Why Hosted VoIP?

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Introduction

Who is Concierge Communications?

Concierge Communications is a no-cost, national communications and technology solutions broker representing over 40 different business communication providers in the following areas:

- Telecom Expense Management (TEM)
- Voice and Data
- Managed Services
- Hosted Services
- Wireless
- GPS & LBS
- Contact Center

Founded in 2001, Concierge Communications has been representing managed/hosted Voice over Internet Protocol (VoIP) since 2003. Concierge has client locations in over 40 states utilizing hosted VoIP services.

Please contact us at www.conciergecom.com or 888.353.9900 to speak with a solution specialist for a free, no-obligation consultation of your communications needs.

Introduction

VoIP Related Definitions

API
> Application Programming Interface. Allows connectivity from a remote system to the core features of a remote system owned, operated and maintained by a third party.
>
> *How it affects VoIP:* Allows legacy applications to have features coded (programmed) into them so they can connect to the remote system and utilize the features of the outside system. This is typically less expensive and a more robust solution rather than trying to build those features from scratch in the existing system.
> *Example:* see www.calloncrm.com. Their applications access the core VoIP systems for call control, screen pop and more.

CODEC
> CODer and DECoder or COmpression and DEcompression. Conversion of voice from analog to digital and back allowing voice to be transmitted via Internet Protocol (IP) packets.
>
> *How it affects VoIP:* The quality of the voice transmission can be relative to the CODEC used to convert the voice to digital and how much compression is used to shrink the bandwidth required to transmit the voice over a network.

CoS – Class of Service
> Prioritization of the IP packet.
>
> *How it affects VoIP:* The ability to prioritize the IP packet is a key component to ensure voice packets, video streams and / or specific applications which are given the proper priority in a converged network.

G.711 or G.711 CODEC
> Algorithm used to transmit and receive a specific type of voice. Sometimes referred to as "uncompressed voice".
>
> *How it affects VoIP:* Generally referred to as high quality, non-compressed voice. Typically less susceptible to quality issues over a public transport.

G.729 or G.729 CODEC
> Algorithm used to transmit and receive a specific type of voice using compression.
>
> *How it affects VoIP:* Used often as the means to compress voice, but still have acceptable quality. The greater the compression, the more simultaneous calls you can have on any given circuit and network but the greater potential for quality issues over a public transport.

G.722 or G.722 CODEC
> Algorithm used to transmit and receive a specific type of "wideband" or "high-definition" voice.
>
> *How it affects VoIP:* Often used for intra-office where bandwidth is plentiful on the LAN. Sometimes used for inter-office to improve quality of calls. Hosted PBX users may enjoy high-definition calls to other customers on the same hosted platform. Users often claim that this CODEC suppresses all white noise on the call.

Introduction

VoIP Related Definitions

Jitter
IP packets arriving at a varied delay.

How it affects VoIP: Creates popping and clicking even if the packets arrive within the time frame of 300 – 400 milliseconds.

Latency
The time delay to get packets through the network.

How it affects VoIP: Voice quality can be greatly impacted by latency greater than 300 milliseconds and from IP packets arriving at different latency intervals.

MOS – Median Opinion Score
Voice quality rating on a scale of 1 to 5.

How it affects VoIP: It is a measurement of voice quality.

MPLS
Multi-Protocol Label Switching. The ability of the network to understand the predefined prioritization of an IP packet and forward it properly within the network.

How it affects VoIP: Allows voice, video, data and applications to be prioritized across the network. This technology, or similar technologies, is important to Quality of Service (QoS) across the network.

Origination or SIP Origination
A provider "hosts" all of your company's phone numbers and delivers inbound calls made to those numbers to one or more phone systems.

How it affects VoIP: All inbound calls can be sent to a single phone system the routed over the network to individual offices, eliminating the need for local phone service at the branch office.

QoS – Quality of Service
A subjective measurement of the end-to-end quality of the transmission of voice, video and / or data.

How it affects VoIP: Typically QoS involves creating the network and / or equipment in such a way that you minimize all possible effects to the IP packets that will adversely affect the desired quality.

Termination or SIP Termination
A provider accepts all of the outbound calls from your locations through their centralized phone system and terminates the calls to the appropriate phone number. The termination can be local, domestic long distance or international.

How it affects VoIP: Centralization of all outbound calls can reduce costs, maintenance and the need to local or long distance service at branch offices.

Introduction

VoIP Related Definitions

Traffic Shaping or Packet Shaping
Controlling traffic within the network to conform to the desired policy by application and IP address to achieve the desired result.

How it affects VoIP: When done properly, helps ensure that voice is given priority and the ability to expand as call volume dictates. Does not allow other services on the network to take over without notice and can throttle bandwidth hungry applications like streaming media.

VoIP
Voice over Internet Protocol. The combination of voice, video and data combined into IP packets and transported over a private, semi-private or public network.

VPLS
Virtual Private LAN Service. Allows a multi-location network to look and act like they are all connected to a single switch.

How it affects VoIP: Allows data to flow freely between remote sites as if local. Restricted by the size of the connection to other sites, however, many companies are offering Ethernet services for metro and long-haul connections enabling multi-site companies to look, act and perform like the entire network is local.

VPN or IP-VPN
Virtual Private Network. Most often referred to as a site-to-site connection that has encrypted the data packets between the sites over a public network such as the Internet. Sometimes used by providers to describe their site-to-site connections over a private network. This is confusing when you hear the term in both arenas and a customer should always ask if the network is public or private and if the network is QoS and CoS enabled.

How it affects VoIP: Anytime a packet is encrypted it introduces latency in order to wrap the packet with a security wrapper and unwrap it at the other end. In addition, public networks are subject to service outages and delays from issues beyond the initial provider's control.

For a more complete description of VoIP and telecom terms, we recommend purchasing
<u>Newton's Telecom Dictionary</u> by Harry Newton.

