DSL FORUM
Annual Report 2004

2004

PRESIDENT'S NOTE

Fellow DSL Forum Member,

Digital Subscriber Line (DSL) has become the most popular broadband technology in the world with more than 64% of all high-speed connections. DSL meets the need for high-speed remote access to the internet, corporate networks, and a variety of new video, data, and IP voice services, facilitating the best in online lifestyles. Recognized as the voice of the DSL industry, the DSL Forum has set a global target of 500 million DSL subscribers by 2010. In 2005, the Forum will continue to facilitate exemplary broadband DSL growth by advancing new technical developments and expanding the scope of our market education.

Tom Starr
President & Chairperson

Interesting facts:

- Virtually every major telephone company around the globe offers broadband DSL and together they added 24 million subscribers in the first nine months of 2004.
- More than half a million people every week chose DSL, according to industry analyst firm Point Topic.
- The total number of DSL subscribers reached approximately 100 million lines by the end of 2004, which is the most aggressive technology growth curve ever, as we had just celebrated 1 million subscribers in 2000.
- 10% of the world's phone lines today are delivering the very real benefits of the digital society to people in every region.

European Union countries currently make up the largest regional DSL population worldwide, with Asia Pacific close on its heels and North and Latin America steadily gaining subscribers. The ten largest DSL population countries now account for more than 80% of DSL subscribers worldwide. Tim Johnson of Point Topic commented: "This is a classic pattern for the early stages of a dynamic market. We can now see growth rates leveling off as leading countries like South Korea, Taiwan and Hong Kong approach 30% market penetration. But there's another cycle of growth still to come. We'll see new broadband applications beginning to take hold, like voice and video that will drive the next cycle and then, in a year or two, broadband will be going into homes that have no interest in owning PCs or surfing the Internet."

By constantly evolving, DSL is enabling more consumers and businesses to take advantage of new applications and multi-media services made possible by the Internet. In today's emerging network environment, the DSL Forum has worked hard to strengthen DSL's capabilities to align with the new demands for speed, network and application awareness, and to embrace the quality of service differentiators, which prove once again why DSL is the most chosen broadband option in the world.

The DSL Forum, celebrating 10 years of industry service, has always been dedicated to developing the full potential of DSL. In 2004 we accomplished so much:

- Ten Technical Reports (TRs) were produced. These key TRs addressed CPE and network management, VDSL, home networking, the evolved IP-centric network architecture, and interoperability testing for ADSL equipment.
- Two Marketing Reports were approved; DSL Anywhere Reference Guide, which is the Version 2 DSL Anywhere paper providing a compendium of techniques to deliver DSL to everyone, and the ABCs of Home Networking, which provides a basic education to the options for a broadband empowered home network.
- Seven DSL Forum specification based plugfests were held, advancing interoperability of ADSL2 and ADL2plus.
- The DSL Forum's European Logo program was launched as the next stage of the interoperability program, used to indicate that the equipment passed tests done by a recognized independent laboratory (ITL).
- Over 627 positive DSL Forum press stories were carried in 35 countries around the world.

- Thirteen Ambassador presentations were made on behalf of the industry in three different regions.
- DSLHome™ Roadshow was launched; exhibiting all that is exciting about a DSL empowered home network, with appearances at SUPERCOMM and Broadband World Forum-Europe.
- 3 tradeshow exhibits (SUPERCOMM, Broadband WorldForum-Europe and Telecom'04).
- 4 quarterly global subscriber growth announcements produced through our strong partnership with Point Topic.
- 62 new Analyst reports posted to the Analyst Corner.

I am proud of our accomplishments and you should be too. We have many promising opportunities to further our progress and a huge market yet to be served. People need broadband connections now more than ever, as the way they work, learn and entertain themselves changes in the face of changing economic conditions and services coming online. The DSL Forum will continue its efforts to develop the full potential of DSL, and to promote the positive progress that continues to drive DSL to its position as the #1 Broadband Choice in the world.

Tom Starr
President & Chairperson, DSL Forum

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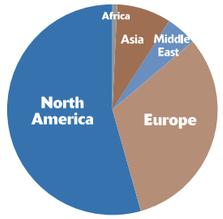
DSL FORUM MEMBERSHIP STATISTICS IN 2004

The DSL Forum is an international non-profit industry association working cooperatively to promote DSL. We have forged a powerful alliance of service providers and companies from virtually every sector of communications, networking and computer industries around the world to focus on developing and promoting end-to-end solutions.

