IPITOMY

The Business Phones System

For the Next 100 Years

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The Move to IP Communications

The Market is changing. Users are beginning to demand better performance than 100 year old technology available from the former status quo. The fact is technology has changed. It began changing back in the 1990's and has experienced continued improvement for over a decade. The "new" IP technology (VoIP – Voice over Internet Protocol) has been around for a long time. The migration of business communications applications has moved along at a typical pace to allow users to get familiar with the technology and become comfortable with the performance. The trend is that the old technology "TDM" (Time Division Multiplexing) is obsolete and will be completely replaced within the next several years.   There are several choices in IP technology for business. Pure IP technology comes standard with a Pure IP PBX System. Pure IP PBX Systems provide the greatest value for features and benefits as well as investment protection for the future. This white paper will discuss the alternatives and provide the facts for assisting the reader in making an informed decision.

Many businesses have decided that purchasing obsolete technology does not make good investment sense:

More than 150,000 U.S. small and midsized businesses (SMBs) had adopted some level of VoIP through the end of 2005.

Gartner, the respected industry research group, predicts that based on quality and quantity of the business benefits, VoIP is inevitable by 2008 in 70 percent of all businesses. The shift is also visible in the increased volume of IP system and line shipments compared with the declining volume of time division multiplexing systems and lines.

Moving your business communications system to IP Technology makes sense for most companies. Sometimes the move is based upon return on investment and sometimes it is based upon investment protection. Since both methodologies for determining which is best for your business are valid, it is a reasonable conclusion that choosing the IP technology is always a better long term strategy than TDM/Hybrid technology.

There are several technology choices when evaluating the suitability of a particular technology application for your business. This whitepaper lays out the primary drivers behind a business' decision to move to VoIP, the basics of the technology, the considerations you should be aware of before embarking on a VoIP project and the types of implementations that your business might undertake.

This whitepaper explains the options that will assist you in the decision making process. Since we are nearly 10 years into the 21st Century, there is little doubt that purchasing obsolete hardware that claims to be IP technology is a mistake. The best decision is to select the right benefits for your business while protecting your investment.

Understanding the process of evaluating IP Technology Solutions:

- Business Drivers Cost analysis – Premise based solutions – Hosted Solutions – TDM/Hybrid alternatives

- IP Technology overview

- How to plan for your deployment

- Available deployment options and a comparison of strengths and weaknesses

We have included diagrams and charts to assist in understanding basic IP options.

IP Technology Business Drivers

The residential VoIP market has clearly been driven by price; providers like Vonage and Comcast are competing to provide low cost residential solutions to compete with local exchange carriers. The business market is quite different. This market segment is driven by features and benefits that improve performance, lower dial tone costs (and other expenses) and is sensitive to business efficiencies and contemporary lifestyle realities like working from home.

Features and Benefits of VoIP:

- Efficiency/ Productivity / Flexibility

- Mobility

- Cost Savings Opportunities

- Business Continuity

VoIP for business presents abundant opportunity for incredible efficiencies. What sometimes looks like an interesting and "must have" feature from the standpoint of just being amazing technology can also double as a major contributor to return on investment for any business.

Efficiency and Productivity

Efficiency and productivity go hand in hand in any telecommunications environment. New technologies like webinars, shared desktop applications and conference calls for extended groups of people have the ability to pay for themselves in a very short period of time. If one deal can be closed with a webinar as opposed to an in-person meeting with airline and hotel accommodations expense, the efficiency becomes a major factor in purchasing a VoIP system. Frost & Sullivan claims that productivity and efficiency benefits are viewed as key drivers for VoIP adoption by nearly 30% of respondents in mid-sized businesses in North America. But what are these benefits and why are they driving this quick adoption?

Some of the most commonly reported productivity enhancing VoIP features are as follows:

Work from Anywhere

With the need for flexibility in the workforce more important than ever, VoIP technology provides what every business needs. In an era where both parents share responsibilities as both bread winners and care givers, employees frequently find themselves in situations where working from home is an important part of everyday life. From saving money on fuel for commuting to the everyday challenges that life presents, VoIP has the flexibility to allow workers to work from home or on the road while still contributing as productive members of the workforce.

