

November/December 1999

Lucent

magazine



Building Next-Generation Networks

I N S I D E

Success in Saudi Arabia • Lucent Digital Video

Lucent Belles of Australia Champion Netball League

With two championship seasons behind them, the Lucent Belles, a team of energetic young women from the Global Service Provider office in Toowong, Brisbane, Queensland, are leading the way in the Brisbane Ozports Ladies Netball League. Similar to basketball, Australian netball players score points by throwing a ball through a hoop. But each team fields seven players at a time, and there is no backboard behind the hoop. Richard Egelstaff, Lucent regional manager in Queensland, provided uniforms with the Lucent logo and manages the team. They compete against nine other company-sponsored teams, including Telstra, the Australian telecommunications giant.



Proud members of the Lucent Belles netball team include (from left, back row) Jodie Toft, wing defense; Vanessa Webster, goal defense; Melissa Potter, wing attack; Kassahnah Ward, goal keeper; and (bottom row) Melissa Mamana, goal attack; Renee Hall, center; and Kaylene Gibson, goal shooter.

READERS' LETTERS

Global Logo

The day after I returned home from a 20-day tour of China, I received the August/September issue of *Lucent Magazine* in the mail and saw the picture on the Letters page of the Lucent folks on the Great Wall, where I had recently visited. The photo reminded me of how proud I had felt when I saw Lucent billboards in Beijing.

Dick Genaille
Winston-Salem, N.C.

More Valuable Than Gold

What a pleasant surprise to see Lucent Technologies listed in a September *Wall Street Journal* story as one of the most reputable companies in America, according to a survey conducted by The Reputation Institute and Harris Interactive Inc. The ranking was based on six dimensions: corporate appeal, products and services, financial performance, vision and leadership, workplace environment, and social responsibility. I think our showing—13th out of 30 companies—is remarkable since we have been a stand-alone company for only three years. What a great way to start the new millennium.

Hank Schweibold
Alpharetta, Ga.

Compelling Faces

The August/September cover story ("Switching to a New Era") got my attention, so I took a closer look at *Lucent Magazine*. The photos show a culturally diverse body of professionals, and their faces compelled me to read on. I found myself beginning to better understand and appreciate the contribution of their respective disciplines. I'm happy to be part of a company that promotes an

international perspective, especially in such a highly competitive industry.

Felix Reyna
Austin, Texas

Dial Safety

During our last safety meeting it was brought to my attention that the environment and safety hotline number was not listed in the "Navigating Lucent Technologies" section of the June/July issue of *Lucent Magazine*. The number is 1-800-44-SAFET (1-800-447-2338). Lucent representatives on the line can help employees with environmental and safety issues, or assist in an emergency.

Andrew Richardson
Pittsburgh

Taking Care of the People

Great article on "Acquiring Cool New Ideas, Hot New Technology" (October 1999). However, it didn't mention the members of the Lucent Corporate HR Mergers and Acquisitions team, who are some of the first Lucent people our newly acquired talent meet. We "take care of the people, so the people take care of the business."

Brad Batastini
Morristown, N.J.

Safe Cycling

A word of caution regarding the photos of the denim-jeaned and leather-jacketed, but ungoggled, low-shoed, helmetless and gloveless guys on the bikes in "Gearing Up for the Future" (October 1999). The Motorcycle Safety Foundation (MSF) urges all motorcycle riders to don the "gear" that will withstand the rigors of weather and various

road debris far better than their bare eyes, skin and skulls can. For more information, visit the MSF's <http://www.msf-usa.org> Web site.

Dan Levy
Naperville, Ill.



Lucent Magazine

O N L I N E

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and ideas for articles.

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Leading a New Generation of Communications Networking

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BENOIT DECOURT

C O V E R
S T O R Y



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FROM THE REVOLUTION

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Communications Solutions

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Communications Revolution

16 Leading the Way
In Video Networking

ON THE COVER With an eye on the future, Lucent is constructing advanced networks for the next generation. Symbolizing that new generation are: (clockwise from center, back row) Guillermo Rodriguez, son of Fernando Rodriguez, Garza Garcia, Mexico; Ginger Jiang, daughter of Hong Jiang, Murray Hill, N.J.; Ankit Patel, son of Rajesh Patel, Schaumburg, Ill.; Sam Thornton, son of Cheryl Thornton, Atlanta, Ga.; Eddie Kinch, son of Arie Kinch, Morristown, N.J.; Napatsorn Patamawisut, daughter of Wutipong Patamawisut, Bangkok, Thailand; Cyrielle Beaudouin, daughter of Jean-Pierre Beaudouin, Le Plessis-Robinson, France; and Brandon Updegrave, son of Kristin Ciemiewicz, Reading, Pa. **Photography by Roger Tully, Peter Charlesworth and Jean Claude Thuiller.**

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Postcards

FROM THE REVOLUTION

A Turbo-Charged Chip

In the late 1970s George Lucas gave us R2D2 and Bell Labs gave us DSP1, the first single-chip digital signal processor (DSP). DSP1's descendants drive the modems, cell phones and other devices fueling the communications revolution. This year, on DSP1's 20th anniversary, Bell Labs and the Microelectronics Group turbo-charged DSP1's great-grandchild, DSP 1628, achieving 100 megahertz at 1.0 volt. That's the industry's fastest—more than 30 percent quicker than the nearest competitor. This swift, less power-hungry DSP could lead to smaller, clearer and more feature-rich communications devices such as interactive personal assistants, earplug phones and others that George Lucas never even dreamed of.

ONE-STOP MESSAGES

It's a phone. No, it's a PC. No, it's a fax machine. What is it? It's Unified Messenger for Service Providers, a solution that combines all voice, e-mail and fax messages into a single mailbox and

allows users to access, create and manage all messages through a PC or telephone. Lucent recently completed its Unified Messenger package when it became the



first company licensed to resell Microsoft Exchange to global service providers. "The market for managed services, including applications hosting, is exploding, and Lucent's expanded relationship with Microsoft will help accelerate unified messaging revenues for service providers," said **Bill O'Shea**, executive vice president and CEO, Lucent Enterprise Networks.

No. 1 & Growing Strong in VoIP

Lucent is making its mark in Voice over Internet protocol (VoIP). It ranks No. 1 in a recent survey of market research firms. In the rapidly changing and competitive VoIP environment, Lucent is poised to deliver quality products. Revenues for VoIP equipment have been forecast to exceed \$10 billion a year by 2005, and Lucent will continue to be a major force in that market. "We anticipate a very dramatic increase in market share for Lucent in the carrier market over the next several quarters," said Pete Dailey, managing partner of Frost & Sullivan, an international marketing firm.

