The VoIP Institute, Inc. Presents

CxO – 5 Minute VoIP Guru Guide

A NON-VENDOR PERSPECTIVE ON
VOIP FOR EVERY CXO OR DECISIONMAKER

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About the VoIP Institute, Inc.

The VoIP Institute is an independent organization created to advance knowledge of VoIP technologies with a non-vendor bias and user-oriented focus. VoIP is a technology change that impacts every corporation and its employee base. The VoIP Institute's ultimate goal is to create a setting for users to share case study information, build workshops and guides for users, and make it easier for users to select, manage, and maintain the technology in their environment. This guide is intended to assist the CxO to understand the basics and issues behind VoIP and its planning process.
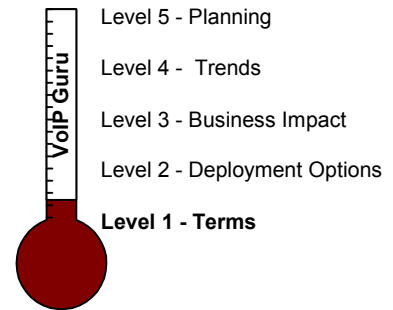
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Introduction to the 5 Minute Guru

What if you were told that VoIP will affect every desktop in your company, the productivity of every employee and has the potential to make or break your customer relationship? Would that make it something you would want to understand? It is a technology that is difficult to learn due to the major changes in the marketplace. Much of the information is either written as if you already know something or so technical that you don't know how you would apply that information to your business decisions. This 5 Minute VoIP Guru Guide is written from a non-vendor standpoint to help you appreciate key points about the technology and the impact on your company. After reading this guide you should be able to also understand the trends and high level issues. Even if you already know a little bit about VoIP – this guide has points to better guide your planning process.

Minute 1 – Learn the Terms and Why You Need To Know Them…

Five Must Know Terms

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1. **VoIP – Voice over Internet Protocol:** means that voice is packetized into data packets and sent over a data network using the "Internet Protocol" which is a standard protocol for data communications on a network. It does not necessarily mean that you are using the Internet itself. It means you are using a standard data protocol for communicating across a data network.

2. **How it differs from traditional phone systems**: There are several major differences that affect your business. First, traditional phone systems use a single, dedicated circuit for a voice path. This means that every simultaneous call must have its own circuit (or connection). This makes it difficult to pass calls back and forth between sites. Every phone must have a dedicated circuit or "line" to that phone. Alternatively, the packets in VoIP share a circuit and can be routed and re-routed without taking up dedicated resources. Traditional phone systems also use a totally separate voice network from your data communications. This means you are maintaining two separate networks instead of one in the case of VoIP. Traditional systems are also typically "proprietary" using that vendor's hardware and/or software that cannot be maintained by the customer. VoIP systems use standard protocols and are moving toward industry-standard hardware as well to reduce your ongoing costs.

3. **IP PBX:** the term for a VoIP-enabled phone system. (Internet Protocol Private Branch Exchange).
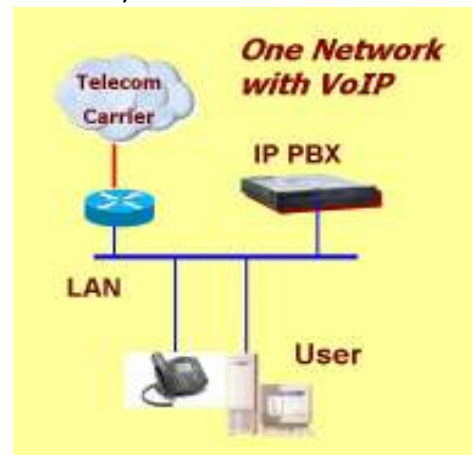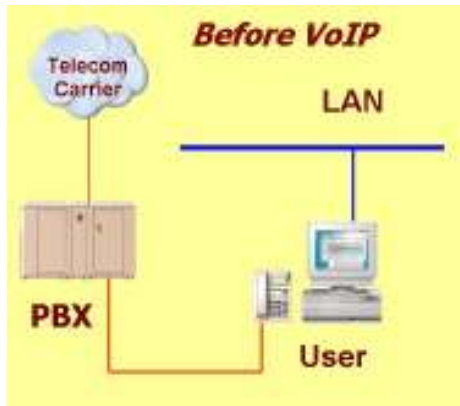
4. **Internet Telephony:** Generally refers to the applications that use VoIP such as the phone system in a business or how calls are routed. VoIP is the technology used by those applications.

