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Vanilla to Killer
Delivering voice over DSL services requires superior OSS
by Angie Arnold and Geoff Nokes

This year has marked a discernable shift in the development of the digital subscriber line (DSL) market. Until recently, the focus has been on network build out by incumbent local exchange carriers (ILEC), competitive local exchange carriers (CLEC) and interexchange carriers (IXC). Now, DSL service providers are intent on maintaining high consumer demand, differentiating themselves from competing providers and technologies and maximizing their return on equipment investment. The key to achieving each of these goals lies in the development of new value-added services, such as voice over DSL (VoDSL). VoDSL, using the public switched telephone network (PSTN), essentially transforms DSL from a plain vanilla transport technology into a killer application for the delivery of value-added services.

By leveraging the capability of broadband to provide value-added services to these markets, VoDSL can make a substantial contribution to providers' bottom lines

Until this point, providers had only the revenue from high-speed data services to justify the cost of purchasing and colocating digital subscriber line access multiplexers (DSLAM) in ILECs' central offices. VoDSL technology enables the multiplexing of up to 16 voice lines plus a dedicated, secure high-speed Internet connection onto a single DSL access line. Thanks to the FRF.12 standard and the associated adaptive fragmentation technologies—as well as other standards introduced by the American National Standards Institute (ANSI) and the European Telecommunications Standards Institute (ETSI)—this process does not compromise quality of service (QoS). Such dynamic bandwidth usage allows DSL providers to maximize the efficiency of the DSL connection.

Emerging desktop telephony opens the door for VoDSL technology to be configured from the desktop in real time. This will allow users, for instance, to initiate a person-to-person call, add others to create a conference call and use the connection to share viewing of electronic documents or local files. This dynamic killer application is especially attractive to the small and medium enterprise (SME), telecommuter and small office/home office (SOHO) markets. By leveraging the capability of broadband to provide value-added services to these markets, VoDSL can make a substantial contribution to providers' bottom lines.

Markets

In the United States alone there are over eight million small businesses, accounting for two thirds of business access lines, with 20% adding telephone lines each year (dsllife.com). The compound annual growth rate of DSL for US small businesses is predicted to average more than 400 percent through 2002 (dsldigest.com). (CIR)

projects that by 2005, almost 25 million lines of VoDSL will be deployed worldwide, a third of which will be installed in North America (cir-inc.com).

> **One of the first decisions DSL providers must make regarding of VoDSL services is how they will handle connectivity to the PSTN**

The attraction for modest businesses is obvious. DSL and VoDSL technologies make it economically feasible for them to purchase a wide range of desirable services, including multiple telephone lines, fax lines, Internet access, audio/video conferencing and other multimedia applications. Although T1 or frame relay lines outfitted for delivering high-speed data offer similar services, they can cost 10 times as much as those offered over a typical 384 Kbps DSL. Consumers save more than money by purchasing bundled services offered over a single connection; they also save time and energy by enjoying a single point of contact for installation, billing, service management, technical support and customer service.

The challenge

DSL providers looking to include VoDSL in their service offerings want to be assured that it can be smoothly integrated within existing platforms and seamlessly bundled with existing services. This process complicates DSL providers' tasks because the delivery of voice services involves a completely different set of requirements than the delivery of data services.

These additional requirements include

- Providing and managing connectivity to the PSTN
- Managing voice traffic
- Satisfying interconnection requirements, such as primary interexchange carrier/customer account record exchange (PIC/CARE), E911, line information data bases (LIDB) and number portability
- Offering enhanced voice services, such as unified messaging, conferencing, Centrex services and vertical services
- Handling PSTN switch provisioning and inventory management

DSL providers' operational support systems (OSS) must be able to seamlessly support these requirements in addition to the DSL data service-related requirements, which include

- Loop qualification
- Streamlined service provisioning of a wide range of high-speed data and Internet protocol (IP) services
- Unbundled loop requests from trading partners
- Service level agreement (SLA) management
- DSL and broadband/IP asset and circuit inventory management
- Customer premise equipment (CPE) management
- Customer care Web interface
- Flow-through integration with billing and service activation systems

In short, DSL providers' OSS must be able to handle all aspects of the voice services enabled by VoDSL, with the added caveat that those services are provided on the same access loop as the data service.

The OSS solution

To enable providers to integrate VoDSL within existing platforms to offer an end-to-end DSL service bundle, effective OSS solutions should include the following voice-related features:

- **PSTN switch provisioning and management**
  One of the first decisions DSL providers must make regarding the provisioning of VoDSL services is how they will handle connectivity to the PSTN. Will they

offer their own services through the provisioning and management of their own PSTN switches and related interoffice trunking, or will they resell another provider's voice services? Despite its significant capital and operations pressures, the former option offers better opportunities for innovative service development, packaging and competitive differentiation. Capacity management of a PSTN switch and its interoffice trunks can be a complex endeavor, requiring sophisticated tools to monitor and forecast traffic usage and ensure that blocking is limited to target levels. The switch-related asset inventory must also be able to be modeled and managed within the OSS.

