Top photo: The Calix C7 simplified services platform snaps into existing networks.

TeleSoft NEWS

TELECOM DATACOM INTERNET

A WORD FROM THE FIRM

To kick off the new year, we are delighted to invest in Calix, a later stage company that has developed a next-generation carrier access platform. Calix has already announced 50+ independent and smaller carrier customers (including AllTel and CenturyTel). Calix closed a $50 million round of financing led by TeleSoft Partners, Azure Capital, Integral Partners, Kinetic Ventures, Meritech, and Redpoint Ventures. The stellar management team includes Carl Russo (ex-Cerent, Xircom), Mike Hatfield (ex-Cerent, AFC), and Michael Ashby (ex-Cerent, Ascend).

Congratulations also to Aarohi, BayPackets, and CreekPath on raising financings from Intel, InvescoCorp/TLV, and NEA. All three companies are continuing to gain traction.

On the TeleSoft conference call earlier this week and at the annual meeting, we shared our perspective on key demand and supply side drivers covering:

- **Carrier Capital Spending**: fundamentally huge in aggregate; potential regulatory changes to restimulate RBOC broadband investments; plus key new technologies like WiFi.
- **Enterprise IT Spending**: largely stagnant in 2003, but will need to invest in 2004 to avoid obsolescence; currently enterprises are investing in storage management and security.
- **Ramifications on Equipment Suppliers and the Supply Chain**: cuts in headcount and development programs will lead to large product gaps at established vendors.

We expect another two years of further tough rationalization, from late 2002–late 2004, before there is a potential uptick in late 2004–early 2005. We do not see much liquidity through M&A or IPOs until demand and capital markets recover. Although things are down currently, the chairman of the FCC has publicly announced support for regulatory changes to the 1996 Telecom Act. Communications and IT continue to be critical for the overall global economy, and startup teams, business plans, and valuations have become more realistic.

Overall, we are swamped and remain focused on the core business—including internal initiatives on sourcing solid new investments, portfolio business development, and knowledge management. TeleSoft celebrated its sixth anniversary in October 2002—venture capital is a long-term asset class, and we continue to be humbled by the challenges and remain excited about our prospects!

Arjun Gupta



Calix's executive team: Carl Russo, Mike Hatfield, and Michael Ashby.

FIRST QUARTER 2003

IN THIS ISSUE

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From the Front Lines

Telecom Carrier Scenarios: Herding Cats

The telecommunications industry in North America is at a crossroads. After extraordinary growth in the late 1990s, the past two years have been challenging for the telecommunications industry and its infrastructure suppliers who have faced restructuring, bankruptcies, slashed capital expenditures, and plummeting valuations. Industry analysts are trying to make sense of the current situation and establish a view of what the next several years could look like. A key determinate of the industry's future health can be associated with the status of telecommunications service providers. The revival of carrier financial stability and capital spending are topics that will be debated through the next year and beyond. This issue of From the Front Lines provides a scenario perspective on telecom service providers and leverages information presented by industry consultant RHK at its most recent STARTRAX conference.

Framing the issues

To establish the parameters for evaluating potential scenarios that could represent the next phase for the telecom industry in North America, RHK and consultant Lawrence Wilkinson of Global Business Network met with a number of telecom executives to collect and evaluate information on the issues facing the industry. The parameters established for evaluating the service provider industry directions were summarized into two axes. One axis represented demand for services or carrier revenue opportunities. The other axis represented service provider barriers to entry as a proxy for describing the competitive environment. In each of the quadrants, RHK created a description of the characteristics of the service providers operating in these potential environments. (See figure 1.)

