Association of Corporate Counsel 2005 Annual Meeting
"The Merger of Telecom and IT: U.S. Innovation Driving Economic Growth"
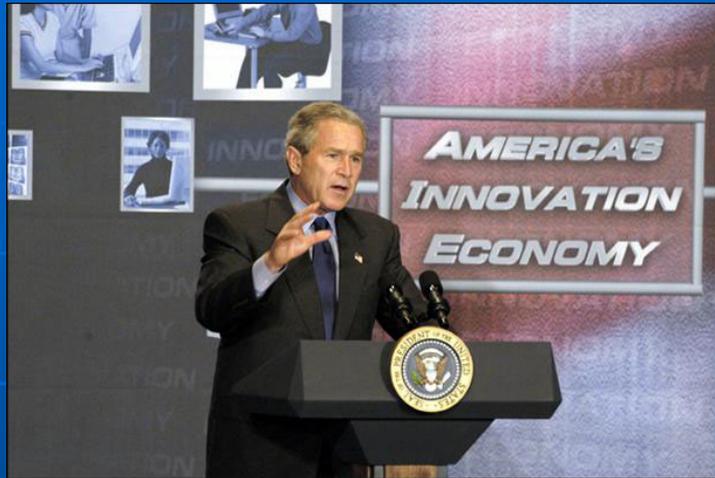
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The President's Broadband Vision

President Bush speaking at the U.S. Department of Commerce June 24, 2004

"This country needs a national goal for broadband technology . . . universal, affordable access for broadband technology by 2007."

— President George W. Bush, Albuquerque, NM, March 26, 2004

Government's Role

"The role of government is not to create wealth; the role of our government is to create an environment in which the entrepreneur can flourish, in which minds can expand, in which technologies can reach new frontiers."

— President George W. Bush, Technology Agenda, November, 2002

Creating Economic Conditions For Broadband Deployment

"We ought not to tax access to broadband. If you want something to flourish, don't tax it."

> – President George W. Bush in Baltimore, Maryland on April 27, 2004

- Tax relief has given businesses powerful incentives to invest in broadband technology
  - Accelerated depreciation for capital-intensive equipment
  - Extension of the Internet tax moratorium until Oct. 31, 2007; support making the moratorium permanent
  - An 18-month extension of the research and experimentation tax credit; support making it permanent
  - President's FY 2006 budget requests a record $132 billion for research and development.

Benefits of Broadband

"[B]roadband will not only help industry, it'll help the quality of life of our citizens."
— President George W. Bush, Dept. of Commerce, June 24, 2004

- Tele-Medicine
- Distance Learning
- Tele-Work
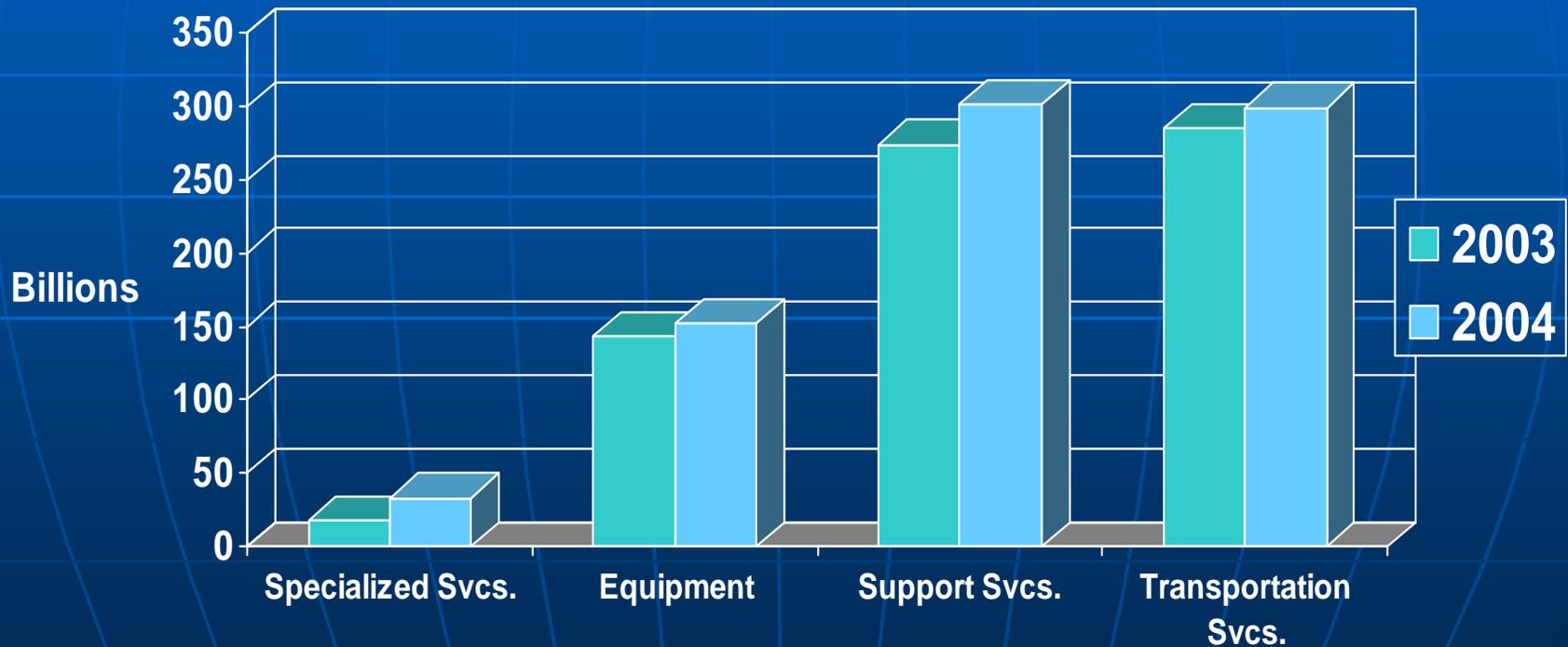- National Security
- Jobs and Economic Growth

