

## MARKET ANALYSIS

### U.S. Hosted IP Voice Services 2004–2008 Forecast: VoIP Invades the Enterprise

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#### IDC OPINION

After years of hype, VoIP has made the shift from an emerging technology to a viable business solution. Although the consumer market has attracted the most attention from the press, the fastest-growing VoIP market is hosted IP voice services for business customers. Hosted IP voice services are fundamentally different from PBXs because capital expenditure is avoided, maintenance contracts are unnecessary, and management is fully outsourced to a secure, central location. Furthermore, the customer is assured of instant access to the latest upgrades in both hardware and software. Hosted IP voice is the business model that will deliver next-generation applications to business customers. However, the market is still formative, and the following issues will play a critical role in shaping the near-term direction of the market:

- ☒ **Security.** This continues to be a top-of-mind issue for end users, service providers, and equipment vendors. Concerns over security delay or even prevent purchasing decisions. However, VoIP-appropriate security solutions exist for network, operating systems and application servers. Service providers can bulletproof their offerings and must communicate these measures and their efficacy to the market.
- ☒ **Quality of service (QoS).** Although VoIP promises a robust set of features that can be economically delivered over a converged network, it is important not to underestimate the challenges of running real-time voice traffic over a packetized infrastructure. Although all businesses are looking to cut costs on voice service, any savings will quickly evaporate if voice quality suffers.
- ☒ **Redundancy.** Many businesses are quite comfortable placing data and voice on the same network. However, within certain industries, downtime on a converged network could spell disaster. Although this problem has not yet become a consistent concern among end users, it has the potential to disrupt adoption in industries such as finance and healthcare.
- ☒ **IP PBX.** Equipment vendors such as Avaya and Cisco are keen to take share from service providers offering a hosted solution. Given the tremendous capital investment involved in a rip-and-replace scenario, we believe that a hosted IP telephony will be especially popular in the small and medium-sized enterprise (SME) market as well as with companies with multiple locations. Premise-based solutions will be confined to large enterprises that have access to capital as well as in-house IT expertise. However, given the disparate needs of businesses, a significant number of enterprise customers will opt for a mix of both premise and hosted solutions.

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## IN THIS STUDY

This study presents IDC's forecast of the business hosted IP voice services market. Hosted IP voice services are an alternative to premise-based business telephone systems. Hosted IP voice services include a complete array of PBX-like business telephony features, including an auto attendant, four-digit extension dialing, three-way conferencing, conference bridge, multiple call handling, business-class voicemail, and hunt groups. Hosted voice services also deliver applications and enhanced features such as unified messaging, contact center, Web services, remote services/mobility, self-service management, presence, and instant messaging. Hosted voice services are fundamentally different from PBXs because capital expenditure is avoided, maintenance contracts are unnecessary, and management is fully outsourced to a secure, central location.

This research is based on analysis of service providers and end-user demand for hosted IP voice. IDC interviewed all major current and anticipated providers of hosted IP voice services to business customers. This includes incumbent local telephone companies such as SBC, Qwest, BellSouth, and Verizon; long distance providers such as AT&T, MCI, Sprint, Global Crossing, and Level 3; competitive local exchange carriers (CLECs) such as ICG Communications, XO Communications, and ITC^DeltaCom; and virtual network operators such as GoBeam and M5 Networks. Service provider analyses include product packages/feature descriptions, date of market entry and geographic availability, number of sites installed and lines in service, examples of specific customers, and market distribution strategies.

Hosted IP voice is one segment of the VoIP services market analyzed by IDC. The other VoIP service segments include:

- ☒ **Consumer broadband VoIP services.** These services provide inexpensive flat-rate plans for local and long distance calling to residential and small business customers. It is typically bundled with advanced calling features and Web access to account controls, call logs, and feature activations, etc. This service requires a broadband connection such as DSL or cable modem and either a special VoIP phone or a traditional phone connected to a VoIP terminal adaptor (TA). The VoIP phone or TA is connected to the cable or DSL modem through which the call is sent.
  
- ☒ **VoIP over VPN.** This is voice telephone service delivered over an IP VPN packet network. Multisite enterprises adopt VoIP over VPN to gain cost efficiencies of converged voice and data networks and avoid long distance toll charges for intracompany voice calls. VoIP over VPN services include private dial plans for site-to-site calling, off-net public switched telephone network (PSTN) call routing for calls that terminate outside the enterprise, PBX signaling transparency to interoperate with enterprises' existing premise-based business telephony systems, and full performance monitoring to insure quality and reliability of real-time voice traffic over a packet network.

- ☒ **Inbound/outbound call termination.** This is used by enterprises and is also provided on a wholesale basis to carriers and service providers. It provides IP interconnection, transport, and call completion for packet-based voice traffic. Available since the late 1990s, wholesale VoIP reduces carrier costs by offering lower rates for transport than traditional circuit-switched facilities. Some wholesale VoIP carriers such as Callipso, iBasis, and ITXC/Teleglobe focus exclusively on the carrier marketplace; others such as Global Crossing, Level 3, and AT&T have introduced VoIP call termination services for enterprise customers.

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## **Methodology**

The forecast developed for this study represents IDC's best estimates and projections based upon the following:

- ☒ Interviews and briefings with all significant market participants, including service providers as well as equipment vendors
- ☒ Publicly available documents filed with the Securities and Exchange Commission (SEC) and the Federal Communications Commission (FCC)
- ☒ Documents disseminated by service providers and equipment vendors, including, but not limited to, earnings releases and PowerPoint presentations
- ☒ Participation and attendance at major industry trade shows and forums
- ☒ Interviews with end users

Given the infancy of the market for these services, IDC has tested its forecast and underlying assumptions with carriers and hosted IP services providers. This process was undertaken as a quality check to compare with actual market experience.

### ***Forecast Methodology***

To develop the baseline data for 2003 and the first several months of 2004, IDC analyzed all existing hosted IP voice service providers. This involved determining the actual installed bases of customers, sites, and users. IDC also analyzed actual revenue per site and looked at near-term trends for month-over-month growth rates.

To develop the forecast through 2008, IDC deconstructed hosted IP voice services into key elements. These elements are sites, users, and average revenue per user (ARPU). Each element is analyzed and projected based on key dynamics of adoption, pricing, packaging, and supply. For ARPU, IDC broke out the contributions of long distance, Internet access, local access, and the core call management/media processing functions. For the core hosted voice functions, IDC assessed the relative contribution of basic and enhanced services. The details of trend projections for each of these elements are detailed in the Forecast and Analysis section of this document.

### ***IDC Leadership Grid Methodology***

The IDC Leadership Grid is a tool that graphically depicts the market potential of carriers by rating two competitive factors with market-specific inputs. IDC views the market as dynamic and fluid and is acutely aware of changes that take place. With this in mind, a description of these factors is supplied as follows:

**Market opportunity alignment.** This factor identifies a carrier's ability to meet current market demand. Inputs include the following:

- Ability to set industry standards
- Market share (revenue, customers, and users)
- Potential for market dominance (ranking first)
- Potential for place or show (ranking second or third)
- Product and service breadth

**Ability to gain share.** This factor identifies a carrier's ability to gain share in the market. Inputs include the following:

- Footprint
- Sales force/marketing
- Pricing
- Network
- Technical expertise
- Financial resources
- Reputation

For each vendor, IDC rates each input on a scale of 1 (lowest) to 10 (highest). The average scores for the market opportunity alignment and ability to gain share for each carrier are then plotted on the x-axis and y-axis, respectively, of the IDC Leadership Grid.

Vendor placement in the four quadrants of the leadership grid should be interpreted as follows:

**Upper right quadrant.** Carriers that appear in this section of the grid should be considered top contenders for market leadership in terms of revenue and market reach. This grid position reflects strong performance in the past and suggests a promising future.

- ☒ **Upper-left quadrant.** Service providers that appear in this grid location are more granular in their market focus. In addition, these carriers have not been as successful in their past efforts aimed at bringing next-generation products to market.
- ☒ **Lower-right quadrant.** Placement in this grid section suggests successful past performance but also implies a less than stellar future. Carriers appearing in this quadrant are likely to be smaller, but have been able to quickly bring a product to market. However, the size of these companies and their level of access to financial resources will render them vulnerable once the large competitors enter the market.
- ☒ **Lower-left quadrant.** This section is the least desirable in terms of past performance and future. Carriers that appear in this quadrant lack the resources to compete and may not be able to fully execute their business plan.

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## **Executive Summary**

With all of the market conditions in alignment, VoIP is finally poised to overtake and replace the aging but reliable circuit-switched infrastructure. Much of the recent excitement over VoIP has focused upon relatively minor deployments to the consumer market. While not down playing the potential of the consumer, IDC believes that the business market is ripe for adoption of VoIP and the features and functionalities that it promises. Hoping to avoid the savage price wars that have decimated other business services as well as fight off losses to IP PBX vendors, carriers are beginning to offer hosted IP services to business customers. IDC believes the following about the market for hosted IP services:

- ☒ Increased broadband penetration will help speed of the adoption of all VoIP services.
- ☒ Advances in technology have improved voice quality; however, there is still room for improvement.
- ☒ A hands-off approach from the FCC will help spur the development and rapid deployment of new services, thus increasing the penetration of hosted IP voice solutions.

## **SITUATION OVERVIEW**

After years of hype, VoIP has made the shift from an emerging technology to a viable business solution. VoIP is gaining accelerated business adoption because it provides measurable cost savings, simplifies the delivery and management of communications, and facilitates convergence for more flexible business practices.



The typical business telephony situation is a fragmented, multigeneration environment of several dimensions:

- ☒ Premise equipment is a mix of PBXs, key systems, and desktop phones from a variety of vendors and suppliers.
- ☒ The access and transport facilities associated with voice are a hodgepodge of private trunk lines, POTS, Centrex, ISDN, Internet, and data networks.
- ☒ Contracts and bills come from multiple telephone companies, maintenance firms, and equipment suppliers.

VoIP represents an opportunity to eliminate redundant infrastructure, manage all voice and data communications via a single Internet network with a single provider, and deploy the same telephony solution in every branch office — one that can be administered and managed remotely from a Web-based interface by in-house staff.

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## What Are Hosted IP Voice Services?

Hosted IP voice services are an alternative to premise-based business telephone systems. Hosted IP voice services deliver all business-class telephony features, including an auto attendant, four-digit extension dialing, three-way conferencing, conference bridge, call transfer, call hold, call park, do not disturb, business class voicemail, and hunt groups. The service supports standard business lines, direct inward dial (DID) lines, and toll free numbers without requiring any changes to existing numbers. Service is delivered on a simple "per seat per month" cost basis, and upfront costs are a fraction of those for traditional PBX equipment. Hosted IP voice services go beyond PBX feature emulation to deliver services that cannot be provided on a PBX. These include:

- ☒ **Visual voicemail.** Users can listen to voice messages through a browser or through email, as well as through the phone. This allows voicemail to be handled like email. Voice messages can be viewed and listened to in priority order according to caller ID or a date/time stamp. Voice messages can be forwarded to any email box.
- ☒ **Web-based call management.** Users can easily configure and optimize their own calling features via a Web portal. This can be access from any Internet location in the office, at home or on the road. Administrative accounts on the call management portal allows office managers to set up default features sets for different classes of users. The portal contains a call log that displays a list of dialed, received, and missed calls and provides the ability to click-to-call from the call log or from a directory.
- ☒ **Follow me/find me.** Using the Web portal, users can instruct the service to forward their calls to any combination of phone numbers (home phone, cellular phone, office phone, or friend or colleague's phone). This ensures the reception of important calls and avoids the distraction of low-priority calls. Calls can be directed sequentially (e.g., ring office, then mobile, then home) or simultaneously.