SuperStar Router

The magic of mirrors is reflecting on the future of networks. Lucent recently unveiled the industry's first high-capacity, all-optical router—the *WaveStar Lambda Router*. *WaveStar* uses a series of microscopic mirrors to route optical signals in a network without first converting them to electrical signals, as done today. This breakthrough

technology moves network traffic at the amazing rate of 10 trillion bits a second, and is capable of directing 10 times the traffic of today's Internet in one second. "Optical wavelengths are the true building blocks of next-generation networks, and Lucent will be the first to make all-optical networks a reality," said Optical Networking Group President **Gerry Butters**.

INS Celebrates Sunny Day One

GLORIA BAKER



For **John Drew** (foreground) and more than 5,500 associates of International Network Services (INS), Oct. 18—Day One of INS' merger with Lucent—was a sunny day in more ways than one. Drew, who was recently named executive vice president and CEO of Lucent's *NetCare Professional Services*, celebrated with (from left) INS associates Clifford Stephan, Andrea Urton, Andrea Thomas and Sanjay Melwani outside INS headquarters in Sunnyvale, Calif.

Bell Labs Builds in Beijing

Sharpener its focus on the Asia/Pacific region, Lucent's Bell Labs established an Asia/Pacific and China headquarters in Beijing. **Carl Hsu**, a well-known Chinese-American scientist from Bell Labs in the United States, is charged with heading the new location and will continue Bell Labs' momentum as it expands into China and the Asia/Pacific region. "We would like to work closely with universities, research institutes and relevant government offices to further promote and elevate basic research in China and participate in China's drive of rejuvenating the country through science and technology," Hsu said. "At the same time, we are aggressively looking for opportunities in other countries in the region for Bell Labs and Lucent."

LEADING A NEW GENERATION OF

Communications Networking

Lucent is building a new generation of networks that will integrate wired and wireless voice, data and video traffic. The result will be a new generation of growth opportunities for Lucent — in systems, software, silicon and services — the four S's where we're focused.



BENJAMIN DECOURT

Visitors from around the world recently viewed Lucent's next-generation network offerings at Telecom '99 in Geneva, Switzerland.

N

ext-generation networks are just around the corner. They'll deliver huge quantities of information to a myriad of communications devices—all at the speed of light. Lucent, with its remarkable repertoire of Bell Labs technological innovation, its record year of growth and its newly streamlined and customer-focused organization, is positioned to lead in their creation.

"We're finding new ways to grow," said Lucent Chairman and CEO Rich McGinn, "by focusing on

the hottest opportunities presented by next-generation networks." As today's voice and data networks converge, Lucent's vision is focused on tomorrow's networks. That key message was delivered by McGinn and other senior leaders at Telecom '99 in Geneva in October and at Lucent Week in Murray Hill, N.J. in November.

"The opportunities for growth presented by next-generation networks can be categorized by the four S's—systems, software, silicon and services," McGinn said. "They're the building blocks of networks, and we've focused the business to deliver value to our customers at each of those points." The newest next-

PICTURE THIS

A Celebration of Lucent's Next Generation

There's no doubt that Lucent employees have the brightest and most photogenic children in the world. And *Lucent Magazine* has stacks and stacks of photographs to prove it. Thanks to the many employees worldwide who sent their children's photographs for consideration. Here are some of the faces of Lucent's next-generation movers and shakers.



Corinne Santarpia
Belle Mead, N.J.



Alex Anderson
Neptune, N.J.



Emily Schwartz
Urbandale, Iowa



Zakary & Devin Dakes
Allentown, Pa.



Samuel Dorsey
Bethlehem, Pa.



Jasmine Lopez
Katy, Texas



Representing Lucent's celebration of next-generation networks are Ginger Jiang, daughter of Lucent's Hong Jiang, of Murray Hill, N.J.; Brandon Updegrave (center), son of Lucent's Kristin Ciemiewicz, of Reading, Pa.; and Eddie Kinch, son of Lucent's Arie Kinch, of Morristown, N.J.

desktop," said Bell Labs President Arun Netravali. "Optical technology is revolutionizing networks."

Lucent is clearly the leader in optical elements for next-generation networks, and we recently added to our list of "firsts." In November, we announced the world's first high-capacity, all-optical router, the WaveStar Lambda Router, whose 256 microscopic mirrors direct optical signals from input fibers to output fibers without first having to convert them to electrical form. That brings to 18 the number of new optical products Lucent introduced in 1999 for the core, the metropolitan backbone, and for enterprise access.

And Bell Labs is continuing to rewrite the optical record books, recently setting two new world records for optical transmission—sending data over 1,022 wavelengths through a single optical fiber, and packing 160 megabits of information on just one wavelength.

Lucent's NX64000 MultiTerabit Switch/Router, added to our portfolio when we acquired Nexabit Networks, can make the most of optical bandwidth power. "Our goal at Nexabit was to deliver the leading multiterabit-scale wide area networking products to unlock the raw bandwidth created by today's (Continued on page 6)

generation networking products in those categories are based on sizzling technological advances that are blazing out of Bell Labs at the new record pace of four patents a day.

Systems at the Speed of Light

Optical systems carry information over wavelengths of light. They're incredibly fast and amazingly inexpensive, with almost unlimited capacity. Currently, only the

long-distance backbone is all-optical. But soon, optical wavelengths will reach into metropolitan markets, extend into enterprise networks, and even replace the core routers and servers in use today. In the new millennium, the world's most powerful broadband networks will be all-optical—delivering information at the speed of light.

"In the future, there will be optics everywhere, all the way to the



Peyton Auter
Oceanside, Calif.



Keith Wankel
Mesa, Ariz.



Jordan Raveneau
Saumur, France



Jason Giroux
Westborough, Mass.



Enrique Castaneda
Moore, Okla.



Patrick O'Leary
New Orleans, La.



Cristina Esteban Fernández
Madrid, Spain



Duncan Salek
Bernardsville, N.J.

Anthony Mezta
Oceanside, Calif.



A banner proclaims Lucent's message at Telecom '99: "Your network's future starts today." A record 300,000 visitors generated more than 10,000 leads from potential customers looking for next-generation networks.

"We're market leader in Intelligent Networking, service and network management and, with our acquisition of Mosaix, we're a leader in customer relationship management," McGinn said. "These are the hottest segments of the market."

With the Lucent softswitch and our acquisition of Excel Switching, we're the world leaders in the open programmable network environment. Our open platforms enable customers to rapidly develop and deploy new services flexibly, while protecting their investments.

