming a major part of daily business life. Unifying voice and data communications can allow users to interact in new ways and from new locations.
- Rich media, including audio, multimedia (animation and graphics), and video. These elements are increasingly used in training, conferencing, and collaboration.
- Real-time communications can refer to any IP communications that demand constant interaction. These generally fall under one of the categories mentioned above.

These technology goals dovetail with several pressing business needs as well. The primary goal for most companies undertaking an IPT migration process is making their employees more productive by allowing them to be fully connected both inside and outside the office, and by giving them a wider range of powerful communications tools. In addition, IPT enables workers to provide better customer services via efficient new IPT applications such as virtual contact centers and speech-driven access channels for customers.

This need becomes more pressing as companies pursue a global strategy. Employees must have complex interactions with distant coworkers and partners, not just communication but designing products. Meanwhile, supply chains and distribution systems are growing more complex, demanding communications that are highly integrated with supply chain software and other infrastructure systems. All this must be done in a way that does not compromise security or business continuity.

The related business goal, then, is to find the most cost-effective way of making this happen. Many firms have found themselves measuring the results of many separate technology investments in areas such as WLANs, VoIP, or UC. While such implementations may work fine on their own, they often haven't been coordinated to work together or maximize business potential due to mergers or lack of planning.

By creating a network converged around enterprise IPT, companies can make their existing technology investments more effective, while lowering complexity for both users and IT staff. Such a converged network can also make it easier to roll out advanced applications to branch offices and remote workers.

## **Mapping a Migration Path**

The first step in undertaking an IPT network migration project sounds deceptively simple: determine technology and business needs, then measure those needs against current capabilities and infrastructure. However, making the leap to having a more effective network is not

always easy, particularly as both networks and networked applications have grown more complex.

Once a company determines what upgrades are needed, there is still much planning to be done. Since most companies cannot afford to take their networks down for extended periods — and also likely do not have the IT staff to make upgrades happen overnight — network upgrades must be carefully scheduled.

Furthermore, even global companies may have relatively small, centralized IT staffs, meaning that remote management and outsourcing will be important factors in the upgrade process. Once upgrades are complete, companies must also test the new networks, as well as train staff on their use and support.

For these reasons, many companies seek outside help when engaging in network upgrades, especially upgrades focused on IPT convergence. In IDC's annual WAN Manager Survey, medium-sized and large U.S. businesses were asked about their current and planned managed network services usage. Figure 1 shows that IP PBX and IP Telephony garnered the highest percentage of respondents willing to consider outsourcing the management of these strategic network elements.

While many companies have been pursuing such a strategy via providers that offer managed IPT services, there is stronger growth among companies building such networks in-house — though generally with external help. The fastest growing integration service activities are those that center on security, reliability (high availability), benchmarking, and performance. Industries seeking the most network consulting services include insurance, financial services, and retail.

