



**Best Practices for
IP Telephony Migration**

*Putting Business Benefits
on the Fast Track*

An Executive Briefing Paper

September 2006

Table of Contents

2	Approach
2	The Technology Adoption Continuum
3	IP Telephony Goes Mainstream
4	Incremental IP -- the Preferred Approach for Many Businesses
4	The Business Benefits of IPT -- Closer Than You May Think
	- Reinforcing Competitive Advantage
	- Complementing Best-in-class Business Processes
	- Taking Customer Care to a New Level
	- Making End-user Mobility a Reality
9	Summary

Approach

The market perspectives contained in this Executive Brief reflect the most up-to-date research from the *IntelliCom Enterprise Intelligence Program*SM, as well as the experience of our senior staff in assessing technology adoption trends since 1990.

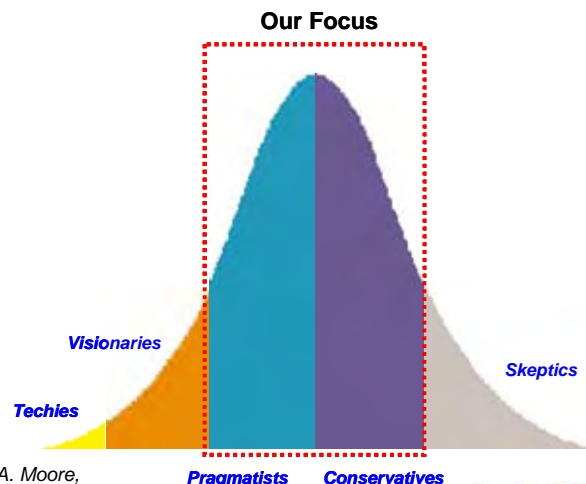
This Executive Brief also features the business drivers, deployment approaches and candid experiences of four enterprises that recently migrated from traditional voice systems to IP Telephony (IPT):

- Financial services provider **Mid-Wisconsin Bank** (www.midwisc.com)
- Seattle-based transportation and logistics provider **Lynden Inc.** (www.lynden.com)
- Indiana-based manufacturing firm **Marvin Windows and Doors** (www.marvin.com)
- Knoxville-headquartered diversified construction firm, **Phillips and Jordan** (www.pandj.com)

The Technology Adoption Continuum

In his landmark 1991 book, *Crossing the Chasm*, Geoffrey Moore described the different ways that businesses approach the adoption of new technology. Moore saw that technology decision-makers typically fall in to one of five main groups -- ranging from early adopter *techies* and *visionaries* who are the first to embrace a new technology, to last ditch *skeptics* that significantly lag the rest of the market. Some fifteen years later, Moore's technology adoption model continues to accurately describe enterprise buying behavior.

This Executive Brief focuses on a specific technology, IP Telephony (also commonly referred to as *voice over IP* -- VoIP), and the two groups that Moore sees making up the mainstream business market -- the *pragmatists* and the *conservatives*.



Source: *Crossing the Chasm*, Geoffrey A. Moore, HarperBusiness, ISBN 0-88730-717-5

The pragmatic enterprise isn't particularly interested in technology per se -- they want a *business solution that is fully functional and time-tested*. Fundamentally, these companies will proactively pursue a technology only when it has become *highly reliable* and can *clearly contribute to the success of their business*.

A conservative enterprise, in contrast, will typically time their technology purchase decision to some type of business necessity. The conservative decision-maker has a low tolerance for technological complexity and places high value on solutions that demonstrate strong price-performance.

Since pragmatic and conservative businesses are estimated to make up over 60% of the total marketplace, the way that these enterprises view and approach IP Telephony is of keen interest to communication manufacturers and channels.

IP Telephony Goes Mainstream

When it comes to Moore's technology adoption segments, the findings from our end-user research leave little doubt -- *IP Telephony has clearly entered the mainstream*.

In looking back at the changing perceptions of convergence over the past seven years, we have seen a 3-stage evolution in decision-maker thinking.

