

UPDATE

Solutions for Success

Consultant/Vendor Sales Group

To Encrypt Or Not **see P. 6**

Your Personal Information Revealed **see P. 13**

Digital Solutions for Disabled **see P. 14**

AT&T – Official US Olympic Team Partner **see P. 17**

Heritage of Innovation **see P. 18**

>AT&T Company Overview

Profile

The new AT&T is the largest telecommunications company in the United States and one of the largest in the world.

It is the global company that will set the industry standard for a new era of integrated communications and entertainment services. Today, the new AT&T has IP-based (Internet Protocol) network capabilities, assets, and resources that are widely regarded as unsurpassed in the marketplace, enabling the company to lead the industry in using the language of the Internet to deliver innovative services that integrate voice, data and video. The combined IP assets of the new AT&T will enable innovations that neither the pre-merger SBC nor pre-merger AT&T could have accomplished on its own.

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>HP & Cingular Wireless Solution

HP and Cingular Wireless recently announced the HP iPAQ hw6500 series Mobile Messenger, the first Pocket PCs in the United States to use Cingular's high-speed EDGE network.

This sleek smart device, delivers wireless email and an array of applications that offer users access to the digital content and services they need for truly effective global communication and mobile productivity.

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Kari's Korner



>The Best Is Yet To Come

A wise person once said, "Nothing is constant but change." That's pretty true, unless you're trying to get change from a vending machine. Speaking of change, those of us in the Consultant Vendor Sales Group are thrilled with the birth of the new AT&T. Some of our team once had business cards that read, "Pacific Telephone" (part of AT&T prior to divestiture), then "Pacific Bell," and "SBC". Now we've emerged as the new AT&T (with the acquisition of AT&T Corp.) We're happy because this most recent change gives us amazing local, global and wireless network

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UPDATE Special Report On Executives

>What Makes You Successful Today?

We asked several telecom consultant executives to provide insight into their thoughts about Success. Each has been in business for years. They responded with refreshing candor, chockfull of invaluable tips on Success. Our sincere THANKS to these very busy professionals for taking time to enlighten us.

I Don't Do What I Don't Do

The reason I believe I'm successful is because I follow my own motto: 'I don't do what I don't do.' Too many people are afraid to tell their client or customer that they are not familiar with a product, application or an idea. They think that by not having all the answers, they look weak in their field. I only do what I know I am best at, comfortable with and enjoy doing. Anything beyond those three aspects of my practice are not worth anyone's time. I've found in my consulting experience that the most money I make are the jobs I don't take.

*Jacque Mercier, Principal, Eagles Soar Communications
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Working to keep your communications going 24/7 for over 125 years.
Courtesy AT&T Archives & History Center

I Treat People How I Want To Be Treated

'Success' is a personal measurement. We all measure it different. I don't measure it in dollar terms.

I Treat People How I Want To Be Treated

This is a good rule in life and it really works at work. And, it's a very simple philosophy to learn.

Be A Team Player

In our personal and business lives, we are not the center of our universe. In life, I need to team with my kids to achieve the best results. In business, there are many people involved (in projects) –some not as "strong" as we'd like. But we need to get them to a level they contribute in a positive fashion. All members of a project have their own agendas—some positive; some to benefit themselves at the expense of the team.... I try to help them be a member of a team, leading by example. If there is a problem, it's all about the solution, not the weak link, not to fingerpoint. My job is to show them this is how a team can be successful.

Create Loyal Relationships

By treating people as an equal, by promoting a team strategy, I've learned to develop relationships that have promoted loyalty from both sides. For instance, I'm not going to be the biggest buyer of services from a vendor, but I'll likely get better treatment than someone who is a bigger buyer because I have worked at developing relationships that speak beyond \$\$\$.

Always Be Accessible

Both clients and vendors can always find me. I'm very responsible and try to answer all calls, even if to say I'm busy and will call back. Often there's a 30-second question I can answer, stopping the game of phone/voice mail tag. I carry a PDA and respond. This makes everyone feel I'm in the flow of everything going on.

Have Happy, Long Term Clients

I don't lose clients. I perform the services agreed upon and I feel I give them a good value for their dollar. I work the relationship which drives the loyalty.

Doug Kanner, President, RFM Group
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Understand How Your Customer Uses Telecommunications

Working closely with the client helps me understand how they use telecommunications, what potential uses for telecom are viable and what is most important to them. Then I make a solid recommendation. In developing a recommendation, the most important consideration is to be ethical and provide all appropriate options to the client. I customize the options to that particular

client and give them all the information they need so they can make an educated choice. There's no such thing as a "one size fits all" solution in today's telecom world. Not surprisingly, all our new business has been from referrals. I receive referrals from customers and vendors. I consider both a big win because it shows that I'm not only doing a good job but also treating everyone fairly and with respect. Here are some of my Tips for Success:

Seize the day

Be organized, plan and get things done. Don't procrastinate.

Learn the trade from the inside out

Wherever possible, listen and learn. Understanding each part of the telecom puzzle is essential to delivering a successful system or solution.

Provide a high level of customer service

Customer interface and good synergy are essential to a successful installation or project.

Strategize with the client

No one knows their business like they do. Find out what's important to them. It may surprise you. Design a system or solution that meets their own unique needs.

Get involved as early as possible

It's never too early to start planning, even when the building is still on the drawing board.

Look at all the options

The best choice is not always the most obvious.

Provide all appropriate options to the client

Give them the pros and cons of each so they can make the right decision.

Quality is everything

Do it right the first time.

Build relationships with vendors and service providers on whom you can trust and rely

Bottomline: you'll know you are making your customers happy when the referrals start rolling in.

John N. Lambert, Managing Principal, Lambert & Associates
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Make Your Customers Successful

If you make your customers successful, you'll be successful. Making them successful requires several things, including:

- ◆ Understandable ongoing communication
- ◆ Careful listening
- ◆ Making sure everyone's on the same page
- ◆ Keeping up on the daily developments in technology and business practices
- ◆ Delivering what you promise & what's expected

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The opinions expressed in this column are those of the individual executives and not those of the AT&T family of companies.

resources for making integrated communications and entertainment a reality. And along with Cingular Wireless (the new AT&T owns 60% of it), we want to give you anywhere, anytime communications. But even though there have been a lot of changes in telecom lately, some things never change—the companies who came together to form our "new" company have been around for more than 125 years! We've always stressed Innovation, Quality, Reliability and Customer Care. Your Success remains our mission. We have a passion to assist you. Please contact our liaison managers (see back cover).

Thank you,

Kari

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Kari Aguinaldo, CVSG Leader



P.S. Speaking of change, you may have noticed the new logo. The three dimensional

AT&T globe represents the expanding breadth and depth of services that the new AT&T family of companies provide to customers. It also symbolizes AT&T global presence.

The HP iPAQ hw6500 series is the first generally available Cingular-enabled device to have an integrated global positioning satellite (GPS) receiver. Cingular will sell two versions of the Mobile Messenger, the hw6515 featuring a 1.3-megapixel camera and the hw6510, which will come without a camera. The HP iPAQ hw6500 series also boasts a unique combination of digital wireless voice and data capabilities, including access to Cingular's nationwide EDGE network, built-in keyboard, and Bluetooth™ wireless technology.

Cingular's EDGE network is the largest and fastest national wireless data network in the United States, with availability in 13,000 cities and towns and along more than 40,000 miles of interstate highways.

To help simplify the implementation of wireless solutions, HP and Cingular have collaborated with 14 application providers to create the HP Mobility Solutions Evaluation Center (www.hp.com/go/mobile-evaluation), a one-stop shop for diverse mobility solutions and know-how for notebooks, tablet PC and handheld devices.

"When I look at the future, it's so bright that it burns my eyes."

Oprah Winfrey

The new AT&T family of companies serves millions of customers around the globe, including global, national, mid-size, regional and government customers. It delivers an unsurpassed portfolio of traditional and IP-based voice, broadband Internet, data transport, wireless and video services. It also offers online and print directory publishing and advertising.

Key Facts on the New AT&T Companies

One of the world's most advanced and powerful IP backbone networks, carrying 4.6 petabytes (4.9 billion megabytes) of traffic on an average business day to nearly every continent and country, with up to 99.999% availability.

One of the world's largest providers of IP-based communications services for businesses, with an extensive portfolio of Virtual Private Network (VPN), Voice over IP (VoIP) and other offerings, all backed by innovative security and support capabilities.

- ◆ The new AT&T VoIP service portfolio is one of the most extensive in the market today, enabling enterprises to migrate seamlessly between VoIP and TDM services.
- ◆ The new AT&T is the only provider to deliver interoperability with the world's five leading IP PBX vendors.

No. 1 U.S. provider of broadband DSL. Has 6.5 million lines in service and a major Wi-Fi provider, making it a leader in delivering IP-based services to residential and small-business customers.

No. 1 U.S. wireless provider. Holds a 60 percent ownership of Cingular Wireless, which has 52.3 million customers.

No. 1 U.S. provider of local voice services.

No. 1 U.S. provider of long distance voice services.

World's largest directory publisher. Delivers 110 million directories a year and publishes more than 700 different directories in 13 states, as well as online.

World leader in transport and termination of wholesale traffic. Recognized by numerous experts for its industry-leading wholesale services portfolio.

U.S. Presence

Through its affiliates and subsidiaries, the new AT&T is the largest U.S. provider of broadband DSL, long distance and local voice services. The company serves millions of customers, with concentration in Arkansas, California, Connecticut, Illinois, Indiana, Kansas, Michigan, Missouri, Nevada, Ohio, Oklahoma, Texas and Wisconsin. These 13 states cover about one-third of the U.S. population.

Via its Cingular relationship, the new AT&T is able to deliver a range of wireless voice and data services to customers across the

United States and globally. Cingular is the nation's largest U.S. wireless carrier, with spectrum in 49 states. Further, the Cingular relationship expands the new AT&T's ability to provide a range of innovative and flexible solutions that integrate wireless and wireline communications.

Global Reach

The new AT&T provides services to virtually every country and territory in the world, providing international voice service in 240 countries, linking 400 carriers and offering remote access via 19,500 points of presence in 149 countries around the globe.

Cingular delivers the widest international coverage of any U.S.-based wireless carrier, giving customers the ability to make calls using an internationally enabled phone on six continents and 170 countries, with wireless data roaming in 70 countries for laptops, hand-held devices and other data services.

Mass Market: Consumer and Small-Business Portfolio

The new AT&T companies provide an unsurpassed array of voice, wireless, entertainment, and IP/data communications products and services for consumers and small businesses. The new AT&T companies will expand the reach of comprehensive, innovative service bundles provided by the SBC companies, enabling millions of new consumers and businesses to take advantage of discounted pricing and a single bill for wireline and wireless voice and data, broadband Internet and messaging services. The new AT&T portfolio of services is perhaps the most robust in today's market, featuring choice, value and convenience across a range of service options that includes:

- ◆ Broadband DSL.
- ◆ Wi-Fi connectivity at more than 18,000 hot spots in the United States and the world, offering broadband service for on-the-go customers in a total of 42 countries.
- ◆ Home and small-business networking.
- ◆ Wireless services.
- ◆ Satellite television and, beginning with limited rollouts in 2006, IPTV entertainment services.
- ◆ Local and long distance voice services.
- ◆ Messaging services and call management features.
- ◆ IP and Layer 2 data transport services.
- ◆ Directory services, listings and advertising.

In addition, the new AT&T companies will focus on quickly adapting communications innovations that start in the enterprise to bring the same benefits to small-business and residential customers.

Global, National, Mid-Size, Regional and Government Portfolio

Business customers benefit from access to a single source for comprehensive local, national, global and wireless services. The new AT&T companies provide an industry-leading portfolio of advanced IP and traditional networking solutions for both voice and data. All services are matched with an array of consulting and management services, providing businesses with professional support options for every element of network planning, design, deployment and ongoing management. Enterprise customers also benefit from the industry's most powerful online service portal, which enables a range of automated sales and service functions.

The world's leading CIOs are increasingly recognizing the new AT&T as their global IT or information technology strategic partner and networking integrator of choice – thanks to the company's relentless focus on delivering the industry's most reliable service, most globally consistent portfolio, and the most advanced network management and security tools. The new AT&T leadership in IP services is evident in the customers it serves:

- ◆ Virtually all of the Fortune 1000 companies
- ◆ All of the Standard & Poor's (S&P) 500 companies

Services include:

- ◆ Access and local services
- ◆ Contact management services
- ◆ Data/managed data services
- ◆ Hosting
- ◆ Integrated offers
- ◆ IP and IP-VPN services
- ◆ Long distance voice
- ◆ Network integration and consulting
- ◆ Security and business continuity
- ◆ Voice and data CPE
- ◆ Voice over IP
- ◆ Enterprise mobility

Wholesale Offerings

The new AT&T wholesale organization is a global leader in transport and termination of wholesale traffic. It offers a comprehensive wholesale solutions portfolio that is widely regarded by industry experts as being industry-leading. Wholesale services from the combined company benefit carriers, wireless operators, cable providers, and Internet Service Providers (ISPs) by offering complete, end-to-end solutions locally, as well as globally, all from one provider. The new AT&T wholesale organization can help businesses grow by extending their footprint, strengthening their network infrastructure, making their internal business operations more efficient and complementing their existing offers with new value-added application services.