Call Forwarding / Find me / Follow me

Historically, advanced features like off premise forwarding and Find Me/Follow Me required a button programmed on your telephone by a specialized technician. Now the features in an IP PBX system are controlled by individual end-users. These features can be enabled or disabled from a web page or through touch tone dialing making using them simple and more effective. As an example, a user can set their extension to ring their desk phone 2 times before attempting to reach the user on their cell phone, home number or both. This is commonly called "sequential ring". "Simultaneous ring" is also available where all designated numbers are dialed at the same time. The actual forwarded to number remains hidden to the calling party at all times for either application. Changing the forwarding attributes remotely adds to the flexibility and spontaneity.

Remote Phone / DID Call Routing

Similar to Find me / Follow me, this functionality incorporates the ability to take your office telephone number (DID) anywhere with you utilizing the above process or with another IP telephone or softphone. Outbound calls on a Softphone or VoIP phone show the appearance of coming from the office regardless of where the user is located. With this option, organizations can actually have a distributed workforce working at home or on the road and still appear to be in one office with all of the same functionality. For companies that feel having ownership of their advertised phone numbers promoted using company resources, the use of DID's is a good way to avoid publicizing the personal cell phone numbers of employees.

Simple User Interface Allows Users More Control

Application control and integration enables users to control their individual settings, voicemail and handset options from a typical web browser. Application integration allows users to initiate and accept calls from applications already familiar to them such as Internet Explorer and Outlook. Users "click" to dial these telephone numbers for seamless integration and maximum ease of use.

Softphone Extensions

Using a softphone from a desktop or laptop PC adds an additional element of flexibility. If an employee has a softphone on their laptop and are not able to make it into the office, the softphone can be used just like their extension in the office. Calls are made through a headset or other device plugged into a mobile laptop or PC. The softphone then acts as an extension of the user's regular office phone regardless of where they are, providing all of the functionality of their office system while on the road or at home. Broadband is the only requirement for a Softphone. Calls can be received or placed from a laptop or other PC just like it was an extension in the office. For instance, calls could be received in a coffee shop or hotel room and any calls placed from the remote extension will include the business caller ID.

Unified Messaging

Unified Messaging is the merger of voicemail, email and fax in one inbox. Voicemails are delivered into the user's email Inbox along with emails and electronic faxes. Users "click" the voicemail attachment to hear voicemails through the audio function on their PC. When using a FAX Server, fax's can be sent from the fax server to the users email inbox as a PDF attachment. With most FAX Servers, a driver can be installed on the user's PC to allow sending documents from their desktop via the FAX Server. This is great for workers who receive a lot of faxes and those that are frequently away from the office.

Conferencing and Collaboration

Each IP phone is capable of at least a 3 party conference call. The IP PBX System is capable of up to a 32 party conference call utilizing the on board conference bridge. Combining the conference bridge with web collaboration tools like Webex or GoTo Meeting create an extremely effective on line meeting that is far less expensive than business travel.

It is clear that the productivity and efficiency of an IP PBX system adds value to any business. What is not so clear is how to quantify the benefits in financial terms. Keeping a good employee productive with the ability to work from home occasionally (or all the time) when required has value. Reducing the disruptions caused by life's occurrences keeps a business running smoothly. Staying connected while on the road allows a mobile employee to continue to receive calls no matter where they are. Using the collaboration tools to hold on line meetings to reduce travel expenses is   a tremendous value. Having the ability to reach out to many business partners during a single day instead of the time required for travel is a major productivity enhancement. Overall, an IP PBX system generates a multitude of "new" options that enhance efficiency and convenience which in turn, creates enhanced value.

Enhanced Mobility with IP PBX Systems

In 2006, the number of mobile workers in the U.S. reached 105 million. Further illustrating the pervasive growth of the mobile workforce, Gartner estimates that by 2010, 80 percent of key business processes will involve the exchange of real-time information with Mobile Workers.

Migration to the mobile office is an inevitable event in the future for every business. Businesses can choose to fight the trend or embrace its hold on the American worker. Employees look forward to a future of flexible work hours, flexible locations and the convenience of ubiquitous access to business applications. Businesses who embrace this trend can look forward to a distributed but very engaged work force with more productive time throughout the day. This trend will certainly continue with the anticipated workforce proliferation of "echo boomers" – a younger workforce who will become major drivers of new applications and work styles.

IP PBX phone system features can be extended to any location with an Internet connection or WAN connection back to the office. As a result, small offices and home users can have the same features as users at the headquarters (or large corporations!) without the expense of long distance charges.

