

As a small or medium sized organization, you may be approaching an important crossroads in your telephony needs. Your traditional telecommunications system is nearing the end of its product lifecycle, and you must now decide whether to repair it, replace it, or head down a new but potentially more viable path: deploy Voice over Internet Protocol (VoIP), an Internet Protocol (IP)-based solution for voice. Many Organizations are currently thinking about, looking at, or deploying VoIP, and the number using VoIP continues to significantly increase year-over-year. In fact, according to market research firm In-Stat, U.S. seats in service are predicted to rise from 500,000 in 2007 to nearly three million in 2010.¹ These current and predicted surges in adoption rates aren't surprising given the fact VoIP allows organizations to realize new avenues for cost-savings, and enables them to achieve unprecedented levels of flexibility and control.

The opportunities presented by VoIP are too great to be ignored. If you haven't already done so, now is the time to learn about how this technology can help your agency converge its network infrastructure, increase immediate bandwidth access, consolidate termination traffic, and reduce long distance charges. Understanding the value of IP and VoIP will enable you to prepare you for the important initial steps that will lead to a successful VoIP deployment. You'll be pleased with the end result: a whole new world of efficiency and interoperability.

INTRODUCTION

With changes in technology, organizations are looking for ways to increase their agility and adaptability so they can continue to serve their constituents as effectively as possible. Many have already migrated their records database, inventory, and other back-end systems to IP in order to replace antiquated systems and cut costs, increase scalability, enhance flexibility, or improve efficiencies. Upgrading phone systems to VoIP is another important facet of this strategy. Because IP sends multiple packets of information over many different routes at the same time, it enables organizations to move massive amounts of information more efficiently and at a much lower cost than traditional circuit switched networks. VoIP can simultaneously transmit voice, data, and multimedia; share bandwidth between applications; and more effectively use network resources than time-division multiplexing (TDM). In addition, Session Initiation Protocol (SIP)-based VoIP, which is built on open standards, is non-proprietary and allows for easy interoperability with new and emerging SIP-based applications and technologies from various vendors. As a result, SIP-based VoIP can simplify integration, enhance communication, and improve interactions with the people and organizations that an agency serves. Many businesses are today struggling with how they can best move from point "A" (TDM) to point "B" (VoIP) without experiencing interruptions. The truth is that this migration is not an all or nothing proposition. A hybrid approach is often the best solution because it enables an organization to adopt VoIP while still using elements of its legacy telephone system. A successful migration strategy focuses on bridging the gap. And, in doing so, allows an organization to continue to operate efficiently while maximizing its investment in existing technologies and beginning to take advantage of what VoIP has to offer.

BENEFITS OF AN IP-BASED INFRASTRUCTURE

IP infrastructure can be significantly less expensive than TDM networks. Why? IP allows an organization to realize reduced operational and capital expenditures through lower cost of

equipment and an increased ability to mix and match products from multiple vendors to create the best possible solution at the right price. Specifically, IP-based systems can reduce the “cost of doing business” through:

- **Converged network infrastructure** – Organizations have traditionally maintained separate networks for private data, voice, and Internet applications. IP allows organizations to combine the disparate TDM voice and data networks into one network to handle voice and data, as well as video. This convergence reduces the capital and operating expenses that were previously associated with maintaining, upgrading, and managing multiple networks. It also paves the way for advanced communications applications such as video conferencing.
- **Increased immediate bandwidth access** – Organizations can now purchase Broadband Ethernet-based connectivity at the access level, in lieu of traditional T-1/DS-1 circuits that have traditionally been a choke-point in deploying converged network solutions.
- **Consolidated telephony architecture and aggregated Public Switched Telephone Network (PSTN) traffic** – IP architecture allows an organization to aggregate all of its branches into a single ingress and egress location, or gateway site. This enables greater control of telecommunications expenses, elevates buying power to upstream providers, and increases control and monitoring of network activity.
- **Reduced long distance charges** – IP systems have the ability to route calls internally rather than send them over the PSTN, eliminating “per minute” charges. Organizations with significant interoffice communications for both domestic and/or international calling patterns can use IP to drastically reduce long distance charges. IP-based voice infrastructures enable organizations to employ a wide array of features that can increase their efficiency and effectiveness.