The new AT&T wholesale organization offers a robust portfolio that recognizes the unique needs of wholesale customers such as the following:

- ◆ **Wireless Operators.** The new AT&T wholesale organization offers services that meet unique requirements of wireless operators, from traditional voice applications to high-capacity data applications over a secure next-generation network.
- ◆ **Cable Operators.** The new AT&T wholesale group allows cable operators to offer to their end-user customers an array of voice, data and video services solutions, all delivered over a reliable, secure state-of-the-art network.
- ◆ **Wireline Carriers.** The new AT&T scalable network infrastructure enables carriers to seamlessly expand their networks, as well as to offer to their end-user customers a robust portfolio of voice, video and data services.
- ◆ **ISPs.** The new AT&T wholesale organization provides ISPs with the flexibility to scale and successfully deliver to their end-user customers new voice, data and video applications over a reliable, secure state-of-the-art network.

Networks

The new AT&T owns and operates world-class local, national and global wireline, wireless and IP/data networks, including one of the world's most advanced and powerful IP backbone networks, which uses multiprotocol label switching (MPLS) technology to enable seamless integration of multiple networking technologies. This reliable, high-performance infrastructure enables businesses to evolve toward IP and support diverse applications while still taking advantage of their existing network infrastructure.

The company's U.S. networks include:

- ◆ 50.2 million access lines (SBC-only access lines).
- ◆ 6.5 million DSL lines.
- ◆ Access to more than 18,000 Wi-Fi hot spots in 42 countries.

Cingular's wireless network includes:

- ◆ Superior spectrum availability in the nation's top 100 markets.
- ◆ A fully digital, GSM/GPRS infrastructure across its footprint.
- ◆ EDGE wireless broadband across its footprint.
- ◆ UMTS broadband, which is currently being deployed to deliver higher-speed broadband services in metro markets.

The new AT&T's global backbone network includes: 1,500 managed MPLS nodes in 80 countries.

- ◆ 75,000 MPLS customer ports.
- ◆ 28 data centers.
- ◆ 410,000 fiber route miles

Headquarters

San Antonio, Texas

Employees Worldwide

197,100 (SBC: 157,600; AT&T: 39,500 — as of 9/30/05)

Industry Ranking

If ranked at merger close among the 2005 Fortune 500, the combined company would place 12th on the full U.S. list and 24th on the full global list.

Community Support

The new AT&T also inherits a proud heritage of corporate citizenship that will continue to be an integral part of the company's future. The new AT&T and its employees are committed to enriching and strengthening the communities they serve through financial support and volunteerism.

Since 1984, SBC Communications Inc. and the SBC Foundation have contributed more than \$1 billion to nonprofit organizations around the country. Likewise, the AT&T Foundation has been a significant supporter of education, civic causes, the arts and culture. With the creation of the new AT&T, the predecessor foundations will be combined and are expected to invest more than \$60 million in philanthropic giving.

The new AT&T is proud to be a company sponsor of the Pioneers, the world's largest industry-sponsored community volunteer organization. Approximately 197,000 employees and retirees of the former SBC Communications Inc. and former AT&T Corp. serve their communities through the Pioneers. In 2004, Pioneers from both former companies donated 8.5 million hours to community outreach activities — more than \$140 million worth of time.

Recognition

The new AT&T companies are the recipients of numerous industry and national awards and recognition. Honors include:

- ◆ America's Most Admired Telecommunications Company (Fortune magazine, 1996 – 1998, 2000 – 2004)
- ◆ Named as a leader in Gartner's Magic Quadrants for U.S. Network Providers, Global Network Service Providers and Asia/Pacific Network Service Providers (Gartner Inc., 2004)
- ◆ Best Customer Portal in the Industry; chosen for "highest overall level of product integration, provisioning, tools and feature support" (Yankee Group, 2005)
- ◆ CIO Enterprise Value Award in High Tech, telecom and utilities category (CIO magazine, 2005)
- ◆ America's 50 Best Companies for Minorities (Fortune magazine, 2004)

Corporate History

The birth of the new AT&T is, in large measure, the culmination of the evolution of telecommunications in the United States. AT&T's roots stretch back to 1876, with Alexander Graham



Serving you for over 125 years

Bell's invention of the telephone and the founding of the company that became AT&T. As the parent company of the Bell System, AT&T provided what was by all accounts the best telephone service in the world.

The Bell System was divested in 1984 by an agreement between the former AT&T and the U.S. Department of Justice, in which AT&T agreed to divest itself of its local telephone operations but retain its long distance, R&D and manufacturing arms. Out of the divestiture was born SBC Communications Inc. (formerly known as Southwestern Bell Corp.).

In the face of dramatic changes to the competitive landscape triggered by the Telecommunications Act of 1996, SBC Communications Inc. embarked upon a series of acquisitions to establish itself as a global communications provider: Pacific Telesis Group (1997), Southern New England Telecommunications (1998) and Ameritech Corporation (1999).

With the merger of AT&T Corp. and SBC Communications Inc., the new AT&T is now one of the largest global telecommunications and networking companies.

Investor Information

Ticker Symbol

NYSE: "T". A Fortune 500 company, the new AT&T is one of the 30 stocks that make up the Dow Jones Industrial Average.

Traded

AT&T Inc. common stock is listed on the New York Stock Exchange and the Swiss Exchange and is traded on the London Stock Exchange through the SEAQ International Markets facility.

2004 Revenues

SBC Communications Inc. — \$40.7 billion
AT&T Corp. — \$30.5 billion



>The new AT&T offers robust IP-MPLS based products

In the May 2004 Update I wrote about a new product offering called SBC PremierSERVSM Network-based Virtual Private Network (NVPN). The article reviewed this product that is an overlay to the SBC national IP backbone that uses Cisco Systems routers and Multiprotocol Label Switching (MPLS) technology to deliver highly differentiated network services. I reviewed the industry trends, products features, benefits and target customer profiles. The article may be viewed at <http://www.sbc.com/cvsg>. At that time SBC had not yet introduced multiple classes of service for voice, data and video for this product. This article will discuss the added feature, Class of Service (CoS) queuing we began providing in January 2005 on our Provider Edge Routers. And with the acquisition of AT&T, we now have three new MPLS based products for our customers. They include: IP enabled Frame Relay, a PVC-less Layer 2 product; Enhanced VPN, providing full CPE management; and MPLS Private Network Transport. Early next year we plan to offer AT&T VPN which is very similar to our embedded SBC NVPN product that supports both Frame and ATM in a managed and customer managed environment.

Our MPLS based products are designed to help business customers reduce cost, increase productivity, improve responsiveness, build resilience and let them focus on their core competencies. To understand Class of Service queuing we must first begin with an emerging network technology called MPLS that provides a range of cost-effective, simplified networking options for customers.

MPLS technology provides differentiated CoS levels that will support video and voice applications. This technology works by switching packets based on labels, rather than routing. At a simple level, MPLS computes routing decisions and assigns a label or "tag" telling a switch or router where to send a packet. By implementing label switching technology, devices are not making any decisions so packets are switched rather than routed. This virtual routing and forwarding technology eliminates the need for encryption and authentication, and can achieve much higher performance levels moving data through the core network than address-based routing. It's the ability to "tag" packets that allows data for video, voice, or low priority transmission to be identified and routed accordingly.

Class of Service (COS) Queuing

CoS is defined as the measure of performance for a transmission system that reflects its transmission quality and service availability. Different applications have varying needs

for delay (latency), delay variation (jitter), bandwidth, packet loss, and availability. These parameters form the basis of CoS. One of the new features made available by MPLS is support for CoS. In January 2005 SBC implemented CoS on our Provider Edge Routers in order to manage the multitude of applications such as streaming video, voice over IP, e-commerce and other services. Customers using CoS queuing classify and mark classes of traffic by the origination application on their network so that varying service levels can be enforced throughout the network. This allows their network to prioritize the real time traffic inside their network, and on the link from the Customer Edge (CE) Router to the Provider Edge (PE) Router. Once traffic is marked, it will contain the same markings as it traverses multiple hops through the NVPN network.

AT&T Offers Four Classes of Service

AT&T offers four classes of service on our MPLS based products. It's important to note that AT&T does not mark IP traffic, but only respects the markings placed on the traffic by the customer. CoS is usually set by the end device, such as the VoIP phone, the video server, or the database access application. The four classes offered are:

- ◆ C1 (Real Time) is designed for high speed interactive video and voice applications. This CoS takes priority over all other options, and is used for applications that are sensitive to latency, availability, and jitter - such as voice and video.
- ◆ C2 (Interactive) is designed for critical applications that require priority treatment. Applications using this CoS include one-way video broadcast systems that require a delivery confirmation within a short period of time or database activity.
- ◆ C3 (Enhanced) is designed for low frame loss and low delay requirements. This CoS is designed to transport non-mission critical, yet delay sensitive applications such as SNA applications or streaming video.
- ◆ C4 (Standard) is designed for bursty traffic with minimal delay/latency requirements. Applications would include e-mail, Internet traffic or other services that do not rely on short delivery return messages. This would include most computer-to-computer applications.

In addition to the four classes of service described above, C1 traffic also needs to be shaped according to the service profile. Service profiles control the amount of C1 traffic that the customer is permitted to pass on a site by site basis. This is also known as the "traffic contract."

AT&T has defined traffic profile contracts specifying the maximum amount of traffic that can be marked as C1 (Real Time). These categories define the amount of Real Time (C1) data they wish to send, relative to their other types of data. Real Time traffic exceeding the

contracted amount is dropped at the PE router in the MPLS network. Any remaining bandwidth can be utilized for lower priority (C2-C4) traffic. Thus it's important for customers to conform their traffic to the traffic profile contract they have purchased. The maximum percentage of Real Time traffic service categories are: 0%, 20%, 40%, 60% and 100% Real Time. These are stated as a percent of port size and a premium is charged for the percent of C1 traffic only. Customers are allowed to float C2 - C4 traffic up to 100% of port size. For example, if a customer has ordered the 40% service category, but is only transmitting 10% Real Time traffic, they may transmit 90% lower priority traffic.

The percentages are representative of the customer's data stream and are not meant to represent the percentage of bandwidth available. Depending upon the transport type, speed ordered, and the VoIP codec used, actual throughput and available bandwidth could vary considerably. A customer needs to define their application priorities and service categories carefully, because the way they mix the data priorities can have a profound impact on their data throughput and network performance.

Additionally, the 100% C1 traffic service profile refers to bandwidth remaining after making allowances for a small percentage of overhead reserved for traffic control, such as routing updates and "keep alive" messages. There is also a misconception that marking all traffic as C1 will enhance the overall delivery of customer traffic. In fact, the reverse is true. Marking all traffic as C1 will have the same effect as not having Quality of Service enabled, i.e., a network guarantee to provide predictable results. Traffic shaping and prioritization will only work if there are multiple classes of traffic on the interface.

Summary

AT&T uses CoS components in the MPLS network to provide a greater value to the enterprise customer. The network has an SLA of 99.99% uptime in order to offer a highly available service. It allows for traffic groupings with specific attributes; class levels are used to prioritize traffic; policies are used to control network resources; and CoS is based on per hop behavior, i.e., each node is responsible for managing its own traffic flow. CoS allows AT&T to provide the enterprise customer with the tight SLAs essential to services such as VoIP and interactive video. By deploying these specific CoS mechanisms to manage latency, jitter, bandwidth and packet loss on a network, AT&T can achieve the level of end-to-end CoS that our enterprise customers require.

Tom

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UPDATE



> Encryption Decisions

Executive Summary

The decision to use encryption is different for each participant in the decision.

Management may want to protect information with encryption, technology implementers know what encryption products and technologies are available and technology users tend to want the technology to do all the work. Users frequently won't encrypt if they have the choice even if it's just one extra keystroke or checkbox. In addition encryption is normally more appropriate for information in transit over a network or on mobile devices than it is for information stored on disk or tape, but not always. Sometimes it's better not to spend the money on encryption but use better access controls to protect your information.

Introduction

Encryption is fascinating technology, built on complex but understandable mathematics. In theory it's one of the best ways to conceal the meaning of information. In practice, of course, you will find a more complex picture. People often resist using encryption for day to day things and poor implementation can leave weaknesses that the mathematics can't control. This article will discuss the decision to apply encryption to information on different devices and media.

Encryption Key Overview

Encryption depends on encryption keys, strings of random characters, and some keys are better than others. There are two primary, sophisticated ways to encrypt: either with a secret key or with a pair of keys known as a public key/private key pair. Each method has advantages and disadvantages. A lot of encryption technology combines the two to get the most benefit.

Secret Key

Encryption between two persons or entities with a shared, secret key tends to be very fast, but requires that the two parties have a secure way to share their secret key. You can't just send the key in advance in clear text: the secret key is confidential information, and could be duplicated by anyone who could see it, allowing a third party to read the message. So speed is the benefit, but sharing the key is the weakness. If you are encrypting information for your own storage and not to transmit, secret key is the way to go.