The wireless industry is poised to create up to 3 million jobs and save $600 billion over 10 years, according to a new report from Ovum for CTIA. About 2.5% of all jobs in the US now depend on the wireless industry, according to the Ovum report. (Source: TechDaily, 10/3/05)

U.S. Chamber of Commerce study released 10/6/04 found more than 212,000 new jobs would be created and $127 billion a year would be added to GDP over the next five years if telecom regulations were overhauled.

U.S. Telecom Market Continues to Lead the World…

2004 Total: $784.5 Billion (7.9% growth over 2003)
One-third of the Global Telecom Market

Source: *TIA's 2004 and 2005 Telecommunications Market Review and Forecast*

Removing the Regulatory Underbrush

- The Administration supports the FCC's order freeing newly deployed broadband infrastructure from legacy regulation.

- As a result → the number of communities with fiber build outs has increased 83% from 217 communities to 398 communities in 43 states. The number of homes passed by fiber grew from 970,000 in October '04 to 1.6 million in April '05. Many of the communities are outside the "big cities". (Source: FOCUS, FTTH Council and TIA, 5/10/05)

Improving Access to Rights-of-Way:

"[B]roadband providers have trouble getting across federal lands…that's why I signed an order to reduce the regulatory red tape for laying fiberoptic cables and putting up transmission towers on federal lands."
– President George W. Bush, U.S. Department of Commerce, June 24, 2004

- On April 26, 2004, the President signed an executive memorandum directing federal agencies to implement recommendations set out by the Federal Rights-of-Way Working Group. They called for improvements in: 1) Information Access and Collection, 2) Timely Processing, 3) Fees and Other Charges, and 4) Compliance.

President's Spectrum Policy Initiative

"The existing legal and policy framework for spectrum management has not kept pace with the dramatic changes in technology and spectrum use."

- President George W. Bush, Presidential Memorandum, May 29, 2003

- Committed the Administration to develop a comprehensive U.S. spectrum policy for the 21st century.

- The Secretary of Commerce was charged to lead this initiative.

- Established a Federal Government Spectrum Task Force – membership includes the Departments of State, Treasury, Defense, Justice, Interior, Agriculture, Transportation, Energy, Homeland Security, and NASA, OMB, OSTP and Project SAFECOM.