DSL Fourm ended 2004 with 206 members.

Regional Membership	
North America	112
Europe	66
Middle East	10
Asia	17
Africa	1



Industry Segment Breakdown	
Service Providers	30
Vendors	158
Consultant	17
Regulatory Entities	1

DSL FORUM ORGANIZATION

There is tremendous collective expertise in our members and by joining forces to develop a focused strategy, the DSL Forum directs significant resources toward the development of end-to-end solutions.

Membership Classes of the DSL Forum:

Principal Members - $7,500 USD
- Attendance to all annual, general and committee meetings of the Forum
- One vote each on all Forum issues
- Access to all working documents, contributions, technical reports, and meeting minutes
- Eligibility to run for Board of Director and Committee officer positions
- Eligibility to submit Technical Committee and Marketing Committee contributions
- Subscription to all DSL Forum email mailing lists

Small Company Principal Members - $3,500 USD
- All the privileges listed above for a Principal Member
- Note: Small Company Principal Members must have had annual revenues under $10 million USD in the previous year and are required to submit a letter from their CEO stating this

Auditing Members - $2,500 USD
- Attendance to all annual and general (i.e., Summit and Plenary) meetings of the Forum
- Access to all working documents, contributions, technical reports and meeting minutes
- Subscription to all DSL Forum email mailing lists
- Note: Auditing members may NOT attend committee meetings (i.e. Technical and Marketing Working Group meetings) of the Forum and are NOT eligible to submit Technical Committee or Marketing Committee contributions

Associate Members - $500 USD
- Attendance to all annual, general and committee meetings of the Forum (but not eligible to vote)
- Access to all working documents, contributions, technical reports and meeting minutes
- Subscription to all DSL Forum email mailing lists (For non-profit and educational institutions, provides no right to vote, but will have all other rights associated with a Principal membership)
- Note: Associate Members must be non profit or educational institutions. Institutions will be approved for membership annually by a majority vote of the Board of Directors

Barter Members - Entities who provide special services in barter for their membership
- Access to all working documents, contributions, technical reports and meeting minutes
- Subscription to all DSL Forum email mailing lists

BOARD OF DIRECTORS

The Board of Directors, elected at the Annual meeting in March, held a two-day strategy meeting where they discussed the Forum's role in furthering the progress of DSL. It was determined that the very definition of the end-to-end network needed to be extended beyond the modem to encompass all the new devices being deployed within the home and office networks, as well as address the quality of service and speed requirements of the applications that were coming online. A new charter was outlined to address this:

Vision Mass market DSL in every region of the world: 500 M subscribers by 2010

Mission Develop technical specifications and marketing materials that enable the promotion, delivery and support of profitable broadband products and services

Strategy Lead industry stakeholders to develop and adopt technical and marketing tools that drive DSL

President and Chairperson
Tom Starr
SBC

Vice-President, Operations Secretary and Treasurer
David Greggains
Gorham & Partners Ltd

Vice-President, Strategy
Michael Brusca
Verizon Communications

Board Member
Frank Van der Putten
Alcatel

Board Member
Peter LeBlanc
Aware, Inc.

Board Member
Phil Skeba
Intel Corporation

Board Member
George Dobrowski
Conexant

Board Member
Jeri Pitoniak
Samsung Telecommunications America

Board Member
Steve Plume
BT

Board Member
Greg Bathrick
Texas Instruments

Board Member
Steve Kingdom
KTL

Board Sub-Committees

Each year, members elect new officers to the DSL Forum Board of Directors to lead the effort to promote DSL. The DSL Forum Board develops the strategic goals for each year, and provides direction throughout the year to drive initiatives. Each Board member sits on various Board subcommittees to focus on specific areas of Forum management.