Key Pair

Encryption between two persons or entities who each have a public key and a private key

is slower, but the exchange of keys is very easy. Each person can send a public key in clear text to the other, and then use the other person's public key to encrypt the message. The message is only revealed by the recipient's private key, which is not shared. Sharing the key is easy, but the communication is slowed by the slow encryption.

Combination

In the combination method, a key-pair is used only to exchange a secret key which will allow the rest of the message to be encrypted and decrypted quickly. The secret key is used for only one session or for one message, then discarded. This is the way information is encrypted on secure Internet web sites. Sharing a secret key becomes easy and communication is accomplished with the faster encryption.

Key Strength

Key strength is an important factor to consider. Key strength is a way of describing how difficult it is for a third person to discover the key that reveals the meaning of the message. Two things determine key strength. First is always the size of the key, or the number of random characters. The second is the means used to generate those random characters. If keys are too short or the way they are generated is not well thought out, keys can be discovered easily using modern, off-the-shelf computers.

Human Factors

People like the idea of encryption, they just don't like it or trust it when they have to participate in the process. When the infrastructure is set up so the machines decide when and how to encrypt, and handle the key exchange, people are happy to let that happen, and even more confident in using the infrastructure to share personal and financial information. Somehow when people actually have to make the encryption decision, they either don't bother or don't think about it, unless the motivations are really strong.

People like online banking, bill paying and tax filing. They are convenient and the technology assures the security; individuals don't have to make the encryption decision. People don't like to encrypt E-mail because it takes time to manage their own and other people's keys. It just feels like too much work for what should be easy - sending a message. It may just be that encryption has not matured enough; not enough people are doing it to be generally accepted yet.

If you need your employees to encrypt e-mail or hard drives you will have to communicate this policy clearly along with the reasons. You will need their buy-in to implement encryption successfully. People will find ways to avoid security if it becomes

complicated for them or takes them away from their "real work". If you make it a requirement, they will start to consider it what they need to do.

Encryption on a Network

Information on a network or over the airwaves is vulnerable to interception. Anyone on the network could eavesdrop on all messages going over the wire, or someone with a receiver could "listen in" to messages going over the air. Information is often most at risk when it's traveling. Fortunately that's also when encryption is at its best.

Secure Web Pages

Secure web pages are the best example of the best use of encryption. Web pages can be protected with Secure Sockets Layer (SSL). The web browser and the web server manage the security. Most likely E-commerce would not be possible without SSL or some equivalent to protect credit card numbers or online banking PINs from interception. The user doesn't even have to know this is going on, although the knowledgeable user will see the https in the Universal Record Locator (URL) or page address. If you need to protect confidential information on a web page, SSL is your best bet.

SSL requires that the web server and the web browser exchange a public key so that a secret key can be generated and shared for the transmission of the information. This all happens computer to computer. Some web pages allow the user to click a button to turn on the security. The one weakness with SSL is that the strength of the security is determined by the settings on the web browser of the person accessing the website. If the user settings call for short encryption keys, those are used.

Wireless Networks

I love my wireless network at home. I've only got 2 computers, but I don't have to string a CAT5 wire from the DSL connection to another room to work (or surf) on my laptop. Unlike SSL, the user has to be the system administrator. The user has to take the time to configure both ends of the communication with the protocol and the encryption key. Once it's set up, it's more like SSL, the devices do the rest.

While it's not that hard to configure the encryption, a lot of people don't bother. Vendors make it easier and easier, but the components will work without the security and many people just want instant gratification. There's no easy solution; you have to get over your own resistance and do it. Protect your home or office network from your neighbors' teenagers or the person driving by looking for a free connection.

Protocol Choices

This paragraph gives technical details on the equipment you buy when you want to have a wireless network. If you don't want any technical detail at all, skip to the next paragraph. There are 3 flavors of encryption for an 802.11 wireless network: *Wired Equivalent Privacy (WEP)*, *Wi-Fi Protected Access (WPA)* and *WPA2*. WEP has known vulnerabilities and hackers have utilities to make it easy to crack. WPA improved on WEP and WPA2 is the latest version of WPA. The router and adapter have to be capable of, and configured to use, the same protocol or your secured network won't work for you. Not all Peripheral Component Interconnect (PCI) adapters will support the stronger encryption and the ones that do are more expensive. Still, if you are buying your first wireless router or it's time to upgrade to the newer faster ones, spend the money to get the higher level of security. Then turn it on.

Working away from Work

The ability to work from remote locations can be a win-win situation for employer and employee. It's one situation where people are willing to make the effort to use encryption so they can get the obvious benefits. Employees on call 24/7 don't have to get dressed and drive to work in the middle of the night to fix a problem or to get information to make a decision. Employees who travel can be productive in hotel rooms or at customer sites. Encryption makes this possible. Yes, good security can actually help you be more productive.

A Virtual Private Network (VPN) turns the Internet into a secure information pipeline. Through authentication and encryption a computer in the office and a remote computer on the Internet establish a virtual private-line connection. Even though the packets of the message can be sent anywhere on the Internet before reaching their destination, their meaning is hidden until revealed at the other end.

Original VPN required both computers to have compatible VPN software, but some recent VPN (Clientless VPN) makes use of SSL and web browsers to have the privacy without the need for VPN software. This makes it possible to use any web browser on any computer. Remember that security is often a trade off. Using an insecure computer for the VPN connection could compromise any information left on the computer. Public-use computers at a trade show might not be the best bet for working remotely if you leave your secrets for the next person to review.

Limitations

Never forget that encryption will do you no good if you do your work or read sensitive information in a public place where the

person in the next seat or at the next table may be shoulder-surfing. By allowing employees to work from remote locations, you have also permitted that employee to display that information in airport waiting areas, in hotel lobbies or in Starbucks.

Business to Business

This is an ideal situation where encryption can both lower costs and enable productivity gains. The demands for business to business communications no longer allow you to call your supplier and order a thousand more widgets. Computers can place these orders a lot faster without holidays or sick days. It used to be when businesses needed security they had to pay for private-line, dedicated circuits between locations. Today encryption allows two businesses to keep the privacy at a fraction of the cost. The reduced cost allows smaller businesses to take advantage of faster communications. Good security, wisely used, can help your business to grow.

Disk Drives and Mobile Devices or Media

The decision to use encryption when you are not sending the information over a network is more complicated. Do a lot of people need access? Do you have other means of protecting the information that may be more appropriate? Is the information stored on a device that could be lost or stolen? Is there a suitable encryption product available at a reasonable price? Unfortunately there is no easy encryption, such as SSL, for storage devices or mobile media (e.g. diskettes, tape, CD's DVD's or USB drives). There's nothing really cheap and easy. You really have to want it to get it.

Lots of Users

The more people who legitimately need access to information, the less likely you are to get any benefit from encryption on your storage devices. The more people who need access to a secret key to read the information, the less secret the key. It's just that simple. You have to do something else to protect the information. On the other hand, if you're the only user, then you should weigh the value of the information against the risk that the device could be accessed by a hostile third party.

Mobile Devices or Media

If you keep sensitive information on any mobile devices such as a laptop, Universal Service Bus (USB) drive, Personal Digital Assistant (PDA), Apple Computer iPod®, digital camera, cell phone or wrist watch, then you should buy devices that will encrypt the information and protect it with a password. Laptops are stolen every day. USB drives can be left behind accidentally. PDAs are lost, iPod's and cameras are attractive to thieves.

Do you remember the story of the British

officer in the Gulf War who had a laptop stolen from his car in London causing a revision of the invasion plans and punishment for the officer?

Several banks last year received bad publicity when backup tapes, containing clear text personal financial customer information, were lost or stolen. Their customers were not happy.

It's worth the extra effort and money to buy devices that contain encryption code or software that will encrypt your information on any media you can carry out of the building.

Conclusion

1. Encryption is best suited for networks and is most likely to be used where systems, not people, turn on the encryption. Not enough people have gotten used to encrypting.
2. Encryption is very important on any mobile device or media that contains valuable or sensitive information.
3. Information can be encrypted on storage devices where only one person needs access.
4. Encryption on disk drives, especially where more than one or two persons need access, probably is not as beneficial as other means to control access.
5. Make sure to secure your wireless networks. Easy for you is also easy for everyone else. Taking the time to turn on the security will make it harder for anyone to listen in.



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"The pen is the tongue of the mind."

Miguel De Cervantes

Extra Space Storage Inc. Contract

AT&T announced recently it has won a two-year, \$1 million contract from Extra Space Storage Inc. to provide voice networking services. Extra Space Storage recently acquired Storage USA, making it the second largest self-storage operator in the United States, with more than 630 properties in 34 states.

AT&T networking services have enabled the company to improve operational efficiency and customer service while providing an estimated 45 percent savings.



> Why Not WiMax?

WiMax stands for "World-wide Interoperability for Microwave Access Forum." Many operators and service providers may be unfamiliar with the details of the IEEE 802.16 standard, but this wireless technology has the potential to revolutionize the broadband wireless access industry.

WiMax was formed in April 2001, in preparation for the original 802.16 specification published in December of that year. According to the WiMax Forum, the group's aim is to promote and certify compatibility and interoperability of devices based on the 802.16 specification, and to develop such devices for the marketplace. Members of the organization include Airspan, Alvarion, Analog Devices, Aperto Networks, Ensemble Communications, Fujitsu, Intel, Nokia, OFDM Forum, Proxim, and Wi-LAN.

WiMax 802.16 technology is expected to enable multimedia applications with wireless connection and, with a range of up to 30 miles, enable networks to have a wireless last mile solution. The 802.16 standard, the "Air Interface for Fixed Broadband Wireless Access Systems," is also known as the IEEE WirelessMAN air interface. This technology is designed from the ground up to provide wireless last-mile broadband access in the Metropolitan Area Network (MAN), delivering performance comparable to other broadband services such as traditional cable, DSL, or DS-1 offerings.

802.16 wireless technology will provide a flexible, cost-effective, standards-based means of filling existing gaps in broadband coverage, and creating new forms of broadband services not envisioned in the wired telecom world. WiMax is basically the next generation of the wireless local loop (WLL) concept. But the development of WiMax is taking a much more solid, constructive, growth-oriented approach than previous incarnations of WLL technology.

WiMax: The Wireless MAN Solution

In January 2003, the IEEE approved the 802.16a standard which covers frequency bands between 2 GHz and 11 GHz. The 802.16 standard is an extension of the IEEE 802.16 standard for 10 - 66 GHz that was published in April 2002. These sub 11 GHz frequency ranges facilitate non line-of-sight RF connectivity, making the WiMax standard an ideal technology for last-mile applications. Here's why: obstacles like trees and buildings are usually present, and

base stations may need to be unobtrusively mounted on the roofs of homes or buildings, rather than towers on mountains.

Key: The most common WiMax configuration consists of a base station mounted on a building or tower that communicates on a point to multi-point basis with subscriber stations located in businesses and homes. 802.16a has up to 30 miles of range with a typical cell radius of 4 - 6 miles. Non-line-of-sight performance and throughputs are optimal within this typical cell radius.

802.16a also provides an ideal wireless backhaul technology to connect 802.11 wireless LANs and commercial hotspots to the Internet. 802.16a wireless technology gives businesses the ability to flexibly deploy new 802.11 hotspots in locations where traditional wired connections may be unavailable or too time consuming to provision. This capability offers service providers around the globe a flexible new way to stimulate growth of the residential broadband access market segment, especially in areas where cable modem or DSL services simply aren't available.

With shared data rates of up to 75 Mbps, a single "sector" of an 802.16a base station – where sector is defined as a single transmit/receive radio pair at the base station – provides sufficient bandwidth to simultaneously support more than 60 businesses with T1-level connectivity and hundreds of homes with DSL-rate connectivity, using 20 MHz of "channel bandwidth". To support a viable business model, service providers need to sustain a mix of high-revenue business customers and a high-volume of residential subscribers. 802.16a helps meet this requirement by supporting differentiated service levels, which can include guaranteed T1-level services for business, or best effort DSL-speed service for home consumers. The 802.16 specification also includes robust security features and the Quality of Service (QoS) needed to support services that require low latency, such as voice and video. 802.16 voice service can be either traditional Time Division Multiplexed (TDM) voice or Voice over IP (VoIP).

Key: The main advantages offered by 802.16 are as follows:

1. The ability to quickly provision service, even in areas that are hard for wired infrastructure to reach;
2. The avoidance of steep installation costs; and
3. The ability to overcome the physical limitations of traditional wired infrastructure.
4. The ability to complement and interface with other wireless broadband technologies such as 802.11 Wi Fi, and 3G.

WiMax Network Architecture

By using a robust modulation scheme, WiMax delivers high throughput at long ranges with a high level of spectral efficiency that is also tolerant of multi-path fading. "Dynamic adaptive modulation" allows a WiMax base station to exchange throughput for range. For example, if the base station cannot establish a robust link to a distant subscriber using the highest order modulation scheme, 64 QAM (Quadrature Amplitude Modulation), the modulation order is reduced to 16 QAM or QPSK (Quadrature Phase Shift Keying), which reduces throughput but simultaneously increases effective range.