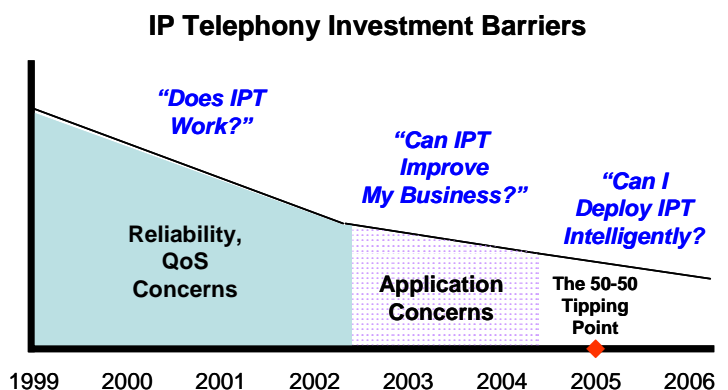
When IP Telephony first started commanding some serious buzz in the late 1990's, it was primarily of interest to the business technologists; whether data-oriented IT organizations or traditional telecom departments. At this first stage of commercial availability, the near universal business sentiment was a healthy skepticism -- *it's a great concept, but does IP Telephony really work?*

The real issue was not so much about the technological feasibility of convergence, but rather a concern about performance. Having enjoyed decades of near perfect sound quality and system reliability, end user expectations of voice communications were extremely high -- as were the political risks to technology managers if those user expectations were not met. As a result, the majority of businesses were content to take a wait and see approach.

It took several years, but eventually most manufacturers were able to demonstrate that their IPT systems could deliver equivalent user-perceived availability and Quality of Service (QoS) as the tried and true TDM (Time Division Multiplexing) voice switches that enterprises were accustomed to. The question for decision makers now became -- *OK, it works, but can it really bring genuine value to our business?*

The practical concern at this point revolved around whether there were unique capabilities of IPT platforms or convergence-enabled applications that could actually improve business performance and competitive differentiation. Essentially -- *what can IP Telephony do for our business that the existing PBX can't?*

The early adopter enterprises largely answered this question for the rest of the business market when they deployed IP-based applications that actually yielded measurable operational improvements. Soon the word was out that new apps like multi-modal work group collaboration and multi-channel customer care in contact centers could genuinely decrease business cycle times, improve associate productivity, and raise levels of customer satisfaction and retention.



By 2005, this concern had largely been put to bed, and the market signaled its acceptance of IP as the going-forward standard for communications technology. The tipping point was tangibly evident in the fact that shipments of new IPT systems that year eclipsed sales of traditional TDM platforms.

With the inevitability of IP now a foregone conclusion, the last consideration for enterprise decision-makers was one of timing -- *given our existing infrastructure investments, when does it make good business sense to deploy IPT?*

Incremental IP -- the Preferred Approach for Many Businesses

Even though IP is now viewed as the technology-of-choice for forward-looking enterprises, our research shows that most decisions to invest in IP Telephony are driven by specific business events rather than by a desire to be technologically well-positioned for the future.

Typical events that trigger an IPT investment decision range from erratic performance of an existing PBX or key system, to the rude awakening that comes when a system manufacturer advises that parts or service will no longer be available.

Although many industry watchers initially predicted that businesses would gravitate toward wholesale swapouts of their embedded TDM systems with new IP platforms, incremental deployments of IP Telephony are much more the norm. With this hybrid approach, businesses introduce IPT into their existing infrastructure while continuing to use selected TDM assets for some period of time.

Depending on one's choice of IP manufacturer and network design, advanced applications (like Unified Communications and end-user call control through desktop PCs) can actually be extended to **all** employees -- even those in locations served by the remaining TDM switches and traditional phone sets.

Provided that the new IP components can successfully interoperate with the existing infrastructure, this approach makes great business sense -- *if some of our existing PBXs are working fine and a hybrid approach will allow us to extend IP features to our end-users, why should we immediately throw away all TDM investment?*

This approach to asset conservation is particularly appealing to businesses that have multiple locations. If some of the existing systems are delivering reliable performance and others are sub-performing or in need of costly upgrades, then those troublesome switches can be the first to be retired; leaving the conversion of the other TDM systems to a later point.

The Top 5 Events Driving IP Telephony Migrations

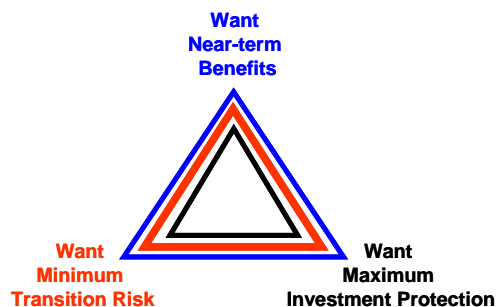
- Performance/Reliability Problems With Embedded Platform
- Opening of Greenfield Location With No Existing Infrastructure
- Business Requires Additional Functionality
- PBX Lease Term Up For Renewal
- Existing PBX at Parts/Service End-of-life

Source: IntelliCom Primary Research

The Business Benefits of IPT -- Closer Than You May Think

Although the enterprises that share their stories in this Executive Brief had different business reasons for adopting IP Telephony, they all approached the migration from TDM to IP with a similar set of expectations:

How can we attain the benefits of IP and also make intelligent use of our embedded investments -- all the while minimizing the risk of performance problems or business disruption?



