



# Critical Year For IP Centrex

Larry Hettick

## Features and functions exceed traditional Centrex but still lag IP-PBXs, and availability is extremely limited. Do or die in 2002?

The move by enterprises from a traditional telephony to IP is not a question of “if,” but “when.” Voice over IP (VOIP) services offer lower cost, advanced services regardless of the user’s location and productivity enhancements generated by integrating voice systems with desktop computers and other data applications.

However, one familiar and fundamental choice will continue from the days of circuit-switching: Rent vs. buy. Today, enterprises can choose between a PBX and a Centrex service (or, potentially, some hybrid of the two). Likewise, tomorrow’s voice infrastructure choices will be between an IP-PBX, IP Centrex or a hybrid IP-PBX/IP Centrex combination.

While the IP-PBX has received wide media and customer attention over the past year, less has been said about IP Centrex services or their availability. This article will review what kind of services can be offered on IP Centrex, look at the pros and cons and examine when IP Centrex services may become widely available.

### How We Got Where We Are

The evolution of Centrex has been inextricably linked to that of the PBX. The 1968 Carterphone

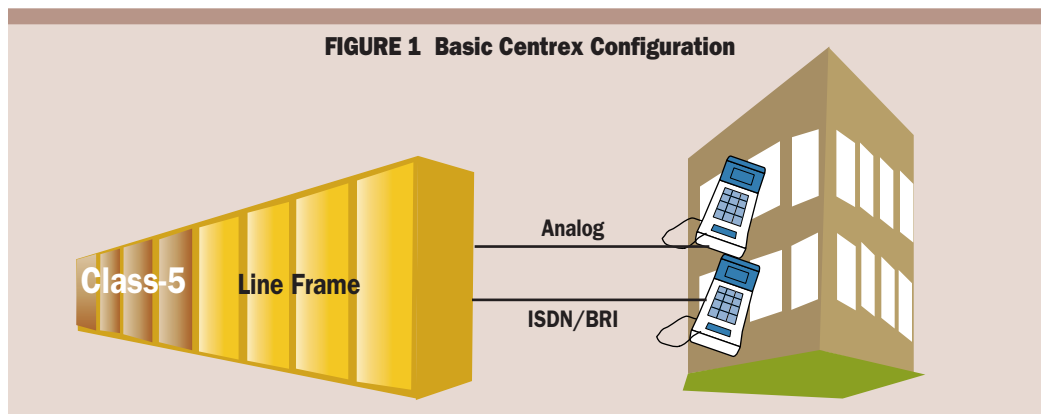
decision allowed non-AT&T equipment to be connected to the previously-closed AT&T network; not long afterwards, PBXs began offering features not available on POTS. As a result, AT&T redesigned its Centrex offerings to stave off competition from new PBX and key system features. However, since AT&T owned the monopoly telephone network and was also the dominant PBX vendor, its effort to provide both feature-rich PBXs and Centrex service was half-hearted.

By 1984, however, many other vendors had entered the PBX market; PBX features improved, and so did Centrex. The breakup of the Bell System also motivated the regional Bell operating companies (RBOCs) to improve their Centrex offerings, since they were banned from selling equipment and thus faced the prospect of losing revenues to PBX vendors.

When the introduction of the digital PBX threatened Centrex with extinction, the RBOCs introduced ISDN-based Centrex, which delivered increased feature parity and tariff packages aimed at smaller enterprises.