For service providers, billing and customer care are crucial to attracting and retaining customers. In Kenan Systems, Lucent recently acquired the No. 1 billing system in the world.

(Continued from page 5)

optical networking technologies," said Mukesh Chatter, Nexabit founder who is now Advanced IP Core Technologies vice president. "Working with the unmatched technical capabilities of Bell Labs, we have the opportunity to help revolutionize service provider networking capabilities globally."

Lucent is also prepared to lead in next-generation wireless systems. Called "3G" for "third generation," they'll combine high-speed access to Internet-based services with the convenience of wireless mobility. To remain successful and to compete in the networked economy, service providers must transform themselves, and they'll have to pick equipment partners with a breadth

and depth of network capabilities. Our strengths in mobility, data networking, optics, software and



PETER RUGGIERI

"Our realignment is aimed at delivering what customers want as they enter the next generation of networking—converged network solutions and access to our full networking capabilities."

Pat Russo, executive vice president and CEO, Service Provider Networks

professional services put us in a strong position to lead in the coming wireless revolution.

Software: The Lifeblood

Network software will make next-generation networks super intelligent, keep them healthy and improve their performance and capability. And Lucent is already in the lead.

In addition, we're expanding our portfolio with Solutions for Converged Networks, providing one architecture that converges wireless, wireline, Internet and cable networks.

Silicon Solutions

Lucent's Microelectronics Group (ME) is already the world (Continued on page 8)



Stacie Chiang
Colesville, Md.



Morgan Seal
Richmond, Va.



Brandon Bulman
Avenel, N.J.



Laura Cecil
Lexington, N.C.



Jessica Seagraves
Danville, Calif.



Brennden Keeter
Joplin, Mo.



Kaitlin Stewart & Brenden Kuprel
Martinsville, N.J. & Berkeley Heights, N.J.



Trisha Mahapatra
Swindon, England



Samantha Frankel
Ho-Ho-Kus, N.J.

Analysts React to Lucent Week

More than 500 financial and industry analysts attended Lucent Week presentations in early November. Here is a sampling of their comments and reactions to what they heard and saw that week.

"Lucent Day remains by far the most comprehensive effort by any company in the communications technology industry to give investors all the information they need to understand a very large, complex company."

Mary Henry
Goldman, Sachs & Co.

"The most significant differentiator for Lucent Technologies is the company's ability to provide comprehensive systems solutions to service providers on a global basis."

James Parmelee
Credit Suisse First Boston

"Lucent's broad range of competencies and rapidly evolving product line ensure it a significant position in the fast-paced telecom equipment market in the coming years."

Luke Szymczak
Prudential Securities

"The conference was an impressive showcase of Lucent technology, products and senior leadership. When you combine the strength in these areas with Lucent's ability to turn technology into solutions, it's clear why the company is an industry leader."

Chris Nicoll
Current Analysis

"The Industry Analyst event was an excellent opportunity for us to meet the key decision makers at Lucent. The presentations and discussions gave us a more in-depth understanding of Lucent's products, businesses, and future direction as it continues to play a leading role in communications networking."

Sanjay Mewada
Yankee Group



ROGER TULLY



Elise & Robert Benjamin
Gaithersburg, Md.



Louis Meggiolaro
Nutley, N.J.



Jessica Neises
Bartlett, Ill.



Peter Chen
Naperville, Ill.



Terry Gelsi
Peapack, N.J.



Gabrielle Indyk
Jamesburg, N.J.



Tucker Gritton
Moline, Ill.



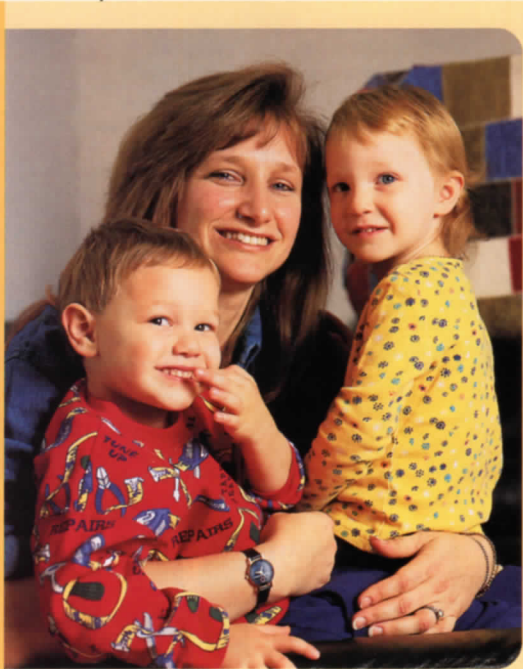
Erin Moroze
Broomfield, Colo.



Bill, John & Jeff Russell
Lisle, Ill.

(Continued from page 6)

leader in communications integrated circuits and optoelectronics, and breakthroughs in chip technology will enable Lucent to provide this vital element to



ROGER TULLY

Double-Digit Growth — Lucent was officially “born” Oct. 1, 1996. On the same day, **Stacy Fishkin**, a systems engineer in Whippany, N.J., gave birth to fraternal twins **Scott** (left) and **Leah**. Like Lucent, the 3-year-old twins are highly independent, speedy, imaginative and unstoppable — whether on the playground or home turf — with Stacy, her husband Ira, and son Jonathan.

next-generation networks.

Chips will become denser, faster and less power-hungry. Next-generation networks will take advantage of the enormous capabilities of systems-on-a-chip solutions, which already provide 50 percent of ME’s revenue. One key trend



in the future of converged networking will be comprehensive offerings that combine silicon and optoelectronics capabilities, both areas of particular strength for ME.

“We will continue to target the hottest communications markets,” said John Dickson, executive vice president and CEO of Microelectronics and Communications Technologies. “We’ll continue to lead the trend in systems-on-a-chip and to integrate silicon optics and power systems. We’re the company to beat in the communications sector.”

Services Expertise

In the multivendor world of next-generation networks, professional services will be key to maintaining our lead in the communications revolution. With the addition of International Network Services (INS), Lucent can offer customers unprecedented expertise in net-

work technologies and protocols.

Our 5,500 technicians hold 1,200 certifications from leading network certification programs, providing multivendor solutions in whatever combination is best for our 10,000 services customers.

“As data, voice and wireless networks come together, system design, installation and operations become difficult for our customers to accomplish alone,” said John Drew, executive vice president and CEO of NetCare Professional Services. “Our organization will provide the knowledge behind the network.”