The Problem with VoIP

Misconceptions of VoIP

Many business communication decision makers continue to have several misconceptions about VoIP including the following:

1. VoIP = Voice Over the Internet

   One of the most misunderstood things about VoIP is its definition. Fueled by business and industry trade writers, technical teachers and a lot of other people that should know better, they mistakenly translate the technical terms into a simplified version that confuse meaning and challenge perceptions of quality.

   Much of the confusion stems from the misunderstanding of Transport versus packet. The encapsulation of information into an Internet Protocol (IP) packet continues to be confused with the way we transport that packet across public, private and semi-private networks.

   Many people continue to think VoIP means transport of voice over the Internet. In reality, it means the digitization of voice, combined with video and data into a converged network with transmission of an IP packet over an IP network. That network can be a public network, such as the Internet, or it can be a private network such as a point-to-point circuit or MPLS network.
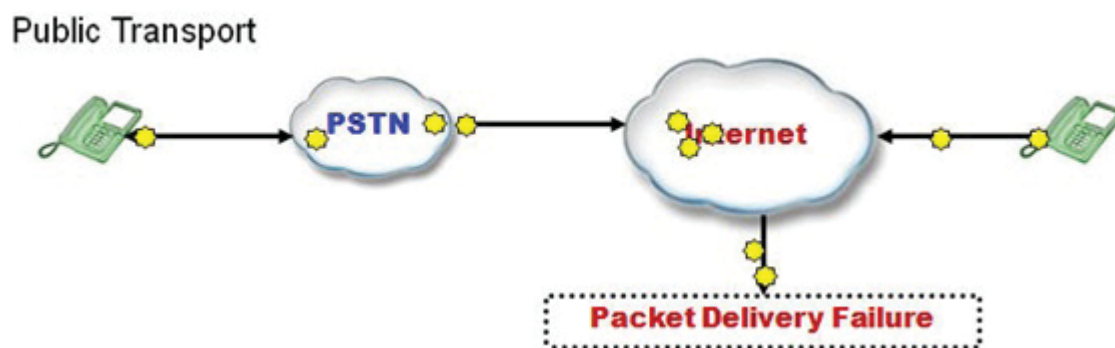
   Public network transport is subject to security concerns, packet delivery failure, and packet latency that continue to plague voice over the Internet. It is not the 95% - 99.9% of the time you can get voice to work well enough over a public transport that hurts your business, but it is the one-time to 5% of the time that you experience issues that cause problems at inopportune times that could result in lost business and other business issues.

   Businesses should be careful putting mission-critical voice across a public network. First, QoS should be enabled on the LAN for outbound traffic with voice being prioritized. If using a public transport, check to make sure that the provider has located their equipment in an area such as a Network Access Point (NAP). This is a major city that is accessible through low-latency connectivity from most Internet Service Providers (ISP). The holy grail of public transport is the ability to prioritize voice over the public transport. This solution is just emerging as an option in the marketplace.

The Problem with VoIP

Misconceptions of VoIP

Private transport of voice, if architected properly, ensures quality through CoS and QoS settings that are maintained end-to-end. An architecture that does not prioritize the packet at the customer premises and carry that prioritization all the way through the network to the point where voice and data diverge will be subject to quality issues.

Ironically, in the first Cisco press release in October of 1997, Cisco outlined the technology needed for successful deployments of VoIP. Over a decade later, the industry still struggles to understand and implement this basic, fundamental VoIP requirement. http://newsroom.cisco.com/dlls/prod_101097.html

"For real-time applications such as voice over IP to become widespread, high quality of service (QoS) must be maintained. To achieve this high QoS, Cisco is demonstrating state of the art queuing and buffering techniques in its ATM switches, which guarantee low-round trip delays and low-cell discard rates."

2. Free Long Distance

There is no "free" long distance when connecting to the Public Switched Telephone Network (PSTN). Providers are charged for terminating calls to other providers regardless of their origination. These fees must be passed on in the form of usage or a flat rate. Only same network to same network, public or private, can be "free" which means they are embedded in the flat rate you pay for your network connection.

Although the long distances rates are significantly reduced through transmission over an IP network, prospective VoIP customers should know that other low-cost and no-cost long distance options exist outside of hosted VoIP offerings. Some Competitive Local Exchange Carriers (CLEC) offer free site-to-site long distance calls and some also offer free customer-to-CLEC customer long distance calls.

3. Unlimited Long Distance

The word "Unlimited", when referring to calls that terminate to the PSTN, really means that there is an abuse policy in place. Read the fine print and you will find the ability of the provider to terminate services for abuse, meaning call volume in excess of a predetermined amount of long distance minutes such as 10,000 in a monthly billing period.

Misconceptions of VoIP

4. VoIP Will Save Me Money

While some VoIP solutions can and do save companies money, a potential VoIP customer should always explore the products available, the business benefits derived from these products, as well as the service and support that comes along with the implementation of this solution. All of this information should be gathered and used to create an analysis of:

If I am saving money, are there any features I lose or quality I give up to implement the solution?
- What features do I gain?

If I am spending the same amount of money what do I get for the work required to change systems and is the work of changing worth the added benefits?
- Depending on the complexity of your VoIP solution, the changes may be simple or may require advanced planning.
- A properly planned VoIP migration, combined with proper project management, will eliminate most change issues.

If I am spending more money, what business benefits do I get with the solution and are those benefits worth the additional costs?
- It is strongly recommended that prospective VoIP customers take the time to educate themselves as much as possible on the features and potential configurations offered by the hosted VoIP provider.
- Many features are available that have either been traditional too expensive or not available to some businesses prior to the hosted VoIP solution.
- Explore, ask questions and uncover what features may enhance your business. You might be pleasantly surprised and find the any additional cost can be offset by productivity gains or enhanced capabilities.

Any Return on Investment (ROI) model should take into account the labor savings, if any, of the new technology.

5. VoIP is a Residential Solution

Architected properly, small, medium and large businesses can enjoy a quality and robust VoIP solution. Benefits of converged network and features can benefit most companies. Only through exploration and education will you uncover the benefits of hosted VoIP.