- ☒ **Remote user.** Calls for specific or all employees can quickly be rerouted to satellite offices or their homes, as if they were still receiving and making calls on their normal office extension. This means employees can work from anywhere (remote offices, home, executive suites). This saves money because it eliminates the need for telephone expense reporting, as all remote calls are made on the company calling plan. Remote user function is an effective disaster recovery solution in the event that power failure or other events knock out the office location. This capability extends to hot desking and flexible working. Float staff and employees who typically work at different locations can move between different points on the network without having to alter their telephone extension and have full access to their configuration profile. They can do this by moving their own phone from one location to another, and they can also log in at a remote location on another telephone set.
  
- ☒ **Desktop integration.** Many hosted IP services include integration with a PC-based application such as Microsoft Outlook and Lotus Notes. This creates a unified mailbox of voicemail, email, and faxes and enables a centralized directory with click-to-call and click-to-conference functions. Companies are beginning to trial the integration of personal calendars, instant messengers, personal directories, and real-time VoIP communications to create richer collaboration and raise employee productivity.

Hosted voice services are cheaper than PBX equipment and have a fundamentally different economic structure from PBXs because:

- ☒ **Capital expenditure is avoided.** PBX equipment is expensive — a 50–75 person office will pay \$40,000–60,000 for a PBX system. PBX installation charges are typically 15% of capital cost.
  
- ☒ **Maintenance and administrative costs are avoided.** Ongoing PBX maintenance is usually contracted to the PBX installer and runs at about 15% of the installed equipment cost per year. The IT staff resources required to administer the PBX may represent another 15% of the purchase price per year.
  
- ☒ **Bandwidth costs are reduced.** Many business locations maintain three or more different networks for long distance calls, local voice service, and Internet access. Because voice travels over the data network in hosted IP telephony and both local and long distance are bundled, significant bandwidth efficiencies are gained by converging three networks to one network. A T1 circuit has enough capacity to deliver both the phone lines and the Internet bandwidth needed by the typical small to medium-sized business location.
  
- ☒ **Long distance charges for calls between company offices are eliminated.** Hosted IP voice services differentiate between on-net and off-net calls. An on-net call originates and terminates on a hosted IP voice site. An off-net call originates on a hosted IP voice site and terminates on the PSTN. All on-net calls are free. Hence, a company with five hosted IP voice sites has free intracompany calling among those sites regardless of geographic location or volume of calls.

## Who Offers Hosted IP Voice Services?

There are about 30 providers of business hosted IP voice services active in the U.S. market in July 2004. Tables 1–6 present details for a selection of 22 hosted IP voice service providers. Most of these providers have offered commercial services for less than 6 months. Only 3 companies introduced services prior to 2003. IDC estimates that this number will double over the next 12 months. Categories of service providers offering hosted IP voice services are:

- ☒ **CLECs:** There are 7 companies offering service.
- ☒ **Incumbent local exchange carriers (ILECs):** There are 4 companies offering service.
- ☒ **Interexchange carriers (IXCs):** There is 1 company offering service.
- ☒ **Virtual network operators (VNOs):** There are 10 companies offering service.

In addition to the above-mentioned categories, Table 6 provides information for several hosted communications providers. IDC differentiates them from hosted IP voice service providers because their infrastructure is not based on open standard IP call agents, but rather on a proprietary TDM-based architecture (for further explanation see the What's in a Name? section of this document).

**TABLE 1**

## Top 15 Competitive Local Exchange Carriers by Revenue, 2003

Company	Revenue (\$M)
XO	1,111
McLeod	869
Time Warner Telecom	670
KMC	500
ITC^DeltaCom	462
ICG	426
Covad	389
Paetec*	360
Birch Telecom*	340
ChoiceOne	323
US LEC	311
ZTel	289
Cavalier*	197
Mpower	148
Pac-West	135

\* IDC estimates; companies are privately held.

Source: IDC, 2004

**TABLE 2**

## Hosted IP Voice Services Providers: Competitive Local Exchange Carriers

	Headquarters	Hosted Voice Offer	Date Service Introduced	Voice Application Server Vendor	Availability
Cavalier Telephone	Richmond, Virginia	Phonom	February 2004	Broadsoft	Phonom is a subsidiary of Cavalier Telephone, a CLEC with 277,000 access lines covering the mid-Atlantic market, including Philadelphia; Baltimore; and Washington, DC; as well as Delaware, Maryland, Southern New Jersey, and northern Virginia.
Cinergy Communications	Cincinnati, Ohio	SuperLink VBX	December 2003	Broadsoft	Cinergy Communication is a CLEC offering services in Indiana, Kentucky, and Tennessee. It is the communications subsidiary of the utility company Cinergy Corp.
Cypress Communications	Atlanta, Georgia	EZ Office VoIP	June 2003	GoBeam (Sylantro), Level 3	Cypress initiated service in July 2003 in Southern California via its GoBeam reseller relationship. In May 2004, the company announced a partnership with Level 3 to sell hosted IP voice services nationwide starting in Atlanta.
ICG Communications	Denver, Colorado	VoicePipe	February 2003	VocalData	ICG began to offer services in Denver, Boulder, Fort Collins, Colorado Springs, and Pueblo, Colorado; Akron, Cincinnati, Cleveland, Columbus, and Dayton, Ohio; Louisville, Kentucky; Dallas, Houston, Austin, San Antonio, and Corpus Christi, Texas in June 2003 and Boston; Chicago; New York; Seattle; and Washington, D.C. in December 2003.
Onvoy	Minneapolis, Minnesota	Hosted Voice over IP	October 2003	Broadsoft	Onvoy offers services in Minneapolis.
Pac-West	Stockton, California	VoIPpro	March 2003	Sylantro	VoIPpro services were launched in California in March 2003 by Sentient Group of San Ramon, California. Pac-West acquired Sentient Group in February 2004. The company announced a partnership with Level 3 in May 2004 to expand its VoIPpro sales and support nationwide.

**TABLE 2**

## Hosted IP Voice Services Providers: Competitive Local Exchange Carriers

	Headquarters	Hosted Voice Offer	Date Service Introduced	Voice Application Server Vendor	Availability
US LEC	Charlotte, North Carolina	VOIP	April 2004	Broadsoft	US LEC launched business VoIP services in Jacksonville and Tampa, Florida. The company plans to expand services to more of its markets in 15 eastern states during 2004.
Covad/GoBeam	Pleasanton, California	vPBX	January 2001	Sylantro, Latitude (conferencing bridges)	Prior to being acquired by Covad in June 2004, GoBeam sold retail in California and wholesale in other states — Verizon in Chicago and Ohio and Cypress Communications in Denver, plus 40 VARs. GoBeam had about 13,000 end users and 250 customers in March 2004. GoBeam was acquired by Covad in June 2004. In early August 2004, Covad rolled out its VoIP offering in 42 markets and expects to expand availability to 113 markets by the end of 2004.

Note: Descriptions were obtained through SEC filings, interviews, and publicly available documents.

Source: IDC, 2004

**TABLE 3**

## Hosted IP Voice Services Providers: Incumbent Local Exchange Carriers

	Headquarters	Hosted Voice Offer	Date Service Introduced	Voice Application Server Vendor	Availability
ALLTEL	Little Rock, Arkansas	NA	June 2004	Broadsoft	ALLTEL announced a contract with the University of Kentucky in June 2004 to migrate all of the university's voice traffic and applications off of its IP PBX and onto the ALLTEL network. ALLTEL is a large rural ILEC with 13 million customers and \$8 billion in revenue.
BellSouth	Atlanta, Georgia	Network-hosted VoIP	June 2004	Siemens	BellSouth had market trials in Columbia, South Carolina, and Miami, Florida, and will extend to other markets in the second half of 2004.
Qwest	Denver, Colorado	Qwest One Flex	July 2004	Sylantro	Services became available in mid-July in Boise, Idaho; Denver; Minneapolis; and Phoenix. By the end of 2004, services will be available in an additional 22 cities nationwide, including Boston; Chicago; Los Angeles; New York; Philadelphia; San Diego; San Francisco; Seattle; and Washington, D.C.
SBC	San Antonio, Texas	PremiereServ Hosted IP Communications Service (HIPCS)	November 2003	Level 3 (Sylantro)	SBC's PremierSERV HIPCS offering is a national offering available in 69 standard metropolitan statistical areas (SMSA) including 46 SMSAs in SBC's 13 state footprint as well as 23 SMSAs in the SBC telecom markets.

Note: Descriptions were obtained through SEC filings, interviews, and publicly available documents.

Source: IDC, 2004

**TABLE 4**

## Hosted IP Voice Services Providers: Interexchange Carriers

	Headquarters	Hosted Voice Offer	Date Service Introduced	Voice Application Server Vendor	Availability
MCI	Ashburn, Virginia	MCI Advantage	October 2002	Broadsoft	In April 2004, MCI Advantage was enhanced by adding an IP access option through extended hosting communications capabilities via a Broadsoft infrastructure deployment. The Broadsoft capabilities launched customer trials starting in April 2004.

Note: Description was obtained through SEC filings, interviews, and publicly available documents.

Source: IDC, 2004



**TABLE 5**

## Hosted IP Voice Services Providers: Virtual Network Operators

	Headquarters	Hosted Voice Offer	Date Service Introduced	Voice Application Server Vendor	Availability
Broadvox	Cleveland, Ohio	VoiceTrex	July 2003	Sylantro	Broadvox introduced services in Cleveland and Detroit in August 2003 and Minneapolis/St. Paul and Chicago in December 2003.
CentricVoice	Dallas, Texas	Centric-Flex	April 2004	Level 3 (Sylantro)	CentricVoice offers direct sales in Texas and has a partnership with Level3 to offer hosted PBX services nationwide.
Go-Comm	Dallas, Texas	BusinessWorx	June 2003	VocalData	Go-Comm offers services in the Dallas/Ft. Worth, Texas area and has a partnership with IceNet for a 28-market expansion. In May 2004, Go-Comm was acquired by Airband Communications, a Dallas-based provider of broadband Internet access services in Dallas; Houston; Ft. Worth, Texas; and Phoenix. Airband has been selling Go-Comm services in the Dallas market since November 2003.
M5 Networks	New York	MTS	June 2002	VocalData	M5 Networks focuses on the New York metropolitan area. In March 2004, it announced it has 200+ business customers and 5,000 lines in service; the company is processing over 50,000 calls per day with a cumulative total of 10 million calls handled since its launch.
Nuvio	Kansas City, Missouri	NuvioCentrex	April 2004	NA	Nuvio announced availability in 1,200 cities nationwide in April 2004. Nuvio has a private label partner program by which it licenses broadband service providers, VARs, and other companies to brand, sell, and support Nuvio IP voice services.
Pingtone	Chantilly, Virginia	Pingtone IP Dial Tone Service	March 2002	Cisco	Pingtone offers services in Washington, D.C.; Baltimore; and New York City.
Red Gap	Dallas, Texas	Hosted PBX	March 2002	VocalData	Red Gap offers services in Dallas and Houston. In February 2004, the company announced a partnership with IceNet to deploy in Austin, Texas; Baltimore; Chicago; Connecticut; Dallas; Houston; Miami; Newark, New Jersey; New York; Orlando, Florida; Philadelphia; Seattle; Washington, D.C., Boston; Los Angeles; San Antonio, Texas; and San Diego.

**TABLE 5**

## Hosted IP Voice Services Providers: Virtual Network Operators

	Headquarters	Hosted Voice Offer	Date Service Introduced	Voice Application Server Vendor	Availability
Reynwood Communications	New York	Reynwood Xtreme	October 2003	Broadsoft	Reynwood sells exclusively through agents and is extending its VoIP platform to wholesale customers. The focus is on the New York and New Jersey area and on small and medium-sized business customers.
Packet8	Santa Clara, California	Virtual Office for Small Businesses	March 2004	NA	NA

Note: Descriptions were obtained through SEC filings, interviews, and publicly available documents.