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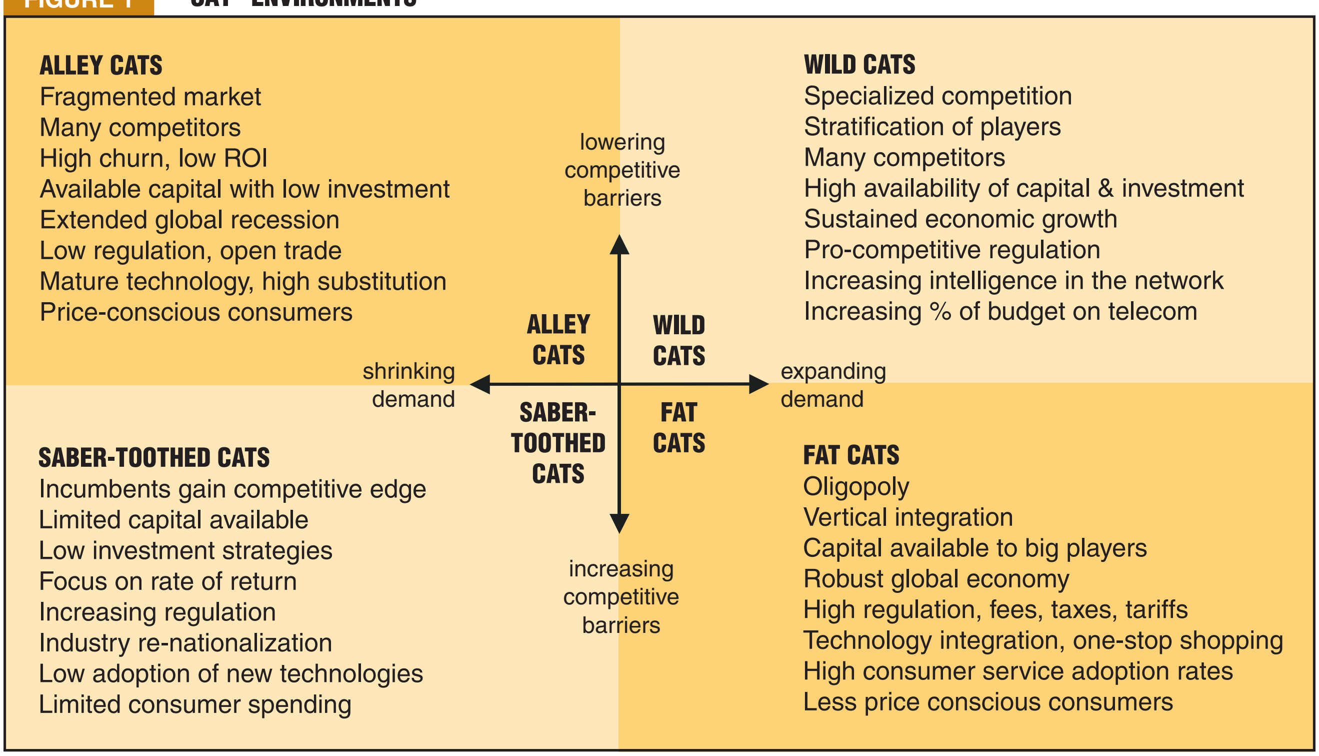
FIGURE 1 **"CAT" ENVIRONMENTS**



SOURCE: RHK

From the Front Lines

Telecom Carrier Scenarios: Herding Cats

In the "wild cat" environment, service demand is strong with business and technical innovation developing rapidly. Competition is rabid among several agile players who try to leapfrog each other. Carriers invest in technology for disruptive advantage.

The environment for carriers in the boom of the late '90s can be described as wild cats. The demand for broadband services, Internet connectivity, new business connection growth, and emerging wireless connectivity expanded overall service demand. Changes in telecom regulation , high availability of capital, and technology innovation created an environment charged with a number of new and incumbent carriers. These elements led to an attractive investment environment where consumers were willing to try increasingly affordable new services from service providers. New and incumbent service providers invested in infrastructure to meet demand plus stay ahead of competition. However, this environment proved to be unsustainable as the economy slowed, service supply moved past demand, and competitive barriers increased.