Mid-Wisconsin Bank

IP Focus -- Reinforcing Competitive Advantage

For Leif Christianson, Director of IT at Mid-Wisconsin Bank, IP Telephony became a serious consideration because of a TDM infrastructure that couldn't support the bank's reputation for strong customer support.

Business Drivers

"We are a 13-branch community bank in central Wisconsin with nearly 200 employees. Prior to the decision to go IP, our communications infrastructure consisted primarily of key systems.

"There were several reasons IP became a relevant consideration for us. First and foremost, the **performance of our existing TDM technology** wasn't consistent with the bank's customer service model. We were experiencing phone system outages that typically impacted our customers several times a month. Delivering banking services with a personal touch is a key differentiator for us, so we really couldn't tolerate any reliability problems.

"We were also having performance issues with some of our essential telephony features. We frequently need to transfer incoming customer calls to specialists in different branches, and the call forwarding capabilities of the existing systems left a lot to be desired. We never knew from call to call whether the customer would even make it to the right destination.

"In addition to the reliability of the telephone features, we also wanted to **provide our customers with a consistent phone experience** regardless of which branch they happened to call in to. That wasn't possible with our existing mix of switches.

"The third factor that made IP a smart business move was **growth**. Extending the bank's community coverage in Wisconsin is a big thrust of our business plan, and we were getting ready to add two new locations and had plans for several more. We asked ourselves whether we really wanted to invest new dollars to extend our existing infrastructure. Given the performance and consistency issues, the answer was a clear no.

"We also knew that our choice of new technology had to be **employee friendly**. Many of the staff move between branches, so we wanted a consistent user interface that would be intuitive and easy for our employees to master.

"Although cost was an important consideration in the decision, we also put a heavy weighting on the **interoperability** of the solution with our current IVR, as well as the **ease of deployment and on-going management**.

"The bank has a very hands-on approach to IT, so we wanted a solution that we could implement and maintain ourselves rather than relying on outside resellers or telecommunication providers. We also wanted to avoid unnecessary components and complexity, so **out-of-the-box functionality** like on-board unified messaging was another requirement. We took a serious look at four of the major vendors and ruled two of them out fairly quickly because of price and complexity. As it turned out, there was only one manufacturer that met all of our specifications."

Approach to Migration

"One of the big plusses of the particular solution we chose was the ability to deploy IP as fast or as slow as we wanted. In our case, we had decided to move to IP in stages, so it was critical that the total network continue to operate smoothly during the time that we had a mix of TDM and IP technology.

"We knew that a flash cutover to IP was not the way the bank wanted to go, so we developed a migration plan that first converted those offices that had the poorest performing switches. Once we had

Mid-Wisconsin Bank

Key IPT Drivers



- Improved Platform / Feature Reliability
- Provide Consistent Customer Experience
- Support New Location Growth
- Simplify Employee Training
- Reduced TCO

those locations converted to IP, we started to migrate our other branches one at a time. It was about as seamless a conversion as you could ever want.

"In addition to immediately providing our customers with a greatly improved phone experience, we started saving money on administration of the new systems essentially from day one. We paid for the entire cost of the IP solution with hard dollar savings within a year and a half of converting the last branch."

Lynden, Inc.

IP Focus -- Complementing Best-in-class Business Processes

Although global transportation and logistics firm, Lynden Inc., was able to move hundreds of thousands of tons of freight each year with ease, it found communicating between its various locations in the Pacific Northwest a far greater challenge. As Ed Johnson, Lynden's Manager of Telecommunications, saw it, the company was in need of a significant change.

Business Drivers

"When your business is global logistics, having a rock-solid communications network is essential. We have over 60 sites around the world, and the trouble was that we had nearly as many different models of PBXs and key systems in our voice network.

"Despite having world-class business processes for moving freight, our communications technology wouldn't even allow us to establish a single dialing plan or unified voice mail across all of our locations. In addition to **missing key feature-functionality** that we needed, the technology **wasn't easily scalable**, and centralized **remote administration was nearly impossible**. Our technology was definitely not in the same league as our core business operations.

"Sometimes, it takes someone at the top to get things moving. A few years back, the president of one of our operating units said: 'Enough! It's time for our communications capabilities to be as efficient and cost-effective as the rest of our business processes.'

"We had been looking at IP technology for some time, and it seemed an ideal platform for giving us a **single unified architecture** and the **end-user voice applications** we needed. IP also looked like a real winner from the perspective of **reducing our on-going cost of operations**.