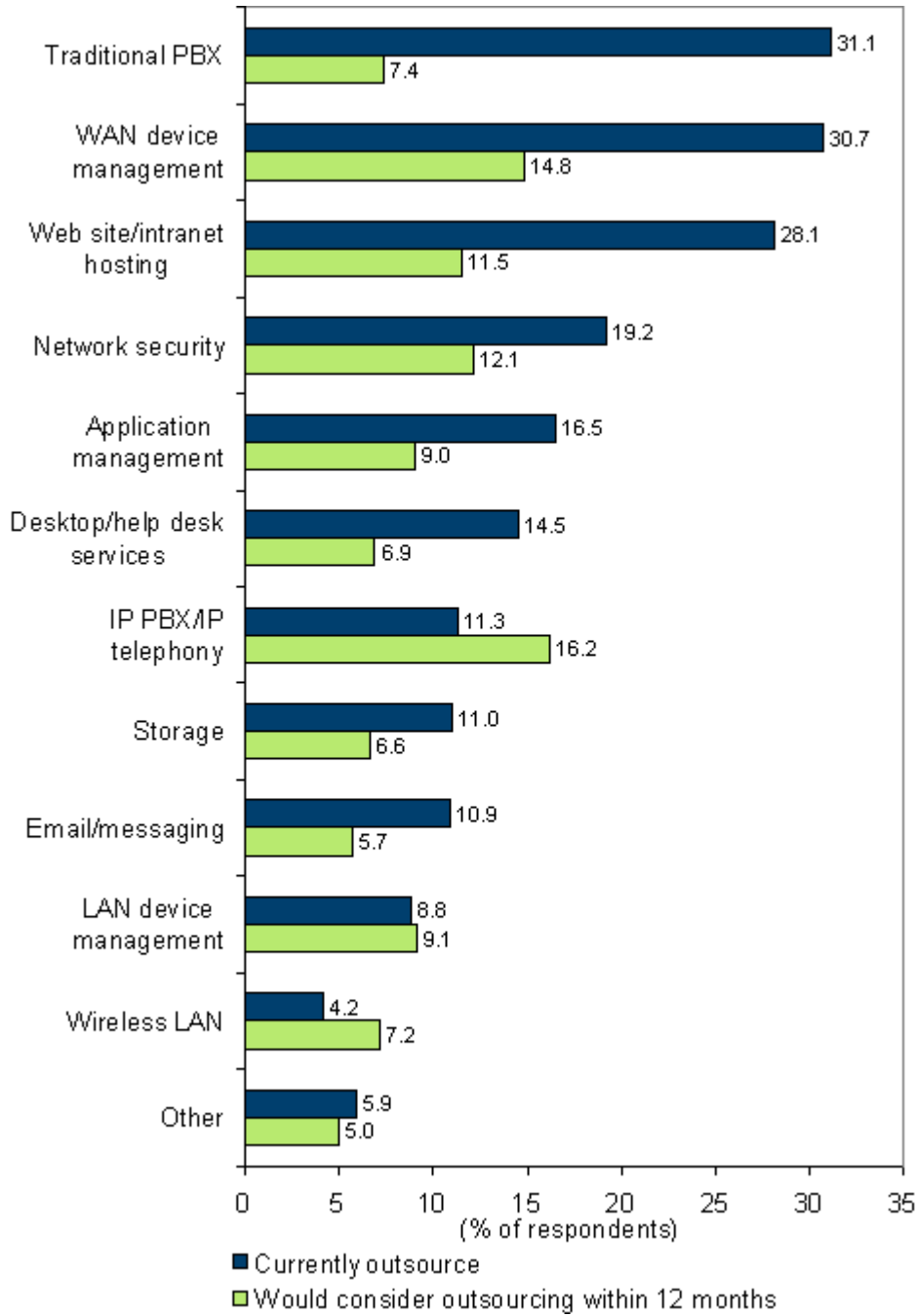
Consulting activities include:

- Benchmarking provides measurement and comparison to best industry practices to ensure that technology operations remain cost efficient. It also provides a periodic measure of the cost efficiency of the technology in place and establishes a documented process to help businesses manage change.
- Needs assessment determines needed changes in skills, technology, workflow, facilities, and supplier and alliance relationships to enable migration from current operational capabilities to meet business strategy objectives. This is particularly important when companies are adding VoIP or other real-time communications.
- Capacity planning demands a mapping of system requirements against the anticipated workload. Again, this is an important area of concern for companies that are enacting real-time communications such as IP telephony. Such activities place greater demands on the system, placing priority on certain traffic

and making it necessary to allow extra bandwidth for traffic spikes.

**Figure 1**

Use of Third-Party Management of Specific Network Elements



Source: IDC, 2004

- Reliability and high-availability planning incorporates appropriate survivability into the network design, balancing business need against the cost of survivable components. The key is choosing the right resilient components and sufficient levels of server and framework (e.g., gateway) redundancy.
- Security consulting is essential when companies add new types of networks or networked communications, because new types of security risks are introduced. These can range from people trying to come in via your WLAN signal, to providing a new way in for viruses. Moreover, security designs need to account for the differences in communications systems versus data systems, and be implemented at the systems architecture level.
- Operations assessment involves a methodical process of analyzing how employee skill sets, business processes, and existing information systems function. The result is a comprehensive assessment of how effectively a company uses resources and how well operating units perform.
- Network strategy and planning services interpret the organization's current network capabilities and needs to meet the overall business strategy. They also create a vision for migrating existing systems. The resulting strategy may call for an iterative process that smoothly migrates the corporation to new architectures and platforms, even across highly distributed enterprise constituents. It is during this stage that companies often determine what mixture of in-house and outsourced services they will use.
- Change management activities can include measuring the ability of the workforce to accept change, revising human resource policies, redefining job responsibilities, appropriately communicating with the workforce, and setting an appropriate rate of transition toward the new organizational structure. This is the step during which human issues are taken into account, such as IT skills and working styles among employees. When it comes to IP telephony or real-time conferencing, it should involve watching how employees use these applications.
- Network design provides a review of the network architecture against the actual likely use of the network in terms of load, users, and applications.
- Network analysis and tuning involves testing the network under actual working conditions. For instance, organizations can simulate high-use days, with many people involved in VoIP communications and rich-media conferencing.
- Process improvement examines existing processes, then seeks to alter them with increasing automation and removing unnecessary redundancies. This phase places an emphasis on important enterprise applications such as customer relationship

management (CRM) and enterprise resource management (ERM).