Finance & Audit
Chair: Steve Kingdom
Members: David Greggains, Michael Brusca, Phil Skeba

Technical Oversight
Chair: Michael Brusca
Members: Tom Starr, George Dobrowski, Greg Bathrick, Frank Van der Putten
Ex-officio: Gavin Young

Membership & Nomination
Chair: Frank Van der Putten
Members: Peter LeBlanc, Jeri Pitoniak, Steve Plume

Marketing Oversight
Chair: Jeri Pitoniak
Members: Greg Bathrick, Steve Plume
Ex-officio: Jay Fausch

DSL Forum Initiatives

1. Identify appropriate content and applications to support, by aligning with:
   - ISPs and ASPs
   - Consumer Electronics Manufacturers and organizations
2. Build on our end-to-end architecture development considering:
   - Economics in network planning and deployment
   - Support of content and other applications, e.g., "triple play"
   - Leveraging relationships with other standards bodies
   - Common specifications for network evolution
3. Foster the linkage of DSL into the home for:
   - Home Networking
   - Interfaces to appliances
   - CPE functionality
   - Creation of joint deliverables with other industry bodies
4. Broaden the interoperability and qualification:
   - Physical level
   - ATM layer
   - Higher layers

The work of the DSL Forum is performed under two main committees and under the steer of three special advisory committees.

Technical Committee
Chair: Gavin Young, Bulldog Communications
Vice Chair: Frank van der Putten, Alcatel

Marketing Committee
Chair: Jay Fausch, Alcatel
Vice Chair: Vincenzo Gulla, Aethra S.p.A.

Board Advisory Committees
Qualification Oversight Committee, Service Provider Action Council (SPAC), and a new team, the Asian Tiger Team, which provides leadership in evaluating and directing our regional activities in Asia.

TECHNICAL COMMITTEE ACHIEVEMENTS

The **Technical Committee** is divided into a series of subcommittees or Working Groups that focus on specific areas to facilitate and expedite the technical work of the Forum. In 2004 these Working Groups were put in three logical tracks to promote end-to-end solution developments.

Design

- Architecture - led by David Allan, Nortel Networks and David Thorne, BT

Test

- Testing & Interoperability - led by Les Brown, Texas Instruments
- QOC/ITL - led by Andreas Ehre, Cetecom

Operate

- Operations & Network Mangement - led by Peter Adams, BT and Greg Bathrick, Texas Instruments
- AutoConfiguration (DSLHome Tech) - led by George Pitsoulakis, Westell and Greg Bathrick, Texas Instruments

Technical Committee Achievements

2004 saw a major shift in network architecture related work as service providers began to plan for the evolution away from ATM centric architectures towards more IP-centric approaches. The Broadband Remote Access Server became a key policy enforcement point and therefore a major service delivery tool. Requirements for such equipment were specified in some detail. In addition to network developments, customer premises equipment such as DSL residential gateways combined with home networks took a leap forward in 2004. Hence the Forum spent considerable energy on specifying a home networking architecture together with requirements of residential gateways and how they interact with the IAN and WAN. General network management and operations work was largely focused on new high speed DSL technologies such as VDSL and ADSL2. Testing and Interoperability work was also heavily focused on progressing interoperability of these new higher speed DSL technologies.

See page 12 for summary of the TRs produced in 2004.

As we look forward to progress in 2005, work continues in a number of key areas:

Architecture Working Group focus:

Many service providers are now at the stage where they are seriously looking at delivering video over DSL to bring triple play bundles to consumers. Subsequently new work will specifically examine how to deliver video over DSL. There are many architectural and physical layer considerations that make this far more challenging than delivering Internet access and so we need to work together to share experience in this area in order to ensure DSL becomes the wireline platform of choice for interactive video. In order to deliver such service bundles cost-effectively, many service providers are seeking to evolve their networks from using ATM over SDH/Sonet towards Gigabit Ethernet. This will cause many profound challenges and changes such as how best to deal with security, OAM, traffic management, subscriber identification QoS and multicast.

DSLHome Technical Working Group focus:

Bundling services over DSL requires more sophisticated Customer Premises Equipment (CPE) than the simple modems or routers just used for Internet access. Hence the DSL Home Technical Working Group will be examining the requirements of CPE needed to deliver voice and data. They will also be looking at how such equipment can be remotely configured and managed.

Operations & Network Management Working Group focus:

Test and diagnostics for these Next Generation multi-service DSL networks will require new approaches. There is a need to review test and diagnostics functionality because QoS controlled multiple services may need improved performance monitoring for sectionalisation.

Testing & Interoperability Working Group focus:

Triple play service bundles and video will also drive the need for even higher speeds. Thus the Testing & Interoperability Working Group is heavily focused on completing functionality and performance test plans for ADSL2plus and progressing plugfests for this technology. As this ADSL2plus work matures throughout the year it is hoped that similar activity on VDSL2 may be ramped up towards the end of 2005 (when physical layer standards for VDSL2 should have been approved and understood).