The Problem with VoIP

Misconceptions of VoIP

6. If I Use VoIP, I Don't Need A Phone - I Will Just Use My Computer

While it is true, you can use a soft phone (computer software that emulates a physical phone) instead of a physical phone, most business people cannot rely on a soft phone as their primary phone. If their computer crashes or locks up, so does the phone. Most business people prefer to have a physical handset for stability, ergonomics and a great speakerphone.

7. It Is Much Easier To Install a VoIP System than a Traditional Phone System

This may be true of some premises-based phone systems, but hosted VoIP typically is the convergence of voice, video and data into a single network with prioritization. Getting knowledgeable people that understand some very technical things is critical to a successful hosted VoIP deployment.

Without a converged network, you need to look at what you are really gaining by implementing a VoIP system. Premises-based VoIP systems are subject to most of the same limitations as traditional premises-based phone systems. Hosted VoIP represents the ability to take advantage of the resources of the hosted provider at a technical level previously not available. These resources enable redundancy, capacity and features that a premises-based phone system cannot duplicate.

The Problem with VoIP

Architecture versus Service Level Agreement (SLA)

Ask most business communications decision makers what a provider SLA is and you will get some standard answers like:
- The amount of uptime I can expect from the service provider
- The amount of time the provider guarantees their service will be available
- A representation of how well the system has been architected

The true and simpler definition for a provider SLA is:
- An SLA is "the right to argue for a credit."

An SLA is a predefined point of lack of service quality or availability, that when exceeded, requires you, the customer, to request a credit from the provider. In many cases you are required to prove to the provider the issue is their fault and defend your own equipment and systems as possible problems for the issue. In all cases, the credit liability is equal to or less than the monthly service charges paid to the provider.

The best thing a business can do when evaluating any new service is to look beyond the SLA and look under the technical covers.
- Spend the time to understand the architecture of the VoIP solution.
- Understand the financial backing of the VoIP provider.
- Understand what they have done to mitigate failures.
- What redundancy do they have in place to avoid outages?
- Ask for references and follow up with those references to understand their experiences with the Hosted VoIP provider.

The Problem with VoIP

The Worlds of Voice and Data Collide

The world of computers, data systems, and data-related solutions can be thought of as the "data train." The world of voice communications, phone systems, carrier services as well as voice-related and other traditional communication services can be thought of as the "Telco train". Not too long ago, these two trains found themselves on the same track, headed toward each other at a high rate of speed. After the collision, the data train emerged from the wreckage as the dominant communication infrastructure.

Where there was once voice, video and data, there is now only data. Voice rides a data network typically with ever decreasing bandwidth significance, but with the highest priority. Voice and video are now encapsulated into data packets and shipped across data networks only to be delivered and converted back into traditional communications or left in their data form to be processed by newer data equipment like VoIP phones.

To complicate matters in the "data world," technologies are generally introduced by a company, sent to a committee for ratification of a standard and then named and supported by all companies under that standard.

Example: 802.x wireless technologies. But in the "traditional voice and data communications world," communication services are typically introduced by a company, mimicked or replicated by a competing company and named something different in order to try and preserve some proprietary claim on product, price or service tweak. These practices are slowly fading as the data train becomes more ingrained into the Telco train world and telecom is replaced by data solutions.

Previous Options

How We Got to Hosted VoIP

Lines
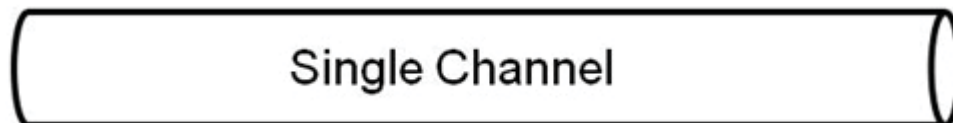
Single Channel

A single line is fine for an alarm line, elevator line, occasional fax line and a few other isolated uses. Some small businesses still use lines for their phone system, but many want the features of larger systems.
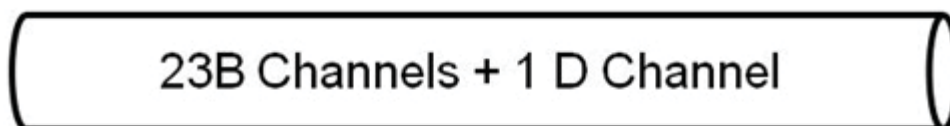
Trunks

24 Channels

A T1 can carry 24 channels of voice or 1.544 mbps of data. Trunks offer Direct Inward Dial (DID) – an effective "line" for each phone number, but uses aggregation to better utilize capacity. Example: 100 DIDs may only have 24 trunks shared across the organization meaning that only 24 calls can be made simultaneously, but 100 unique phone numbers exist in the phone system.

Trunks have been on the sharp decline since ISDN - PRI often offers more features, like Caller ID Name rather than just number, and is more efficient at call set up and tear down than trunks.

ISDN – PRI (Primary Rate Interface)

23B Channels + 1 D Channel

ISDN – PRI offers 23 or 24 voice channels, all the benefits of trunks, plus has more features. Costs are now in line with trunks for equipment and service charges making them much more attractive for traditional phone service.

SIP (Session Initiation Protocol)

~30k   (G729)   ~52 effective channels
~64k – 80k (G711)   ~17 effective channels
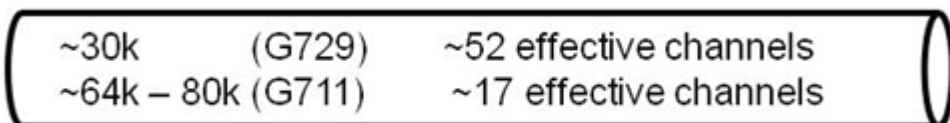
SIP offers two main advantages over trunks and ISDN-PRI:
• The ability to keep the call native in an IP packet
• The ability to compress the packet, giving more effective simultaneous calls over the same network facility, thus reducing costs of network infrastructure and equipment.
• G.722, using about 85k, is starting to emerge as a preferred CODEC to G.711.