"In addition to increasing our IT productivity through simplified administration, IPT would allow us to dramatically reduce our telecommunications expense by putting all of the toll traffic between locations on the corporate wide area network."

Approach to Migration

"Given the number of locations that were involved, we knew the move to IP would need to be a multi-stage process. This meant that the solution we chose would have to **integrate tightly with our legacy infrastructure**. We did our competitive homework and also touched base with other companies that had recently adopted a phased approach to IP. When all was said and done, we decided on a solution that several of the IT groups I spoke with had already adopted and were very pleased with.

"The first sites we converted were in our Alaska Marine Lines subsidiary in Seattle, where we had about 100 employees. True to what we had been told, the new IP solution integrated easily into our existing infrastructure. We now have nearly a third of our offices converted to IP and expect to have the remaining locations converted within another 12 months.

"All in all, the entire conversion will have taken about 36 months, but that timetable met our needs completely. A phased approach allowed us to continue making use of the TDM investments that were performing well, allowed us to develop some good hands-on experience with IP, and also gave us

<p>Lynden Inc. Key IPT Drivers</p> <ul style="list-style-type: none"> - Improved Operational Efficiency - Reduced TCO - Support New Location Growth 	
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some breathing room to systematically upgrade our wide area network to carry IP traffic with a high Quality of Service."

Marvin Windows and Doors **IP Focus -- Taking Customer Care to a New Level**

For premier manufacturer Marvin Windows and Doors, IP was the answer to solving several daunting problems. Jeff Snyder, Marvin's Manager of IT, found himself in the center of the action.

Business Drivers

"Historically, the communications technology in our nine locations was managed locally. As a result, we wound up with a whole assortment of equipment ranging from small key systems to high-end PBXs. Several years ago, we conducted a rigorous assessment of our communications infrastructure from the standpoint of performance and contribution to the business. The findings showed us that we were coming up short in several important areas.

Marvin Windows and Doors **Key IPT Drivers**



- Improved Platform Reliability
- Modernize Customer Care Capabilities
- Support New Location Growth
- Reduced TCO

"The state of our call center was probably the most serious deficiency. The system was way behind the times in terms of capabilities, and **performance was erratic**. We clearly needed to take action since the company depends on the center to provide the majority of our customer care.

"We also determined that there were several sites that needed **serious system upgrades or wholesale replacements**. To make matters even more interesting, we had a site in the planning stages that would require a new switch."

Approach to Migration

"We kept an open mind on all of our options. We started out by looking at traditional TDM solutions -- both as an upgrade path as well as for our greenfield site. We then examined the performance and capabilities of available IP systems.

"We also evaluated the financials of all the potential solutions. As it turned out, upgrading our existing TDM platform would have cost us more than adopting an entirely new set of IP servers. The inside wiring for the new site would also have cost more with TDM since we would have had to make two wire runs instead of the **one converged cable for IP**.

"The realization that a **TDM upgrade would be more expensive** than moving to a state-of-the-art IP voice server was a real eye-opener. And it wasn't just that TDM would cost more -- an IP platform would also give us advanced messaging capabilities and was far **easier to manage and administer**. This last point was important for us, since we typically like to manage our technology in-house. Continuing on the traditional path just didn't pencil in -- if we stayed with TDM, we'd be **spending more and getting less**.

"We were initially attracted to one particular IP provider given their prominence in traditional data networking. When we actually priced out the full cost of the solution -- which required that we add a number of data switches and routers -- the price tag was way too high. We were also concerned about potential disruption to business operations as all that new gear was cut in.

"The approach that made the most sense to us was a phased introduction that would feather IP in slowly. We started out with a trial of a small IP system and tied it into one of our large TDM PBXs with a T-1 tie trunk. Although getting the two systems to **seamlessly interoperate** was not fully 'plug and play', we were able to get everything working together with a little help from the vendor's field support team. The new system worked perfectly with our existing dialing plan, so when our people traveled from one site to another they could still pick up the phone and dial the codes that they were familiar with.

"The trial was a hands-down success, so we got the green light from management to phase out all of our TDM technology. Based on the performance of the IP server in the trial, we locked in with that vendor to supply the rest of the network. The specific solution we chose came with **built-in unified messaging and call center applications** -- both of these capabilities have really helped to bring our customer care technology into the 21st century.