Finally, in all we do, we need to ensure that our work compliments that of other key industry bodies such as the DLNA, UPnP Forum and BCD Forum and that we continue to promote our technical reports to ensure global adoption, establishing the common platform to build DSL broadband success.

Gavin Young
Technical Chair

MARKETING COMMITTEE ACHIEVEMENTS

DSL Forum **Marketing Committee** work is accomplished through the efforts of five member-led Working Groups as well as through our Marketing Director and PR teams located in London and Chicago. Forum marketing activities focus on developing and delivering promotional, educational and PR programs which create a supportive environment for DSL deployment and adoption among service provider, end-user, and public policy constituents.

Following is the Marketing Committee Working Group structure at the end of 2004:

- Strategic Communications- led by Rich Wonders, BellSouth
- European Market Focus Group- led by Vincenzo Gulla, Aethra and Steve Plume, BT
- Summits & Best Practices- led by Peter Leblanc, Aware, and Lisa Garza, Cisco
- DSLHome™ Marketing Group- led by Brian Powers, Westell, and David Glazner, Verizon
- Ambassadors- led by Alan White, Samsung, and Yue Chen, Juniper

Marketing and Public Relations support was provided by:

Marketing Director
Laurie Gonzalez
DSL Forum
Phone: +1.770.761.9300
Mobile Phone: +1.404.502.8961

North/South America PR Representative
Kristi Kosloske
Hot Off the Presses PR
Phone: +1.773.755.2012

European PR Representative
Carol Friend
Pielle Consulting
Phone: +44 (0) 20.7323.1587

Marketing Committee Achievements

2004 was a banner year for the DSL Forum's Marketing Committee. We embarked upon the multi-event DSLHome™ Roadshow tour, with stops at SUPERCOMM in Chicago and the IEC's Broadband WorldForum Europe in Venice. We published our first two official Marketing Reports, MR-001, aka DSL Anywhere white paper, Release 2.0, and MR-002, aka ABCs of Home Networking. We continued our PR juggernaut, conducting 134 interviews and issuing 25 press releases, garnering 627 pieces of coverage in 35 countries during the year. We kicked-off a rejuvenated Ambassador Working Group, and continued to organize and deliver key educational and best-practice sharing sessions at each and every one of our face-to-face meetings during the year. We also initiated planning for a potentially significant DSL advertising campaign and made great progress in the European Market Focus Group.

Key Marketing accomplishments during the year include:

- The **Strategic Communications** efforts were focused on developing a stronger DSL value proposition, and addressing the competitive challenges in North America, the only region in the world where DSL is not the dominant form of broadband access. A great deal of effort during 2004 was put into developing a proposal for a mass media advertising campaign highlighting the benefits of broadband DSL, and 2005 will be the year where we attempt to obtain the required funding and implement the campaign.
- The **European Market Focus Group** efforts during 2004 were focused on regional broadband drivers, issues, and opportunities unique to Europe. From hosting an enlightening regulatory panel to delving into rural deployment strategies and country differentiators, the group provided a good platform for those interested in the European market to get a clearer sense of the drivers and inhibitors in the European market.
- **Summit and Best Practices/Birds of a Feather program**
  The Summit program was revamped to a half-day format twice a year, and a keynote at alternating meetings, freeing up important time for working group activities, and it continues to focus on issues critical to the day.

2004 Summit and Birds of a Feather (BoF) Session Line-up and Attendance:

- *Birds of a Feather (BoF) Session* - DSL Anywhere White paper, "During the time of the BOF"

Brussels (228 attendees)

- *Circle of Excellence Award* - Tom Anschutz, BellSouth Communications

Toronto (235 attendees)

Keynote Address:

- Evolving to a World of IP™:
  Eugene Roman, Group President Bell Canada Systems and Technology
- Customer Care and e-Care Best Practices:
  Neil Nolan, IBM
  Bill Bradley, Omega Management Group
  Mike Desmarais, SQM Group

MARKETING COMMITTEE ACHIEVEMENTS - *continued*

- Customer Care Solutions:
  John Stephens, Netopia
  Sanjay Castelino, Motive Communications
  James Morehead, SupportSoft

Prague (185 attendees)

- *Birds of a Feather (BoF) Session* - DLNA (DHWG) Home Network Guideline Overview
- *Circle of Excellence Award* - Heather Kirksey, Motive

Orlando (263 attendees)

Keynote Address:

- Asian Application and Service Drivers:
  Dr. Sachio Semmoto, President eAccess Ltd.
- Latin America Market Service Provider Plans for Applications and Services:
  Yon Moreira, Executive VP BrasilTelecom
  Ronaldo Varela, Senior Director Telefonica Brasil
  Dennis Burke, Senior Analyst Pyramid Research
- President's Panel:
  Hans Erhard Reiter – Achieving the First Million DSL Subscribers
  Bill Rodey – Scaling DSL for the Mass Market
  Tom Starr – Moving Beyond 100 Million
- *Circle of Excellence Award* – Alan White, Samsung

- The **DSLHome-Marketing Working Group** was primarily focused on DSLHome Roadshow activities in 2004, with major events at SUPERCOMM in Chicago and Broadband WorldForum in Venice. In addition, the group made great progress on key DSL enablers such as home networking, launching the "DSL Home" initiative to develop user education, and issuing a key "how to" document, "The ABCs of Home Networking."
- The **Ambassador** program was relaunched late in 2004, with new qualifications and classes of Ambassadors. Two new overview presentations have already been developed by the group, and a variety of new Forum presentations were developed earlier in the year by the DSL Forum Marketing Committee focused on video over DSL, DSL Anywhere, and regional market drivers.
- The **Service Provider Action Council** was reinvigorated with new leadership, and provided a platform for Service Providers to have a cohesive voice into the Forum. New work surrounding Service Provider architecture requirements, and addressing peer-to-peer traffic were key topics for the meetings.

Marketing Communications

Public Relations

One of our most active and valuable communication tools during 2004 was our Public Relations team. Spreading the positive stories and technology/deployment advancements was a critical goal of the DSL Forum in 2004, and the PR team excelled in delivery. Our association with Point Topic allowed us to establish the DSL Forum as the "source" for DSL subscriber figures, giving us an excellent international media/PR opportunity every quarter of the year. We promoted the Forum's various technical accomplishments and the launch of the DSLHome campaign throughout the year with great coverage results. Here are the highlights:

	Americas	Europe/Asia	2004 Coverage Totals
Coverage	391	236	627
Bylines	9	7	16
Interviews	119	15	134
Press Releases	11	14	25
% End user Pubs	48%	39%	43%
% Trade Pubs	52%	61%	57%
Countries hit	6	29	35
Analyst Report Add.	51	7	58

MARKETING COMMITTEE ACHIEVEMENTS - *continued*

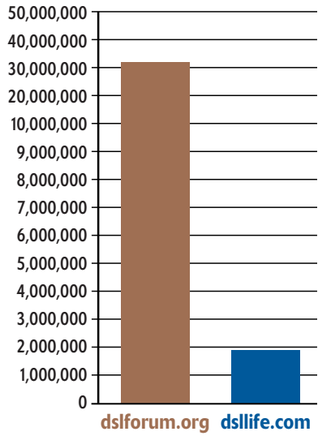
Tradeshows

The DSL Forum participated in three major tradeshow/conferences in 2004: SUPERCOMM, Broadband WorldForum-Europe, and USTA Telecom'04. Our DSLHome™ Roadshow garnered tremendous positive industry and press attention at SUPERCOMM and Broadband WorldForum-Europe, and we established relationships at these events which generated seven new Forum members. We attended Telecom'04 with an information booth, and hosted a series of one-on-one interviews that also led to strong media coverage.

The Forum also hosted an informal meeting space at the Broadband WorldForum Asia conference. We presented in the conference program as well. This provided a simple platform to reach out to key industry leaders in the APAC region, and begin to better understand how the Forum could deliver value to industry players in the region, and how the progressive Asian leaders could help strengthen the Forum's work moving forward.

Websites

AVERAGE MONTHLY HITS



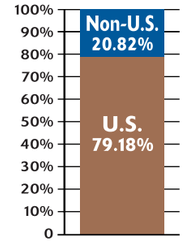
www.DSLForum.org

The appearance and functionality of the DSLForum.org site went through a significant update in 2004. Removing flash and freeing up space for new content, the front page became a valuable destination page for approximately 32,096,012 visitors in 2004.

www.DSLLife.com

The consumer based website of the DSL Forum continues to provide an educational resource for consumers interested in understanding and getting the most out of DSL. With nearly 1,935,330 hits in 2004, DSLLife.com is focused on bringing the most up to date DSL information to the end-user community.