To accommodate easy cell planning in both licensed and unlicensed spectrum worldwide, WiMax also supports flexible channel bandwidths – it fosters scalability. For example, if an operator is assigned 20 MHz of spectrum, that operator could divide it into two sectors of 10 MHz each, or 4 sectors of 5 MHz each. By concentrating RF power on increasingly narrow sectors, the WiMax operator can increase the number of users while maintaining good range and throughput. To scale coverage even further, the operator can re-use the same spectrum in two or more sectors by creating proper isolation (physical separation) between base station antennas to avoid interference. In other words, WiMax allows for carefully engineered frequency re-use.

In addition to supporting a robust and dynamic modulation scheme, the IEEE 802.16 standard also supports technologies that increase coverage, including mesh topology and "smart antenna" techniques. As radio technology improves and costs drop, the ability to increase coverage and throughput by using multiple antennas to create transmit and/or receive diversity will greatly enhance coverage in extreme environments.

Privacy and encryption features are also included in the 802.16 standard to support secure transmissions and provide authentication and data encryption.

WiMax Standards and Development

Standards are important for the telecom and wireless industry – really any industry – because they facilitate economies of scale that can bring down the cost of equipment, ensure interoperability, and reduce investment risk for WiMax operators.

Key: Without industry-wide standards, equipment manufacturers must provide all the hardware and software building blocks and platforms by themselves. This includes the chip sets, subscriber station gear, WiMax base stations, and element management software used to provision services

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and remotely manage the subscriber station. With the 802.16 standard in place, suppliers can amortize their research and development costs over much higher product volume. The WiMax Forum has facilitated this standards activity.

Standards also specify minimum performance criteria for equipment, enabling a common broadband wireless access baseline (platform) that equipment manufacturers can use as the foundation for ongoing innovations and faster time-to-market. With its broad industry support, the 802.16 standard lets device manufacturers and solutions vendors do what they do best: achieve overall price/performance improvements and open mass-market opportunities that cannot be equaled by proprietary approaches.

The WiMax Forum is a non-profit corporation formed by equipment and component suppliers, including Intel Corporation, to promote the adoption of WiMax-compliant equipment by operators of broadband wireless access systems. The organization is working to facilitate the deployment of broadband wireless networks based on the IEEE 802.16 standard by helping ensure the compatibility and interoperability of broadband wireless access equipment. This is similar to how the Wi-Fi Alliance promoted the IEEE 802.11 Wi-Fi standard for wireless LANs.

Several industry players are leading WiMax's implementation. The first of these is Intel, which is making heavy investments into WiMax as part of a strategy to take the lead in WiMax the same way they did in Wi-Fi with Centrino. Their research shows that many people use their PDAs, broadband equipped mobile phones and laptops to access data networks while mobile, a phenomenon that is causing a significant number of communities to build metro-based broadband access areas to serve them.

Some industry observers believe that WiMax competes with Wi-Fi. Most informed players argue that WiMax is really a complementary technology to Wi-Fi, particularly in the metro arena. They see it as a broadband wireless alternative to cable or DSL, and believe that certified WiMax products will begin to appear in the enterprise market in mid-2005, while residence WiMax products will provide solutions that are most cost-effective that fixed solutions in rural or greenfield areas.

In April 2002, the IEEE published their 802.16 standard for Broadband Wireless Access (BWA), also known as WiMax. 802.16 specifies the details of the air interfaces for Wireless Metropolitan Area Networks (MANs). And while there are some similarities between Wi-Fi and WiMax, in other respects they could not be more different. Spectrum was allocated globally for 802.16 implementation through a two-year, open-consensus procedure that involved hundreds of engineers from major carriers and vendors around the world. Consequently, 802.16, while still a nascent technology, enjoys global acceptance and what will be a relatively trivial implementation phase once it becomes more widely deployed. Furthermore, the capabilities of the standard are impressive. Whereas Wi-Fi offers megabits of nominal bandwidth over service distances of 300 feet, WiMax offers 100 Mbps over a service radius of several miles. And because it is orthogonal, it does not require line of sight for connectivity.

Over the last few years 802.16 has undergone a series of modifications, resulting in the existence of various flavors of the original standard including 802.16a and 802.16e. They are discussed below.

802.16a

IEEE 802.16a was ratified in January 2003 as an extension to the original 802.16 stan-

dard. The 802.16a standard is basically an amendment to the more general 802.16 core standard developed in December 2001 by IEEE Task Group 1. The core 802.16 specification was an air interface standard for broadband wireless access systems using point-to-multipoint infrastructure designs, operating at radio frequencies between 10 GHz and 66 GHz. It targeted an average bandwidth performance of 70 Mbps and peak data rates up to 268 Mbps. It addresses the requirements of both licensed and unlicensed implementations, and supports point-to-multipoint networks as well as mesh topologies within the unlicensed region.

But the 802.16a standard wasn't complete in many peoples' minds. It applied only to line-of-sight deployment in licensed spectrum, didn't address non line-of-sight (NLOS) transmission, neglected to offer any conformance guidelines and ignored ongoing development of the similar European HiperMAN standard. The 802.16a collection of amendments took into account the emergence of licensed and license-exempt broadband wireless networks operating between 2 GHz and 11 GHz, with support for non line-of-sight architectures that could not be supported in higher frequency ranges. Support for NLOS performance was one of primary PHY [physical layer] differences in 802.16a. 802.16a was developed with the requirements of lower frequencies in mind. The amended standard also allowed for WiMax deployment in varying channel capacities to address the different amounts of spectrum carriers may own from market to market, and in different parts of the world.

802.16e

802.16e is under development as an extension of 802.16a. Its potential impact is enormous in that it adds mobility to 802.16a systems.

Table 1: 802.16 WiMax Standard Evolution

	802.16	802.16a/REVd	802.16e
Completed	Dec. 2001	802.16a: Jan 2003	
802.16 REVd: Q3 2004	Estimate: 2nd half of 2005		
Spectrum	10 to 66 GHz	< 11 GHz	< 6 GHz
Channel Conditions	Line-of-sight only	Non line-of-sight	Non line-of-sight
Bit Rate	32 to 134 Mb/s at 28 MHz channelization	Up to 75 Mb/s at 20 MHz channelization	Up to 15 Mb/s at 5 MHz channelization
Modulation	QPSK, 16 QAM and 64 QAM	OFDM 256, OFDMA	
64 QAM, 16 QAM, QPSK, BPSK	Same as REVd		
Mobility	Fixed	Fixed and Portable	Mobility, Regional Roaming
Channel Bandwidths	20, 25 and 28 MHz	Selectable channel bandwidths between 1.25 and 20 MHz, with up to 16 logical sub-channels	Same as REVd
Typical Cell Radius	1 to 3 miles	3 to 5 miles; Maximum range 30 miles based on tower height, antenna gain and transmit power (among other parameters)	1 to 3 miles

UPDATE

Key: The addition of mobility could support the end-to-end needs of a subscriber in both fixed and mobile environments. However, the addition of mobility has a potentially major impact in an area that not many may be considering. Observers may say that WiMax represents a real threat to Wi-Fi. But given that WiMax spectrum has already been allocated around the world, mobile WiMax represents more than a potential threat to Wi-Fi, it represents a huge threat to 3G. Billions of dollars have been spent since 2001 on 3G spectrum, with minimal deployments to date. Now 802.16e-based WiMax holds the promise of wireless broadband connectivity with global reach. 3G begins to appear as just another option.

Given that the ultimate goal of 802.16 is to provide a technology solution that will bridge the gap between fixed and mobile wireless systems, 802.16e will allow Wireless ISPs (WISPs) to enter and take over a market with minimal investment in infrastructure, then offer a complete package of services to subscribers. Wireless broadband, in the form of WiMax, could also compete favorably with such options as cable modem and DSL (in fact, some analysts refer to WiMax as wireless DSL). See Table 1 for a comparison of the three existing WiMax standards, illustrating the technology's evolution.

WiMax is absolutely still in its nascent stage. Members of the WiMax forum are working together to carefully plot the evolution of 802.16 from a vague standard into a marketable technology. Common ambition and experience deploying Wi-Fi serve as their guide rails.

WiMax is not Wi-Fi - not yet, anyway - but the next evolution in broadband wireless has set off down Wi-Fi's path. Wi-Fi, based on the 802.11 standard, once claimed only a sparse, polka dot pattern of hot spots around the globe, but that pattern is becoming denser by the day - much faster than wireline broadband technologies could. Its success has given proponents of broadband wireless access, whose visions of success have proved mirages before, reason to hope again.

The WiMax Forum, comprised of more than 100 companies, is gathering a broad array of vendors and service providers from around the world that will contribute to the success of WiMax. Advancing the technology to market depends largely on the ability of this industry cooperative, which will shape an intentionally vague standard into something more marketable and receptive to mass deployment. The key objective consists of devising specifications for product interoperability across a wide range of

equipment vendors and overseeing testing of the products at third-party labs in order to certify them for interoperability.

Key: In the long-term future, the vision is for WiMax to become a last-mile access technology integrated in laptops and other end-user devices. But in the near term, it probably will have the most viability for backhauling the rapidly increasing volumes of traffic being generated by Wi-Fi hot spots. This would reflect an end-to-end wireless "last mile", all the way to the end users' device !

WiMax has key benefits for carriers and operators. By choosing interoperable, standards-based equipment, the operator lowers the risk of deploying broadband wireless access systems.

- ◆ Economies of scale due to standardization will help reduce monetary risk.
- ◆ Operators are not locked in to a single vendor, or small group of vendors, because base stations will interoperate with subscriber stations from different manufacturers.

Ultimately, operators will benefit from lower-cost and higher-performance equipment, as equipment manufacturers rapidly create product innovations based on a common, standards-based platform.

WiMax Application Options

The WiMax standard will help the telecom industry provide wireless solutions across multiple broadband segments.

Wireless Carrier Backhaul Network

Long-haul and Internet backbone providers in the U.S. are required to lease lines to third-party service providers, an arrangement that tends to make wired backhaul relatively affordable. The result is that only about 20 percent of cell base stations are backhauled wirelessly in the U.S. With the possible removal of the leasing requirement by the FCC, U.S. wireless (cellular) providers may look to 802.16-based wireless backhaul as a more cost-effective alternative to leased lines. The robust bandwidth of 802.16a technology makes it an excellent choice for backhaul to support commercial enterprises such as hotspots, as well as point-to-point backhaul applications.

Broadband On-Demand

Last-mile broadband wireless access can help spur the deployment of 802.11 hotspots and home/small office wireless LANs, especially in areas not served by cable or DSL or in areas where the local telco may have a long lead time for provisioning broadband service. Broadband Internet connectivity is mission critical for

many businesses, to the extent that these organizations may actually re-locate to areas where broadband service is available. In today's marketplace, local exchange carriers have been known to take three months or more to provision a DS-1 circuit for a business customer, if the service is not already available in the building. WiMax technology enables a service provider to provision service with speed comparable to a wired solution in a matter of days, and at a significantly lower cost.

Key: 802.16a technology also facilitates instantly-configurable, "on demand" high-speed connectivity that can support hundreds or even thousands of users for Wi-Fi hotspots, for temporary events such as trade shows. In this context, WiMax operators could use 802.16a solutions for backhaul to the core network. Current (wireless) technology makes it possible for the service provider to scale-up or scale-down service levels, literally within seconds of a customer request.

"On demand" connectivity also benefits businesses such as construction sites, that have irregular broadband connectivity requirements. "On demand" last-mile broadband service such as WiMax represents a significant new profit opportunity for any carrier willing to deploy it.

Supplementing Gaps In Cable and DSL Coverage

The cost and complexity associated with traditional wired cable and telephone infrastructure have resulted in significant broadband coverage gaps in the U.S. and across the globe. Early attempts to use wireless technology to fill these coverage gaps have involved a number of proprietary solutions for wireless broadband access that have fragmented the market without providing significant economies of scale.

A surprisingly large number of areas in the US and throughout the world still don't have access to broadband connectivity. Providing a wireline broadband connection to a currently underserved area through cable or DSL can be a time-consuming, expensive process.

Practical limitations prevent cable and DSL technologies from reaching many potential broadband customers. Traditional DSL can only reach about 18,000 feet (3 miles) from a telco central office, and this limitation means that many urban and suburban locations cannot obtain DSL connectivity. Cable also has its limitations. Many older cable networks have not been equipped to provide a "return" channel, and equipping these networks to support high-speed broadband can be expensive. The cost of deploying cable is also a significant deterrent to the extension of wired broadband

service in areas with low subscriber density. This is because the capital outlay required to implement the cable, which is mostly labor costs for trenching, would take a long time to recoup, if it could be recouped at all. The low subscriber density is the mitigating factor. Even if all potential customers bought into the service, their low numbers would likely not be sufficient to cover the cost of supplying cable to the area(s).

For wireline telcos, WiMax could prove cheaper and easier to install than DSL, and the evolution toward 802.16e's mobile capability in the future could help telcos compete better with the wireless carriers. Also, WiMax with mobility could provide a broadband evolution for mobile carriers that have not yet decided about 3G. WiMax will surely get the attention of wireless carriers, because 3G CDMA (EV-DO) operates at lower rates than WiMax. 802.16e should reach the marketplace sometime in late 2006 or 2007.