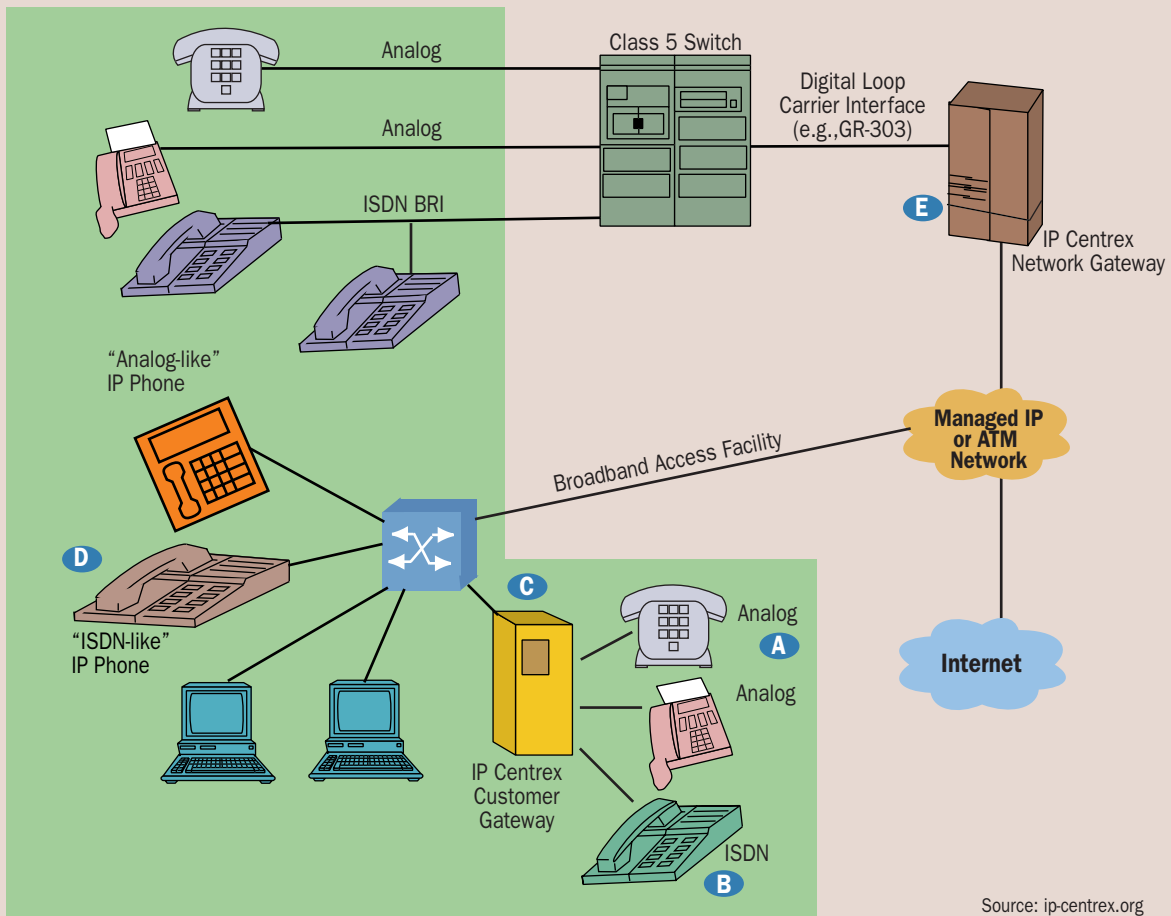
Centrex offers a laundry list of features including: anonymous call rejection, automatic callback, call block, call forwarding, call hold, call park, call pickup, call restrictions, call return, call transfer, call waiting, caller ID, distinctive ringing, intercom dialing, hunt groups, last number redial, message waiting indicator, music-on-hold, repeat dialing, speed dialing, station message detail recording (SMDR), three-way conferencing, toll restriction and 700/900 call blocking.

FIGURE 1 Basic Centrex Configuration



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**FIGURE 2 Class 5 Switch-based Architecture For IP Centrex**



Source: ip-centrex.org

The emerging IP Centrex systems can provide all these functions and more. And to maintain feature parity with the next-generation IP-PBX competitors, IP Centrex promises toll cost savings, easier-to-use Web-based personalized user and network profiles and integrated applications like click-to-talk, click-to-conference, text-to-speech email and visual voice mail.

**How Centrex Works**

Legacy Centrex services are provided to the enterprise over traditional phone lines, using equipment owned and operated by the service provider and located on the provider's premises. Because Centrex frees the customer from the responsibilities of owning any equipment except the phone sets, it can be thought of as a "hosted" solution, in contemporary Web parlance (Figure 1).

IP Centrex also works from a "hosted service" perspective: The enterprise buys and maintains the phone sets, but the network intelligence resides in the service provider's central office. However, IP Centrex offers several key ingredients not available from traditional Centrex. These distinctions, shown in Figure 2, are:

- An IP Centrex service requires either an IP phone connected to the Ethernet LAN at the user's desk (point D in Figure 2), or a premises-based gateway that makes the legacy analog and ISDN desktop phones appear as IP phones to the network (shown as a connection from points A and B to point C).
- An IP Centrex service provides connectivity to desktop computers, enabling a Web interface to personalize user profiles and integrate applications like click-to-talk from a common contact database.
- IP Centrex typically connects over a router, using a broadband link to a managed IP or ATM network, although some service providers offer dial access in lieu of broadband.
- The service provider's network must provide a gateway function to the legacy circuit-based Class 5 central office switch (shown at point E.). Alternatively, a "hybrid" Class 5 switch might include an integral ability to process VOIP calls just as it would process standard POTS calls. A final option is to eliminate the Class 5 switch entirely, replacing it with a softswitch employing trunking and signaling gateways (this option isn't pictured in Figure 2).