AVERAGE MONTHLY INTERNATIONAL HITS



The DSL Forum has made great strides towards helping to make DSL service widely available, easy to acquire, and simple to activate and use. DSL is clearly taking root around the world. With intense competition from other broadband technologies, the upcoming year will be a critical time for the DSL Forum's marketing efforts to take center stage.

Jay Fausch

Marketing Committee Chairman

Financial Report Progress

Due to financial irregularities found during the audit, the report has been delayed subject to further investigation.

DSL FORUM POSITION & OUTLOOK FOR 2005

Looking forward to 2005, the DSL Forum will build on its specifications for an IP-based network architecture and DSLHome™ to enable new applications and services that promise to increase the value of DSL. This will directly address the industry-wide interest in triple-play service via DSL. A key enabler for this is higher access speed via ADSL2plus and VDSL2. The DSL Forum must step up its work to address management and interoperability for these higher speed DSL technologies.

An ever-increasing number of standardization bodies and industry organizations are turning to our work as a basis for standards and continued initiative development, such as the DSLHome cooperative effort. The DSL Forum must strengthen our relationships with many of these key organizations to expedite the adoption of DSL across the industry.

Current Liaisons include:

ATM Forum	IEEE
BCD Forum/SCC	IETF
DLNA	ITU
ETSI	ATIS
UPnP Forum	TIA

DSLHome endorsing organizations:

BCD Forum/SCC
CABA
CEA
ECTA
HomePlug Powerline Alliance
HomePNA
International Engineering Consortium
Internet Home Alliance
NTCA
OPASTCO
USTA

It is clear that DSL is in transition from a "fast Internet" service to a "triple-play" service in every region of the world. More robust interactive broadband is not far behind and the work of the Forum this year will bring that quickly to fruition.

Only with the help of our diverse global membership base, can we accomplish these goals. We strive to not only come up with solutions but also to continuously encourage recommendation adoption and industry support.

It is clear that there are numerous challenges ahead that provide opportunities for members to get involved. We have actively positioned the DSL Forum as a key driver of DSL technical advancements, and market awareness. In parallel, we ensure that all stakeholders in this industry, as well as regulators, analysts and media, are kept well informed on what is going on in the DSL world in an unbiased and professional way.

Setting the bar high and exceeding expectations of DSL among stakeholders and end users around the world are the governing factors to everything we do. Our goal of 500 million subscribers by year-end 2010 is central to all our decisions and initiatives that we will rollout in 2005. And with a combined technical and marketing effort at the DSL Forum, we are making great strides towards creating a shared platform of excellence to support this goal.

CONCLUSION

The DSL Forum Board of Directors would like to take this opportunity to thank the delegates of our member companies for their continued contributions to the successful work of the Forum and for their efforts in advancing DSL. We also thank them for their confidence in our officers and chairpersons. 2004 was a year of which the Forum and its members can take significat pride.

The DSL Forum has performed its tasks and duties in a professional and cooperative spirit in 2004. Its Officers have made every effort to manage the Forum in the best interests of its members.

Therefore, the Board of Directors proposes to the members present at the Annual Meeting to accept this Annual Report.

