

Enterprise PBX Buyer's Guide

Focus Research

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Executive Summary

Premise-based IP PBX (Internet Protocol Private Branch eXchange) systems are changing how small through large businesses implement and use their voice communications. They are the modern heirs to the historic PBX systems that were the ultimate in business communications for the past thirty years. But premise-based IP PBX systems are cheaper and far more capable than their predecessors. They also integrate much better into business networks and data communications which, in turn, enable new applications that are still being discovered and applied to common business practices.

Modern premise-based IP PBX systems literally deliver multinational enterprise capabilities to even small businesses, often at a cost lower than the far more basic systems they are replacing. This Buyer's Guide examines the premise-based IP PBX market and tells you what to look for in a proposed system. It also covers the relative advantages and disadvantages of a premise-based approach, and in particular, the advantages of integrating your systems so that they offer much better service than previous communications technologies your business might have employed.

The bottom line with premise-based IP PBX systems is that they can provide a relatively easy way for businesses of any size to move to VoIP and get a wide range of new features and capabilities for their phone systems. If your company is upgrading from a traditional TDM (time-division multiplexing) phone system, the savings can be substantial, and the new service will pay for itself almost immediately. In addition, businesses will want to take the time to then understand the new system and perhaps invest resources to integrate its capabilities into existing business processes such as sales and CRM tools.

In this Buyer's Guide, you will find details on what to look for, how to buy, what you can expect to pay and how to go about maximizing your investment in VoIP.

Premise-based PBX Overview

A PBX (Private Branch eXchange) is essentially an automatic switchboard for telephone systems. It provides the same basic functions for any business or enterprise that the ranks of telephone operators with handfuls of wiring plugs did that you will remember seeing in old movies. Those essential features are to provide switching and connection between any two (or more) telephone users and make sure the connection remains in place until it is ended, at which point the system properly terminates the connection.

Any system that does this automatically for telephone calls within an organization is a PBX. The reason businesses move to PBXes is to avoid requiring every employee to have a direct line to the public telephone system, each of which incurs a connection and a line charge. Instead, a smaller number of lines get shared by all the users and managed by the PBX. This saves money and is more efficient.

All IP PBX systems are basically exchange and extension managers for calls based on Internet protocol – also known as VoIP and Internet telephony. The essential advantage they offer to small- to medium-sized businesses is the ability to add features that have only been affordable or available to large businesses up to now. VoIP and Internet telephony are usually also more cost-effective when looking at long-term operating costs, due to lower monthly fees and much lower costs to connect and complete calls.

There are three basic kinds of premise-based phone systems. The first kind is called keyless systems or KSU-less systems. They are very lightweight phone systems designed for organizations with fewer than 10 employees that also have very basic phone requirements. The advantage of these systems is that they are very inexpensive and very easy to set up and run. They are portable and can be moved easily if you relocate. However, in a typical keyless system, you get very little support and maintenance from your service provider. Also, additional features – such as those that prevent users from picking up a line in the middle of another call – are often impossible to implement. These systems are so simple that they are not considered PBXes and are in fact being phased out since more full-featured PBX systems are approaching them in cost while delivering far more benefits.

The next largest premise-based system is called a key system. These use a KSU (key system unit) that acts as a central control unit, providing features and functions – such as extension management and locking users off from lines that are in use – that aren't available on ordinary phone systems. Key systems are essentially closed, 'black-box' units that provide 80 percent of a basic PBX system's functions for a lower cost. They are typically used in businesses with anywhere from 5 to 50 employees that have only basic business telephony needs. And nowadays, more often than not, key systems are in fact PBX systems with some of the functionality turned off, which makes for an easy path for growth and upgrading should the business need it.

The reason businesses move to **PBXes** is to **avoid** requiring that **every employee** have a **direct line** to the public telephone system, each of which incurs a connection and line charge.

Finally there are full PBX systems, the most common and flexible kind of business phone system. Even a low-cost premise-based PBX can now offer a small business phone services that are indistinguishable externally from those used by multinational corporations.