Source: IDC, 2004

**TABLE 6**

## Hosted IP Voice: Proprietary Hosted Voice Services Providers

	Headquarters	Hosted Voice Offer	Date Service Introduced	Voice Application Server Vendor	Availability
AccessLine	Bellevue, Washington	Enterprise Solution	2000	Proprietary "softgate" VoIP gateway technology	AccessLine is positioned as a provider of carrier-independent Centrex services with Internet portal services by which users can acquire, control, and access their services. AccessLine has a mix-and-match capability that supports legacy TDM/PBX-based and next-generation IP/SIP-based environments.
VirtualPBX	San Jose, California	VirtualPBX	1997	Dialogic-power call control and IVR (not IP)	VirtualPBX makes almost all of its sales through OEMs, VARs, and a referral effort for customers that promote the firm's services. The company pays its partners residual revenue based on the size of each contract.

Note: Descriptions were obtained through SEC filings, interviews, and publicly available documents.

Source: IDC, 2004

### ***Competitive Local Exchange Carriers***

All CLECs focused on the retail business market offer integrated access as their flagship product. Integrated access is an innovative business communications tool that combines high-speed Internet with local and long distance calling services. This is delivered over a reliable T1 access facility and billed on a fixed monthly price. VoIP is a logical extension of integrated access. This usually is deployed in two phases — phase 1 is IP voice transport and phase 2 is an IP voice feature server (e.g., PBX-like features) in the network. Phase 1 is driven by the internal operational goals of a lower-cost voice transport infrastructure. Phase 2 is driven by the goal of increasing monthly user spending by offering an alternative to premise-based PBX.

Many CLECs have already capped their circuit-switched voice transport infrastructure and are growing with an IP infrastructure. By mid-2004, only a few CLECs had moved to phase 2 VoIP and offer hosted IP voice services. ICG Communications of Englewood, Colorado, is the CLEC with the largest base and longest experience in hosted IP voice services. ICG launched hosted IP voice service under the brand VoicePipe in February 2003 and was approaching 8,000 customers in 350 sites in April 2004. ICG is a national CLEC with revenue of \$62 million for the quarter ended March 31, 2004. The company is facing a growing liquidity crisis and is expected to initiate a financial restructuring that will result in either a bankruptcy filing or sale of all or part of its assets. Despite being one of the most successful hosted IP voice services, VoicePipe's future is clouded by its parent company's financial woes.

There are about 75 CLECs, but only 15 have revenue of \$135 million or more. Table 1 lists the 15 tier 1 U.S. CLECs by revenue. Only four of the tier 1 CLECs currently offer hosted IP voice services — Cavalier Telephone (via its Phonom subsidiary), Covad (through its acquisition of GoBeam), ICG Communications, and US LEC. Several other tier 1 CLECs have announced plans to offer hosted IP voice services, including XO Communications, McLeod Communications, Time Warner Telecom, and ITC^DeltaCom. IDC expects all tier 1 and tier 2 CLECs to enter the hosted IP voice market during the during the second half of 2004 or in 2005.

A specialized group of CLECs are data CLECs. These service providers focus on the provision of data communications and high-speed Internet access directly to small and medium-sized business and ISPs, VARs, and other telecommunications carriers. Data CLECs are very interested in VoIP services as a way to increase and diversify their revenue portfolio and increase their revenue per user. Covad, with revenue of \$388 million in 2003, is the largest data CLEC and has entered the VoIP market through acquisition of GoBeam, the largest hosted IP voice services provider. Similarly, DSL.net, a \$70 million data CLEC concentrated in the mid-Atlantic and northeast states acquired TalkingNet, a hosted IP voice services provider, in September 2003. The company is now rolling out IP voice services over its data networks.

### ***Incumbent Local Exchange Carriers***

A total of 10–15% of ILEC business lines are driven by traditional Centrex services. Traditional Centrex is an outsourced PBX service where the business-class calling features reside on infrastructure in the telephone company's central office. Centrex uses old proprietary circuit-switched equipment. The service offers a minimal number

of features that are hard to add or change, and it is expensive. Telecom equipment vendors such as Cisco, Avaya, Nortel, and Siemens have been successfully displacing the Centrex base with modern, flexible IP PBXs.

ILECs are introducing IP Centrex to defend the Centrex base. Beyond this specialized segment, hosted IP voice services represent an opportunity for ILECs to increase share of wallet. The capital and operating budgets associated with PBXs have been unavailable to carriers. Hosted IP voice services presents an opportunity to tap into new revenue streams.

In late 2003, SBC introduced PremierServ Hosted IP Communications Services (HIPCS) via a wholesale arrangement with Level 3 and its Sylanro application servers. The partnership with Level 3 enabled SBC to gain early market entry. Over time, SBC is likely to rely more on its own infrastructure of softswitches and application servers.

BellSouth formally entered the market in June 2004 with its announcement of hosted IP voice market trials in Columbia, South Carolina, and Miami, Florida. Plans are to roll hosted IP voice out throughout BellSouth's southeastern U.S. region. Similarly, Qwest has announced plans to introduce business VoIP services in summer 2004.

In June 2004, ALLTEL, a multistate ILEC with 13 million customers and \$8 billion in revenue concentrated in small town/rural America, announced a contract for hosted IP voice services with the University of Kentucky. ALLTEL's hosted IP voice solution is intended to replace the university's current premises-based IP PBX systems. The decision to go with a network-based hosted solution is based on the need to support greater mobility for faculty and students and have a migration path to deploy future VoIP services.

The entry of these new competitors with deep resources for national marketing programs, VAR education, and resources programs will accelerate market momentum and reduce acquisition costs.

For all large carriers, the strategy is to offer a complete portfolio of VoIP products, including:

- Sales, support, and management of IP PBX premise equipment
- IP interfaces for traditional Centrex customers
- Integration of VoIP services with IP VPN layer 3 network services to enable
- Sales of hosted IP telephony services
- Remote access connections for small branch offices and mobile employees

### ***Interexchange Carriers***

Large incumbent carriers have been slow to enter the hosted voice market. Most large carriers offer VoIP over IP VPN for their scattered enterprise customer base. MCI is the only large carrier with multiple years of experience in the hosted IP voice

space. MCI Advantage was first introduced in October 2002. In early 2004, MCI added new VoIP access and calling capabilities to this service. By integrating the Broadsoft server application, MCI Advantage now enables a Web self-management portal and extended hosted functions. MCI references several Advantage customers that are national chains with hundreds of sites. These include:

- ☒ **CSK Auto.** CSK Auto is a specialty retailer of automotive parts and accessories. The company operates more than 1,100 stores in 19 states. MCI Advantage will be deployed in some 300 store sites by the end of 2004.
- ☒ **Select Comfort.** Select Comfort operates 330 mattress stores across the country and is deploying MCI advantage in 100 stores to consolidate local and long distance calling over a single national network and enable future converged applications.

AT&T has announced plans to enter the hosted IP voice services market in late 2004. AT&T's strategy in VoIP is to be the migration partner for enterprises as they evolve from proprietary voice and data network environments to a converged IP-based environment. This requires a broad portfolio approach including:

- ☒ **VoIP over IP VPN.** This allows companies with an enterprise data network to leverage that facility for transporting their voice traffic. A network upgrade for voice capability is relatively easily done through adding a voice card to the router and rehomeing the PBX to the router. Cost savings are realized through converged access and transport and simplified network administration.
- ☒ **VoIP interoperability.** Recognizing the diverse vendor phone systems that exist in enterprise environments, AT&T offers a PBX interoperability service. This ensures the interoperability of PBXs from Alcatel, Avaya, Cisco, Nortel, and Siemens with the AT&T VoIP network.

In late 2004 and continuing into 2005, AT&T will extend this portfolio to include:

- ☒ **Local services.** In late 2004, AT&T will extend the VoIP over VPN offer to include local outbound off-net services and inbound services and full PSTN functionality (e.g., 911 emergency, number portability, and DID lines) over the same VoIP infrastructure.
- ☒ **Hosted IP voice.** By early 2005, AT&T plans to offer a full IP Centrex service for branch offices that want to eliminate the capital cost of premise-based solutions.

IDC believes that all other IXCs — Sprint, Global Crossing, and Wiltel Communications — are developing suites of VoIP services that include the general availability of business-hosted IP voice services in late 2004 or 2005.

Level 3 is a leading IXC that has a full suite of value-added VoIP services. Additionally, Level 3 expanded its VoIP portfolio significantly with the September 2003 acquisition of Telverse Communications, a hosted IP voice services VNO. However, Level 3 offers enterprise VoIP services only through third-party distribution. As a wholesale provider, Level 3 is the infrastructure behind several of the hosted IP voice services providers discussed here, including SBC, Cypress Communications, Pac-West Telecomm, and CentricVoice.

### ***Virtual Network Operators***

VNOs do not own transport infrastructure or switching facilities. VNOs invest in a datacenter that houses the software for processing telephone calls and managing business-class telephony features. They hire technical staff to manage the datacenter, field technicians to assess and install the IP infrastructure on the customer premise, and a sales force to sell the service. Many VNOs operate under a partner-led sales model and rely on a network of third-party agents to sell their services.

VNOs are small, localized, venture-funded companies. Many of the founders come from an Internet background where they had involvement with ISPs or Web services companies. VNOs have perceived a market opportunity to eliminate the complexity, risk, and cost of a premises-based telephone system.

Only three of these service providers introduced services prior to 2003. The largest providers include:

- ☒ **GoBeam.** GoBeam is the oldest and largest provider of hosted IP voice services. Founded in 2000, GoBeam has primarily focused on selling its vPBX service in California. At the end of February 2004, GoBeam claimed 13,000 end users and 250 customers. The average customer has about 40 users, and the ARPU is just over \$60. GoBeam was acquired by national broadband CLEC Covad in June 2004. Covad plans to integrate the GoBeam VoIP services with the Covad broadband ADSL and SDSL access facilities and VAR distribution model to accelerate national market rollout of VoIP services. Note several other hosted IP services were launched in the 1999–2000 time frame.
  
- ☒ **M5 Networks.** M5 Networks is a two-year-old New York City–based provider with a pure-play focus on hosted IP phone services for small and medium-sized New York City–area businesses. In March 2004, M5 announced 200+ business customers and 5,000 lines in service; processing over 50,000 calls per day with a cumulative total of 10 million calls handled since its launch.

The VNO business proposition is built on extraordinary customer service. Their promise is to deliver customized professional support and to be the trusted partner providing the most complete and reliable phone solution.

### ***Making the Call: Who's Leading and Who's Lagging?***

Although the market for hosted IP voice services is just beginning to gather momentum, some service providers have introduced products into the market that show potential to grow market share. Others have products in the market that are less robust and do not have the corporate strength to significantly challenge for market share. This analysis of the market is reflected in the IDC Leadership Grids presented in Figures 1–6. These IDC Leadership Grids present IDC's view of the relative positioning of carriers that offer hosted IP voice services by plotting the average scores for two types of factors on which vendors are rating on a scale of 1 (lowest) to 10 (highest). An analysis detailing how each of the service providers compare for each of the two types of factors is also shown. A description of the metrics used in creating the IDC Leadership Grid is included in the Methodology section. IDC recognizes that markets are in flux and the assumptions surrounding these grids will

change. Thus, IDC plans to undertake a periodic revisions for these tables. In order to create an apples-to-apples comparison, we have included two differing leadership grids. The first set of figures compares facilities-based providers, while the second focuses on virtual network providers.

As seen in Figures 1–3, SBC has come out of the blocks early with a fairly comprehensive offer; however, IDC believes that competition from other carriers will diminish SBC's early lead. Although there are clear leaders in terms of VNOs, IDC believes that the market for this type of carriers is very formative, and much needs to be done to establish the value that VNOs bring to the market. Figures 4–6 provide an overview of the leaders and laggards from a VNO perspective.