**Next-gen providers are leading the way, but ILECs have held trials**

■ The IP Centrex service provides a direct connection to the Internet for user access to Internet-based information, for connectivity to Internet-transported calls or for both.

**Why IP Centrex?**

Having examined the complexity of IP Centrex, the next question is: Why bother? After all, to compete with the premises-based solutions, Centrex must have feature parity (or near-parity) with the PBX, and this requirement will be as important in the IP world as it was in the legacy circuit-switched environment.

However, feature parity between IP Centrex and the IP-PBX has yet to be achieved. For example, many of today's IP-PBXs integrate applications like Outlook Express, Instant Messaging and customer resource management (CRM), and most also can accept both IP and legacy desktop phones via a gateway. Some IP-PBXs can even monitor voice quality and redirect calls to another IP circuit or the PSTN, or can transparently accept and receive calls to and from wireless networks. These features tend to be lacking in IP Centrex.

But IP Centrex can offer feature parity with today's legacy Centrex offerings, and it offers at least one significant advantage: The ability to deliver features to users who are away from the office environment.

According to Ken Arndt, VP, marketing at AG Communication Services, "One of the big draws for IP Centrex is the capability to offer remote and mobile users the same features they get when in the office. To replace a phone system that has 15 features with another phone that has the same 15 features is not a big deal. But to offer those same 15 features transparently to mobile and remote users—that is a big deal. We've built every existing traditional phone system feature into our new IP Centrex, with the exception of coin phone support."

IP-PBX vendors also tout transparent remote access capability as one of their key differentiators over legacy PBXs. But for some enterprises, IP Centrex may be the preferred way to obtain these features, and for the same reason that historically Centrex customers have opted not to use a PBX: To avoid the expense and difficulty of owning and managing their own equipment. For example, a 2001 study by Phillips-InfoTech found that an enterprise with 400 lines and moderate growth from year-over-year could realize a savings of at least \$113,000 in the first year, \$13,000 in the second year and \$6,500 in the third year when compared to implementing an IP-PBX (savings reflect total cost of ownership).

Part of the reason the business case may favor IP Centrex over traditional Centrex is reduced administrative costs. IP Centrex doesn't require that a physical copper pair be associated with a user's phone number, or that a user's profile be set by a

service order. This makes moves, adds and changes (MACs) more economical, since they can be controlled by the enterprise telecom manager or even the end user him/herself. According to John Egli, product marketing director for hosted business services at Nortel Networks, the average cost for a MAC on traditional Centrex can exceed \$150 per station, while the cost for an IP Centrex MAC is under \$50.

IP Centrex also may save money over the traditional service by increasing worker productivity—though admittedly this is hard to quantify. Productivity improvement occurs, although it's measured in seconds saved, with applications like click-to-talk or ease of using integrated voice and data contact lists. In the future, applications like instant messaging may have as dramatic an effect on business process efficiency as email has had.

A final potential benefit for IP Centrex over its traditional predecessor is that the service will support IP phones, which promise greater feature-richness and intelligence than circuit-switched PBX phones. (For more about IP phones, see this issue, pp. 54–57, and *BCR*, December 2001, pp. 29–32.) Nortel's Egli suggests that, if a worker with an annual salary of \$100,000 experiences a 1–4 percent improvement in productivity, the cost of IP phones may be "not a big deal," if the price for phones comes in at \$200–\$400.

**Can You Get IP Centrex Today?**

But while IP Centrex looks promising, it is currently available from only a limited number of service providers and in a few markets. The major providers of traditional Centrex—the RBOCs—have yet to roll out the service; new next-generation service providers are in the IP Centrex vanguard.

For example, TalkingNets currently offers IP Centrex in Denver and Washington, DC. (For more on TalkingNets' service, see this issue, pp. 14–15.) Tony Surak, executive VP of marketing and sales, argues that his company's service offers advantages over both the legacy and newer premises-based technologies.

"When our service is compared to an IP-PBX alternative with 100 sets, we see a real cost advantage," he said. "And when compared to the PBX, we have more advantages in usability. We provide all the features that customers love, and because we have browser-based management systems, the ease of use extends from the user to the network, easing moves, adds and changes. Also, we have included unified messaging with integrated voice mail and email in our offering."

