Is Now The Time To Migrate To IP Telephony? Re-evaluating the Risks and Rewards

By Richard Kent

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Section 1: Introduction

The extended lifespan of existing digital telephony systems has been remarkable with systems averaging 7 to 10 years. This record is especially impressive when compared to other software based applications that businesses upgrade every few years. One can only vaguely imagine a Supply Chain Management or Accounting application that is approaching a decade without major software or hardware enhancements and updates. This speaks to the durability of core voice applications capabilities and systems.

Yet there are inevitable and predictable considerations for businesses with digital technology telephony systems that last underwent a major upgrade cycle during the Y2K wave of 2000. Since they have worked so well in the past, the tendency is to hold on to them for just a little while longer. After all, they are fully depreciated as an investment and for the most part are working well. What's more the choices for moving into the next generation of IP based telephony systems appears to present significant risks to the operational stability that many businesses have experienced with their current platforms.

If your business finds itself with one or more aging digital PBXs, you are facing the challenge of deciding when a migration to a new telephony environment makes sense for your specific business situation and objectives.

This white paper is intended to facilitate your understanding of the range and types of current risks that you face with that challenge. It will also suggest that delay in preparing for that migration and draining the last vestige of value out of your current system may ultimately prove to be more risky than moving forward.

Section 2: Identifying the Risks Associated With IP Telephony Migration

In order to fully analyze the risks associated with any major technology investment, businesses must evaluate a full range of potential impacts that the technology can have on your enterprise. This is equally true for telephony investments. In the case of IP Telephony, one must also be conscious of dealing with the current as opposed to historic risks associated with a set of technologies and applications that have experienced a rapid maturization over the last decade.

The range of risks includes a number of categories including Technology, Business and Financial Risks. An important, often overlooked, starting point for risk analysis, is the evaluation of the "hidden" risks of doing nothing. Examples of hidden risks include the impact of service outages from aging systems, the loss of leverage with service providers over WAN costs as they transition to newer IP network models, the lost productivity gains from new applications such as mobility and communications process integration, the loss of competitive advantage to rivals who are modernizing their infrastructure and applications, and finally, the loss of flexibility in choosing the timing for an inevitable migration.

Once the landmines of hidden risks have been surfaced and evaluated, the more obvious risks can be addressed. In appraising the Technology risks associated with IP Telephony, prudent business managers must evaluate risks associated with operational viability of the technology (i.e. does it work as promised?), its maturity level, and its performance level, not only from a reliability and security level, but from a productivity enablement perspective. They must also deal with evaluating the current state of the technology, while eliminating the historic growing pains and vendor hype experienced in the early days of the technology's deployment.

Evaluating the business risks associated with IP Telephony environments involves requirements for building clear business objectives for the adoption of the technology and assessing the risks associate with whether those objectives can be realized. Examples might include utilizing the technology investment to improve organization flexibility and responsiveness to customer needs, or accelerating time-to-market with new products or services. Another facet of business risk that requires attention is the potential for the technology transition to negatively impact business operations either during the actual migration or once implemented. Many businesses rely on voice communications as their lifeline to customers, suppliers and their employees. Disruptions, outages and system failures in telephony can present serious threats to business continuity and must be considered in decisions to migrate to a new platform.

Another dimension of risks that must be evaluated includes Financial risks. Building a financial risk analysis involves the clear identification of financial value that the investment in IP Telephony is intended to deliver (i.e. return on investment, competitive advantage, and cost savings) and evaluating the risks associated with achieving this value.

Section 3: The Hidden Risks of Not Modernizing Your Telephony Platform

A key component of any thorough risk analysis for business investments is risk and impact that can result from not making a business investment. The failure to carefully evaluate current risk is often born of complacency. It assumes that what has happened or existed in the past will continue into the future. In the case of telephony systems it can result in unsubstantiated assumptions about the continued reliability, performance, and economic value of embedded systems. Once exposed to careful analysis, these assumptions can prove to have hidden substantial business and financial risks to your business.

One of the most interesting elements of the hidden risks associated with embedded telephony systems is the assumption that they are inherently more reliable than the new generation of IP Telephony systems that are poised to replace them. The assumption is based upon a backward looking view that assumes that the two types of systems are locked in their performance of the past. Digital PBX systems had achieved a "state of the art" level of reliability just as they reached relative maturity in the late 1990's. IP Telephony systems were immature and prone to both reliability and performance issues during their initial emergence during this same period. Yet much has changed in the intervening decade that has reversed the match-up for reliability results in 2007.