**FIGURE 1**

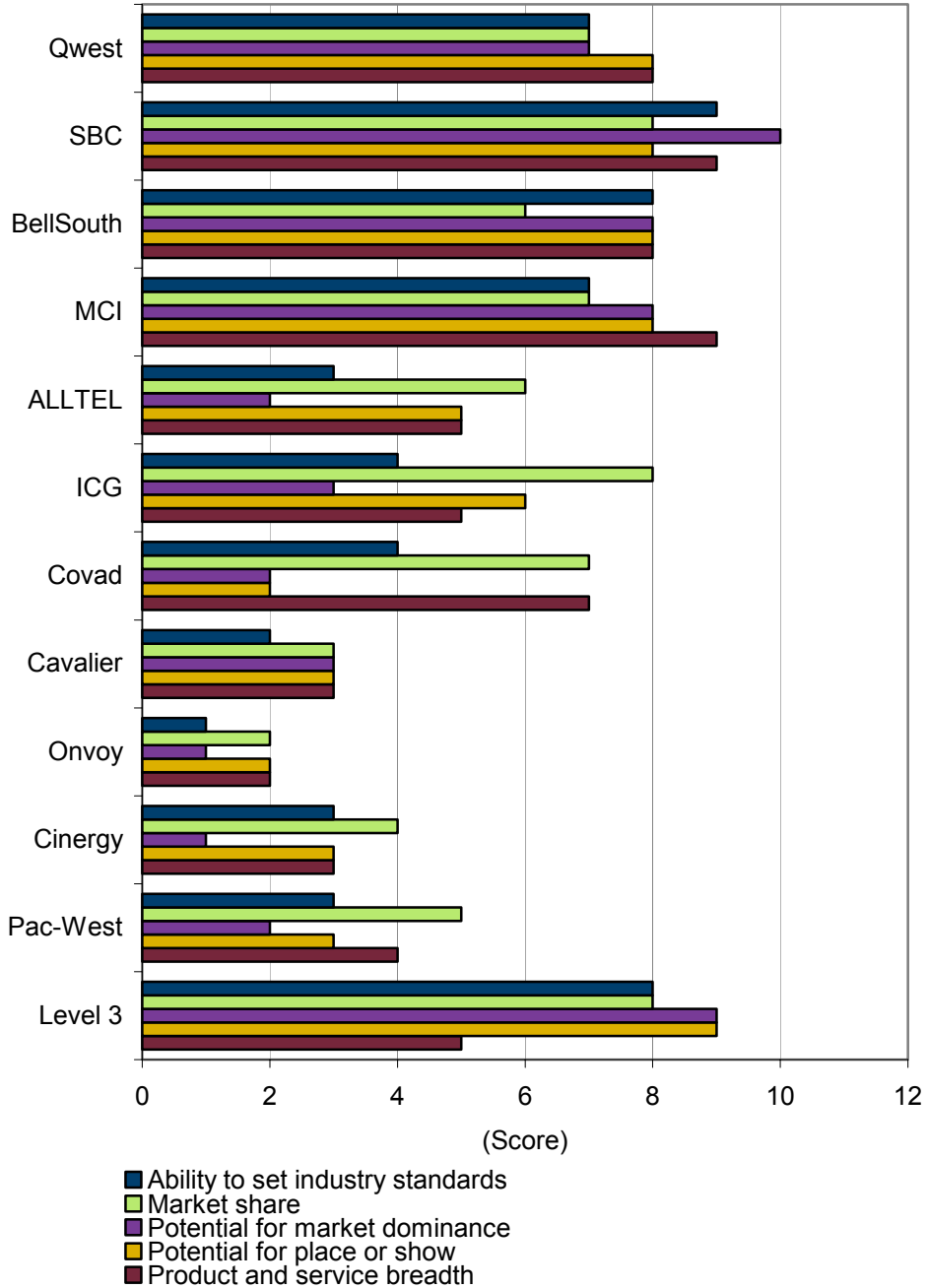
IDC Leadership Grid: U.S. Hosted IP Voice Services Market for Facilities-Based Carriers



Source: IDC, 2004

**FIGURE 2**

Leadership Grid of the U.S. Hosted IP Voice Services Market for Facilities-Based Carriers: Vendor Ratings for Opportunity Alignment (X-Axis) Attributes



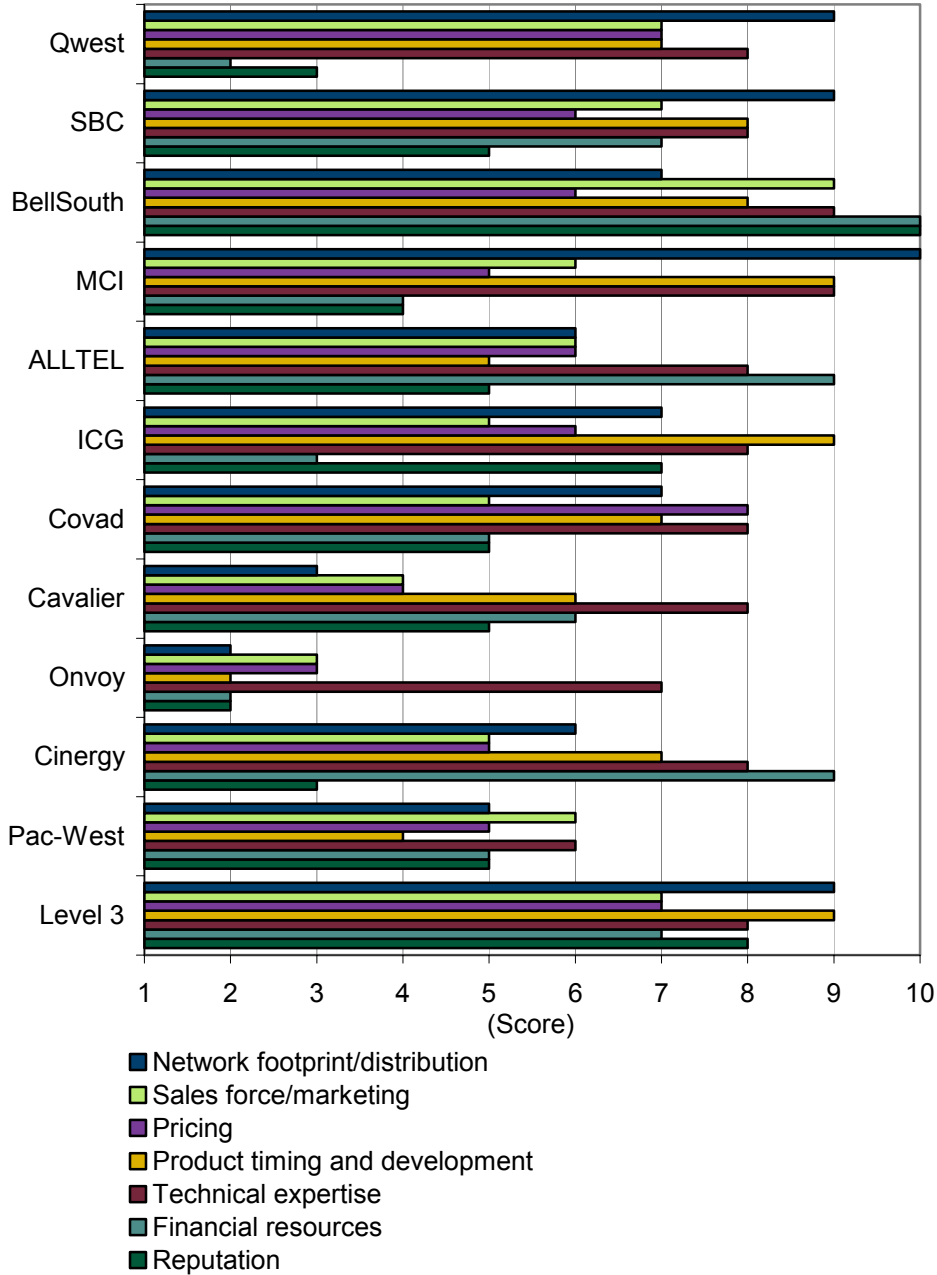
Note: Scores are based on a scale of 1–10 (1 = very poor, 10 = excellent).

Source: IDC, 2004



**FIGURE 3**

Leadership Grid of the U.S. Hosted IP Voice Services Market for Facilities-Based Carriers: Vendor Ratings for Ability to Gain Share (Y-Axis) Attributes

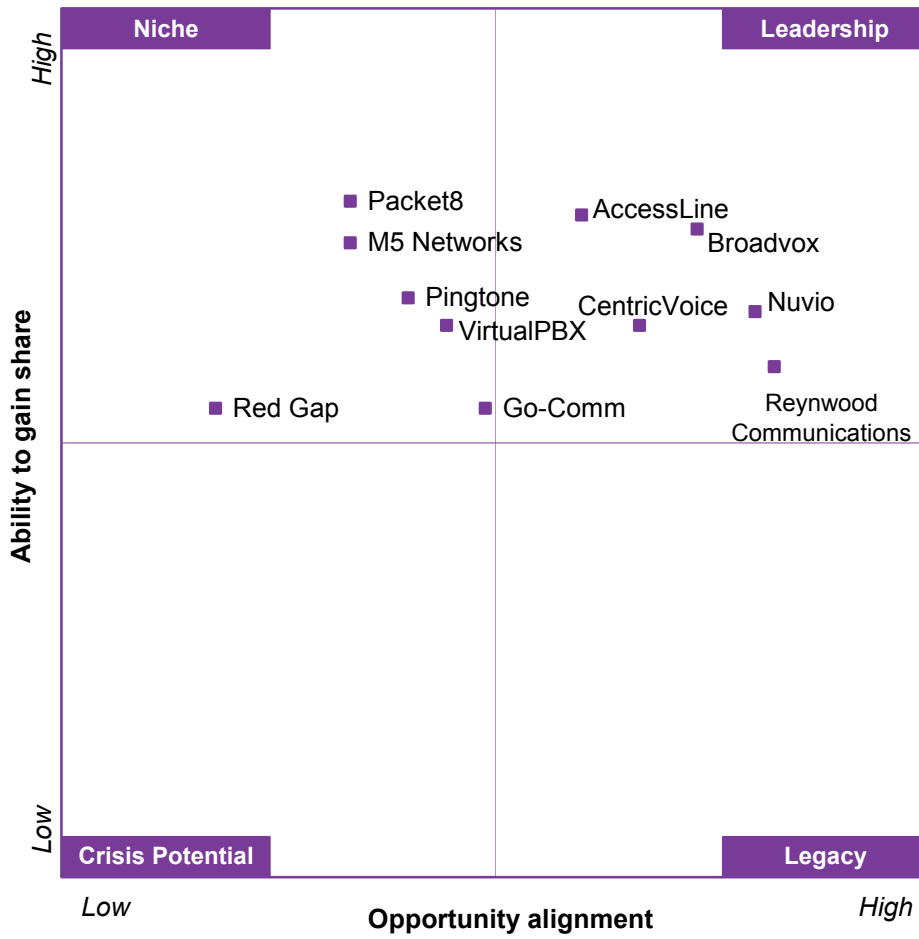


Note: Scores are based on a scale of 1–10 (1 = very poor, 10 = excellent).