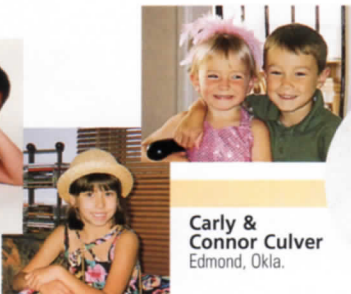
Delivering to Next-Gen Customers

Lucent not only has the technology and services to build next-generation networks, it has a new structure to facilitate the process.

“We’ve organized around customers to better offer full network solutions,” said Pat Russo, execu-



Brian & Eric Krugh
New Albany, Ohio



Carly & Connor Culver
Edmond, Okla.

Melissa Proulx
Laval, Canada



Sarah Yumi Schlotter
Columbus, Ohio



Leo & William Lamontagne
Andover, Mass.



Archibald Tassot
Berkeley Heights, N.J.



Adam & Ashley Goodwin
Yukon, Okla.



Cole Parker
Valdosta, Ga.

Leticia McDuffie
Roselle, N.J.

Lucent's multistory exhibit at Telecom '99 (left and below right) attracted crowds of visitors, who gave its staffers the highest rating among 750 exhibitors for their personalized tours and live demonstrations of next-generation networking products.

tive vice president and CEO of Service Provider Networks. "Our realignment is aimed at delivering what customers want as they enter the next generation of networking—converged network solutions and access to our full networking capabilities."

All of Lucent's product houses that support the service provider market have been brought together under Russo's leadership, along with the global service provider sales force. "These changes allow us to increase our efficiencies in marketing, sales, services, technical support and product development," Russo said.

Our customers are looking to us to help them build or evolve next-generation networks because we

individual customer at a particular point in time. These are key characteristics for leadership in next-generation networks."

Enterprise Networking

Similar trends exist in the enterprise market. "Our customers are dealing with convergence, virtual private networks and the explosion of new technologies," said Bill O'Shea, executive vice president and CEO of Enterprise Networks. "Most importantly, enterprises are making e-business their first priority."

In response, Lucent is creating best-in-class solutions in professional services, applications, network software and network systems to support its customers.

"We will focus on continuing

for tomorrow rests partially on our success today. Soaring sales and surging profits for fiscal 1999 resulted in the strongest quarter and strongest year in our history. As a result of our nearly 150 contracts worth more than \$12 billion—96 of them with new customers—we increased our worldwide market share, and are the No. 1 communications networking equipment provider worldwide. That puts us ahead of Siemens, Alcatel, Nortel, Ericsson, Cisco and Nokia. And more than 60 of those contracts were for products new since last year.

"Lucent will sustain this growth because it has a clear vision of communications networks for the next generation," McGinn said.

"We have leadership in every key network building block, including systems, software, silicon and services. We're focused on the highest growth opportunities in each segment. We're bringing breakthrough technologies to market today that are actually defining what the next generation of networks will be. And, we enjoy long-term relationships with both service provider and enterprise customers, and rapidly growing success with new carriers around the world.

"We look forward to leading the next generation of communications growth." ○

—Suzanne Sidhu



"We have leadership in every key network building block, including systems, software, silicon and services. We're defining what the next generation of networks will be."

Rich McGinn, chairman and CEO

have demonstrated that we can help them be first to market with the right technology at the right time.

"Lucent has delivered breakthrough products in record time, across the product line," Russo said. "And, we are able to offer total solutions—combinations of products that address the needs of the

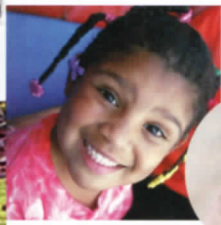
to help customers migrate from circuit to packet-based networks, find solutions for the virtual enterprise, and choose the right e-business solutions," O'Shea said.

Building on Success

Our confidence in our ability to create next-generation networks



PETER RUGGERI



Brianna Purdie
South Orange, N.J.



Conner Prasad
Wall, N.J.



Drew & Derek Gerberich
Myerstown, Pa.



Michele, Marc & Nicole Stanziale
Morris Plains, N.J.



Alba Mendoza
Mexico City, Mex.



Seamus, Bridget & Deidre O'Loughlin
Chatham, N.J.



Carly Shniderson
Plano, Texas



Jonathan & Caterina Li
Duluth, Ga.



Aneesh Tyle
Riyadh, Saudi Arabia

Saudi Arabia Success Story —

Building Next-Generation

Lucent and the Saudi Telecom Co. are putting the finishing touches on one of the world's most advanced communications structures — and Lucent's biggest endeavor to date outside the United States.

More than simply the largest telecommunications project ever awarded outside the United States, the multibillion dollar endeavor that is nearing completion in Saudi Arabia is a watershed—for both the kingdom and Lucent.

“Saudi Arabia is

buildings, including a National Network Control Center. They've put in place—from the ground up—cell towers, power systems, fiber-optic rings and satellite earth stations. They designed and installed centralized operations and maintenance (COM) systems for the new transmission and switching systems. And they implemented customer care and billing systems.

Of critical importance, too, was the deployment of an advanced asynchronous transfer mode (ATM) system to handle the initial rollout of Internet service in the kingdom.



Size Plus Speed

The sheer magnitude of what has been accomplished in Saudi Arabia is impressive, especially considering that much of the work has been completed ahead of schedule. Much of that has to do with the team's definition of and dedication to speed. Lucent Saudi Arabia not only moves fast, but has organized itself to accomplish tasks and meet goals in new ways, more effectively and efficiently.

“Our Saudi team has continually examined all our key processes to streamline cycle time in as many areas as possible,” Heindel explained. “In a project of this enormity, attention to detail and constant improvement are absolutely critical.”