Service demand

The economic recession in North America and fallout from the Internet "bubble" economy are key reasons the telecom industry has been in a depression. Leon Levy of Oppenheimer Funds pointed out in *Forbes* magazine that the current economy in general is one in which "nothing is in short supply." That means pressure on pricing and profits is expected to continue for the foreseeable future. This is particularly true for the telecommunications service providers in the long-distance market, where an abundance of fiber optic capacity exists along with customers that are looking for ways to curtail or cut operational expenses.

"NOTHING IS IN SHORT SUPPLY."
—LEON LEVY
OF OPPENHEIMER FUNDS

However, local carriers also have had sluggish financial performance. Both Verizon and SBC report fourth quarter revenue growth around 1 percent over the prior year, and Qwest reported a 6 percent drop in fourth quarter revenues. Businesses closing up shop or tightening budgets had a negative effect on revenue growth. In addition, local service providers have seen wireless phones, residential cable connections, and competitive carriers replace secondary and primary landlines.

The last point, competitive carrier displacement, is the most controversial. The RBOCs are presenting arguments to regulatory and legislative bodies that allowing competitors to lease unbundled network element platforms (UNE-Ps), as outlined in the 1996 Telecom Act, is resulting in depressed financial returns due to loss of lines and lease pricing that is too low. While competitive carriers have made inroads to local competition, FCC findings show that incumbent carriers still control 89 percent of the nation's access lines.

Shrinking service provider revenue growth changed the environment from "wild cats" to one more like "alley cats." In this environment, customers have slowed the adoption of news services, and commodity pricing is more prevalent than value-added pricing. Customer churn is high, and margins are low. The alley cat environment for service providers is one of hyper-competition as carriers fight for shrinking customer demand (see figure 2, "Current Demand Trend"). Investment is limited and focused on defensive measures to become lean and agile.

Without the return of revenue

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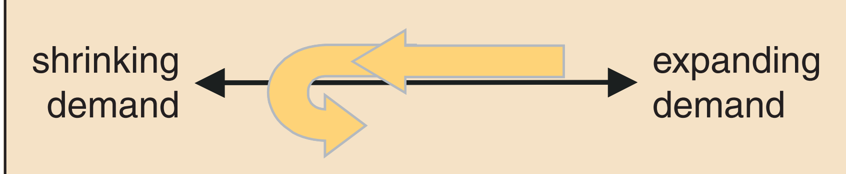
FIGURE 2 **CURRENT DEMAND TREND**



From the Front Lines

Telecom Carrier Scenarios: Herding Cats

FIGURE 3 SAMPLE OF CARRIERS FILING FOR CHAPTER 11 BANKRUPTCY PROTECTION

Carrier	Filed	Emerged	Comments
360 Networks	Jun ’01	Nov ’02	Facilites based CLEC
Covad	Aug ’01	Dec ’01	$1.4B debt reduction
Genuity	Nov ’02	Sold	Assets sold to Level3 for $242M
Global Crossing	Jan ’02	Sold	Majority interest purchased for $750M
ICG Communications	Nov ’00	May ’02	$2.5B debt reduction
McLeodUSA	Jan ’02	May ’02	$3B debt reduction
NorthPoint	Jan ’01	Sold	Sold to AT&T for $135M
Rhythms	Aug ’01	Sold	Sold to WorldCom for $32M
Teleglobe	May ’02	Sold	Sold to Cerberus Capital Mgmt for $155M
Teligent	May ’01	Sep ’02	$1.65B in debt at filing
USinternetworking	Jan ’02	May ’02	Merged with Interpath
Velocita	Jun ’02	Sold	Sold to AT&T for $37M
Williams Communications	Apr ’02	Oct ’02	Now WilTel
WorldCom	Jul ’02	1Q03 tgt	~$40B in debt
XO Communications	Jun ’02	Dec ’02	$5B debt reduction
Yipes	Mar ’02	Jul ’02	Facilites based CLEC

SOURCE: TELEPHONY, NETWORKWORLD, BANKRUPTCYDATA.COM, COMPANY WEB SITES, NEWSWIRE

growth, this is an unstable environment. There is pressure to reduce the number of service providers since there is insufficient demand to support hyper-competition between large numbers of carriers. As witnessed by the number of service provider bankruptcies over the last twenty-four months, industry pressure is reducing competition and increasing barriers to entry for new carriers. (Figure 3 offers a sample of carriers filing for Chapter 11 bankruptcy protection.)