Source: IDC, 2004

**FIGURE 4**

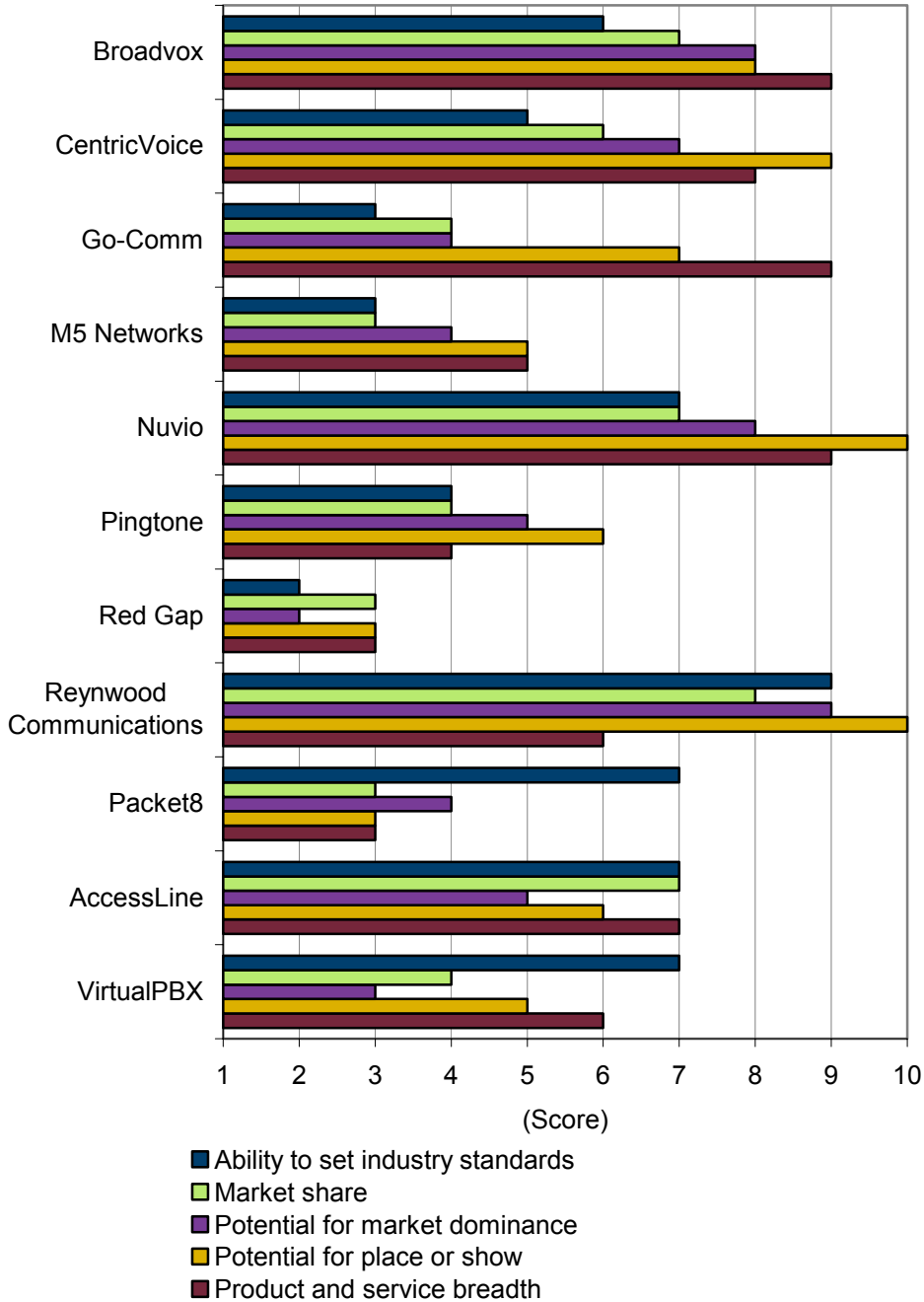
IDC Leadership Grid: U.S. Hosted IP Voice Services Market



Source: IDC, 2004

**FIGURE 5**

Leadership Grid of the U.S. Hosted IP Voice Services Market:  
Vendor Ratings for Opportunity Alignment (X-Axis) Attributes

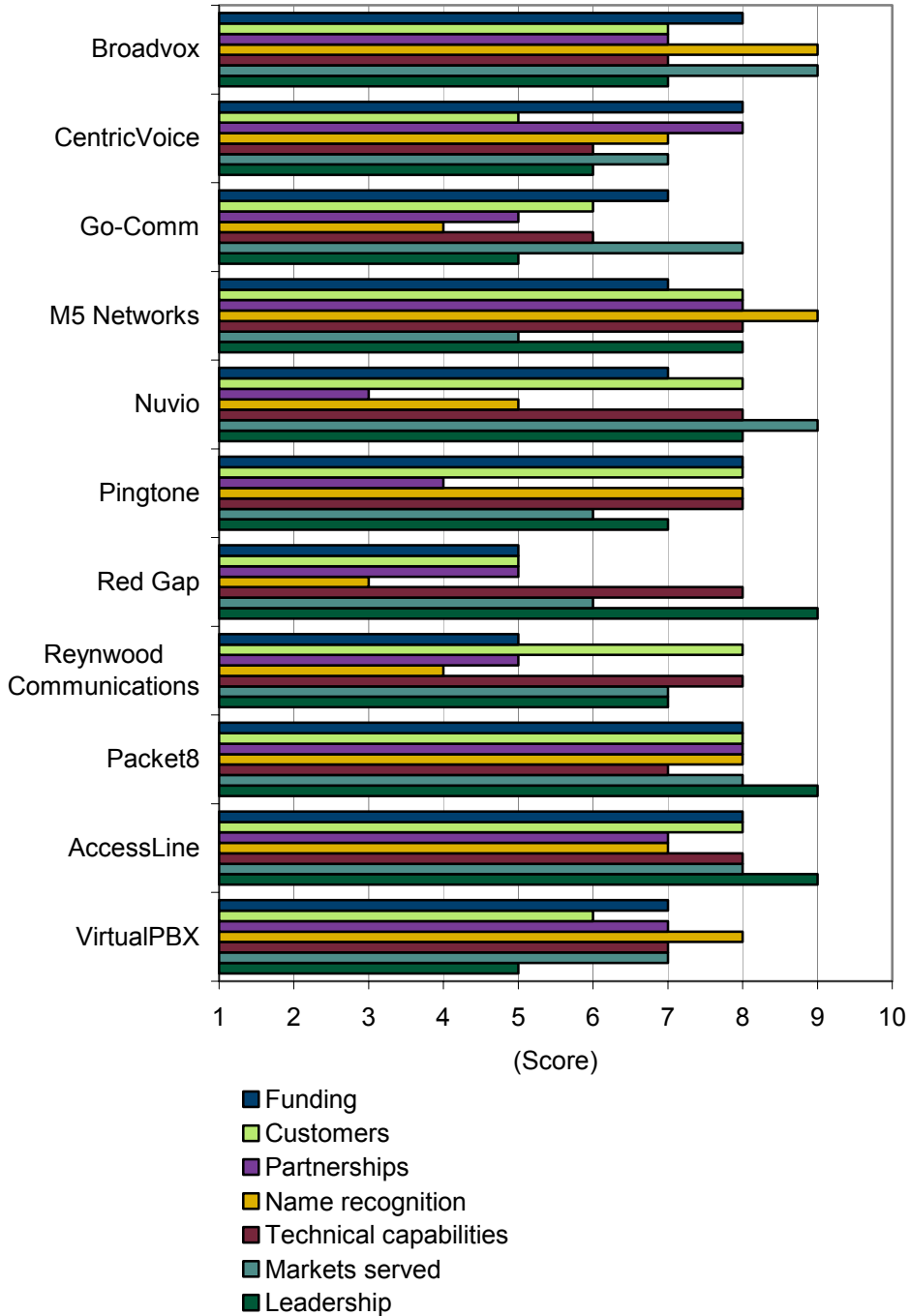


Note: Scores are based on a scale of 1–10 (1 = very poor, 10 = excellent).

Source: IDC, 2004

**FIGURE 6**

Leadership Grid of the U.S. Hosted IP Voice Services Market:  
Vendor Ratings for Ability to Gain Share (Y-Axis) Attributes



Note: Scores are based on a scale of 1–10 (1 = very poor, 10 = excellent).

Source: IDC, 2004

### ***What's in a Name?***

IDC defines hosted IP voice service as an IP-based call management server housed in a carrier's central office or a service provider's network operations center that is scalable and sharable across many users. It delivers all of the features of a PBX and supports many functions not available on traditional PBX systems such as remote user, find me/follow me, Web-based management, and desktop integration. The service delivery model is a flat-rate monthly recurring cost per seat that incorporates local calls, long distance calls, Internet access, and call features.

There are many names used to describe IP-hosted voice services. Other names for this include outsourced PBX, virtual PBX, virtual key telephone system, IP Centrex, or simply "ditching the switch."

IDC differentiates hosted IP voice services from several other services that are closely related. These include:

- ☒ **Centrex.** Centrex is a generic term used by phone companies to describe enhanced business-class phone features typically associated with very large office phone systems and digital phones. Call forwarding, caller ID, call waiting, call transfer, and call forwarding are just a few examples. This is similar to hosted IP voice because it eliminates premises equipment and delivers services as a monthly recurring cost. However, it is based on a traditional TDM circuit switch. Most customers consider Centrex to be expensive, offer a narrow feature set, and have a relatively inflexible set of parameters. Nevertheless, Centrex is widely used by state and municipal government, universities, and hospital communities.
- ☒ **Centrex IP.** This means IP enabling the traditional Centrex Class 5 circuit switch with IP interfaces or IP adjunct equipment to deliver Centrex services over an IP network. A typical deployment example is the use of IP trunking to extend a Class 5 switch's Centrex capability. The key to Centrex IP is that Centrex features remain resident in the traditional circuit switch and are the same for IP and legacy endpoints.
- ☒ **Hosted IP PBX.** Some companies purchase an IP PBX and find it effective to locate the PBX platform offsite in a third-party datacenter. The datacenter delivers the security, environment, and resources to ensure reliable 24 x 7 service. This is a datacenter hosting model, similar to hosted Web sites. It is primarily a real estate and managed services business model. It is fundamentally different from the hosted IP voice service model, which is scalable across a theoretically unlimited user base and is constantly upgraded with new technology and feature sets.
- ☒ **Hosted communications services.** There are a handful of service providers that use telco-grade technology to offer scalable, network-based business telecommunications. These companies push the PBX intelligence into the network cloud to deliver services internal and external to the corporate network. Hosted voice communications services providers include Accessline (Bellevue, Washington) and Voxpath (San Jose, California). These companies position themselves as managed services providers. IDC differentiates them from hosted IP voice service providers because their infrastructure is not based on open standard IP call agents, but rather on a proprietary TDM-based architecture.

### ***Office Phones and Handsets***

All hosted IP voice services allow customers to use IP phones at the desktop. Some services provide a migration path to IP by offering the option to use regular analog phones. Regular phones and other analog devices (e.g., G3 fax machines and modems) are supported through the use of an integrated access device (IAD), which packetizes the traffic of the analog device before establishing a call.

Native IP phones are supported by all hosted voice service providers. Desktop IP telephones are available from the legacy voice vendors such as Avaya, Nortel, Siemens, Alcatel, and Mitel; from data network vendors such as Cisco and 3Com; and from VoIP specialists such as ShoreTel (formerly Shoreline Communications) and Vertical Networks.

The most widely deployed IP phones are the Cisco 7900 series. Other IP phones commonly supported include:

- Avaya 4600 series IP telephones
- Nortel i2004 Internet Telephone
- Siemens optiPoint 400 phones
- Mitel Network 5200 Series IP desktop
- Polycom Soundpoint IP telephones
- NEC Dterm Series IP terminals
- 3Com 3102 Business Phone

Most telephone equipment companies also offer a software-based VoIP client (or softphones) that turns any Windows laptop or desktop computer into a telephone that can be used anywhere in the world. Using a simple graphical user interface (GUI), softphones integrate with Microsoft Outlook contact lists and other directories.

IP phones deliver the most complete convergence functionality and features. Most IP phones introduced in the second half of 2003 come with an LCD display and programmable and preprogrammed soft keys and incorporate a browser that allows users to personalize their configuration and download software for future upgrade capability. The newer IP telephones provide more intuitive user interfaces to simplify access to applications and convergence benefits.

IP phones are also being developed for different segments and user types, including executive, manager, administrator, staff, basic, conference station, and hall phone. Different feature sets and price points are associated with different phones.

Like PCs, IP phones are simply connected to an Ethernet LAN port. Any user can configure their phone preferences (e.g., speed dials and call forwarding) via a Web portal. Any user can authenticate to any IP phone device and receive their personalized phone treatments regardless of the particular work point they happen to be using at any given time.