Tom Starr
President & Chairperson

Michael Brusca
Vice President, Stategy

David Greggains
Vice President, Operations

PRINCIPAL CLASS

2Wire
3Com Corporation
Acterna
Actiontec Electronics
ADTRAN
Advanced Digital Broadcast
Aethra
Agere Systems
Agilent Technologies
AIMS (INT) Ltd
Alcatel
Allot Communications
Analog Devices
AVM
ATMEL
Aware
Be Connected Ltd.
Bel Fuse
Belgacom
Belkin
Bell Canada
BellSouth Telecommunications
Bridgewater Systems
Broadcom
BT
Bulldog Communications
Calix Networks
Camiant, Inc.
Casero, Inc.
Caspian Networks
Celite Systems
Centillium Communications
CETECOM ICT Services
Chunghwa Telecom Labs
Ciena
Cisco Systems
Comtest Networks
Comtrend
Conexant
Consultronics
Coppergate Communications
Copper Mountain Networks
CoSine Communications
Covad Communications
Core Networks
Critical Telecom
D-Link
Deutsche Telekom
EANTC AG
Earthlink
East by North
ECI Telecom
Electriphy
Elisa Communications
Ellacoya Networks
Entrisphere
Ericsson
Excelsus Technologies
Foxconn
France Telecom
Fraunhofer-ESK
Freescale Semiconductor
Fujitsu
Gemtek Technology
Gorham & Partners, Ltd.
Hellenic Telecommunications Organization
Huawei Technologies
i3 micro technology
Ikanos Communications
Incognito Software
Infineon Technologies
Intel
ITRI
Juniper Networks
KTL
L.E.A.
Lattelekom SIA
Laurel Networks
LSI Logic
Lucent Technologies
Marconi Communications
MCI
Microsoft Corporation
Mindspeed Technologies
Motive
National Technical Systems
NEC
Net.com
Net to Net Technologies
Netopia
Nexans
Nokia
Nortel Networks
Occam Networks
Operax AB
Paradyne
P-Cube
Pedestal Networks
Phase Seven Laboratories, Inc.
PMC Sierra, Ltd.
Quante AG
Qwest Communications
Real Communications
Redback Networks
Samsung
Sandvine
SBC
Schmid Telecommunication
SeaChange International
SercoNet, Inc.
Siemens
SMC Networks
Sparnex
Spirent Communications
Sprint
STMicroelectronics
Sumitomo Electric Industries
SupportSoft
Symmetricom
TAZZ Networks
Telcordia Technologies
TDC A/S
Telecom Italia
Teledata Networks
Telefonica Investigacion y Desarrollo
Telekom Austria
Telekomunikacja Polska S.A.
Telenor
TeliaSonera AB
Telindus
Tellabs
TELUS Communications Inc.
Teradyne Inc.
Texas Instruments
Thomson
TietoEnator
Tollgrade Communications
Toshiba Corporation
Tracespan Communications
TrendChip Technologies Corp.
UTStarcom
Verizon
V-Tech Innovations
Westell
Wilcom
Wintegra
Zeugma Systems, Inc.
ZTE Corporation

AUDITING CLASS

ADC Telecommunications
Alpha Networks Inc.
Aeta.com
Arcadyan Technology Corp
Askey Computer
Broadxent
Carrier Access Corporation
Celsian Technologies
Cincinnati Bell Telephone
Conklin-Intracom
Communications Test Design
CyberTAN Technology
E & E Magnetic Products Limited
Etisalat
Flextronics
HyperEdge
Intermate A/S
Inventel
Iskratel
Jungo Software Technologies
Keymile
KT Corporation
Linksys
Matav
Metalink
Netgear
Pirelli
Realtek Semiconductors
Sagem Group
SELTA SpA
Silicon & Software Systems
SmartLink Technologies
Sphairon Access Systems GmbH
Sprint Canada
Sunrise Telecom Incorporated
SupraTelecommunications &
Information Services, Inc.
Taicom International Inc.
Teldat
TNO Telecom
Telsey S.p.A.
TelStrat
Verilink
Vogt electronics AG
XAVi Technologies Corporation
Yahoo

ASSOCIATE CLASS

Communication Authority
Copper Development Assoc.
eCommerce Innovation Centre
Forschungszentrum Telekommunikation Wien - FTW
Georgia Tech Broadband Institute
Ghent University
International Engineering Consortium - IEC
Instituto de Telecomunicacoes
National Telecommunications Cooperative Association - NTCA
OPASTCO
Point Topic
Stanford University
University of New Hampshire

COMPLETE LISTING OF TECHNICAL REPORTS BY APPROVAL QUARTER

by Burssels, Belgium (March 1-4, 2004)

TR-065	Operations & Network Management	FS-VDSL EMS to NMS Interface Functional Requirements
TR-066	Operations & Network Management	ADSL Network Element Management (Update to TR-005)

by Toronto, Canada (May 17-20, 2004)

TR-064	DSLHome -Technical	LAN Side DSL CPE Configuration Specification
TR-067	Testing & Interoperability	ADSL Interoperability Test Plan (Formerly TR-048)
TR-068:	DSLHome -Technical	Dual Port ADSL Router Requirements Specification
TR-069:	DSLHome -Technical	CPE WAN Management Protocol
TR-070:	Operations & Network Management	SCM Specific Management Objects in VDSL Network Elements

by Prague, Czech Republic (August 16-19, 2004)

TR-092:	Architecture & Transport	Broadband Remote Access Server (B-RAS) Requirements Document
TR-094:	Architecture & Transports and DSLHome-Tech	Multi-Service Delivery Framework for Home Networks

by Orlando, Florida (December 6-9, 2004)

TR-090:	Operations & Network Management	Protocol Independent Object Model for Managing Next Generation ADSL Technologies

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