Moore Meets Marconi: Wireless Broadband and New Technologies

"The other promising new broadband technology is wireless. The spectrum that allows for wireless technology is a limited resource . . . [a]nd a wise use of that spectrum is to help our economy grow, and help with the quality of life of our people."   -- President George W. Bush, June 24, 2004

The Administration has made more radio spectrum available for wireless broadband technologies:

- Advanced Wireless Services ("3G")

- Ultra-wideband

- 5 GHz Spectrum

- 70/80/90 GHz

Broadband Over Power Lines: The Third Wire

"*We need to get broadband to more Americans . . . one great opportunity is to spread broadband throughout America via our power lines.*"

— President George W. Bush, US Department of Commerce, June 24, 2004

- The FCC began a BPL rulemaking on February 12, 2004.
- Principal concern was the risk that BPL systems might interfere with radio communications.
- NTIA submitted to the FCC a Phase 1 study that defined interference risks and potential mitigations (April 2004).
- Based on additional analyses, NTIA recommended several supplements to the FCC proposed BPL rules to reduce risk of BPL interference (June 2004)
- The FCC adopted rules incorporating most NTIA recommendations on October 14, 2004.
- Today, many utilities, hotel operators and others are deploying experimental and operational BPL systems.

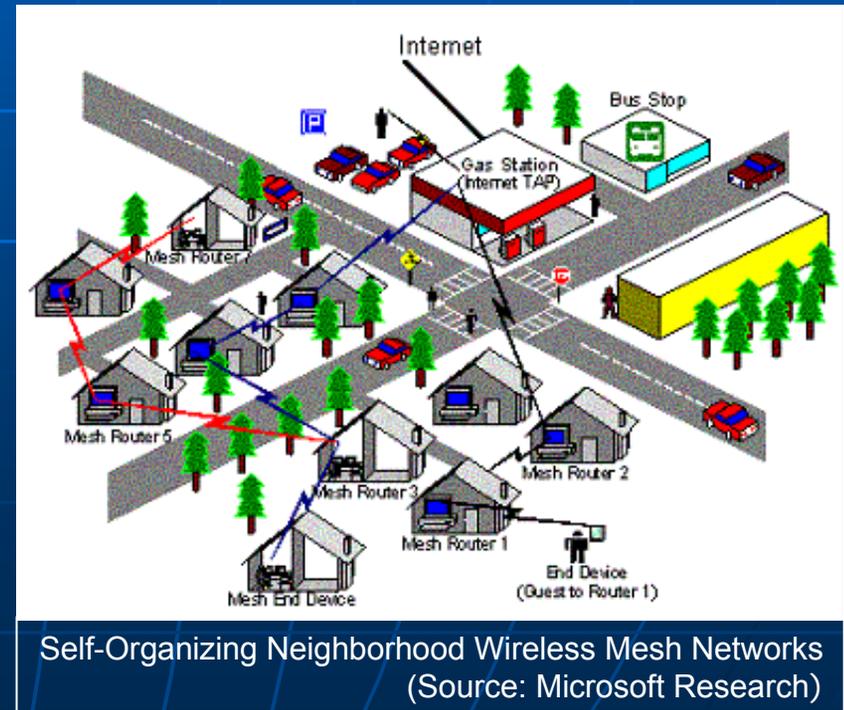**HomePlug Modem** can turn an electrical outlet into an Internet connection.

Expanding Competition through Wireless Applications

▪ **Wi-Fi:** Rural Oregon is home to the world's largest Wi-Fi hotspot → **700 miles[2]** Airgo Networks announced plans to sell Wi-Fi chips with data rates up to 240 Mbps by 4th quarter 2005 – 4x the speed of current Wi-Fi chips at 54 Mpbs.

▪**WiMax:** Intel plans to build WiMax into its Centrino chip platforms, which power 80% of all PCs, by 2006. InStat/MDR estimates that a company could reach 97.2% of the U.S. population with a $3.7 billion investment in WiMax [1].

▪ **Software Defined Radio** (SDR) devices can dynamically reconfigure the device's characteristics for better performance and new services.

▪ **Cognitive radio technology** is a particular extension of SDR that employs model-based reasoning based upon its assessment of the radio environment.