The IP phones can be rented, leased or purchased, or packaged into the hosted voice service for one monthly fee. Even where users opt for next-generation IP phones, the traditional method of placing calls still applies — pick up the handset and dial 9 plus the number.

Like PCs, IP handsets are portable. When users change offices or locations within the enterprise, they simply take the phone to the new location and plug it into the existing Ethernet LAN. This is simply plug and play and eliminates the need for technical support from the IT department of the service provider. However, unlike traditional phones, IP phones do require a separate power source. All IP phones come with a LAN connection jack and a power adaptor for the wall outlet. Although IP phones are portable, it is necessary for there to be power for the telephone at each location.

Very significant advancement is expected with IP phones and other client devices during 2004 and 2005. IDC anticipates that IP phones will integrate with PC soft clients so that calls can be initiated, answered, and transferred from a phone or PC. Also, call logs and lists will be available on both phone and PC.

Users will have options for phone control via a Web portal or a PC client. The PC client will likely integrate with Microsoft Exchange or Lotus Notes to optimize users' existing digital life (e.g., directories, calendars, and instant messengers).

For service providers, the development of IP phone sets presents an opportunity to develop a utility model of phone services associated with different user cases. Business user cases vary widely, for example:

- Power users who want to customize their communications tool set and view
- Administrators and IT staff who manage calls for groups
- Workers who share phones such as at factories and retail locations

For example, today's hosted IP voice services are priced around dollars per seat per month. There is no pricing discretion linked to the type of user. It is conceivable that services will be created and priced based on type of user such as on-net/off-net call volumes, inbound/outbound calls, feature lists, and remote user.

### ***Packetized Voice Quality on the LAN and WAN***

The conversion from a traditional business telephone system to outsourced IP telephony raises fundamental quality of service (QoS) considerations. The path of a voice phone call can be broken down into several elements, each of which effects quality. These are:

- LAN on customer premises.** This has an effect on how the LAN is configured and engineered.
- CPE access router.** This has an effect on how data and voice packets are prioritized using TOS bits, classifications, and priority queuing.

- ☒ **Access facility.** This is the access circuit from the customer site to the service provider's network point of presence. The access facility has to be adequately sized to accommodate call volumes.
- ☒ **WAN.** This is the network carrying traffic between access facilities at two hosted IP voice sites or between one hosted IP voice site and the PSTN. Factors for QoS on the network include service level agreements (SLAs), the ability to support multiple classes of service, and configuration of the network as star or meshed.
- ☒ **Media gateway/PSTN interconnection.** This is a crucial transition point for all VoIP traffic; many gateway vendors do not upgrade their codecs to those that are more efficient and feature a higher bit rate. This can impose speech distortion before a call enters the core network. When traversing the network, a packet will encounter disparate codecs before it reaches its ultimate destination. To ensure QoS, network operators will need to factor the effect that multiple encode/decode events will have on VoIP traffic.

For the LAN, the conversion is a complex effort and should be treated as a project management activity. The first step in planning and coordinating the migration is a site assessment to ensure that real-time voice communications can be handled on a company's LAN. A LAN that works well for data may not be at all tolerant of voice. Data traffic is inherently asymmetrical, while voice is always symmetrical and full duplex in nature. Consequently, the LAN voice-readiness assessment usually results in modifying the network infrastructure to optimize bandwidth usage and provide the voice quality and reliability expected in a traditional phone system.

Key configuration parameters that a LAN needs to support voice include:

- ☒ The LAN must be comprised of a switched Ethernet infrastructure with an individual switch port available for each IP phone.
- ☒ The LAN network infrastructure should be capable of switching at 100Mbps or higher at the core and distribution layers.
- ☒ If a firewall is present, the filtering rules should allow VoIP traffic and signaling protocols.

For the WAN, operational performance and end-to-end QoS must meet basic user expectations for voice reliability and toll-quality sound. Data network services are very familiar with SLAs specifying latency, throughput, availability, packet loss, mean time to repair, and mean time to report. A converged network running both voice and data over a packet infrastructure has to measure and guarantee the traditional data SLAs as well as a set of voice-specific SLAs. Three key parameters are applied to ensure that user expectations of voice quality are met. These are:

- ☒ **Clarity.** Clarity is a measure of the quality of the voice sound to the listener. Two techniques are used to measure clarity of a voice signal after it has been transmitted from a phone: perceptual speech quality measurement (PSQM) and perceptual analysis measurement system (PAMS).



- ☒ **Delay.** Delay is the time it takes the voice signal to travel from the caller to the person called. In the data communications world, this is referred to as latency. Delay is introduced through the time required to code and decode voice into and out of packet. In addition, the switches and routers add small amounts of time.
- ☒ **Echo.** Echo is the sound of the speaker's voice returning via the same phone. This is usually caused by electronic misalignment between the trunk line and the phone line.

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## **Target Market**

Hosted IP voice services appeal to two broad market segments:

- ☒ Small and medium-sized organizations with information workers that are in the market for a new phone system
- ☒ Large companies that want to simplify and improve network performance through a converged architecture

Small and medium-sized companies range from single-site companies with 10 employees to multiple branch companies with 500 workers. Large companies have thousands of employees in hundred of sites. The appeal of hosted voice is shared among both market segments, but the orientation is different for large and small companies.

Smaller companies are attracted to hosted voice for the cost advantages and service improvements of an outsourced phone system. Larger companies are driven by the bigger picture obstacles of multiple vendor invoices, inefficient service and support processes, and the need for paced migration from traditional black phones, to hybrid phones, to pure IP phones.

### ***Small and Medium-Sized Companies: Simplicity of Outsourced Phones***

The key characteristics for hosted voice opportunities in the small and medium-sized business market are vertical segments with lots of information workers and companies that are shopping for a new phone system.

Information workers have a heavy reliance on the phone system and on the Internet to conduct their business. Key segments with this characteristic include law firms, real estate agencies, financial services firms, and consulting companies. Personal productivity features such as visual voicemail, click to dial, find me feature for instant call forwarding, and real-time call logs have a significant practical impact for information workers.

Companies that are in the market for a new phone system are relocating, opening new offices, or replacing outdated PBX equipment. Identification and engagement with these events is achieved through coordination with commercial real estate agents and IT consultants, who play a critical role in company relocation activities.

The subnetting capability of IP hosted services is attractive to multitenant services providers and executive business suites companies. Examples include:

- ☒ Cypress Communications provides communications services to nearly 1,000 office buildings across the United States. The company has a relationship with GoBeam to resell VoIP services to tenant buildings in California.
- ☒ Office Suite Group, based in New York, provides executive suites packaged with advanced telecommunications and business support services in the New York City metropolitan area. Office Suite uses the M5 Networks hosted voice service packaged with a rebilling tool to create competitive advantage in the office suite marketplace.
- ☒ Officescape Inc., based in Indianapolis, Indiana, manages office suites in some 300 national locations and integrates a variety of office-on-demand and virtual communications services with real estate. It uses MCI Advantage to deliver enhanced communications to clients.

The appeal of hosted voice services for small and medium-sized business is a combination of economics and simplicity. The chance to eliminate PBX costs (e.g., capital purchase, insurance, and maintenance), reduce recurring telephone bills, and lower Internet access costs presents a strong economic argument for small businesses. However, there are lots of cheap business telephones, local and long distance charges continue to decline, and Internet access via a cheap DSL connection is acceptable for most business needs.

The prime selling proposition for hosted IP voice services in the small business market is not that it is a cheap phone system, but rather that it is a better model for communications. For small and medium-sized businesses, hosted IP voice means the simplicity of a single vendor delivering customized, professional support and monitoring for the voice network, the data network, and the phone system.

Although the hosted IP voice service incorporates dozens of enhanced features, user personalization tools, and user call control capabilities, it can be used as a traditional black phone. It is a telephone. It does not require any retraining for users or paradigm change for employee communications. As Mike Kallet, CTO of ICG Communications, puts it, hosted IP voice is a "revolution wrapped in an evolutionary package."

For this market, the keys to success are high levels of customer service built on a product strategy that focuses on pure hosted IP voice solutions. Services providers with this approach include the smaller services providers such as GoBeam, ICG, and M5 Networks.

### ***Large Companies: Manage the Migration to IP Convergence***

Large, multisite companies have a hodgepodge of voice, data, and Internet circuits deployed at different times and managed by different groups. Large companies also have a heterogeneous mix of vendors, technologies, and customized solutions for their phone systems in the branch offices. Complicating this further is the difficulty of dealing with hundreds of contracts and third-party providers.

Hosted voice represents an opportunity to eliminate redundant infrastructure, manage all voice and data communications via a single Internet network with a single provider, and deploy the same telephony solution in every branch office. The bundled model is very attractive. The logistics of introducing and maintaining technologies in hundreds of sites is simplified with hosted voice that bundles local, long distance, and IP into one predictable monthly price with consolidated billing. There is interest to extend this to a utility model encompassing telephone equipment in the monthly fee. Industries with fast-changing dynamics and economics may close and move locations on a frequent basis. A utility model eliminates capital equipment outlays and five-year equipment depreciation cycles, which ensures the best technology and enables a flexible, adaptive enterprise. This scenario is very attractive for widely scattered enterprises such as retailers with hundreds of store locations or banks with hundreds of branch locations.

Large organizations have a substantial investment in legacy equipment and require a solution that allows legacy and IP technologies to coexist. Enterprise solution preferences vary by size of organization, locations, budget, and IT support. To enable customer migration in the most cost-effective and flexible manner, a service provider needs to deliver a cafeteria-style choice of products and engagement options including:

- ☒ **IP trunking that provides distance-insensitive transport for existing TDM PBXs over a packet WAN that also carries data traffic.** Dynamic allocation of bandwidth between voice and data traffic enables a more cost-efficient networking resource, enables insource/outsource options for applications (e.g., voicemail, conferencing, presence, and call center), and smoothes migration to hosted services when PBX exhausts.
- ☒ **Signaling and protocol interoperability between legacy PBXs and IP PBXs.** Large customers may also use voice VPN and Centrex service. Interworking connectivity is needed to support seamless integration between these different voice environments so that features such as four-digit dialing, call transfer, call transfer, and call hold are transparent and available to all.
- ☒ **Customer-managed IP PBX.** This is for large headquarters sites that want to retain ownership and management responsibility for communications equipment.
- ☒ **Carrier-managed IP PBX.** This is for companies that want their own dedicated PBX but prefer it to be housed and managed in a third-party datacenter.
- ☒ **Hosted IP voice services.** This is for sites that want to outsource the complete communications solution.
- ☒ **Uniform applications and feature set across offices.** Although the platforms and access facilities may vary from site to site, enterprises want a uniform set of features and applications across all sites. This includes voicemail, auto attendant, dialing plans, and corporate directory services.

This portfolio approach recognizes the mixed-vendor, mixed-solution approach that different companies and different sites within the same company adopt for the migration to VoIP. Service providers with a portfolio approach and diverse engagement options are best positioned to be the customer's migration partner for IP telephony. Providers with this approach are the big carriers such as AT&T, MCI, SBC, and BellSouth.

The creation of a heterogeneous network environment creates new problems relating to feature transparency, call detail records, and billing. Critical to managing this cafeteria of choices are session border controllers in the carrier network. Session border controllers (SBCs) are an important, new network element that promote interoperability and enhance performance. SBCs streamline connectivity across different network environments, including a peering border from service provider to service provider and an access network to backbone border from an enterprise to a service provider.

## FUTURE OUTLOOK

### Forecast and Assumptions

The market for hosted IP voice services among US businesses is expected to reach nearly \$60 million by the end of 2004. IDC projects a compound annual growth rate (CAGR) of 282% to reach \$7.6 billion in 2008. IDC's projection of hosted IP voice business lines in service jumps from 75,000 at the end of 2004 to 12 million in 2008 (see Table 7).

