

VoIP Phone Systems: The Ideal Communications Solution for Growing Small Businesses

Complete Guide to Business VoIP Phone Service and Systems



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For America's growing small businesses, the solutions offered by a VoIP phone system are worth taking note of. VoIP is widely recognized for the tremendous advantages it offers small businesses in terms of cost savings and efficiency. With intuitive features that increase company productivity, and the ability to blend traditional PBX systems into a common platform, VoIP systems help small businesses accomplish much more while spending less.

As your small business grows in size, VoIP phone system solutions are customizable and adaptable to your company's expanding needs. Small businesses that make the move to VoIP typically experience an increase in productivity and customer satisfaction as a result of the change. The benefits of switching to a VoIP system for companies with fewer than 100 employees are many, including:

- Increased user productivity
- Reduced call resolution time
- Optimized payment/billing plans
- Integrated CRM
- Fewer unanswered calls
- Measurable, real-world user productivity benefits
- Greater voice messaging accessibility and efficiency
- Lower total cost of ownership (TCO)
- Immediate and long-term cost savings
- Reduced expense of telecom administrator moves, adds, and changes (MACs)
- Simplified management of servers, systems, endpoints, and network
- Greater flexibility of component selection

In a recent study by Intel, using a VoIP system resulted in an increase in performance of between 134 to 500 percent over traditional phone system. Of particular note was the



increased speed (27 times faster) of scheduling a conference bridge and also of receiving a fax (31 times faster).

Companies that want to remain competitive can no longer ignore the advantages of adopting VoIP technologies. And just as important as making the decision to switch to VoIP, is choosing the right vendor to meet your phone system needs.

This guide is designed to help small business owners make informed decisions about their communication system provider. This decision can be complicated for companies with an existing traditional PBX system. Some businesses may find it difficult to replace their entire system at once but will need to outline a strategy to integrate your current system with the new IP solution. This process begins by identifying and prioritizing your business communication needs and comparing them with the solutions you already have.

Due to the maturity of the phone system market, you will likely find little difference in core feature offerings of various vendors. Pay close attention, though, to how the provider implements these features and the type of support they offer. Find out what additional functions and features are available with the solutions and vendors you consider. This will help you define a package that effectively addresses your company's unique goals and priorities.

Should You Choose a Premise-Based or Network-Based System?

A further decision you will face is whether to have your IP communications system hosted by a provider or have the system installed on location. Each choice comes with unique advantages.

Select the option that will suit both your current and future needs.

One of the chief advantages of choosing a hosted service is that it can be a completely managed service, reducing the IT resources you will need to deliver the solution to the end users. Some of the benefits you may find with a premised-based solution include:

- Predictable cost of acquisition

- More control over the purchase, installation and operation of the system

- Convenience of readily available in-house expertise

- Ability to incorporate future systems and to accommodate the company's growth

Network-based VoIP solutions can offer companies greater flexibility and control over their own applications and feature usage while providing the advantage of a carrier-



class service with excellent voice quality and performance. Some of the benefits you may see from a network-based solution include:

- Easier growth management
- Fewer concerns about equipment obsolescence
- May require fewer resources to operate and maintain
- More predictable operating costs

Choosing Your Vendor

First, you will want to narrow your list of provider options by conducting a thorough check of each vendor's reputation and performance record in regard to reliability, quality, customer service and overall feature set.

Ensure that the vendor is financially stable and able to commit to a long-term business relationship. Of the vast number of providers in the communications industry, some operate with a significant amount of venture capital funding, which could eventually put these companies in the position of having to sell to repay the debt. Many others are operating on an extremely limited budget and some may fail each year. Performing due diligence regarding a vendor's financial health may save your company from needing to deal with such situations in the future.

Evaluate your total cost of ownership (TCO) with each provider. Each vendor will attempt to demonstrate that their service comes with a reduced TCO. This can be confusing so be sure to get all your questions answered. Remember to include the cost of hiring and training personnel resources, both end user and administrator. Also be sure to add the projected costs of installing upgrades and additional services within two to three years.

Determine what infrastructure will need to be replaced. With the right service provider, the transition will be easier. You may not need to discard your entire existing system if you work with a vendor who can help you build a hybrid system combining VoIP and PSTN by converging your traditional telephony systems with your computer network to create an enterprise-level communications system. A comprehensive migration strategy will allow you to retain the investment in your traditional system. Your ideal vendor will have the expertise and core product line to carry out such a transition for your company.