- **Voice-related trading partner interconnection**
  VoDSL adds an entirely different dimension to trading partner interconnection transactions. It frequently entails the migration of existing voice services from one service provider to another, raising related number portability and cutover timing coordination issues. It may also involve several business models (e.g. resale). Additional interconnection transactions include PIC/CARE, E911, LIDB, as well as the various line service requests (LSR) transactions associated with reselling or migrating a service from one provider to another. These challenges increase the need for OSS capability that streamlines all aspects of trading partner interconnection.

- **Order entry for all types of voice services**
  The OSS should support efficient order entry for a full range of voice services, including basic voice (POTS), private branch exchange (PBX) trunks (direct inward dialing, direct outward dialing), Centrex and enhanced voice (messaging, conferencing, etc). In addition, the system should enable the rapid addition of new service templates as new services are developed.

- **Telephone number management**
  The OSS should support all aspects of telephone number management, including local number portability, previous number history, vanity numbers, and reservation of number blocks and groups. This management should extend, of course, to both native and ported numbers.

- **Service activation**
  A key objective of today's next-generation service provider is to continuously minimize service provisioning intervals, targeting the "holy grail" of automated flow through, real-time service provisioning that is directly under customer control. The pressure to achieve this objective is particularly high in voice service provisioning, which in many cases requires only service data configuration changes in the PSTN switch. To minimize service provisioning intervals, DSL providers need an OSS that communicates seamlessly with the voice switches, typically through a service activation engine designed expressly for this purpose. The OSS must also be able to communicate—likely through a different service activation engine—with such network elements as DSLAMs, ATM switches and routers for the DSL-based data services. Note that service activation tasks involving VoDSL services must span the DSLAMs and the switches and handle related coordination issues.

- **Customer care web interface**
  In a voice service environment, the customer care Web interface should enable customers to view their entire service profile, including new service orders, trouble status and bill. It should also provide customers with the means to change various services on-line when additional transmission facilities are not required. Such advances in customer relation management (CRM) will prove to be key differentiating features among VoDSL providers.

A superior DSL services solution offers all the advantages associated with a fully featured service management OSS, while responding to the key challenges of DSL providers. An OSS that combines the voice features described above with those required to support DSL-based data services will enable competitive differentiation, improve service provisioning intervals and time to market for faster realization of revenues, and offer increased operational efficiency and service assurance to lower operating costs.

VoDSL technology is drastically changing the economics of serving the SME, telecommuter and SOHO markets. Considering that ninety-five percent of those businesses use twelve or fewer phone lines, a single DSL circuit provides sufficient bandwidth to serve the voice needs of the vast majority of the market

(virtualpressoffice.com). It isn't surprising, then, that the Yankee Group predicts that revenues generated by the VoDSL industry will increase substantially in the next several years and will exceed $3 billion US in 2004 (clec-planet.com). Although the market is undoubtedly alluring, it is important to keep in mind that ILECs have spent a generation developing sophisticated operations processes and systems to manage voice services. The operational demands of these services and their demands on the OSS infrastructure should not be taken lightly by DSL providers introducing VoDSL services.

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References
• cir-inc.com. January 2000. "25 million Lines of Voice-over-DSL to Create New Service Opportunities, Says New Report from Communications Industry Researchers." Charlottesville, VA: Communications Industry Researchers, Inc.
• clec-planet.com. 24 February 2000. "Voice over DSL Set to Boom, Study Says." Darien, CT: internet.com Corp.
• dsldigest.com. April 2000."DSL Studies." Kansas City, MO: BizSpace Inc.
• dsllife.com. 2 June 2000. "Voice over DSL Service: New Revenue from Existing Infrastructure." Fremont, CA: DSL Forum.
• eftia.com. June 2000. "Choosing the Best OSS is Key to DSL Service Providers' Success." Ottawa, Ontario: Eftia OSS Solutions, Inc.
• hellodirect.net. 19 February 1999. "Voice over DSL: The Next Generation Business Phone Line." San Jose, CA: Hello Direct, Inc.
• Krapf, Eric. November 1999 "Voice Over DSL: Why It's Hot, What Could Cool It Down." Voice2000, supplement to Business Communications Review: 24-28. bcr.com.
• virtualpressoffice.com. "The Case for Voice over DSL." Montclair, NJ: Virtual Press Office, Inc.
• Walsh, Kevin. April 2000 "VoDSL: Real World Challenges." dsldigest.com. Kansas City, MO: BizSpace Inc.

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