Previous Options

How We Got to Hosted VoIP

Once we look at a converged network, we are finding that voice is playing a much smaller role in the capacity planning of a network. This means that in many cases having a premises-based phone system for SIP only introduces voice limitations and single points of failure that can be removed by moving to a hosted VoIP solution. Cost savings on network facilities through the use of compressed voice have been greatly reduced by price reductions in recent years.

Note: There are many CODECs in use and available besides G.711, G.729 and G.722. These are currently the CODECs in wide use.
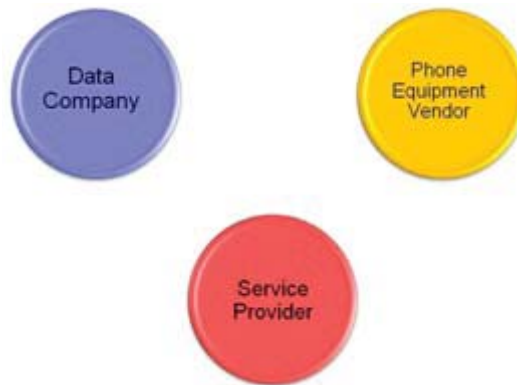
Previous Options

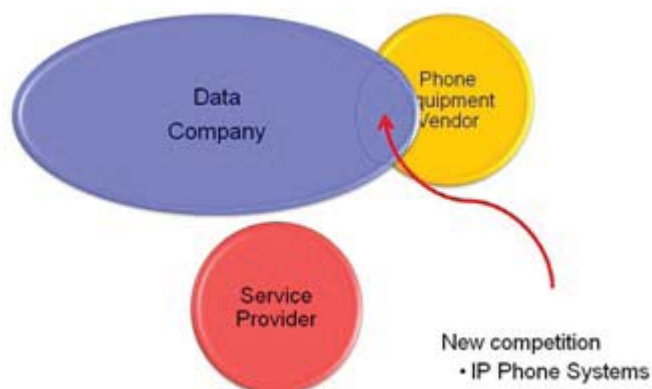## What Are the Different Industry Forces Driving VoIP?

For decades, three industries worked harmoniously to bring business communication services to small, medium and large business.

On October 10,1997 Cisco announced its entry into the VoIP space with a demonstration at Networld+Interop. Other VoIP systems were also entering the market, but few with little debt, billions in cash and none possessing the experience with IP like Cisco.
See: http://newsroom.cisco.com/dlls/prod_101097.html

Many Cisco Value Added Resellers (VARs) became competitors to phone equipment vendors. Many new and existing phone vendors created VoIP systems and starting courting computer-related VARs.
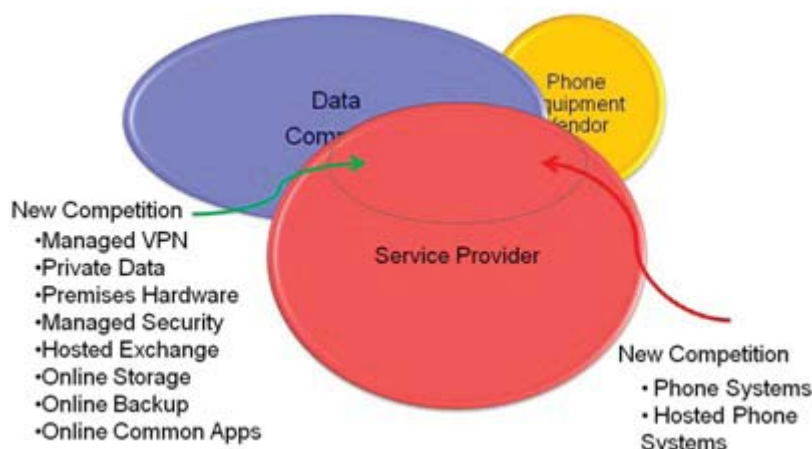
Previous Options

What Are the Different Industry Forces Driving VoIP?

In the early 2000s many communications providers ran into financial troubles. Many filed bankruptcy, shed their debt, restructured and started to offer competitive services to the phone equipment vendors and data companies.

Today many companies are finding that the word "convergence" not only applies to technologies, but to industries. Customers are finding that service providers are offering more equipment and services that used to be obtained from phone equipment vendors and computer-related companies.

In addition, software-based hosted VoIP solutions have emerged. A company like Broadsoft, is a formidable, if not dominant, option for core VoIP services. Combined with High Definition phones from Polycom and you have a high-quality and feature rich alternative to traditional voice services.

Hardware-based VoIP solutions continue to enhance their services as well. They continue to add features and service offerings to make them also more attractive than traditional voice solutions.

Hosted VoIP Options

Why Companies Choose Hosted VoIP

There are many reasons why a company would choose a hosted VoIP system. Here are the three most prominent:

1. Multi-location
   - Companies that have multiple locations can typically save money, while increasing features, through a converged network. The convergence of interoffice voice and data is very appealing. The addition of a 7 x 24 x 365 team of professionals to manage the network and voice systems is something that most companies cannot afford to implement themselves, but can afford through hosted VoIP solutions.
   - Multi-site and multi-state companies typically have to deal with many different communication contracts. A national hosted VoIP provider can consolidate many communication services and bills into a single solution and a single bill. Instead of dealing with the billing and support from dozens of companies, it can be consolidated into one. This shrinks internal support staff requirements, simplifies billing, and simplifies support calls.