Call center operations can utilize remote workers or contractors in a single unified call center operation. In essence, the business can operate virtually and more productively. How far the business takes the "virtual" office is limited only by their imagination and commitment. The productivity enhancing features discussed above are what enable easy mobility of the workforce.
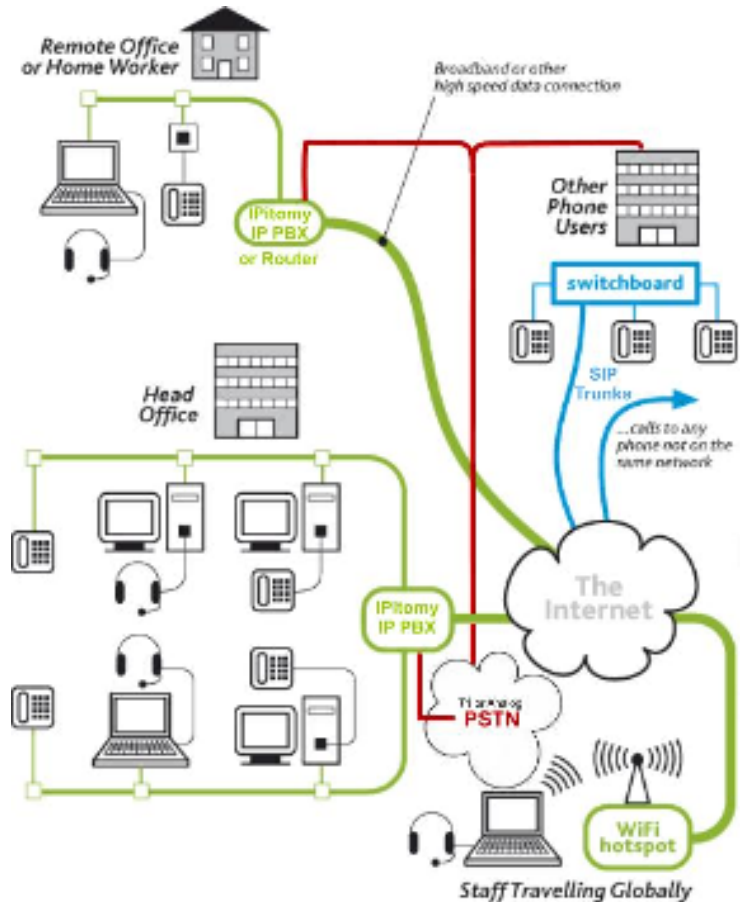
Using Broadband for Dial-tone

SIP Trunks offer an additional option for users of IP PBX Systems. In addition to using the standard PSTN connections like T1 lines and analog lines, SIP trunks provide the opportunity to make calls over broadband connections just like the T1 lines or analog lines. SIP trunks are basically hosted dial-tone services that generally have lower prices. With SIP trunks, you pay per trunk not per user and most SIP providers provide bundled minute packages.

Disaster Recovery and Business Continuity

It's safe to say that over the last decade, increased geo-political and geo-physical events are disrupting the workforce more frequently while pressure from corporate compliance regulations have increased. This has resulted in increased business interest in disaster recovery and business continuity plans. While many businesses have some form of DR plan for their data operations, they may not have fully vetted plans for the continued operation of their voice services in the event of a of disaster. This is the fundamental difference between Disaster Recovery and Business Continuity. Since most IP PBXs reside at the customer premise, use of both SIP trunks and traditional trunk lines can provide a hedge against communications failures due to down phone lines or Internet outages. This is a significant advantage for onsite IP PBX systems as it provides a simple and inexpensive way to handle calls during an outage. A single day without the use of their extension can effectively render information workers and salespeople completely useless. Depending on the size of your operation, that cost can range from several thousand dollars to several million.

The nature of some IP PBX systems provides options to address this problem. While different types of VoIP implementations can address this issue with different levels of effectiveness (see VoIP Implementation Options), nearly all VoIP implementations offer some form of disaster recovery - from shared configuration between IP PBXs at multiple locations to Network-based options that do not reside at any of the businesses' sites. In addition, the mobility features discussed above can also be considered a Business Continuity benefit. Quite simply, if a location is unavailable for a period of time, employees can simply take their phone home or

the key to effective communications...

FREE CALLS within the same network	Laptop	LAN Connection
Charged Calls outside the network	"Hard" Phone	Adapter for Non IP Phones
Desktop PC	"Soft" Phone Headset	Wireless Internet Access Point

use a soft phone client to remain productive and available at their extension without the rest of the world even knowing there was an issue.