Hosted vs. Premise-based PBX

There are two primary types of PBX solutions for business: hosted IP PBX and premise-based IP PBX. Hosted systems take most of the switching and intelligence of the system and move it offsite to a remote location where it is managed by the service provider. Equipment at an organization's site is limited to the phones themselves, some dedicated routing equipment and perhaps a switch to provide emergency access to the older traditional TDM telephone network.

As a result, hosted systems are usually quicker and cheaper to install and set up. They offer a standardized set of services. Because they are hosted remotely, there is less maintenance for a business and no need to perform upgrades. The downside is that upgrades often must wait until the service provider is prepared to offer them. There is less flexibility and fewer options in configuring the system.

In contrast, premise-based PBXes require servers and more switches to be located at the business site. The organization must also be prepared to install, manage and upgrade them. The downside is a higher startup cost, the need to manage and maintain the system and more difficulty growing the system in the future. On the other hand, the organization can upgrade to new features at will and has full ability to configure and customize the system any way they like, which can be particularly important when thinking about integrating voice and data networks to create new applications and extensions of old applications.

Care should be taken when selecting a premise-based IP PBX provider. With the arrival of open-source options for VoIP and PBX software, a new breed of premise-based IP PBX providers has arisen, supplying systems at even lower prices – and with rapid upgrades in capability. Open-source options have also given rise to a set of even lower-priced solutions with very basic service and support besides the 'free' option of rolling your own using open-source software and basic equipment. One common misconception of open-source IP PBX solutions is that they are free, but in fact, any solution requires hardware (phones, server and switches at a minimum) and will also incur installation and configuration costs.

The traditional assumption is that hosted IP PBXes are a better solution for small-to-medium-sized businesses, while premise-based solutions are better for medium to large companies. But this isn't as much the case as it was in the past, and the boundaries are becoming blurred. There are premise-based solutions aimed at companies with as few as 20 employees, and there are hosted IP PBXes that can scale up to thousands of users. But this is a crucial area of differentiation, and great care should be taken to make sure that any solution can really match up well to your requirements in terms of size, usage and cost.

Market Overview

The premise-based IP PBX and VoIP market is an extremely competitive one, with several factors keeping prices very competitive for customers. One of these is the previously mentioned rise in open-source PBXes. Another is competition at the low end from the hosted PBX market, and a third is the rapid rise in the numbers of PBX system suppliers and resellers competing aggressively for business.

Despite those factors, the primary reason that small and medium businesses are attracted to VoIP in the first place remains cost savings – the inherent advantage of completing all pure VoIP calls (both ends of the call are on a VoIP platform) for free means that basic phone service is bound to cost less using VoIP.

Other main reasons that small-to-medium-sized businesses are adopting VoIP include access to features that are either not available or are cost-prohibitive on older phone systems. Examples of these include integration with desktop and office software such as Outlook, call routing features, and IVR (interactive voice response) features, all of which used to be extremely hard to set up and prohibitively expensive for small businesses.

Premise-based PBX systems may be more complex to install and maintain than hosted VoIP services, but they are still far simpler and simultaneously more powerful than previous incarnations of PBX systems. In fact, the new breed of premise-based PBXes hold their own very well in the market against the hosted services that would seem to be a better way to break into VoIP.

Market research and surveys indicate that lower total cost of ownership and better system management are the primary factors for small businesses moving to VoIP, but that the technology is still misunderstood and early miscues such as poor voice quality have led to misperceptions in the market.

The bottom line is that the “perceived wisdom” about VoIP is that call quality is poor and the technology is difficult to implement. But the truth is that more than 80 percent of small businesses surveyed have responded that they are satisfied or highly satisfied with their decision to make the change. In fact, modern VoIP systems have better call quality than regular phones.

Global IP PBX markets are expected to reach \$26.9 billion dollars in the year 2009, according to WinterGreen Research Inc.

Other main reasons that **businesses are adopting VoIP** include **access to features** that are either not available at all or are cost-prohibitive on older phone systems.

In-Stat reports that “IP PBX players must radically change their historical business models in ways that replace hardware revenues with software and services. One leg of such strategies requires IP PBX players to walk the fine line between cooperation and competition with powerful players like Microsoft.”