**TABLE 7**

U.S. Business Hosted IP Voice Services Forecast, 2003–2008

	2003	2004	2005	2006	2007	2008	2003–2008 CAGR (%)
Sites (000)	1	5	15	50	200	400	231.4
Growth (%)	NA	400.0	200.0	233.3	300.0	100.0	
Users (000)	12	75	300	1,250	6,000	12,000	298.1
Growth (%)	NA	525.0	300.0	316.7	380.0	100.0	
Users per site	12	15	20	25	30	30	20.1
Monthly revenue per user (\$)	65	65	62	59	56	53	-4.0
Total revenue (\$M)	9.4	58.5	222.3	879.9	4,012.5	7,647.9	282.3
Growth (%)	NA	525.0	280.0	295.8	356.0	90.6	

Notes: See Table 13 for key forecast assumptions

Source: IDC, 2004

Hosted VoIP revenue consists of more than long distance voice charge avoidance and impacts a wide swath of telecom services, IT staffing expenses, and even IT equipment investments. In order to give a better perspective on the impact and opportunities VoIP brings to the marketplace, IDC's hosted VoIP model includes several different breakouts. Tables 7–12 demonstrate that the core hosted IP voice service will generate the majority of revenue. Internet access, followed closely by local access, rounds out the other contributors, with long distance voice contributing the least in terms of revenue contributing components.

**TABLE 8**

U.S. Business Hosted IP Voice Services User Revenue Share by Service, 2003–2008 (%)

	2003	2004	2005	2006	2007	2008
Long distance	13.0	12.0	12.0	11.4	10.8	10.3
Internet access	18.0	18.0	17.6	17.3	16.9	16.6
Local access (shared T1 facility)	12.0	12.0	13.2	14.5	15.5	16.4
Core hosted voice	57.0	58.0	57.2	56.8	56.7	56.7

Note: See Table 13 for key forecast assumptions.

Source: IDC, 2004

**TABLE 9**

## U.S. Business Hosted IP Voice Services Revenue by Service, 2003–2008 (\$M)

	2003	2004	2005	2006	2007	2008	2003–2008 CAGR (%)
Long distance	1.2	7.0	26.7	100.3	434.6	786.8	264.9
Internet access	1.7	10.5	39.2	152.1	679.8	1,269.7	276.2
Local access (shared T1 facility)	1.1	7.0	29.3	127.8	621.9	1,256.5	307.1
Core hosted voice	5.3	33.9	127.1	499.7	2,276.2	4,334.7	281.9
<b>Total</b>	<b>9.4</b>	<b>58.5</b>	<b>222.3</b>	<b>879.9</b>	<b>4,012.5</b>	<b>7,647.9</b>	<b>282.3</b>
Less long distance	8.1	51.5	195.6	779.6	3,578.0	6,861.0	284.7
Less Internet access	7.7	48.0	183.1	727.8	3,332.7	6,378.1	283.6
Less long distance and Internet access	6.5	41.0	156.4	627.5	2,898.2	5,591.3	286.8

Note: See Table 13 for key forecast assumptions.

Source: IDC, 2004

**TABLE 10**

## U.S. Business Hosted IP Voice Services Revenue per Service per Site per Month, 2003–2008 (\$)

	2003	2004	2005	2006	2007	2008	2003–2008 CAGR (%)
Long distance	101	117	148	167	181	164	10.1
Internet access	140	176	218	254	283	265	13.5
Local access (shared T1 facility)	94	117	163	213	259	262	22.8
Core hosted voice	445	566	706	833	948	903	15.2
<b>Total</b>	<b>780</b>	<b>975</b>	<b>1,235</b>	<b>1,467</b>	<b>1,672</b>	<b>1,593</b>	<b>15.4</b>
Less long distance	679	858	1,087	1,299	1,491	1,429	16.1
Less Internet access	640	800	1,017	1,213	1,389	1,329	15.7
Less long distance and Internet access	538	683	869	1,046	1,208	1,165	16.7

Note: See Table 13 for key forecast assumptions.

Source: IDC, 2004

**TABLE 11**

U.S. Business Hosted IP Services Revenue per Service per User per Month,  
2003–2008 (\$)

	2003	2004	2005	2006	2007	2008	2003–2008 CAGR (%)
Long distance	8.45	7.80	7.41	6.69	6.04	5.46	-8.3
Internet access	11.70	11.70	10.89	10.14	9.44	8.82	-5.5
Local access (shared T1 facility)	7.80	7.80	8.15	8.52	8.64	8.73	2.3
Core hosted voice	37.05	37.70	35.30	33.32	31.61	30.10	-4.1
<b>Total</b>	<b>65.00</b>	<b>65.00</b>	<b>61.75</b>	<b>58.66</b>	<b>55.73</b>	<b>53.11</b>	<b>-4.0</b>
Less long distance	56.55	57.20	54.34	51.97	49.69	47.65	-3.4
Less Internet access	53.30	53.30	50.86	48.52	46.29	44.29	-3.6
Less long distance and Internet access	44.85	45.50	43.45	41.83	40.25	38.83	-2.8

Note: See Table 13 for key forecast assumptions.

Source: IDC, 2004

**TABLE 12**

U.S. Business Hosted IP Services Core Hosted Voice Revenue Share  
by Segment, 2003–2008 (%)

	2003	2004	2005	2006	2007	2008
Basic services	90.0	85.5	81.2	77.2	73.3	69.6
Enhanced services	10.0	14.5	18.8	22.8	26.7	30.4

Note: See Table 13 for key forecast assumptions.

Source: IDC, 2004

IDC recognizes that this forecast for hosted IP voice services presents an extraordinary growth rate. In a period when the revenue of most telecommunications services is compressing due to aggressive price competition and oversupply, this is a standout market opportunity. To substantiate our forecast, IDC has been extremely diligent to document the sources, assumptions, and models and test these assumptions with carriers and hosted IP services providers.

The cost savings and worker productivity benefits of hosted IP voice services are defined above. These are essential to the VoIP value proposition and market forecast assumptions. In addition, VoIP benefits from several adjacent developments that will grease the skids and make it easier for businesses to realize the benefits of VoIP. These include:

- ☒ **Growth in broadband.** IDC predicts that broadband DSL and cable modem connections will exceed 30 million households in 2004 and will pass 60 million in 2007. The proliferation in broadband access data networks is primarily a residential and small business market. However, a fast-growing base of mass market endpoints with high-speed Internet access stimulates hosted IP voice take-up by facilitating the mobile work force.
- ☒ **Technology advances that improve real-time application quality over IP networks.** Traditional Internet-based phone calls have been positioned as less than voice-grade quality. However, intelligent route control technology in IP networking and real-time application performance management tools, combined with widespread use of private IP networks, now enable service providers to guarantee business quality voice in a hosted IP voice solution.
- ☒ **Increased competition.** In June 2004, one IXC (MCI), one ILEC (SBC), and one CLEC (ICG Communications) had commercially available hosted IP voice services that are generating revenue. By early 2005, IDC expects 20 or more major, multibillion dollar carriers to be in the market with multistate and national offers. This includes IXCs (e.g., AT&T, Sprint, Global Crossing, Broadwing, Primus, Wiltel, and Savvis), ILECs (e.g., Verizon, BellSouth, Qwest, TDS, Cincinnati Bell, and ALLTEL), and CLECs (e.g., XO, McLeod, ITC^DeltaCom, KMC Telecom, Focal, Birch, Time Warner Telecom, and Paetec).
- ☒ **Favorable regulatory environment.** VoIP poses fundamental challenges to the legal and economic framework that government uses to achieve the goals of universal service, emergency services, law enforcement, access for disabled, competition, and innovation. It is inevitable that VoIP will be regulated. The key issues of regulation for VoIP market opportunity is if legacy regulations will be applied to IP communications or if the regulatory framework will be adjusted to encompass IP communications. There have been recent wins by the VoIP industry in the FCC: FCC Chairman Powell has publicly stated that "lite regulation" is best for VoIP, and the FCC granted the Free World DialUp petition to remain an unregulated information service. There is no guarantee that regulators and tax authorities will maintain this hands-off approach.
- ☒ **Security.** The PSTN is a close proprietary environment; IP is open and accessible by everyone. Therefore, IP telephony is exposed to all IP vulnerabilities — service disruption (i.e., denial of service attacks), theft of service (i.e., privacy and identity manipulations), fraud, and unauthorized access. The groundswell of customer and vendor initiatives to address business continuity, mail abuse, network intrusion protection, and information security, among others, with a holistic, multilayered approach will enable VoIP to leverage the considerable technology, people, and process investments already being made.



- ☒ **Support for organizational VoIP readiness planning.** IP-based telephone solutions are a fundamental challenge for customer organizational structures and for the existing LAN/WAN infrastructure. IP telephony does not fit typical enterprise organization support structures that consist of separate voice and data operational units. Support of IP telephony requires interdisciplinary knowledge of voice issues, data networks, and server environments. VoIP service providers and many professional services firms have recognized these challenges and have built practices and processes to streamline this migration.

### ***Market Adoption Assumptions***

Hosted voice services are targeted at all business markets. However, IDC believes that the best candidates are offices with 10 or more people and roughly 10,000 minutes or more of long distance calling per month.

It is unlikely that companies with fewer than 10 employees will use hosted voice. Offices with fewer than 10 people do not need PBX features such as corporate directory, front desk operator, and auto-attendant functions.

IDC expects that the small office/home office market will be served through Vonage-like services where the price is cheap, the feature set is limited, and the access facility is a lower-cost DSL or cable modem.

As large enterprise customers are attracted to hosted voice, a common strategy is to roll out IP telephony in satellite offices or in new network sites. There are large enterprises (3,000+ employees) planning to deploy companywide, but this will remain uncommon throughout the forecast period. Large enterprise sites such as headquarters locations and major branch offices will continue to use premise-based systems for their voice services.

The target market for hosted voice are businesses with more than 10 employees. Based on U.S. Commerce Department statistics, there are approximately 2 million U.S. businesses with 10 or more employees.

Of the 2 million business with 10 or more employees, 1 million have 20 or fewer employees, 850,000 have 20–100 employees, and 100,000 have over 100 employees. Based on this breakout, IDC assumes 3 million U.S. business sites with 10 or more employees.

Market adoption is also driven by service availability and service provider capability to deliver quality services. The market will ramp slowly through 2004 and 2005 as the primary service providers are small companies with very limited resources. Large carriers (e.g., AT&T, Verizon, BellSouth, Qwest, Sprint, and XO Communications) will enter the market in second half of 2004 and early 2005, starting with pilot in-region cities, followed by gradual nationwide and eventually national availability.

### ***Price and Package Assumptions***

A principle appeal of hosted IP voice is simplification and convergence. Hence, hosted voice service packages typically include long distance voice and high-speed Internet connectivity as well as business lines and PBX-like features. In terms of a

total package, IDC assumes a monthly price of \$65 per seat per month in 2003 and 2004. This includes local calls, long distance, Internet access, and the hosted voice functionality. Customers of hosted voice service may supply their own phones or lease them from the service provider. Telephone lease costs are not included in this forecast model.

In some cases, long distance charges are bundled into the single flat monthly rate. Most hosted voice service price long distance at a separate rate of \$0.02–0.05 per minute, depending on volume commitment. Long distance will decline as a portion of the hosted voice revenue due to downward long distance pricing pressure and a growing tendency to unbundle it.

High-speed Internet access is often bundled into the flat monthly fee. Internet access is delivered using the same managed T-1 connection for voice service; therefore, cost is relatively low. IDC assumes a monthly per seat price of \$12 for Internet access, and \$15 for long distance usage.

The local access facility is and will remain a T1 circuit provided through the local incumbent telco. Access facility prices are not expected to decline much as there is minimal competition other than incumbent local telephone companies for the source of local loops. An average local T1 circuit cost is \$150 per month, and it is expected to remain consistent throughout the forecast period. However, as the seat sizes per site increase, access facilities will rely on multiple T1s, which will increase the overall average access price per site from \$156 per month to nearly \$350 per month.