The seeds of renewed growth exist, but it may take time for this growth to have a positive impact on service provider financials. Data traffic continues to grow at more than 50 percent per year although pricing continues to be under pressure. The emergence of usage-based pricing (such as tiered pricing for DSL and cable modem services), plus application- or priority-based pricing could enhance carrier data revenue growth. Wireless services continue to expand. While the cellular voice market is maturing, the wireless data service market and investments in WiFi are growing. In addition, the reach of broadband services continues to increase. According to the DSL Forum, since the beginning of 2002, cable has grown its subscriber base by more than 40 percent, while DSL carriers have seen 25 percent growth. As a result, there are approximately 16 million broadband users in the United States, representing only 12–15 percent of total households. Currently, legislative and regulatory bodies are discussing action to attempt to invigorate service demand and investment.

Competitive barriers

At the “low-barrier” end of the competitive scale, free market and open competition are the primary industry forces. Regulation is restrained, and there is a high availability of capital for new service provider ventures. At the “high-barrier” end of the scale, there are fewer providers, and monopolies or oligopolies are the primary industry forces. The market is more controlled and more organized with regulation having a strong influence. Capital is relatively tight

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From the Front Lines

Telecom Carrier Scenarios: Herding Cats

for new ventures. (See figure 4, "Current Competitive Barrier Trend.")

The Telecom Act of 1996 lowered competitive barriers seeking to end the local phone monopolies and introduce competition. The thrust of the legislation was to increase competition by lowering tariffs and providing more choices for customers. The act was successful in generating a flood of new service providers. However, recession and heavy debt (generated by service providers' financing of infrastructure build-outs) have reversed the growth of new carriers. An exception to the reduction in number of new competitors is the entry of RBOCs into the long-distance market.

RBOCs have gained the ability to offer long-distance service in more than thirty-five states. Verizon announced that it has displaced Sprint as the nation's number three long-distance carrier. This is difficult news for the incumbent long-distance carriers which were hoping for pricing stability to prop up weakened financials. Long-distance carriers were looking to expand into the local market in order to survive long-distance pricing pressure, but they only control a limited percentage of local access lines despite growing steadily in 2002.

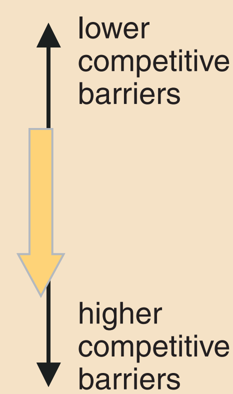
While WDM technology allowed the number of long-distance carriers to increase, regulation mandating the leasing of incumbent RBOC facilities (called unbundled network elements or UNEs) at wholesale prices allowed for new local competitors to enter market. Those regulations are now under attack by the RBOCs and the FCC. RBOCs argue that mandatory leasing of facilities is financially damaging and reduces the incentive for investment in network facilities, both by RBOCs and competing carriers. The FCC is backing this view with a shift in policy that focuses more on increasing network investment and less on increasing competition or lowering prices. In February 2003, the FCC is set to review these regulations, but it is expected to face resistance from Congress, competitive carriers, and states that do not want to lose the ability to influence local pricing.

Eliminating UNE pricing may or may not increase network investment, but it will increase competitive barriers to entry into local services. With limited access to capital, competitive carriers will be hard pressed to finance the build-out of their own new networks rather than utilizing incumbent facilities. While the long-distance carriers appear to be fighting it out in an alley cat environment, higher barriers to entry would push competitive local carriers into the "saber-tooth cat" environment.