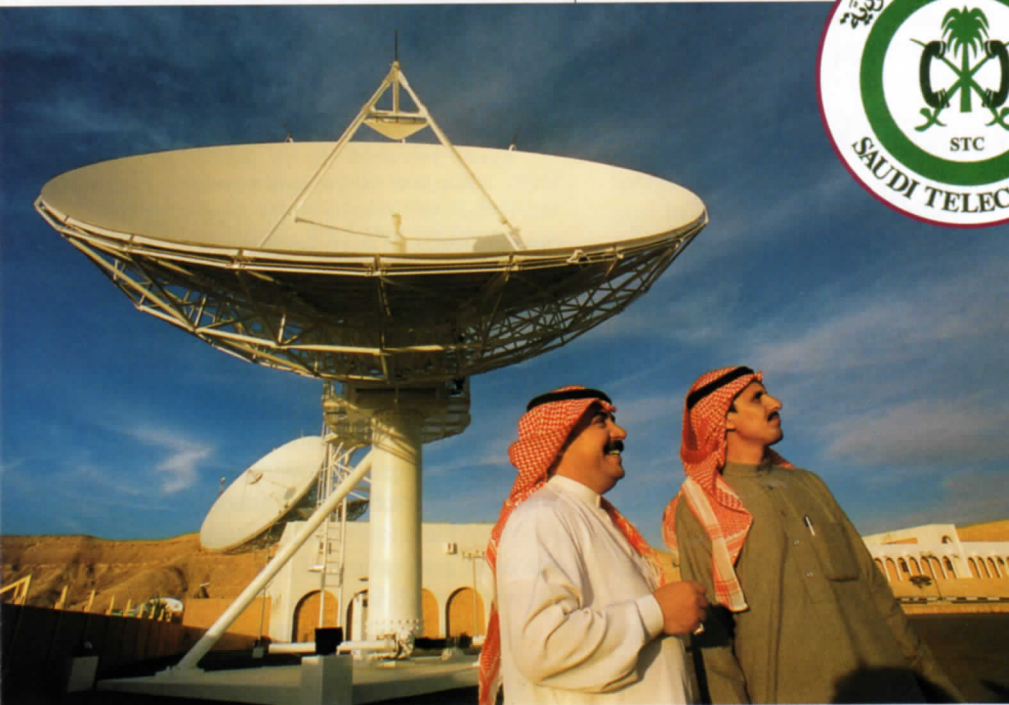
And the customer is pleased with the results.

“Lucent has played an important part in implementing a major program,” said Engineer Abdulrahman Al-Yami, president of Saudi Telecom. “Significant strides have been made in a short time. To illustrate, the

Lucent's biggest international customer,” said John Heindel, who has guided the enormous project as president of Lucent Saudi Arabia. “And we're extremely proud to be the team that the kingdom has chosen as it creates one of the most sophisticated communications environments on earth.”

The work in Saudi Arabia has involved a number of significant deployments. Lucent and Saudi Telecom have constructed numerous

The future and the past blend seamlessly at Saudi Telecom Co.'s Dirab Satellite Earth Station, where employees AbdulAziz Al-Sayyari (left) and Hamad Al-Abdan work.



Communications Solutions

number of fixed telephone lines has doubled to almost 3.5 million within just the last 18 months.

"We are moving forward at a healthy pace."

Four Projects in One

The Saudi project actually includes four separate components:

- Telephone Expansion Project-6 (TEP-6) was the first contract. Awarded in 1994 by the Saudi Ministry of Post, Telegraph and Telephone, it called for the installation of 1.5 million fixed lines and the sophisticated network required to support the enormous amount of traffic that would be generated.
- Global system for mobile communications (GSM), which, in three separate programs, has provided service for 1 million subscribers.
- TEP-7, signed in 1998, which called for an additional 645,000 5ESS switched lines.
- The Y2K project was contracted in early 1999. Through this important work—completed in September—Lucent made 900,000 fixed lines Y2K compliant by converting them from a competitor's product to a 5ESS-based network.

Utilizing Diversity

A diverse group of more than 3,000 people, the Lucent Saudi Arabia team is composed of Saudi nationals and expatriates from 41 nations. "Our work force brings new viewpoints from its diversity, and that has been instrumental to our success," Heindel said. "We've listened and benefited enormously as a team.

"And the synergy that has created our success extends far beyond just the Lucent Saudi Arabia team. Only with great cooperation and teamwork from our customer, and the leadership support of Jim Brewington and Ernie Rodriguez, have we been able to develop innovations and produce

increasingly gratifying results."

Brewington is group president of Wireless Networks and Rodriguez is vice president of Advanced Technologies, Bell Labs.

"For the entire region and elsewhere, the Saudi Telecom network is a shining example of how economic development can be unleashed by next-generation communications networks," said Brewington. "Only Lucent has both the breadth and depth of network capability to support Saudi Arabia's achievements.

"More than technology, however, the relationship between Saudi Telecom and Lucent has been the key to success."

Changes, Breakthroughs

The Ministry of Post, Telephone and Telegraph (MoPTT) privatized the Saudi Telecom Co. in 1998—a big step toward a promising future.

In addition, the Saudi government's Economic Offset Investment Program has made it possible for Lucent to partner and collaborate with local companies, adding to the growth of a local telecommunications industry with world-class capabilities that is creating thousands of new jobs.

"The creation of Saudi Telecom signaled the start of a major privatization effort throughout Saudi

Arabia," said Engineer Al-Yami.

"Saudi Telecom and Lucent have demonstrated that privatization is the right answer, along with the kingdom's Economic Offset Program, which encourages inclusion of substantial local participation.

"An example is Advanced Electronics Co., a Saudi manufacturing company that worked with Lucent to deliver circuit pack requirements for the TEP-6 project almost a year and a half ahead of schedule."

Global Teamwork

Lucent people all around the world have contributed to the success in Saudi Arabia.

In addition to working with Saudi Telecom and its employees, the Lucent team was supported by factories in Saudi Arabia; Nuremberg, Germany; Tres Cantos, Spain; and Merrimack Valley, Columbus, Omaha, Atlanta and Dallas in the United States. Teams in Swindon, U.K., and Warren, N.J., coordinated

(Continued on page 12)



The completion—ahead of schedule—of Lucent Saudi Arabia's Y2K compliance project was commemorated by Saudi Telecom President Engineer Abdulrahman Al-Yami and John Heindel (right), president of Lucent Saudi Arabia.

The Saudi Program includes:

- 1.8 million new and 1.5 modernized wired lines
- 1 million GSM mobile lines
- Installation of a 12,000-kilometer optical network
- Installation of 2,500 wireless towers
- 17 integrated COM systems, plus complete Video Wall Control Center
- 100,000 Airloop lines
- 1,200 buildings and containers
- 2,500 worker years of engineering
- 30,000 worker years of construction
- 47,000 hours of training for Lucent employees
- 250,000 hours of training for Saudi Telecom Co. employees

(Continued from page 11)

order provisioning and logistical support. Installers from the Lucent Indonesia team contributed their expertise and skills in successfully completing the Y2K and TEP-7 work.

That kind of cooperation will no doubt prove useful as the Saudi Arabia telecommunications infrastructure and environment expand—as they must—to serve the growing needs of the kingdom's citizens.

While teledensity in the kingdom has increased 50 percent since the project was begun, there's still room for enormous growth in the country of 20 million. And that growth is what makes the future especially bright.

"Saudi Arabia holds many new opportunities for expansion and enhancement of the wired and wireless networks that have been deployed," Heindel said. "Compe-

tion is increasing in this market, right along with the expanding needs for telecommunications products and services, and Lucent Saudi Arabia is well-positioned—based on its performance, products and people—to help meet those needs.