In-Stat reports also state:

- Most PBX players have some level of relationship with Microsoft, and many of these ties have been strengthened in recent months.
- As dual-mode phones that operate on both cellular and 802.11 frequencies begin to hit the market, mobility is becoming an increasingly important part of IP PBX player strategies.
- Line shipments of IP PBX systems will increase from 19.1 million in 2006 to 37.8 million in 2010.

The report also concludes “the PBX is no longer a standalone system, but rather just one component of a larger unified corporate communication system that includes e-mail, IM/presence, dual-mode phones, video conferencing. Full IP PBX deployments across the entire scope of the enterprise remain relatively rare, and smaller businesses are only now beginning to gain sufficient confidence to deploy IP-based systems.”

Other market-research reports highlight increased growth in IP PBX systems globally as the worldwide business market recognizes the importance of this technology to its future success. The important factor to recognize for any business that is looking to experience substantial growth is the comment about unified communications. Any systems you purchase and install **MUST** be capable of interaction with and integration with other communications and data networks.

The Benefits of Premise IP PBX

The benefits of an IP PBX to any enterprise are similar to and different from the benefits of a VoIP system in general. Obviously, the cost savings and reduction in basic wiring infrastructure from needing only one network for communication instead of two are clear. And the savings from the lower basic cost of completing external calls are also clear. But IP PBX brings far greater benefits because of manageability, upgradeability and enhanced feature sets.

The specific benefits of an IP PBX over traditional phone systems or PBXes include the following:

- A cleaner and simpler infrastructure.
- Lower operating costs.
- Simplified equipment and maintenance.
- Unified communications.
- Improved scalability and growth.
- Improved features for business operations.
- Improved technological features and capabilities.

Specific Benefits

	Traditional Telephone	VoIP
Conference Calls	Special equipment is required for more than three people.	Easily conference large numbers.
Mobility	Very difficult to set remote users up in systems if they are local.	Easily add remote users of any kind.
Phones	Can only provide traditional phone services, albeit complex ones.	Can be programmed to provide internal and external apps of all kinds.
Efficiency	Dedicated voice lines provide known quality levels but no flexibility.	More efficient use of network.

Basic Features

Residential and very low-end VoIP providers often claim to offer business-class PBX services, but except for very small organizations, that just isn't the case. Even the most basic businesses now require a set of capabilities that would not have been possible even for the largest corporations 20 years ago.

In addition to the default PBX features like call switching, call completion, call connection, call termination and accounting, the following should also be found in any premise-based IP PBX system:

Call Routing Features

- **Automated Attendant:** An automatic system to answer phones with the ability to build phone menu systems, add call menus, transfer to voice mail and create flexible and programmable rules to handle all of these features.
- **Call Menus:** Flexible call management menus with user selectable options – a more advanced version of the traditional phone tree/menu systems. A better-quality system will let you have multiple sets of menus and even change them based on time or on information gleaned from caller ID.
- **Managing Extensions:** Features to help the phone system administrator, such as the ability to add new extensions, remove unneeded extensions, change extension locations and much more from a Web-based control panel.
- **Call Forwarding:** Automatic, programmed or manual call forwarding to any number.
- **Call Transfer:** The ability to transfer calls between extensions without going back to a central switchboard.
- **Call Parking:** Essentially a group hold – put the caller on hold in a waiting area so that any other phone system user can pick the call up.

Messaging and Management Features

- **Voice Mail and Voice Mailboxes:** Any IP PBX should allow an almost infinite number with far more flexibility than regular phone systems – more advanced features would include the ability to record all incoming and outgoing conversations automatically.
- **Call Hold:** Placing callers properly on hold with no drop off in queues with user selectable hold music and programmable options about handling hold time length.
- **Conference Calling:** Handling multiparty conference calls, internally and externally.
- **Web-Based Management and Administration:** To make it quick and easy to manage your phone system directly from a Web browser – this can include the ability to add configuration and management functions as well.
- **User Directory:** Some form of user directory and address book that is part of the phone system and is centrally updated.