4. **Endpoints:** the phones and other devices at the edge of the network commonly are commonly called endpoints. Endpoints take the data packets and make them into voice again for the caller/called party to hear or packetize the voice to be sent on the network.

5. **Network assessment**: every company needs a network assessment (costs range based on the size) whereby a networking company or your own IT staff assesses the ability of the data network to handle voice traffic. Here are some items to be evaluated:

Quality of Service – This is a feature whereby the packets are marked that they are voice and require priority and therefore will be delivered before other data packets in the case that there is congested traffic on your network.

Delay – Packets can be delayed on a network for a number of reasons – the ear hears 150 milliseconds or more delay.

Packet Loss – Lost voice packets can lead to poor quality calls with gaps in the call sometimes even disconnecting the call. If this is already occurring on your network you may need a network upgrade to components and/or bandwidth.

Bandwidth – The amount of bandwidth on your network affects how much voice and other data traffic can be carried on the network at the same time. You may need to upgrade the bandwidth on your local area network and/or wide area network depending upon how much voice will now be carried simultaneously.

Many vendors require a network assessment before moving forward with a VoIP installation on your LAN or WAN. The network assessment is critical to understanding your costs for any new components or network segments that must be upgraded to handle VoIP.

Other Technical Terms

Compression methods – voice packets can be compressed and passed on the network using less bandwidth. This process can sometimes cause delay for the time it takes to compress and decompress the voice packets. What you need to know is that some compression methods are standard and some have licensing and therefore cost more to use. In a nutshell, compression methods effect quality, bandwidth planning, and therefore costs.

Protocols – these are the methods that the voice is handled on the network by the endpoints and other devices. What you need to know is that the entire market is moving to standard protocols. Given the movement to standards, most organizations should consider implementing with the accepted standard for VoIP now.
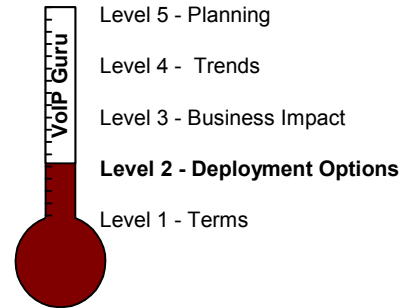
Session Initiation Protocol (SIP) - This is the standard that is winning in the marketplace by manufacturers and telecom carriers. It uses an addressing scheme much like the Internet that you see in your e-mail address and browser.

H.323 – H.323 is older than SIP and considered more mature. However, it was built for point-to-point communications between two endpoints and not really considered ideal for the routing needs required by most business applications.

Proprietary protocols – Some manufacturers didn't wait for standards to emerge and built their on VoIP communications using proprietary protocols that only they own. This means you have to use their devices which can drive up costs.

Minute 2 – Deployment Options and Where You Fit

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Where Does Your Company Fit?

The following table will help you understand where you fit or where given departments fit in the deployment models. You can read more detailed definitions of the deployment models below.

Your Profile	Type Recommended	Possible Vendors	Advantages
Recent significant investment in phone devices (within last 2 years), adding new departments/locations	Hybrid Approach	Your current vendor – such as Avaya, Nortel, Mitel, Siemens, Ericsson	Keep same phones, add VoIP only where it makes sense, same investment in admin training
Low applications requirement, lower IT resource requirement desired	IP PBX	Shoretel	Purpose built for VoIP, considered easier to administer, highly reliable
Higher in business communications requirements for mobile workers and/or customer service	Software-based IP PBX	Vonexus, Alcatel, some from traditional phone system vendors	Typically use standards such as SIP, easy to administer, many features for end users and service departments
Cost is major concern but have technical resources – technical companies	Open Source Model	Asterisk – maintained and services by Digium	No charge for software license, applications being added regularly, Digium creates packages for higher reliability and "version" control
Little to no IT resources, growing rapidly, moving off of Centrex to VoIP	Hosted	Covad, Packet8, others	No servers to maintain, no upgrades to worry about, can pay for moves, adds, and changes
Distributed company with high scale requirements, have certified network staff	Network Approach	3COM and Cisco	Cisco and 3COM provide IP PBX and other applications. Some benefits include integration to networking components for VoIP routing features.