"As we move forward toward new challenges, the goal is to take our contributions and achievements to the next level." ○

—David Fine

Persistence Earns Big Win For Australian Wireless Team

For a time, Lucent's chances of winning a \$535 million contract from One.Tel, the Australian communications company, seemed slim.

But the tenacious persistence of Lucent's global system for mobile communications (GSM) team in the region paid off. The deal—Lucent's biggest GSM win in the Asia/Pacific region and first in Australia—was won in September. It will extend One.Tel's national GSM 1800 network throughout the business districts and metropolitan areas of Sydney, Brisbane, Melbourne, Adelaide and Perth.

"After One.Tel told us that they didn't consider Lucent a serious player in this opportunity, we could have given up. Instead, we persisted and didn't let One.Tel forget about Lucent," said Nigel Waters, GSM business development manager for Australia. "We called them several times a day, everyday, until they signed Lucent's contract."

In the end, Lucent won over Ericsson, Nokia and the Motorola/Siemens team. We'll supply our latest wireless telecom products, including mobile switching centers, base stations and controllers, and microcells, plus network operations and management, Intelligent Networks (IN), software and professional services. The network

launch is set for the first quarter of 2000, starting with Sydney.

One.Tel chose Lucent because

of our ability to meet stringent objectives, including superior technical expertise, experience and flexibility in delivering and supporting solutions. "The Lucent team has been flexible, innovative and dedicated to providing One.Tel with a best-in-class network," said Stephen Moore, associate director and technical director, One.Tel Ltd.

"Partnering with Lucent for networking development and support will enable One.Tel to continue to focus on expanding its core business in a highly competitive market."

The dedication of Lucent's GSM Asia/Pacific teams in Kuala Lumpur and Australia brought the deal home. The teams held daily meetings to discuss the strategy and execution and to assign tasks and responsibilities. "Our approach

made us more agile and focused," said Waters.

The contract, which was negotiated and signed in just six weeks, is testimony to the close working relationship the team established with One.Tel. "It was a grueling six weeks, which consisted of 19- to 20-hour days, seven days a week," said Waters.

"This is a great win for Lucent. It's indicative of the dedicated efforts of Lucent's One.Tel team," said Phil Pryke, managing director, Lucent Australia and New Zealand. "The team really pulled its resources together to win this deal. This is Lucent's chance to get its name linked with GSM in the Asia/Pacific region."

When completed, the expanded network will be the fourth GSM network in Australia. It's targeted to support 2 million subscribers by the year 2004. "The aggressive combination of One.Tel and Lucent will create a leading-edge competitive alliance in the Australian mobile market," said One.Tel spokesperson Zoe Hawkins, "and bring substantial benefits to consumers." ○

—Kara Jordan



Lucent's wireless winners in Australia include Lucent One.Tel team members Nigel Waters (left), David Reynell and Fred Molenaar.



Speed, Customer Focus Pay Dividends in Brazil

When Vesper São Paulo, a new fixed-telephony service provider in Brazil, recently awarded Lucent its largest wireless local loop (WLL) contract to date — a five-year, \$470 million agreement to build a wireless network in São Paulo — Lucent Brazil

rewarding to everyone involved.”

And, as Vesper São Paulo President Virgilio Freire confirms, the first joint effort between Lucent and Vesper is already paying dividends.

“WLL allows us to meet all of our goals within the specified time and

we had done very little business with was mind blowing as well. We knew that we were doing something that would transform our lives and those of millions of Brazilians forever.”

WLL systems offer many advantages to wireless users. They transmit network services from base stations to receivers in customers’ homes or offices via radio signals, relying on IS-95 code division multiple access (CDMA)

technology. The signals transmit the information directly to in-building wiring systems, rather than routing them through outdoor cable and telephone poles.

As a result, WLL networks can be established

quickly — with no need for installers to dig trenches, install cable and telephone poles, or lay copper wires — saving lots of time and money. Base stations were rushed from a manufacturing site in Campinas, Brazil, for quick turnaround time. Lucent won the order over two major competitors in Brazil, Nortel and Ericsson, to extend its international presence.

In addition, Lucent *NetCare* Professional Services is also providing network support services to smooth the transition from traditional telecommunications systems to the WLL system.

“There are many advantages to Lucent with the signing of this contract,” said David Dial, vice president of business development for the CALA region. “This contract gives Lucent a major position with a fixed-service provider in São Paulo, home to more than 20 million people and one of the largest markets in Brazil. It also strengthens Lucent’s existing position in Brazil, will hopefully lead to successful pairings with Vesper São Paulo in the future, and clearly establishes Lucent’s footprint in CDMA technology in Brazil and around the world.”

—Rebecca Scott



Milton Yoshimura, Vesper’s vice president of operations, made the first phone call on São Paulo’s new IS-95 wireless network. Jeff Marcello, an installation technician, works to ensure that Vesper’s revolutionary new network is operational 22 days after the contract signing.

didn’t waste any time responding. The first call was placed on Vesper São Paulo’s new wireless network a remarkable 22 days after the contract signing.

“We have focused all of our resources to help our customers in Brazil enter into operation rapidly and efficiently,” said Jose Roberto Campos, acting president of Lucent Technologies in Brazil. “The Vesper negotiation took months of integrated effort from all areas of the company, not only in Brazil, but also from the U.S. team, and the teamwork was very

provide direct benefits to the consumer given its high quality, easy installation and competitive price,” said Freire. “The success of the first call demonstrates not only the commitment of Vesper São Paulo, but also of its suppliers, to offer excellent service to our customers.”

“With this contract, time was of the essence, since our customer had to deliver lines before the year-end, and negotiations started only in August,” said Edson Rigonatti, sales director for the Vesper account. “Landing a sale that big in Brazil with a customer

Communications Software—

Network Management Communications



Mike Decelle, Communications Software vice president, says *OneVision* software is a world-class effort. Decelle oversees marketing for *OneVision*. Michel Schoemaeker (right), a Communications Software systems engineer in Brussels, says *OneVision* has a bright future in Europe.

Software enables all networks and their applications. It has become the most strategic research and development investment a company can make—typically accounting for up to three-fourths of the R&D budgets of communications systems providers around the world. “Software has become the silent partner of everything,” said

Lucent’s *OneVision* Management Systems are helping manage next-generation networks.

Kenan Sahin, vice president of Software Technology at Bell Labs.