2. Call center technologies
   - Call centers are able to scale up and down, have a more robust architecture and centralize management while decentralizing agents.
   - Call center technologies are not just for traditional call centers anymore. Call queuing for instance allows even small companies or departments to have callers wait for a live person rather than simply go to voicemail.
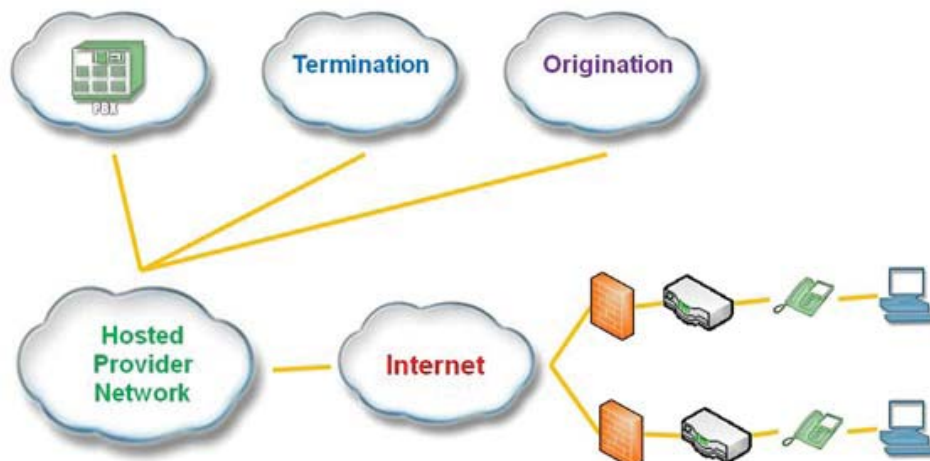
3. Features
   - The list of features for VoIP is very long and growing by the day. They key is to find a feature that gives your company a business benefit and adds value to the organization. Search diligently for these features. Implement them and train users to utilize them.

Hosted VoIP Options

Why Companies Choose Hosted VoIP

Public Connections

Calls are routed through a public network such as the Internet to the hosted phone system. Site to site communication is done via a VPN. Communication is subject to interruption and quality issues through packet loss, packet delay, security issues such as denial of service attacks and other issues that plague public networks.
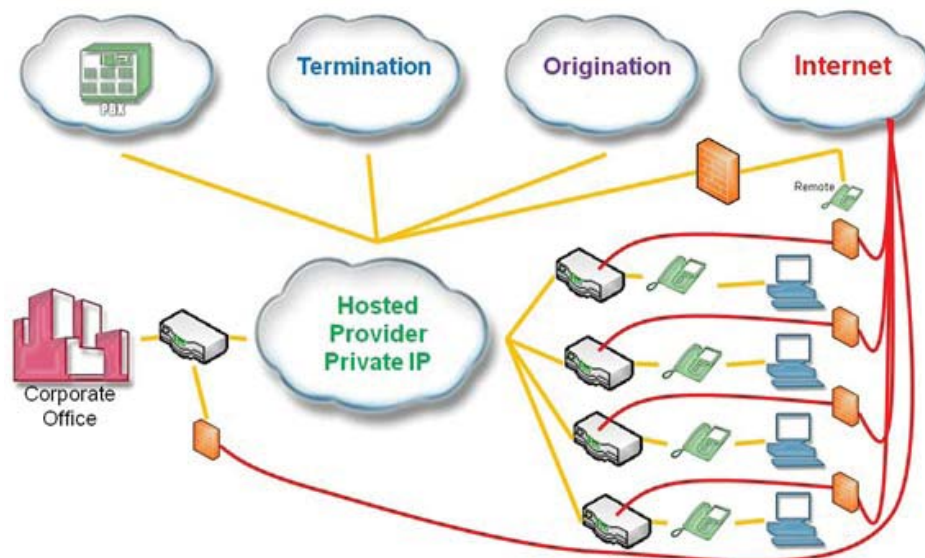
Private Connections
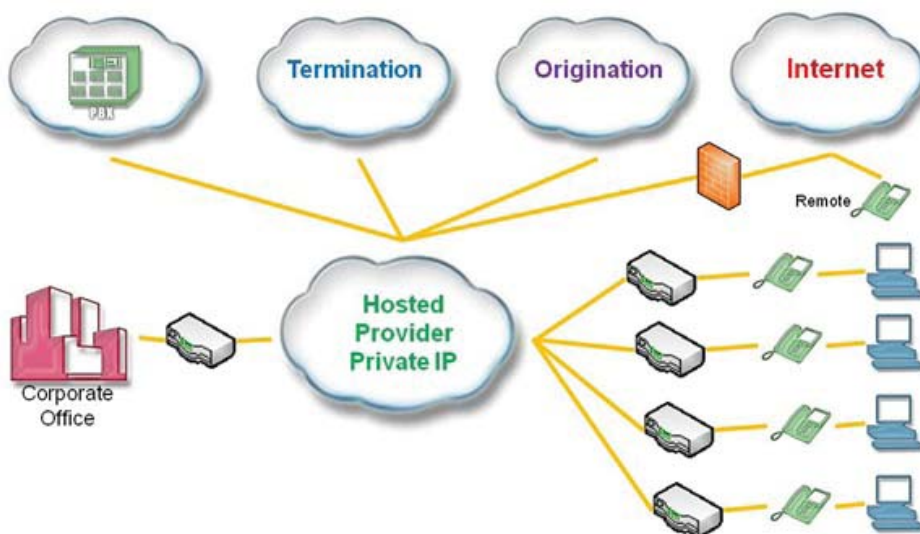
Calls are routed to central location through a private network that maintains CoS and QoS ensuring voice and data quality. Security and other public network concerns can be pushed to the edge of the network. Home office phones can be added as Internet-based phones and be a part of the same corporate phone system.

Hosted VoIP Options

Why Companies Choose Hosted VoIP

Redundant Voice and / or Data Connections

Because the phone system intelligence resides outside the customer premises, it is possible to connect a secondary private or public connection to the site and failover voice and / or data traffic to the alternate connection.

In the case of a public connection failover, security is maintained through an IPsec encrypted tunnel. Although CoS and QoS are not maintained through the public connection, it provides a low-cost failover of the inbound and outbound voice traffic. Connections are not limited to traditional T1 type connections, but can include cable service, DSL, microwave, WiMAX and other Internet connection technologies. In many cases, this can provide a second level of redundancy for the network facility in addition to the network path.