Carriers in the saber-tooth cat scenario (shrinking demand and increasing barriers to entry) are focused on survival. The focus is on milking existing infrastructure and not on investment—other than for cost reduction. Consolidation of distressed assets is likely, as well as potential cross-industry investment of telecom assets. Competing carriers and infrastructure players may retreat to specialized markets and forego converged technology/business strategies (e.g., AT&T and Nortel shedding business units).

FIGURE 4

CURRENT COMPETITIVE BARRIER TREND



After several potentially gloomy periods of transitioning through the alley cat and saber-tooth cat environments, it seems plausible that fewer larger players will emerge. The environment for "fat cat" service providers is one in which there is increasing demand for services, but only a few dominant players. The fortunate surviving carriers represent an oligopoly, where profits and pricing are steady relative to other scenarios. Hence, money is available for investment in new services and infrastructure. However, investment is tied to long-term plan-

CONTINUED ON PAGE 6

ning and return metrics. In the fat cat environment, scale wins, and therefore, investment is focused on consolidation, integration, and expansion. Service providers may even look to merge with content providers and expand into adjacent territories.

Catastrophe?

None of these potential scenarios for carriers represent a definite future. The signs for each scenario are present today, and industry events will have the effect of pushing service providers to one or more of these quadrants. The successful introduction of a disruptive technology can change the industry dynamics to wild cats. The introduction of WDM in the late '90s contributed to increased demand for bandwidth and lowered barriers to entry. A technology could spark increased customer demand for bandwidth, quality of service, or converged voice and data applications. Another push toward the wild cat scenario could be created by massive support by government or industry to increase service adoption. Industry support of WiFi technology and subsidized build-outs of broadband access have the potential to change the demand characteristics in the service providers market. (See figure 5.)

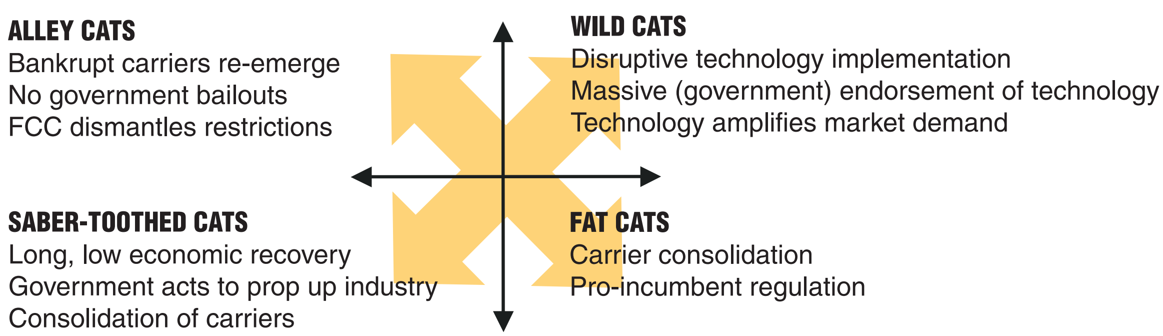
Bankrupt carriers reentering the market while service demand remains weak would prolong the alley cat environment. Government and regulatory actions that encourage competitive markets (cable, local, long-distance, wireless, content) to compete primarily on price will make it difficult for service providers to generate the revenue growth to emerge from this environment.

A long, slow economic recovery period would extend the saber-tooth cat period in which service providers are just trying to survive. Government stimulation of demand (e.g., broadband to every home initiatives) could nudge the industry out of the saber-tooth cat environment, as well as the consolidation of carriers to allow a few to renew revenue growth.

Is this all a catastrophe for telecom systems and software vendors? While a wild cat environment presents the most attractive background for new ventures, emerging infrastructure vendors can survive in other scenarios by focusing on the new needs of the carriers. Fat cat service providers look for solutions that assist on scaling and integrating operations. Saber-tooth cats look for the lowest cost solution and expertise within a specific market niche. Alley cats need solutions to reduce cost and increase operational efficiency. Suppliers in a wild cat environment survive on leapfrog technology and quick time-to-market solutions.