#### **Basic and Enhanced Services**

Although the market for hosted services is still developing, a pattern has developed regarding the components that constitute a basic and enhanced offer. As the market matures, IDC expects service to providers to become more creative with their packaging, perhaps blurring the boundaries between basic and enhanced packages. The packages will include the following items:

- ☒ **Basic.** Voice, Internet access, Web controls, and call logs
- ☒ **Enhanced** Desktop integration, remote user, find me/follow me, voicemail, conferencing, unified messaging
- ☒ **Next-generation enhanced applications.** Real-time stock ticker, IVR, speech recognition, time clock application, corporate messaging, one-to-one video, client billing, FedEx/UPS tracking integration to other applications (CRM, supply chain)

Table 13 lists the key forecast assumptions for the U.S. hosted IP voice services market.

**TABLE 13**

Key Forecast Assumptions for the U.S. Hosted IP Voice Services Market, 2004–2008

Market Force	IDC Assumption	Impact	Accelerator/ Inhibitor/ Neutral	Certainty of Assumption
<b>Macroeconomics</b>				
Economy	The economy has stabilized, but overall growth will be modest at best throughout 2005.	<b>Moderate.</b> Slow but steady growth will help calm jitters. Spending on telecom-related products will slowly begin to increase.	↑	★★★★☆☆
Business outlook and needs	Pent-up demand exists for new services and products. Equipment is reaching the end of its service cycles. Business customers are searching for ways to upgrade, consolidate, and future proof. Open systems and convergence will be top of mind as companies push to reduce costs.	<b>High.</b> Looking to become more efficient, IP will emerge as an increasingly popular method of reducing costs.	↑	★★★★☆☆
<b>Telecom economy</b>				
Industry specificity	Overall, pricing wars will continue to pressure profits. In the past, those companies that could offer network ubiquity, flexibility, and QoS had a good chance of winning contracts. Unfortunately, most carriers can provide these capabilities.	<b>Moderate.</b> Carriers will look to creating applications and services in order to differentiate and create new streams of revenue. VoIP will become a building block toward total communications solutions.	↑	★★★★★★
Policy	Favorable, less burdensome regulatory treatment will most likely characterize pending FCC VoIP rules that are slated to be released later this year. However, in a setback for those in favor of a "lite touch," the FCC will require VoIP carriers to comply with CALEA.	<b>High.</b> Presumably, less regulation will give carriers an incentive to invest in new services. However, carriers will need to make sure that the market is ready for new products and services.	↑	★★★★☆☆

**TABLE 13**

Key Forecast Assumptions for the U.S. Hosted IP Voice Services Market, 2004–2008

Market Force	IDC Assumption	Impact	Accelerator/ Inhibitor/ Neutral	Certainty of Assumption
Monopolization	With both AT&T and MCI showing increasingly troublesome financial results, RBOCs could increase their penetration of the business market. However, their ability to take share away from IXCs will depend upon their investment in increasing the reach of their network.	<b>Moderate.</b> RBOC incursion will be met with competition from competitive carriers that have already launched hosted products to business customers. Furthermore, AT&T's decision to exit the consumer market will allow it to devote all of its resources to business customers.	↔	★★★★☆☆
Intellectual property	Several virtual carriers claim to have patents pending regarding the technical processes associated with VoIP. IDC believes that very little if any of these potential patents represent a threat to the overall market. Slightly more troublesome is Telcordia's softswitch patent; however, the company has not taken a hostile posture.	<b>Low.</b> While carriers will look to VoIP to differentiate themselves, any moves to use patents to create proprietary products will not be tolerated.	↔	★★★★★★
Wild card	The war in Iraq and the overall volatility in the Middle East will remain a wild card.	<b>High.</b> Any serious flare ups will have a significant impact on the U.S. economy.	↓	★★★★☆☆
<b>Technology/service developments</b>				
Softswitch	The reliability and scalability of softswitch has improved dramatically over the past several years.	<b>High.</b> Carriers have been purchasing softswitches for the network core and edge deployments. This strategy will encourage deployment of IP services.	↑	★★★★★★
Bandwidth	Beaten down by competition, prices for higher-speed pipes have become affordable for small businesses. Although adequate in some deployments, IDC believes that hosted solutions will require a T-1 to ensure QoS.	<b>High.</b> Cheap bandwidth will help reduce overall costs and reduce choke points. This will allow customers to realize the full potential of hosted IP voice solutions.	↑	★★★★☆☆

**TABLE 13**

Key Forecast Assumptions for the U.S. Hosted IP Voice Services Market, 2004–2008

Market Force	IDC Assumption	Impact	Accelerator/ Inhibitor/ Neutral	Certainty of Assumption
Linux	Linux-based PBXs will begin to make their presence in the market. The capability to quickly create customized applications could prove to be an enormous advantage for premise-based solutions. However, IDC believes bulletproof systems are still in development and will not impact the market for several years.	<b>Low.</b> Although enterprise customers will show interest, many will wait until more robust platforms make their way into the market. In the meantime, carriers will develop on-demand applications for their hosted customers.	↔	★★★★☆
Security	Issues related to security rank among the highest in terms of impediments to customer adoption of hosted IP voice. IDC anticipates that vendors and carriers will work together to close any gaps. However, any serious breach could result in serious questions related to the efficacy of hosted IP voice.	<b>High.</b> Customers must feel confident that their conversations are secure. Until gaps are closed, this will be a serious impediment to mass adoption.	↓	★★★★★
QoS	Poor quality calls have been the bane of VoIP services since their inception. IDC believes that most of the quality issues have been solved.	<b>High.</b> By enabling quality that is as good as circuit-switched voice, a key concern of business customers becomes a nonissue. This will help increase adoption rates of hosted solutions.	↑	★★★★☆
Legacy	For those customers who are only interested in price, legacy Centrex, cheap long distance minutes, and analog handsets will prove more to be more cost-effective.	<b>Low.</b> There will always be a subset of customers that shop for price. These customers are among the most likely to churn and are the least desirable customers. They will adopt new technology only when cheaper alternatives are no longer available.	↔	★★★★★

**TABLE 13**

Key Forecast Assumptions for the U.S. Hosted IP Voice Services Market, 2004–2008

Market Force	IDC Assumption	Impact	Accelerator/ Inhibitor/ Neutral	Certainty of Assumption
Standards	Although organizations such as the IEC and IEEE are working hard to finalize next-generation standards, both service providers and equipment vendors are beginning to feel the strain of supporting a dizzying array of standards.	<b>Low.</b> Currently, standards bloat has caused some carriers and vendors to pick and choose. However, IDC views this as a temporary problem that will solve itself within the forecast period.	↔	★★★★☆
<b>Labor supply</b>				
Developers/R&D specialists	Comparatively speaking, IP allows developers to work in a less proprietary environment.	<b>High.</b> Developers will create new applications more efficiently, enabling carriers to meet customer needs in real time.	↑	★★★★☆
<b>Capitalization</b>				
Implementation	Whether premise based or hosted, VoIP has often been described as a cost-effective approach to telephony. In the long term, IDC believes this to be true; however, the proper deployment of any VoIP solution requires significant capital investment from the service customers.	<b>Moderate.</b> Although there are costs associated with hosted solutions, IDC believes that these costs will be much less than those of comparable premised-based products.	↑	★★★★★
Wall Street	Investment bankers are bullish on VoIP services in general as an enabler of the telecom recovery.	<b>Low.</b> The positive view of VoIP could enable private companies to go public or others to recapitalize. However, smaller carriers will likely run into the ILEC juggernaut, which cannot be stopped and will likely roll over competitors in spite of Wall Street money.	↔	★★★★☆
Venture capital	Venture capitalists are still gun-shy about investing in telecom.	<b>Low.</b> Venture capital will be unlikely to have much affect on the uptake of hosted IP voice services.	↔	★★★★☆

**TABLE 13**

Key Forecast Assumptions for the U.S. Hosted IP Voice Services Market, 2004–2008

Market Force	IDC Assumption	Impact	Accelerator/ Inhibitor/ Neutral	Certainty of Assumption
<b>Market characteristics</b>				
Evolutionary or revolutionary	Hosted IP voice is a revolutionary product wrapped up in an evolutionary package.	<b>Low.</b> There may be some bumps in the road, but there will be high rewards for carriers overall.	↔	★★★★☆
Learning curve/economies of scale	VoIP Will require some behavioral changes and training. This is especially true for the more sophisticated products.	<b>Low.</b> Carriers seem to have learned from their experiences with unified communications that revolutionary products require robust training and support.	↓	★★★★★

Legend: ★☆☆☆☆ very low, ★★☆☆☆ low, ★★★☆☆ moderate, ★★★★☆ high, ★★★★★ very high

Source: IDC, 2004

## ESSENTIAL GUIDANCE

Given the dynamics of the current market for telecommunications services, combined with the advantages embedded in a hosted solution, IDC believes that the opportunity for service providers is theirs to own. In the past, business customers quickly rejected products that did not replicate their legacy experience. Furthermore, customers are not interested in the plumbing, they want a service that works and is well supported. This is especially true with SMEs — a core market for hosted IP voice services — which do not have the time nor the expertise to work on their own phone system. A hosted solution plays into these characteristics/needs by providing turnkey pricing. However, issues still lurk like icebergs, and service providers will need to solve or mitigate the potential downside of the following:

- ☒ **Security.** From discussions with vendors and carriers, we believe that most of the issues related to security are solvable and should be dealt with at the speed of light. Even worse, recent articles in the press highlight hacking tools such as voice over misconfigured Internet telephony (VOMIT) will likely lead to hysteria and false impressions regarding the true nature of VoIP security gaps. Further, carriers and equipment vendors need to shape the discussion around security or risk tainting hosted IP services before it has a chance to prove itself in the marketplace.

- ☒ **Provisioning.** Expect the unexpected at the customer premises. These problems include networks with inadequate bandwidth and subpar wiring held together by multivendor/proprietary protocols. Anecdotal data suggests that at least half of all sites will need some upgrade to their LAN to ensure adequate resources for voice and data. Service providers will have to recognize and deal with these problems, especially in the early adoption phase. In order to avoid recurring problems, consider creating a database of problems encountered and their solutions. Although these types of deployments may not prove as profitable, a site that fulfills customer expectations is worth its weight in referrals.
  
- ☒ **Pricing.** With revenue declining from legacy business services, service providers are looking toward hosted IP voice services to help create new revenue flows. Pricing will obviously play an important role in replacing legacy revenue with next-generation revenue. However, there is a delicate balance between ensuring healthy margins and deal-breaking fees. In order to maximize the customer base, IDC recommends the following:
  - ☐ **Be aware of competitive alternatives.** If your rates are higher, be prepared to explain the value of your service over cheaper alternatives.
  - ☐ **Business cycles are important.** In discussions with end users, most of deployments were the result of businesses moving to new locations or as a result of old proprietary equipment that was costly to maintain.
  - ☐ **Don't worry about wow factor.** Although end users were impressed with the features and functions available from a hosted platform, they were not enough to seal the deal. Instead, pricing, the elimination of costly service contracts, and worry-free service are the factors that most interest end users.
  
- ☒ **Voice quality standard.** For the most part, when a T-1 is sold to a business customer, the basic features of the circuit are well understood. By comparison, voice quality standards are not well understood or robust, especially when it comes to VoIP. In order for customers and service providers to engage in an apples-to-apples comparison conversation about voice quality, some sort of consistent standard needs to be developed. A standard that incorporates opinion and objective methodologies would be useful for both buyers and sellers.



## LEARN MORE

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### Related Research

- ☒ *U.S. Consumer VoIP Forecast 2004–2008* (forthcoming)
  - ☒ *U.S. Small Business Landline 2004–2008 Forecast: The Song Remains the Same?* (IDC #31253, May 2004)
  - ☒ *Come Together: Covad Acquires GoBeam* (IDC #30998, March 2004)
  - ☒ *U.S. Cable Telephony 2004–2008 Forecast: Golden Egg or Lead Balloon?* (IDC #30797, February 2004)
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