Key: The current generation of proprietary wireless systems are relatively expensive for mass deployments because, without a standard, few economies of scale are possible. This scenario also limits procurement leverage of WiMax carriers. Standardizing a technology leads to more equipment manufacturers getting "into the game", which is good for operators because it gives them additional leverage with manufacturers when negotiating.

Cost and deployment inefficiencies will change with the launch of standards-based systems based on WiMax. The range of 802.16a solutions, the absence of a line of sight requirement, high bandwidth, and the inherent flexibility and low cost of WiMax-type service helps to overcome the limitations of traditional wired and proprietary wireless technologies.

Service providers seeking to build broadband infrastructure in developing countries should take fiber as far as they can practically take it, then go wireless. WiMax technology will allow these companies to deploy broadband quicker and cheaper. For any carrier looking to fill the holes in their cable or DSL networks, wireless is the most viable solution today. This is because the cost of wireless components has dropped dramatically since the late 1990s, and WiMax standardization – like any technology standardization - will facilitate widespread deployment.

Areas Underserved By Broadband

Wireless Internet access based on the WiMax standard is also a natural choice for underserved rural and outlying areas with low population density. In such areas, local utilities and governments usually work together

with a local Wireless Internet Service Provider (WISP) to deliver Internet access service. Recent statistics show that there are more than 2,500 WISPs who take advantage of license-exempt spectrum to serve over 6,000 markets in the U.S. [Source: ISP-Market 2002]. On an international basis, most deployments are in licensed spectrum, and are deployed by local exchange carriers who require customers to purchase voice services in addition to high-speed data. This is because in these areas the wired infrastructure either does not exist or does not offer the quality to support reliable voice, let alone high-speed data. This is essentially a wireless local loop (WLL) application.

Extendable Wireless Access

As the number of Wi-Fi hotspots proliferates at a blazing pace, users will naturally want to be wirelessly connected, even when they are outside the range of the nearest hotspot. The IEEE 802.16e extension to 802.16a introduces roaming capabilities which will allow users to connect to a WISP even when they roam outside their home or business, or go to another city that also has a WISP

Licensing

The WiMax Forum has no intentions of navigating the jumble of international spectrum policy to bring the licensed frequencies into the WiMax fold. The Forum has selected a few bands that meet the world's needs, and they've formed a regulatory group that will work towards harmonization. Essentially, the WiMax Forum is concentrating on two critical bands: the 2.5 GHz or MMDS band, and 3.5 GHz – by far the most abundant broadband spectrum allocated across international borders. There are other bands under consideration that WiMax could support, but the Forum and most of its vendor members have chosen to concentrate their energies on those two bands. Since WiMax is intended to be a specification that enables volume sales through standardization, the objective is to generate a lot a buzz about a few spectral bands rather than little interest in numerous bands. The Forum is getting approached by many governments that want to know how they can them work toward harmonization.

Key: As is the case with so many other wireless technologies, the U.S. is unique when it comes to the potential of broadband wireless. While the rest of the world is jumping on the 3.5 GHz spectrum, regulation has kept those bands off of the table in the U.S. While there is discussion of opening up the similar 3.6 GHz band at the FCC, most of the U.S.'s hopes lie in the 2.5 GHz MMDS held by Sprint and Nextel. Neither of these carriers have announced any WiMax-related plans to date for their MMDS spectrum.

WiMax is not a new technology - it is a more innovative and commercially viable adaptation of a proven technology that is delivering broadband services around the world today. In fact, wireless broadband access systems from WiMax Forum members are already deployed in more than 125 countries around the world. These leading equipment providers are on a migration path to WiMax.

Proceeding With Caution

For now, WiMax proponents are hopeful about the prospect for broad market deployment, but they are also trying to keep that hope from mutating into too much hype. It's in the backs of everyone's minds that over-investment, too much marketing hype and exorbitant product cost were among the factors that killed off a previous generation of broadband wireless service providers, namely LMDS and MMDS. Sprint purchased MMDS spectrum licenses, launched "Sprint Broadband" service around 2000, only to grandfather the service around 9 months later. This isn't to say that many carriers who've purchased LMDS and MMDS licenses won't eventually put them to use again at some point in the future. How that's done is the million dollar question. WiMax Forum members believe the mistakes of the past have helped them contribute to a detailed, revised standard and a product certification plan that broadband wireless didn't have 5 years ago. This time around, Wi-Fi now exists as a last mile complement that paves the way for WiMax. Theoretically, WiMax will be a natural extension of something that already exists: Wi-Fi.

Key: With the advent of a standard and economies of scale driving down equipment prices and improving performance, many analysts predict a virtual explosion in the market for broadband wireless. In-Stat/MDR forecasts the market will grow to more than \$1.2 billion by 2007.

Perhaps one of the most exciting aspects of WiMax – one with the potential to make this a significantly bigger market - is the evolution to true mobility. The WiMax Forum worked aggressively to incorporate mobile capabilities into the 802.16 standard by the end of 2004. In the 2006 timeframe, it's expected that WiMax will be incorporated into end-user devices like notebook computers and PDAs along with Wi-Fi and Bluetooth, enabling the delivery of wireless broadband directly to the end user - at home, in the office and on the move. This potential could allow for true end-to-end wireless communications, a truly groundbreaking moment first in the world of wireless communications. In the 2007 timeframe, it's expected that WiMax will be integrated into 3G phones along with Wi-Fi,

providing a simplified network connection for voice and data. The WiMax Forum is driving a common platform for harmonization between standards that will enable users to remain connected wherever they go.

But for all of the industry hope and hype that has been placed at the feet of WiMax, the technology remains today in an early, pre-market stage.

Market success for WiMax is not assured. Though analysts believe the WiMax market will be worth anywhere from \$2 billion to \$5 billion by 2009, the defining aspects of that anticipated growth remain to be pinpointed. It's very likely that the initial service providers adopting WiMax in 2005 will be wireless ISPs, many of whom already are demanding pre-certified products from vendors.

WiMax has the potential to be the great equalizer in broadband access - to close the gap of the digital divide, which has never been more within reach.

Paul

Paul Bedell is Associate Director of Product Management for the PremierServ Hosted IP Service. Paul is also an Adjunct Faculty member at Chicago's DePaul University and a published author. This article is an excerpt from his new book, "Wireless Crash Course - SECOND EDITION".

The opinions expressed in this feature are those of Mr. Bedell and not of the AT&T family of companies.

>Contract with Molina Healthcare

AT&T recently announced that Molina Healthcare Inc. has signed a three-year, \$7.2 million contract for an Internet Protocol Virtual Private Network (IP VPN) that will provide the company with a full range of voice and data networking services.

Molina Healthcare operates health plans in California, Indiana, Michigan, New Mexico, Utah and Washington, as well as 21 primary care clinics located in Northern and Southern California.

Molina Healthcare turned to AT&T for a networking solution that will allow the company to take advantage of newer, more cost-efficient technologies and allow for future expansion efforts. The AT&T solution integrates voice and data services and enables Molina Healthcare to take advantage of new technologies like VoIP (Voice over Internet Protocol), which offers additional features and operational efficiencies. In addition, the network provides increased productivity and an improved customer service experience for members and providers.

>Cingular MEDIA Net Simplifies Wireless Internet Experience

Cingular Wireless recently announced a significant upgrade to its MEDIA Net service that dramatically simplifies the way more than 30 million of its customers access the wireless Internet on their mobile phones. The enhanced MEDIA Net provides customers with the quickest access to favorite online content, and is the first wireless Internet service to offer breakthrough levels of personalization. Cingular's more than 30 million customers with data-capable handsets will be automatically migrated to the new MEDIA Net over the next several weeks. The new MEDIA Net dramatically reduces the number of clicks it takes to retrieve online information on consumers' wireless phones. Now, with just one or two clicks on the phone's keypad, customers can gain access to news and entertainment headlines, sports scores, financial quotes, local weather, and more. Cingular's introduction of a personalized "phone page" enables users to add and remove whatever content they wish to see.

Cingular has worked closely with leading content providers, including CNN for news, ESPN for sports, E! Online for entertainment, The Weather Channel for weather, and Univision for Spanish-language content.

To make it even easier for Cingular's customers, the company has taken the first step by linking localized content to the customer's billing zip code. Therefore, when customers access the new MEDIA Net, they will see their local weather, sports team scores, movie theatre listings and more on their first visit - all tied to their zip code. MEDIA Net then provides customers the control to move beyond these initial settings to further personalize their experience right from their phone.

>Telemark Gold Awards For Customer Satisfaction

AT&T Inc. Internet Protocol Virtual Private Network (IP VPN) services "seem to be hitting new heights," according to the most recent Telemark Services customer satisfaction survey. AT&T Inc. has received more Telemark Gold Awards than any other global carrier in the most recent global IP customer satisfaction survey results issued by the marketing services firm in December 2005.

According to the Telemark survey, AT&T is the operator with the greatest number of "Outstanding" performances in this latest report, winning three in total.

A Telemark Gold Award is bestowed for satisfaction scores rated at more than 20 percent above the benchmark standard, which represents the attainment of an exceptional level

MEDIA Net Live Ticker

Taking MEDIA Net's convenience and simplicity one step further, Cingular also has introduced MEDIA Net Live Ticker. For the first time in the industry, MEDIA Net Live Ticker delivers pre-selected content, such as breaking news, weather and sports information, directly to consumers' phone displays without the need to touch a single button or incur any charge for accessing the initial information.

MEDIA Net Live Ticker provides zero-click access to specific personalized headlines and content. Information rolling across the "ticker" at the bottom of the phone display is updated automatically several times daily to keep consumers current with their favorite news, weather, sports and entertainment content; all without pressing a button. MEDIA Net Live Ticker updates in the background when the phone is idle and does not disrupt the phone's normal usage.

With MEDIA Net Live Ticker, consumers will receive "bites" of headline-style information that appear on their phone's display. The customer can then delve one-level deeper and "snack" on a brief synopsis of the information. If the customer then decides to "feast" on additional information beyond what has been provided, they can use MEDIA Net to access the wireless Internet and retrieve the full story. Charges are only incurred if the customer chooses to open the MEDIA Net session to get the full story. MEDIA Net Live Ticker is launching on the Motorola V557 for the holidays, with more handsets featuring this service to come in the new year.

MEDIA Net services can be purchased on a pay-as-you-go basis (\$0.01 per KB), or included in a MEDIA Net package, ranging in price from \$4.99 for 1MB of data usage to \$19.99 for unlimited data usage.

of customer satisfaction. The three Gold Awards AT&T received are for Secure Data Transfer, Installation Not Disrupting and Satisfaction With Prior Pilot Installation.

AT&T received five "Excellent" ratings for its Network Availability, Operational Guarantees, International Performance, End-to-End Network Management and Bills in Currency of Choice. AT&T also met or exceeded benchmark satisfaction levels for 31 of the 32 attributes measured.

AT&T was also ranked "Best in Class" in seven of the report's 32 key categories. They are Secure Data Transfer, Value for Money, Ability to Meet Customers' Requirements, Installation Not Disrupting, Operational Guarantees, Prior Pilot Installation and Bills in Currency of Choice. AT&T outperformed all competitors on Prior Pilot Installation and Operational Guarantees.



> What Your Magnetic Stripe Says About You

Recently, my ID was checked at a local club offering a concert. It wasn't because I look young; everyone had to go through the indignity. When my driver's license was swiped through the card reader, my age was displayed on a board in large, red lights. I watched while others were also carded, and after getting over the fact that I was probably the oldest person there, I began to wonder, how did they get that information from a simple card swipe? How much do the magnetic stripes on the back of my credit cards and license say about me?

I decided to investigate and began looking for a card reader.

What I Learned

Card readers are readily available online from merchants who sell point-of-sale equipment. Obtaining the software is a little trickier. It is very expensive; much more than I was willing to pay for my little experiment. But, after some additional searching on the Internet, I not only found some free software, I also located instructions on how to build my very own card reader. Unfortunately, I also ran into a few sites selling data collectors, which are card readers that scan and store card numbers for unscrupulous uses. More on that later.

Magnetic stripes are divided into three tracks. Most credit cards only use tracks 1 and 2. Track 1 generally holds the primary account number, the cardholder's name, a country code, and the expiration date.

Track 2 also holds the card number, country code and expiration date. Some cards make use of track 3 where the PIN is stored in an encrypted format.

When I slid my own cards through my new card reader that is exactly what I found. In fact, some cards, like my HMO card, AAA card and my grocery store club card had even less information than that. I was feeling pretty good about the lack of information being shared, until I scanned my driver's license.

States that use magnetic stripes on their driver's licenses use all three tracks. Every bit of information that is written on the front of the license is stored on those tracks. Which means that the club owner who was scanning licenses for admittance to the show could have potentially gathered and stored all kinds of personal information from each of the patrons.

They could possibly sell addresses to other club owners so upcoming show information could be mailed out. They could determine the types of shows most 5' 6" brunettes of a certain age and weight were most interested in. Or use the information gathered about our physical attributes for direct marketing purposes. The possibilities are practically endless, and for the most part sound somewhat harmless. But, as with most subjects I write about, there is a criminal element lurking out there, ready to take advantage of our information.