Lower Total Cost of Ownership - TCO

TCO is an often overused and misunderstood concept. Many financial decision makers consider TCO as a soft or sunk cost argument towards making an expensive technology decision. And while a poorly formed argument can surely seem that way, an IP PBX System can offer a truly quantifiable TCO that is generally equal to or lower than the traditional TDM alternative or completely hosted solution.

TCO calculations can vary greatly based on the type of implementation (Traditional vs IP PBX, on site vs Hosted PBX). These variations will be explained later in this paper. So let's start with the general TCO of a PBX (VoIP vs Legacy PBX technologies).

The general TCO of a PBX includes the following components:

Purchase price of the system (lease or buy)

Installation cost of the system

Maintenance costs (maintenance contract)

MACs (Moves, Adds and Changes) — the process of adding or deleting a line, setting up a new user or feature, moving someone, etc. (roughly $125 one-time per MAC)

Monthly telecommunications costs — Local, Long distance etc.

Internal costs— staff time managing the solution, waiting for MACs, training, etc.

Soft / Productivity Increases (not included)

While system and installation costs are similar, there are several key areas where IP PBX Systems will provide a better TCO than Legacy PBXs:

The first area of dramatic cost savings is in the cost of MACs (Moves, Adds and Changes). Depending on the size of an operation, MACs can be a large and inconsistently occurring expense. However, an IP telephone's network address is tied to the device itself, not the port it plugs into (like a traditional handset). As a result, IP handsets can be moved from office to office and the user's extension and features will follow them—whether the user has moved to a different office or taken their phone home. Users can move the device themselves or use a designated non-technical contact instead. It is not necessary to call their PBX vendor and pay them to "hardwire" the new changes. At an average cost of $125 per MAC, this can add up very quickly in most businesses.

The second area of cost savings is in monthly telecommunications services cost. There are two primary reasons. First, most installations of an IP PBX System have greater connectivity options. The options are using standard analog lines, T1/PRI lines or SIP Trunks. The delivery of VoIP over SIP Trunks on a broadband connection allows for a converged delivery of voice (local and long distance services), Internet access and possibly WAN services. Since all services are IP based, carriers offer consolidated services over fewer physical connections to service the systems. Depending on your local configuration and your carrier's capabilities, this alone can have a dramatic effect on monthly costs. Second, businesses with multiple locations can experience reductions in usage between locations by moving those packets over the company's Wide Area Network (WAN) effectively eliminating carrier per minute charges for communicating from site to site.

Gartner research has found that enterprises have reported saving more than 40 percent on their long distance costs by packetizing their wide area voice traffic.

Some providers may also "bundle" telecommunications services like T1/PRI and Internet services fees into one package. This enables the business to consolidate expenses. This can reduce TCO by reducing line costs. It

also may have the effect of increasing and improving bandwidth for some customers who have been using inferior broadband products.

Ranging over into the "soft" cost side of TCO, businesses need to consider the internal costs related to managing the PBX solution. While many firms simply outsource all work related to their PBX, there is always some degree of on-site management. In mid-sized businesses, there may be an individual or team of individuals managing the Legacy PBX solution. This knowledge is generally not required in other areas of the business. IP PBX systems are obviously IP-based and easily fold in the domain of the IT department. A converged architecture allows for maximum utilization of available resources and limits the businesses' dependence on specialized legacy PBX skill sets.