These include:

- **Easier integration of applications** – IP is the widely accepted standard upon which most of today’s applications are built. Organizations that use IP as their foundation can achieve seamless integration and interoperability between applications such as VoiceXML-based interactive voice response (IVR) systems and Web-based conferencing applications.
- **Improved support for remote workers** – IP provides traveling workers and teleworkers with access to the organization’s network from anywhere in the world, enabling them to stay more tightly connected to the agency. IP also delivers user-defined capabilities that can be set up on users’ desktops, including IP-based voicemail, e-mail, voice integration, and “Find Me, Follow Me,” a feature that allows remote workers to have their calls follow them wherever they go. Finally, organizations can use IP to deploy productivity applications that can make remote workers more effective and integrate management tools that enable supervisors to better support and evaluate those workers.
- **Enhanced customer service** – Through the integration of voice, data, and multimedia, IP allows organizations to provide consumers with more consistent experiences across all communication channels. For example, publicfacing organizations can use IP to regularly route

multiple local phone numbers to a single contact center so that constituents receive the same service, regardless of where they are geographically located.

- Rapid increase in capacity – IP enables an organization to quickly augment capacity on its network. VoIP equipment can dynamically allocate existing bandwidth from data to voice to accommodate increases in call volume, a process that is not possible with traditional TDM voice circuits. IP-based systems are extremely flexible and can be easily modified as requirements and available technologies change and develop over time. They work with legacy TDM facilities, and enable a number of attractive features and applications that are not available with TDM. Unified messaging is an attractive application, which enables users to access a single interface and check one location for all incoming voice, fax, and email messages.

Feature capabilities are one of the greatest drivers for the migration to IP. They are also the basis on which many business cases are proven – IP allows organizations to control internally many of the advanced features that were traditionally handled externally and charged at a premium. **High-level comparison of feature availability across TDM and VoIP: Feature**

Call Forwarding to a Remote number

A call going to a user's primary location is forwarded to a mobile number or a remote office. Limited feature that is implemented within the customer's PBX. Call forwarding functions typically consume two call paths for the duration of the call. VoIP mobility features such as Find Me/Follow Me offer network-based Call Forwarding, eliminating the need for a customer's PBX to route these calls.

Remote Office Support Users working remotely typically use a separate IP address for the feature. VoIP Disaster Recovery The trunks are either bus or ring. Great for work from home service

- Primary, Secondary, etc.
- Round Robin
- Percentage Allocation

Traffic is moved via a new IP address, and does not consume idle network capacity.

Voice Virtual Private Network (VPN)

A private dialing plan that allows an organization to place all calls to the organization's local offices. A private dialing plan that allows an organization to place all calls to the organization's local offices. The specialized applications are typically used by total TDM Moves, Adds, Changes, Disconnections (MACDs) the specialized applications are typically used by total TDM

NOW IS THE TIME TO BUILD-UP AND BRIDGE-OUT

In order to experience a seamless migration from TDM to IP, an organization must embark on a methodical and deliberate network evolution. The VoIP elements should initially be a “wedge” or a complement to the traditional private branch exchange (PBX). That said, there is no need to eliminate existing architecture to migrate to VoIP. Rather, an organization should view VoIP as an ongoing process with one extremely critical initial action – to ensure that the basic infrastructure is in place to build-up and bridge-out the existing network. This requires that two primary elements are in place: support for any legacy TDM systems, and parallel services for newer VoIP telephone handsets and IP-based PBXs.

- Integrated Access Devices (IADs) – Serve as the conversion mechanism between existing TDM-based telephone equipment, and the new VoIP services delivered from the provider. Organizations should insist these devices be included as part of a managed offering from their service provider.
- IP Line Services – Ultimately provide direct connectivity from the organization’s newer IP telephones to the PSTN. Usually provisioned in support of smaller offices without an IP-PBX, IP Lines should be available with enhanced features such as Find Me/Follow Me, [Web Portal access](#), and Internet access.
- IP Trunking Services – Ultimately provide direct connectivity, from the organization’s newer IP-based PBX to the PSTN. IP Trunks should be available with enhanced features similar to vendor offerings for IP Lines.

FIVE STEPS TO A SMOOTH MIGRATION

As mentioned earlier, migrating from TDM to IP doesn’t have to be a difficult process. Like other large-scale projects of this nature, government organizations must engage in thoughtful discovery activities and short-term and long-term planning in order to ensure a cost-effective and seamless transition. By following five basic steps, organizations can upgrade their networks from pedestrian to prodigious without incurring interruptions or displacing existing equipment:

1. Assess the Network Organizations should always conduct a complete network assessment prior to implementing an IP telephony solution. These tests are extremely important as they enable an organization to evaluate its data network for a Multiprotocol Label Switching (MPLS) deployment, and to determine if it is robust enough to handle current and projected voice and data traffic needs. The network assessment, which also allows an organization to evaluate the impact of changes in calling patterns, provides details needed to budget for previously unforeseen but necessary network improvements. This type of evaluation is best supported by equipment vendors.
2. Create a Cross-Functional Team Because VoIP involves the convergence of telephony and data networks, its implementation spans the organization

and requires cooperation from various groups, including those associated with telecommunications and networking functions. Key members of these groups should be asked to participate on a project team, with the express purpose of gaining an understanding of the overriding objectives, and defining organization, human, and technological requirements.