- Maintenance planning measures future support requirements, resulting in a customized maintenance plan. It involves the evaluation of many factors, including pricing structures, warranty terms and conditions, and staffing resources for all IT systems, networks, and software.

Important integration services include:

- Site preparation follows systems design and includes areas such as installation of power, uninterruptible power supplies, grounding, air conditioning, heating and ventilation, fire-protection systems, and computer room security. Also included are cable pulling for networks and the installation and testing of safety and security systems.
- Project management involves making sure the network convergence project meets all of its performance goals on-time and within budget.
- Debugging involves putting stress on the network and measuring actual performance via specifications. The team can then hunt for problems and tune the system if it is dropping too many IP voice calls, for instance.
- System installation and configuration encompasses all the tasks required to bring the system to its start-up position, such as installing hardware and software. It can also include the implementation of information security systems, including security hardware and software, directories, and access policies.
- Custom software development can be particularly important for companies that want to implement IP voice and conferencing systems that are integrated with other enterprise software. Many companies have legacy or specialized applications that are intrinsic to their day-to-day business. These must be integrated with shared virtual workspaces and other applications designed to bring users together in design processes.
- System migration is the act of moving from an existing computing environment to a new or modified one. For example, system migration services would be used to move an organization from a host/terminal environment to a client/server distributed environment. This service includes assessing the migration task and implementing a plan based on challenges such as database design, unique language and system constructs, and human resource issues such as training and productivity.
- Security implementation involves installing and configuring all necessary security software and hardware for the new network. It can also demand integrating disparate security systems to

make sure the network does not offer any holes to intruders. In modern, converged networks, security generally involves not just basic firewalls but implementation of tunnels, filtering applications, and specialized access methods. Finally, it demands that companies have business continuity and disaster recovery solutions that address their diverse networks.

## **Considerations**

One of the biggest issues a company faces in an IPT network upgrade process is whether to work with an outside provider. In the meantime, they may also be looking at contracting for ongoing services such as hosted IP telephony or audio or video conferencing.

Many companies still face a shortage of IT staff due to certain cutbacks. However, they also face a somewhat fragmented service provider environment, with no one service provider able to help a company across all of these needs. Most companies will need to work with a mix of internal resources and one or more external providers, including service vendors or system integrators. One challenge for many companies will be to manage a multi-vendor strategy, and make sure each vendor is accountable for the aspects of the upgrade for which they are responsible.

Companies must plan costs carefully, focusing on particular prioritized business needs that are often based on empowering organizational sales or services teams. For some companies, there is not a killer app. Others have an intense need to enable a particular capability, such as IP telephony or shared collaborative spaces that help them meet key business goals. Two companies may technically want to offer the same mix of services to their employees, but will have different demands in terms of what applications they consider mission-critical, so attention should be paid to appropriate applications training for the specific business objectives. Finally, costs must be planned out over time, since this will not be an overnight process.

## **Conclusion**

The desire to enable employees with VoIP and other advanced business communication applications is driving many companies toward IPT network migration. The cost of these network upgrades, which may be necessary anyway to meet today's demanding business challenges, should be more than compensated by increases in employee productivity and connectivity that provides operational efficiency and lower TCO versus traditional voice systems. IPT networks will allow companies to provide enhanced communications, support the next generation of smart devices, and achieve other pressing technology goals by converging different networks toward advanced communications.

IPT continues its march toward widespread deployment in critical business environments whether organizations are ready for it or not. Companies are finding that their competitors, partners, and

customers are pursuing it, and will show ROI in the near future. Creating a network that adequately supports the activities described in this Brief requires both adding capacity and leveraging what a company already has. This process must be carefully planned out and supported by ongoing testing.

Given that when IPT networks are deployed in ways to support business imperatives, companies can gain competitive advantage, so most organizations will find they need to pursue migration. However, they must do so within the context of specific needs. For many companies, this need will center first on integrating voice and data.

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