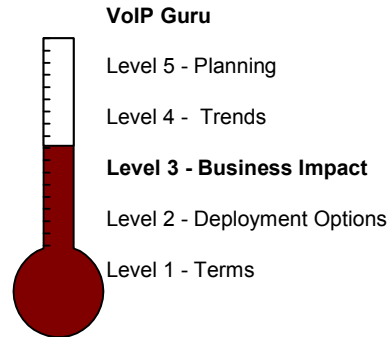| Your Profile	Type Recommended	Possible Vendors	Advantages
Customer contact requirements and large mobile workforce	Applications Approach	Microsoft	This approach is not viable as yet for your IP PBX alone but combined with another SIP-based system, can be powerful for mobile workers and workers who use instant messaging with Microsoft. Will soon be integrated with Microsoft's wireless devices.
Multi-channel customer contact center or internal help desk	IP Contact Center Suite	Interactive Intelligence*, Nuasis purchased by Intervoice, and Telephony at Work, Aspect Software	Some brands* can be your IP PBX for service-oriented businesses, multi-channel customer contact routing built-in, pre-integrated – costs less to maintain and integrate to your CRM.

Deployment Options Explained

1. Hybrid – Many traditional phone system vendors have adopted this approach. It means that their systems use "cards" to plug in and use VoIP for stations or a different "card" to use traditional phones. This is a good approach if you have recently invested in phone devices that are proprietary to that phone system and cannot be used on any other phone system. Many companies use this approach due to growth factors but not wanting to invest any more money in traditional phones.

2. Pure IP-PBX – these are purpose-built VoIP phone systems. Components were designed from the beginning to be an IP-based phone system. These are typically easier to manage and deploy because administration and other tools were built for this purpose.

3. Software-based – these are IP PBX's that use software to control phone calls and routing. The software is many times based on a Microsoft-based server. Companies with a Microsoft-based network and resources that are Microsoft certified will manage these systems easily with all other servers on the network.

4. Open Source Model – this is IP PBX software where you do not pay a license fee. Developers create and share programming code. It is lower in cost but you will need technical IT resources or a services company to work with it.

5. Hosted – Now that your phone system is simply a server on your data network – the server can be located anywhere. Hosting companies host the server so that you pay a monthly fee and don't worry about upgrades, system maintenance, back-ups, etc. This approach is advantageous for fast-growing companies that want to keep IT costs down.

6. Network Approach – networking companies such as Cisco and 3COM provide IP PBX and other voice applications. They use a network approach in that they also provide the routers and other data devices. Some additional routing features may be available. This a good approach in larger-scale environments that need only basic phone features.

7. Applications Approach – Microsoft fits into this category with its foray into VoIP. They are taking the approach of user-oriented applications such as presence and integration with instant messaging for mobile and remote workers.

8. IP Contact Center Suite – Traditional phone system manufacturers have moved their contact center products to VoIP over time and therefore still use separate products for your call distribution (ACD) and voice response as well as other contact center applications. IP Contact Center suites were built with VoIP in mind and provide a multi-channel queue (handles voice, e-mail, web chat and other interactions) to streamline multimedia customer contact. Significant gains are available for the consolidated contact center with this approach.

Minute 3 – Creating Positive Impact to Your Business

Single Site Companies

The most commonly asked question is how to determine the benefit of VoIP for a single location business. Business managers have a hard time seeing the difference between systems because phone features themselves are very similar. Because combined voice and data network routing savings is obvious with a distributed organization, a single site organization has a harder time making a business case for VoIP. Here are some of the possible advantages for a single location:

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Maintain one network instead of two. The costs of administration are estimated at reduction of headcount by one to four or more administrators depending upon your company size and the deployment model you select.

Simplified administration happens in two ways. One is that many companies have been paying their vendor to maintain moves, adds, and changes to resources and user configurations. The second is that the newer systems have easier interfaces to learn and maintain. With many new IP PBX systems, there are no configuration changes required when an end user changes their office location. A cascade effect can occur when one user moves or changes so moves, adds, and changes can have significant impact on system administration costs.

Better integration to data systems – examples range from integration to Microsoft Outlook to make calls from contact lists to opening the appropriate data record on the user's PC when a call arrives (screen pops). Other applications include presence (knowing if a user is in or out of the office at a glance) and call routing choices based on presence that can increase sales productivity. Soft phones can speed up user dialing and create more customer contact.

Integration to wireless access points – users can use wireless phones in the office and be accessible no matter their location.

Work at home options – many systems offer software that allows for the flexibility to work at home with little to no IT support impact.

Distributed Companies

In addition to the above benefits for larger and/or headquarters sites, distributed organizations can benefit as well.