Price Comparisons of Options for Business Communications Systems
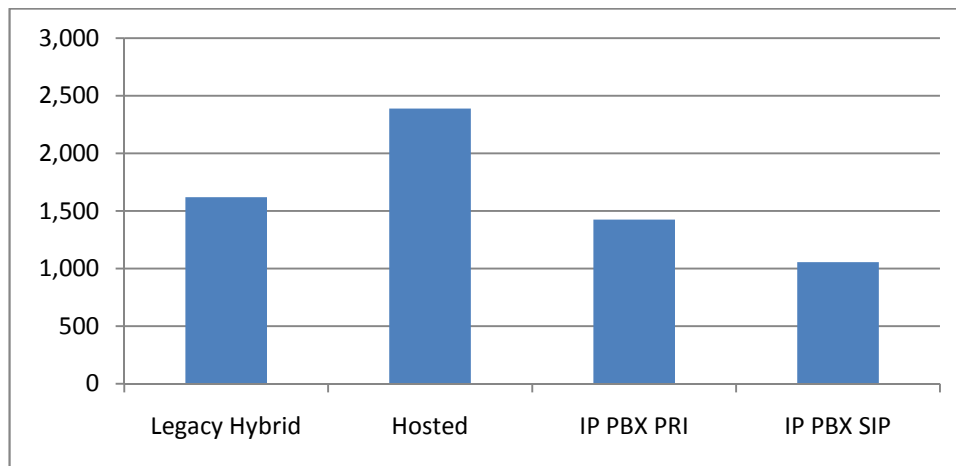
The chart below provides basic costing estimates on Legacy TDM PBX Systems, Hosted VoIP Services and an On-Site IP PBX Solution. The costs are basic and represent a number based on average cost assumptions. Each hosted provider is different, but we have tried to include the costs associated with the average hosted providers in most metropolitan areas. The Hosted providers have some choices in telephones as do the Legacy and IP PBX solutions. We chose a middle of the road phone cost for comparison purposes. The hosted solutions vary widely in the phone cost and payment terms. We believe that the chart accurately reflects a reasonable cost of the hosted solution with an IP phone included in the cost structure. The Legacy TDM PBX has a much higher cost as the system expands due to adding hardware for expansion. The IP PBX actually goes down in cost as the system gets larger reflecting the low license fees associated with expansion. All in all, the prices are fairly representative of the market.

The IP PBX using SIP trunks is far less expensive than any of the rivals. The feature set available from the IP PBX also contains advanced functionality that allows the operator and power users to have a set of features that facilitate more efficient and productive performance by introducing a totally unified environment with text messaging, presence management, unified messaging and traditional features like park and busy lamp status indicators that are not available from most hosted applications.

Further call control and multi-site integration is available on many IP PBX systems that complete the unification of multiple application features that unite the enterprise and introduce valuable collaboration features without introducing massive expenses. Unlike the hosted applications where monthly fees mount up and contribute to higher costs remise based solutions do not generate additional fees.

The monthly expense on a premise based equipment lease usually is less than a hosted application on a monthly basis.

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Comparison of Legacy TDM PBX, Hosted Services and IP PBX System Installed on Premise

Feature	Legacy Hybrid	Hosted	IP PBX PRI	IP PBX SIP
Number of Users	30	30	30	30
Number of Remote Users	1	1	1	1
Cost Of PBX Provisioned for 30 Users	2,000	0	1,500	1,500
Cost per phone	200	200	200	200
Voice Mail	750	0	0	0
Music on Hold	250	0	0	0
Remote Phones	1,000	0	0	0
Conference Bridge	2,000	Fees	0	0
Unified Messaging	1,500	0	0	0
Desktop Call Manger	1,000	NA	1,000	1,000
T1/PRI Trunks	1,000	NA	1,000	0
Analog Trunks	250	NA	250	0
Total Cost of phones	6,200	6,200	6,200	6,200
Total Equipment Cost	15,950	6,200	9,950	8,700
Fee Per Extension	0	30	0	0
Monthly Fees	0	930	0	0
Monthly Broadband Cost	550	200	550	200
Cost of SIP Trunk	20	0	20	200
Total Broadband and Telco 5 Years	34,800	12,000	34,800	24,000
Fees for 5 years	0	55,800	0	0
Total cost for 5 years	50,750	74,000	44,750	32,700
Cost Per User Over 5 Years	1,618	2,387	1,424	1,055

TCO assumptions based on average PBX or IP PBX purchase cost and related monthly telephony expenditures. The assumed phone lines would be a converged T1/PRI line for the IP PBX and Legacy TDM PBX and a separate category for an IP PBX with SIP trunks. Only one remote phone was assumed. If the Hosted IP System claims to include the phone for free, the phone cost is merely included in the monthly fee. The typical telephone will cost about $200. Other expenses such as POE Smart Data Switches have been left out as both the hosted and IP PBX systems require but are assumed to be part of the existing data structure.

VoIP Technology Overview

Definition

VoIP is the transport of packetized voice traffic on an IP (public or private) transport facility with or without other types of data. The voice signal is sampled, compressed and encapsulated into IP data packets to allow it to be switched or routed along with other data packets across the LAN or WAN.

CODECs

CODECs (Compressor/De-compressor) convert audio signals into a digital format and compress for transmission. The most commonly used CODEC standards for VoIP transmission are G.711 and G.729

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G.711

64K (standard) compression algorithm for encoded speech Total bandwidth required with overhead = 93 Kbps. This takes up the most bandwidth but is the most reliable.