Some companies choose to have their primary Internet connection through the Internet connection at the premises and have the Internet failover through the private IP network. They then have their primary voice and application traffic through the private IP network and have the failover for those services through the Internet connection. This utilizes both connections and maximizes usage of both connections while given the best possible service experience during normal operation and keeping a failover path available for an outage.

This type of redundancy is not possible in the traditional voice communication infrastructure which tries to facilitate redundancy through call forwarding and secondary call paths that have limitations and generally do not provide a true secondary connection for inbound and outbound traffic to the PSTN. This architecture is especially attractive to call centers that are seeking low cost redundancy for their site rather than just a failover of calls to an alternate site.

Hosted VoIP Options

Why Companies Choose Hosted VoIP

Traditional Call Center Queuing
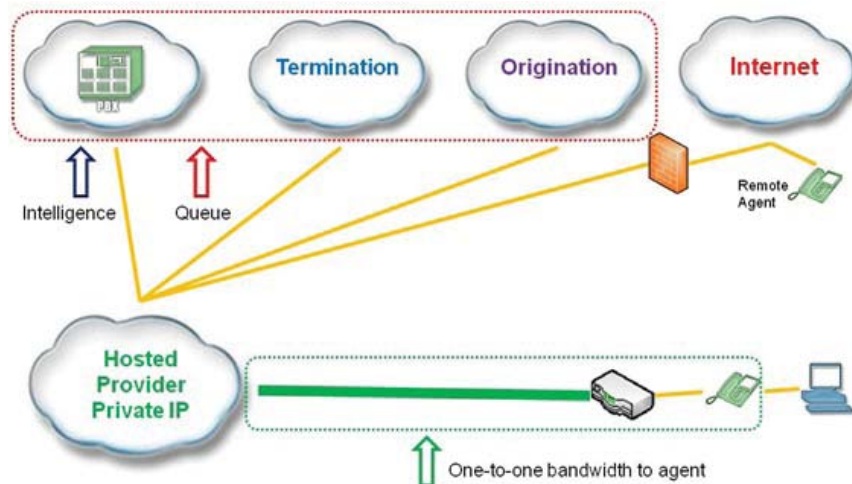
In a premises-based call center, the queue (the amount of calls that can be waiting to speak to an agent) is limited by the connection to the phone system at the premises. This can be expensive, especially for seasonal call centers, to maintain facilities for their maximum simultaneous call volume.

Hosted Call Center Queuing
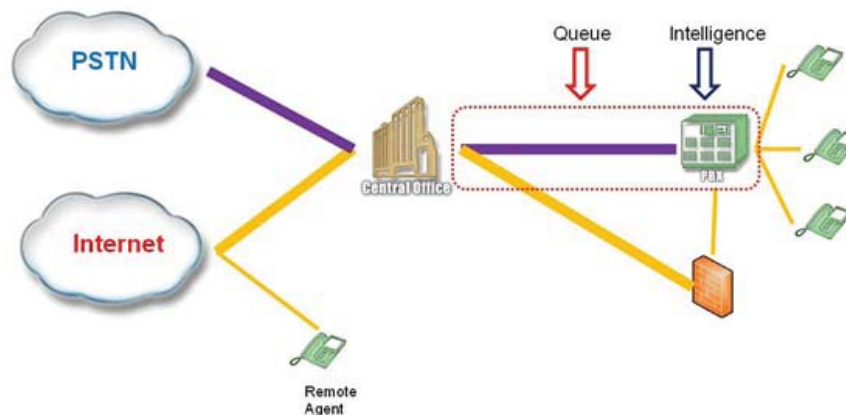
A hosted call center's queue resides in the cloud with the hosted VoIP provider. The PSTN connection from the hosted VoIP provider has much more capacity because it is aggregated with other customers. A capacity planning team manages network availability and can aggregate seasonal traffic from multiple customers offsetting call volume spikes. This architecture allows the call center to maintain a one-to-one ratio of agents to bandwidth requirements. In addition, adding additional sites or at home agents is much simpler and can be done dynamically.

Hosted VoIP Options

Why Companies Choose Hosted VoIP

Hosted Call Center Redundancy
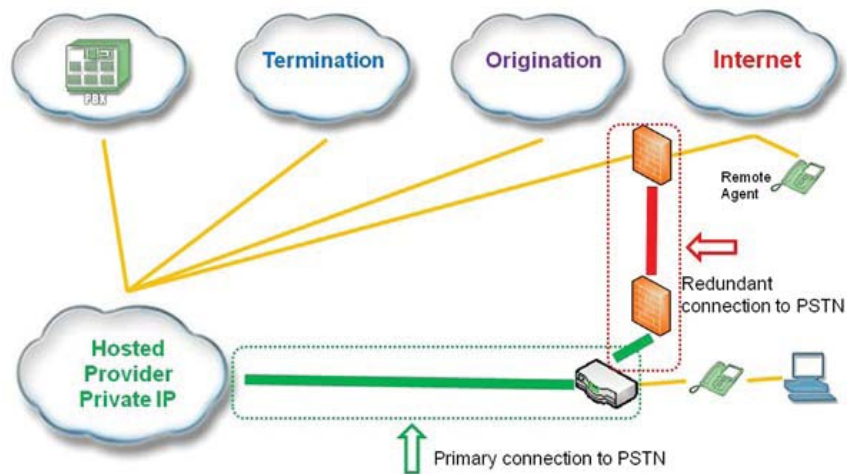
As stated previously, call centers can easily maintain a redundant private or public connection enabling them to better survive temporary connection outages, keeping workers working and not overloading alternate centers with call traffic.