With the uncertainty that exists today, the next year is likely to be similar or potentially more difficult than 2002. The best we can do, in the meantime, is to look for signs of which way these "cats" will stray.

FIGURE 5



Portfolio News

AmberWave
www.AmberWave.com

- AmberWave and Mitsubishi form strategic alliance to introduce strained silicon to Japanese semiconductor manufacturers (1/6/03).
- *Semiconductor Business News* reports that AmberWave's strained silicon technology is ready (12/6/02).
- AmberWave appoints Richard Crisp as vice president of sales (10/28/02).

BayPackets
www.BayPackets.com

- BayPackets delivers enhanced voice applications to accelerate voice-over-cable deployments (9/30/02).

Calient Networks
www.calient.net

- Calient receives prestigious 2002 R&D 100 Award (10/14/02).

CoSine Communications
www.cosinecom.com

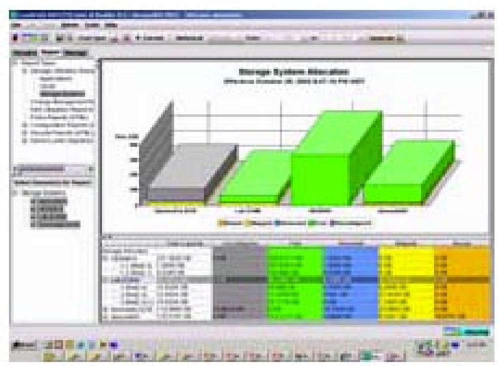
- Cybera selects CoSine to power the first IP service portfolio based solely on virtual routing (11/4/02).
- KDDI picks CoSine to power network-based security services (10/28/02).
- CoSine announces third quarter results (10/23/02).

The TeleSoft team at its 5th Annual LP Meeting.

- CoSine's IPSX product family is awarded Firewall Certification from ICSA Labs (10/14/02).
- CoSine trims costs by $4 million to $5 million per quarter as part of program to focus on large customers (10/1/02).

CreekPath Systems
www.creekpath.com

- CreekPath named "Emerging Software Management Company of the Year" at Server I/O Conference (1/22/03).
- CreekPath announces full support of brocade fabric access API for safe-automation of heterogeneous networked storage environments (11/25/02).
- CreekPath appoints Dennis J. Grant as chief executive officer (11/12/02).



CreekPath Systems' Application Intelligent Management (AIM) Suite.

- CreekPath delivers new release of the CreekPath AIM™ Suite—industry's first integrated storage resource management solution (11/12/02).
- CreekPath closes oversubscribed Series B financing; secures more than $16 million (11/5/02).

Portfolio News

The FeedRoom
www.feedroom.com

- FeedRoom holds its top five ranking among all streamers in Accustream's iBroadcast streaming report (12/02).
- FeedRoom launches five new weekly "features" newsletters to complement the daily news Video Alert (12/02).
- @d:Tech 2002 awards Best Branding Campaign to the Miramax FeedRoom (11/19/02).
- FeedRoom CEO Jonathan Klein is named one of the "Most Influential People in Streaming" (10/03/02).
- FeedRoom is nominated for Best Media/Portal Site by Massachusetts Interactive Media Council (10/03/02).

Ikanos Communications
www.ikanos.com

- Nokia, Ikanos, ZyXEL, and Hyundai Networks partner to deliver interoperable VDSL-DMT systems (12/4/02).
- Ikanos, Stanford University, Sequoia Captial, Walden International, and Greylock Partners sponsor second annual "Finding Gold in Copper" Conference (11/11/02).
- Ikanos introduces world's first single chipset to support VDSL-DMT, ADSL-DMT, and EFM with on-chip QoS (10/28/02).
- VDSL Systems selects Ikanos' VDSL-DMT chipsets to power its new-generation products for business and remote terminal applications (10/7/02).
- Ikanos appoints Peter Hansen as vice president of sales and Joshua Rom as vice president of operations to complete the executive management team and gear up for volume shipment (10/7/02).