One virtual phone system regardless of location – over and over again companies state that they want their business communications to look like one integrated company to customers and employees. Traditional phone systems at each location cause a barrier in communications in some cases. With VoIP companies can realize one virtual phone system with routing schemes regardless of location. This improves customer and internal communications.

Centralization of IT systems – many IT groups are moving to a centralized model so that there are little to no devices to maintain at remote locations. With traditional phone systems, many times outside vendors were required to go on site to make moves, adds and changes – these costs can be dramatically reduced with centralized IP PBX system maintenance. Companies claim vast savings in reduction of traditional phone systems to maintain.

Presence – newer phone systems use the concept of "presence" to indicate user status instead of just reaching voicemail – users can set their status to be reached at alternate numbers or can indicate that they are in a meeting. Features for call routing around presence can increase sales and productivity of professional and technical resources.

Disaster recovery – most VoIP systems have disaster recovery options and built-in alternate routing capabilities. It truly is the "killer app" of VoIP to offer disaster recovery features and capabilities.

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Minute 4 – Key Issues and Trends That Effect Your Decisions

Security, Security, Security

Security is a concern for VoIP because security is a concern for all data networks. Now that the phone system is on the data network – security issues change versus a traditional phone system. Most security concerns are the same as your data networks such as hackers, viruses, and denial of service attacks. Proper planning for data security ensures voice security as well. A couple of things to consider for your planning.
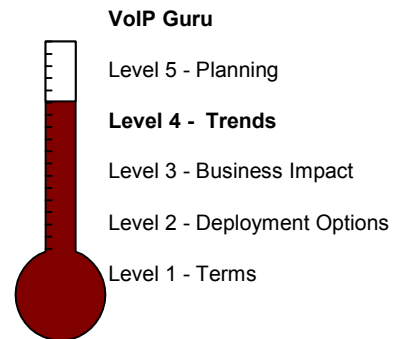
Encryption methods – check whether your system does now or will soon support encryption of the voice conversation so that anybody on the network cannot "sniff" the packets and hack into the conversation.

VLAN – your network integrator may recommend a virtual LAN (VLAN) for the voice traffic to keep it separate from data traffic. If attacks occur on your data network, your phone system traffic will not be affected. Work with your networking vendor and/or IT staff regarding this topic.

E911 and 911 Issues

911 is an issue when there are multiple places or lines where calls are routed off of your data network. Calls must be routed to the appropriate 911 "Public Safety Answering Point" for the location of the phone itself. This is built into your new VoIP-based phone system's

route plan. The phones themselves can also use direct routing for 911 calls outside of the IP PBX in the case that the IP PBX does not respond on the network.

E911 means that the location of the station is also passed to the PSAP. This is crucial for campus environments for example. Some times these features are not free and are not standard with your new IP PBX phone system – check that you are covered on these issues.

Standards

VoIP is quickly changing to a standards-based environment where all communications between endpoints and telecom carriers will be handled with one standard protocol on the data network called SIP or Session Initiation Protocol. Just as you use PC's from any manufacturer in a data environment – you will be able to use endpoints from any manufacturer for your phone system. Standards always drive down costs. It means that users will have a greater variety of devices to select from based on that department's individual needs. When selecting a vendor, be aware that the market is moving in this direction and what your costs will be with that vendor to move to standards. If they are already using the standard of SIP you are one step ahead of the game.

Moving to Software Model Away from Hardware-Centric Systems

VoIP systems are also quickly moving to an all software model and away from a hardware-centric model. This means that instead of paying high prices for vendor components, spares, and replacement parts, you will be able to buy them at market rates. Hardware in the LAN/WAN environment has very low mark-up. Traditional telecom have enjoyed higher mark-ups due to their proprietary phone devices for instance. This model is changing dramatically due to the SIP standard and the software approach. One common complaint about the software approach however is that the servers must be maintained just like other data servers on the network and are sometimes viewed as having a higher "touch" by the IT organization. Regular maintenance however should be handled and scheduled just as any other mission critical server on the network.
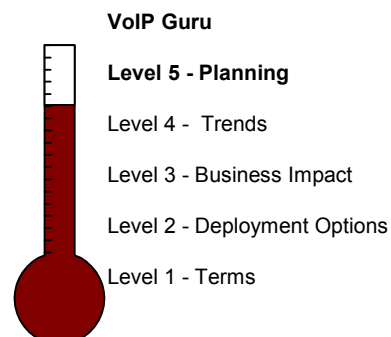
User Mobility

The trend for user mobility is driving many VoIP applications and integrations such as integration into CRM, sales force automation, and Microsoft Outlook and other products. Mobility is also driving changes to user devices such as handheld PDA's that now have soft phone or cell phone capability built-in. User mobility features and direction is something to look for in a phone system manufacturer and their direction for support of these features.