G.729a

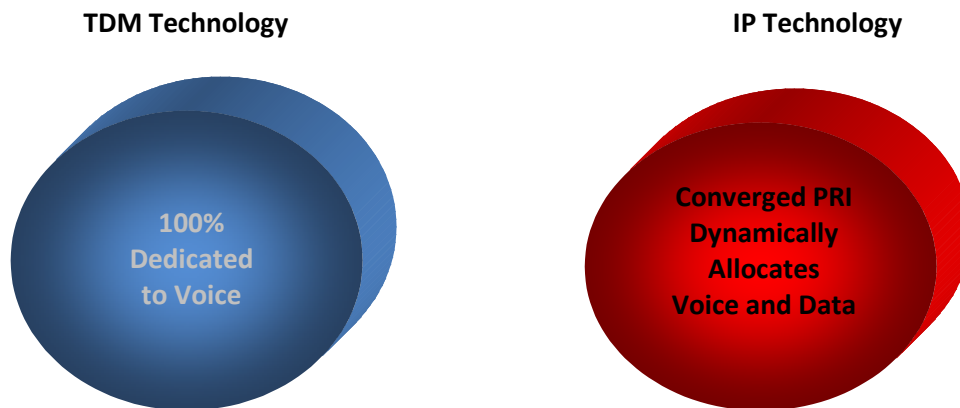*Compresses 8kHz audio signals and encodes them for transmission at 8 Kbps*

Total bandwidth required with overhead = 28.8 Kbps

This level of voice compression allows for over subscription and greater service efficiencies but is prone to failures on unreliable network facilities.

Either CODEC provides for a significantly more efficient network infrastructure than traditional TDM networks. By "packetizing" voice into streams of 28.8kbps to 93kbps, voice conversations can travel the same network utilized for Internet and WAN traffic eliminating traditional POTS lines, PRI or voice tie lines and allowing for more efficient use of available bandwidth.

TDM / Data differences (Convergence) consider this:

Time Division Multiplexing (traditional voice) does not make effective use of bandwidth because lines are physically segmented and allocated for voice whether or not the phone is being used.

TDM Technology

IP Technology

100% Dedicated to Voice

Converged PRI Dynamically Allocates Voice and Data

Data is "packet switched" meaning that it is utilized only when requests are being made and data is being transmitted to the end user. As a result, bandwidth utilization moves up and down wildly, creating gaps and peaks which result in unused and over-used bandwidth.

Typical Data Packet Utilization - Less Efficient

| No Data | Data | Data | No Data | Data | No Data | Data |

Voice and Data Packets Sharing the Same Bandwidth - More Efficient

| Voice | Data | No Data | Voice | No Data | Voice | Data | Voice |

IP voice conversations also create gaps (pauses, silences, calls on hold, etc) that can fill the data gaps. VoIP on a converged network infrastructure can provide greater bandwidth efficiency for all applications. Quite simply, VoIP delivers on the age-old business goal of "more for less".

Key Planning and Deployment Considerations

So you're ready to run out and buy a brand-new IP PBX?

If so, as with any new technology, there are various items to recognize, plan for and address. Below is a list of the items that any business considering a move to an IP PBX System should consider in advance of making a decision. While they may seem intimidating to non-technical readers, they are actually very simple in concept and can be easily addressed — *if they are recognized and planned for early in the process*.

Network Preparedness

Simply put, convergence means your existing network will now take on a "new" responsibility of adding and moving voice through the network. Voice streams are more sensitive to network congestion than data. If your access to a web page is a millisecond slower today than yesterday, you will not even notice, but a 200 millisecond delay in delivering a voice packet manifests itself as a moment of silence or a stutter.

The three most common factors affecting the quality of your deployment are:

Latency—The time it takes the voice stream to travel from end-point to end-point (commonly referred to as "delay")
Packet Loss — High amounts of data congestion can cause routers and switches to overflow - *To keep traffic moving along routers will sometimes discard packets*

Jitter—The difference in time between the expected transmission rate of data and the time it actually arrives - *Generally traced to dramatic changes in network traffic or load*

The problems of jitter, packet loss and delay can be avoided in the network by applying a little common sense. The same type of consideration for any increase in data usage has to be planned for. A thorough network assessment should be performed to ensure there is sufficient bandwidth (LAN and WAN) and control for the introduction of IP voice. Pay particular attention to links where traffic transitions from LAN to WAN

Conduct a complete network inventory and understand the current bandwidth consumption of existing applications and services as well as future calling traffic patterns. Gain a clear view of the network design and identify every device that does not use DHCP and make a note of the IP address.