Advanced Features

Other IP PBX features can get extremely specific, and the precise mix of features can make a big difference to business operations. Most of these advanced features come under areas like helping with remote offices and remote users, or programmability and flexibility of the system.

Management

- **Scalability:** The ability to rapidly grow or reduce the system under your control. Better systems can scale to handle hundreds of users.
- **Rights Management:** Allowing different groups of employees different rights within the phone system for management, administration, usage and more.
- **Group Management:** Managing groups of callers and call recipients.
- **Call Queue Management:** Providing visibility into and the ability to manage incoming call queues. This can include specific call management as well as general system management of rules and varying loads, hold times and so on.

Programmable Routing and Scheduling

- **Call Routing:** Setting up programmed rules to route calls based on flexible criteria like caller ID or time, or even next available extension in the designated call management group.
- **Scheduled Call Routing:** Handling incoming calls differently based on time received – and even setting up several systems of call management that are all different depending on time of day or day of the week.
- **Automatic Ring Back Features:** Features to automatically return calls based on various programmable criteria.
- **Call Screening:** The ability to routinely screen calls as they come in.
- **Call Monitoring:** The ability to silently monitor calls as they progress for purposes like sales training and customer support.
- **Barge In:** The ability to break in to a call between two other people – usually related to call monitoring.

Remote User Features

- **Branch Office Support:** The ability to manage and remotely administer extensions at other offices just as easily as if they were local.
- **Features to Support Remote Users as if Local:** One of the most powerful features of IP telephony is the ability to have remotely located employees work and appear to external and internal callers as if they are local.
- **Hoteling:** Allowing users to make any physical phone in the system act as if it were any other number, so that any user can make any phone on the system act as if it were their own phone for any period of time. This feature is particularly useful for telecommuters.

Unifying/Integrating Office Systems

- **Full Outlook/Email Integration:** Incoming calls can be matched with contact management records and outgoing calls can be initiated from within Outlook so users can click on contact management systems records and dial from within Outlook or other applications.
- **Voice mail to Email:** Sending all voice mail from a mailbox to an email account where messages can be opened and listened to on a PC – as well as stored and managed.
- **Data Network Integration:** Some form of integration into your basic data network so that “click-to-call” functionality, integration with office documents, email systems or even full blown CRM systems can be added.
- **Click-to-Dial:** Some form of click-to-dial to go from a number on a PC screen to a call on the phone without having to dial the numbers yourself.

Unique Features

- **Integrated Voice Response:** The system includes the ability for callers to navigate through menus using a phone keypad or voice responses.
- **Analog and IP Handling:** Many IP PBX systems can manage both VoIP phone and regular telephone systems at the same time – although not all functionality is available to regular phone users. This feature is useful for managing merged groups or multiple sites.
- **IP Fax:** A fax system integrated into the IP phone system. You cannot use regular fax machines directly on IP phone networks without some kind of interface.
- **Presence Features and IM Integration:** Presence features indicate the status of a user of the phone system to all other users and even to external callers if features are supported. These indications can be as extensive as to indicate location, kind of devices by which communication can take place, and transfer between routing methods.

Cost

Premise-based IP PBX systems vary extremely widely in cost and even more so as you look at wide-scale deployments and future growth and additions to a system. A basic premise-based box for a relatively small number of users – say up to 20 in a single location – can cost less than \$1,000 excluding the phones themselves. But expansion costs and other branch locations can change the cost equation dramatically. In addition, you will have ongoing costs related to connection to the regular phone system and whatever connection costs are imposed by your backbone supplier. These ongoing costs are nevertheless going to be considerably lower than any other form of phone system. They should be lower than hosted VoIP solutions, and they will be dramatically lower than any older PBX and telecommunications provider.

Expansion and growth into other locations can incur “hidden” costs, such as the need to buy expansion boards and cards for PBX server systems to allow for greater processing power or more switching connections. These costs are often not quoted directly and can take some sleuthing to find. So remember to query any potential provider about expansion costs and peripheral costs, including add-ons, before you commit to a contract of any kind.