In contrast, issues remain to be solved before the incumbent local exchange carriers (ILECs) will broadly deploy IP Centrex services. But these have more to do with larger VOIP issues than with IP Centrex specifically.

The first and most widely publicized issue is guaranteed quality of service (QOS). Voice callers have come to expect high levels of sound quality and network availability, and that they can direct dial to any phone number in the world. While IP protocols like DiffServ and MPLS can help prioritize voice calls in the network, these solutions have not been universally deployed, nor are the engineering aspects of IP prioritization proven.

Notes AG Communications' Ken Arndt: "One of the reasons it is taking so long for ILECs to implement IP Centrex is that they must guarantee QOS. When you look at the average desktop [appliance] QOS [having] a 4-percent downtime, that's unacceptable to an ILEC who believes it needs 99.999 percent reliability."

The good news is that the ILECs are addressing this and other issues in their ongoing IP Centrex trials. Linda Kruse, VP offer management at Verizon, said, "We are actively pursuing several Centrex trials to understand the users' requirements, and are looking at 2002 based on what we can learn from both the technology and the requirements. We're solving the IP QOS issues. As we explore possibilities with our trials, we're determining what gives the best QOS. Different customers have different tolerance points, and we want to assure their issues are minimal or non-existent."

BellSouth completed two IP Centrex trials in 2001. "We are now working to see how and where we can bring this service to market," Eric Schwartz, VP of IP communications said. "We're resolving issues and working with our customers to see who may want what...As for IP QOS, using the public Internet [as a core network] presents challenges, but it can be managed. We can use our own robust, large-scale IP network to manage QOS as an integral part of our service."

The next challenge the ILECs must resolve is the three-tiered issue of integration with:

- The existing network.
- Back office systems.
- Customer premises equipment like the IP-PBX.

BellSouth's Schwartz continues, "The issues of integration into our existing network are more involved than just adding a PBX. Our service is a combination of the network and the back-office systems and processes. Adding a service is much more complex than adding a box to the network. It is a long road from technical capability to having a service customers can use."

Another issue is how to bundle IP Centrex with other services so it can be more than just another Centrex solution. For example, AccessLine Communications plans to integrate IP Centrex with other offerings. "We consider IP Centrex a

sub-solution of our family of hosted solutions," said Lauren Calaby, VP product marketing.

Following the tragic events of September 11, AccessLine implemented an emergency readiness service with its IP Centrex features. The service provides "follow-me/find-me" functionality, so calls to out-of-service phone numbers can automatically be re-routed to alternative locations.

Both Verizon and BellSouth will offer an integrated IP-PBX with their IP Centrex services, and Verizon is looking at how to offer IP Centrex as part of a larger IP VPN service. "IP Centrex plus IP-PBX plus IP VPN becomes a very powerful offer," says Kruse.

The final big issue to address is how to make sure all the "cool technology" makes business sense to the enterprise. As BellSouth's Eric Schwartz said, "These capabilities have been available even with our regular phone service. We have a long list of potential features. The challenge is to bring them to market as relevant to business needs, and not just as something that is technically interesting."

**The final challenge:  
Use "cool technology"  
in ways that make  
business simple**

**Conclusion**

Last year, several service providers, including TalkingNets and AccessLine, introduced commercial IP Centrex to the North American market-

place, while ILECs including Verizon, BellSouth and SBC reported successful trials. This year, we are going to see IP Centrex begin to be more broadly deployed across North America.

IP Centrex features have met and exceeded the range available on traditional Centrex, but still have some catching up to do to meet the feature set of IP-PBXs. So the bottom line in IP Centrex adoption remains: Does an enterprise keep what they have, buy a IP-PBX, lease IP Centrex or adopt an IP Centrex/IP-PBX hybrid to get the features most appropriate to its feature and financial requirements? During 2002, we'll make important progress on answering that question □

<b>Companies Mentioned In This Article</b>
AccessLine ( <a href="http://www.accessline.com">www.accessline.com</a> )
AG Communications ( <a href="http://www.agcs.com">www.agcs.com</a> )
AT&T ( <a href="http://www.att.com">www.att.com</a> )
BellSouth ( <a href="http://www.bellsouth.com">www.bellsouth.com</a> )
Nortel Networks ( <a href="http://www.nortelnetworks.com">www.nortelnetworks.com</a> )
SBC ( <a href="http://www.sbc.com">www.sbc.com</a> )
TalkingNets ( <a href="http://www.talkingnets.com">www.talkingnets.com</a> )
Verizon ( <a href="http://www.verizon.com">www.verizon.com</a> )