Minute 5 – Managing the Change to VoIP – Staff Considerations

IT and the Business Groups – planning for resources for projects

If you are moving to VoIP in the next two years, you should start planning now. A combined task force should be created using resources from both IT and

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your business groups. There are many options and new applications on the market that can effect the business operations. You cannot get significant returns from your move to VoIP if you implement your new system the same way you routed calls with your old system. If you use the same features and applications - you will only get incremental benefit.

Build an Inventory

If you don't have an inventory of all communications systems and devices your VoIP migration will cost more and take longer than you plan. Start with an inventory. An inventory will help your company to determine the types of phones, exact location of devices, requirements for additional cabling, and details on the end user numbering plan that will assist during the installation of the new system.

Survey the Business Groups

Don't ask the business groups what they don't like about their current phone system. Most users and business managers don't know. Do ask them what is wrong with their customer communication, what do they wish they could do that they cannot do today. Ask business managers what constrains them about their current systems and limits them from better doing their job or servicing their customers. Remember also that users cannot complain or ask for what they don't know is a problem or a limitation! Consider educating key departments on the options before making your vendor selection.

Create an Effective Migration Strategy AND COMMUNICATE to All Users

Once you have an inventory and know some of the issues in your departments you can start creating an effective migration strategy. Watch the arguments start here, "Why does the contact center go first? Why does the contact center go last, etc." To eliminate these and other confusing migration issues, communicate the plan across departments along with the benefits and advantages to the plan. Remember that VoIP can impact EVERY desktop in your organization – involve the users in regular communications from your task force. Your marketing communications group may be able to help with this effort.

End User Considerations

What would it mean to your company if you increased the availability and communications of every sales person by ten percent? Ask your own top sales people what effect that features for presence and mobility would do for their productivity. Ask the best contact center agents what would make them better at servicing customers. Ask your top customers what it is like calling into or communicating with your company. If you are a relatively small department or mid-size company – these can be personal calls and conversational information. If you are a formal contact center or large organization – consider a survey format for this planning. Ensure that you are not implementing VoIP "with the same routing" as your previous phone system or call distributor.

Moving Your Contact Center to VoIP

Your contact center is the most critical "user" of your communications system. The contact center management and/or supervisors should have one of the most important roles in your migration strategy planning task force. Careful planning in this area can bring about

significant gains in productivity and customer satisfaction through newer features and functionality available on the market. Strategies with VoIP such as consolidating customer contact and skills matching among sites can offer huge savings for distributed contact centers. Other improvements previously mentioned such as integration to the customer CRM records or better routing through data integration that can virtually eliminate mis-routed calls. Multi-channel suite VoIP products on the market can improve web site customer service as well and when moving to VoIP have only an incremental cost for advanced features. All of these issues combined mean that VoIP has the possibility to significantly improve your contact center with the appropriate strategy and planning.

Conclusion

The general rule for the CxO related to VoIP is that this technology does have the ability to truly change how your business communicates. Decision makers who look only at desk phone features are missing the boat. Planning for a technology change that affects every one of your employees and departments takes careful consideration and an empowered internal team. Unfortunately for most decision makers the vendor and trade information can be overwhelming and sometimes misleading.

Hopefully it took no more than five minutes for you to read this document, you should now be a "Guru" related to VoIP and its issues for your business. It is generally accepted that the question is not if but when you will deploy VoIP in your organization. Hopefully this guide put the pertinent information in a format that you can use and apply to save you and your team an immense amount of time in looking at only the most appropriate deployment models and gave you ideas for significant improvements to your business.

About the Author

It took more than five minutes to write this document by the way. Peggy Gritt is founder and CEO of the VoIP Institute. She founded the Institute in order to advance the knowledge of general users about VoIP and its advantages. It is a confusing marketplace with many vendors and many changes. The Institute is founded to help synthesize the information through workshops, web sites, and guides. Peggy also has a consulting firm to help companies with their customer experience with their communications systems when implementing VoIP. She has over 17 years background in VoIP and contact center technologies. You can learn more about her at www.voipinstitute.net and www.zelphamedia.com. On-site workshops are also available for your planning teams whereby you can learn these concepts and build your design and migration plan at the same time. Contact peggy.gritt@voipuserinstitute.com for more information.