▪ **Smart antenna systems** provide numerous benefits in wireless communications environments – *e.g.,* reduce multipath fading, increase system capacity, extending battery life of terminals, extending the range of base stations, interference reduction
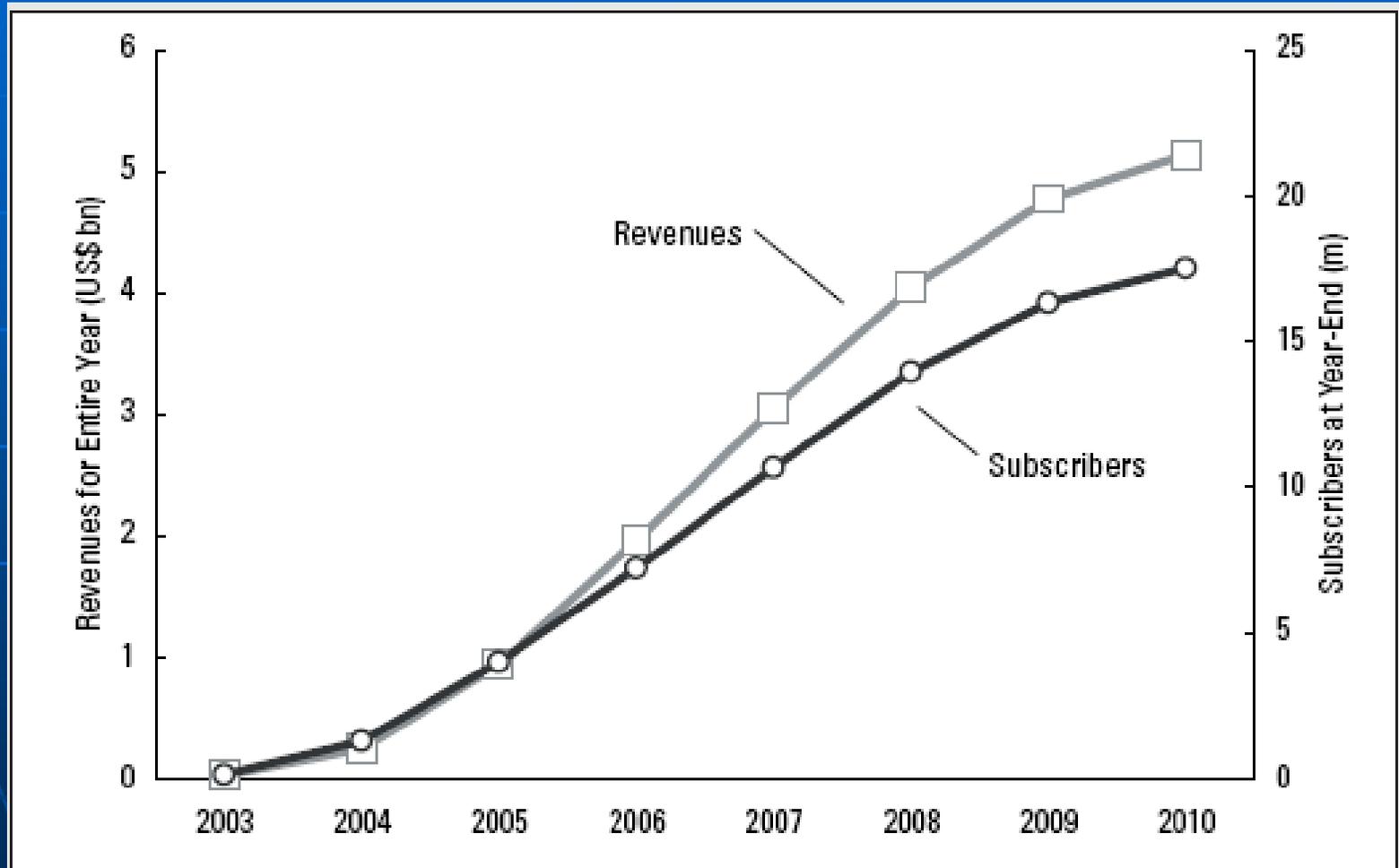
[1] "Why Cheaper And Faster WiMAX Will Force Convergence", *Wireless Business Forecast*, Dec. 16, 2004.

Unlicensed Mesh Networking

- By linking nodes on an ad hoc basis, mesh technology promises to deliver high bandwidth at an order of magnitude lower cost than existing licensed wireless technologies.

- Mesh architecture permits the extension of wireless coverage to areas that do not have wire infrastructure, and can link diverse devices or networks.

- Mesh access points integrate with existing WLAN access points to extend wireless coverage to areas not readily accessible by cables.