Skimming

Skimming takes place when a corrupt employee working at a reputable business swipes a card's magnetic stripe into a hidden card reader before processing the payment. The unauthorized copy can then be sold and/or cloned into a new card. Someone else uses your account information to pay for merchandise they will enjoy, and you get the bill.

The one thing the skimmers can't grab is the CVS code, at least not from a card swipe. The CVS code is the 3-digit code most often printed on the back of the card, but it is not encoded in the magnetic stripe.

So, how do skimmers bypass the approved card readers? They use the data collectors I mentioned earlier. Data collectors are battery operated card readers. They can read magnetic stripes as well as bar codes. The newest breed of these data collectors are so small, they can be stored on a key ring, and can be completely concealed in the palm of a hand. The information of up to 1500 cards can be stored and then uploaded to a computer at a later time. Some of these devices even have a quick-erase button so all the information can be dumped in a hurry if needed. The skimmers know that in many states it is a crime to acquire and store this information without the permission of the cardholder.

They also know that credit card fraud goes largely unpunished, and that the Secret Service cannot investigate unless the loss to the true card holder reaches \$2,000 for each single transaction. Therefore, they keep purchases from each business below that magic number, many times just dumping the card and moving onto another after each purchase. As many of the transactions take place across state lines, local law enforcement is unable to get involved even though the loss may be less than \$2,000.

Skimming can also occur at ATM machines or gas stations. Devices have actually been placed over the card reader that will gather your information. A brochure or deposit envelope holder can hold a small camera, which can record your PIN as you type it in. When no

money comes out, the patron of the ATM will simply think the machine is out of order and move on, unknowingly leaving their card number and PIN for a bad guy to harvest.

During my research, I also read many articles that claim hotel keycards not only store your room number and your checkout date, but also store your name and credit card information. The good news is, that information falls under the urban legend category. Hotel keycard coders are not hooked up to a hotel's billing system.

The bad news is, criminals do use the cards, but they use them as blanks. They erase what is on the keycard and replace it with stolen credit card information. That way, if they are arrested, law enforcement only finds an old hotel key in their possession and not a fraudulent credit card.

What Can You Do?

- ◆ Never let your card out of your sight.
- ◆ Shield the key pad with your free hand when entering your PIN.
- ◆ Be aware of your surroundings.
- ◆ Review your monthly statements carefully.
- ◆ Monitor your credit report.
- ◆ Try to use ATMs you are familiar with and use on a regular basis.
- ◆ And finally, just for safe measure, keep your hotel key card and destroy it later.

Nancy

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New Mobile2Home calling service in CT

Speeding the long-awaited integration of wireless and wireline services, AT&T Inc. and Cingular Wireless recently announced a limited trial launch of a new service that gives residents unlimited calling to and from their Cingular Wireless mobile telephone number and their primary phone line.

The service trial, called Mobile2Home™, is available to qualified Connecticut customers with combined-billed local and Cingular Wireless service. The Mobile2Home feature will be available for \$5.99 a month for each wireless phone only to Connecticut residential customers of the new AT&T companies with a home phone line and who combine their Cingular Wireless bill with their local phone service bill. The trial runs through Feb. 25, 2006.



Digital Solutions for People with Disabilities

A small but significant part of the society has some form of physical or psychological handicap. Biology at birth, accidents in life, aging of human mind and body or absence of human interconnectedness are some of the reasons attributed to explain these handicaps. The following statistics reflect the magnitude of the problem for people with only vision and hearing impairment:

- ◆ Although estimates vary, there are approximately 10 million visually impaired people in the United States. Approximately 1.3 million Americans are legally blind.
- ◆ Approximately 28 million Americans have a hearing impairment. Hearing loss affects 17 in 1,000 children under age 18. Some 314 in 1,000 people over age 65 have hearing loss and 40 to 50 percent of people 75 and older have a hearing loss.

Continued developments in digital technologies are assisting many people with disabilities and providing new business opportunities for companies engaged in creating digital solutions for different disabilities. Digital solutions bring people with handicaps into the main stream of the society. This allows them to fully participate in the ongoing economic and social development towards building an all 'inclusive' society.

Digital Solution Examples

The following examples illustrate as to how digital solutions are improving the functioning capabilities of people with vision and hearing impairments:

Speech Enabled Mobile Phones

Mobile Speak software provides easy accessibility to the powerful functionality and data management features of mobile phones, heretofore inaccessible to those who are visually impaired. When Mobile Speak is installed on a compatible cell phone, it converts text into crisp, easy to understand speech using a text-to-speech engine. The speech is heard through the phone's internal speaker or Bluetooth headphones. Instead of proprietary note takers or several mobile devices, each performing a separate task, blind people can do exactly what their sighted counterparts have been doing for some time: Buy and carry one single device to handle multiple communications and data management functions.

A number of mobile phones come with powerful features and functionality, and virtually all of those features are easily accessed by

blind or sighted users. With a five-way joystick and two control keys in some phones, we can cycle through the comprehensive menus, easily making selections with a click of a joystick.

Below is a sample of some of the features provided with Mobile Speak software loaded into some smart phones for the visually impaired:

- ◆ Hear incoming and outgoing calls
- ◆ Check logs for missed calls, received calls, or merely review dialed numbers
- ◆ Access incoming caller ID information
- ◆ Manage contacts as well as dial numbers from its directory
- ◆ Check for appointments
- ◆ Access calendar information
- ◆ Write and read text messages
- ◆ Write, read, and send e-mails
- ◆ Write notes and journal entries
- ◆ Create to-do lists
- ◆ Set alarms
- ◆ Hear the battery status as well as signal strength
- ◆ Produce multi-media files using a sound and video recorder
- ◆ Take, send, or store pictures using digital camera
- ◆ Synchronize all contact and calendar details between the phone and PC.
- ◆ Use your phone as a wireless modem by connecting to your PC via Bluetooth, Infra-Red, or USB to manage e-mail or surf the web
- ◆ Perform day to day calculations using accessible four-function calculator
- ◆ Optional MP3 player

PDA's for Disabled

Department of Electronics and Electrical Engineering at University of Glasgow, UK has been using Personal Digital Assistants (PDAs) for a number of disabled students in order to enhance their learning capability. The PDA can be a useful enabling technology for students with physical or cognitive disabilities. For example, for those students with visual impairments and dyslexia it is useful to be able to customize interface attributes, such as color and font size.

For students with communication or confidence difficulties a PDA can provide assistance via its "beaming function". Most PDAs provide a beaming facility (either via infra-red or Bluetooth technology) to enable the exchange of information both from PDA to PDA and between PDAs and other devices. Therefore in class, students can write their questions out and beam them to their colleagues or tutor. This is helpful for anyone with speech impairment as well as those who lack the confidence to ask a question in front of their peers. The increased opportunity for communication also provides the possibility

of greater collaboration between students within lectures.

The opportunities for collaboration are enriched by the wide variety of content that can be interchanged even between different types of PDA. Such collaboration by means of document exchange may be particularly valuable means of "inclusion" for students with communication difficulties.

The idea is to enable people with disabilities to enjoy anytime, anywhere access to assistive technology using commodity wireless devices. The first example of such a service is a portable, low-cost speech synthesis system that runs on wireless-enabled, commodity PDAs. In this project researchers have enhanced the text-to-speech capability of a standard PDA by developing a series of custom "buttons" that can be tapped by the user to quickly form spoken words to convey common thoughts or basic needs, like ordering in a campus cafe. Current capabilities include the ability to type text or tap the buttons on a PDA, sending the information over a wireless link to a server, with the resulting synthesized speech played back on the PDA. This application already runs on some prototypes and research work is underway to address many more applications for disabled including location based services.

SMS for Hearing Impaired

Today's mobile telephony has not left the hearing impaired out of its purview. The ability to hear is no longer a prerequisite for utilizing mobile phones and stay connected with the society. SMS (Short Message Service) -a text messaging service- is so simple, quick and affordable that mobile phone users are utilizing it with greater frequency- including those that are hearing impaired. This is just the beginning and many other powerful multimedia services including sending video messages will add new communication capabilities for the hearing impaired.

The power of multimedia messaging technology is that 'nothing is impossible for the deaf except hearing' sends out a message of encouragement. Communication among themselves and their normal fellow beings is the biggest challenge faced by the hearing impaired. Sign language has been around for millions of years. Long before cave men learnt the power of words, actions were the medium used to communicate. Today, sign language is the most natural form of communication among the deaf and does not entail accurate knowledge of a spoken language. Currently available and evolving multimedia messaging services allow many hearing impaired people to lead very normal lives, talking and laughing away.

Digital Solution Benefits

There are many more digital solutions possible by using speech recognition and speech synthesis technologies. People traveling overseas can carry handheld pocket size devices for language translations. While in Beijing the device can talk in Chinese, in Paris in French and Rome in Italian. These are text-to-speech or speech-to-speech applications of technology for all people.

Key benefits of digital solutions include:

- ◆ Affordable and meaning solutions
- ◆ A transparent and all “inclusive” world
- ◆ A more productive society
- ◆ A more connected world

Providing personal access solutions to millions of people with disabilities can bring them into the main stream of the society. Device manufactures and network providers have recognized this multi billion dollar product and service opportunity for people with disabilities. Accelerating the creation of new digital solutions for disabled will bring many economic and social benefits to the society.

Jagdish

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New Southern California Area Code Coming

- ◆ All customers who currently have a 310 Area Code will keep the 310 Area Code.
- ◆ Phone numbers with the new 424 Area Code can only be issued after Aug. 26, 2006.
- ◆ To prepare for mandatory 1+10-digit dialing on July 26, 2006, all customers should begin the habit of dialing 1+10-digits beginning Dec. 31, 2005.
- ◆ Beginning July 26, 2006, 1+10-digit dialing will be required to complete calls. All customers with 310 and 424 area codes must dial 1+10 digits on all calls, including those within and between the 310 or 424 Area Codes.
- ◆ The Telecom Carriers serving California have launched a public education program so customers will understand the change.
- ◆ During the past 10 years, telecom carriers successfully implemented 50 Area Code overlays throughout the U.S. to make telephone numbers available to meet growing demand.
- ◆ The above information was provided by the Joint Telecommunications Carriers about the California Public Utility Commission's decision to introduce the 424 area code overlay in Southern California. Contact your Liaison Manager for further information.

>Stress Demystified

By Jagdish Kohli, Ph.D.

Stress is the body's normal response to deal with life's everyday situations in our imperfect world. In handling any event, our body's automatic nervous system gets into action and provides the energy hormones needed for that situation. After dealing with the occurred event the body goes through a recovery phase to restore its normal state of equilibrium. This natural process continues within our bodies as various pleasant and unpleasant events occur in our daily life. The following points summarize some key attributes of stress:

- ◆ Stress is a feeling that's created when we react to particular events.
- ◆ It's the body's way of rising to a challenge and preparing to meet a tough situation with focus, strength, stamina, and heightened alertness.
- ◆ Stress varies from one person to another.
- ◆ Our perception of a situation creates different levels of stress.
- ◆ Our attitude towards life contributes to different levels of stress.
- ◆ One person's stress could be another person's motivation.
- ◆ A change in the normal state of “mind and body” is an indicator of stress.

Any number of factors can trigger stress based on our physiology. The following are some of the key causes of body and mind stress in our complex world:

- ◆ Over exertion in our daily work life and not enough rest for the body can result in excessive stress.
- ◆ Eating unbalanced food, excessive drinking, daily smoking, consuming recreational drugs can create stress.
- ◆ Poor time management skills, inability to delegate and absence of good organization can cause stress.
- ◆ Negative emotions associated with the feelings of guilt, unexpressed anger, low self esteem, worry and depression can result in stress.
- ◆ Unrealistic desires and lack of resources to fulfill these desires can create a lot of stress.
- ◆ Tenuous interpersonal relationship can cause psychological stress.

Most of us thrive on stress. Stress keeps us engaged in the world and helps us define what's important. Short bursts of stress may even strengthen the immune system. Long bursts of stress and frequent occurrences disturb the normal functioning of our automatic nervous system and create toxins in the body. Extended stress diminishes our natural defenses and has

corrosive emotional and physical repercussions. In many cases, the cumulative effect of continued stressful events leads to disease within the mind or body.

Have we ever noticed that certain people seem to adapt quickly to stressful circumstances and take things in stride? They're cool under pressure and able to handle problems as they come up. Researchers have identified the qualities that make some people seem naturally resilient even when faced with high levels of stress. If we want to build our resilience to stress, work on developing the following attitudes and behaviors:

- ◆ Think of change as a challenging and normal part of life.
- ◆ Respond to life's daily events. Don't react to them.
- ◆ See setbacks and problems as temporary and solvable.
- ◆ Believe that we will succeed if we keep working toward our goals.
- ◆ Focus on what matters most in life and ignore unessential activities.
- ◆ Be confident and take action to solve problems that crop up.
- ◆ Focus on solving the problem in hand and live in the moment.
- ◆ Success is getting 'what you like' but satisfaction is 'liking what you get'.
- ◆ Build strong relationships and keep commitments to family and friends.
- ◆ Stay connected with your environment.
- ◆ Have a support system and ask for help.
- ◆ Participate regularly in activities for relaxation and fun.
- ◆ Enjoy healthy and balanced meals every day.
- ◆ Develop a “feel good” attitude towards life and its journey.