Look for a vendor with a clear commitment to continued improvement in services and feature offerings. A good provider will adapt with the ever-changing IT environment to



provide the optimal communications system for your business.

Choose a provider who can demonstrate expertise in various enterprise phone system applications, such as video conferencing, direct inward dialing (DID) number, toll-free numbers and calling cards. A VoIP vendor's capacity to handle all types of applications can be a direct reflection of the maturity of the company and their range of VoIP expertise and experience.

Take advantage of any opportunities to tour the company's facilities and to meet the people involved with monitoring the network. Most reputable companies will welcome your visit the service provider's data center or network management center. This will help give you an overall picture of the investments the company has made as well as their level of customer service.

Obtain documentation regarding the company's service resolution procedures to ensure that you are choosing a provider with adequate disaster recovery capabilities. This is an area where some providers cut corners, especially those in the start-up or rapid growth period. They may not have sufficient resources to deploy services at multiple data centers, and they may have single points of failure in their hardware, software or network. Establishing a resilient platform entails significant initial expense for the company, but it is essential if a company wishes to provide its customers with the coveted 99.99% uptime.

Inquire about the vendor's answer seizure ratio (ASR), which is a measure of the number of calls properly terminated. This number can provide insight into the quality of the routes the provider utilizes; a good ASR is a good indicator of quality service.

Does the vendor serve large enterprises exclusively? Companies dedicated to serving the communication needs of large businesses will have a greater capacity to provide the solutions and customer service requirements of a large organization.

Finally, make sure you read the Service Level Agreement (SLA) carefully. Give full attention to the details, including those in fine print, to gain a full understanding of the provider's recovery timescales and customer service standards. Some providers will work with you to create a customized, service-specific SLA for your company.



Glossary

(courtesy of Technology Marketing Corporation)

CAGR

Compound annual growth rate. The year over year growth rate of an investment over a specified period of time.

CLEC

Competitive Local Exchange Carrier. A telephone service company that provides local telephone service that competes with the incumbent local exchange carrier (ILEC).

Codec

Coder/Decoder A technique for compressing information to a fewer number of bits for more efficient transmission and storage (coding), and subsequently recovering the original data (decoding).

CTI

Computer Telephony Integration.

Delay

The amount of time it takes for a signal to transfer or for the time that is required to establish a communication path or circuit.

FCC

Federal Communications Commission

Firewall

A firewall is a data filtering device that is installed between a computer server or data communication device and a public network (e.g. the Internet). A firewall continuously looks for data patterns that indicate unauthorized use or unwanted communications to the server. Firewalls vary in the amount of buffering and filtering they are capable of providing.

FTTC

Fiber to the curb. A distribution system that uses fiber optic cable to connect telephone networks to nodes that are located near homes or any business environment (near the curb). The fiber optic transmission is used to provide broadband services beyond the central office, all the way to the last 50-100 feet from the subscriber. The service pedestal is said to be "at the subscriber's curb."



FTTH

Fiber to the home. A distribution system that uses fiber optic cable to connect telephone networks to nodes that are located in the homes of customers. The fiber optic transmission is used to provide broadband services beyond the central office, all the way through the drop wire to the optical node that is located in the customers' home.

G.711

A standard analog to digital coding system (coded) that converts analog audio signals into pulse code modulated (PCM) 64 kbps digital signals. The G.711 is an International Telecommunications Union (ITU) standard for audio codecs. The G.711 standard allows for different weighting processes of digital bits using mu-law and A-law coding. The G.711 standard was approved in 1965.

G.723

An International Telecommunication Union (ITU) standard for audio codecs that provides for compressed digital audio over standard analog telephone lines.

G.729

A low bit rate speech coder that was developed in 1995. It has low delay due to a small frame size of 10 msec and look ahead of 5 msec. It has a relatively high voice quality level for the low 8 kbps data transmission rate. There are two versions of G.729: G.729 and G.729 A.

H.323

H.323 is an umbrella recommendation from the International Telecommunications Union (ITU) that sets standards for multimedia communications over Local Area Networks (LANs) that may not provide a guaranteed Quality of Service (QoS). H.323 specifies techniques for compressing and transmitting real-time voice, video, and data between a pair of videoconferencing workstations. It also describes signaling protocols for managing audio and video streams, as well as procedures for breaking data into packets and synchronizing transmissions across communications channels.