Ikanos's SmartLeap broadband chipset.

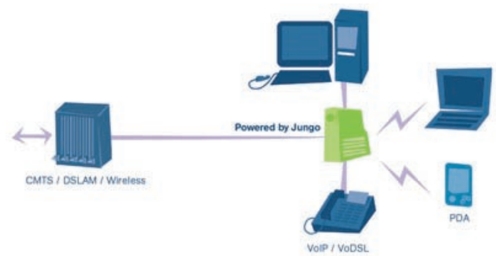
Internet Photonics
www.internetphotonics.com

- Internet Photonics introduces lightstack gateways to enable profitable delivery of VOD services and HDTV across legacy cable infrastructures (11/4/02).

Jungo
www.jungo.com

- U.S. Robotics selects Jungo for next-generation networking products (1/21/03)
- Jungo receives ICSA Labs' Firewall 4.0 Certification (12/17/02).
- Jungo delivers CableHome™ based solutions on Texas Instruments' cable platform (12/11/02).
- Jungo announces Version 5.22 of its Driver Development Tools (11/28/02).
- Conexant and Jungo introduce the world's first CableHome™ based HomePlug System Solution (11/25/02).
- Allwell and Jungo to demonstrate CableHome™ based Residential and Soho Gateway at BroadbandPlus (11/20/02).
- Jungo Driver Development Tool for custom USB human interface devices (HIDs) is available for alpha testing (11/18/02).
- Jungo releases OpenRG™ v2.1 Residential Gateway Software (10/29/02).

Portfolio News



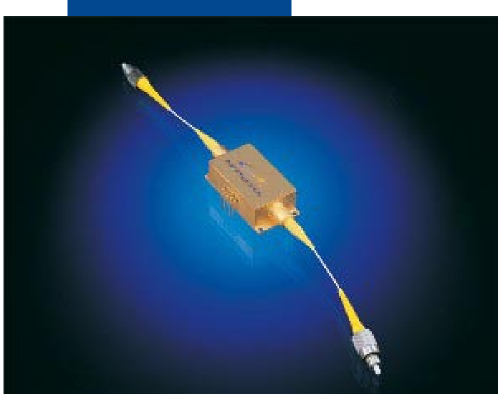
Jungo's scalable suite of software infrastructure and technologies enables OEMs to bring broadband CPEs, IADs, and residential gateways to market.

- Jungo announces Version 5.21 of its Driver Development Tools (10/23/02).
- Jungo and CATC to provide comprehensive set of USB Verification and Development Tools (10/7/02).

Lynx Photonic Networks

www.lynxpn.com

- Lynx Photonic announces delivery of the first wideband switching capability on a PLC switching subsystem—a feature that allows for switching of wavelengths from 1265 to 1610 nm. (11/25/02).
- Lynx Photonic introduces its new Photon.PROTECT family of photonic protection switching subsystems at the European Conference on Optical Communications 2002 (ECOC) in Copenhagen (9/3/02).



NP Photonics' Tunable Filter Module.

NP Photonics

www.npphotonic.com

- NP Photonics delivers samples of optical spectrum analyzer engines (1/21/03).
- NP Photonics unveils optical spectrum analyzer engine (9/16/02).

ProFlowers

www.proflowers.com

- ProFlowers reports operating profit for fiscal year 2002 on sharp rise in revenues (10/2/02).

SigmaTel

www.sigmatel.com

- SigmaTel D-Major™ Audio Technology powers CES Award-Winning MP3 Players (1/10/03).
- SigmaTel D-Major™ Audio available in Classic MP6410 MP3 Player (1/9/03).

- SigmaTel introduces C-Major™ 6-Channel Audio Codec with Universal Jacks™ and Audio Device Detection (11/18/02).
- SigmaTel announces the sale of the 1 millionth D-Major™ MP3 Audio Decoder Chip (11/11/02).
- SigmaTel announces a D-Major™ Audio Design-Win with Evolution Technologies' MTV®: Music Television 64 Portable MP3 Player (11/04/02).
- SigmaTel D-Major™ Audio Decoders power the latest SONICblue™ MP3 Players (10/28/02).