To improve your networks ability to deal with voice and data on the same network, Quality of Service (QOS) options should be enabled. Enabling QOS on your network will give voice packets priority over data packets as they pass through routers. This will have little or no effect on the network data performance and will keep the voice packets moving without any packet loss resulting in crystal clear voice calls. Always give precedence to voice packets on the network for timely delivery.

Security

With legacy TDM, voice systems weren't affected by IP related threats. Because VoIP is implemented on the IP network using IP standards, it is subject to the same security vulnerabilities as the rest of your businesses' IP-based systems such as servers, routers, switches, firewalls and databases.

The good news is that there are no significant VoIP specific protections needed other than an effective organizational security policy that includes VoIP centric systems and services along with legacy IP based systems. There are no substitutes for a fully encompassing approach to security policy implementation and enforcement. The best security for a network is common sense. Use strong passwords and always take precautions to avoid problems.

Power

Traditional POTS (Plain Old Telephone Service) lines in small office and home offices provide inline power to telephone handsets. Larger offices with actual telephone systems and handsets also get inline power. Since VoIP handsets are connected to Ethernet instead of POTS, power must be provided via alternate means. One option is to add an adapter to plug the phones into a standard power outlet but this method is susceptible to power outages. The second and more desirable option is to replace the Ethernet switching to the end points with POE (Power over Ethernet) switches which provide inline power over standard Ethernet lines similar to traditional POTS.

These switches can then be backed up with an on-site UPS (Uninterruptable Power Supply) to ensure continued use of phones in the event of a power outage.

Failover Options

In the event of a primary local access line outage (T1, Fiber), failover options are a good idea if you can afford them. The use of an IP PBX on site provides the best performance for failover. Since the IP PBX System can be equipped with multiple trunk options like T1/PRI, SIP Trunks and analog trunks, the system can be set up to failover to use the trunks that are functioning while the Internet may be experience an outage. If SIP trunks are used as the primary inbound trunk, they can be set up to automatically re-route calls to the T1 or analog trunks. Since the IP PBX is located at the business location, it is a simple function of the PBX system to automatically failover and no outage is ever experienced.

Creating a policy to have failover analog lines and possible alternate Internet access will avoid down time. If possible, a wireless Internet or cable broadband option for such emergencies can provide Internet access during a fiber cut. This consideration is also important in a legacy PBX environment but is difficult to achieve. An IP PBX provides the best failover protection when planned properly. Using Hosted VoIP services provides some redundancy options, but has more vulnerabilities as there is no IP PBX located on site to continue operations in the case of a failure. While the IP PBX system on site will continue to function during an Internet service outage, the hosted VoIP services will be out of commission for all extensions.

E911

When a **911** call is made via the PSTN (Public Switched Telephone Network), there is address information that is transmitted to a local PSAP (Public Safety Answering Point) so that emergency services can locate the caller.

Due to the "virtual and possibly mobile" nature of a VoIP end-point (handset or soft client), calls are technically not originated from a "physical" location complicating the transmission of address information to the PSAP in the event of a **911** call.

Due to regulations surrounding this, VoIP PBXs and Service provider stations must be "registered" to a location so that they can be "logically" mapped to a "physical" address which can be transmitted to the PSAP.

Companies evaluating any VoIP implementation should understand this consideration and discuss options with their service provider or integrator.

Mobility

Mobility has already been demonstrated as one of the primary drivers for businesses considering VoIP, however, the mobility capabilities of the end-points differ based on the various options of VoIP implementation. Businesses should discuss both long and short term mobility objectives before planning their implementation and plan for effective policy and administration.

Quality

SOHO (Small Office / Home Office) and Consumer-oriented VoIP offerings (Skype, Vonage) generally use the Public Internet for transport of voice packets back to the service provider. In any situation where voice packets traverse the Internet, Quality cannot be assured. Businesses should understand the implications of Internet-based transport and discuss it with their service provider or integrator.

While these considerations should be taken seriously, they should not be looked at as reasons to shy away from a VoIP implementation. A well planned and executed VoIP strategy can deliver call quality ratings similar to or better than traditional TDM implementations.

Implementation Options

Now that we have discussed overall VoIP benefits and considerations, it is helpful to understand the types of procurement and deployment options and their relative strengths and weaknesses. Listed below are three types of potential implementations as well as their advantages and disadvantages.