By managing our own stress level we can enhance the quality of our own life and share our joy with peers, family members, friends and other people we may come in contact every day.

“Nothing gives one person so much advantage over another as to remain always cool and unruffled under all circumstances.”

– Thomas Jefferson

Dr. Kohli conducts on-site workshops on “techniques of stress reduction”.

The opinions expressed in this article are those of Dr. Kohli and not those of the AT&T family of companies. There are a lot of trained professional mental health practitioners who can be consulted on the matter of stress.

“Don't let the noise of others' opinions drown out your own inner voice. Have the courage to follow your heart and intuition.”

Steve Jobs



>10 Steps To Presenting An Effective Web Conference

How would you like to give a presentation to an audience around the globe without leaving your office?

With the combined technological advances of personal computers, the Internet, telephony and email, anyone can now setup a virtual meeting room, called a web conference, and speak to people around the world. A sales and marketing presentation, the introduction of a new product or virtual classroom training can be done without the boundaries of time and place.

Web Conferencing

Web conferencing is a service that allows two or more people to 'share' a computer screen remotely so that everyone on the web conference is viewing the same 'host' computer screen. For each web conference, there is a "host or moderator" who is the person who runs the conference and presents the information and "participants" who are the audience members or receivers of the information presented.

Web conferencing typically does not require any special equipment other than a computer, with certain minimum requirements, that is able to connect to and browse the Internet. PowerPoint slides, Excel spreadsheets, live web pages and just about any file that can be opened on the host's desktop can be presented during the conference.

Prior to the introduction and availability of web conferencing, the presenter or moderator was required to travel and meet with the audience in person. Through web conferencing, or virtual meetings, both the moderator and the participants can save time and money on travel while using their time more efficiently.

Technological advances in web conferencing create virtual meeting centers that are interactive, visual and capable of many applications previously done in person such as:

- ◆ One-time training sessions
- ◆ Ongoing education/certification
- ◆ Sales and marketing presentations
- ◆ Business presentations to global offices
- ◆ Corporate financial updates
- ◆ Previews of new websites or changes in current websites

Once you have decided to host a web conference, follow these ten steps to create and present a web conference that impresses your audience and effectively communicates your message while saving both time and money.

1. Choose The Right Web Conference Product

Most web conferencing services are 'reservationless' or 24/7 which means that a web conference can be setup whenever you like without making any reservations beforehand. In some cases, usually when there are hundreds of participants in the audience, reserving a conference at a specific time for a specific number of participants is required. Check with your vendor for these types of options.

Before you choose a vendor, also know the features and functionalities you'll need during your presentation. A training session will require different features than a sales and marketing presentation. Ask yourself the type of conference you're giving and what you need from your audience. Do you need to ask questions, poll the audience, or whiteboard?

The features and functionalities of web conferences or virtual meetings are rapidly improving to resemble in-person meetings, and a few are listed below:

- ◆ The host can see a list of those present in the meeting; this list is updated automatically as people join and leave the conference.
- ◆ Audience participants can 'chat' with other participants using a feature similar to "instant messaging".
- ◆ Participants and the host can chat with each other.
- ◆ Participants can raise a hand and ask the host questions.
- ◆ A host can ask questions of the audience.
- ◆ Hosts can poll the audience.
- ◆ For work sessions, whiteboarding is a tool that can be utilized by anyone in the meeting.
- ◆ The conference can be recorded for playback later to those who missed it or want to view it again.

2. Organize Your Presentation

Now that you have setup your web conferencing service, you have tested it and been trained, you're ready to start preparing and organizing your presentation.

Describe your reason for the presentation in one sentence such as "the purpose of my presentation is to explain the introduction and marketing of a new product". Let's say your company is called "Fast Running Shoes", and you're introducing a new shoe. Create an introduction, a body and a conclusion by writing out the presentation in a speech format.

Determine the number of words for your presentation. It takes about 80 words to speak for 30 seconds, and that's probably enough information for one slide. So if you want to present 20 slides for a 30 minute presentation, your speech should probably be around 1,600 words. The rest of the conference time is used for questions and answers, polling the audience, ad libbing at times and even changing slides.

After writing your presentation speech, you're ready to create your PowerPoint slides.

3. Break the Ice and Connect With Your Audience

Since the audience can't see you, you need to establish an immediate visual connection with the audience, and the first slide is your opportunity to introduce yourself to your unseen audience.

This first slide may include a photo of yourself, your company or your product. Let's say your business, "Fast Running Shoes" is marketing new running shoes. You may show a photo of yourself or even a photo of your product, Since your audience can't see you in person, your audience needs to feel comfortable with you, as if they personally know you. You can choose a PowerPoint slide with two sides; on the left-hand side of the slide is your photo, and on the right is text with a few lines about you, your company or your title and phone number..

4. Choose Your Words Carefully

Each slide should contain no more than 3-4 lines... just short bullet points. The audience will see the points but listen to what you have to say. It's important that the words you choose for each bullet reflects your meaning clearly and concisely.

WRONG WAY

FAST RUNNING SHOES

- ◆ Company has been in business for a little more than 13 years
- ◆ We offer 7 styles of running shoes for the whole family
- ◆ Introduction of our latest new shoe is next week

Rewrite these bullet points to be more concise. The audience should be LISTENING TO YOU, not reading the slides while you're talking.

BETTER WAY

FAST RUNNING SHOES

- ◆ In business since 1992
- ◆ Seven family styles
- ◆ January 15 introduction

Also, do not talk about something that is not on a slide. It's too confusing for the audience and impossible to follow along.

5. Make it Visual

Your slides should all "tell a story". For example, instead of reporting the number of shoes sold as just a number, paint a picture for the audience that shows the story.

WRONG WAY

FAST RUNNING SHOES

- ◆ SALES 2003 1,200,500
- ◆ SALES 2004 1,800,000

Don't leave it up to the audience to figure out the information. Show them that sales were

“up” from 2003 to 2004. They’ll thank you for not forcing them to analyze the figures.

BETTER WAY

FAST RUNNING SHOES

◆ SALES 2003	1,200,500
◆ SALES 2004	↑ 1,800,000

With the addition of the arrow you have communicated more without saying a word. Although you’ll talk about last year vs. this year, the audience can “see” what you’re saying more easily without having to analyze the information. Remember to paint a picture keeping in mind that the audience should be able to understand the slides with little explanation.

6. Keep The Audience Interested

There are many ways to keep the audience’s attention beyond your own words and visuals. PowerPoint offers the presenter great tools to keep the attention of your audience such as slide and background options like:

- ◆ Color schemes
- ◆ Design templates
- ◆ Layouts

A slide that is visually attractive will maintain the attention of the audience longer than one that is not.

7. Poll Your Audience

Speaking of boring your audience, it’s a good idea to poll your audience every ten minutes or so to make sure they’re paying attention. By polling the audience, you can ask a question of them about the presentation and see how many responses you receive. If only half of the audience responds, perhaps you’ve lost their attention. Conversely, if they all respond, you’re right on track.

8. Question Your Audience

You can ask them how they’re enjoying the presentation or simply test them on material presented thus far.

This is especially important within a training function to see if the audience understands the material.

As the presenter, you’ll be able to ask a question that has a “Yes and No” response or a “multiple choice” response; then ask the audience participants to answer. If your question is “Do you understand the material so far?,” you’ll receive the aggregate number of responses, for example, 78, yes; 14, no. Talk with your vendor to setup this function if you’re unfamiliar with this feature.

9. Rehearse Your Presentation

Now that you have prepared your slides, you’re ready to rehearse your presentation. Rehearsing a web presentation is just as important as rehearsing a speech. You want to be sure that your high energy, focus and passion will be evident to the listening audience.

As you rehearse, tell the story behind each slide. Remember, you’re painting a picture; your audience sees your bullet points and, simultaneously, listens to your description. This is similar to showing a painting by Picasso and telling the audience about the background, passion, personal involvement and work that went into a piece of art that makes it so special. You may think that your presentation isn’t as spectacular as a Picasso, but you can still reach for the passion behind your slide.

Time your presentation so that it’s long enough to get your message across but not long enough to bore your audience.

10. Use Vocal Variety

Vocal Variety is more important than ever. Remember, the audience feels what you feel.

Stand while delivering the presentation. This gets your energy levels up. Those who are listening will tune into someone who seems to care about the presentation. A presenter with low energy comes across as uninteresting and puts the audience to sleep.

Gesture wildly so they feel your words as well as hear them. If you’re talking about higher sales raise your hands in the air. Other methods of increasing energy include punching the air with your fists, swaying your body back and forth or even pretending that the people are in the room.

Tape the presentation in rehearsal and play it while you’re running through the PowerPoint Slides. You may want to change a few bullet points or change the order of the slides.

Good luck!

Victoria

Victoria Nissen is an expert on web conferencing tools and applications. The Seton Hall grad has more than 20 years in sales and is an accomplished writer and speaker. Vicky recently reached the finals in a Toastmasters International Southern California Humorous Speech Contest.

AT&T Internet Security News Network

AT&T Inc. recently unveiled AT&T Internet Security News Network (AT&T ISNN), a first-of-its-kind 24/7 video Webcast that provides enterprises with critical security news and information, helping them to stay abreast of the latest security issues and remain one step ahead of malicious activities proliferating on the Internet.

AT&T ISNN is exclusively available to subscribers of the company’s flagship alerting and monitoring service, AT&T Internet ProtectSM. The news network delivers up-to-date information from security experts and forensic analysts directly to subscribers’ desktops, around the clock.



Proud Sponsor of the U.S. Olympic Team

> AT&T Returns As Official Partner of the U.S. Olympic Teams

In a move reaffirming its commitment to the Olympic spirit and to its role as a global leader in communications, the new AT&T, in conjunction with the United States Olympic Committee (USOC), recently announced that it will again be an Official Partner of the U.S. Olympic Team, providing significant financial support, products and services to America’s summer and winter athletes.

AT&T will serve as the Official Telecommunications Services Partner of the U.S. Olympic Team for the upcoming Olympic Winter Games in Torino, Italy, which start on Feb. 10, and the 2008 Olympic Games in Beijing, China.

The sponsorship announcement by the new AT&T marks a return to the Olympic Movement for the world-renowned company. AT&T had shared the global spotlight with the U.S. Olympic Team from 1984 to 2004, bringing Americans closer to their athletes and the Olympic Games.

With the recent acquisition of AT&T by SBC Communications Inc. and the decision to rename the combined companies AT&T Inc., the sponsorship with the USOC is a key element in the new AT&T’s commitment to support the new brand with the most extensive multimedia advertising campaign in the history of either SBC or AT&T.

Official Partner is the highest level of domestic sponsorship available within the USOC, with Official Partner companies like AT&T providing the most significant amount of resources, products or services in support of the U.S. Olympic Team. As such, AT&T may leverage the benefits of Official Partner-level companies such as marketing rights to the U.S. Olympic Team.

As the Official Telecommunications Services Partner for the U.S. Olympic Team, the new AT&T will also help sponsor U.S. Olympic Team trials, as well as exhibitions of various sports. The company will also introduce programs for the upcoming Olympic Winter Games that leverage AT&T broadband technologies in support of the U.S. Olympic Team. Details on those programs will be announced before the 2006 Torino Games.

AT&T Sponsors Famous Golf Event for 21st Year

The AT&T Pebble Beach National Pro-Am Golf Tournament takes place from February 6-12, 2006 on California’s beautiful Monterey Peninsula.

UPDATE

>The New AT&T: A Heritage of Innovation and Service

The new AT&T is the latest chapter in a rich history of achievement and leadership in the evolution of communications. In fact, with the new AT&T, the brand associated with the invention of the telecommunications industry is now leading the reinvention of the communications and entertainment industry.

This heritage can be traced directly back to Alexander Graham Bell's genius and persistence. The journey that began with his invention of the telephone in March 1876 has led to extraordinary technological advancements and a culture of unwavering dedication to customer service.

Following are a few milestones from this more-than 120-year history.

A Tradition of Innovation

The new AT&T inherits a rich tradition of meaningful innovation from its predecessor companies, which combined have almost 6,700 patents issued or pending worldwide. Researchers and engineers at AT&T Laboratories, founded in 1925, have received seven Nobel Prizes and developed some of the world's major technological inventions, including the transistor, the solar cell and the communications satellite.

SBC Laboratories, established in 1988, has been an industry leader in the development of DSL and other broadband Internet transport and delivery systems, wireless data networks and new technologies and applications for networking and enterprise business needs.

The new AT&T's predecessor companies pioneered new technologies and developed promising new products and services in a wide range of areas, including:

- ◆ IP network management.
- ◆ Optical technology.
- ◆ Automatic speech recognition.
- ◆ Next-generation text-to-speech products.
- ◆ Voice over Internet Protocol technologies.