- Champaign-Urbana Community Wireless Network (CUWin) in Illinois has offered free 1.5 Mbps Internet access on a mesh network since 2002. The network can support 50-100 simultaneous users with three high-capacity T-1 wires that connect to the Internet. Speeds are comparable to $50/month ISP subscription.
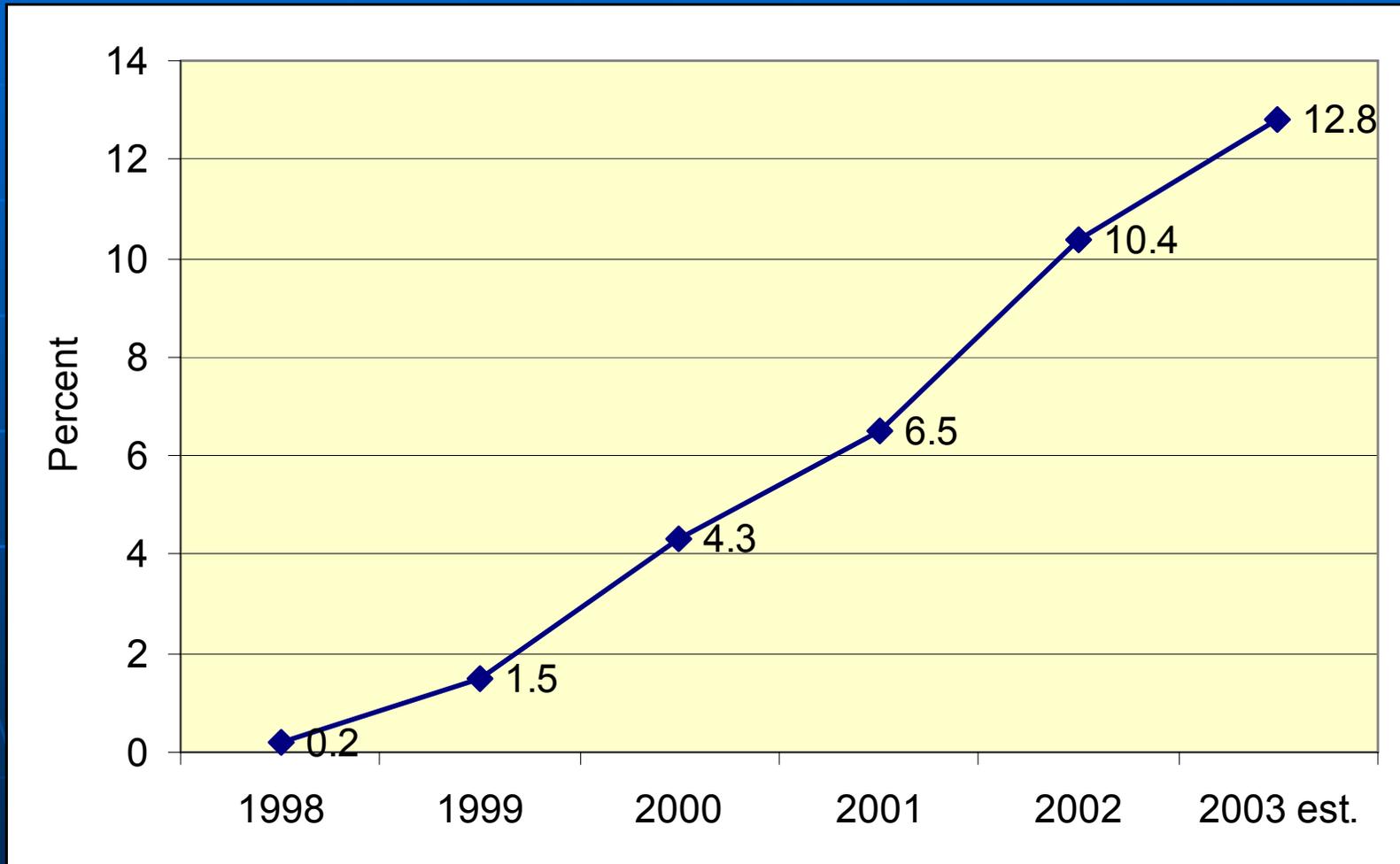

Self-Organizing Neighborhood Wireless Mesh Networks
(Source: Microsoft Research)

VoIP and Other IP Applications Will Continue to Change the Market

VoIP Share of International Traffic (1998-2003)

Source: Telegeography 2004

"Big V" over IP: IPTV

- IPTV delivers streaming broadcast-quality video over the Internet. In consumer settings, IPTV can support video on demand (VoD), digital video recording (DVR), and interactive TV.

- Businesses can also use IPTV for video conferencing, employee training, or product training.

- IPTV will enable telephone companies to offer video services, as well as bundles of voice, data, and video services.

- Microsoft, Thompson/RCA, Juniper, Cisco, Minerva Systems, and Amino) are developing hardware and software to support IPTV.