3. Identify the Appropriate Human and Capital Resources As with other technologies, effectively deploying IP requires a specific knowledge set and a certain level of experience. Organizations must take the time to accurately assess the resources that are available in-house and identify the external expertise they need to secure. Successful IP deployments require certain skills, and migrations run smoothly when organizations work with equipment vendors and network providers that have the ability to deliver the best components and the highest level of consultative expertise. These same providers can guide an organization throughout the process, delivering insight into the most effective way to proceed and providing information about what to anticipate at different points throughout the project.

4. Select the Right [Network Service Provider](#) A solid, experienced service provider is critical to a successful IP migration. To ensure quality of service and scalability, an organization must understand the role that MPLS plays in a potential partner's network and how the network service provider routes IP traffic. Focus on carriers that offer the following capabilities:

- A converged network infrastructure
- A solid TDM background
- Experience in scaling a VoIP network
 - VoIP as an integrated part of the data infrastructure and not an "experiment" next to their traditional switching
- Monitoring systems that recognize issues unique only to VoIP networks, such as Jitter and Latency.

The reach and scale of the service provider's network is also important as a nationwide footprint allows organizations to route their VoIP calls over a single network from origination to termination so that they can realize a higher level of QoS. Finally, equipment and service providers should support an organization's plans to leverage a new IP system without abandoning existing assets. The speed of the migration will be based on the desired timeframe for return on investment.

5. Develop a Detailed Migration Plan and Stick to It Once an organization has determined and selected its partners, the parties should work in tandem to create a full-fledged plan for IP deployment. The plan should identify expected technological, financial, and other costs and savings, and outline anticipated timeframes for completion of specific tasks as well as the overall project, among other items. It is imperative that the organization continue to provide its customers with uninterrupted service as it migrates from TDM to IP. The organization can do this by ensuring TDM and IP interconnection, transitioning in phases in order to eliminate the margin of error and enable for phased-in service, and selecting technologies and protocols that best suit its network as it evolves.

The Midwest SIP Position Migrating from TDM to IP is a gradual evolution of the network. Due

to age, wear and tear, organizations will soon need to start replacing legacy equipment and networks. In addition, equipment vendors are beginning to phase out the support of certain TDM components. Agencies must now determine whether to spend their limited budgets replacing components and maintaining their legacy networks, or implementing IP-based solutions.

IP is not just about deploying a new network; it's about creating and implementing a communications strategy that will carry the organization well into the future. The right strategy can lay the foundation for scalability and growth, and help improve the bottom line by providing unprecedented flexibility, reduced costs, and increased efficiencies. And employing the right strategy means choosing the right partners — partners like MidwestSIP — that can supply the infrastructure, services, and expertise that can help businesses quickly and reliably deploy VoIP capabilities in their telecommunications-intensive environments. Midwest SIP operates on one of the largest Internet backbones in the world. In addition, our high-quality, expanded on-net footprint is trunked to multiple termination vendors in the United States.

While Midwest SIP's infrastructure and services greatly differentiate us from our competition, so does our extensive knowledge. We have a solid history of building network solutions that are based on customer needs, and a significant amount of experience managing TDM to VoIP migrations while helping businesses continue to operate efficiently throughout the process. In fact, we have integrated our own TDM and VoIP networks to enable us to provide our customers with innovative solutions that increase their productivity and reduce their expenses without compromising quality.

Our solid reputation has enabled us to develop solid partnerships with respected equipment and software companies, giving us the ability to continue to deliver proven, complete and cost-effective solutions to meet our customers' needs. Organizations can use these offerings to gain efficiencies, shorten installation time, and ultimately achieve faster returns on their investments. And, MidwestSIP's proven ongoing support services helps our customers ensure that their technology continues to offer maximum returns year after year.

The fact is that a network and the applications that ride on that network can impact the way your organization is able to deliver on its mission. Deploying a well-architected, flexible and cost-effective network today can prepare you for a successful tomorrow. One question remains: what are you waiting for?

Please call our Sales Department today (616) 723-0100