Implementation Guide

Existing Contracts

What do I budget for a hosted VoIP solution?
- A call to your communications consultant will help the process of developing a budget. Your consultant will want to see your current bills for local dial tone, long distance, Internet access, wide area network (WAN) and more in order to figure out your telecom spend and develop a cost comparison.
- If you are a large organization (spending over $50,000 / month on all combined communications), now is the time to consider a telecom audit or Telecom Expense Management (TEM) solution.
- Don't forget to make your wish list. If you are going to look at a hosted converged network, make a list of what you would like the network to look like or do. This is the perfect time to get the business to drive the technology, not let the technology drive the business.
- Remember you can pick up some budget dollars through technology implementation. Solutions like a single receptionist for multiple locations may free up enough money to justify the solution. Adding a call queue can eliminate a person answering the phone. Figure out how to use the technology to save costs.

What if I am still in contracts for my voice and/or data services?
- One of the unique ways of implementing managed VoIP prior to the expiration of a current contract is to convert your existing voice or data circuit being delivered by your current provider into a point-to-point or MPLS connection from your location to the managed VoIP provider. If the managed VoIP provider is able to accept the connection, they will likely charge you a management fee. You will have two bills, one from the existing provider for the connection to the VoIP provider and one from the VoIP provider for services.
- Otherwise, implement a planned roll out and convert each office as contracts come due or as you can absorb Early Termination Penalties (ETP).

What do I do with my existing phone equipment?
- Liquidate using www.ebay.com or find an equipment liquidator while the system still has value to someone and you don't have to pay a disposal fee to get rid of it.
- If the equipment is under a maintenance contract, weigh the Early Termination Penalty (ETP) against the cost savings or productivity enhancements gained by implementation of managed VoIP. Do not hold on to the idea that you have to delay the implementation of competitive advantages so you can squeeze every last nickel out of an equipment contract. Sometimes you have to spend a little money to save a lot of money.
- Look for opportunities for a possible tax write-off by donating old equipment to your favorite local charity.

Implementation Guide

Architecture Decisions
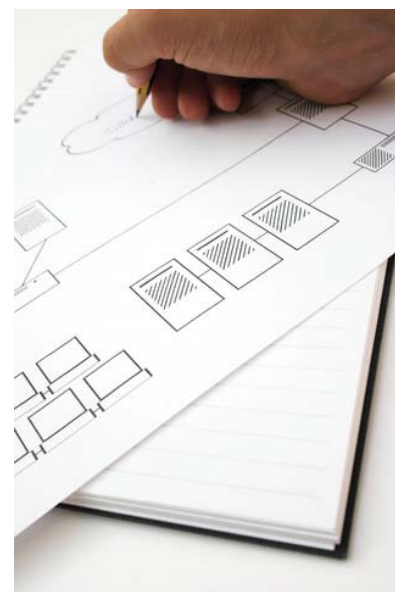
How many locations do you have that need VoIP service?
- Many advantages and cost savings of VoIP come from a converged Wide Area Network (WAN). Explore all existing location costs.
- If you only have one location, you need to identify the features that justify the cost of a hosted VoIP solution. Looking closely at the features of hosted VoIP and discussing your business with your communications consultant is the best way to uncover possible business enhancements and cost justification.

How many employees are at each site?
- I have less than five employees per location
  - ➤ These sites should consider the cost of a private connection versus a public connection with a packet prioritization device at the premises. If the site has secure data requirements, the cost of the private data connection should be considered under that premise and not solely on the voice requirements. Wherever possible, justify a private connection to avoid voice quality issues and additional security costs.
  - ➤ If Internet-based connectivity is chose, this is typically a Bring Your Own Bandwidth (BYOB) solution where the customer provides their own public network connection.
  - ➤ Single phone sites may be able to get by with a simple router that has QoS features.
  - ➤ I have more than five employees per location
  - ➤ These sites should implement a private connection with CoS and QoS.

Should I buy the premises router and Power over Ethernet (POE) switch?
- No!
- One of the biggest issues with hosted VoIP is quality due to improper implementation and that leads to finger pointing. A solid VoIP provider will give you the option to include the router and POE switch (or integrated access device) in their monthly fee. If it breaks, they fix it. If there is a quality issue, they fix it. If they can see the router and switch, but not the phone, they ask you to plug the phone into another port. If the phone works, you fix the wiring. No more finger pointing.

Implementation Guide

Architecture Decisions

How much bandwidth do I need for each location?
- Right size to the peak of all services
    - ➢ *Converged services – add up voice, video, data peak usage*
    - ➢ *Purchase a connection to handle the peak usage*
- *Make sure the hosted VoIP provider has voice AND data monitoring tools*
    - ➢ *Monitor periodically to determine usage patterns*

Typical CoS architecture:

Class 5 - WEB
Class 4 – EMAIL / FTP
Class 3 – INTERNAL DATA
Class 2 - VIDEO
Class 1 - VOICE
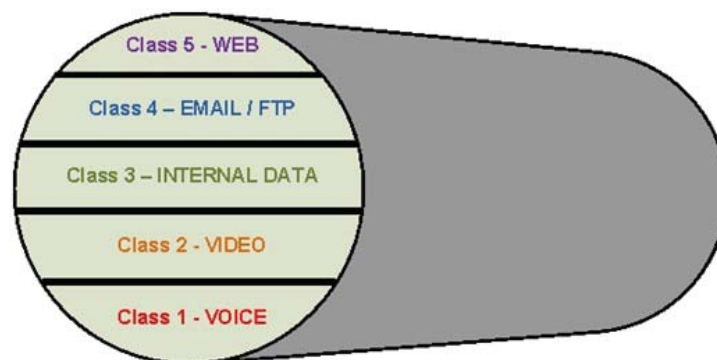
What type of connection should I use?
- You can use multiple technologies – whatever makes sense – just understand the cost, availability of CoS and QoS, and the size of the connection you need.

