

The DSL Forum: Driving technology evolution in today's global economy



By Tom Starr

Broadband Digital Subscriber Line (DSL) is expected to enjoy another great year of growth in 2004. If we stay on track, we will reach the major milestone of 100 million lines before the end of 2004. This growth follows on the heels of 2003, which demonstrated DSL expansion of nearly 80 percent globally, representing the telecom industry's strongest growth market segment. DSL is the world's leading broadband access technology. The DSL Forum, the nonprofit global industry consortium focused on developing the full potential of DSL, is actively engaged in tailoring DSL's continuing role as the best broadband choice to support all the exciting new applications and services going online everyday.

Today's DSL has come a long way from the DSL that originally rolled out. DSL technology advancements have increased its reach, speed, and functionality, thus efficiently empowering exciting new applications. As bandwidth-hungry usage became increasingly mainstream, the core network infrastructure and delivery mechanisms for services over DSL were already in place, making DSL the only viable option for swift delivery of next generation services to consumers' homes, businesses, libraries, schools, and more.

DSL is clearly poised for exponential growth in the coming years, with the DSL Forum acting as the primary driver every step of the way since the consortium was founded in 1994. A decade later, after overcoming many technical roadblocks, the DSL industry is now focused on enhancements and customized services for the ever-changing needs of the online consumer.

DSL Forum leadership charts the course of DSL evolution

In October of 1994, a meeting convened in London to discuss the state of the Asymmetric DSL (ADSL) industry, then in its infancy. Fifty-four people from 43 companies and 14 countries attended that initial meeting. The issue was simple: should the industry allow ADSL to develop as a series of innovative (and proprietary) offerings from various companies or form an alliance to assure that a global mass market for ADSL-based products and services would develop according to a series of global standards that the attendees would support.

"This was not an easy decision," recounted David Greggains, DSL Forum's vice president of operations and secretary treasurer. "To band together would mean that we might give up some competitive advantages in pursuit of a global standard. For some of us this could mean losing our dominant position in a market that appeared to be forming around us. In the end, it became a simple question for each firm. Would you rather dominate a small mar-

ket and absorb its risks or would you consider working together to create a huge market with plenty of room for all?"

The people in that meeting decided to band together and formed the Interim Steering Group for the ADSL Forum. During the next three months, a framework of corporate structure, bylaws, and procedures for how the ADSL Forum would run developed, with a mission to simply "create a mass market for ADSL products and services." Accomplishing this mission would require the creation of technical reference documents to bridge the gaps between the works of existing standards bodies.

"The key was that we were able to band together and rapidly move DSL into a delivery mechanism for broadband data connections to the Internet," continued Greggains. "This was done in an organized fashion, quickly, by nearly 200 companies focused on the outcome of a world connected over DSL-equipped loops. We developed a scalable architecture and invented ways to achieve and automate flow-through provisioning. We created guidelines and brought industry players together to assure that we could achieve transparent connections to the Internet."

Eventually, this effort evolved into what we have today: the DSL Forum. The "A" was dropped in 1999 when the DSL technology evolution led the DSL Forum to branch out and embrace symmetric DSLs as well. During 2004, the interoperability work will address ADSL2plus, SHDSL, and VDSL. The DSL Forum now focuses on all flavors of DSL in the scope of its work.

Today, the DSL Forum is an international industry consortium of approximately 200 leading service providers, equipment manufacturers, and other interested parties focused on developing the full potential of broadband DSL and committed to meeting the needs of the mass market. With the established goal of 200 million global subscribers by the end of 2005, the DSL Forum works to develop processes and specifications. In addition, the DSL Forum shares best practices and information that set the stage for effective deployment and explosive global growth in DSL demand. To empower that vision, the DSL Forum has achieved some critical milestones in the last decade and is laying the groundwork for sustained future growth.

Technology driver: DSL Forum Technical Reports (TRs)

The DSL Forum's primary outputs are Technical Reports (TRs). The DSL Forum approved nine additional TRs in 2003. 2004 promises to be an equally exciting year, as the DSL Forum develops new standards and embraces new applications. Exciting advances in broadband DSL technology, architecture, interopera-

bility, services, applications, and network functionality are paving the way to deliver economic benefits to providers. For example, improved network utilization and traffic management as well as service flexibility and enhancements for broadband DSL customers are predictable results from the new IP-based architecture. In turn, this will provide the foundation for new service capabilities such as Quality of Service (QoS) support, bandwidth on demand, multi-casting, and real-time service delivery.

“As a priority, technical work retains its focus on tailoring DSL further to be the best broadband platform for all of the *new generation* applications that compel broadband facilities to operate successfully,” said Gavin Young, DSL Forum’s technical committee chairman. Visit www.dslforum.org/aboutdsl/tr_table.html for information about Technical Reports.

New applications relying on DSL service capabilities that are making their way to the forefront (and providing the platform for new product offerings) include Video on Demand, Streaming Video over DSL, and enhanced speed and performance guarantee offerings. These applications are sufficiently attractive and valuable to bring in new customers and change existing customers’ usage patterns. They will be the real drivers of a successful broadband industry.

The DSL Forum is building upon new architecture to develop further specifications for operations, management, signaling aspects, and application support. The DSL Forum’s new *DSLHome* initiative is also important in the context of technological advances, as it aims to extend the QoS and management capabilities through the WAN and all the way through the customer premises network.

DSLHome encourages industry cooperation

In 2003 the DSL Forum launched its *DSLHome* initiative to strengthen the link between DSL and home networking, promote the use of DSL-based home networks, and educate users on how to use their broadband DSL connection to its full potential. As more DSL customers are connecting multiple PCs to high-speed Internet access, with connections to their televisions and appliances following suit, *DSLHome* will help enhance performance options and streamline the installation of any equipment that might connect to DSL as its broadband access option.