Embedded systems that are more than five years old are beginning to confront one of the negative risks associated with the “bathtub curve” for electronic systems. Reliability performance and failure rates generally follow a curve that resembles a bathtub shape, with a higher failure rate during the very first part of the lifecycle, a stable rate during the effective life of the systems, followed by a rising failure rate at the end of the lifecycle. While no telephony system vendor has published its increased failure rates for generations of its products reaching this backend rise of the bathtub curb, there is little doubt that telephony systems follow a similar pattern to other electronic systems.

This translates into a rising risk of service outages and lost productivity, due to aging and increasingly vulnerable telephony systems, that has been masked by past reliability performance. Many businesses have become complacent about their existing systems because they have been so reliable in the past and they assume they will continue to operate at those levels indefinitely. But aging systems face increased chances of outages. This increases the potential risks of business disruption from both partial and systemic failures. This trend is often exacerbated by cutbacks in ongoing maintenance as systems age.

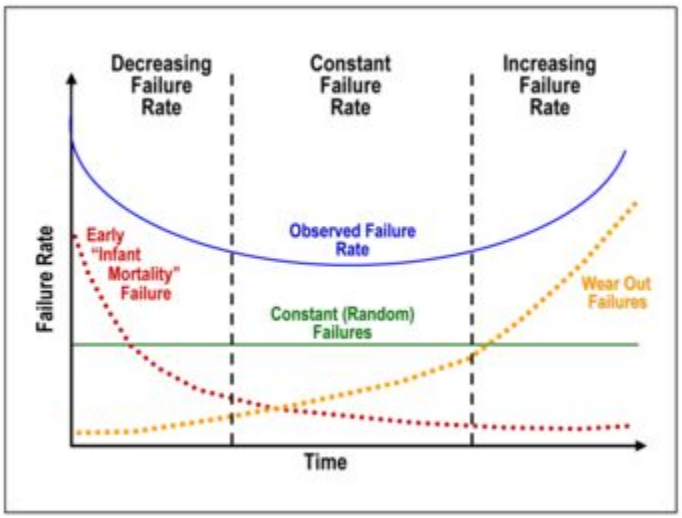

Figure 1: Bathtub Curve in Electronics Systems[1]

The same argument also applies to assumptions about the costs of embedded systems. Costs may have decreased and flattened as systems approached full depreciation. But given the cost increases that come with the later phase in the bathtub curve, including increased incidence of maintenance costs as well as rising parts and support costs, older systems may not be the cost bargain they first appear to be.

A second hidden risk that is starting to appear is the danger of becoming a TDM island within an ocean of service providers that are rapidly converting their networks to IP. Network Service Providers are migrating their networks to an integrated IP backbone and distribution system in order to drive down their costs and maintain their ability to compete in a very cost sensitive marketplace. The risks facing the business that remains in a TDM world involve two key components. As the Service Providers convert their networks and create new networking offer, their expectation will be that businesses

are making the transition to be able to utilize these new IP networking offers. Those businesses remaining too long in the TDM world will not be able to take advantage of the new offers and also face reverse pricing pressures where prices for legacy services will actually rise.[2]

There is a growing body of literature around the impact of new IP Telephony enabled applications that suggests that those that are not making plans for an investment in employee productivity are forgoing significant productivity gains. Key areas for productivity gains lie in:

1. Increased customer service and responsiveness positively impacting customer revenue growth and retention
2. Faster time to decision-making and time to market based upon product team collaboration
3. Faster response to market events

In a recent Forrester Consulting analysis of the impact of IP Telephony productivity gains at four large enterprises from various countries, the researchers found a conservatively factored 30% productivity gain from implementing IPT and its applications in a combined headquarters and branch deployment. Businesses also have the opportunity of adding even more productivity gains from the extension of mobile applications on to their IPT base.[3]

Linked to the potentially missed gains in productivity is the potential for lost business to competitors who have taken the initiative in implementing new IP Telephony infrastructures and applications. Competitive losses can be the result of failure to implement technology that your competitors may be using to operate faster than your business and are more responsive to customer inquiries.

Finally, by delaying any serious consideration of migration while their current systems are still functioning, businesses will risk the loss of decision flexibility around the timing of their inevitable migration to IP Telephony. The inevitability of Murphy's Law producing a telephony infrastructure failure at the worst possible time for your business should be considered a serious risk. It is worth analyzing the economic trade-offs between calculating end of life cost savings against the risks of a forced mandatory response to a total system failure.