"So far, we've seen hard dollar savings primarily from moving toll traffic onto the WAN, although our IT productivity has also improved as a result of being able to do **centralized administration** and perform **moves, adds and changes faster**. When all the sites are converted, we expect to see an annual steady-state **TCO reduction of about \$25,000.**"

Phillips and Jordan

IP Focus -- Making End-user Mobility a Reality

For Steve Rasmussen, Vice President of Information Technology at Phillips and Jordan, there was no ambiguity about what was wrong with their existing approach to communications.

Business Drivers

"Even though we are a nationally-recognized contractor with 15 regional offices and 1,000 employees, the fact is -- prior to IP -- we had **no phone standard**. Each of our offices had bought their systems locally, and as a result, there was **no interoperability** between the different locations. Lack of standard technology also meant **high maintenance and management costs**.

Phillips and Jordan Key IPT Drivers

- Improved Operational Efficiency
- Reduced TCO
- Shift Investments to Forward-looking Technology



"Phillips and Jordan is involved in projects all over the country and our field engineers spend a lot of time on the road. Although the team had cell phones, from a functionality perspective that was really just one step above using a pay phone. We really needed a **serious voice messaging capability** that would connect the whole firm together while giving our field force a boost in efficiency and productivity.

"In addition to properly equipping our team with the right communication tools, the other situation that made IP highly attractive was the fact that the systems in five of our offices were completely out of gas. As we examined our options, it just didn't make any sense to spend **significant dollars on old technology**. We concluded that IP was clearly the way to go."

Approach to Migration

"Initially, we were thinking about IP as an 'all or nothing proposition', but as we looked at the different competitive products, we realized that some of the vendors had solutions that were specifically engineered to integrate with TDM platforms. One manufacturer in particular stood out in this regard, and we decided to take the IP plunge in several phases.

"The decision on where to begin our first IP conversions was a straightforward one -- we started with the five locations that all required a PBX replacement. We moved into the second phase 12 months later with the conversion of our main office in Knoxville, and expect to have all remaining offices converted by the end of 2006. Although we had some initial concerns about interoperability with the phased approach, having a mixed IP/TDM environment has not presented any problems at all.

"In terms of impact, our mobile capabilities have definitely taken a huge leap forward. The new IP platform not only allows our field engineers to route incoming office calls to their cell phones, but all employees can now manage their 'presence' by directing calls to wherever they will be on a given day. IP has definitely moved the whole company to a new level of staying in touch -- both internally and with our clients."

Summary

The experiences of these four case study enterprises are highly consistent with our own research findings and underscore the key business benefits that come with a phased approach to IP Telephony:

→ **Eliminate On-going Investment in Old Technology**

With a Hybrid IP/TDM approach, you can install a new IPT system alongside existing TDM assets to handle incremental growth or greenfield locations -- no need to continue investing in any "dead end" phone systems.

→ **Accelerate Deployment of Advanced End-user Applications**

Depending on your choice of IPT supplier and their ability to fully interoperate with legacy infrastructures, a hybrid approach allows advanced applications like Unified Communications and desktop phone feature control to be delivered to all employees -- even those using analog or digital phone sets and "drawing their dial tone" from an existing TDM system.

→ **Extend the Useful Life of Embedded Assets**

If your business has relatively new TDM switches that have not reached their end of life, a hybrid network allows those assets to continue to be used while utilizing the new IPT system to extend IP applications to all end-users.

→ **Ensure Network Readiness While Spreading Capital Costs**

A phased approach provides an expanded timetable for your IT organization to assess local and wide area networks for required Quality of Service (QoS) levels, as well as make any needed investments to remedy deficiencies.

→ **Build Internal Technical Skills**

An incremental deployment gives your internal technology managers and technicians an opportunity to gain critical experience and bring their IPT skills up to speed prior to full enterprise-wide deployment.

A Consistent Lesson Learned -- Do Your Financial Homework

Get the facts -- enterprises that conducted rigorous comparisons of the hard dollar outlays between legacy platform upgrades and the cost of a new IP system were often surprised to find a compelling ROI for going IP.

All direct quotations in this Executive Brief were made by Leif Christianson at **Mid-Wisconsin Bank**, Ed Johnson at **Lynden Inc.**, Jeff Schneider at **Marvin Windows and Doors**, and Steve Rasmussen at **Phillips and Jordan**.

IntelliCom Analytics is a professional services and business research provider focused on the rapidly-evolving intelligent communications market. Key areas of specialty include the measurement and analysis of enterprise purchase decisions, vendor competitiveness, business models and best practices. With well over a century of collective business and leadership experience in the data and telecom industries, IntelliCom Analytics brings a wealth of finely-honed skills, expertise and market opportunity insights to client engagements. For further information, visit www.intellicom-analytics.com.