

VoIP

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Voice over Internet Protocol (VoIP) is being deployed in all segments of telecommunications networks.

International LD: Operators such as iBasis provide wholesale phone-to-phone call minutes to major retail carriers and already rank among the largest international carriers in terms of traffic.

Domestic LD: Carriers are transitioning their core networks to IP to support video calling and multimedia services as well as voice; to this end, for example, MCI has been replacing its circuit switches with Nortel soft-switches.

Enterprise: VoIP over VPNs (virtual private networks) enables use of bandwidth for multiple applications, more flexible conferencing, support for plug-and-play IP phones anywhere on the network, and extending phone access to new kinds of devices such as laptops; e.g., in 9/2004 Bank of America announced an IP telephony rollout to 180K employees that will replace 360 PBX systems.

Local: CableLabs' specifications define network-based VoIP services for which cable operators will be able to offer QoS (quality of service) assurance and carrier-class features such as support for enhanced e911 and CALEA (Communications Assistance for Law Enforcement Act) call surveillance requirements.

Status of cable VoIP at major MSOs:

- **Comcast** is now rolling out VoIP ("Digital Voice") with plans for availability in all Comcast markets by 12/2006; its 1.2M legacy AT&T Broadband telephony subscribers will be transitioned to VoIP via hybrid IP/circuit-switch systems. Digital Voice will be provided over a QoS-managed network with battery back-up, e911, unlimited US calling, the usual calling features, and use of a web portal to check voicemail and for account management, for \$39.95/month.
- **Cox**, working from a base of 1.1M circuit-switched cable telephone users, has

started to introduce VoIP service. Cox uses IP-to-circuit switch gateways to extend the reach of existing circuit switching facilities.

- **Cablevision Systems'** VoIP includes unlimited US calling, vertical features, and e911, for \$34.95/month. Subscribers can use a web portal to direct voicemail messages for account management. 272K subscribers, 6% of homes passed, by 12/2004.
- **Time Warner Cable** offers VoIP primary lines to subscribers in TWC systems for \$39.95/month covering unlimited local and domestic LD calls, vertical call features and 911. TWC arranged with MCI and Sprint to provide LD connectivity and other IP provisioning services. 220K subscribers by 12/2004.

Other providers offer SIP (session initiation protocol)-based VoIP services in which intelligence is in the terminal devices rather than in the network. SIP enables quick market entry for providers that lack local network facilities:

- Vonage calls are routed through the public Internet; unlimited calling within the US & Canada, the usual vertical features, and the ability to select a favored area code. Cost: \$25/month (or 500 minutes for \$15/month). Customers can connect a standard phone to a Vonage-supplied MTA that plugs into a cable or DSL modem or into a router connected to the modem. 400k subscribers by 4/2005.
- AT&T's CallVantage service, also SIP-based, differs from Vonage in using AT&T's own managed IP network to carry LD traffic.
- Verizon's VoiceWing VoIP service is available nationwide – including outside of Verizon territory – to users with broadband access, and provides unlimited local and LD calling, the usual vertical calling features (excluding 911/e911), online call management, and selectable area code, for \$30/month to its DSL customers and \$35 for other users.

In 11/2004, the FCC cited VoIP's interstate & international scope in preempting state PUC regulation of IP telephony.