Phones are an additional cost, but when buying a premise-based IP PBX system, you often have greater flexibility than in any other arrangement. You can choose to go with very low-cost, no-name or bottom-of-the-line phones (which are still perfectly capable) all the way up to top-notch phones from manufacturers such as Polycom and Siemens that provide usability benefits (although often at a price premium).

ROI (return on investment) can be very difficult to estimate since it depends mostly on the system being replaced. If you are upgrading from an old legacy system, then a premise-based IP PBX is going to save you a considerable amount in operating costs, depending entirely on your current call costs.

The difficulty comes if you are comparing hosted IP PBX with a premise-based IP PBX system, because predicting costs on premise-based equipment is much harder. With premise-based systems, purchase and installation costs can be difficult to determine precisely until full engagement on a purchase, and ongoing maintenance and call-charge costs can be hard to determine.

The typical scenario is that the longer you keep a system and the more users you have, the more likely it is that a premise-based solution will compare favorably.

The bottom line: If you are upgrading from an old phone system, you will save money no matter what. The real differentiators for recommending a premise-based solution are the need for customization, the need for full control of the system, special applications that must be enabled and the size of organization; the larger the organization, the more likely a premise-based solution is the right call.

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Premise PBX Checklist

What to ask before you buy.

Before talking to a premise PBX provider, you will need to know the following about your current situation:

- How many employees are in your organization?
- How many locations do you have that need VoIP service?
- How many remote or mobile users do you have that will not have a local office?
- What are your current broadband connection details – bandwidth, type, lines and so on? Make sure to have as much information available as possible, including your supplier and level of service.
- What is your current network load and available unused bandwidth? Your provider may want to test your network to determine this information for themselves, and if you don't have enough you may need a network or broadband upgrade.
- What type of servers does your system run on? Your service provider may need manufacturer, model number and, most importantly, operating system details.
- What are your existing phone system details - manufacturer, number of lines, connections and so on?
- Will you need to or want to keep existing lines?
- Will you only be upgrading part of your organization?
- What is your budget? What are your total project cost limits and target cost per month per user?
- What is your mix of calling - average amount of internal, local, long-distance and international calls per month? If you don't know, have a few months of current phone bills handy.
- What is your percentage of inbound versus outbound calls?

Be sure to specify your business requirements up front and make sure you know which you are prepared to drop in return for a lower cost. In practice, you are likely to have a few business-critical features in mind that, along with basic phone features, are must-haves. Everything else will be optional, but keep an eye to the future if possible.

Typical issues that change costs involve:

- Do you need an incoming 800 number?
- Do you have a receptionist/phone operator or do you want an auto-attendant?
- Do you need to be able to make conference calls? How large, how many and across how many locations?
- Do you need a call center?
- Do you need integrated voice response (voice menus)?
- Do you have someone available to manage the system for your employees or are they going to have to do it themselves?
- Do you need to integrate with Outlook or other office systems?
- How fast are you going to need to grow the system and how frequently?
- What level of service and SLAs (service level agreements) do you need?

Conclusion

Premise-based IP PBX systems provide small to large businesses with all the abilities and features that are available to large enterprises while providing the potential to reduce long-term operating costs considerably. As with any rapidly growing technology, there are a wide variety of providers and a range of features at greatly varying prices.

Premise-based PBX systems can cost as little as \$700 to install, plus the cost of phones. Operating costs can be as low as a few dollars a month. It is more important to make sure that your system has the basic features that you require now for the operation of your enterprise and for its future growth than to drive the cost to the absolute bare minimum. Unless you are already using an efficient IP telephony system, you will save money no matter what.

In any upgrade to a premise-based IP PBX you should look for:

- Basic operating-cost reductions due to lower call charges, the need for only one communications network and lower maintenance costs
- A minimal investment risk, because your enterprise data network is your new backbone and it is already in place and functioning effectively
- Straightforward installation costs based on tested, reliable components connecting to a system your IT personnel already understand
- Improved efficiency and operations within your organization
- New functionality that can improve your business's effectiveness

It is the last of these points that is most important and critical to the success of the upgrade. This is where the power of converged networks – combined voice and data networks – really comes into its own in terms of providing your enterprise with more tools, capabilities and options that it has previously had. The cost savings are essentially a bonus.