

The PBX Evolution

The term PBX refers to a Private Branch Exchange. A PBX is sometimes called a telephone switch, business telephone system or phone switching device. The term PBX is synonymous with Electronic Private Automated Branch Exchange (EPABX) and Private Automated Branch Exchange (PABX). It is similar to a central office exchange but usually much smaller and privately owned. A central office exchange can accommodate 10,000 subscribers. PBX systems are typically designed to accommodate from 10 to 10,000 subscribers or extensions. A PBX is like a central office exchange for a single building or cluster of buildings. A PBX can handle many phone lines into or out of a particular location. Most advanced PBXs can facilitate both voice lines and data lines, route calls to other offices and to the public telephone network. With a PBX in place, each phone only needs an extension, not a phone number, and the PBX handles all calls made between individuals within the company.

The primary intent of a PBX is to route incoming calls to the appropriate extension within the office and to share a group of phone or "trunk" lines between extensions. When an outside call is required, an access number is dialed (example "9") to access an outside trunk line. The PBX then transfers the call to the phone company's Central Office. The telephone company then forwards the call to the desired number in the outside world.

Over time, PBXs have become far more sophisticated. Many facilities and functions have been added to create a centralized communication hub. These services include automated attendant greetings, recorded messages, interactive voice response, connection to voice mail, automated call distribution, call forwarding, wireless services, conference calling and many more.

A major advantage of a PBX is control over the numbers that can and cannot be dialed from within the system. A properly configured PBX can restrict access to certain costly numbers, such as directory services or 900 numbers, to authorized personnel only. A major savings also results from the ability of the PBX to share a group of lines among many extensions. For example, an office with 100 extensions can often be served by 10 to 15 lines. This results in huge savings from having to provide a line to every phone in the company.

Some of the most well known PBX manufacturers with huge customer premise installations include Avaya, Nortel, NEC, Siemens and Alcatel. These manufacturers have dominated the telecom space for many years. However, a new crop of IP PBX systems is entering the market packed with similar or enhanced features at much less cost. In fact, these new communication servers can reside on a computer processor running low cost operating systems.

Asterisk, an open source PBX, is touted as the world's most flexible and extensible telephone system. It provides many features that compete with or exceed the power of proprietary telephone systems. In keeping with its open source concept, The Asterisk software is free and runs on relatively inexpensive Linux servers.

New technologies such as Voice over Internet Protocol (VoIP) are blowing away the covers from traditionally proprietary devices. This technology takes analog audio signals and converts them into digital form for transmission. Transactions are much more efficient since analog lines remain connected even during periods of no communication. [VoIP PBX](#) packets are sent and received whenever there is activity. The information packets are sent over any open rather than a dedicated line making communication much more effective.

Most companies can recognize huge savings using this technology. The compression of the information and mode of delivery across multiple channels and routers makes packet switching more efficient, quicker and less expensive. The volume of simultaneous communication can be significantly increased using packet switching over circuit switching.

The major manufacturers of PBX equipment have contributed millions to their research and development budgets to produce solutions that allow customers to efficiently migrate their traditional PBX. Some are cleverly providing bridging solutions such as hybrid PBXs that include traditional TDM and VoIP capabilities.

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"We recently talked with 450 companies in North America about their voice infrastructure plans, and the results clearly indicate a steady move to VoIP, which will put this market on a nice steady growth trajectory over the next few years.", said Matthias Machowinski, directing analyst at Infonetics Research after the release of their Q1 2006 report.

According to Infonetics Research, annual revenue in the combined PBX market is forecast to grow to \$11.4 billion in 2009, driven by strong [IP PBX](#) sales worldwide as more organizations move to voice over IP. Between 2005 and 2009, IP PBX revenue is forecast to jump 82% while TDM revenue plunges 88%.

According to a statement by In-Stat analyst Norm Bogen, "The IP PBX is revealing itself as more than a simple one-for-one replacement vehicle for digital systems. With closer ties to data, this new vehicle is influencing corporate power structures and will ultimately have even more far-reaching effects on how business is done around the globe."

Communication managers need to wade through organizational challenges including infrastructure, financial and educational. The PBX is transforming itself to meet these ever changing needs.

Posted by [Pavel Buyeu](#) at Oct 08, 2007 01:31 PDT in Telecom News VoiP | [0 Comment\(s\)](#) | [Permalink](#)