    - ➢ T1
    - ➢ NxT1 (bonded T1)
    - ➢ DS3
    - ➢ Metro and long haul Ethernet
    - ➢ DSL
    - ➢ Cable modem
    - ➢ WiMAX
    - ➢ Microwave
    - ➢ Other wireless

Implementation Guide

Architecture Decisions

Does the hosted provider have all of their private traffic on a single provider or can they stitch together multiple providers?
- A hosted VoIP provider that only uses one underlying provider typically has two limitations:
  - *Reach* – a truly "national" provider will allow you to back haul via a point-to-point circuit to their nearest private Point-of-Presence (POP) or data center where they have a VoIP switch and possibly gateways to the PSTN and Internet.
  - *Single point of failure* – While rare, significant portions of some provider's networks have failed in the past several years. Stitching together a network from multiple underlying providers can provide some network diversity in the event that an underlying provider suffers a severe outage. While some of your sites my go down, you are typically limited to the exposure of the offices connected via that single provider. The hosted system should have redundant PSTN and Internet connections.

Should I consider redundancy?
- In a converged network you are putting more at risk on a single connection. Explore automatic and manual redundancy options and work them into the budget if possible.
- Determine your risk tolerance by implementing redundancy options like you would buy insurance. Understand that you hope it is never used, but you have it just in case. Worry about the cost just like you would any other insurance policy.
- You can architect redundancy so that voice and data are redundant to each other utilizing two paths that failover to each other. To build in redundancy, simply increase the band width on each circuit and count the cost difference as your insurance payment.

Can I eliminate some of my wiring costs?
- Maybe. You can daisy chain the computer off the back of many VoIP handsets. You are limited by the speed of the Ethernet switch in the back of the phone. 10 / 100 Mbps systems require Category 5 cabling. Gigabit systems require category 5 or category 6 cabling. VoIP is subject to the same issues as your computer network. You will likely want to certify your cable. The better the cable, the better the experience with VoIP.
- If you are going to implement an internal gigabit network connection, you will want to weigh the costs of separating out the data connections and cabling a second line to each location against the cost of implementing core gigabit POE switches.

What is my growth (or possible shrinkage) plans?
- Plan for growth and share those plans with your communications consultant and the provider. They can assist with rapid growth solutions like a predetermined number plan, phone staging, advanced circuit ordering and more.
- If you face possible shrinkage in your business, the hosted VoIP provider may also have a business downturn clause. If there is not one included in your contract, ask for one.

Implementation Guide

Features

There is literally a list of features that is growing daily for hosted VoIP. Below are some of the more common features. This is not intended to be an all-inclusive list. You should engage a communications consultant and review the business needs of the company. Learn and understand how new technology can enhance the business through automation, reduction in labor, internal quality of work and customer service.

- Simultaneous ring and / or find me follow me technologies
- Auto attendant
- DID – Direct Inward Dial
- Shared line appearance
- User call controls
  - Profiles
  - DND – Do Not Disturb
  - Call forwarding
  - Speed dial
  - Personal address book
  - Call Transfer
  - Conference calling and conference bridges
  - Voicemail as an email attachment
- Application integration
  - Call controls within applications such as Microsoft Outlook
  - Integration with collaboration platforms such as Microsoft exchange
- Click to dial
  - Highlight a number on a Web page and then click to automatically have the phone dial the number
- Dynamic company directory
- Electronic inbound fax
- Analog line conversion for traditional fax machines
- "Presence"
  - This is a newer term being used to integrate multiple technologies to show current status or state of an individual. This allows responses via voice, fax, email, chat, SMS and other technologies to be selected for the appropriate communication at the appropriate time. Some hosted VoIP platforms are integrating presence.
- Application Programming Interface (API)
  - Some hosted systems allow customers and vendors to integrate features such as call control and call information into legacy systems. This allows for tight integration, increased productivity and prolonged use of systems that may be otherwise become obsolete.

Implementation Guide

Equipment

Will the hosted VoIP provider include premises equipment?
- You should request that the hosted provider include the router and Power over Ethernet (POE) switch at the premises to elimination the finger pointing that has plagued many hosted VoIP installations. If they require you to purchase the equipment it usually means one of two things:
  - ➢ They are not well funded because they cannot front the capital for this equipment
  - ➢ They are not willing to take ownership of the network end-to-end

Can I use the POE switch for my LAN connections?
- A good hosted VoIP provider will give you that much needed LAN technology upgrade or replacement with quality equipment and allow you to connect your computers to the phone's POE switch and run your LAN on the same cable infrastructure on a separate VLAN.

Should I buy, rent, or lease my phones?
- Buy if you want to capitalize the equipment and want to take ownership of the repair of the phone after the warranty period.
- Rent if you don't want to lay out cash for equipment. You also want to outsource all aspects of maintenance, including phone repair, to the provider. In addition, you want to take all the costs as an accounting expense rather than amortize the equipment over time.
- Lease the phones if you want to own the equipment sometime in the future, but want to spread the cost of equipment acquisition over time.

What do I do with my existing headsets?
- Check with the hosted provider to see if your existing headsets will work with their solution. They should be able to provide you a list of compatible headsets.

Summary

Conclusion

A hosted VoIP solution may not hand you the world, but can enhance your business, bring levels of automation to your company, potentially reduce labor costs and provide for a more secure, scalable and feature rich environment.

The Next Steps

1. Contact a communications consultant that has a proven track record of successfully representing and architecting hosted VoIP solutions. They will provide a good view of traditional services versus hosted VoIP services.

2. Review or audit your existing services.

3. Determine the Return on Investment (ROI) and the cost / savings for the business benefits.

4. Plan to rollout new technologies in a way that minimizes the impact to your offices and minimizes your potential early termination penalties for equipment maintenance or service contracts.

5. Ensure that the hosted VoIP provider includes user training as part of their implementation plan. Some of the business benefits will be lost without users learning to use new features.

6. Review the hosted solution at least annually. As features are added, they can add business benefits. Most hosted providers allow you to re-architect your services as your business changes with little or no cost except the cost of additional services or features. Remember, let the business drive the technology, not the technology drive the business.

If we can be of assistance to your company or another company looking to evaluate hosted VoIP, please contact us online at www.conciergecom.com or call us at 888-353-9900 to speak with a solution specialist for a free, no obligation consultation of your communication needs.