Conducting an effective business analysis of the impact of your current Telephony system requires that you start with the often hidden technological, business, and financial risks associated with a stay the course strategy. Once this analysis has been completed you can turn to the more straight forward risks that come with investing in a new telephony platform

Section 4: Evaluating the Current State of IP Telephony Technology

After more than a decade of enterprise IP Telephony development and deployment the verdict is in. IP Telephony shipments have already surpassed TDM in new installed systems. According to InfoTech IP line shipments outpaced TDM shipments by almost

10 to 1 in 2006. In reality, this means, very few businesses are even installing new TDM systems, with TDM shipments being used to expand existing systems rather than new installs. This means that your business' next system will be an IP Telephony system. Given the stark reality of the market transformation, businesses that have not yet begun the migration to IP Telephony need to understand why this change has happened and how to evaluate the technology risks associated with a relatively late stage migration decision.[4]

There are a number of marketplace reasons that have driven this crossover from the older digital PBXs. There are three core drivers for the transformation; the Internet and its open system model, the inherent networking efficiencies of IP protocols over traditional circuit switch protocols and finally the realization of new applications and efficiencies that were made possible by integrating IP data networking and voice networking. The last driver has been the most meaningful for enterprises as it has led to realization of real productivity gains for those that have adopted the technology and applications. Whether it is the new features that are being introduced like larger conference calling capabilities, or presence based applications linking voice mail, email and instant messaging into unified communications capabilities or the ability to project desktop data and voice functionality to mobile devices anywhere that connect to the global Internet, the applications driver has ultimately been the key to enticing businesses to make the investment in IP Telephony.

Given the inevitability of this technology migration process, businesses that have chosen to wait must now confront the imagined and real technology risks of migration. The most commonly cited technology risks include the following:

- Are the new IP Telephony systems as or more reliable than the system that it is replacing?
- Are the new IP Telephony systems as or more available than the system that it is replacing?
- Are the new IP Telephony systems as or more secure than the system that it is replacing?

While each of these questions deserves (and has received) significant research and analysis, the bottom line answer to each of these questions is yes. IP Telephony systems from the leading IP Telephony vendors do meet and exceed the technology risk threshold. They have achieved these results for the following list of reasons:[5]

- The leading IP Telephony vendors have spent billions of R&D dollars to engineer and refine the underlying technologies associated with their systems. Most of the vendors are in their fourth generation of system releases and, having overcome the early risks associated with early systems issues, have moved on to expanding the capacity, feature and application capabilities of their systems.
- With hundreds of thousands of systems deployed, the industry has incorporated tremendous lessons learned in terms of network design configuration, high availability operating environments and hardware platforms, and security hardening techniques for both key telephony system components, encrypted voice streams and the converged network that telephony now runs on.
- The knowledge gained in understanding the importance of network management of converged applications including careful management of Quality of Service

has removed much of the uncertainly and unreliability of IP networks for transmitting voice traffic.
- IP Telephony monitoring, remote diagnostics and maintenance have actually accelerated in enabling well designed and managed IP Telephony environments to exceed the reliability and availability of the digital generation of PBXs.

While technology risks will never be totally eliminated, the maturation of the leading IP Telephony platforms combined with careful planning and implementation of best practices for migration have made IP Telephony migration safe enough for virtually all businesses regardless of their individual risk profiles.

Section 5: Addressing Business Risks Associated With Telephony System Changes

Equally important to evaluating the risks associated with technology is the need to evaluate the business risks of an investment in IP Telephony. These include:

- Risks associated with the identification and achievement of business objectives for the migration
    - Has your planning process defined the specific objectives for the migration that are aligned with your business strategy
    - Can the deployment of IP Telephony and its applications generate the targeted level of business value?

- Risks associated with business continuity during the migration process and during the operation of the new environment
    - Does the migration to IP Telephony improve your business continuity preparedness?

Good business planning rests on clear, measurable business objectives. Achieving a solid business case for technology investments requires the evaluation of business requirements, the formulation of objectives, and clear identification of how technology investments can help achieve those targets.

The experiences of those who have already made the migration suggest that there are a number of credible business objectives that can motivate businesses to undertake the IPT investment. These include achieving competitive advantage, enhancing employee productivity, reducing costs of ownership (TCO), and better integration of distributed locations/branches to achieve productivity gains.

The risks that have been identified by those who have undergone IP Telephony migration, can help in the preliminary risk analysis. Some of the risks identified include: inadequate network assessments prior to IP Telephony installation; inadequate coordination between voice and data support teams; inadequate user community awareness, involvement and education in the system design and implementation; and, finally, failure to establish measurements for evaluating whether the deployment of the technology and applications successfully hit original targets.