- SBC and Verizon plan to invest over $8 billion on network upgrades to make IPTV available to more than 20 million homes over the next several years.

- Legislators in Congress and several states are considering bills to allow telephone companies to offer TV without having to negotiate franchise deals with cities. Recently, Texas Governor Rick Perry signed a law allowing for state franchising of cable and video services.

ENUM: Seamless Movement between Telephone and Internet

- Electronic numbering (ENUM) protocol promises true convergence by facilitating communications through email, fax, instant messaging, or voice calls by using a single telephone number for all transmissions.

- The ENUM protocol was developed by the Internet Engineering Task Force; Global implementation will be administered by the International Telecommunication Union (ITU).

- NTIA held a government/industry roundtable on ENUM in August 2002, and sent a letter to the State Department in February 2003 urging the implementation of ENUM in the U.S. if certain principles of competition, security, and privacy were followed.

- NTIA, in partnership with the FCC and State Department, is leading U.S. Government support of industry efforts to initiate an ENUM trial.

Emerging Elements of a Sustainable Policy Framework in a VoIP World

- **International Scope**: VoIP rules and policies should be uniform and international in scope, as befits the boundary-less nature of Internet communications.

- **Facilitate Investment and Innovation**: Policies should provide the VoIP industry with a stable, predictable regulatory environment so it can make rational, economically efficient business decisions.

- **Exercise Regulatory Restraint**: A deregulatory or minimally regulatory approach will result in the most ideal environment to support innovation.

- **Protect the Homeland**: Rules must recognize the continuing importance of working with law enforcement to protect the homeland (*e.g.,* 911, CALEA) in a technologically effective and cost-minimizing way.
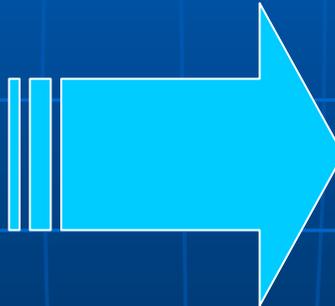
Cost Savings Drive VoIP Market

- Cable operators such as Cable Vision and Time Warner Cable are offering VoIP service at a 60% savings against telephone company rates – adding to the competitive landscape are VoIP services from Vonage, which sells all-distance service for $19.95/mo. and has 1 million customers, and free or nearly free offerings from Skype, Yahoo Inc. and Google Inc. (Source: Multichannel News, 10/05/05)

- Percentage of corporations using VoIP grew to 12% in 2004, from 3% in 2003. (Source: InStat/MDR, CommDaily 12/8/04)

- TIA's 2005 Telecom Market Review & Forecast said the number of VoIP access lines jumped to 6.5 million in 2004 from 3.8 million in 2003 and was expected to expand rapidly to 26 million by 2008.

- Wireless broadband expansion married to VoIP creates great opportunity to reach vast markets in China, India, and other emerging markets.

- According to ITFacts.biz, 10% of U.S. business lines are using VOIP.

Net Value – and Net Threats – Continue to Grow

Then...

Internet Users
16 million
(Verisign, 1995)

Domain Names
38.4 million
(Verisign, 2001)

Average DNS Queries per Day - 3.3 billion
(Verisign, 2001)

Average Emails per Day
15.8 billion
(IDC Market Analysis, 2001)

Average Virus/Malware Incidents per Day
2.0 (Verisign, 2001)

E-Commerce Revenue
$6.9 billion
(Census Bureau, 1Q01)

Now

Internet Users
958 million
(InternetWorldStats, 9/05)

Domain Names
83.9 million
(Verisign, 2Q05)

Average DNS Queries per Day - 13.0 billion
(Verisign, 2005)

Average Emails per Day
31.8 billion
(IDC Market Analysis, 1Q05)

Average Virus/Malware Incidents per Day
4.0 (Verisign, 2005)

E-Commerce Revenue
$19.7 billion
(Census Bureau, 2Q05)

Conclusion

- The President has a vision for making advanced technologies available to all Americans – by creating the economic and regulatory environment to enhance competition and promote innovation.

- The telecom sector is growing, and many new technologies – particularly wireless in nature – are flourishing as new spectrum is freed up for commercial uses.

- IP services are having a very dramatic and positive impact on the U.S. economy.

- In a VoIP world, multiple goals such as promoting investment and innovation, developing light-handed regulation, and protecting the homeland, must be accomplished.