As voice and data networks increasingly converge, Lucent’s *OneVision* network software offers telecommunications carriers and service

providers a “silent partner” to help manage the convergence of new services, protocols and architectures. The *OneVision* software portfolio provides network and service management for today’s diverse multivendor networks, and unifies such disparate technologies as frame relay, asynchronous transfer mode (ATM), Internet protocol (IP), synchronous optical networks (SONET) and synchronous digital hierarchy (SDH).

Together with Ascend’s Navis software and the contributions of ongoing R&D in Lucent’s technical centers, *OneVision* is fast becoming the world-class and carrier-class choice for managing newly converged voice and data networks. Lucent’s recent merger with Ascend was a major step forward in the evolution of Lucent’s data-networking strategy, as Ascend is a recognized leader in service provider ATM, remote access and frame relay.

“*OneVision* management software is designed to provide carrier-class, worry-free management for today’s service provider,” said Lance Boxer, group president of Lucent’s Communications

PETER VIDOR

for the Revolution

Software business. "Coupled with Bell Labs innovations, this wide-ranging software platform provides a spectrum of network and service management functions across multiple network technologies."

A Global Launch

The product of a "global laboratory" that never sleeps, *OneVision* Management Systems was a collaboration by teams of Lucent and Bell Labs software developers working across different time zones around the world. It had its global launch in March at CeBIT, Europe's largest technology show, in Hannover, Germany. "From the Bell Labs Regional Technical Center for Communications Software in Sophia Antipolis, France, to the forthcoming Advanced Software Construction Center in Cary, N.C., *OneVision* is truly a world-class effort," said Mike Decelle, who recently left the MCI WorldCom Global Customer Team to join Lucent's Communications Software team as vice president of management systems product management and marketing. Boxer also formed a new management systems global organization under Decelle that will provide overall strategy, portfolio management, competitive analysis, marketing communications, alliances, product management, Tier 2 systems engineering, alliance management and standards directives for this strategic area of Lucent's future growth.

"Configuring multivendor networks and provisioning services across multiple technologies is a time-consuming and expensive job," added Richard Dominach, senior product manager. "Using our *OneVision* InterDomain Configuration Manager, carriers can dramatically improve their service



Michel Schoemaeker
systems engineer, Communications Software,
Brussels

RUPERT OBERHAUSER

delivery intervals, literally from weeks to hours: hence, the sooner they can start generating revenues."

Michel Schoemaeker, a Lucent Communications Software systems engineer in Brussels, believes that *OneVision* software is the future

in Europe. "The convergence of voice and data networks and the deregulation started in Europe in 1998 are making the various network operators look for the most high-tech management solutions available," he said. "*OneVision* is state of the art. It enables operators to meet their new customer expectations and differentiate themselves from their competitors." ○

— Alex Dumas and Rich Teplitsky

OneVision Facts

- The *OneVision* solution is being implemented by:
 - Bell Atlantic, to manage its new long-distance network.
 - Pensat International, to manage its converged network.
 - Winstar, to provide flow-through provisioning and customer service solutions for its next-generation networks.
- **OneVision Management Systems** will also be deployed by Lucent's *NetCare* Professional Services in the Denver and EMEA Network Reliability Centers to provide outsourced network management services.
- The *OneVision* portfolio provides multivendor, multitechnology network and service management for today's data-centric networks.
- **OneVision InterDomain Configuration Manager** provides integrated data network configurations and flow-through provisioning across ATM, Frame Relay, IP, Sonet and SDH networks.
- **OneVision Customer Service Management** provides proactive management tools to help service providers monitor the performance of customer networks, and to meet service-level agreements. It also allows customers to monitor the performance of their network services.
- **OneVision IP Network Configurator** provides automated IP router configuration through single-point administration, simply, quickly and accurately.
- **OneVision Alliance Solutions** incorporate third-party, best-of-breed network management solutions for multivendor networks.
- The *OneVision* portfolio is being enhanced to interface with Ascend's Navis family of element and network management software for support of Lucent ATM/frame relay network elements for the carrier marketplace.

Lucent Digital Video

Leading the Way in Video Networking

Video networking—sending and receiving digital images around the globe at lightning speed—is a key component of the communications revolution. Backed by Bell Labs' long history in high-definition television (HDTV) and essential patents and market leadership in critical MPEG-2 encoding, Lucent intends to be an important player as this business emerges and grows in the 21st century.



Lucent Digital Video (LDV), a venture company created in 1997 to develop and integrate the products and systems that make digital video broadcasting possible, has been acquired internally. It is now part of the Optical Networking Group in the recently created Service Provider Networks business.

LDV is the second venture created by Lucent's New Ventures Group (NVG) to be acquired by a business unit: the elemedia venture moved into the Switching Solutions Group in June.

Headquartered in Bridgewater, N.J., LDV has the majority share of the U.S. digital television (DTV) market for MPEG-2 encoders, having sold encoders to more than 60 of the 130 stations now broadcasting digital TV signals. It has moved quickly to align itself with Lucent's larger opportunities in optical networking and core asynchronous transfer mode (ATM) switching. In addition, an expanded product line has been announced to support both Lucent's innovative *Optic-Air* systems and its wide-area transport and interactive videoconferencing applications for MPEG-2 video.

"Lucent has the most formidable set of video networking assets in the industry, and this is largely due to the success of Lucent Digital Video," said Gerry Butters, president of Lucent's Optical Networking Group. "The synergy between our ATM core switches, our optical products, and the Lucent Digital Video product line creates a powerful end-to-end set of digital video solutions for our customers."

LDV has had a long-standing relationship with the Optical Networking Group, which has resold the



ROGER TILLY-BELOW, GIORIA BAKER

Lucent Digital Video captured the majority share of the U.S. digital television market for MPEG-2 encoders in 1999, and maintained the No. 1 market position in China. Here, John Mailhot (left), Lucent Digital Video's vice president of engineering, tests the Lucent VideoStar encoder with Nelson Botsford, director of project engineering.

ming. Other major VideoStar customers include MSG Networks, which uses two VideoStar HDTV encoders for New York Knicks, New York Rangers and New York Yankees games, and TVA, which carries French-language programming over cable in the Montreal area.

Lucent Digital Video's reputation as the expert in MPEG-2 compression enabled the group to get an early start on the DTV market. Lucent's debut at the annual National Association of Broadcasters (NAB) show in Las Vegas in April 1997 established Lucent as an influential player in the digital video business.

"The value of the New Ventures Group entrepreneurial structure was critical to the success of Lucent Digital Video. It nurtured us with a flexible decision-making environment that enabled the business to move fast and establish significant market share in the broadcast, cable, satellite and telco segments," said Andreas Papanicolaou, president of Lucent Digital Video. "We could not have done what we did without the support and guidance of the NVG team. This work not only led to a successful venture, but ensured that Lucent would have a strong foothold in the emerging digital video networking market."