One major concern that is inherent in any technology migration is the risk to business continuity both during the migration and during the early days of initial operation or "shake-down period". The front end risk of failure for electronic systems, combined with the risks associated with proper configuration of devices within the converged network, increase the risk profile for the actual migration.

While early migrations to IPT may have carried the risk associated with any "new" technology, the experience gained after nearly a decade of their implementation has dramatically reduced this risk. Adequate system testing prior to installation can reduce the risk of hardware failure. Proper planning and migration management carried out in conjunction with the major IP Telephony vendors and their authorized integration partners is also a major factor in minimizing risks associated with the migration.

Longer term business continuity based upon available telephony can actually be enhanced with a well designed, planned and managed upgrade to IP Telephony. During the aftermath of the September 11 attacks in New York City, IP networks actually outperformed traditional voice networks in resiliency. Because points of failure occurred in a few carrier central offices, a number of financial firms ended up using their alternative IP networks to communicate during the failure of their TDM networks.

Planning for the migration provides an opportunity to look at business continuity with a clear slate. The migration provides the opportunity to review and update an existing business continuity telephony plan where one exists or to create and implement a new one that should have existed. The migration can also create the right timing for increasing the resiliency and recovery capability of your business' telephony environment by designing your network with the capabilities of alternative network routing and redundant media server availability.

Section 6: The Importance of Sound Financial Planning and Project Management for Successful Migrations

Decisions for major financial investments often require the identification of financial objectives associated with the investment that are narrower than strategic business objectives. These objectives include the financial value that is expected to be achieved including return on investment, competitive advantage leading to growth of market share and/or margins, and cost savings.

Common risks associated with achieving financial targets include: inadequate analysis of expected financial results, inadequate evaluation of financing alternatives for the new investment (lease vs. buy, traditional sourcing vs. managed services), poor or delayed implementation that impacts expected results, inadequate user preparation and training, and insufficient tracking and measurement of before and after statistics for productivity levels.

These risks can be mitigated or eliminated by the effective financial planning and management combined with careful project management of the migration. Careful

business planning and preparation in conjunction with the business's financial team, including selection of an optimized financing option and realistic measurements and targets for success can insure that proper financial objectives are set including the selection of the best financing options for your business. By providing the right resources to conduct effective project management of the migration you can insure timely deployment and minimized business disruption. It is important to conduct pre and post cutover measurement gathering to support accurate results from the IPT investment. This will provide the data to effectively judge whether financial and business targets are met by the investment. Finally analysis must be undertaken to review how productivity has been impacted by the migration. The analysis must measure not only headcount impacts but improved processes enabled by the new applications which the migration to IP Telephony has brought into your operation.

Section 7: Conclusions

As companies with aging voice infrastructures face end of life considerations, there has been a tendency to delay migration planning based upon un-examined fears and exaggerated risks associated with the current capabilities of IP Telephony. Many companies, who have been on the sidelines in the migration to IPT, have failed to adequately evaluate the hidden risks that have been growing as their systems reach their end of life stage.

By conducting a wide ranging and effective analysis of the hidden risks of the status quo and the current risks, as well as analyzing the positive business potential impacts for IP Telephony, many companies will find it much easier to justify and ultimately benefit from an earlier rather than later migration to IPT. Running your current telephony system into the ground may seem like a hard nosed business decision, but it can turn out to be riskier and more costly than you realize.

Footnotes

1. http://en.wikipedia.org/wiki/Bathtub_curve
2. For an examination of this trend see Aberdeen Group, “The CFO’s View of Telecom Cost Management”, March 2007, p.7.
3. Forrester Consulting, “The Total Economic Impact™ Of Avaya IP Telephony Solutions Within A Branch Environment”, March 2007; Nokia, The Myths of Mobility, 2006, www.avaya.com; Ascendant Systems, “The PBX Goes Mobile”, December 2005, www.webtorials.com.
4. InfoTech, “2006 Annual Report, InfoTrack for Enterprise Communications”.
5. For current release information see the vendor sites for Avaya, Cisco, Nortel, Shortel, Siemens; Samples of risk specific literature and work arounds include, Robert Bellman and Mark Langanki, “Beyond Five Nines”, 2007, www.spanlink.com; Avaya Labs, “Avaya Communication Manager, Software Based Systems”, October 2006, www.avaya.com; Robin Gareiss, Namertes Research, “VoIP: Challenges, Drivers, Hurdles and Recommendations”, 2006; ShorTel, “IP Telephony from A to Z”, 2007, www.shortel.com.