Portfolio News

VINA Technologies

www.vina-tech.com

- Eschelon Telecom to build six-state integrated access service using VINA products (11/11/02).
- Lucent and VINA expand OEM agreement (10/28/02).
- VINA announces Q3 2002 financial results (10/22/02).
- VINA is named to 2002 Deloitte & Touche Technology FAST 500 (10/16/02).
- Puerto Rico carrier selects VINA's MBX (10/7/02).

Xpedion Design Systems

www.xpedion.com

- Microtune uses Xpedion for RF simulation (10/26/02).

Conference Calendar

RBC FINANCIAL GROUP
February 19–20
New York, NY
Participating: CreekPath

OFC 2003
March 23–28
Atlanta, GA
Participating: NP Photonics, RedClover

BROCADE CONFERENCE
March 30–April 2
Las Vegas, NV
Participating: CreekPath

STORAGE MANAGEMENT 2003
April 9–11
Chicago, IL
Participating: CreekPath

STORAGE NETWORKING WORLD
April 14–27
Scottsdale, AZ
Participating: CreekPath

STORAGE WORLD CONFERENCE
May 5–8
Anaheim, California
Participating: CreekPath

IDC STORAGE CONFERENCE
May 20
San Jose, CA
Participating: CreekPath

DAC 2003
June 2–6
Anaheim, CA
Participating: Xpedion

MTT 2003
June 8–13
Philadelphia, PA
Participating: Xpedion

Investment Bank Analysts

Alcatel (ALA)—Bank of America, Chris Crespi (415-913-2147); Goldman Sachs, Massey Lopes (44-20-7552-2995); RBC Capital, John Wilson (416-842-7908); J.P. Morgan, Jahor Gupta (44-20-7325-1684).

Cisco Systems (CSCO)—CIBC World Markets, Stephen Kamman (212-667-8146); CS First Boston, James Parmelee (212-325-6191); Deutsche Bank, Raj Srikanth (212-469-7687); UBS Warburg, Nikos Theodosopoulos (212-713-3286).

Cypress Semiconductor (CY)—Bear Stearns, Charles Boucher (415-772-2953); CS First Boston, Tim Mahon (650-614-5040); Lehman Brothers, Daniel Niles (415-274-5252); Solomon Smith Barney, Clark Westmont (415-951-1886).

Dell Computer (DELL)—CIBC World Markets, Kevin McCarthy (212-538-3809); Deutsche Bank, George Elling (212-469-8620); Bear Stearns, Andrew Neff (212-272-4247); US Bancorp Piper Jaffray, Ashok Kumar (650-838-1414).

Infineon Technologies (IFX)—Lehman Brothers, Daniel Niles (415-274-5252); Merrill Lynch, Andrew Griffin (44-20-7996-1414); Solomon Smith Barney, Jonathan Joseph (415-951-1887).

Nortel Networks (NT)—CIBC World Markets, Stephen Kamman (212-667-8146); CS First Boston, James Parmelee (212-325-6191); Deutsche Bank, Cobb Sadler (415-617-3242); Soundview, Kevin Slocum (203-462-7219).

Vina Technologies (VINA)—Lehman Brothers, Steven Levy (212-526-2499); Thomas Weisel Partners, Jason Noah Ader (617-488-4621).

Vitesse Semiconductor (VTSS)—CIBC World Markets, Dale Pfau (415-399-5731); CS First Boston, Michael Masdea (415-836-7779); Solomon Smith Barney, Clark Westmont (415-951-1886); Thomas Weisel Partners, Jeremy Bunting (415-364-2610).

Executive Recruiting

Highlighting key job opportunities at our portfolio companies

Aarohi (San Jose, CA)
www.aarohi-inc.com

- CFO

BayPackets (Fremont, CA)
www.BayPackets.com

- Director of East Coast Sales