Purchased IP PBX

In this scenario, the customer purchases or leases the IP phone system and handsets from an IP PBX Vendor. The option of voice services like T1/PRI, SIP Trunks and analog circuits remain flexible and since these are commodity services customers are free to select the best vendor at the best price. This is a significant advantage in using this technology.   Since voice and/or Internet services are contracted separately, the IP PBX vendor typically will recommends the services that best fit your needs.

Advantages:

Benefits of implementing an IP PBX system

Allows for separate negotiation of voice and/or Internet services per location

It's tried, tested and "safe"

It has the richest feature set

It continues to work during Internet Outages

Simplest Branch Office integration

Local company for support

It has the most native IP Options – remote phones – SIP Trunks – Conference Bridge

Best redundancy

Eliminates call expense to branch offices and remote users

Scalability and expansion

It is the lowest cost

Disadvantages:

Capital expenditure

Managed IP PBX

This is simply a different pricing option above the typical IP PBX deployment. In this scenario, the customer pays a monthly fee for an on-site PBX and handsets from a service provider rather than the standard lease/buy/maintenance option. Voice and/or Internet services may or may not be bundled in.

Advantages:

Benefits of implementing an IP PBX system

One service provider for all voice and data

Disadvantages:

Expensive

Hosted IP Telephony / Hosted PBX

In a fully centralized and managed option, a service provider will sell or supply handsets directly to the customer without the need for a local PBX. IP Handsets receive their features from the service provider's network and IP feature servers. All administration, management, network, Local, Long Distance and typically Internet services will be supplied by the service provider. Costs are bundled to provide a per user price or may be broken out by phone, features, network and usage. IP Feature services located in the service provider's network allow for continuity of services regardless of the availability of services and connectivity at the customer's location(s).

Advantages:

Full VoIP functionality

Predictable monthly hardware and service fees

Scalability

Redundancy designed at Central Operation Point (requires Internet to be operational)

Disadvantages

Limited local hardware and points of failure (limits operation during Internet outage)

Disaster Recovery ready— calling functions (voicemail, mobility, etc.) continue in the event of a local outage (call forwarding to cell phones or remote IP phones – business is left without any service)

Quality of service – some providers provide dedicated access and some do not. If they rely on third party Internet access to get to the service provider, service quality may be affected. Those offices with sufficient size can utilize dedicated leased lines (T-1) to provide voice, data and PBX services, ensuring end-to-end Quality of Service. SOHO (Small Office, Home Office) users must utilize existing Broadband Internet connections where quality of service can be managed, but not assured.

Typically limited to installations of less than 20 users per location

Not all service providers are the same and provide the same level of network diversity/redundancy and quality of service –careful consideration must be given to this evaluation.

Unless properly addressed in applicable implementations, failover to secondary access in the event of primary access failure is more challenging than on premise based IP PBXs.

Ultimately, the option that works best for your business will depend on many of the features, benefits and considerations detailed in this paper and on specific niche/vertical market applications that were not detailed.

Very expensive

Conclusion

Why Choose an IP Technology Solution for Your Business?

With clear cut advantages, compelling features and indisputable market trends and statistics, it is difficult to draw any other conclusion. An IP PBX System is more than likely the best option for many organizations looking to deploy VoIP or that need to replace or augment their current telephone system. IP PBX Systems provide the most reliable and least vulnerable solution in the marketplace today. The Ability to have a vast array of

features available for just about any application at a low cost creates a compelling argument where there just is no better solution. An IP PBX contributes so much more than a Legacy PBX or hosted solution to business efficiency. The cost is less than both options due to the nature of the product. An IP PBX is a software solution that includes all of the most used business communications applications including Conferencing, unified messaging, remote workers and all of the options for trunk lines.

In addition to the massive advantage of application options, an IP PBX also provides the following:

Productivity through mobility features Convenience and simplicity of use

Reliability, disaster and disruption readiness Integration superior to all other options

Future proofing from obsolescence

Reduced operating expenses

Immediate payback in flexibility and applications control

Of course, like any other critical decision, there are various conditions that may affect the above. We can most likely help you evaluate your VoIP opportunities, challenges and threats. If the discussion points in this paper make sense or are intriguing to you, contact us to find out if we can assist.

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Who is IPitomy

IPitomy is a team of Communications veterans who believe that the new technology is the way of the future. By designing the IPitomy platform to be easy to use and low in price, IPitomy has quickly become a leader in providing IP PBX systems to businesses globally.