Today, customers are turning more toward new applications such as interactive games, pay-per-view video services, TV replay, videophone, music downloads, secure Virtual Private Network-based communications, and software downloads. The *DSLHome* initiative recognizes the importance of supporting these options. Enhanced QoS controls, speed on demand, and automated CPE management, including flow-through provisioning and maintenance, are key initiatives that are leading the effort, paired with customer education about DSL and home networking opportunities.

Solid support from the global telecommunications and home networking industry forms one of the most positive elements surrounding *DSLHome*. Twelve leading industry groups currently endorse *DSLHome*. These groups range from very specific home networking solution consortiums to broad telecommunications associations that have active members engaged in rolling out DSL-based home network solutions. These consortiums are assisting *DSLHome* development by providing architecture and consumer requirements. Furthermore, by acting as a voice into related industries these coalitions are now sharing the progress and best practices that will propel the networked home forward.

The organizations supporting the DSL Forum’s work in this sphere are:

- Broadband Content Delivery Forum
- Continental Automated Buildings Association
- Consumer Electronics Association
- European Competitive Telecommunications Association
- HomePlug Powerline Alliance
- Home Phoneline Networking Alliance–*HomePNA*
- International Engineering Consortium
- Internet Home Alliance
- National Telecommunications Cooperative Association
- OPASTCO
- United States Telecom Association
- Wi-Fi Alliance

This cooperation will enhance the *DSLHome* technical work already well underway in the DSL Forum, such as adding routing capabilities to the DSL modem, extending its requirements to a residential gateway router, and addressing interactive wired/wireless connections to other devices and the associated LAN and WAN coordinated installation/management.

To further these opportunities, DSL Forum recently published several TRs to further the DSL industry’s progress for business, residential, and mass-market customers by making it easy for non-technical customers to connect their DSL equipment and to provide the QoS needed to support voice, data, and video applications over DSL. More work in these areas is underway.

Industry interoperability programs drive costs down

Additionally, the cost to provide DSL service has decreased dramatically during the past year, and the costs will continue to shrink. To eliminate costs arising from each network operator’s slightly different version of DSL modem, the DSL Forum has developed a common specification of DSL modems for mass-market customers. The DSL Forum has also developed an Interoperability Program that includes the establishment of Independent Testing Laboratories (ITLs). ITLs are recognized laboratories that administer the DSL Forum testing suites, enabling service providers to outsource and depend on the results of the modem testing and allowing modem vendors to bring new products to market faster. Streamlined testing reduces the cost of introducing new versions of modems and will ultimately help stimulate DSL modem sales through consumer retail channels. To date, the DSL Forum’s ITL program has advanced with the recognition of eight current ITLs, strong progress towards industry accreditation of the ITLs, and expanded interest by service providers.

Besides facilitating interoperability testing, the broadband DSL industry has improved the process of installing DSL at home or at work with a goal of making the procedure as straightforward as plugging in a new telephone, printer, CD, or DVD player. Automation has been added throughout the provisioning process, which reduces both costs and time. Aggressive providers have instituted solutions that allow a customer to order service online and track the entire automated provisioning process right through the self-installation and service activation phase.

The DSL Forum: Facilitating the DSL global explosion

Technical advancements to improve the delivery of DSL service and applications, as well as facilitating new broadband content, are a key focus for the DSL Forum. The success of DSL as a whole relies upon the industry’s cooperation, facilitated by the DSL Forum consortium. Meeting face-to-face quarterly on vari-

ous continents, members hold interim subgroup teleconference working meetings, technology *plugfests*, and Board of Director strategic planning sessions.

Each member company contributes to the work of the DSL Forum through the development of the technology and its effective delivery. They participate in technical and marketing working groups, sharing their knowledge, experience, and expertise to create common agreed protocols, processes, and best practice recommendations for industry use, standards, and related industry bodies. This work takes place at quarterly week-long meetings and through the continuous activity of working groups. These DSL Forum meetings foster sharing knowledge and best practices between members to make DSL the world's primary choice for broadband services.

The DSL Forum also exhibits at key industry tradeshows and is expected to roll out exciting *DSLHome* cooperative network demonstrations at regional tradeshows such as SUPERCOMM'04 and the Consumer Electronics Show in early 2005. In addition the Forum is developing strong advertising to drive user demand worldwide and working with the DSL Forum's liaison organizations to define the WAN/LAN architecture that will support the critical multimedia/multi-device applications in the home.

Through its marketing activities, an extensive, continuous global public and industry education campaign, the DSL Forum also ensures a growing international understanding of the benefits of DSL broadband. A huge market for DSL remains to be served.

Conclusion

DSL is clearly poised for exponential growth in the coming years. With so many of the technical roadblocks resolved, today the cooperation of the DSL industry is focused on enhancements and customized services for the ever-changing needs of the online consumer. Homes and businesses around the world are experiencing greater productivity and enjoyment from the Web. People need broadband connections now more than ever as the way they work, learn, and entertain alters in the face of changing economic conditions and new services coming online. DSL Forum's work is vital in creating a profitable DSL-based mass market for the world's service providers and equipment suppliers.

The results to come and the results to date would not have been possible had not that handful of people voted to band together in the fall of 1994. Because of these people and the support of their companies and others we have been able to create a global standard. This is something that no single company could have done on its own.

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For further information, visit the DSL Forum's SuperDemo at SUPERCOMM June 22-24th at Chicago's McCormick Place, Booth #15040 or contact Tom at:

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