Creating a Market

"Harris came to us (in 1997) knowing that we had the lead in the development of an HDTV encoder, and we delivered on time for them in '98, literally ensuring that the DTV industry would start on schedule," said Wilford. "The venture experience with LDV has been incredibly exciting for Bell Labs; the core team of engineers has been working together closely for the past eight to nine years on creating a new market for digital video."

Lucent's VideoStar encoder was used in the event that marked the birth of the DTV industry: the HDTV broadcast of John Glenn's space shuttle launch on Oct. 29, 1998.

Since then, LDV has launched a number of new products, including the LINK-

flagship Lucent VideoStar line of MPEG-2 encoders and decoders to its customers under the WaveStar DVS brand. In April 1998, LDV announced the world's first optical MPEG-2 network installation, in China's Zhejiang province, and it subsequently gained the leadership position in the growing Chinese DTV market.

Good Timing

Lucent Digital Video's roots can be traced to the Bell Labs digital high-definition TV (HDTV) research efforts initiated in 1989 by Arun Netravali, who was recently named president of Bell Labs. The venture sprung from Bell Labs' Advanced Technologies unit, led by Paul Wilford, who remains as LDV's chief technology officer, and its success is built on world-class expertise in MPEG-2 encoding, for which Lucent owns essential patents. John Mailhot, vice president of engineering for LDV, built the encoding system for the Grand Alliance HDTV system, and accepted the 1997 Primetime Engineering Emmy Award on behalf of Bell Labs for this work.

In January 1998, LDV announced a strategic alliance with Harris Corp., the world leader in transmitter sales for the radio and television broadcast industries, to sell Lucent encoders to broadcasters who were scrambling to comply with the FCC's mandated transition to DTV. Currently, all television stations owned and operated by the ABC and CBS networks in the United States, as well as many other stations around the country, use VideoStar to encode their program-



Gerry Butters
president, Optical Networking Group

Runner line of video gateways, and has incorporated the VIA 188 codec from AG Communications Systems into a new series of videoconferencing solutions.

"Lucent Digital Video was a market-maker in its first year, and it helped establish the bar by which we measure our ventures, combining innovative marketing and sales with best-in-class engineering skills," said Tom Uhlman, president of Lucent's New Ventures Group. "Now that this video networking technology has become strategic for Lucent, we're delighted to be able to deliver this resource to the Optical Group." ○

—Chris Pfaff

What is the key to Lucent's success in building next-generation networks?



ROGER TULLY

Passion for excellence. Lucent employees are the catalysts for our next-generation networks. Employees who display passion for work, knowledge and success exemplify the leadership and creativity necessary to propel Lucent into the next generation. Our continued success requires dedication, teamwork and desire not only to compete but excel in future markets. Our employees will empower Lucent to be the market leader.

Brandon Updegrave & Kristin Ciemiewicz

financial specialist,
Chief Financial Officer,
Microelectronics,
Reading, Pa.



PETER CHARLESWORTH

Change and innovation. The new millennium will usher in major technological changes. Voice, data, video, wired and wireless communications will boost Lucent's market share. Our history of innovation and creativity and our familiarity with changing technologies and markets will become invaluable assets in the future. Lucent is positioned and ready to make the next generation better.

Napatson & Wutipong Patamawisut

installation manager,
Customer Operations
and Project Management,
Service Provider Networks,
Bangkok, Thailand



ROGER TULLY

Knowledge. The never-ending quest for knowledge is critical to Lucent's future. From scientific discoveries to our business processes, knowledge powers Lucent's product portfolio. We must use Lucent's unparalleled knowledge of our customers, technology and telecommunications to expand our frontiers. The ongoing search for the best talent and technology will help Lucent design networks of the future and leave a legacy that will shape our children's future.

Guillermo & Fernando Rodriguez

senior sales manager,
AT&T Customer Business Unit,
Service Provider Networks,
Garza Garcia, Mexico



ROGER TULLY

Research and development. Lucent must continue to beat competitors by thinking outside the box and exploring new possibilities. With the recent business realignment and newly acquired companies, Lucent is venturing into new markets to create world-class products before customers realize they need them and before competitors know they missed the mark.

Sam & Cheryl Thornton

installation staff,
NetCare Network Services,
Service Provider Networks,
Atlanta, Ga.



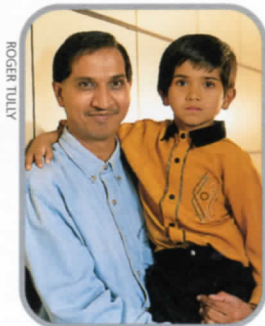
ROGER TULLY

Innovation and speed.

The convergence of voice and data networking will frame our next-generation networks. This exploding market will also challenge traditional thinking. Lucent must be open to new ideas and embrace initiatives that will speed concepts from the drawing board. Our success depends on knowledgeable people with an eye for opportunities, who are motivated by change.

Ginger & Hong Jiang

member of technical staff,
Advanced Video Technology Dept.,
Bell Laboratories,
Murray Hill, N.J.



ROGER TULLY

Competitive products and customer driven. Lucent is ready to build broadband networks today that deliver voice, data and video services. We have the broadest portfolio of reliable products at competitive prices. The alignment into four core businesses reinforces our promise to deliver end-to-end service and new technology that will make Lucent a clear industry leader.

Ankit & Rajesh Patel

member of technical staff,
Flexent Performance Planning Group,
Service Provider Networks,
Schaumburg, Ill.



JEAN CLAUDE THUILIER

Relationships. Our professional and personal lives are driven by relationships. With our broad portfolio of innovative products, Lucent has earned a reputation for delivering seamless communications that bring people closer together and bypass differences in time zones and boundary lines. Lucent's new developments, like third-generation wireless services, will give our children the best tools for sharing their emotions and ideas, enhancing their lives and improving our world.

Cyrielle & Jean-Pierre Beaudouin

engineer,
Wireless Networks Group,
Service Provider Networks,
Le Plessis-Robinson, France



ROGER TULLY

People and products. Our success depends on continually developing new products and building a strong people base with employees and customers. My organization supports Lucent Real Estate, and we're constructing newly designed workplaces to improve communications, computing and collaboration and to support employee interaction. If Lucent continues fostering an environment with opportunities that encourage creativity and risk taking, effective results will follow.

Eddie & Arie Kinch

administrative assistant,
Real Estate Finance,
Morristown, N.J.