Following is just a sampling of the innovations that are a part of the new AT&T's heritage:

- ◆ Loading coils (1899, AT&T), which reduce the rate at which telephone signals weaken along a line, enabling longer telephone lines.
- ◆ Three-element vacuum tube (1914, AT&T) as an amplifier, which enabled completion of the first transcontinental line.
- ◆ Coaxial cable for broadband transmission (1929, AT&T), patent filed by AT&T researchers.
- ◆ First commercial, radio-based phone service (1946, Southwestern Bell), the first in the country. AT&T developed the theory of cellular telephony soon after.
- ◆ The transistor (Bell Labs, 1947), invented by scientists John Bardeen, Walter Brattain

and William Shockley who later shared the Nobel Prize. The transistor replaced vacuum tubes, serving as the foundation for the development of modern electronics and made possible the marriage of computers and communications.

- ◆ First commercial modem (1958, AT&T). AT&T began pioneering the laser the same year. When coupled later with hair-thin, ultrastrong glass fibers, this technology transmits billions of bits of information each second.
- ◆ First call transmitted from space (1962, AT&T), via Telstar I from AT&T Chairman Frederick Kappel to U.S. Vice President Lyndon Johnson.
- ◆ Unix computer operating system (Bell Labs, 1969), which later becomes the underlying language for the Internet, which was launched that year.
- ◆ First commercial cellular service (AT&T and Ameritech, 1983).

The creation of AT&T Laboratories continues this commitment to develop and deliver meaningful innovation across market segments, from residential to small-business to enterprise.

A Legacy of Service

The new AT&T also inherits a proud heritage of corporate citizenship that will continue to be an integral part of the company's future. AT&T and its employees are committed to enriching and strengthening the communities that they serve through financial support and volunteerism.

- ◆ Founded in 1911, the Telecom Pioneers is the world's largest industry-related, volunteer organization. With more than 625,000 members across the U.S., Canada and Mexico, the Pioneers contribute millions of volunteer hours to their communities every year, including books for children, services for the elderly, homes for the needy and packages for troops overseas.
- ◆ From the blizzard of 1888 and the San Francisco earthquake of 1906, to Hurricanes Andrew in 1992 and Katrina in 2005, AT&T and SBC have responded to national disasters with emergency communications services and financial support.
- ◆ In 1930, Bell companies began teaching customers how to use new dial service with demonstrations at schools, meetings and other events. This tradition continues today with customer education for emerging technologies, as well as a public education program that delivers tips, guidance and tools for creating an emergency communications plan to help families maintain contact during uncertain times.
- ◆ While almost 70,000 Bell employees served in World War II, the telephone became an essential part of the war effort

in 1914. Bell companies produced more than 1,200 defense projects and trained thousands of military communications people. Today, the new AT&T will continue its commitment to supporting our troops, providing phone cards and other telecommunications support.

- ◆ Since 1984, SBC Communications Inc. and the SBC Foundation have contributed more than \$1 billion to nonprofit organizations around the country. Likewise, the AT&T Foundation has been a significant supporter of education, civic causes, the arts and culture. With the creation of the new AT&T, the predecessor foundations will be combined and are expected to have approximately \$60 million available for charity and community-giving.
- ◆ Today, 250,000 employees and retirees of SBC Communications Inc. and AT&T Corp. serve their communities through the Telecom Pioneers. In 2005, SBC Pioneers donated 8.4 million hours to community outreach activities – more than \$140 million worth of time.

Historical Milestones

- ◆ **1876** Alexander Graham Bell's (a Scottish immigrant fascinated with sound since childhood) curiosity and growing expertise in speech and sound lead him to experiment with telegraphy. He is experimenting with a liquid transmitter in March 1876, when his message to his electrical assistant, Thomas Watson, revolutionizes the world. In another room, Watson clearly hears Bell's voice transmitted over the wire as he says, "Mr. Watson, come here. I want you."
- ◆ **1877** Alexander Graham Bell and two financial associates form Bell Telephone Company. There are 778 phones in operation and one employee – Thomas Watson, paid \$3 a day and a one-tenth interest in the company.
- ◆ **1885** AT&T is formed as a subsidiary of the American Bell Telephone Company. Its mission: Build the first long distance network.
- ◆ **1894** Alexander Graham Bell's patents expire. Within 10 years, 6,000 independent telephone companies open across the country.
- ◆ **1899** AT&T acquires the assets of American Bell Telephone to become the parent of the Bell System. By 1899, there are 1,322,000 phones and 45,553 Bell employees.
- ◆ **1927** AT&T begins transatlantic telephone service between the United States and London via radio.
- ◆ **1935** AT&T completes the first around-the-world call.
- ◆ **1977** AT&T opens its first Network Operations Center in Bedminster, N.J.
- ◆ **1983** In Chicago, AT&T and Ameritech (the name for the new parent for the Bell companies in Illinois, Wisconsin, Michigan,

Indiana and Ohio) launch the first commercial cellular service in the country.

- ◆ **1984** The Bell System ceases to exist in the settlement of an antitrust suit requiring AT&T to divest itself of local phone service, creating seven regional bell operating companies.
- ◆ **1995** As the holding company for the Bell companies in Missouri, Kansas, Oklahoma, Arkansas and Texas, Southwestern Bell Corp. changes its name to SBC Communications Inc.
- ◆ **1996** AT&T moves through a modern transformation by restructuring into three separate companies: AT&T, the services provider; Lucent Technologies, the equipment company; and NCR, the computer company.
- ◆ **1997** In its first acquisition since the Telecommunications Act of 1996, SBC Communications Inc. expands its capabilities by acquiring Pacific Telesis Group, the parent company of Pacific Bell and Nevada Bell, for \$16.5 billion.
- ◆ **1998** SBC Communications Inc. acquires SNET for \$6.5 billion, tracing its heritage to the world's first commercial telephone exchange.
- ◆ **1999** In the largest telecom acquisition in American history, SBC acquires Ameritech for \$75 billion and builds a wireline footprint now covering 13 states. Focused on data transmission, SBC begins offering business customers new network options, announces the largest rollout of DSL service in the industry, and adds TV to its lineup through a strategic agreement with an industry-leading satellite television provider. AT&T acquires TCI, which becomes AT&T Broadband and acquires MediaOne the next year to become the country's largest cable company. Accelerating the competition between cable and traditional telecommunications, AT&T Corp. redefines its role as an agent of telecommunications transformation.
- ◆ **2000** A joint venture between SBC Communications Inc. and BellSouth Corp. creates Cingular Wireless. AT&T Corp. begins a reorganization that focuses on leadership in the expanding networking field — just as data traffic on its network exceeds voice traffic for the first time. Over the next two years, the company creates and spins off AT&T Wireless and AT&T Broadband.
- ◆ **2001** SBC enters a strategic alliance with Yahoo! to provide co-branded, premium DSL and dial-up Internet access.
- ◆ **2002** SBC moves to a single national brand to reflect its position as a national telecommunications leader. Adopting the slogan, "The world's networking company," AT&T deploys a nationwide, intelligent optical network and

continues to move from a consumer-oriented voice company to an enterprise-focused network company.

- ◆ **2003** SBC completes its move into long distance service in all 13 of its states. SBC expands services to business customers with next-generation voice and data networking with a portfolio of managed Internet Protocol products, including Voice over IP.
- ◆ **2004** Cingular acquires AT&T Wireless to create the nation's largest wireless provider, the strongest spectrum position in the country and a presence in the nation's top 100 markets. AT&T introduces extensive VoIP service – CallVantage – and commits to entering the top 100 markets this year. The company also announces a withdrawal from the consumer market to focus on business networking and VoIP. AT&T Internet Data Centers will increase to 25 with new ones in Frankfurt, Paris, Tokyo and London, further expanding its international network.
- ◆ **2005** SBC and AT&T announce a \$16 billion agreement to merge and create the industry's premier provider of next-generation integrated communications and entertainment through leadership in Internet Protocol, integrated wireless/wireline services and increased competitiveness in the enterprise business market. SBC announces that it will adopt the AT&T, Inc. name following approval of its acquisition of AT&T. SBC/AT&T merger is finalized; the combined companies form AT&T Inc.

Some Executives at the new AT&T

Edward E. Whitacre Jr. - Chairman and Chief Executive Officer

James W. Callaway - Group President - AT&T Integration

James W. Cicconi - Senior Executive Vice President - External and Legislative Affairs

James D. Ellis - Senior Executive Vice President and General Counsel

Karen Jennings - Senior Executive Vice President-Human Resources and Communications

James S. Kahan - Senior Executive Vice President-Corporate Development

Richard G. Lindner - Senior Executive Vice President and Chief Financial Officer

Forrest E. Miller - Group President AT&T Communications Corp.

Randall L. Stephenson - Chief Operating Officer

Rayford Wilkins, Jr. - Group President - International, Directory and Sterling Commerce

>Cingular Launches Enhanced Push To Talk Service

Cingular is enhancing the way businesses and consumers communicate as it introduces a next generation Push to Talk (PTT) service. The service will operate across the largest Push to Talk coverage area in America, and brings a host of new, unmatched features including:

Availability – unique icons allow Cingular PTT users to see if other PTT customers are available before making a PTT call.

Quick Group Calling – allows users to select individuals from their contacts and instantly place a group call. In addition to this impromptu group calling, customers can also pre-establish groups in their contact list (up to 30 groups) and call up to 20 people.

Convert to Cellular – enables a PTT call to be converted to a regular wireless voice call. Calls with up to 20 participants can be converted effectively creating a mobile conference call.

By integrating walkie-talkie and traditional cellular technology, Cingular provides a refined PTT service that can be used by families, executives or employees at job sites. With one click a PTT user can access their list of individuals and groups and see who is available and who is not. One more click and they are instantly speaking to the person or the whole group (up to 20 people). If a quick PTT call turns into a longer discussion, simply convert the call to cellular. In addition, the service offers:

Call Waiting – gives customers the option to accept or decline a second incoming call whether currently on a PTT or regular cellular call.

Contact Alerts – lets customers receive alerts when a contact becomes available.

Voice Messaging – leave a voice message with one person or a group of people directly in their current cellular voicemail box.

Call Me Alerts – allows a user to urgently let someone know they need to talk. A user receiving a "Call Me Alert" can instantly place a PTT call back by pressing the dedicated PTT key.

The service also uses a single phone number for both cellular and PTT service, eliminating the need to remember two numbers.

Cingular offers unlimited PTT service features to meet the needs of consumers and businesses. These features offer unlimited minutes, national coverage and no hidden charges for group or national calls. Consumers on a Cingular Nation Plan can add service for \$9.99 a month per line. Those on Family Plans can select a \$19.99 feature that gives up to five family members on the account unlimited access to the service. Businesses can add a PTT service option to each line of service for \$9.99 per month.

Register For Our February 8th Streaming Broadcast

News on AT&T and Cingular Wireless

You're invited to participate in the next Streaming Broadcast from 9-11am PST February 8, 2006. Topics will be the new company, Cingular Mobile Professional Solutions, Disaster Recovery and the latest company news. Please contact your Liaison Manager (1.800.552.5299) to register & get the URL. Thank You for your participation.



CVSG-TV host Kari Aguinaldo interviews Dr. Jagdish Kohli, Ph.D. at a recent broadcast.



Capturing the Magic

These two business executives were spotted reading the latest UPDATE at the new Hong Kong Disneyland Resort. THANKS to alert reader Oscar Rockwell for snapping the shot and sending it to us. If you catch folks reading UPDATE in an unusual setting, please send a digital shot to our editor. It will be much appreciated.

AT&T Wins Contract From Snap-on Inc.

AT&T Inc. recently announced it has won a three-year global networking services contract from Snap-on Inc. to support its growing global business. Snap-on is a leader in professional tools, diagnostics and equipment. Terms of the contract were not disclosed.

AT&T will provide an Internet Protocol Virtual Private Network (IP VPN) enabling Snap-on to integrate its European network of 19 locations across France, Germany, the Netherlands, Portugal, Spain, Sweden and the United Kingdom. The AT&T solution also paves the way for Snap-on to evolve to a converged voice and data-networking platform for future IP applications.

Through the secure VPN, Snap-on gains the attributes of a private data network within a shared network infrastructure.

Yellowpages.com Launch

The AT&T Yellow Pages business has become a more formidable force in the online directory world, with the launch of a new web site that brings together three leading Internet yellow pages into a single URL – the new yellowpages.com.

SBC and BellSouth partnered last November to acquire yellowpages.com with the goal of unifying their two high-volume online directories – SMARTpages.com and RealPages.com, respectively – into an Internet Yellow Pages that would be the leading online resource for finding local business information. The new yellowpages.com, which launched publicly Dec. 1, combines the expertise of those directories into a single site which has a fresh look and feel and offers new features to attract both consumers and advertisers.

CVSG Resources For You

1. Website: sbc.com/cvsg
 2. CVSG Hotline – 1.800.552.5299
 3. Breaking News on CVSG Listserv
 4. Streaming News Broadcasts
- (Call your Liaison Manager to subscribe to the Listserv or UPDATE, and to participate in Broadcasts)

Consultant/Vendor Sales Group

Toll-Free Hotline 1.800.552.5299 (for any other number, toll charges may apply.)

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Thank You for reading

UPDATE