ILEC

Incumbent local exchange carrier. A telephone carrier (service provider) that was operating a local telephone system prior to the divestiture of the AT&T bell system.

IP Centrex

IP Centrex is the providing of Centrex services to customers via Internet protocol (IP) connections. IP Centrex allows customer to have and use features that are typically associated with a private branch exchange (PBX) without the purchase of PBX switching systems. These features include 3 or 4 digit dialing, intercom features,



distinctive line ringing for inside and outside lines, voice mail waiting indication and others.

IP PBX

A private local telephone system that uses Internet protocol (IP) to provide telephone service within a building or group of buildings in a small geographic area. IPBX systems are often local area network (LAN) systems that interconnect IP telephones. IPBX systems use an IP telephone server to provide for call processing functions and to control gateways access that allows the IPBX to communicate with the public switched telephone network and other IPBX's that are part of its network.

IP Phone

An Internet protocol phone (IP phone) is a device (a telephone set) that converts audio signals and telephony control signals into Internet protocol packets. These stand-alone devices plug into (connect to) data networks (such as the Ethernet) and operate like traditional telephone sets. Some IP Telephones create a dial tone that allows the user to know that IP telephone service is available.

ISP

Internet service provider

Jitter

(1-general) Jitter is a small, rapid variation in arrival time of a substantially periodic pulse waveform resulting typically from fluctuations in the wave speed (or delay time) in the transmission medium such as wire, cable or optical fiber. When the received pulse waveform is displayed on an oscilloscope screen, individual pulses appear to jitter or jump back and forth along the time axis. (2-packet) The short-term variation of transmission delay time for data packets that usually results from varying time delays in transmission due to different paths or routing processes used in a packet communication network. (3-IP Telephony) The variance of inter-packet arrival times.

LAN

Local-area network

Latency

Latency is the amount of time delay between the initiation of a service request for data transmission or when data is initially received for retransmission to the time when the data transmission service request is granted or when the retransmission of data begins.



MOS

Mean opinion score (MOS) is a measurement of the level of audio quality. The MOS is a number that is determined by a panel of listeners who subjectively rate the quality of audio on various samples. The rating level varies from 1 (bad) to 5 (excellent). Good quality telephone service (called "toll quality") has a MOS level of 4.0.

PBX

Private Branch eXchange. A private telephone network used within an enterprise.

PSAP

Public safety answering point. An agency that receives and processes emergency calls. The PSAP usually receives the calling number identification information that can be used to determine the location of the caller.

PSTN

Public switched telephone networks are communication systems that are available for public to allow users to interconnect communication devices. Public telephone networks within countries and regions are standard integrated systems of transmission and switching facilities, signaling processors, and associated operations support systems that allow communication devices to communicate with each other when they operate.

QoS

Quality of service (QoS) is one or more measurements of desired performance and priorities of a communications system. QoS measures may include service availability, maximum bit error rate (BER), minimum committed bit rate (CBR) and other measurements that are used to ensure quality communications service.

RBOC

Regional Bell Operating Company. A United States telephone company that is one of the seven telephone companies that were created as a result from the division of AT&T in 1983. RBOCs are also known as the Baby Bells. The RBOCs were Ameritech, Bell Atlantic, BellSouth, Nynex, Southwestern Bell Corporation, Pacific Telesis, and US West.

ROI

Return on Investment is a financial measurement that compares the profit with the original investment. ROI evaluates the impact of an investment on the telephone company's profitability or operational efficiency: dollars spent compared to benefits gained.



SIP

SIP is an application layer protocol that uses text format messages to setup, manage, and terminate multimedia communication sessions. SIP is a simplified version of the ITU H.323 packet multimedia system. SIP is defined in RFC 2543.

SMB

Small and medium businesses

SOHO

Small office, home office

UPS

A battery backup system designed to provide continuous power in the event of a commercial power failure or fluctuation. A UPS system is particularly important for network servers, bridges, and gateways.

VoIP

A process of sending voice telephone signals over the Internet or other data network. If the telephone signal is in analog form (voice or fax), the signal is first converted to a digital form. Packet routing information is then added to the digital voice signal so it can be routed through the Internet or data network.

WAN

Wide-area network